

RAILROAD EQUIPMENT

**SIGNALING
COMMUNICATIONS
MAINTENANCE OF WAY
MECHANICAL
NAVIGATION AIDS**

WESTERN RAILROAD SUPPLY COMPANY

division of **WESTERN INDUSTRIES, INC**
Chicago, Illinois



SECTION 1

Flashing Light Crossing Signals

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WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



Type A-479-A
Flashing Light Highway Crossing Signal with
Type 970-201 Light Units

ALL ALUMINUM





GENERAL INFORMATION

The Flashing Light Highway Crossing Signals manufactured by Western Railroad Supply Company represent the latest improvements in design. They meet all A.A.R. Specifications.

This catalog illustrates the most popular arrangements of flashing light signals and accessories, such as junction box-crossarm with two or four flashing light units for one-way or two-way indication. Other arrangements can be furnished to meet particular requirements.

Type 970-201 Crossing Signal Light unit housing is constructed of aluminum and has an efficient 8" diameter parabolic reflector. The lamp receptacle is supported by a cast metal bracket, positioned to insure exact focusing of lamp filament to reflector. The filament is also in alignment with the side light openings which are fitted with clear glass discs, unless otherwise specified.

The Type 970-201 Crossing Signal differs from previous designs in that it includes an integral hub at the top threaded for 1¼" pipe fitting. It can readily be attached to the usual junction box-crossarms by using adapter elbows with:

- a — threaded fitting on one end and clamp fitting on the other, or
- b — threaded fitting on both ends.

The Type 970-201 Crossing Signal Light unit is completely interchangeable with the previous design, Type 950A-201, by use of a proper elbow, as illustrated in this catalog section.

The Type 970-201 Crossing Signal Light unit is lighter in weight (9 pounds) than previous design. A Two-conductor cord is wired to the lamp unit and is long enough for attachment to terminals in the junction box of the crossarm.

The 970 types of junction box-crossarms are constructed of cast aluminum with two three-unit terminal strips; 12 binding posts. Each light unit is attached to a suspension bracket which provides for adjustment of the light beam alignment. Adjustment can be made of each light unit independently of the other units; horizontal and vertical alignment of each unit can be adjusted and locked in place independently.

The 970 type junction box-crossarm is the same as the previous type 950 design, except for adapter elbows used in attaching the light units.

Roundels furnished are the A.A.R. standard, 8⅜" diameter, red, with photometric rating for color of 220-300. Listings below show the types available. No. 5323P roundels (red plastic) are furnished unless other type is specified on the order.

The "NO TURN" signal, shown on Page 1-28 in this section is often used in conjunction with flashing light signals at locations where mounting of additional flashing light units would not provide suitable protection. It is the safest method of protecting a street parallel to a railroad without interfering with traffic not crossing the tracks.

In this catalog section no attempt has been made to show all possible combinations of flashing light highway crossing signals. We will gladly furnish plans and information for special assemblies.

Note: Roundels Available for Flashing Lights Units are:

	Plastic	Glass	
CL-17P	CL-17,		30° Horizontal Spread.
		5321,	20° Deflecting.
*5323P	5323,		30° Horizontal Spread, 15° Down Deflection.
		5327,	20° Horizontal Spread, 32° Down Deflection.
		5332,	70° Horizontal Spread.
		5333,	Diffusion-deflection Type, with Horizontal and Downward Spread.

* = Standard unless otherwise specified.



Speed Table For Crossing Signal Starts

Miles Per Hour	Seconds Feet Per Second	Distance Traveled in Feet												
		10	15	20	25	30	35	40	45	50	55	60		
1	1.46	14.6	22.0	29.3	36.6	44.0	51.3	58.6	66.0	73.3	80.6	88.0		
2	2.93	29.3	44.0	58.6	73.3	88.0	102.6	117.3	132.0	146.6	161.3	176.0		
3	4.4	44	66	88	110	132	154	176	198	220	242	264		
4	5.86	58.6	88	117.3	146.6	176	205.3	234.6	264	293.3	322.6	352		
5	7.3	73	110	147	183	220	257	293	330	367	403	440		
10	14.6	146	220	293	366	440	513	587	660	733	807	880		
15	22.0	220	330	440	550	660	770	880	990	1,100	1,210	1,320		
20	29.3	293	440	587	733	880	1,027	1,173	1,320	1,467	1,613	1,760		
25	36.7	367	550	733	917	1,100	1,283	1,467	1,650	1,833	2,017	2,200		
30	44.0	440	660	880	1,100	1,320	1,540	1,760	1,980	2,200	2,420	2,640		
35	51.3	513	770	1,027	1,283	1,540	1,797	2,053	2,310	2,567	2,823	3,080		
40	58.7	587	880	1,173	1,467	1,760	2,053	2,347	2,640	2,933	3,227	3,520		
45	66.0	660	990	1,320	1,650	1,980	2,310	2,640	2,970	3,300	3,630	3,960		
50	73.3	733	1,100	1,467	1,833	2,200	2,567	2,933	3,300	3,667	4,033	4,400		
55	80.7	807	1,210	1,613	2,017	2,420	2,823	3,227	3,630	4,033	4,437	4,840		
60	88.0	880	1,320	1,760	2,200	2,640	3,080	3,520	3,960	4,400	4,840	5,280		
65	95.3	953	1,430	1,907	2,383	2,860	3,337	3,813	4,290	4,767	5,243	5,720		
70	102.7	1,027	1,540	2,053	2,567	3,080	3,593	4,107	4,620	5,133	5,647	6,160		
75	110.0	1,100	1,650	2,200	2,750	3,300	3,850	4,400	4,950	5,500	6,056	6,600		
80	117.3	1,173	1,760	2,347	2,933	3,520	4,107	4,693	5,280	5,867	6,453	7,040		
85	124.7	1,247	1,870	2,493	3,117	3,740	4,363	4,987	5,610	6,233	6,858	7,480		
90	132.0	1,320	1,980	2,640	3,300	3,960	4,620	5,280	5,940	6,600	7,260	7,920		
95	139.3	1,393	2,090	2,787	3,483	4,180	4,877	5,573	6,270	6,967	7,663	8,360		
100	146.7	1,467	2,200	2,933	3,667	4,400	5,133	5,867	6,600	7,333	8,067	8,800		
105	154.0	1,540	2,310	3,080	3,850	4,620	5,390	6,160	6,930	7,700	8,470	9,240		
110	161.3	1,613	2,420	3,227	4,033	4,840	5,647	6,453	7,260	8,067	8,873	9,680		
115	168.6	1,686	2,530	3,373	4,217	5,060	5,903	6,747	7,590	8,434	9,277	10,120		
120	176.0	1,760	2,640	3,520	4,400	5,280	6,160	7,040	7,920	8,800	9,680	10,560		
125	183.3	1,833	2,750	3,667	4,583	5,500	6,417	7,334	8,250	9,167	10,084	11,000		
130	190.7	1,907	2,860	3,813	4,767	5,720	6,673	7,627	8,580	9,534	10,487	11,440		

NOTE: Where length of track circuit is known, time in seconds can be determined by dividing its length by "Feet Per Second" at train speed selected.

* Does not allow for drop-away time of relays.



Information Desired With Inquiry For Complete Highway Crossing Signal Installation

We are pleased to furnish engineering information and to quote on requirements for Highway Crossing Signal Installations. Where possible, inquiries should be accompanied by a sketch, or preferably, a scale track plan showing the location of the highway.

The following information is especially desired:

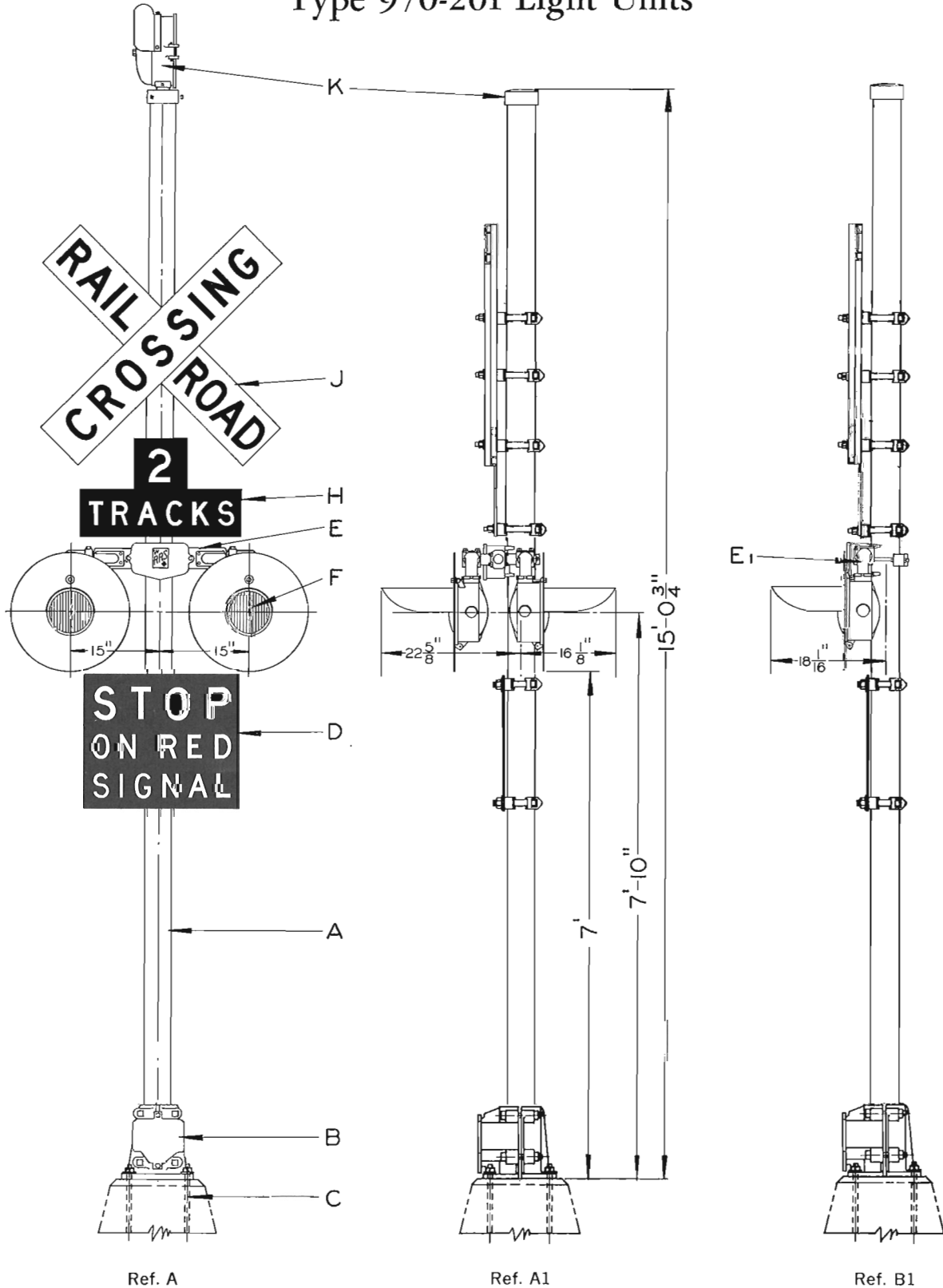
1. Is "Railroad Crossing" sign required?*
2. Is number of tracks sign required? If so, advise numeral.*
3. Is "Stop on Red Signal" sign required?***
4. Advise maximum authorized speed of train movement. (A.A.R. recommendation is 20 seconds warning for fastest train)
5. What special operating conditions exist within the area?
6. Specify whether there are any switches within the approach section.
7. Specify if there is any signal equipment now in place which might be affected by this installation.
8. Specify whether Diesel-Electric or Electric propulsion railway.
9. What electric power is available for operation of signals? If D.C., specify voltage; if A.C., specify voltage and frequency.
10. Specify whether stand-by electric service is required. (Can continuity of available service be depended upon?)
11. Specify weight and type of rail and whether four or six hole insulated rail joints.
12. Specify if track ballast is rock, gravel, sand, cinders, or other material.
13. State whether highway is paved. Width of highway or travelled portion. Specify class of paving.

*Available in Reflector Unit Type, both synthetic enamel and vitreous enamel finish and in Reflex-Reflecting Sheet Type.

**Not available in vitreous enamel finish.



Type A-479-A Flashing Light Highway Crossing Signal with Type 970-201 Light Units





Type A-479-A

Flashing Light Highway Crossing Signal with Type 970-201 Light Units

By far the majority of Flashing Light Type Highway Crossing Signal installations require two Flashing Light signals, two-way indication; one with a bell and one with a pinnacle, although, frequently two bells are used. Western's A-479A all-aluminum assembly with 4" I.D. mast, junction box type base having 9½"x9½" anchor bolt spacing and reflex-reflecting sheet type signs on extruded or sheet aluminum, meet most requirements. Type 222CR Crossing Bell is usually required, but Type 1275CR Pedestrian Crossing Bell will be supplied when specified. Plastic roundels having 30° horizontal spread and 15° down deflection are furnished as standard.

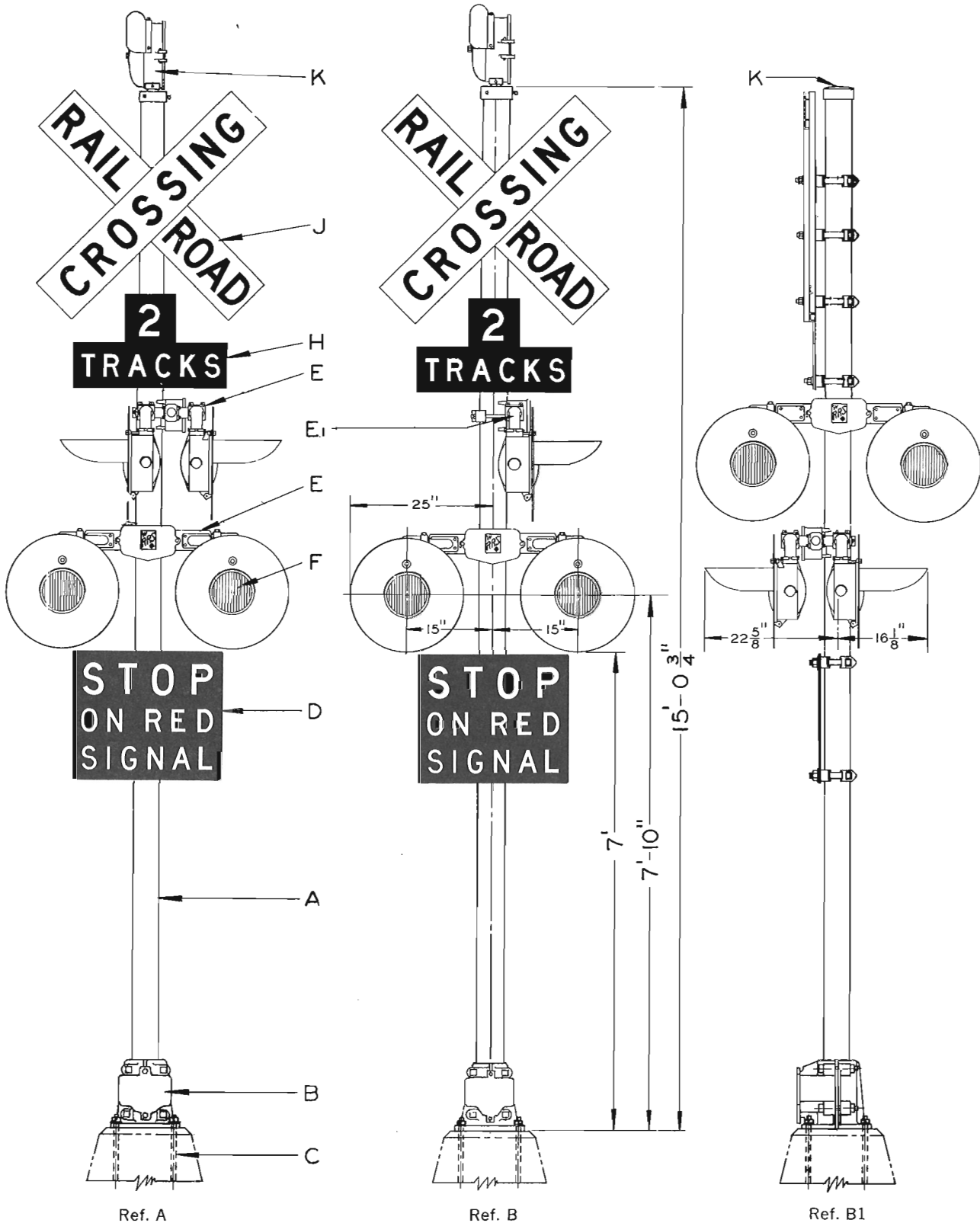
Below are ordering references for these most frequently used assemblies. See Page 1-10 for information for ordering variations from these assemblies.

Ref. No.	Description	Piece No.
A	Flashing light Highway Crossing Signal complete; two-way indication, with 222CR Bell. (specify numeral on track sign and voltage and wattage of incandescent electric lamps, if required).....	A479AB
A1	Same as Ref. A, but with pinnacle in place of bell.....	A479AP
A2	Same as Ref. A less "Stop On Red Signal" sign.....	A479ABL
A3	Same as Ref. A1 less "Stop On Red Signal" sign.....	A479APL
B	Flashing Light Highway Crossing Signal complete; one-way indication, with 222CR Bell. specify numeral on track sign and voltage and wattage of incandescent electric lamps, if required).....	A479AB-1
B1	Same as Ref. B, but with pinnacle in place of bell.....	A479AP-1
B2	Same as Ref. B less "Stop On Red Signal" sign.....	A479ABL-1
B3	Same as Ref. B1 less "Stop On Red Signal" sign.....	A479APL-1
	See Page 1-10 for information for ordering commonly used variations.	



Type A-479-A

Flashing Light Highway Crossing Signal with Type 970-201 Light Units





Type A-479-A

Flashing Light Highway Crossing Signal with Type 970-201 Light Units

Many locations require Flashing Light Highway Crossing Signals having extra light assemblies to provide indication to traffic on streets or highways paralleling the railroad, or on curved approaches, in addition to the Flashing Lights that provide the indication to traffic on the street or highway that crosses the tracks.

Generally these extra lights are mounted 90° to the right of and above the main lights, as illustrated.

The extra lights can be mounted at any angle which may be specified, or even on special brackets as shown on Page 1-27. Given the requirements we will be pleased to submit drawings of assemblies required.

These commonly used assemblies, with extra lights, are usually Western's all-aluminum A479A type with 4" I.D. mast, junction box type base having 9½" x 9½" anchor bolt spacing and reflex-reflecting sheet type signs on extruded or sheet aluminum. One signal with 222CR bell and one with pinnacle are normally required at each crossing, but the Type 1275CR bell will be supplied when specified. Plastic roundels having 30° horizontal spread and 15° down deflection are furnished as standard.

Below are ordering references for the assemblies illustrated on the opposite page. See Page 1-10 for information for ordering variations from these assemblies.

Ref. No.	Description	Piece No.
A	Flashing Light Highway Crossing Signal complete; two-way indication main lights, two-way indication extra lights mounted 90° to the right and 222CR Bell. (specify numeral on track sign and voltage and wattage of incandescent electric lamps).....	A479AB-8
A1	Same as Ref. A, but with pinnacle in place of bell.....	A479AP-8
A2	Same as Ref. A less "Stop On Red Signal" sign.....	A479ABL-8
A3	Same as Ref. A1 less "Stop On Red Signal" sign.....	A479APL-8
B	Same as Ref. A, but with one-way indication extra lights.....	A479AB-6
B1	Same as Ref. A1, but with one-way indication extra lights.....	A479AP-6
B2	Same as Ref. B less "Stop On Red Signal" sign.....	A479ABL-6
B3	Same as Ref. B1 less "Stop On Red Signal" sign.....	A479APL-6
	See Page 1-10 for information for ordering commonly used variations from these assemblies.	



Type A-479-A Flashing Light Highway Crossing Signal with Type 970-201 Light Units

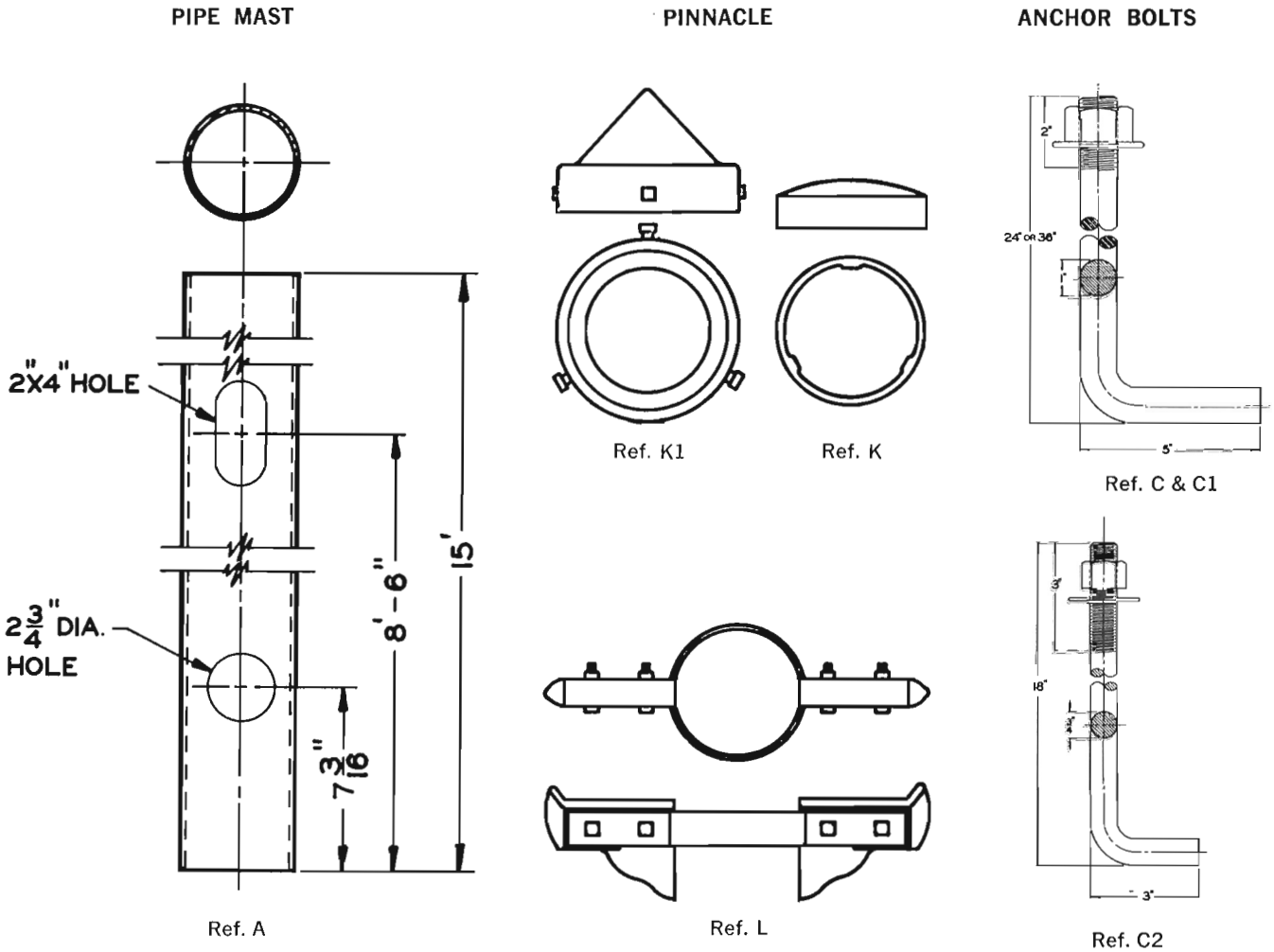
When ordering assemblies other than are shown on Pages 1-6 to 1-9 please use the reference data below, enumerating components required.

If extra light assemblies are called for, specify degree of angle to right or left of main lights.

We will gladly furnish plans and information for special assemblies, including supporting brackets as shown on Page 1-27, Marker Lights on Page 1-26, etc.

Ref. No.	Description	Piece No.
1	Type A479-A Aluminum Flashing Light Highway Crossing Signal with the following equipment.	
A	Pipe Mast (See Page 1-11).....	
B	Base (See Page 1-13).....	
C	Anchor Bolts (See Page 1-11).....	
D	"Stop on Red Signal" sign (See Page 1-21).....	
E	Flashing Light Assembly (See Page 1-15).....	
F	Roundels (See Page 1-3 or 1-14).....	
G	Specify voltage and wattage of lamps.....	
H	"Tracks" sign (See Page 1-23).....	
J	"Railroad Crossing" sign (See Page 1-25).....	
K	Bells (See Section 5)..... or Pinnacle (See Page 1-11).....	

Type A-479-A Flashing Light Highway Crossing Signals

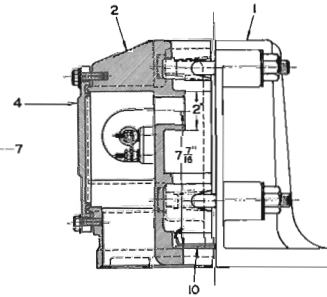
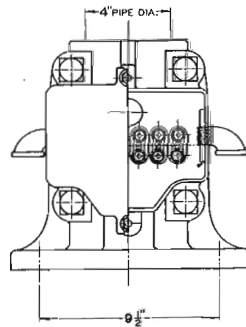
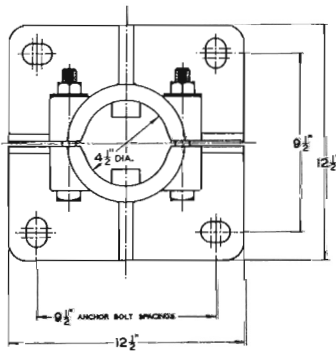


Ref. No.	Description	Piece No.
A	Pipe Mast. 4" I.D. x 15' Long drilled for Jct. Box Base.....	714-50U-2
A1	Same as Ref. A less Drilling for Jct. Box Base.....	714-50-1
A2	Same as Ref. A, but 5" I.D.....	715-50U-2
A3	Same as Ref. A1, but 5" I.D.....	715-50-1
C	Type 11079 Anchor Bolt 1" x 36" lg. complete with washer and hex. nut (galvanized)	11079
C1	Same as Ref. C, but 24" lg.....	11079-1
C2	Type 2144 Anchor Bolt 3/4" x 18" lg.....	2144-18
K	Type 110 Pinnacle for 4" I.D. pipe post.....	110A-6
K1	Same as Ref. K, but for 5" I.D. pipe post.....	110-8
L	Pole Step complete for 4" I.D. pipe post.....	10151
L1	Same as Ref. L. but for 5" I.D. pipe post.....	10152

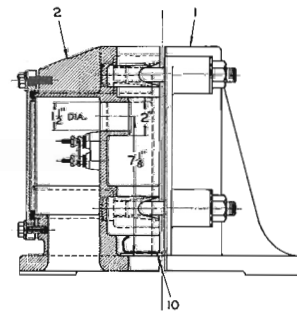
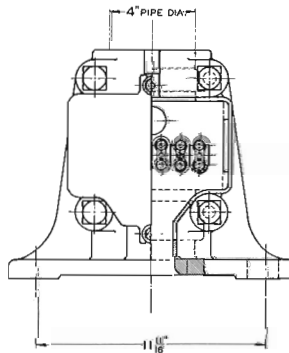
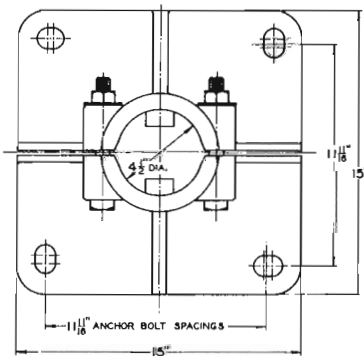
Type A-479-A

Flashing Light Highway Crossing Signals

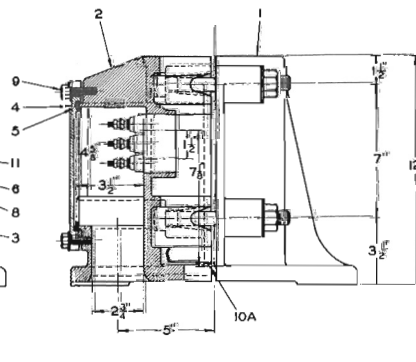
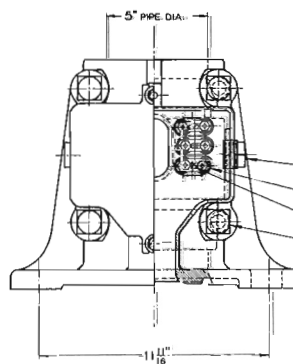
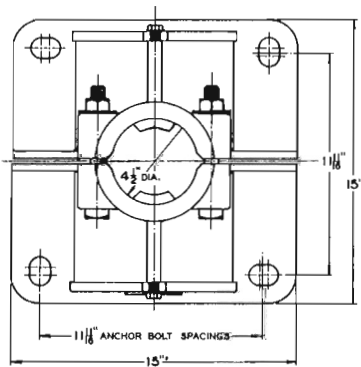
Clamp Type Bases



Ref. B & B3



Ref. B1 & B5



Ref. B6 & B7



Type A-479-A

Flashing Light Highway Crossing Signals

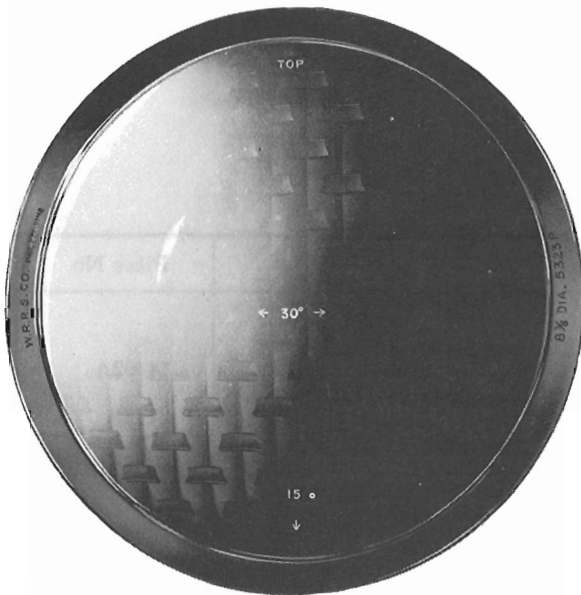
Clamp Type Bases

These clamp type signal bases are available as plain split bases or with one or both halves having a cast-in junction box capable of holding a bakelite terminal strip of 6 units (12 binding posts). The base may be furnished complete or the half with the junction box may be obtained separately for use with signal assemblies already installed.

Ref. No.	Description	Piece No.
B	Type 14492 Plain Split Base Assembly, for 4" I.D. pipe, with 9½" x 9½" anchor bolt spacing. Cast Aluminum.....	14492A
B1	Type 2143 Plain Split Base Assembly, for 4" I.D. pipe, with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Aluminum.....	2143A
B2	Type 2145 Plain Split Base Assembly, for 5" I.D. pipe with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Iron.....	2145
B3	Type 2146 Split Base Assembly with junction box on one half and six terminals, for 4" I.D. pipe, with 9½" x 9½" anchor bolt spacing. Cast Aluminum.	2146A-11
B4	Same as Ref. B3 but junction box on both halves.....	2146A-12
B5	Type 2146 Split Base Assembly with junction box on one half and six terminals, for 4" I.D. pipe, with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Aluminum.	2147A-11
B6	Same as Ref. B5 but junction box on both halves.....	2147A-12
B7	Type 2148 Split Base Assembly with junction box on one half and six terminals, for 5" I.D. pipe, with 11-11/16" x 11-11/16" anchor bolt spacing. Cast Iron.	2148-11
B8	Same as Ref. B7, but junction box on both halves.....	2148-12
REPLACEMENT PARTS		
1	Plain Half Base Casting for ref. B (cast aluminum).....	1449A-1
1A	Plain Half Base Casting for ref. B1 (cast aluminum).....	2143A-1
1B	Plain Half Base Casting for ref. B2 (cast iron).....	2145-1
2	Junction Box Half Casting for ref. B3 & B4 (cast aluminum).....	2146A-15C
2A	Junction Box Half Casting for ref. B5 & B6 (cast aluminum).....	2147A-15A
2B	Junction Box Half Casting for ref. B7 & B8 (cast iron).....	2148-15
3	¾" x 6½" lg. mach. bolt with sq. hd. and hex. nut.....	
4	Cover (cast iron).....	2148-16
4A	Cover (cast aluminum).....	2148A-16
5	Flax packing 5/16" sq. x 29" lg.....	
6	Terminal strip (12 post).....	
6A	Terminal strip for ref. B7 & B8 only (6 post).....	2506-112
7	Ventilator	2506-106
8	No. 10-32 x 5/8" lg. rd. hd. mach. screw.....	1143-16
9	¾"—16 x 1¼" lg. hex. cap screw and plain washer.....	
10	Pipe shield	2147-24
10A	Pipe shield for ref. B7 & B8 only.....	2149-24
11	Pipe Plug, 1¼".....	



Type A-479-A Flashing Light Highway Crossing Signals Roundels



Ref. F4

Roundels furnished are A.A.R. Standard 8³/₈" diameter, Red, with photometric rating for color of 220-300. No. 5323 and 5323P Roundels are recommended by the A.A.R. Signal Section, for general use.

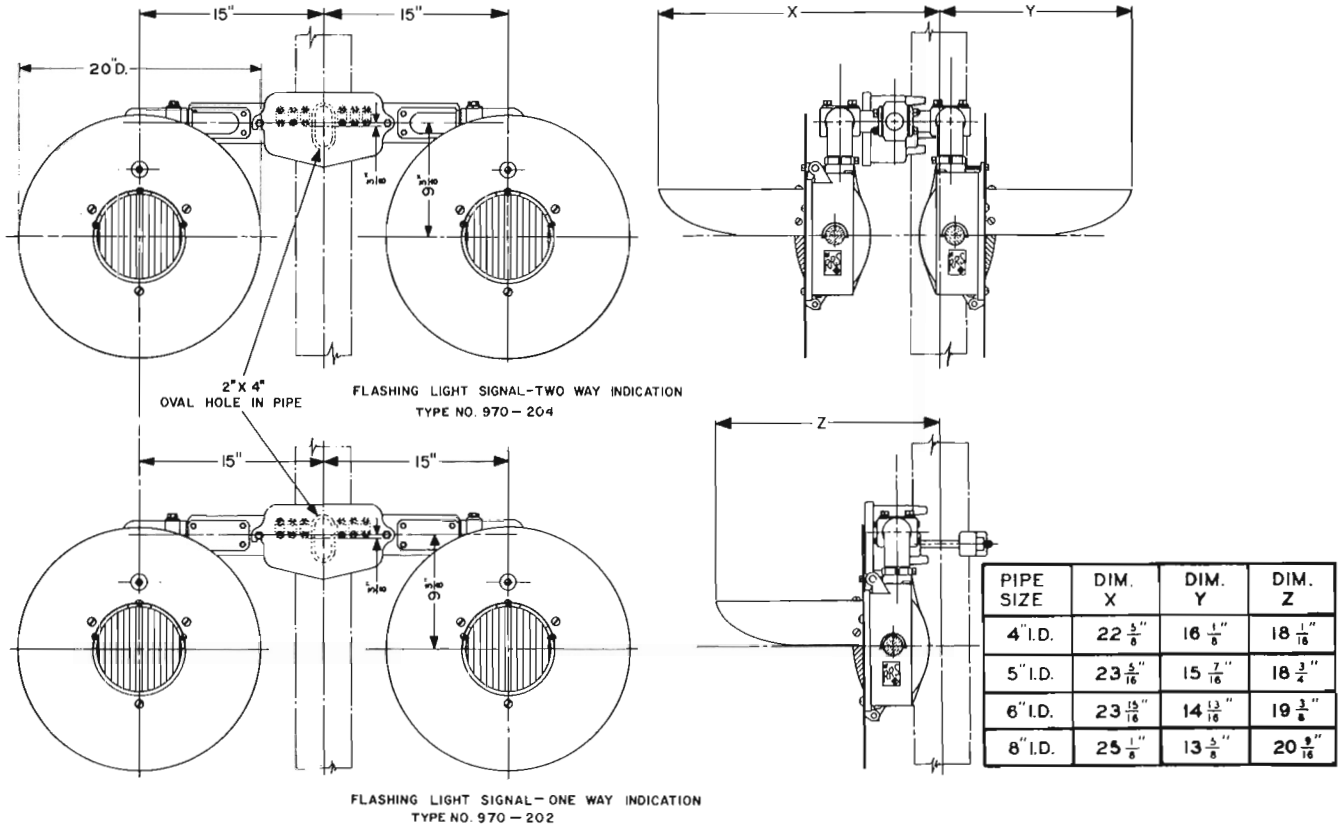
Types CL-17P and 5323P are plastic.

Ref. No.	Description	Piece No.
F	Type CL-17 30° Horizontal Spread Roundel, Glass.....	CL-17
F1	Same as Ref. F but Plastic.....	CL-17P
F2	Type 5321 20° Deflecting Roundel, Glass.....	5321
F3	Type 5323 30° Horizontal Spread, 15° Down Deflecting Roundel, Glass.....	5323
F4	Same as Ref. F3 but Plastic.....	5323P
F5	Type 5327 20° Horizontal Spread, 32° Down Deflecting Roundel, Glass.....	5327
F6	Type 5332 70° Horizontal Spread Roundel, Glass.....	5332
F7	Type 5333 Diffusion-Deflection Type, with Horizontal and Downward Spread, Glass	5333

Type A-479-A

Flashing Light Highway Crossing Signal with Type 960 Crossarm and Type 970-201 Light Units

CAST ALUMINUM CROSSARM, BRACKETS AND ELBOWS
SHEET ALUMINUM BACKGROUNDS AND HOODS



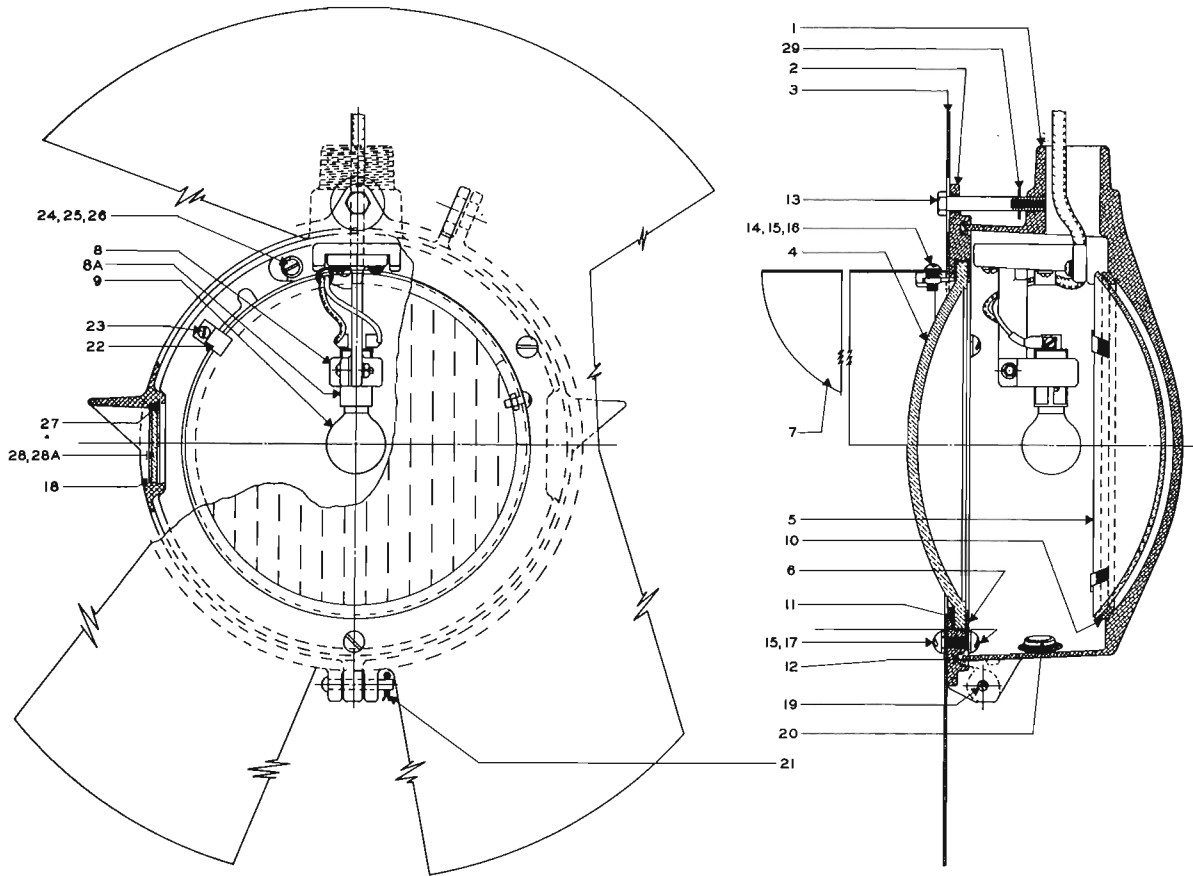
Type 970-201 Light Units are equipped with Parabolic glass reflectors, 8 ³/₈" diameter red roundels and single contact, bayonet base, receptacles positioned to accommodate S-8 or S-11 bulb electric lamps, having 2 ¹/₄" light center length.

Ref. No.	Description	Piece No.
E	Type 970 Flashing Light Unit Assembly with Type 960 junction box crossarm for two-way indication, 4 light units. (If ordering other than with complete flashing light highway crossing signal specify I.D. of pipe and roundels desired)	970-204
E1	Same as Ref. E but one-way indication, 2 light units.....	970-202
E2	Type 970 Light Unit only.....	970-201
E3	Type 960 Junction Box Crossarm for two-way indication. (Specify I.D. of pipe)	960-5
E4	Same as Ref. E3 but for one-way indication.....	960-3

For replacement parts see page 1-17 and 1-19.



Type A-479-A Flashing Light Highway Crossing Signal Type 970-201 Light Unit



Ref. A



Type A-479-A Flashing Light Highway Crossing Signal Type 970-201 Light Unit

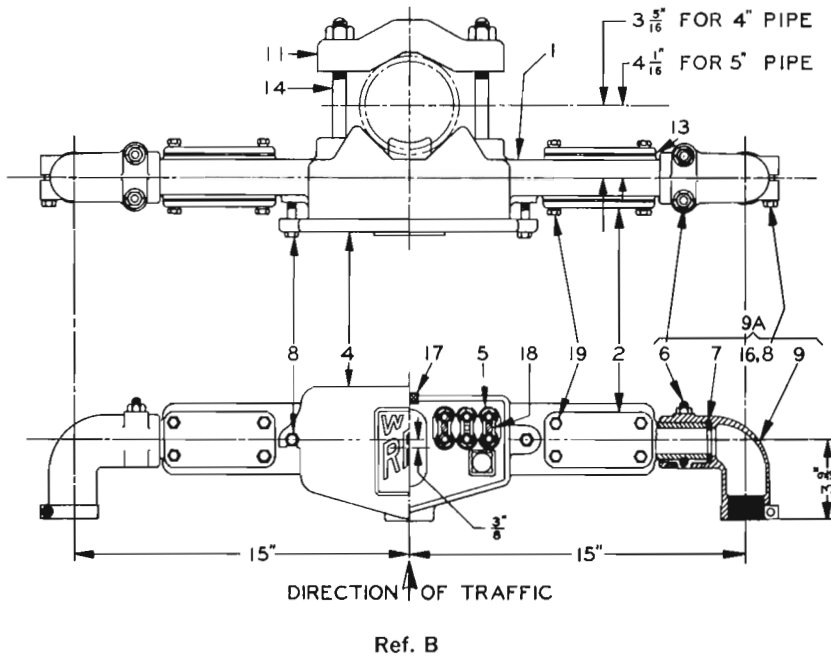
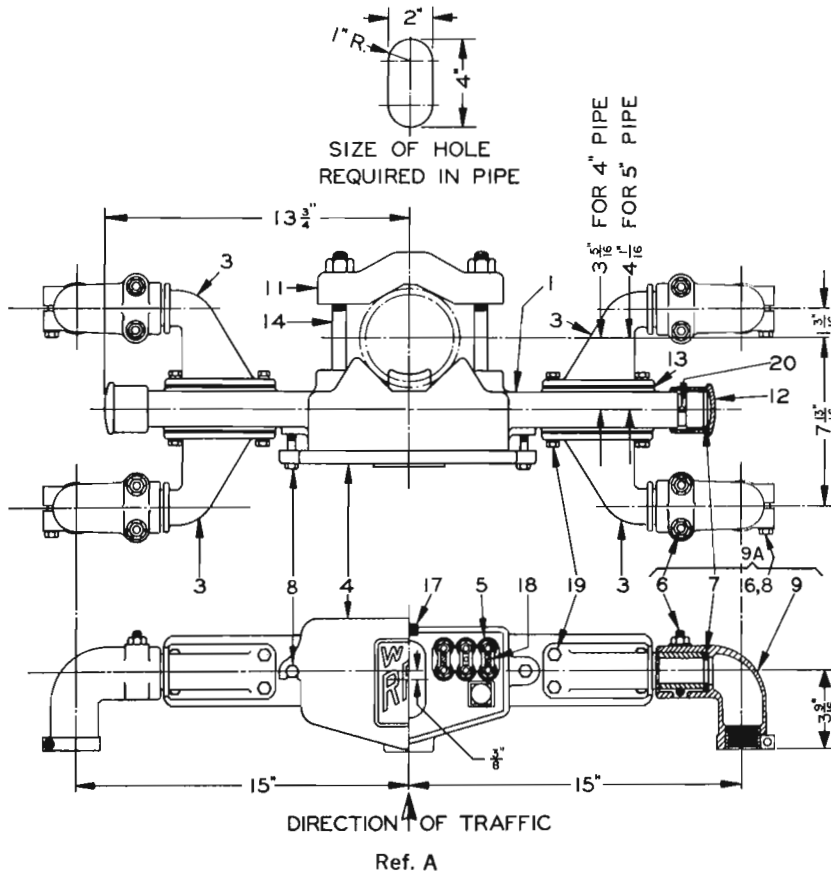
All castings in the Type 970-201 Light Unit
are aluminum, with sheet aluminum hood and
background.

Ref. No.	Description	Piece No.
A	Type 970 Flashing Light Unit assembly, specify roundel desired and voltage and wattage of lamp, if required.....	970-201
REPLACEMENT PARTS		
1	Case	970-1
2	Cover	970-2
3	Background	960-13
4	Roundel (see page 1-3).....	
5	Reflector	950-275C
6	Roundel Retainer	960-19
7	Hood	960-9
8	Lamp Bracket and Socket sub-assembly.....	970-20
8A	Lamp Receptacle with insulating sleeve.....	970-18
9	Electric Lamp (specify voltage and wattage).....	
10	Reflector Supporting Ring.....	970-16
11	Roundel Gasket	825
12	Door Packing	960-18
13	5/16" x 2 1/4" lg. hex. hd. cap screw. steel.....	
14	1/4" x 20 x 1/2" lg. rd. hd. mach. screw.....	
15	1/4" Internal Tooth Lock Washer.....	
16	1/4"-20 Sq. nut, brass.....	
17	1/4"-20 x 1/4" lg. rd. hd. mach. screw, brass.....	
18	Side Light Gasket.....	960-48
19	Hinge Pin	950-259
20	Ventilator	1265-6
21	3/32" x 5/8" lg. Cotter Pin.....	
22	Reflector Holding Clip.....	970-17
23	No. 8-32 x 1/2" lg. rd. mach. screw.....	
24	No. 10-24 x 3/4" lg. rd. hd. mach. screw.....	
25	No. 10 Plain Washer.....	
26	No. 10 Spring Lock Washer.....	
27	Retaining Ring	960-7
28	Side Light Glass Disc.....	811
28A	Side Light Blank Plate.....	950A-261
29	Crescent Retainer	960-15

Type A-479-A

Flashing Light Highway Crossing Signals

Type 960 Crossarm





Type A-479-A

Flashing Light Highway Crossing Signals

Type 960 Junction Box Crossarm

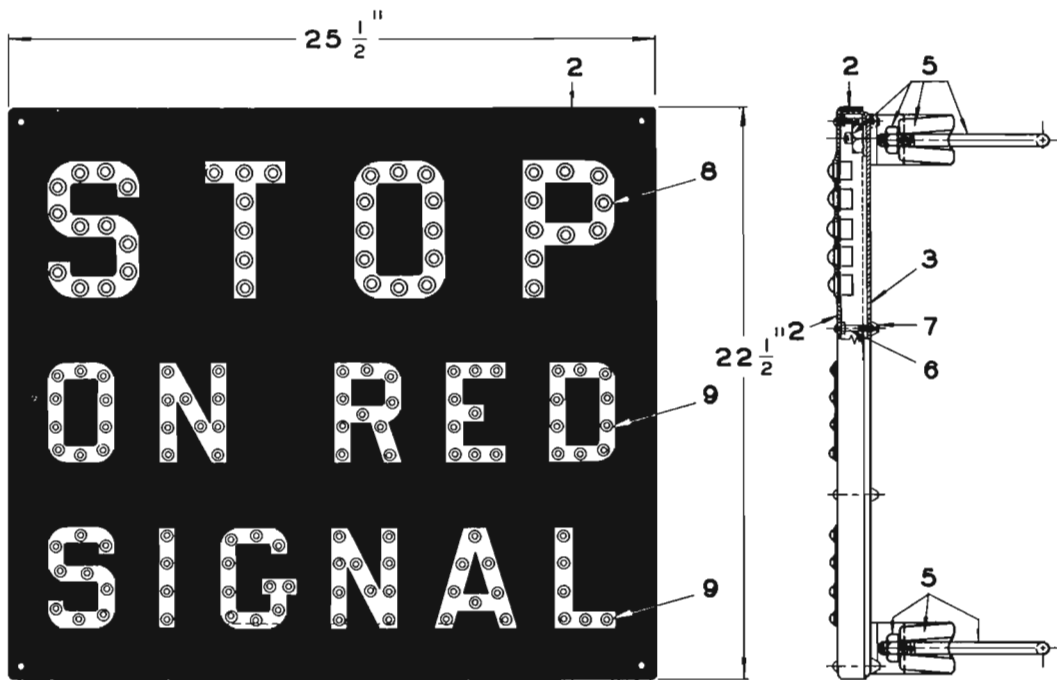
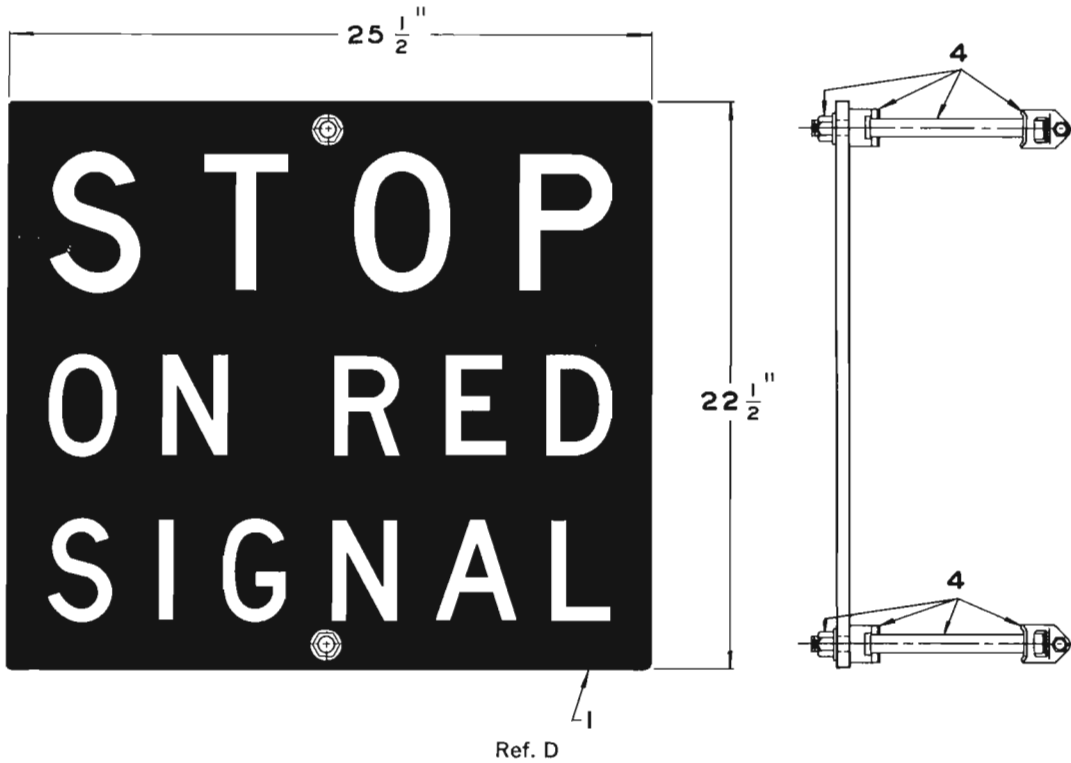
All castings in the Type 960 Junction Box Crossarms are aluminum. Replacements parts of cast aluminum are interchangeable with cast iron parts of former designs and will be furnished for all replacements.

Ref. No.	Description	Piece No.
A	Type 960 Junction Box Crossarm for two-way indication. (Specify I.D. of pipe)	960-5
B	Same as Ref. A but for one-way indication.....	960-3
REPLACEMENT PARTS		
1	Junction Box Crossarm casting only.....	950A-22
1A	Junction Box Crossarm, sub-assembly of Ref. 1, 4, 5, 17 & 18.....	950A-62
2	Cover Plate	950A-39
3	Bracket, 3½" extension.....	950A-57
4	Cover	950A-20
5	Terminal Block, complete, 6 binding posts.....	2506-106
6	"U" Bolt, ¾"-16, complete with nuts.....	950-31
7	Gasket, sponge rubber.....	950-28
8	¾"-16 x 2" lg. hex. hd. cap screw, steel.....	
9	Supporting Bracket casting only.....	960-131
9A	Supporting Bracket, sub-assembly of Ref. 6, 7, 8, 9, & 16.....	960-163
11	Adapter Clamp	950A-34
12	Cap	950A-29
13	Gasket, Cork	950-27
14	⅝"-11 x 6" lg. sq. hd. mach. bolt and hex. nut for 4" pipe.....	
14A	⅝"-11 x 7½" lg. sq. hd. mach. bolt and hex. nut for 5" pipe.....	
16	⅜" lock washer, steel.....	
17	⅜" dia. x 27" lg. torchwick packing.....	
18	No. 10-32 x ⅝" lg. fil. hd. mach. screw and lock washer, steel.....	
19	⅜"-16 x ⅞" lg. hex. hd. cap screw and lock washer, steel.....	
20	¼"-20 x ½" lg sq. hd. cup pt. set screw, steel.....	



Type A-479-A Flashing Light Highway Crossing Signals

"STOP ON RED SIGNAL" SIGN

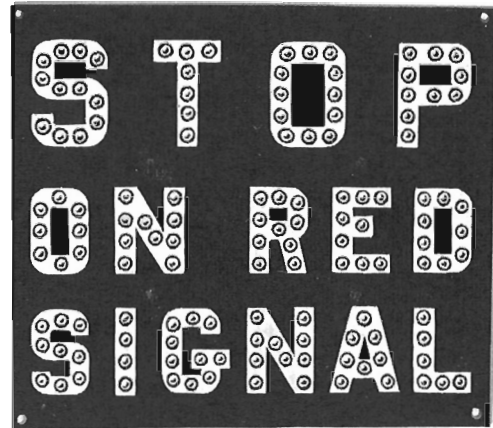


Type A-479-A Flashing Light Highway Crossing Signals

"STOP ON RED SIGNAL" SIGN



Ref. D



Ref. D1 & D2

Type 3366 "Stop on Red Signal" sign, Reflex-Reflecting Sheet type is on an aluminum plate. White letters on black background. Stainless steel strapping is used for mounting the sign on the pole.

Type 3366 "Stop on Red Signal" sign, Syn-

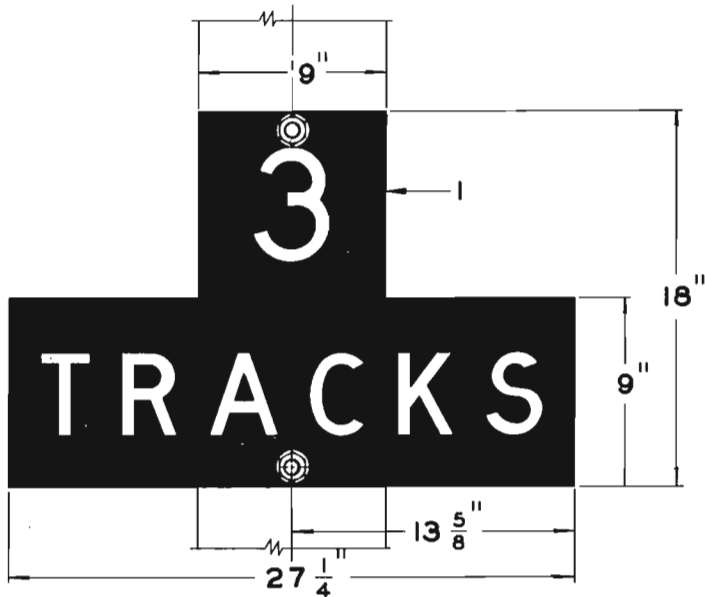
thetic Baked Enamel, embossed steel front plate with front entrance clear reflector units and telescoping steel back. The screws and nuts are theft-resisting type. White letters on black background. Adaptor clamps and "U" bolts are used for mounting the sign on the pole.

Ref. No.	Description	Piece No.
D	Type 3366 "Stop on Red Signal" sign. Reflex-Reflecting sheet type on aluminum plate with stainless steel strap kit complete for mounting on 4" or 5" I.D. pipe mast.....	3366-7
D1	Type 3366 "Stop on Red Signal" sign with synthetic baked enamel finish and adaptor clamp kit complete for mounting on 4" I.D. pipe mast.....	3366-4
D2	Same as Ref. D1 but for 5" I.D. pipe mast.....	3366-4A
REPLACEMENT PARTS		
1	"Stop on Red Signal" aluminum plate only for Ref. D.....	3366-7L
2	"Stop on Red Signal" front plate. synthetic baked enamel finish, for Ref. D1 & D2.....	3366-4L
3	Steel back plate for Ref. D1 & D2.....	3366-12
4	Stainless steel strap mounting kit complete for one sign.....	3366-815
5	Adaptor clamp mounting kit for 4" I.D. pipe mast complete for one sign.....	3380-311-4
5A	Same as Ref. 5, but for 5" I.D. pipe mast.....	3380-311-5
6	3/16"-24 x 1 3/8" lg. stl. carriage bolt, (cad. pl.).....	
7	3/16"-24 Theftproof nut.....	3380-27X
8	No. 3F Plastic Reflector unit, clear.....	
9	No. 5F Plastic Reflector unit, clear.....	

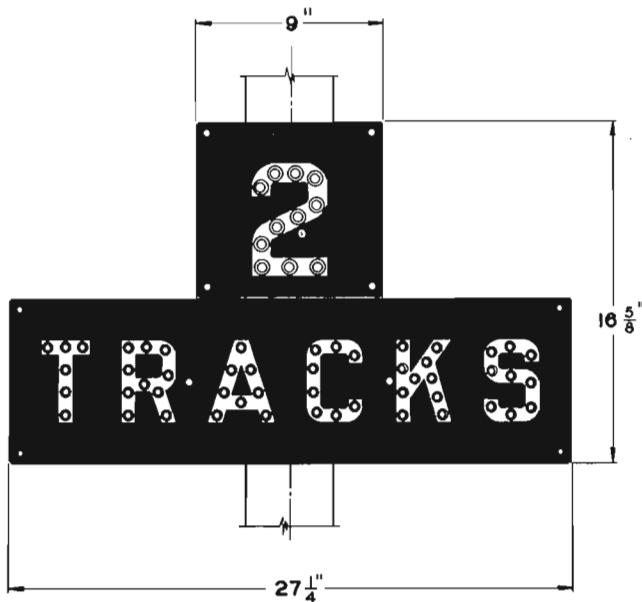
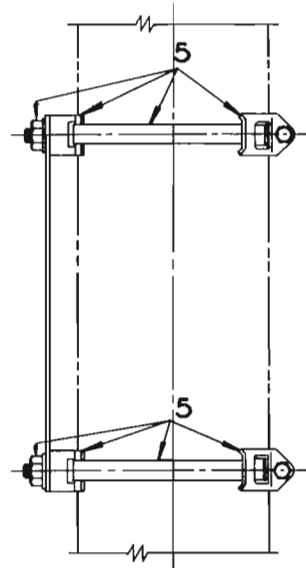


Type A-479-A Flashing Light Highway Crossing Signals

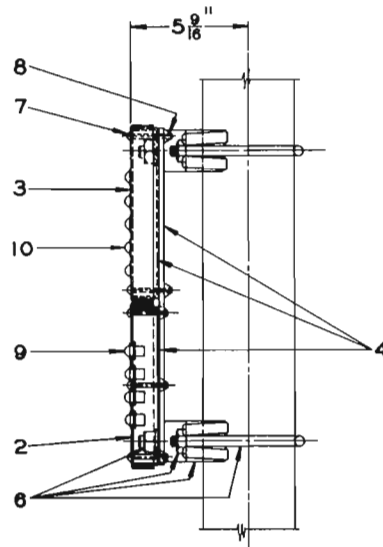
NUMBER OF TRACKS SIGN



Ref. H



Ref. H2



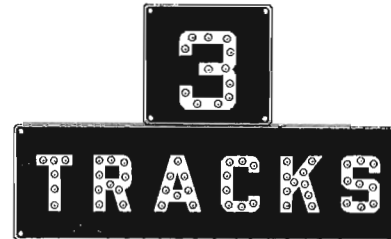


Type A-479-A Flashing Light Highway Crossing Signals

NUMBER OF TRACKS SIGN



Ref. H



Ref. H2

Type 3368 Number of Tracks Sign Reflex-Reflecting Sheet type is on an aluminum plate with white letters on black background, or black letters on white background. Stainless steel strapping is used for mounting the sign on the pole.

Type 3368 Number of Tracks Sign with Synthetic baked enamel; embossed steel front plate with front entrance clear reflector buttons and

telescoping steel back. All the screws and nuts are stainless steel, theft-resisting type. White letters on black background. Adaptor clamps and "U" bolts are used for mounting the sign on the pole.

The Vitreous Enamel finish sign is the same as the Synthetic but does not have embossed letters.

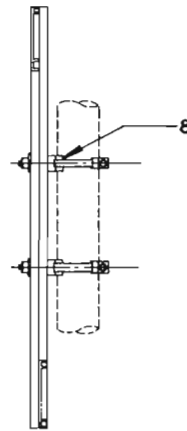
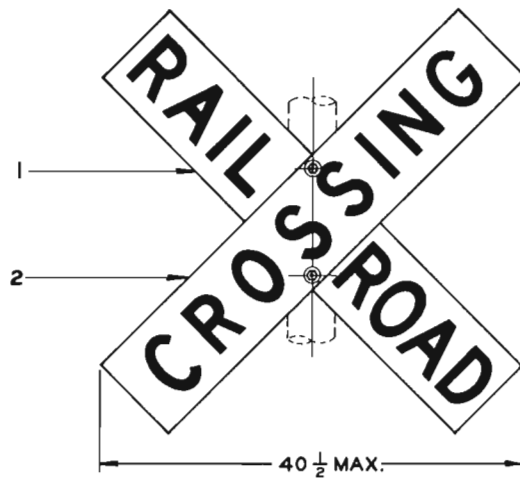
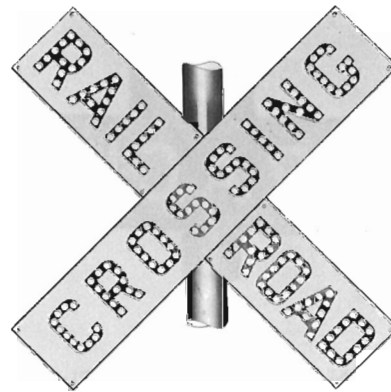
Specify numeral required.

Ref. No.	Description	Piece No.
H	Type 3368 Number of Tracks Sign, Reflex-Reflecting sheet type on aluminum plate with white letters on black background and stainless steel strap kit complete for mounting on 4" or 5" I.D. pipe mast. (Specify numeral required.)	3368-7C
H1	Same as Ref. H, but with black letters on white background.....	3368-7CL
H2	Type 3368 Number of Tracks Sign, Synthetic Baked Enamel finish, and adaptor clamp kit complete for mounting on 4" I.D. pipe mast. (Specify numeral required.)	3368-4
H3	Same as Ref. H2, but for 5" I.D. pipe mast.....	3368-4A
H4	Type 3368 Number of Tracks Sign, Vitreous Enamel finish, and adaptor clamp kit complete for mounting on 4" I.D. pipe mast. (Specify numeral required.)	3368-3
H5	Same as Ref. H4, but for 5" I.D. pipe mast.....	3368-3A
REPLACEMENT PARTS		
1	Number of Tracks aluminum plate only, white letters on black background. (Specify numeral required.).....	3368-710
1A	Same as Ref. 1 but black letters on white reflecting background.....	3368-710A
2	"Tracks" front plate, synthetic baked enamel finish for Ref. H2 and H3.....	3368-27D
2A	Same as Ref. 2 but vitreous enamel for Ref. H4 and H5.....	3368-27C
3	Numeral front plate synthetic baked enamel finish for Ref. H2 and H3. (Specify numeral required.).....	3368-32D
3A	Same as Ref. 3 but vitreous enamel for Ref. H4 and H5.....	3368-32C
4	Steel back plate assembly for Ref. H2 through H5.....	3368-20
5	Stainless steel strap mounting kit, complete for one sign.....	3366-815
6	Adaptor clamp mounting kit for 4" I.D. pipe mast complete for one sign.....	3380-311-4
6A	Same as Ref. 6 but for 5" I.D. pipe mast.....	3380-311-5
7	3/16"-24 x 1 3/8" lg. stl. carriage bolt, (cad. pl.).....	
8	3/16"-24 theftproof nut.....	3380-27X
9	No. 5F Plastic Reflector unit, clear.....	
10	No. 3F Plastic Reflector unit, clear.....	

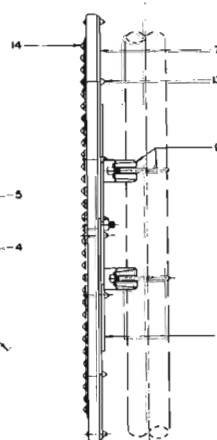
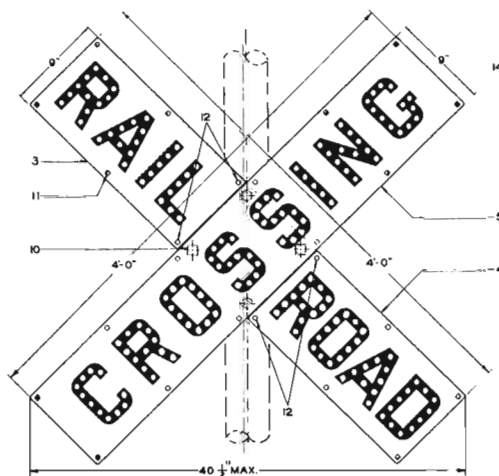


Type A-479-A Flashing Light Highway Crossing Signals

"RAILROAD CROSSING" SIGN



Ref. J





Type A-479-A Flashing Light Highway Crossing Signals

"RAILROAD CROSSING" SIGN

Type 3380 Railroad Crossing Sign, Reflex-Reflecting Sheet Type is on extruded aluminum, with black letters on white reflecting background. Stainless steel strapping is used for mounting the sign on the pole.

Type 3380 Railroad Crossing Sign, Synthetic baked enamel, embossed steel front plate, with front entrance clear reflector units and telescoping steel back. All the screws and nuts are

theft-resisting type. Black letters on white background. Adaptor clamps and "U" bolts are used for mounting the sign on the pole.

The Vitreous Enamel finish sign is the same as the Synthetic, but does not have embossed letters.

Type 3252 Railway Crossing Sign is furnished on extruded aluminum only, with black letters on white reflecting background.

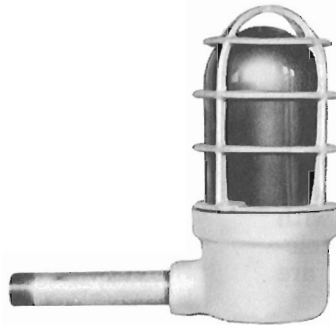
Ref. No.	Description	Piece No.
J	Type 3380 "Railroad Crossing" Sign, Reflex-Reflecting sheet type on extruded aluminum plate with stainless steel strap kit complete for mounting on 4" or 5" I.D. pipe mast.....	3380-7
J1	Type 3380 "Railroad Crossing" Sign, Synthetic Baked Enamel finish, with adaptor clamp kit complete for mounting on 4" I.D. pipe mast.....	3380-4
J2	Same as Ref. J1, but for 5" I.D. pipe mast.....	3380-4A
J3	Type 3380 "Railroad Crossing" Sign, Vitreous Enamel finish, with adaptor clamp kit complete for mounting on 4" I.D. pipe mast.....	3380-3
J4	Same as Ref. J3, but for 5" I.D. pipe mast.....	3380-3A
J5	Type 3252 "Railway Crossing" sign, Reflex-Reflecting sheet type on extruded aluminum plate with stainless steel strap kit complete for mounting on 4" or 5" I.D. pipe mast.....	3252-7
REPLACEMENT PARTS		
1	"RAILROAD" Plate, Reflex-Reflecting sheet on extruded aluminum for Ref. J only.....	3380-7R
1A	Same as Ref. 1, but "RAILWAY" Plate, for Ref. J5 only.....	3252-7R
2	"CROSSING" Plate, Reflex-Reflecting sheet on extruded aluminum for Ref. J and J5.....	3380-7C
3	"RAIL" Front Plate, synthetic baked enamel finish, complete with reflector units for Ref. J1 and J2 only.....	3380-14C
3A	Same as Ref. 3, but vitreous enamel finish.....	3380-14A
4	"ROAD" Front Plate, synthetic baked enamel finish, complete with reflector units for Ref. J1 and J2 only.....	3380-15C
4A	Same as Ref. 4 but vitreous enamel finish.....	3380-15A
5	"CROSSING" Front Plate, synthetic baked enamel finish, complete with reflector units for Ref. J1 and J2.....	3380-16C
5A	Same as Ref. 5, but vitreous enamel finish.....	3380-16A
6	Back Plate for "RAILROAD" Front Plates for Ref. 3 thru 4A.....	3380-12A
7	Back Plate for "CROSSING" Front Plates for Ref. 5 and 5A.....	3380-20A
8	Stainless Steel Strap Kit, complete for one sign.....	3366-815
9	Adaptor Clamp Kit for 4" I.D. pipe mast, for one sign.....	3380-311-4
9A	Adaptor Clamp Kit for 5" I.D. pipe mast, for one sign.....	3380-311-5
10	5/8"-11 x 1 1/4" lg. sq. hd. mach. bolt.....	
11	3/16"-24 x 1 1/4" lg. carr. bolt, brass.....	
12	3/16"-24 x 1 1/2" lg. carr. bolt, brass.....	
13	3/16"-24 Theft-Proof Nut, brass.....	
14	No. 3F Plastic Reflector units, clear.....	
15	Key for theftproof nut, steel (not illustrated).....	3380-27K



Marker Lights for Highway Crossing Signals



Ref. A



Ref. B

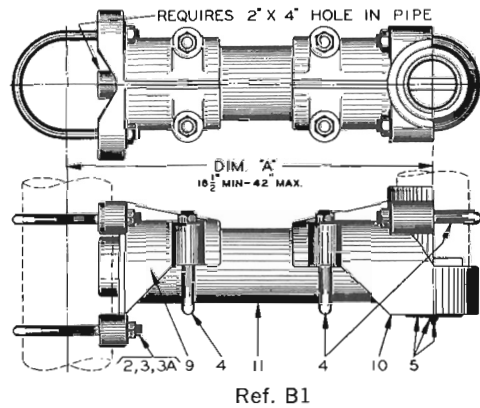
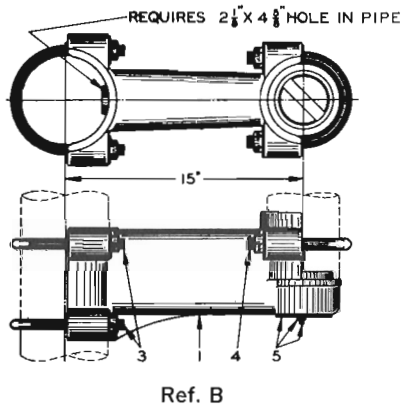
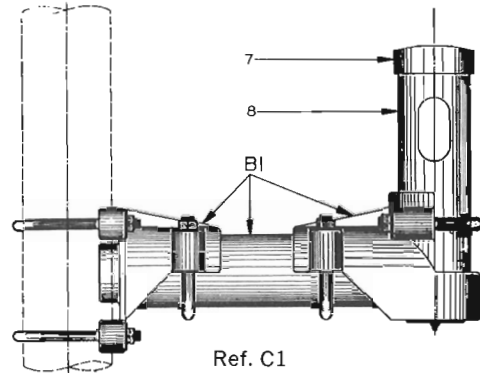
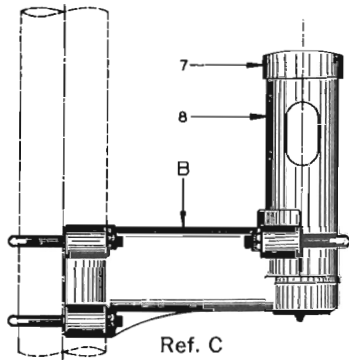


Ref. C

The various Marker Lights are intended for use where Crossing Signals are, of necessity, mounted close to the curb-line or on center-of-street islands. Except Type 1585-80, they are supplied with Red or Yellow glassware, as specified.

Ref. No.	Description	Piece No.
A	Type 1553 Marker Light, with Single Contact, Bayonet Base, lamp receptacle and 3 1/2" dia., 2 1/4" focus, red lenses.....	1553-20R
A1	Same as Ref. A, but with yellow lenses.....	1553-20A
B	Type 675 Marker Light, with Medium Screw Base lamp receptacle and Red Globe	675-R
B1	Same as Ref. B, but with yellow globe.....	675-A
C	Type 1585-80 Marker Light, with Single Contact, Bayonet Base, lamp receptacle and Red, Fresnel, Lens.....	1585-80R
REPLACEMENT GLASSWARE		
1	Red Lens, 3 1/2" dia. x 2 1/4" Focus.....	5325
1A	Same as Ref. 1, but yellow.....	5325A
2	Red Globe for Type 675 Marker Light.....	90801-1R
2A	Yellow Globe for Type 675 Marker Light.....	90801-1Y
3	Red Fresnel Lens.....	1575-11P

Supporting Brackets Type 3565-267 and Type 3567-367



For mounting Crossing Signal Light Units, with standard Junctionbox Crossarms, at one side of the mast, as necessitated by obstructions to the view, or for mounting extra light units for warnings along side-roads, etc.

The Type 3565-367 Supporting Bracket is of cast iron, designed for mounting on 5" mast, and provides a 15" offset of the dowel mast.

The Type 3565-267 Supporting Bracket consists of castings and a length of 4" I.D. pipe,

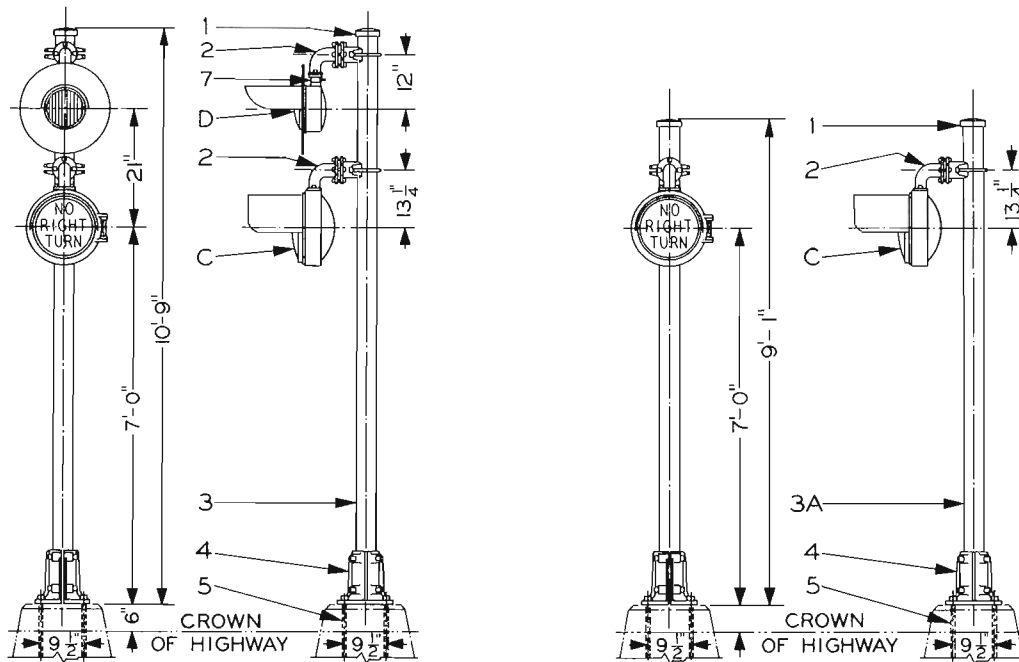
which may be varied in length, to provide an offset of the dowel mast, of 18½", minimum, up to 42", maximum. The inner bracket, with appropriate "U" Bolts, will fit 4", 5" or 6" I.D. pipe.

Either One-way or Two-way Indication Light Assemblies may be mounted on the dowel masts, which can be turned in the socket to any desired angle.

Ref. No.	Description	Piece No.
B	Supporting Bracket Assembly, Less Dowel Mast.....	3565-67
B1	Supporting Bracket Assembly, Less Dowel Mast. (Specify Dimension "A" and diameter of signal mast.).....	3565-167
C	Supporting Bracket and Dowel Mast Assembly.....	3565-367
C1	Supporting Bracket and Dowel Mast Assembly. (Specify Dimension "A" and diameter of signal mast).....	3565-267
REPLACEMENT PARTS		
1	Bracket only	3565-69
2	"U" Bolt, for 4" I.D. Pipe Mast.....	1264-4
3	"U" Bolt, for 5" I.D. Pipe Mast.....	1264-5
3a	"U" Bolt, for 6" I.D. Pipe Mast.....	1264-6
4	"U" Bolt, for 4" I.D. Pipe Extension or Dowel Mast.....	3565-163
5	Cover and Clamp, for wire opening.....	3565-162A
7	Pinnacle, for 4" I.D. Pipe.....	110-6
8	Dowel Mast, 4" I.D. x 14" long, or length as specified.....	714-8
9	Inner Support, Casting only.....	3565-168
10	Outer Support, Casting only.....	3565-166
11	Extension Pipe, 4" I.D. x length as required.....	

No Turn Signals Type A457 and Type A534

Signals of this type are often used in conjunction with Flashing Light Signals at locations where the use of additional Lights on the signal mast would not provide suitable added protection. Their use is the safest method of protecting street or highway traffic on roadways running parallel to the railroad without interfering with traffic not crossing the tracks.



Ref. A

Ref. B

NOTE:

- 1 — For ordering references for these signals and components see following page.
- 2 — For ordering references for replacement parts for Yellow Light Unit see Page 1-17 in this Catalog Section.
- 3 — Replacement Parts List for NO TURN Sign will be furnished on request.
- 4 — The No Turn Light Unit will be furnished with other legend, as may be required, stenciled on inner glass.



No Turn Signals Type A457 and Type A534

Ref. No.	Description	Piece No.
A	"NO LEFT TURN" Signal with Yellow Flashing Light Unit, Pole, Base, Pinnacle and Anchor Bolts.....	A457L
A1	Same as Ref. A but, "NO RIGHT TURN".....	A457R
A2	Same as Ref. A but, "NO TURN".....	A457N
B	"NO LEFT TURN" Signal with Pole, Base, Pinnacle and Anchor Bolts.....	A534L
B1	Same as Ref. B but, "NO RIGHT TURN".....	A534R
B2	Same as Ref. B but, "NO TURN".....	A534N
C	"NO LEFT TURN" Sign with Adaptor Bracket and "U" Bolt.....	939-1L
C1	Same as Ref. C but, "NO RIGHT TURN".....	939-1R
C2	Same as Ref. C but, "NO TURN".....	939-1N
C3	"NO LEFT TURN" Sign, only, (without Bracket and "U" Bolt).....	939-1LX
C4	Same as Ref. C3 but, "NO RIGHT TURN".....	939-1RX
C5	Same as Ref. C3 but, "NO TURN".....	939-1NX
D	Yellow Flashing Light Unit, with Adaptor Bracket and "U" Bolt.....	970-501Y
D1	Same as Ref. D but, without Bracket and "U" Bolt.....	970-201Y
REPLACEMENT PARTS		
1	Pinnacle, for 4" I.D. Pipe Mast.....	110A-6
2	Adaptor Bracket with "U" Bolt, nuts and washers.....	939-51
3	Pipe Mast, 4" I.D. x 10'8" long, for A457 signal.....	714-21-3
3A	Pipe Mast, 4" I.D. x 9'0" long, for A534 sign.....	714-20-2
4	Split Base, for 4" I.D. Pipe Mast.....	14492A
5	Anchor Bolt, 1" x 24" long, with Hexagon Nut and Washer.....	11079-1
6	Transparent Outer Cover.....	221718
7	Adaptor for mounting Type 970-201Y Light Unit on Ref. 2.....	950-72B

NOTE:

- 1 — 10 Volt, 25 Watt, Single Contact, Bayonet Base, Electric Lamps, S-11 Bulb, having light center length of 1¼", are recommended for the NO TURN signs, but are not furnished unless specified on order.
- 2 — No Turn Sign and Yellow Flashing Light Unit mounting Brackets are furnished with "U" Bolts for 4" Pipe Mast, unless otherwise specified.

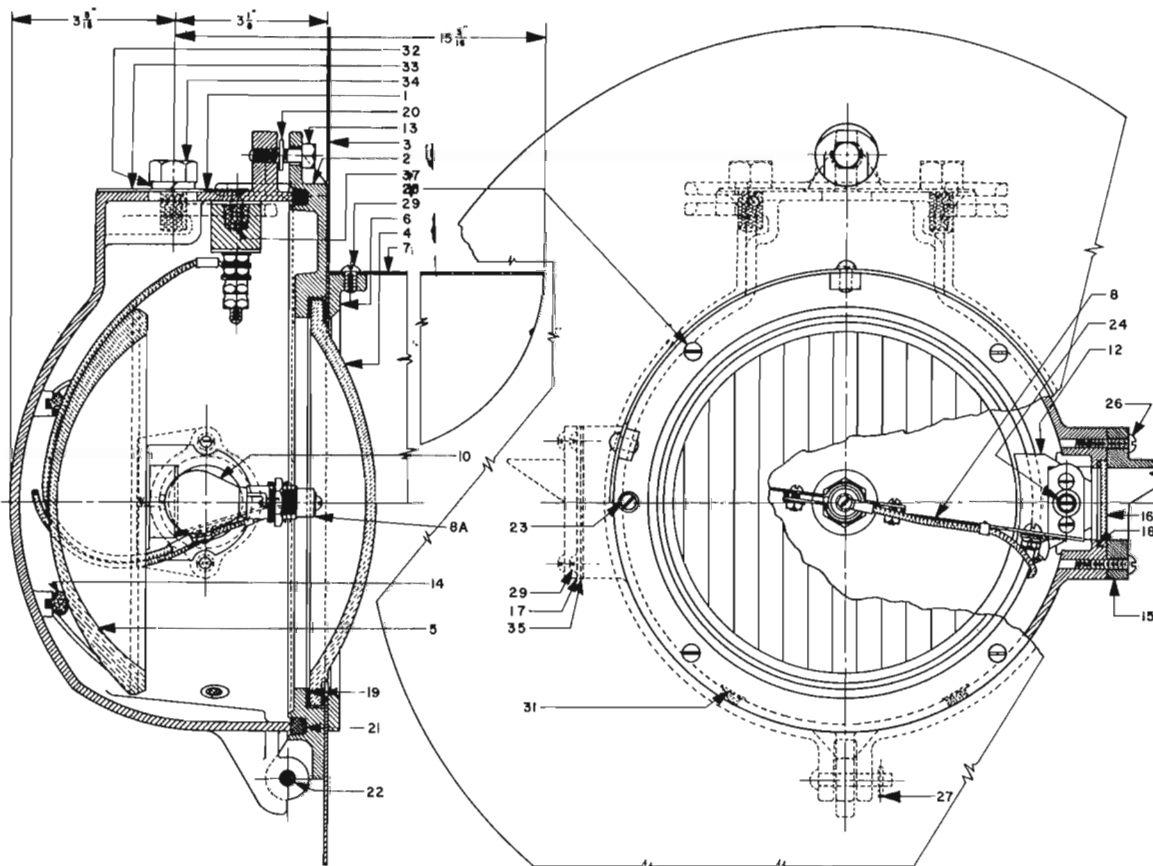
Type 950A-201 Crossing Signal Light Unit

(Single Contact, Bayonet Base, Receptacle)

REPLACEMENT PARTS ONLY (Manufacture Discontinued)

All Castings in the Type 950A-201 Light Unit are Aluminum. Replacement parts of cast aluminum will be furnished. Aluminum and cast iron parts are physically interchangeable.

Sheet Aluminum Hoods and Backgrounds will be furnished on all orders.



NOTE:

- 1 — For ordering references for replacement parts for this Light Unit see following page.
- 2 — For ordering references for replacement parts for the Older Style, Type 950-1, Light Unit see Plate D370 in Old Catalog Section D, Part No. 2.



Type 950A-201 Crossing Signal Light Unit

(Single Contact, Bayonet Base, Receptacle)

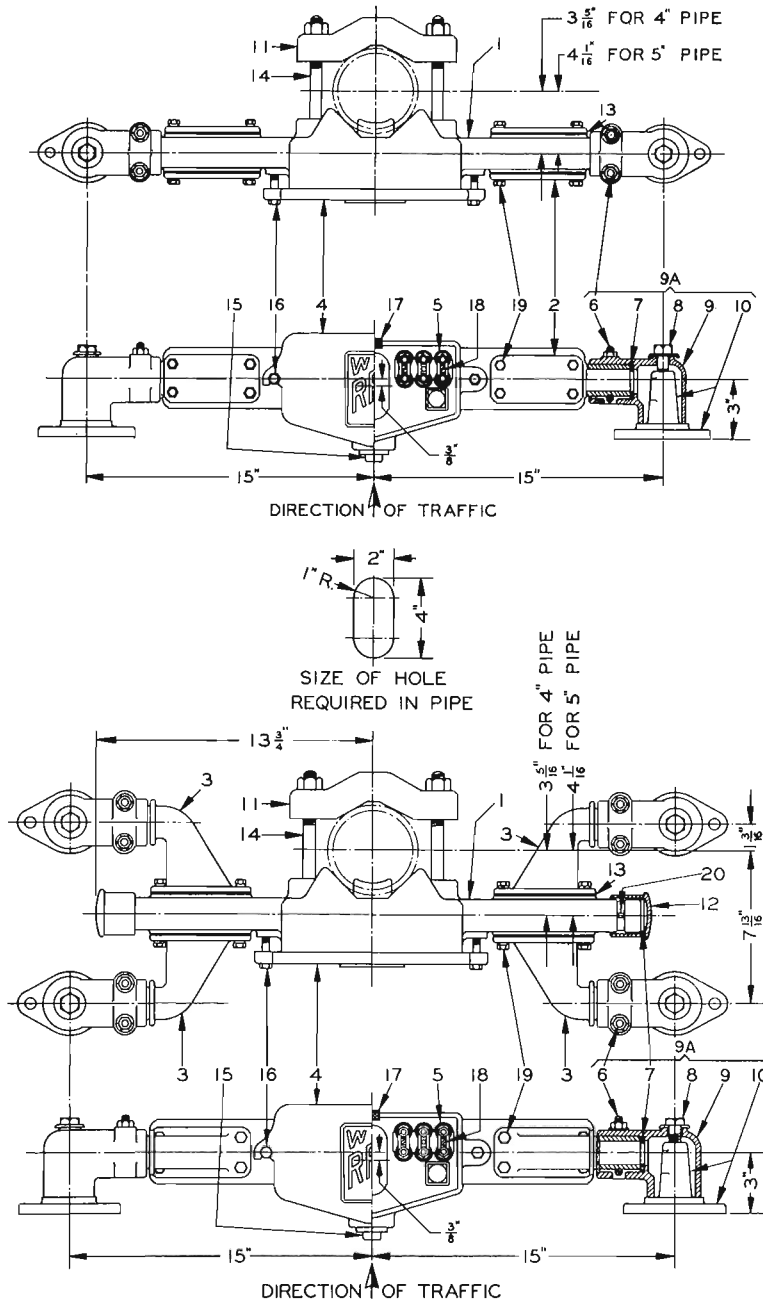
REPLACEMENT PARTS ONLY (Manufacture Discontinued)

Ref. No.	Description	Piece No.
1	Case	950A-11
2	Cover	950A-12
3	Background	950-13A
4	Roundel, (See listing Page 1-3).....	
5	Mangin Mirror Reflector.....	822
6	Roundel Retaining Ring.....	802-1A
7	Hood	823-1A
8	Lamp Bracket and Receptacle, sub-assembly.....	950-250A
8a	Lamp Receptacle and Adjusting Nut, only.....	950-255
10	Single Contact, Bayonet Base Lamp, (Specify Voltage and Wattage).....	
12	Reflector Retaining Plate.....	880-211
13	Cap Screw, 5/16" x 7/8" long, Hexagon Head, Steel.....	
13a	Cap Screw and Retaining Washer Assembly.....	950-270R
14	Reflector Pad	880-15
15	Side Light Hood.....	880A-23
16	Side Light Glass Disc.....	811
17	Side Light Blank Cover.....	801-3
18	Side Light Gasket.....	818-48
19	Roundel Gasket	825
20	Retaining Washer	950-270
21	Packing, for cover.....	880-18
22	Hinge Pin and Cotter.....	950-259A
23	Machine Screw, No. 10-32 x 1/2" long, Fillister Head, Brass.....	
24	Machine Screw, No. 10-32 x 3/8" long, Fillister Head, Brass.....	
25	Machine Screw, No. 10-32 x 5/8" long, Round Head, Brass.....	
26	Machine Screw, 1/4"-20 x 3/4" long, Round Head, Brass.....	
27	Cotter Pin, 3/32" x 5/8" long, Steel.....	
29	Machine Screw, 1/4"-20 x 3/8" long, Round Head, Brass.....	
31	Ventilator	818-49
32	Lock Washer, 1/2", Steel.....	
33	Gasket	950-17
34	Cap Screw, 1/2"-13 x 1 1/4", Hexagon Head, Steel.....	
35	Gasket	801-2
37	Cover sub-assembly, includes references 2, 13, 20 and 21.....	950A-231

Junction Box Cross Arm For Mounting Type 950A-201 Crossing Signal Light Units

REPLACEMENT PARTS ONLY
(Manufacture Discontinued)

All castings in the Type 950A Junctionbox Crossarms are Aluminum. Replacement parts of cast aluminum will be furnished unless cast iron is specified. Aluminum and cast iron parts are physically interchangeable.



NOTE:

1 — For ordering references for replacement parts for these Junctionbox Crossarms see following page.



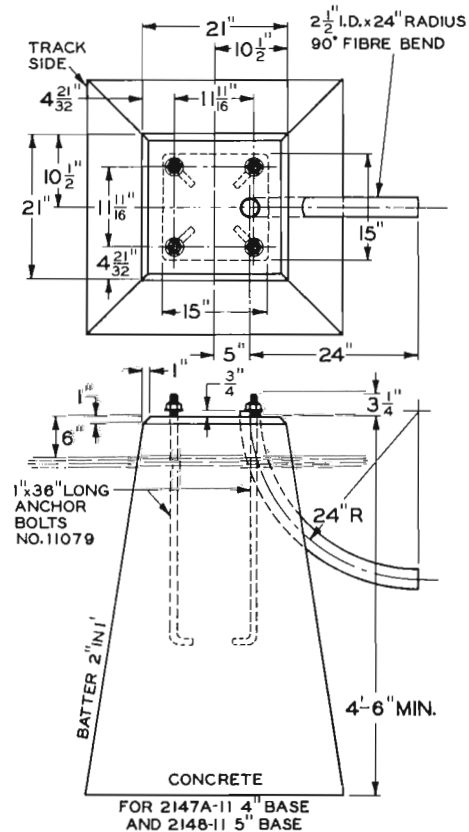
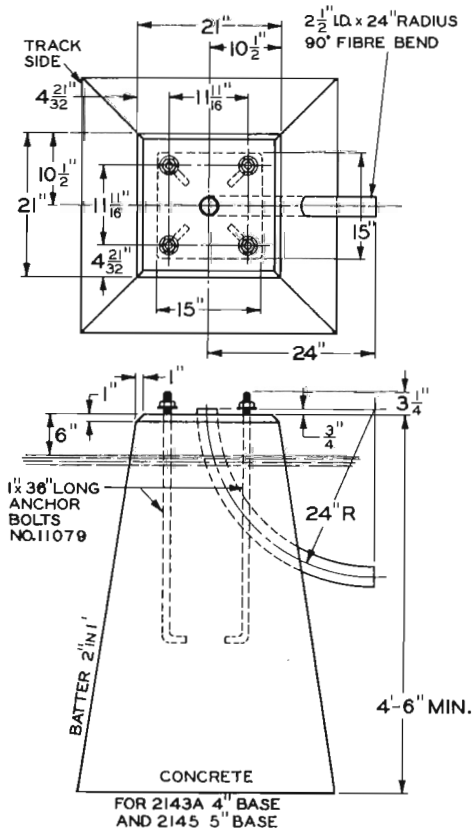
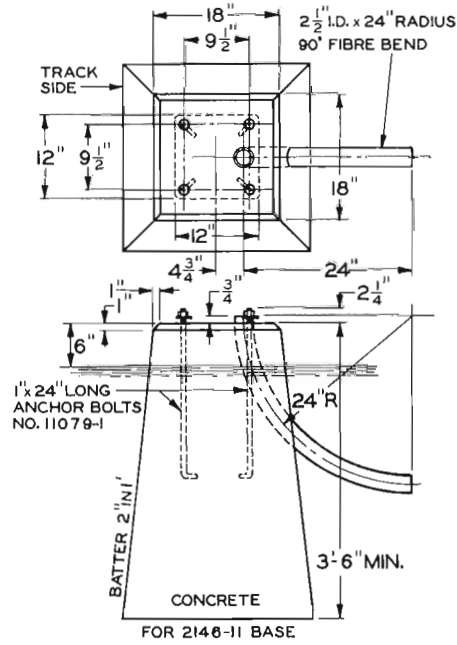
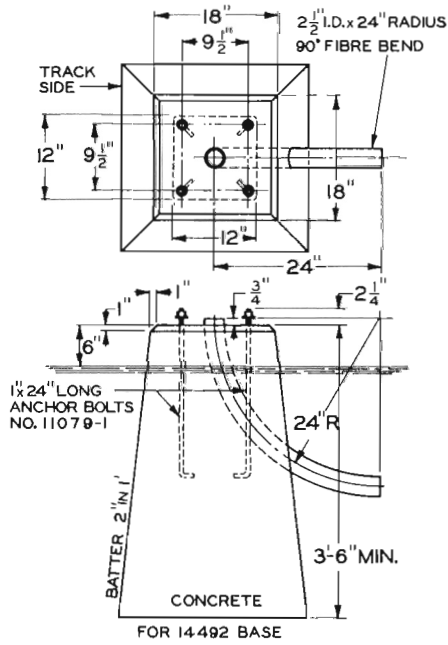
Junction Box Cross Arm For Mounting Type 950A-201 Crossing Signal Light Units

REPLACEMENT PARTS ONLY (Manufacture Discontinued)

Ref. No.	Description	Piece No.
1	Junctionbox, casting only.....	950A-22
1a	Junctionbox, subassembly of references 1, 4, 5, 15, 17, and 18.....	950A-62
2	Cover Plate	950A-39
3	Bracket, 3½" extension.....	950A-57
4	Cover, with packing.....	950A-21
5	Terminal Block, complete, 6 binding posts.....	2506-106
6	"U" Bolt, complete with nuts.....	950-31
7	Gasket, sponge rubber.....	950-28
8	Bolt, complete with cupped washer.....	950-33
9	Supporting Bracket, casting only.....	950A-30
9a	Supporting Bracket, sub-assembly of references 6 to 10 inc.....	950A-63
10	Light Unit Support.....	950A-32
11	Adaptor Clamp	950A-34
12	End Cap, with set screw and gasket.....	950A-29A
13	Gasket, cork	950-27
14	Machine Bolt, with hexagon nut, ⅝"-11 x 6" long, for mounting junctionbox crossarm on 4" I.D. Pipe.....	
14a	Machine Bolt, with hexagon nut, ⅝"-11 x 7½" long, for mounting junctionbox crossarm on 5" I.D. Pipe.....	
14b	Machine Bolt, with hexagon nut, ⅝"-11, curved, for mounting junctionbox crossarm on 6" I.D. Pipe.....	3364-37
14c	Machine Bolt, with hexagon nut, ⅝"-11, curved, for mounting junctionbox crossarm on 8" I.D. Pipe.....	3364-35
15	Pipe Plug, 1¼".....	
16	Cap Screw, ⅜"-16 x 2" long, Hexagon Head, Steel.....	
17	Torchwick Packing, ⅜" diameter, 27" long.....	
18	Machine Screw No. 10-32 x ⅝" long, Fillister Head, Brass.....	
19	Cap Screw, ⅜"-16 x 7⁄8" long, Hexagon Head. steel, with plain washer.....	
20	Set Screw, ¼"-20 x ½" long, Square Head, Cup Point.....	



Suggested Designs for Concrete Foundations For Flashing Light Highway Crossing Signals



There's something that appeals to everyone in

WESTERN'S

**All-Aluminum Rotatable
Cantilever Signal, Type A740**

The Signal Engineer likes its low cost and ease of installation;
the Purchasing Agent, its low price and shipping cost;
the Stores Keeper, its lightness and ease of handling;
the erecting crew, its ease of installation;
the Signal Supervisor, its ease of maintenance;
and the general public likes its superior indication.

Who could ask for anything more?

The super-value cantilever, Western's All-Aluminum Rotatable Cantilever Signal, Type A740, combines functional efficiency and design excellence to bring you a cantilever that is lighter in weight, much easier to install and maintain, yet withstands gusts of 100 mph velocity.

And that's not all: Now an 8-foot span is available. Our Type A740 line now includes these units (with road clearance and comparative savings in weight):

COMPARATIVE WEIGHTS*

Span	Road Clearance	Model No.	Aluminum	Steel**
8-ft.	14'6"	A740-8A	265 lbs.	1675 lbs.
	17'0"	A740-8B	280 lbs.	1700 lbs.
12-ft.	14'6"	A740-12A	290 lbs.	2210 lbs.
	17'0"	A740-12B	305 lbs.	2250 lbs.
15-ft.	14'6"	A740-15A	310 lbs.	2315 lbs.
	17'0"	A740-15B	325 lbs.	2380 lbs.
20-ft.	14'6"	A740-20A	390 lbs.	Not Furnished
	17'0"	A740-20B	410 lbs.	Not Furnished

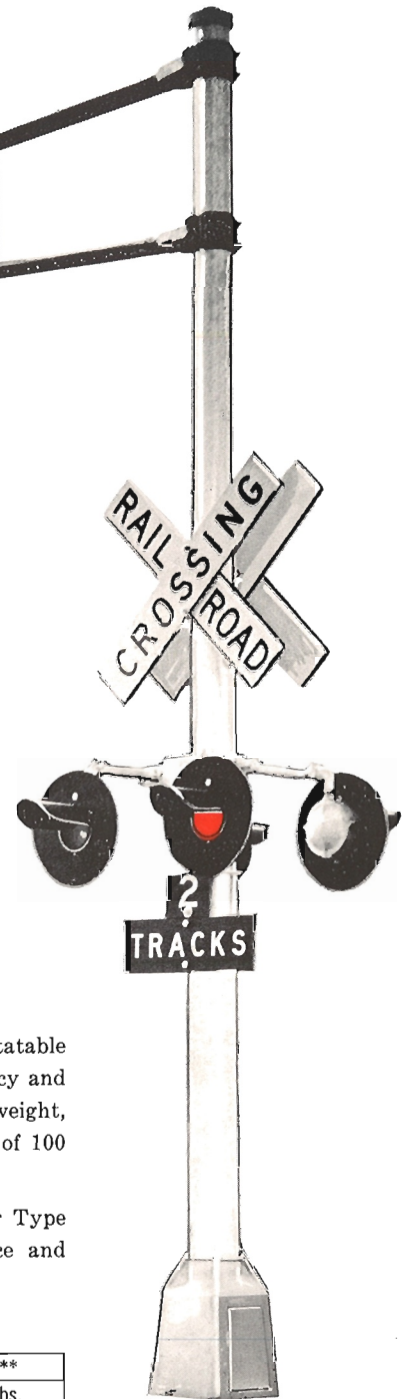
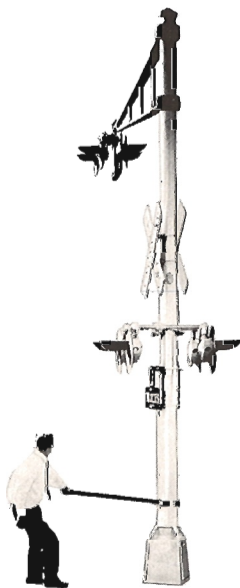
* Approximate for structure only. ** Fixed span.

Would you like drawings and detailed information? . . . Please contact us:

WESTERN RAILROAD SUPPLY COMPANY
Division of Western Industries, Inc.

2742 West 36th Place • Chicago, Illinois 60632

CANADA: Lyman Tube & Supply Company, Ltd., 5420 Pare St. Montreal 9, Quebec



A740 Rotatable Aluminum Cantilever Signal

The A740 rotatable aluminum cantilever signal was introduced in 1965 and has been supplied to 28 railroads for installation in 24 states and Canada.

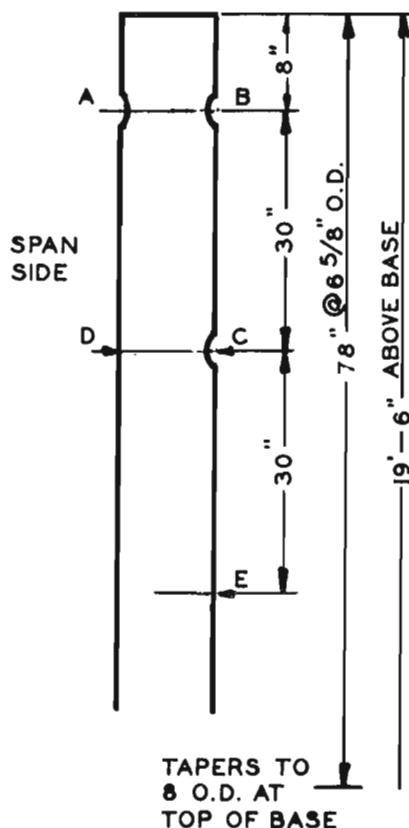
This folder includes description, drawings, ordering references and instructions for erection.

The A740 structure is designed to provide a light weight, maintenance free support for highway crossing flashing light signals, signs and bell. The structure is easily assembled on the ground with indexed parts and may be raised into position by mobile crane or A frame. Its light weight, approximately 300 lbs., permitted one customer to erect it from the top of a truck body when crane was not available.

The A740 cantilever is locked in normal position with span extended over highway and may be rotated 75° or 105° clockwise or counterclockwise and locked for servicing. An extension ladder can be hooked to ladder rest at outer end of span to permit lamp changes and roundel cleaning. Rotation is effected by inserting a short length of 1½" dia. pipe, into bore of bottom ladder rest, and using it as a lever.

The 8" dia. pole is provided with 2-2" x 4" oblong holes for junction box arms at A and B. Pole is shipped with cover on hole B. An additional cover is supplied for hole A when lamps are not required on 8" pole.

For those applications where junction box arm is to be attached to an 8" pole at an angle different than shown on drawing we furnish an arm with blank back GRS cat. section 30 ref. D with 1-2" x 4" oval cover plate, drilled and tapped for 3/4" flex. conduit fitting, for hole B. Thus all light arrangements can be accommodated without requiring additional holes in 8" pole.



New design pole for 14'6" and 17'0" clearance

When our present stock of poles for 8' - 12' and 15' spans is shipped, we will furnish a new-unit design pole suitable for 14'6" and 17'0" clearance assemblies.

This pole will have a 78" length instead of 48" of straight 6 5/8" O.D. section at the top and drilled with 3-1/8" dia. holes for 17'0" road clearance assembly. (holes A-B and C)

When assembly is required for 14'6" road clearance, customer will drill 2-1/8" dia. holes D&E with hole saw at center punched marks and install 2-1/8" dia. metal closures to holes A&B.

If user drills holes D&E and desires at a later date to increase the clearance to 17', holes D&E should be welded closed using aluminum alloy 6061 or 6063 for the plug and aluminum alloy 4043 or 5356 welding wire. Care should be taken to use clean plugs and proper welding techniques.



A740 Rotatable Aluminum Cantilever Signal

1 — Typical ordering reference:

- 2 — Type A740-15B rotatable aluminum cantilever signal 15' span
 - 17' road clearance complete with foundation bolts ref. 4, 4a or 4b. (specify)
 - Two-way indication lights on span ref. 5
 - Two-way indication lights on pole ref. 6
 - Reflector type signs ref. 106, 116 and 126, with fastenings.
 - 1 signal to have bell ref. 8
 - 1 signal to have ladder ref. 19a (or 19)

2 — Directions for erection—Reference dwg. A740 - 8A/8B—20A/20B

Note: Pole is shipped complete with base housing B, top rotation support C, rain cap 23, and adapter plate H. Adapter plate H is bolted to base casting lugs with four short bolts for shipment. Span is shipped as a separate unit.

Both pole and span are tire wrapped to protect surfaces in shipment and handling. Remove before raising structure. If the aluminum base housing is to rest on concrete foundation, the bottom should be painted with heavy coat of asphalt paint. It is not necessary to paint bottom of adapter plate H as it is galvanized and does not touch foundation.

A. With Crane which can raise assembly above top of foundation.

1. Lay out pole and span on ground in position for assembly with top of pole near foundation.
2. Insert 1" rubber grommet in top hole, span side of pole.
3. Install wires from outer end of span, through grommet to oval hole at base of pole, leaving slack at each end for connection to terminals and at the bottom for rotation, (tuck slack back into pole).
4. Clamp span to pole, noting that bosses on inside faces of back clamps mate with index holes in pole.
5. Raise top of pole and span several feet off ground and attach junction box arm and flashing lamps ref. 5 to span.
6. Complete wiring at junction box on span.
7. Attach pinnacles and bell.
8. Assemble hooks to end of extension ladder dwg. 6540-20/24.
9. Attach upper ladder support ref. 20, when used, using ladder to locate position of support.
10. Loosen but do not remove shipping bolts holding adapter plate H to base B.
11. Attach guide rope to bottom ladder rest at outer end of span.
12. Attach sling to upper arm of span about 2' from pole, being careful to protect span structure from abrasion.
13. Base should rest on piece of wood so it does not slide on ground as pole is raised.
14. Raise assembled structure until it is suspended over foundation.
15. Remove four shipping bolts described in 10.
16. Lower base onto foundation bolts.



A740 Rotatable Aluminum Cantilever Signal

17. Line up pole so it is straight or with slight rake to field side. Make sure adapter plate H is centered within housing so there will be no binding at C when structure is rotated.
18. Fasten four nuts on foundation bolts sufficiently to hold structure.
19. Remove sling.
20. Test for ease of turning.
21. Tighten four nuts on foundation bolts.
22. Install terminal board 23 on 2 front foundation bolts and apply jam nuts.
23. Attach other items to 8" pole and complete wiring.
24. Lamps on span may be aligned by workman on ladder hooked over ladder rest. At this time the span is in operating position over the road. The four torque bolts F must be in place and tightened to lock structure during this operation.
When span is rotated to service position, it is only necessary to use two torque bolts F finger tight at L2-L3 to hold it during servicing.
If left for a time in service position, the four bolts should be tightened.
25. End flange E and plate H are indexed for 0° (span over street) and 75° and 105° clockwise or counterclockwise rotation. Span may be rotated 360° in either direction.

B. With Crane of shorter reach than in "A" above.

1. Raise pole complete with base to top of foundation and fasten as described in items A2-7-8-9-10-13-14-15-16-17-18-20-21.
2. Wire span, raise and feed wires into pole. Fasten span to pole.
3. Complete fitting and wiring.

C. Without Crane

1. Complete items A2, 8 and 9.
2. Remove four torque bolts F from base housing and pull pole out of base.
3. Remove four 1" shipping bolts holding adapter plate H to base.
4. Assemble base including adapter plate H on foundation. Check that adapter plate H is properly centered in base housing.
5. Fasten nuts on foundation bolts.
6. Make sure top rotation support C is in place.
7. Raise pole and lower it over bottom rotational support D on adapter plate H. Make sure pole turns freely.
8. Apply four torque bolts F with pole in service position.
9. Complete as in B.

3 — Sub-base is available for application of A740 Cantilever to existing foundation with 14 $\frac{1}{8}$ " x 14 $\frac{1}{8}$ " bolt spacing (as used for 10' and 12' steel Cantilever Signals). This may be ordered as "Sub-base" and cover for A740 type aluminum cantilever dwg. 6540-50.



A740 Rotatable Aluminum Cantilever Signal

4 — Concrete Foundations—Reference dwg. A740-20 for general arrangement.

A. Poured foundation should use 1" dia. galvanized or bi-metallic steel bolts, ref. 4, 4a or 4b, as outlined below. Sectional foundations should use bolts with thread length specified in 3 and 4 below.

	Min. Length Thread	Bolt Extends above top of Foundation
1. Poured foundation with leveling nuts.....	5½"	5¼"
2. Poured foundation without leveling nuts.....	3"	4⅛"
3. Sectional foundation with leveling nuts.....	7"*	6½"*
4. Sectional foundation without leveling nuts.....	3"	4⅛"

*This allows for nut and washer to lock modules together.

B. When leveling nuts are used.

1. Apply bottom nut and washer as shown on A740-20. Level tops of washers, then raise the two nuts on span side 1/4 turn for 8', 1/2 turn for 10' - 12', 3/4 turn for 15' and 1 turn for 20' spans to incorporate desired rake of pole. (Take care to see that nuts can be run down with fingers.)
2. Erect base and pole as per instructions 2A-B-C above. Tighten 1" nuts, finger tight, against adapter plate H. Tighten leveling nuts against underside of base housing, first noting that adapter plate H is properly centered in base housing.
3. Seal open space between base housing and concrete with grout or sealing compound. This may be delayed several days if settlement is expected and re-leveling is desired.

C. When leveling nuts are not used.

1. Follow instructions 2A-B-C.
2. Top of foundation should be raked slightly or shims used to obtain desired rake of pole.
3. Check to see that adapter plate H is properly centered in base housing.
4. Ratchet wrench with Universal joint and extension bar will be required to fasten nuts inside base housing.
5. Seal around base per 3-B-3.



A740 Rotatable Aluminum Cantilever Signal

See Dwg. A740 - 8A/8B . . . 20A/20B.

Ref. No.	DESCRIPTION	Piece No.
1	Pole, tapered 8" x 6.25" O.D. x 17' lg. .219" wall complete with base, raincap and pinnacle (14'6" road clearance).....	50199-Y5
1a	Same as above except 19'6" lg. (17' road clearance)..... (Above for use with 8' to 15' spans, ref. 2, 2a, 2b, 2c)	50199-Y7
*1b	Pole, tapered 8" x 6.25" O.D. x 17' lg. .3125" wall complete with base, raincap and pinnacle (14'6" road clearance).....	50199-Y6
1c	Pole as in 1b except 19'6" lg. .3125" wall (17' road clearance)..... (Above for use with 20' span, ref. 2d)	50199-Y8
2	8' span complete with clamps.....	50199-Y9
*2a	10' span complete with clamps.....	50199-Y1
2b	12' span complete with clamps.....	50199-Y2
2c	15' span complete with clamps.....	50199-Y3
2d	20' span complete with clamps.....	50199-Y4
3	Terminal board assembly.....	6540-26
4	Set (4) foundation bolts 1" dia. x 42" lg. stl. with 2 reg. hex nuts, 1 jam nut and 1-1" plate washer-galvanized.....	11079-42
4a	Set (4) foundation bolts as above except 1" dia. x 72" lg.....	11079-72T
4b	Set (4) foundation bolts 1" dia. x 60" lg. bi-metallic—(stainless stl. threaded tip) with 2 reg. hex nuts, 1 jam nut and 1-1" plate washer—stainless	6540-70
5	Type 970-201 Flashing Light assembly, two-way indication for 4" I.D. pipe mounting with jct. box arm. 960-5.....	970-204
5a	Same as Ref. 5 but one-way indication with jct. box arm 960-3.....	970-202
6	Type 970-201 Flashing Light assembly, two-way indication for 8" tapered pole using jct. box arm 960-54T for elevation A-A.....	970-304T
6a	Same as Ref. 6 but one-way indication with jct. box arm—960-54XT.....	970-304XT
7	Type 970-201 Flashing Light assembly, two-way indication for 8" tapered pole with jct. box arm 960-5T for elevation B-B.....	970-204T
7a	Same as Ref. 7 but one-way indication with jct. box arm—960-3T.....	970-202T
8	Bell #222, 10-16 v. DC with socket for mtg. on 6 $\frac{5}{8}$ " O.D. pipe.....	0222HR
10	"Railroad Crossing" sign without mounting fittings.	
10a	Reflex reflective sheet on aluminum.....	3380-7L
10b	Reflector button, synthetic enamel finish. Sh. Stl.....	3380-4L
10c	Reflector button, vitreous enamel finish. Sh. Stl.....	3380-3L
11	"Tracks" sign (specify numeral) without mounting fittings.....	
11a	Reflex reflective sheet on aluminum.....	3368-7L
11b	Reflector button, synthetic enamel finish. Sh. Stl.....	3368-4L
11c	Reflector button, vitreous enamel finish. Sh. Stl.....	3368-3L
12	"Stop on Red Signal" sign without mounting fittings.....	
12a	Reflex reflective sheet on aluminum.....	3366-7L
12b	Reflector button, synthetic enamel finish. Sh. Stl.....	3366-4L

*Item available but not stocked.



A740 Rotatable Aluminum Cantilever Signal

Ref. No.	DESCRIPTION	Piece No.
13	Mounting kit for attaching signs, ref. 11b, 11c, 12b, to tapered pole. (1 req'd per sign).....	3366-321T
13a	Mounting kit for attaching signs, ref. 10b, 10c, to tapered pole. (1 required per sign).....	3380-321T
14	5/8" offset bolt for attaching jct. box arm to tapered pole (2 per arm) included in ref. 6 and 7.....	3364-47
15	1/2" offset bolt for attaching signs to tapered pole (4 per sign) with hex nut and two washers (included in ref. 13 and 13a).....	3364-48
16	Sign adapter, (2 per sign) (included in ref. 11b, 11c, 12b).....	3364-A1
17	Extension bracket, with bolts, req'd only for reflector button signs ref. 10b, 10c, 11b, 11c and 12b, on poles with ladder mtg. (2 req'd per sign)	3366A-40
18	Back clamp, alum. (included in ref. 13).....	950-A-34
19	20' aluminum extn. ladder (for 14'6" road clearance).....	6540-20
19a	24' aluminum extn. ladder (for 17' road clearance).....	6540-24
20	Upper bracket, alum. for ladder support comp. (1 per installation when ladder is mounted on pole).....	6540-23
21	Padlock "T" alum. for ladder support comp. (1 per installation when ladder is mounted on pole).....	6540-30A
22	1½" dia. pipe galv. 4' lg. without threads.....	
23	Rain cap cast alum. incl. in. 1.....	
24	1⅜" dia. A1 caps (2 furnished for closing 2 holes at top of pole when 14'6" road clearance is req'd).....	
25	Sub-base for use on existing foundation with 14⅛"x14⅛" bolt spacing.....	6540-50



SECTION 3

Automatic Crossing Gates

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WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



GENERAL

Model 10 Signals meet, in every respect, the specifications and requirements of the Association of American Railroads, Communication and Signal Section, and of every State having specifications or regulations applying to grade-crossing protection, as well as those of the Board of Transport Commissioners for Canada.

They are especially designed for automatic control by approaching trains and for manual supervision imposed upon automatic control.

Suggested circuits for the automatic control of Model 10 Signals are shown in the instruction booklets. These follow the principles and recommended practices of the Association of American Railroads, Communication and Signal Section, and embody the use only of relays and other devices meeting the specifications and requirements of that organization.

Contributing largely to the instant success of the automatic operation of the Model 10 Signal, when first introduced in June, 1936, was the provision of a prewarning by flashing lights for a period of 3 to 5 seconds before the gate arm starts to descend and the slow, even descent of the gate arm to the horizontal position in a period of 10 to 15 seconds. Even when these signals are manually controlled this prewarning period is retained. This allows ample time for highway traffic to pass the gate after the lights start to flash, or to come to a stop before reaching the gate.

The three electric lights on the gate arm provide an arrestive, highly visible horizontal row of lights in the path of approaching highway vehicles. At all times when the gate arm is in a position to obstruct traffic the tip light burns steadily and the other two lights are caused to alternately flash in unison with the flashing lights on the signal mast.

Many variations from the typical circuits are used to meet local conditions, including timing circuits to adjust the warning period to the speed of approaching trains and thus to limit the time the gates would be down for slower trains. Circuits are frequently introduced to prevent obstruction of highway traffic by trains standing near the crossing, as occurs during station stops.

Assistance in the design of control circuits to meet special conditions will be gladly given by our Engineers, upon request.



MODEL 10 SIGNALS

The Model 10 Signal assemblies, for which ordering reference data is given in this catalog section, are those most commonly used to meet the conditions encountered in the vast majority of locations. Special assemblies can be arranged to meet various unusual requirements. These may include extension brackets to position the flashing lights so as to project the light beams along side streets, or other necessary features required by the circumstances.

In standard Model 10 Signal assemblies the signs, flashing lights and mechanism are mounted on one 5 inch pipe mast with junction-box type base and a bell or pinnacle. Where cantilever type flashing light signals are required, the gate mechanism and gate arm are frequently mounted on a separate short mast located between the cantilever signal and the track, often on a common concrete foundation. However, where clearance does not permit this arrangement, assemblies with offset cantilever brackets are supplied.

Our Engineering Department is at all times glad to cooperate in the design of special assemblies to meet unusual conditions. Given scale plans or details of a crossings, where standard assemblies do not meet the requirements, we will furnish drawings illustrating the arrangement recommended.

MECHANISMS

Two types of mechanism are available for operation of roadway gate arms, as illustrated on Pages 3-8 & 3-9. Both Types 3567 and 3568 are designed to operate the gate arm to the clear, 90°, position by power and from the clear position to the 45° position, descending, by power and from the 45° position to the horizontal position by gravity. The characteristics and a full description of the mechanisms will be found in Instruction Booklet accompanying each mechanism.

Each of the above mechanisms may be had with a kit for the operation of a sidewalk arm. This sidewalk arm operating shaft and internal actuating parts is supplied as a kit, which can be easily installed.

All mechanisms are provided with auxiliary circuit controller contacts for indication of gate arm position, for flashing and gate arm light control, to stop the bell from ringing after the gate arm is down, etc.

The same gate arms and fittings are used with either Type 3567 or Type 3568 mechanism. The counterweight and gate support arms for roadway arms attach to the splined mechanism shaft. The sidewalk arm support casting, when used, attaches to a square end shaft.

COUNTERWEIGHTING AND GATE ARM TORQUE

These mechanisms are of the powered-down type, but the counterweights supplied with each Model 10 Signal are of correct weight to provide down torque required for proper operation of the gate arm from clear to horizontal position by gravity. The counterweights and mounting arrangement are so designed that they may be adjusted as required, without dismantling, to obtain horizontal and clear position torque values as required for each arm length.

Proper counterweighting and torque values are essential elements of Model 10 Signal design. Recommended torque values based on experience, tests and calculations of wind resistance, for gate arms of various lengths, are given in tables in instruction booklets furnished with each mechanism.



Speed Table For Crossing Signal Starts

Miles Per Hour	Seconds	Distance Traveled in Feet										
		10	15	20	25	30	35	40	45	50	55	60
1	1.46	14.6	22.0	29.3	36.6	44.0	51.3	58.6	66.0	73.3	80.6	88.0
2	2.93	29.3	44.0	58.6	73.3	88.0	102.6	117.3	132.0	146.6	161.3	176.0
3	4.4	44	66	88	110	132	154	176	198	220	242	264
4	5.86	58.6	88	117.3	146.6	176	205.3	234.6	264	293.3	322.6	352
5	7.3	73	110	147	183	220	257	293	330	367	403	440
10	14.6	146	220	293	366	440	513	587	660	733	807	880
15	22.0	220	330	440	550	660	770	880	990	1,100	1,210	1,320
20	29.3	293	440	587	733	880	1,027	1,173	1,320	1,467	1,613	1,760
25	36.7	367	550	733	917	1,100	1,283	1,467	1,650	1,833	2,017	2,200
30	44.0	440	660	880	1,100	1,320	1,540	1,760	1,980	2,200	2,420	2,640
35	51.3	513	770	1,027	1,283	1,540	1,797	2,053	2,310	2,567	2,823	3,080
40	58.7	587	880	1,173	1,467	1,760	2,053	2,347	2,640	2,933	3,227	3,520
45	66.0	660	990	1,320	1,650	1,980	2,310	2,640	2,970	3,300	3,630	3,960
50	73.3	733	1,100	1,467	1,833	2,200	2,567	2,933	3,300	3,667	4,033	4,400
55	80.7	807	1,210	1,613	2,017	2,420	2,823	3,227	3,630	4,033	4,437	4,840
60	88.0	880	1,320	1,760	2,200	2,640	3,080	3,520	3,960	4,400	4,840	5,280
65	95.3	953	1,430	1,907	2,383	2,860	3,337	3,813	4,290	4,767	5,243	5,720
70	102.7	1,027	1,540	2,053	2,567	3,080	3,593	4,107	4,620	5,133	5,647	6,160
75	110.0	1,100	1,650	2,200	2,750	3,300	3,850	4,400	4,950	5,500	6,056	6,600
80	117.3	1,173	1,760	2,347	2,933	3,520	4,107	4,693	5,280	5,867	6,453	7,040
85	124.7	1,247	1,870	2,493	3,117	3,740	4,363	4,987	5,610	6,233	6,858	7,480
90	132.0	1,320	1,980	2,640	3,300	3,960	4,620	5,280	5,940	6,600	7,260	7,920
95	139.3	1,393	2,090	2,787	3,483	4,180	4,877	5,573	6,270	6,967	7,663	8,360
100	146.7	1,467	2,200	2,933	3,667	4,400	5,133	5,867	6,600	7,333	8,067	8,800
105	154.0	1,540	2,310	3,080	3,850	4,620	5,390	6,160	6,930	7,700	8,470	9,240
110	161.3	1,613	2,420	3,227	4,033	4,840	5,647	6,453	7,260	8,067	8,873	9,680
115	168.6	1,686	2,530	3,373	4,217	5,060	5,903	6,747	7,590	8,434	9,277	10,120
120	176.0	1,760	2,640	3,520	4,400	5,280	6,160	7,040	7,920	8,800	9,680	10,560
125	183.3	1,833	2,750	3,667	4,583	5,500	6,417	7,334	8,250	9,167	10,084	11,000
130	190.7	1,907	2,860	3,813	4,767	5,720	6,673	7,627	8,580	9,534	10,487	11,440

NOTE: Where length of track circuit is known, time in seconds can be determined by dividing its length by "Feet Per Second" at train speed selected.

* Does not allow for drop-away time of relays.



Information Desired With Inquiry For Complete Model 10 Signal Installation

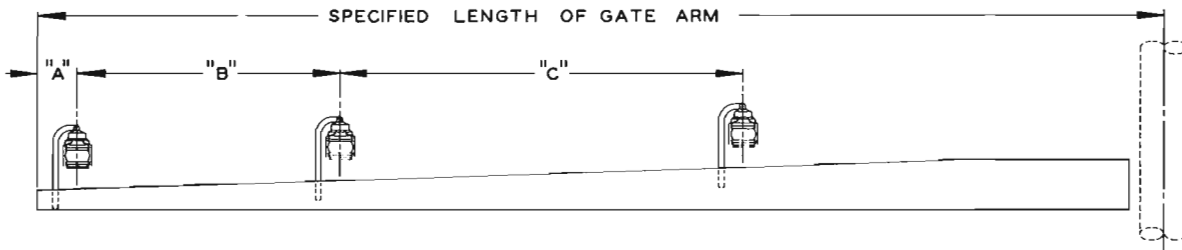
We are pleased to furnish engineering information and to quote on all materials required for installations of Model 10 Signals. Where possible, inquiries should be accompanied by a sketch or scale track plan showing location of highway.

The following information is especially desired:

1. Width of roadway or length of roadway gate arm required.
2. If sidewalk arm is required, length thereof.
3. Length of approach track circuit required each side of highway to provide 20 seconds warning for fastest train, or information as to speeds of trains operated over the crossing.
4. If for double track road, specify if protection shall be provided for reverse traffic.
5. What special operating conditions exist within the area?
6. Details of any switches within the approach sections.
7. Circuits of any signaling now in place which will be affected by the installation of crossing protection.
8. Whether diesel or electric propulsion railroad.
9. What electric power is available at crossing?
10. Weight and type of rail, whether four or six hole splice bars and rail drilling.
11. Type of track ballast (rock, gravel, cinders or other material).
12. Type of highway surface or pavement.
13. If electric propulsion railway, specify what propulsion voltage is used and whether A.C. or D.C. If A.C., specify frequency.
14. If electric propulsion railway, state the normal and maximum return current in rails.
15. If electric propulsion railway, specify if single rail or two rail track circuits are preferred.
16. Whether spare space on pole line is available for extending electric power to ends of track circuits.

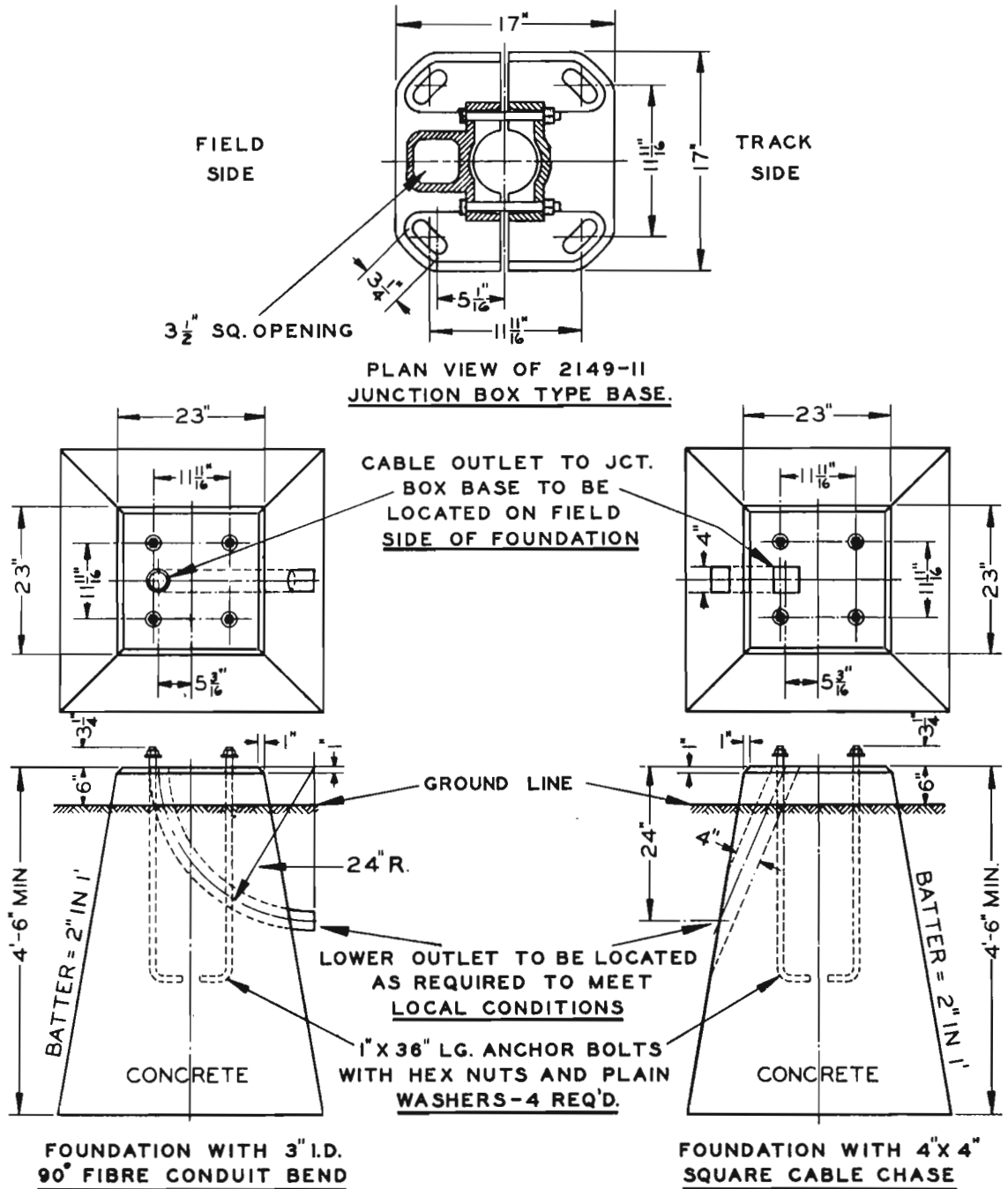


Suggested Roadway Gate Arm Light Spacing



Specified Length of Gate Arm	Dimension "A"	Dimension "B"	Dimension "C"
14 Ft.	6"	36"	5'-0"
15 Ft.	18"	36"	5'-0"
16 Ft.	24"	36"	5'-0"
17 Ft.	24"	36"	5'-0"
18 Ft.	28"	41"	5'-0"
19 Ft.	28"	41"	5'-0"
20 Ft.	28"	4'-0"	5'-0"
21 Ft.	28"	4'-0"	5'-0"
22 Ft.	28"	4'-0"	5'-0"
23 Ft.	28"	4'-0"	5'-0"
24 Ft.	28"	5'-0"	5'-0"
25 Ft.	28"	5'-0"	5'-0"
26 Ft.	28"	5'-0"	5'-0"
27 Ft.	28"	5'-0"	5'-0"
28 Ft.	28"	5'-0"	5'-0"
29 Ft.	36"	6'-0"	6'-0"
30 Ft.	36"	6'-0"	6'-0"
31 Ft.	36"	6'-0"	6'-0"
32 Ft.	36"	7'-6"	7'-6"
33 Ft.	36"	7'-6"	7'-6"
34 Ft.	36"	7'-6"	7'-6"
35 Ft.	36"	9'-0"	9'-0"
36 Ft.	36"	9'-0"	9'-0"
37 Ft.	36"	9'-0"	9'-0"
38 Ft. and Over	36"	10'-0"	10'-0"

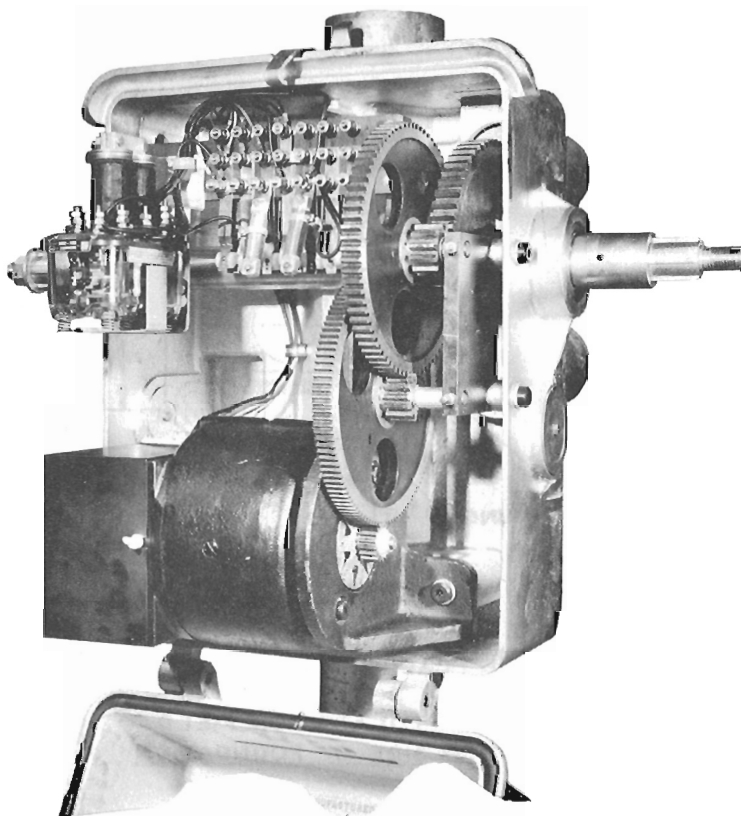
Suggested Foundation Designs For Model 10 Signals Using No. 2149-11 Junction Box Type Base





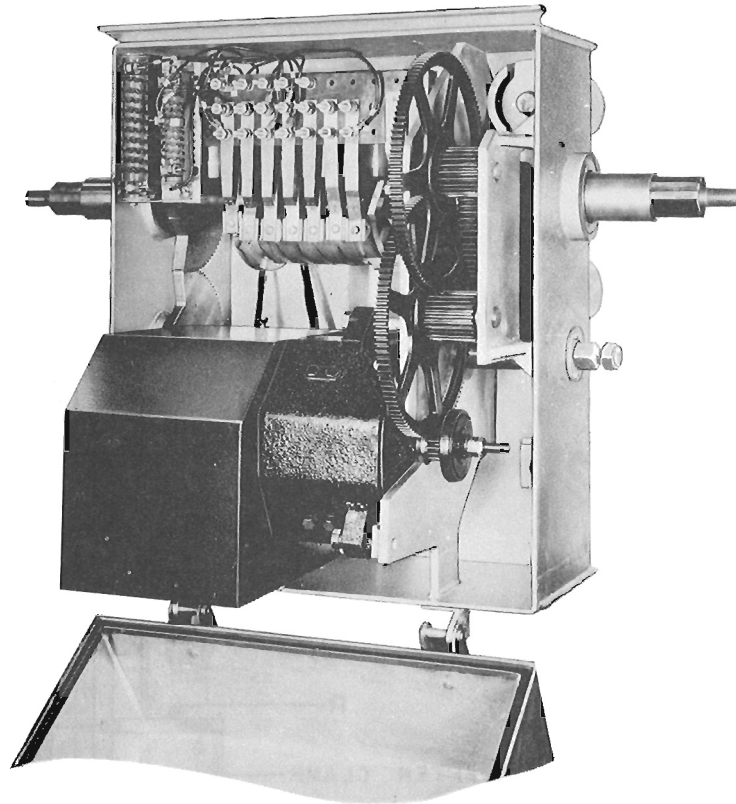
Model 10 Signal Mechanism

No. 3567-131



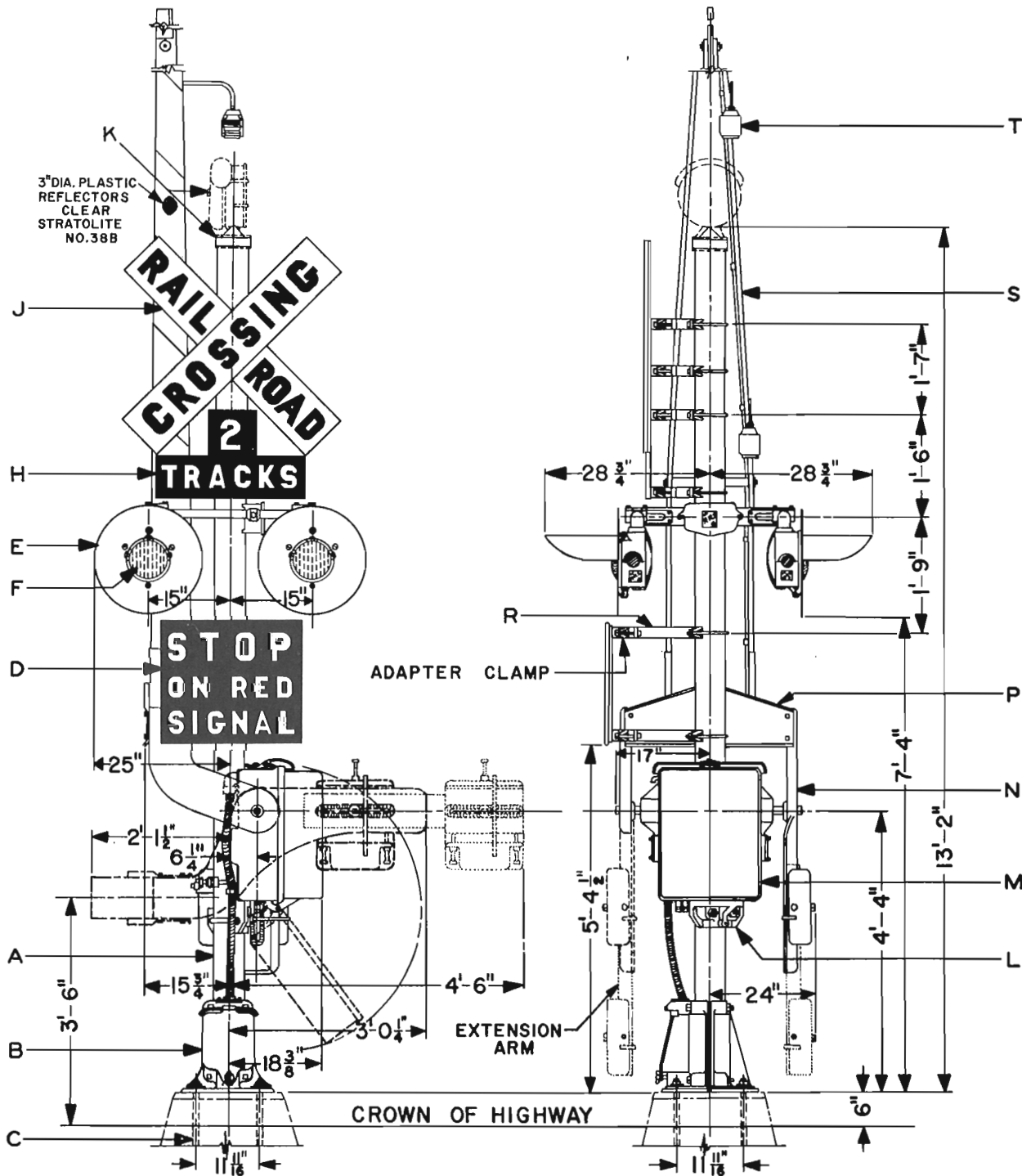
Model 10 Signal Mechanism

No. 3568-132 (With Sidewalk Shaft)





Model 10 Signal Assembly For Roadway Arms 14' to 38'

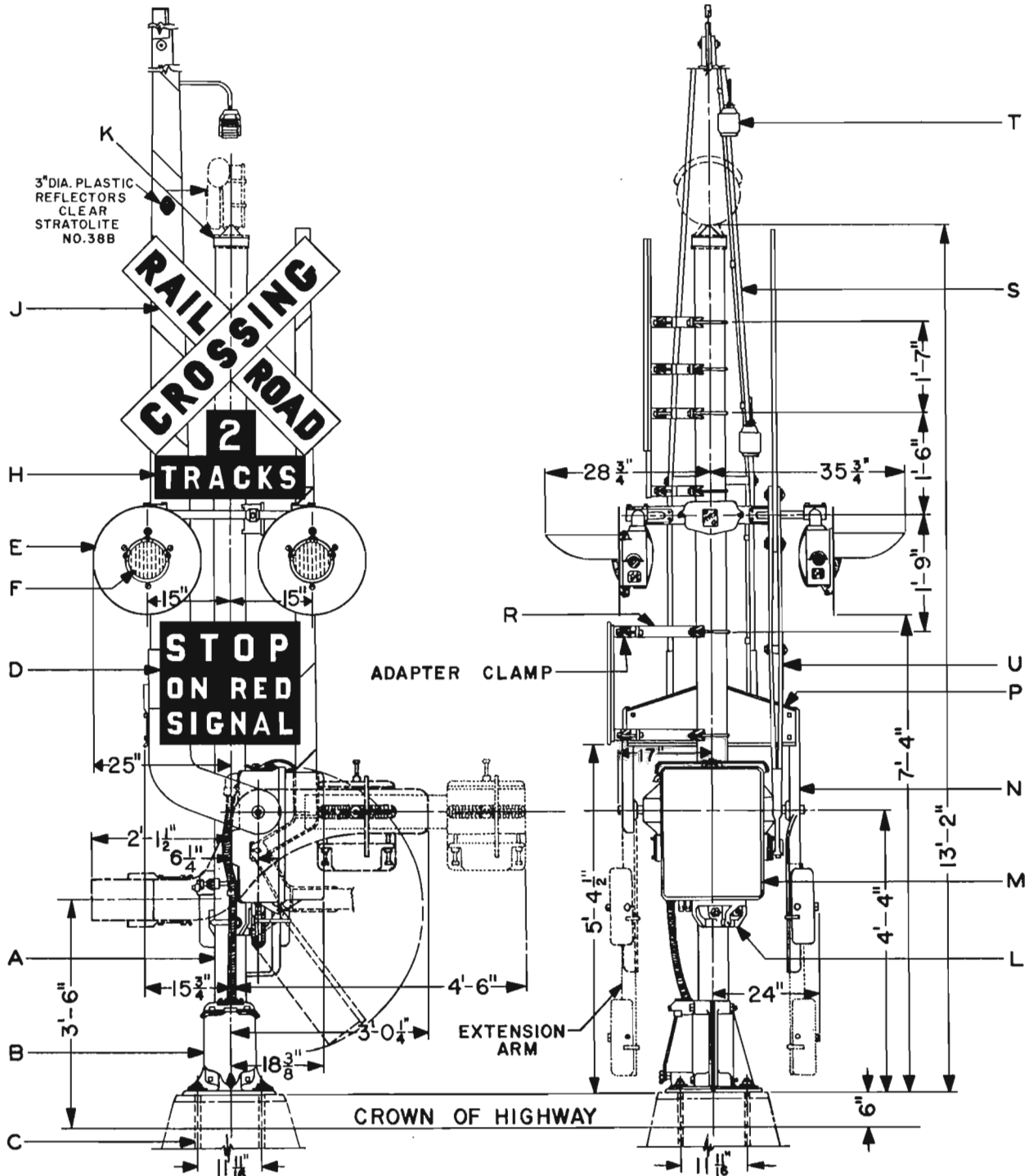


ASSEMBLY WITH 18'-24' ARMS PER — LINES
 ASSEMBLY WITH 25'-30' ARMS PER - - - LINES
 ASSEMBLY WITH 31'-38' ARMS PER ····· LINES

Ref. A or Ref. B

Assembly drawings of Model 10 Signals with roadway arm 39' to 44' in length will be furnished on request.

Model 10 Signal Assembly With Sidewalk Arm For Roadway Arms 14' to 38'



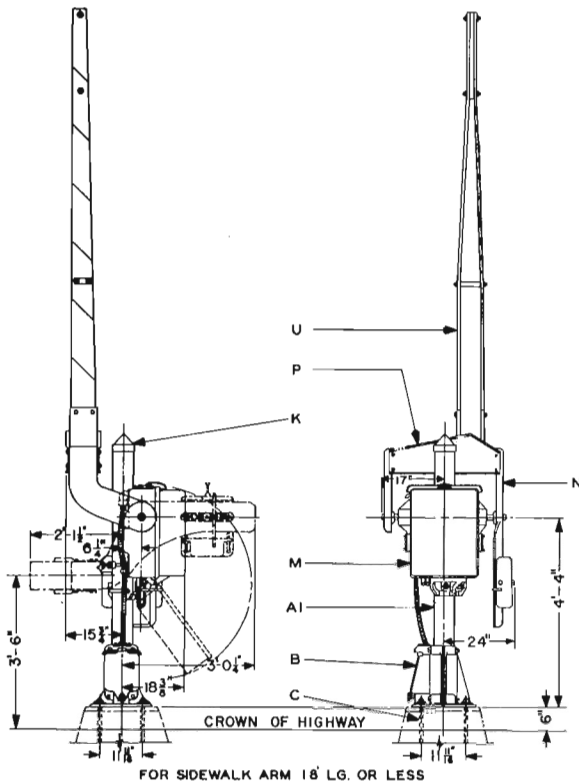
ASSEMBLY WITH 18'-24' ARMS PER — LINES
 ASSEMBLY WITH 25'-30' ARMS PER - - - LINES
 ASSEMBLY WITH 31'-38' ARMS PER ····· LINES

Ref. A or B with Ref. C

Assembly drawings of Model 10 Signals with roadway arm 39' to 44' in length will be furnished on request.



Model 10 Signal Assembly



Ref. D

By far the majority of Model 10 Highway Crossing Signal installations require two Model 10 Highway Crossing Signal Assemblies; one with a bell and one with a pinnacle, although frequently two bells are used. Western's 3567-131 or 3568-131 mechanism with gate arm, 970-204 flashing light units, with 5323P roundels, 5" I.D. mast, junction box type base and reflex-reflecting sheet type signs, meet most requirements.

Below are ordering references for these most frequently used assemblies. See Page 3-13 for information for ordering variations from these assemblies.

When sidewalk arm is required, a kit is supplied consisting of shaft, actuating parts, arm, arm support and brackets for mounting flashing light units on junction box cross arm to clear the sidewalk arm in the clear or 90° position.

Ref. No.	Description	Piece No.
A	Model 10 Highway Crossing Signal, complete with Type 3567-131 mechanism, two-way indication flashing light assemblies, 222CR bell and signs. (Specify numeral on track sign, length of Roadway Arm, from tip of arm to center of mast, and voltage and wattage of incandescent electric lamps, if required).....	A-735
A1	Same as Ref. A, but with pinnacle in place of bell.....	A-735P
A2	Same as Ref. A, less "Stop On Red Signal" sign.....	A-735L
A3	Same as Ref. A1, less "Stop On Red Signal" sign.....	A-735PL
B	Model 10 Highway Crossing Signal, complete with Type 3568-131 mechanism, two-way indication flashing light assemblies, 222CR bell and signs. (Specify numeral on track sign, length of Roadway Arm, from tip of arm to center of mast, and voltage and wattage of incandescent electric lamps, if required).....	A-741
B1	Same as Ref. B, but with pinnacle in place of bell.....	A-741P
B2	Same as Ref. B, less "Stop On Red Signal" sign.....	A-741L
B3	Same as Ref. B1, less "Stop On Red Signal" sign.....	A-741PL
C	Sidewalk Arm kit complete for Type 3567-131 mechanism. (Specify length of arm)	3567-140
C1	Same as Ref. C, but for Type 3568-131 mechanism.....	3568-140
D	Sidewalk Gate Assembly, complete with Type 3567-131 mechanism.....	A-743
D1	Same as Ref. D, but with Type 3568-131 mechanism.....	A-744
	See Page 3-13 for information for ordering commonly used variations.	



Model 10 Signal Assembly

When ordering assemblies other than are shown on Pages 3-10 to 3-12 please use the reference data below, enumerating components required.

If extra light assemblies are called for, specify degree of angle to right or left of main lights.

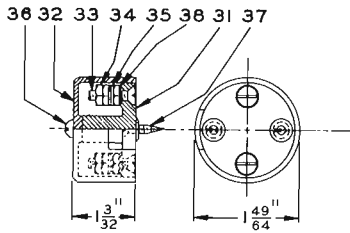
We will gladly furnish plans and information for special assemblies, including supporting brackets as shown on Page 3-48 and 3-49, Marker Lights as shown on Page 1-26, etc.

Ref. No.	Description	Piece No.
A	Pipe Mast 5" I.D. x 13'-0" Lg.....	715-24
A1	Pipe Mast 5" I.D. x 6'-0" Lg.....	715-16
B	Base (See Pages 3-46 and 3-47).....	
C	Anchor Bolts 1" x 36".....	11079
D	"Stop On Red Signal" sign (See Section 1, Pages 1-20 and 1-21).....	
E	Flashing Light Assembly (See Section 1, Pages 1-15 to 1-19).....	
	For Gate Assembly only (See Pages 3-37 to 3-45).....	
F	Roundels (See Section 1, Page 1-14).....	
G	Specify Voltage and Wattage of Lamps.....	
H	"Number of Tracks" sign (See Section 1, Pages 1-22 and 1-23).....	
J	"Railroad Crossing" sign (See Section 1, Pages 1-24 and 1-25).....	
K	Bells (See Section 5).....	
	For Pinnacle (See Section 1, Pages 1-10 and 1-11).....	
L	Mechanism Support (See Page 3-33 for Details).....	3565-380A
M	Gate Mechanism 3567 (See Pages 1-101 to 1-111).....	
M	Gate Mechanism 3568 (See Pages 1-115 to 1-125).....	
N	Gate and Counterweight Arms (See Pages 3-34 and 3-35).....	
P	Gate Arm Support (See Page 3-32).....	
R	Extension Bracket (See Page 3-50).....	
S	Gate Arm (See Pages 3-15 to 3-23).....	
T	Gate Lights (See Pages 3-30 and 3-31).....	
U	Sidewalk Gate Arms (See Pages 3-24 to 3-27).....	
V	Sidewalk Gate Support (See Page 3-36).....	
W	Gate Light Jct. Boxes (See Pages 3-14 and 3-15).....	
X	Buffer Leg (See Page 3-29).....	

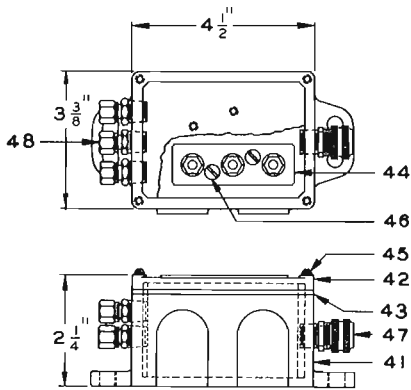


Roadway Arms, Extendable Type

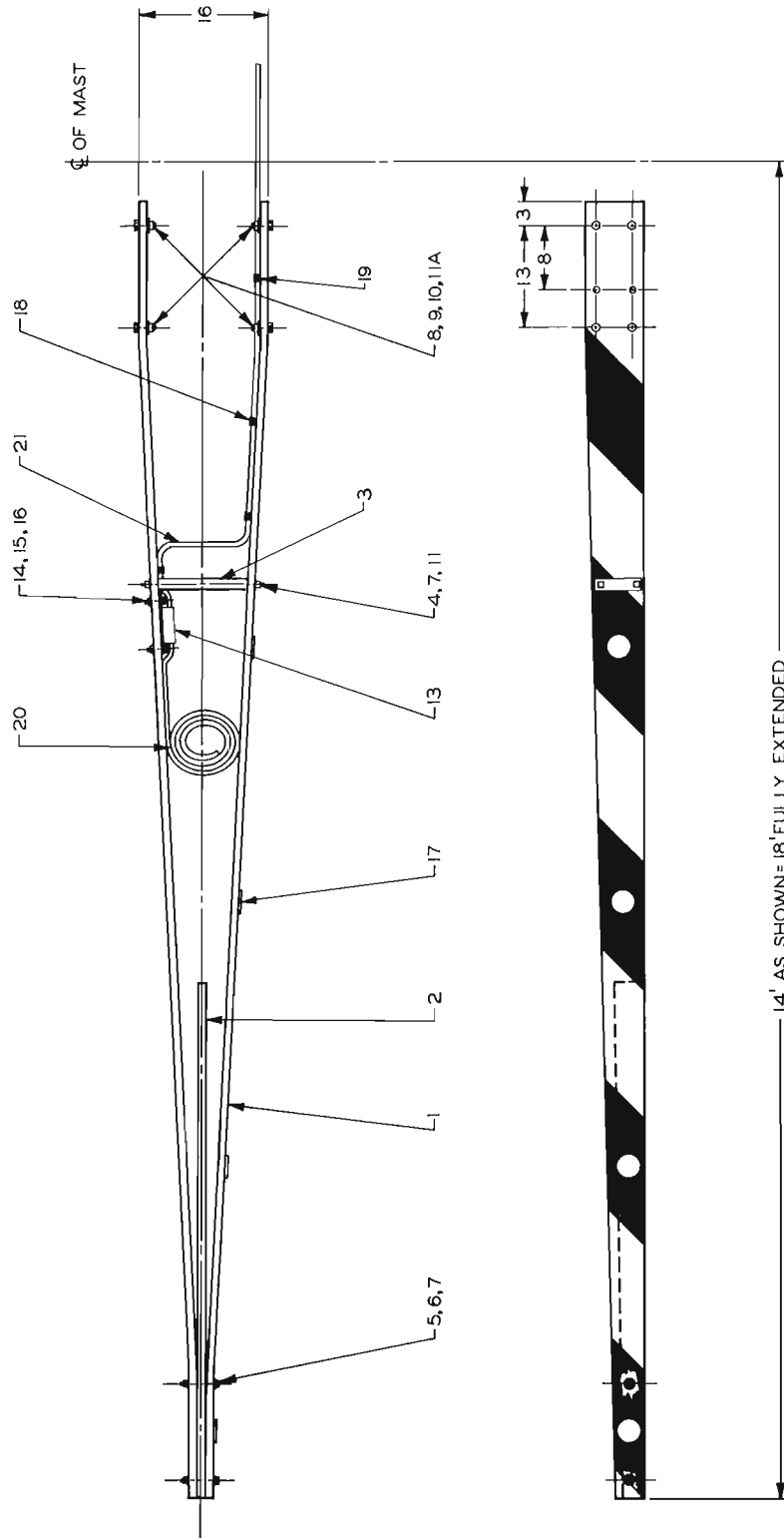
14' MINIMUM 18' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS



Ref. W



Ref. W1



Ref. S



Roadway Arms, Extendable Type

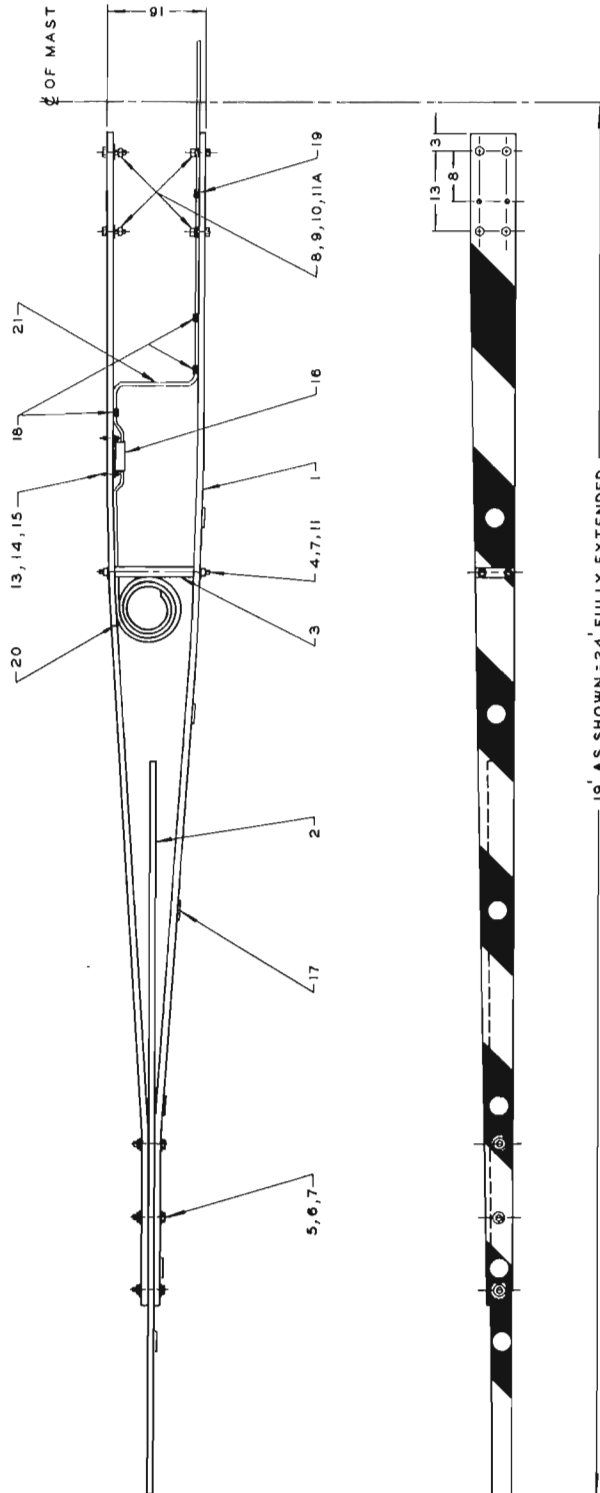
14' MINIMUM 18' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS

Ref. No.	Description	Piece No.
S	Assembly of Roadway Arm with wiring and reflectors, less gate lights.....	3565-331
S1	Same as Ref. S, less wiring and reflectors.....	3565-361
S2	Wiring Harness Only. (Includes all material for wiring roadway arm for three gate lights).....	3565-341
W	Type 3561 Terminal Block Complete, Bakelite.....	3561-196
W1	Type 3561 Junction Box Complete, Aluminum.....	3561-71D
REPLACEMENTS PARTS		
1	Base Board (Specify Track or Field Side).....	3565-54-13
2	Tongue.....	3565-52A
3	Spacer Block.....	3565-55
4	Through Stud.....	3562-66EH
5	Machine Bolt, 3/8"-16 x 3" lg. hex. hd., stl.....	
6	Washer, 7/16" I.D. x 1 1/2" O.D. stl.....	
7	Square Nut, 3/8"-16, stl.....	
8	Machine Bolt, 1/2"-13 x 2" lg., hex. hd., stl.....	
9	Hex. Nut, 1/2"-13, stl.....	
10	Spring Lock Washer, 1/2", stl.....	
11	Aluminum Washer Plate.....	3562-77A
11A	Aluminum Washer Plate.....	3562-71
13	Junction Box Assembly. (For Details see Ref. 41 to 48 below).....	3561-71D
14	Machine Bolt, 5/16"-18 x 1 3/4" lg., hex. hd., stl.....	
15	Hex. Nut, 5/16"-18 x 1 3/4" lg., hex. hd., stl.....	
16	Washer, 5/16" plain, stl.....	
17	3" Diameter Plastic Reflector, with mounting screws.....	38B
18	Aluminum Cable Clip for one 3-Conductor Cable.....	
19	Nylon Cable Clip for one 3-Conductor Cable.....	1953-7A
20	2-Conductor Cable, In Bulk.....	
21	3-Conductor Cable, In Bulk.....	
PARTS NOT ILLUSTRATED		
22	Aluminum Cable Clip for three 2-Conductor Cables.....	
22A	Same as Ref. 22, but for two 2-Conductor Cables.....	
22B	Same as Ref. 22, but for one 2-Conductor Cable.....	
23	Wood Screws for above clips, No. 8 x 3/4" rd. hd., brass.....	
24	1/2" Cable Grip, for one 3-Conductor Cable.....	DB-990
25	Pipe Reducer, 3/4" to 1/2", for Ref. 24.....	
REPLACEMENTS PARTS FOR REF. W AND W1		
31	Terminal Block, Bakelite.....	3561-197A
32	Cover, Bakelite.....	3561-198
33	No. 10-32 x 7/8" Lg. fl. hd. mach. screw, brass.....	
34	No. 10-32 Hex. Nut, brass.....	
35	No. 10 Plain Washer, brass.....	
36	No. 10-32 x 1/2" Lg. rd. hd. mach. screw, brass.....	
37	No. 6 x 3/4" Lg. fl. hd. wood screw, brass.....	
38	No. 10 Internal Everlock Washer, steel.....	
41	Box, cast aluminum.....	3561-75J
42	Cover, cast aluminum.....	3561-76
43	Gasket.....	3561-77A
44	Terminal Block.....	1005-102
45	No. 8-32 x 3/4" Lg. rd. hd. mach. screw & lock washer, brass.....	
46	No. 8-32 x 3/8" Lg. rd. hd. mach. screw, brass.....	
47	3/8" Cable Grip, for one 3-Conductor Cable.....	DB-938
48	Compression Connector.....	1580-7



Roadway Arms, Extendable Type

19' MINIMUM 24' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS



Ref. S3



Roadway Arms, Extendable Type

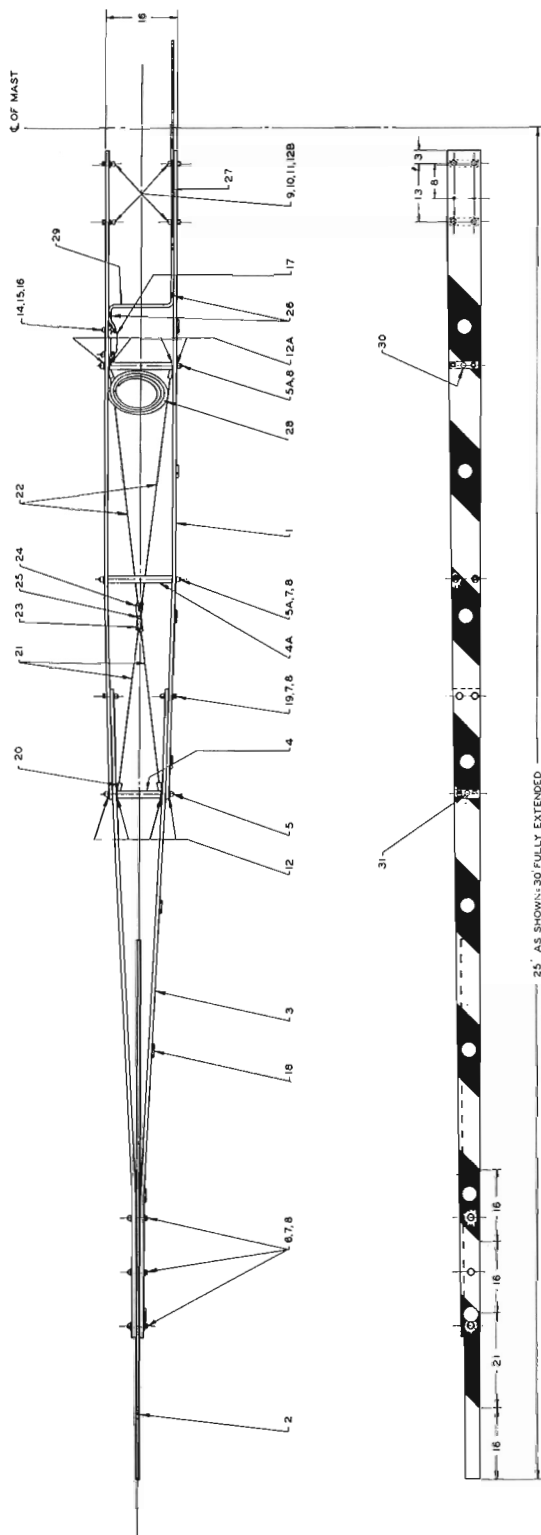
19' MINIMUM 24' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS

Ref. No.	Description	Piece No.
S3	Assembly of Roadway Arm with wiring and reflectors, less gate lights.....	3565-332
S4	Same as Ref. S3, less wiring and reflectors.....	3565-362
S5	Wiring Harness Only. (Includes all material for wiring roadway arm for three gate lights)	3565-342
REPLACEMENT PARTS		
1	Base Board (Specify Track or Field Side).....	3565-54-16
2	Tongue	3565-52B
3	Spacer Block	3565-55
4	Through Stud	3562-66EH
5	Machine Bolt, 3/8"-16 x 3" lg. hex. hd., stl.....	
6	Washer, 7/16" I.D. x 1 1/2" O.D., stl.....	
7	Square Nut, 3/8"-16, stl.....	
8	Machine Bolt, 1/2"-13 x 2" lg., hex. hd., stl.....	
9	Hex. Nut, 1/2"-13, stl.....	
10	Spring Lock Washer, 1/2", stl.....	
	Aluminum Washer Plate.....	3565-56
11A	Aluminum Washer Plate.....	3562-71
13	Machine Bolt, 5/16"-18 x 1 3/4" lg., hex. hd., stl.....	
14	Hex. Nut, 5/16"-18, stl.....	
15	Washer, 5/16", plain, stl.....	
16	Junction Box Assembly. (For Details see Pages 3-14 and 3-15).....	3561-71D
17	3" Diameter Plastic Reflector, with mounting screws.....	38B
18	Aluminum Cable Clip for one 3-Conductor Cable.....	
19	Nylon Cable Clip for one 3-Conductor Cable.....	1953-7A
20	2-Conductor Cable, In Bulk.....	
21	3-Conductor Cable, In Bulk.....	
PARTS NOT ILLUSTRATED		
22	Aluminum Cable Clip for three 2-Conductor Cables.....	
22A	Same as Ref. 22, but for two 2-Conductor Cables.....	
22B	Same as Ref. 22, but for one 2-Conductor Cable.....	
23	Wood Screws for above clips, No. 8 x 3/4", rd. hd., brass.....	
24	Terminal Block and Mounting screws (For Details see Pages 3-14 and 3-15).....	3561-196
25	1/2" Cable Grip, for one 3-Conductor Cable.....	DB-990
26	Pipe Reducer, 3/4" to 1/2", for Ref. 25.....	



Roadway Arms, Extendable Type

25' MINIMUM 30' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS



Ref. S6



Roadway Arms, Extendable Type

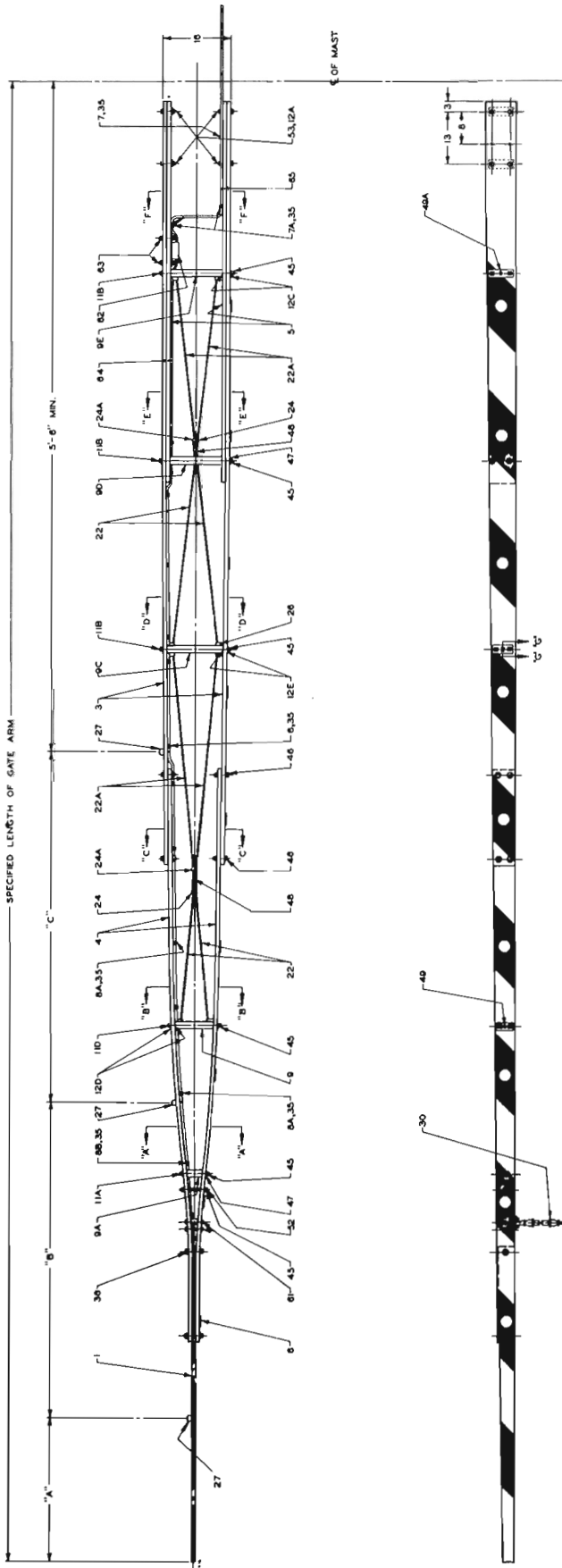
25' MINIMUM 30' MAXIMUM
ADJUSTABLE IN ONE-FOOT INCREMENTS

Ref. No.	Description	Piece No.
S6	Assembly of Roadway Arm with wiring and reflectors, less gate lights.....	3565-333
S7	Same as Ref. S6, less wiring and lights.....	3565-363
S8	Wiring Harness Only (Includes all material for wiring roadway arm for three gate lights).....	3565-343
REPLACEMENT PARTS		
1	Base Board (Specify Track or Field side).....	3562-53-12
2	Tongue.....	3562-54-12E
3	Side Board (Specify Track or Field side).....	3562-52B
4	Spacer Block.....	3562-75
4A	Spacer Block.....	3562-74
5	Through Stud.....	3562-66B
5A	Through Stud.....	3562-66
6	Machine Bolt, 3/8"-16 x 3" lg. hex. hd., stl.....	
7	Washer, 7/16" I.D. x 1 1/2" O.D., stl.....	
8	Square Nut, 3/8"-16, stl.....	
9	Machine Bolt, 1/2"-13 x 2" lg. hex. hd., stl.....	
10	Hex. Nut, 1/2"-13, stl.....	
11	Spring Lock Washer, 1/2", stl.....	
12	Aluminum Washer Plate.....	3562-72A
12A	Aluminum Washer Plate.....	3562-71A
12B	Aluminum Washer Plate.....	3562-71
14	Machine Bolt, 5/16"-18 x 1 3/4" lg., hex. hd., stl.....	
15	Hex. Nut, 5/16"-18, stl.....	
16	Washer, 5/16", plain, stl.....	
17	Junction Box Assembly (For Details see Pages 3-14 and 3-15).....	3561-71D
18	3" Diameter Plastic Reflector, with Mounting Screws.....	38B
19	Machine Bolt, 3/8"-16 x 2 1/4" lg., hex. hd., stl.....	
20	Tie-Rod Clip Assembly.....	3562-70A
21	Tie-Rod and Nut Assembly 41 1/2" lg., right hand thread.....	3562-63E
22	Tie-Rod and Nut Assembly 48" lg., left hand thread.....	3562-63F
23	Turnbuckle.....	3562-67
24	Turnbuckle.....	3562-68
25	Cap Screw, 1/4"-20 x 1 1/4" lg., hex. hd., stl.....	
26	Aluminum Cable Clip for one 3-Conductor Cable.....	
27	Nylon Cable Clip for one 3-Conductor Cable.....	1953-7A
28	2-Conductor Cable, In Bulk.....	
29	3-Conductor Cable, In Bulk.....	
30	Machine Bolt, 5/16"-18 x 1 3/4" lg., hex. hd., with sq. nut.....	
31	Machine Bolt, 5/16"-18 x 2 1/2" lg., hex. hd., with sq. nut.....	
PARTS NOT ILLUSTRATED		
32	Wood Screws, No. 8 x 3/4" rd. hd., Brass, for Cable Clips.....	
33	Terminal Block and Mounting Screws (For Details see Pages 3-14 and 3-15).....	3561-196
34	1/2" Cable Grip, for one 3-Conductor Cable.....	DB-990
35	Pipe Reducer, 3/4" to 1/2", for Ref. 34.....	

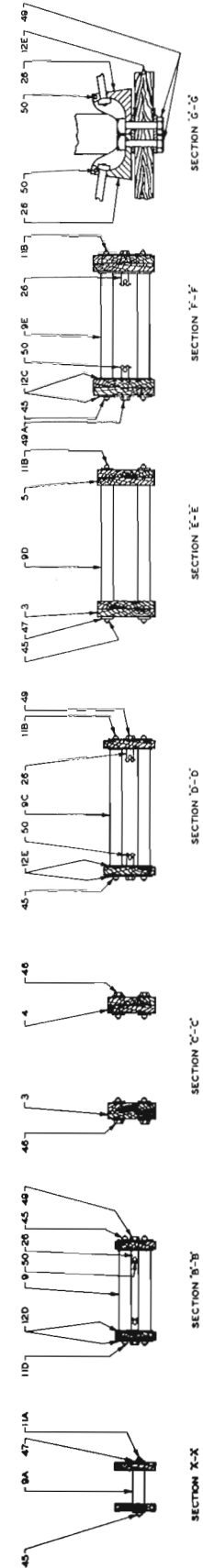


Roadway Arms

31' TO 38' LONG, AS SPECIFIED



Ref. S9





Roadway Arms

31' TO 38' LONG, AS SPECIFIED

Each arm in this range is constructed to the length specified.

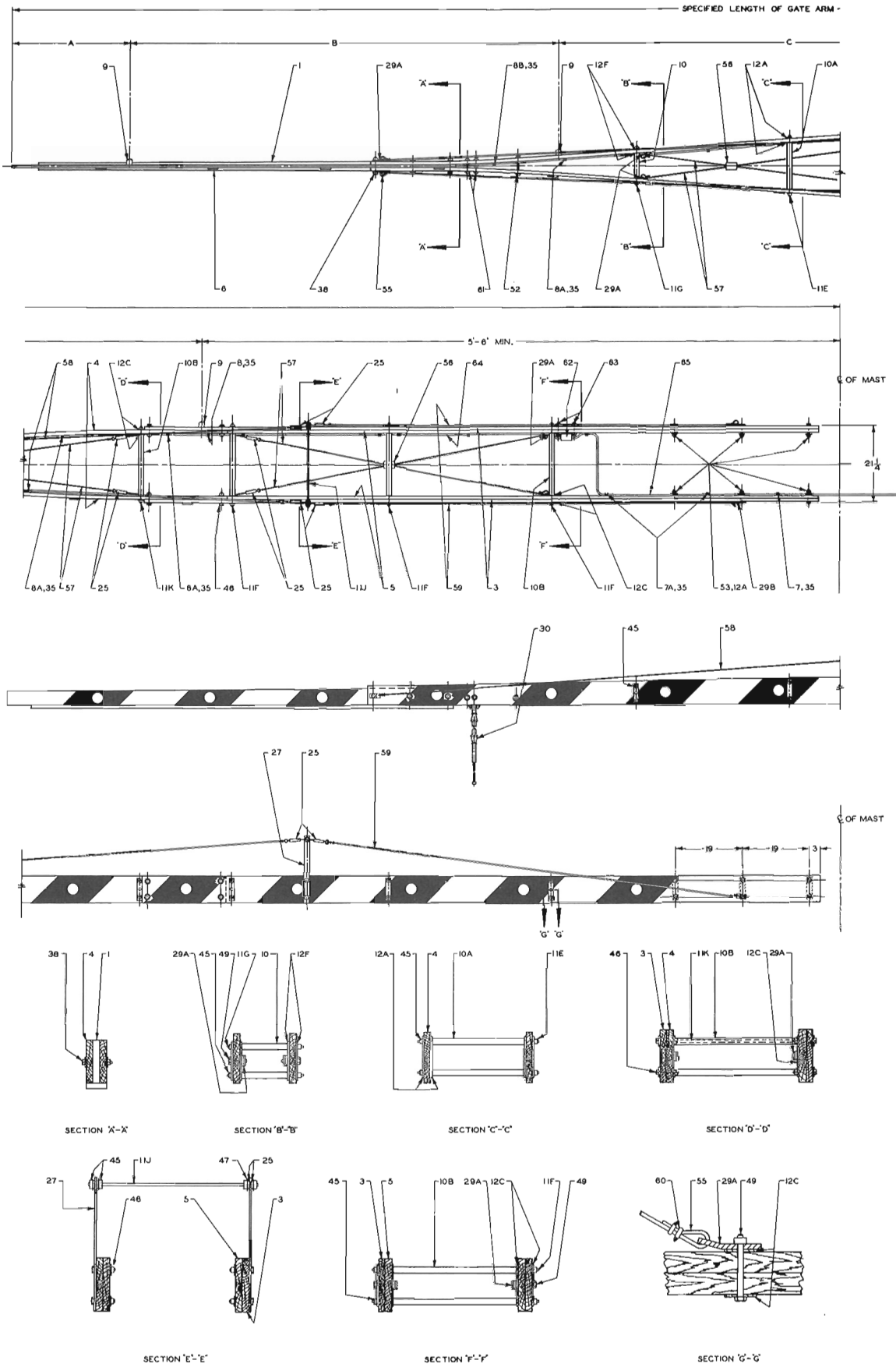
Ref. No.	Description	Piece No.
S9	Assembly of Roadway Arm, complete with wiring and reflectors less gate lights. (Specify Length of Arm and Dimensions "A," "B" and "C").....	3565-34ML
S10	Same as Ref. A, less wiring and reflectors (Specify Length of Arm).....	3565-60
S11	Wiring Harness Only (Includes all material for wiring roadway arm for three gate lights.) (Specify Length of Arm and Dimensions "A," "B" and "C")	3565-215MB
REPLACEMENT PARTS		
1	Tongue	See Table
3	Base Board (Specify Track or Field side).....	See Table
4	Side Board (Specify Track or Field side).....	See Table
5	Re-enforcing Board	3562-53-8
6	3" Dia. Plastic Reflector.....	38B
7	Nylon Cable Clip, for one 3-Conductor Cable.....	1953-7A
7A	Aluminum Cable Clip, for one 3-Conductor Cable.....	
8	Aluminum Cable Clip, for three 2-Conductor Cables.....	
8A	Same as Ref. 8, but for two 2-Conductor Cables.....	
8B	Same as Ref. 8, but for one 2-Conductor Cable.....	
9	Spacer Block, 10 ¹ / ₈ " lg.....	3562-75
9A	Spacer Block, 4" lg.....	3562-76
9C	Spacer Block, 14 ⁷ / ₈ " lg.....	3562-87
9D	Spacer Block, 13" lg.....	3562-74XR
9E	Spacer Block, 12 ³ / ₄ " lg.....	3562-74R
11A	Through Stud, 6 ¹ / ₂ " lg.....	3562-66D
11B	Through Stud, 16 ⁷ / ₈ " lg.....	3562-66
11D	Through Stud, 12 ³ / ₄ " lg.....	3562-66E
12A	Washer Plate	3562-71
12C	Washer Plate	3562-71A
12D	Washer Plate	3562-82
12E	Washer Plate	3562-72B
22	Tie-Rod and Nut Assembly, 41 ¹ / ₂ " lg., right hand thread.....	3562-63E
22A	Tie-Rod and Nut Assembly, 48" lg., left hand thread.....	3562-63F
24	Turnbuckle	3562-67
24A	Turnbuckle	3562-68
26	Tie-Rod Clip	3562-70A
27	Assembly of Terminal Block (For Details see Pages 3-14 and 3-15).....	3561-196
30	Buffer Leg (For Details see Page 3-29).....	3562-316A
35	No. 8 x ³ / ₄ " rd. hd. wood screw, brass.....	
38	Machine Bolt, ³ / ₈ "-16 x 3" lg., hex. hd., sq. nut and 2 plain washers.....	
45	Sq. Nut, ³ / ₈ "-16, stl.....	
46	Machine Bolt, ³ / ₈ "-16 x 2 ¹ / ₄ " lg., hex. hd., stl., sq. nut and 2 plain washers.....	
47	Washer, 7/16" I.D. x 1 ¹ / ₂ " O.D., plain, stl.....	
48	Cap Screw, ¹ / ₄ "-20 x 1 ¹ / ₄ " lg., hex. hd., stl.....	
49	Machine Bolt, hex. hd., 5/16"-18 x 1 ³ / ₄ " lg., and sq. nut.....	
49A	Machine Bolt, hex. hd., 5/16"-18 x 2 ¹ / ₂ " lg., and sq. nut.....	
50	Cotter Pin, ¹ / ₈ " x 1 ¹ / ₂ " lg., stl.....	
52	Through Stud, 5 ¹ / ₈ " lg.....	3562-66AK
53	Machine Bolt, ¹ / ₂ "-13 x 2 ³ / ₄ " lg., hex. hd., stl., hex. nut and lock washer.....	
61	Rivet, rd. hd., stl., ³ / ₈ " x 3 ¹ / ₂ ", complete with cotter pin.....	3362-133A
62	Junction Box Assembly (For Details see Pages 3-14 and 3-15).....	3561-71D
63	Machine Bolt, 5/16"-18 x 1 ³ / ₄ " lg., hex. hd., hex. nut and 2 plain washers.....	
64	2-Conductor Cable, In Bulk.....	
65	3-Conductor Cable, In Bulk.....	
PARTS NOT ILLUSTRATED		
70	¹ / ₂ " Cable Grip, for 3-Conductor Cable.....	DB990
71	Pipe Reducer, ³ / ₄ " to ¹ / ₂ ", for Ref. 70.....	

Table

Specified Length of Gate Arm	Reference 1 Tongue Piece No.	Reference 3 Base Board Piece No.	Reference 4 Side Board Piece No.
31	3562-52A	3562-16	3562-54-12A
32	3562-52B	3562-16	3562-54-12A
33	3562-52C	3562-16	3562-54-12A
34	3562-52D	3562-16	3562-54-12A
35	3562-52A	3562-16A	3562-54-16
36	3562-52B	3562-16A	3562-54-16
37	3562-52C	3562-16A	3562-54-16
38	3562-52D	3562-16A	3562-54-16



Roadway Arms 39' TO 44' LONG





Roadway Arms

39' TO 44' LONG

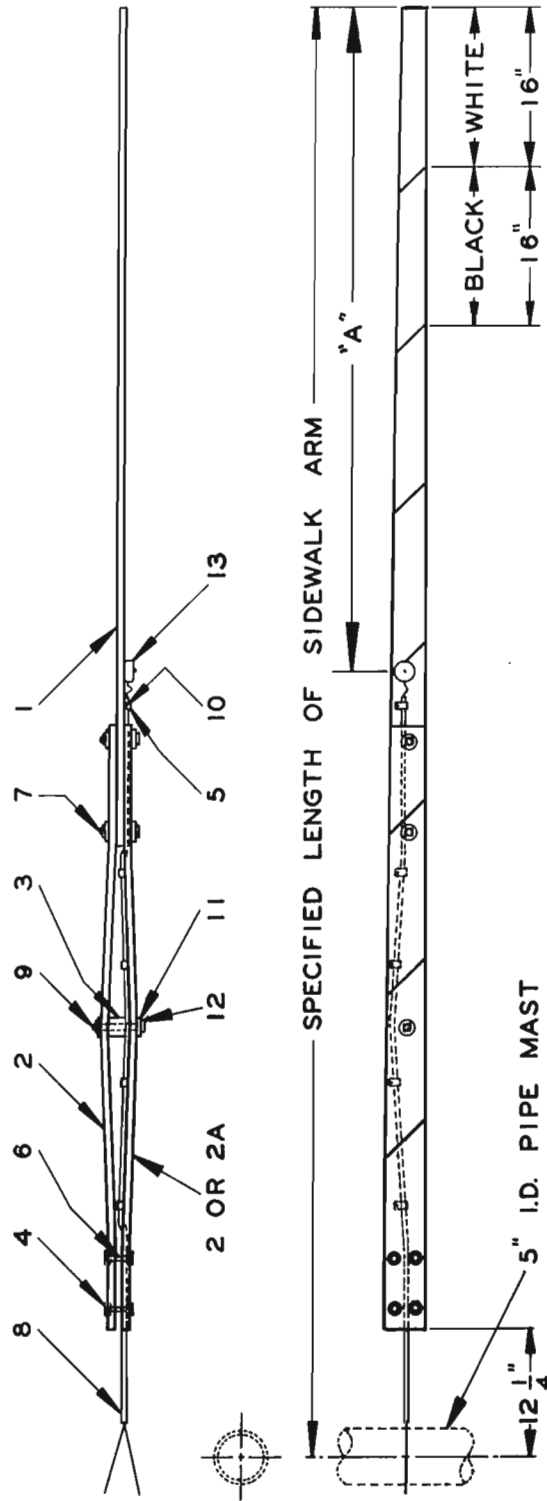
Ref. No.	Description	Piece No.
S12	Assembly of Roadway Arm complete with wiring and reflectors, less gate lights. (Specify Length of Arm and Dimensions "A," "B" and "C").....	3565-34ML
S13	Same as Ref. S12, less wiring and reflectors. (Specify Length of Arm).....	3565-60
S14	Wiring Harness Only. (Includes all material for wiring roadway arm for three gate lights.) (Specify Length of Arm and Dimensions "A," "B" and "C")	3565-215MB
REPLACEMENT PARTS		
1	Tongue, for 39' arm.....	3562-52J
1A	Tongue, for 40' arm.....	3562-52K
1B	Tongue, for 41' arm.....	3562-52L
1C	Tongue, for 42' arm.....	3562-52M
1D	Tongue, for 43' arm.....	3562-52N
1E	Tongue, for 44' arm.....	3562-52P
3	Base Board, (Specify Track or Field side).....	3562-54-16F
4	Side Board, (Specify Track or Field side).....	3562-54-16A
5	Reinforcing Board.....	3562-54-14E
6	3" Diameter Plastic Reflector.....	38B
7	Nylon Cable Clip, for one 3-Conductor Cable.....	1953-7A
7A	Aluminum Cable Clip, for one 3-Conductor Cable.....	
8	Aluminum Cable Clip, for three 2-Conductor Cables.....	
8A	Same as Ref. 8, but for two 2-Conductor Cables.....	
8B	Same as Ref. 8, but for one 2-Conductor Cable.....	
9	Assembly of Terminal Block (For Details see Pages 3-14 and 3-15).....	3561-196
10	Spacer Tubing, 7" long.....	3562-99B
10A	Spacer Tubing, 13 ¹ / ₄ " long.....	3562-99A
10B	Spacer Tubing, 17 ³ / ₄ " long.....	3562-99
11E	Through Stud, 16" long.....	3562-66X
11F	Through Stud, 21 ³ / ₄ " long.....	3562-66Y
11G	Through Stud, 10 ¹ / ₈ " long.....	3562-66F
11J	Through Stud, 24" long.....	3562-272B
11K	Through Stud, 20 ¹ / ₄ " long.....	3562-66N
12A	Washer Plate.....	3562-71
12C	Washer Plate.....	3562-71A
12F	Washer Plate.....	3562-273
25	Turnbuckle.....	3562-184
27	Upright Support.....	3562-271
29A	Guy Wire Clip.....	3562-283
29B	Guy Wire Clip.....	3562-282A
30	Buffer Leg (For Details see Page 3-29).....	3562-316A
35	No. 8 x ³ / ₄ " rd. hd. wood screws, brass.....	
38	Machine Bolt, ³ / ₈ "-16 x 3" lg., hex. hd., stl., sq. nut and two plain washers.....	
45	Sq. Nut, ³ / ₈ "-16, stl.....	
46	Machine Bolt, ³ / ₈ "-16 x 2 ¹ / ₄ " lg., hex. hd., stl., sq. nut and 2 plain washers.....	
47	Washer, 7/16" I.D. x 1 ¹ / ₂ " O.D., Plain, stl.....	
49	Machine Bolt, hex. hd., ¹ / ₂ "-13 x 1 ³ / ₄ " long and sq. nut.....	
52	Through Stud, 5 ¹ / ₈ " long.....	3562-66AK
53	Machine Bolt, hex. hd., ¹ / ₂ "-13 x 2 ³ / ₄ " lg. hex. nut and lock washer.....	
55	Thimble.....	90591
56	Cable Separator.....	3562-282
57	Guy Wire Subassembly, 7'-6" lg., (Includes Ref. 25, 55 and 60).....	3562-284B
58	Guy Wire Subassembly, 18'-0" lg., (Includes Ref. 25, 55 and 60).....	3562-284A
59	Guy Wire Subassembly, 10'-0" lg., (Includes Ref. 25, 55 and 60).....	3562-284
60	Crosby Clip.....	90592
61	Rivet, rd. hd., stl., ³ / ₈ " x 3 ¹ / ₂ ", complete with cotter pin.....	3562-133A
62	Junction Box Assembly. (For Details see Pages 3-14 and 3-15).....	3561-71D
63	Machine Bolt, 5/16"-18 x 1 ³ / ₄ " lg., hex. hd., hex. nut and 2 plain washers.....	
64	2-Conductor Cable, In Bulk.....	
65	3-Conductor Cable, In Bulk.....	
PARTS NOT ILLUSTRATED		
70	¹ / ₂ " Cable Grip, for 3-Conductor Cable.....	DB990
71	Pipe Reducer, ³ / ₄ " to ¹ / ₂ ".....	



Sidewalk Arms 6' to 18' Long

Type 3565-34SW Type 3565-60SW

For Model 10 Signals



Ref. U



Sidewalk Arms 6' to 18' Long Type 3565-34SW Type 3565-60SW For Model 10 Signals

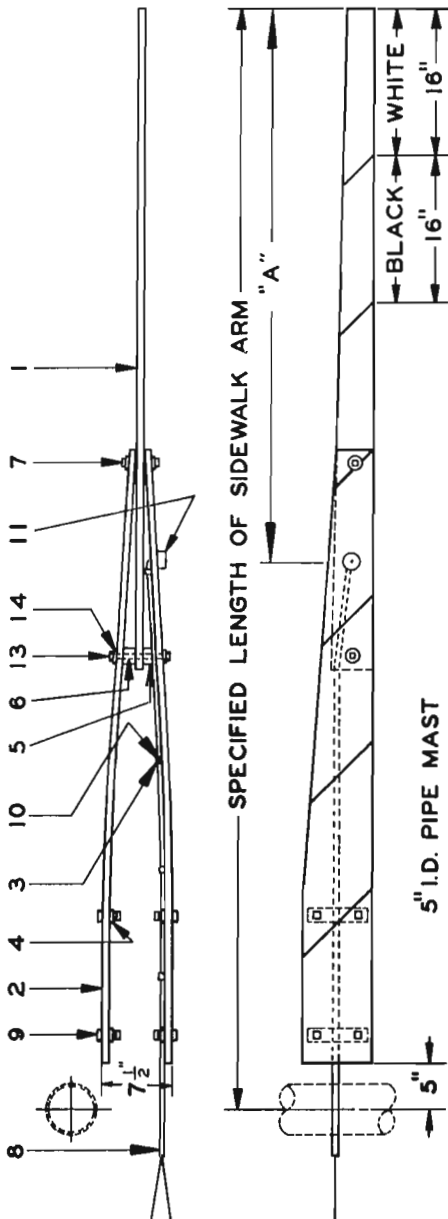
Ref. No.	Description	Piece No.
U	Assembly of Sidewalk Arm Complete with Wiring (Less Light) (Specify Length of Sidewalk Arm and Dimension "A").....	3565-34SW
U1	Assembly of Sidewalk Arm Complete (Less Wiring and Light) (Specify Length of Sidewalk Arm).....	3565-60SW
REPLACEMENT PARTS		
1	Tongue	See Table
2	Base Board	See Table
2A	Base Board (For 3565-34SW only).....	See Table
3	Spacer Block	3565-150
4	5/16" Plain Washer	
5	Clip	3562-95
6	Cap Screw, 5/16"-24 S.A.E. x 1 1/2" Lg. hex. hd. stl.....	
7	Mach. Bolt, 3/8"-16 x 3 1/4" Lg. sq. hd. stl., hex. Nut and two Plain Washers.....	
8	No. 18-2 Conductor Neoprene Covered Type "S" Cord. (Specify Length).....	
9	Through Stud	3562-66DD
10	Wood Screw No. 10 x 3/4" Lg. rd. hd. brass.....	
11	Washer 3/8" Plain, Stl.....	
12	Hex. Nut 3/8"-16 Stl.....	
13	Assembly of Terminal Block (For Details see Pages 3-14 and 3-15).....	3561-196

Table

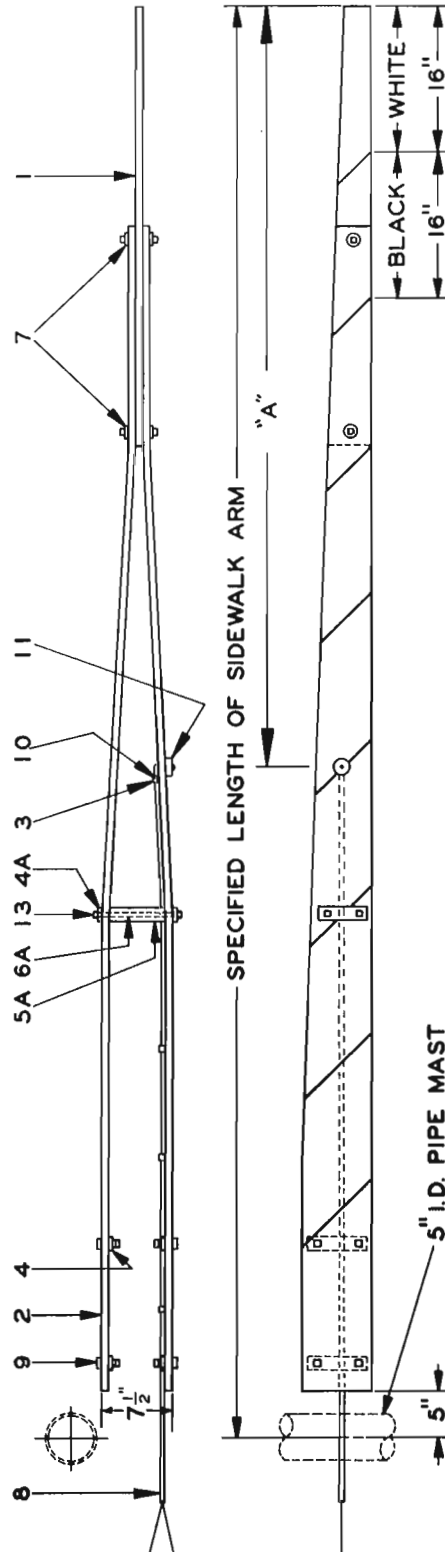
Specified Length of Gate Arm	Ref. No. 1	Ref. No. 2	Ref. No. 2A	Suggested Values For Dimension "A"
6'-0"	3565-142-1	3565-141	3565-141A	2'-2"
6'-6"	3565-142-1A	3565-141	3565-141A	2'-5"
7'-0"	3565-142-2	3565-141	3565-141A	2'-8"
7'-6"	3565-142-2A	3565-141	3565-141A	2'-11"
8'-0"	3565-142-3	3565-141	3565-141A	3'-2"
8'-6"	3565-142-3A	3565-141	3565-141A	3'-5"
9'-0"	3565-142-4	3565-141	3565-141A	3'-8"
9'-6"	3565-142-4A	3565-141	3565-141A	3'-11"
10'-0"	3565-142-5	3565-141	3565-141A	4'-2"
10'-6"	3565-142-5A	3565-141	3565-141A	4'-5"
11'-0"	3565-142-6	3565-141	3565-141A	4'-8"
11'-6"	3565-142-6A	3565-141	3565-141A	4'-11"
12'-0"	3565-142-7	3565-141	3565-141A	5'-2"
12'-6"	3565-142-4A	3565-155	3565-155A	5'-5"
13'-0"	3565-142-5	3565-155	3565-155A	5'-8"
13'-6"	3565-142-5A	3565-155	3565-155A	5'-11"
14'-0"	3565-142-6	3565-155	3565-155A	6'-2"
14'-6"	3565-142-6A	3565-155	3565-155A	6'-5"
15'-0"	3565-142-7	3565-155	3565-155A	6'-8"
15'-6"	3565-142-4A	3565-156	3565-156A	6'-11"
16'-0"	3565-142-5	3565-156	3565-156A	7'-2"
16'-6"	3565-142-5A	3565-156	3565-156A	7'-5"
17'-0"	3565-142-6	3565-156	3565-156A	7'-8"
17'-6"	3565-142-6A	3565-156	3565-156A	7'-11"
18'-0"	3565-142-7	3565-156	3565-156A	8'-2"



Sidewalk Arms 6' to 18' Long Type 3565-34SWX Type 3565-60SWX



Arm lengths 6' to 10'-6"
Ref. U2



Arm lengths 11' to 18'
Ref. U3



Sidewalk Arms 6' to 18' Long

Type 3565-34SWX Type 3565-60SWX

Ref. No.	Description	Piece No.
U2	Assembly of Sidewalk Arm Complete with Wiring (Less Light) (Specify Length of Sidewalk Arm and Dimension "A").....	3565-34SWX
U3	Assembly of Sidewalk Arm Complete (Less Wiring and Light) (Specify Length of Sidewalk Arm).....	3565-60SWX
REPLACEMENT PARTS		
1	Tongue	See Table
2	Base Board	See Table
3	Clip	3562-95
4	Washer Plate	3562-71
4A	Washer Plate	3562-72
5	Spacer Block	3562-98
5A	Spacer Block	3562-59
6	Through Stud	3562-66D
6A	Through Stud	3562-66H
7	Mach. Bolt, 3/8" 16 x 3" Lg. sq. hd. stl., hex. Nut and two Plain Washers.....	
8	No. 18-2 Conductor Neoprene Covered Type "S" Cord (Specify Length).....	
9	Mach. Bolt, 1/2"-13 x 2" Lg. hex. hd. stl., hex. Nut and Lock Washer.....	
10	Wood Screw No. 10 x 3/4" Lg. brass.....	
11	Assembly of Terminal Block Complete (For Details see Pages 3-14 and 3-15).....	3561-196

Table

Specified Length of Gate Arm	Ref. No. 1	Ref. No. 2	Suggested Values For Dimension "A"
6'-0"	3562-57-2	3562-56-6	2'-2"
6'-6"	3562-57-2A	3562-56-6	2'-5"
7'-0"	3562-57-3	3562-56-6	2'-8"
7'-6"	3562-57-3A	3562-56-6	2'-11"
8'-0"	3562-57-4	3562-56-6	3'-2"
8'-6"	3562-57-4A	3562-56-6	3'-5"
9'-0"	3562-57-5	3562-56-6	3'-8"
9'-6"	3562-57-5A	3562-56-6	3'-11"
10'-0"	3562-57-6	3562-56-6	4'-2"
10'-6"	3562-57-6A	3562-56-6	4'-5"
11'-0"	3562-57-2	3562-58	4'-8"
11'-6"	3562-57-2A	3562-58	4'-11"
12'-0"	3562-57-3	3562-58	5'-2"
12'-6"	3562-57-3A	3562-58	5'-5"
13'-0"	3562-57-4	3562-58	5'-8"
13'-6"	3562-57-4A	3562-58	5'-11"
14'-0"	3562-57-5	3562-58	6'-2"
14'-6"	3562-57-5A	3562-58	6'-5"
15'-0"	3562-57-6	3562-58	6'-8"
15'-6"	3562-57-6A	3562-58	6'-11"
16'-0"	3562-57-7	3562-58	7'-2"
16'-6"	3562-57-7A	3562-58	7'-5"
17'-0"	3562-57-8	3562-58	7'-8"
17'-6"	3562-57-8A	3562-58	7'-11"
18'-0"	3562-57-9	3562-58	8'-2"



Hinged-Tongue Roadway Gate Arms

ENGINEERED AND CUSTOM BUILT TO MEET SPECIFIC REQUIREMENTS

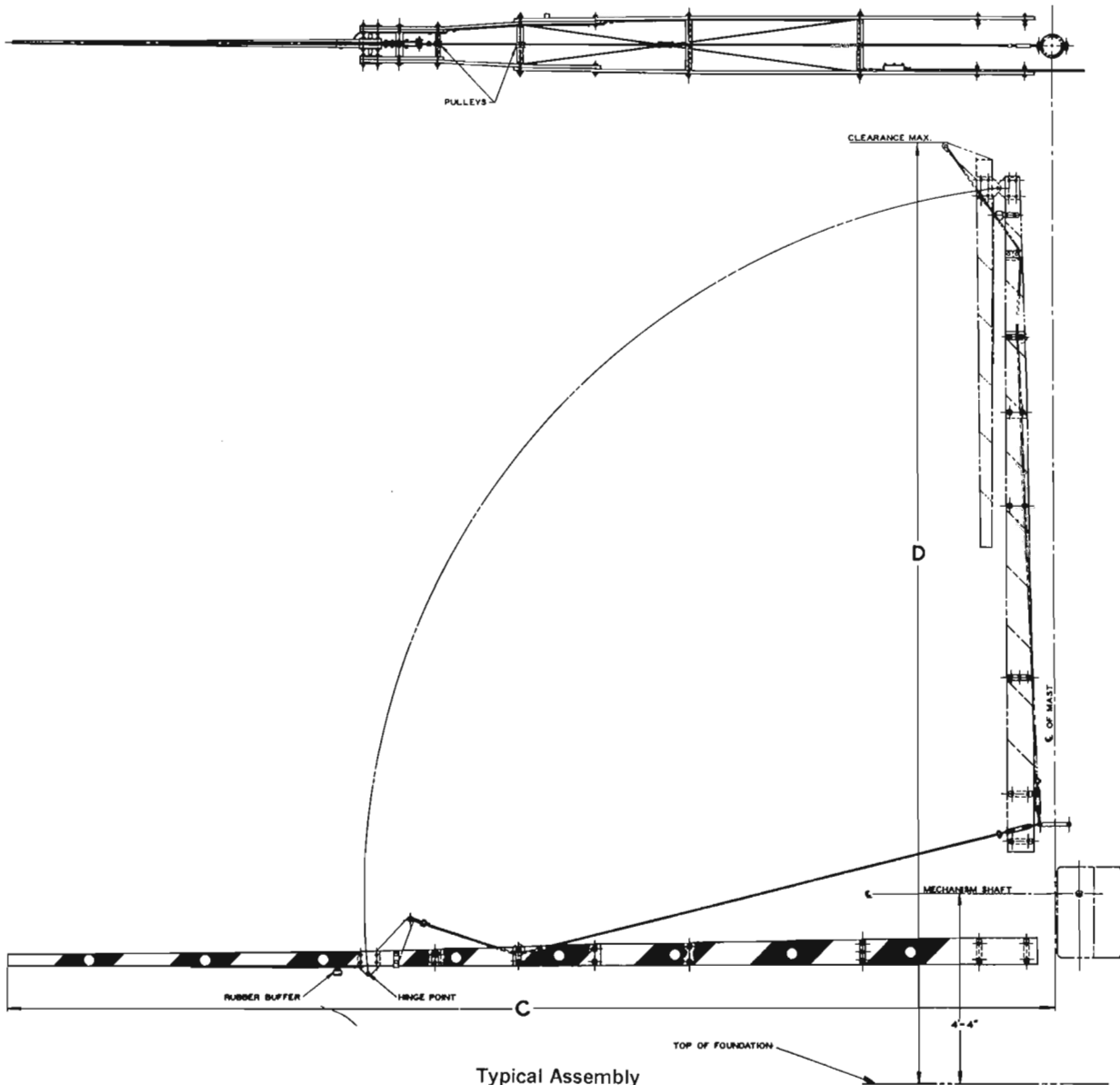
Where overhead wires or structures would obstruct the gate arm in the raised, or clear, position it is often necessary to provide a special gate arm with a hinged tongue. Illustrated is a typical arm of this type.

Arms of 14' to 44', extended length, can usually be made to meet requirements if the clearance height does not necessitate a hinged tongue exceeding one-third of the total arm length.

Given the specific requirements we will submit a drawing for consideration depicting a recommended design. To enable us to perfect a

suitable design the dimensions "C" and "D" must, of course, be known. If the obstruction is not directly above the mast, but is out over the roadway, then the distance from the mast as well as the height of the obstruction above the top of the signal foundation must also be known.

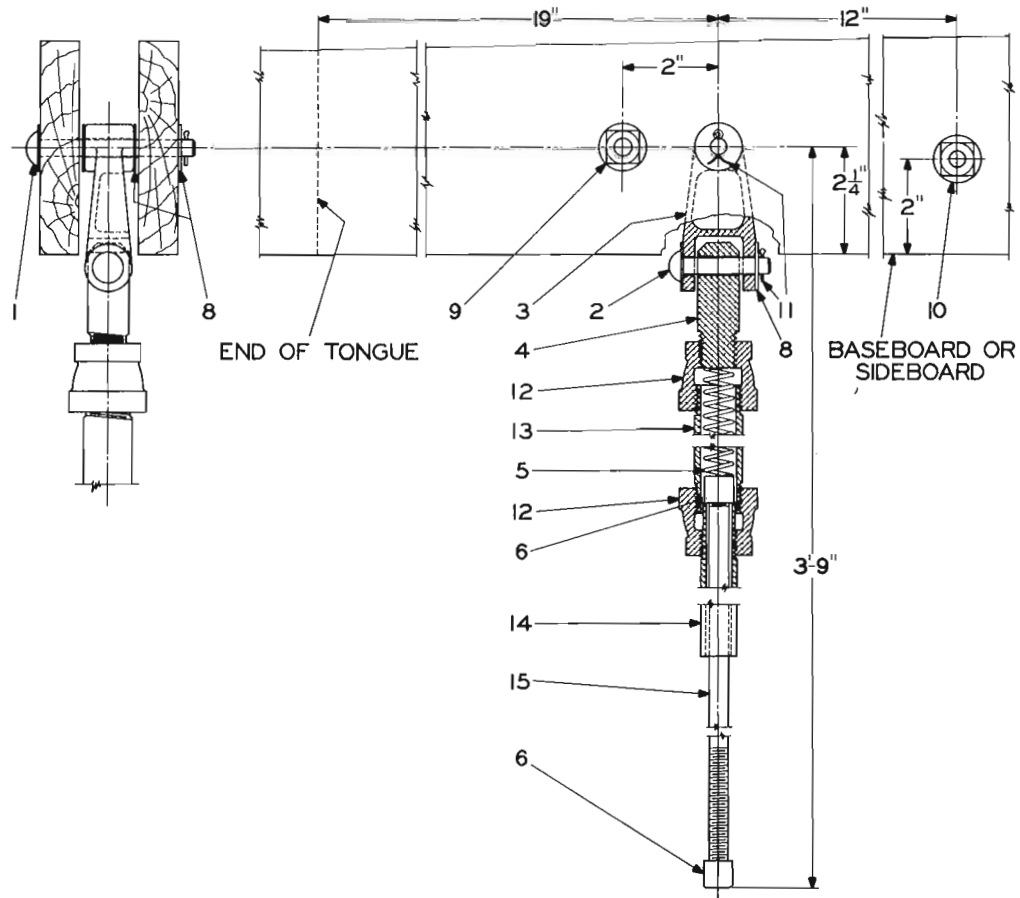
No general replacement parts list for hinged-tongue gate arms can be compiled for cataloging. However, drawings are furnished with each arm supplied, from which replacement parts can be ordered, if required.



Typical Assembly



Buffer Leg For Use With Roadway Arms 31' to 44' Long

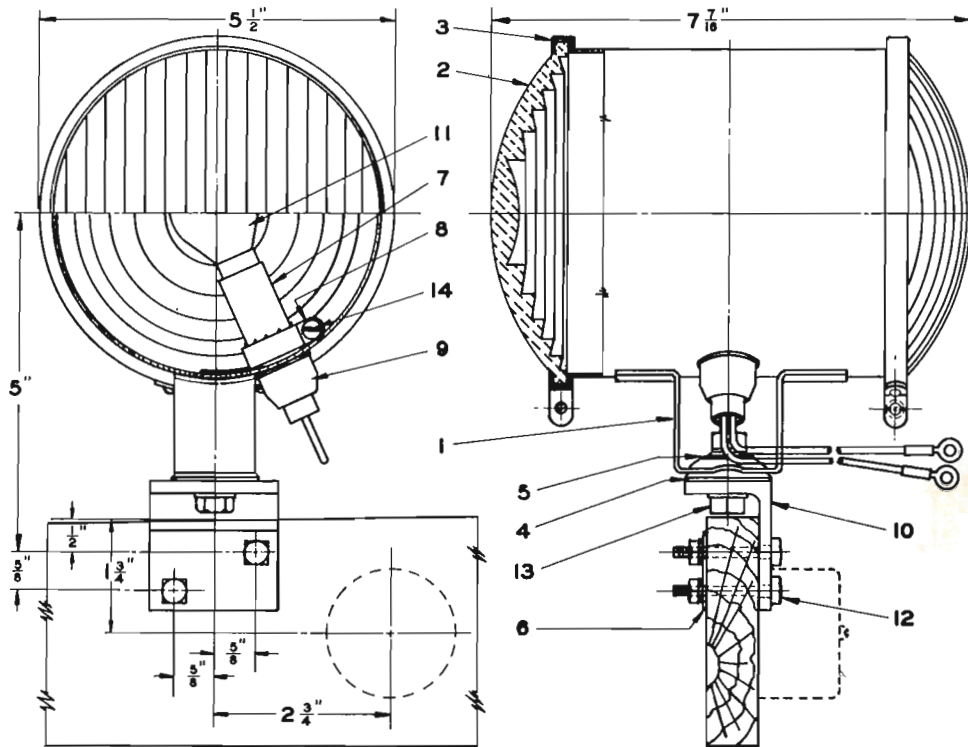


Ref. No.	Description	Piece No.
X	Buffer Leg Assembly Complete.....	3562-316A
X1	Same as Ref. X, Less Ref. No. 9 & 10.....	3562-316
REPLACEMENT PARTS		
1	Rivet, 3/8" x 3 1/4" Lg. stl.....	3562-133A
2	Rivet, 3/8" x 1 7/8" Lg. stl.....	3562-133
3	Yoke	3562-117B
4	Plug	3562-317
5	Compression Spring	3562-318
6	Pipe Cap, stl.....	3562-319
8	Plain Washer, 3/8" I.D. x 1" O.D., stl.....	
9	Mach. Bolt, 3/8"-16 x 3 1/2" Lg., sq. hd., sq. nut and plain Washer, stl.....	
10	Through Stud, 5 1/8" Lg., Aluminum.....	3562-66AK
11	Cotter Pin, 1/16" x 3/4" Lg., stl.....	
12	Reducer, 3/4" x 1/2", Aluminum.....	
13	Pipe Nipple, 3/4" x 12" Lg. T.B.E. Aluminum.....	
14	Pipe, 1/2" x 4 1/2" Lg. T.O.E. Aluminum.....	3562-326
15	Pipe, 1/4" x 2'-5" Lg. Aluminum.....	3562-320



Gate Light—Type 1573-50

Two-Way Indication—5³/₈" Diameter Lenses



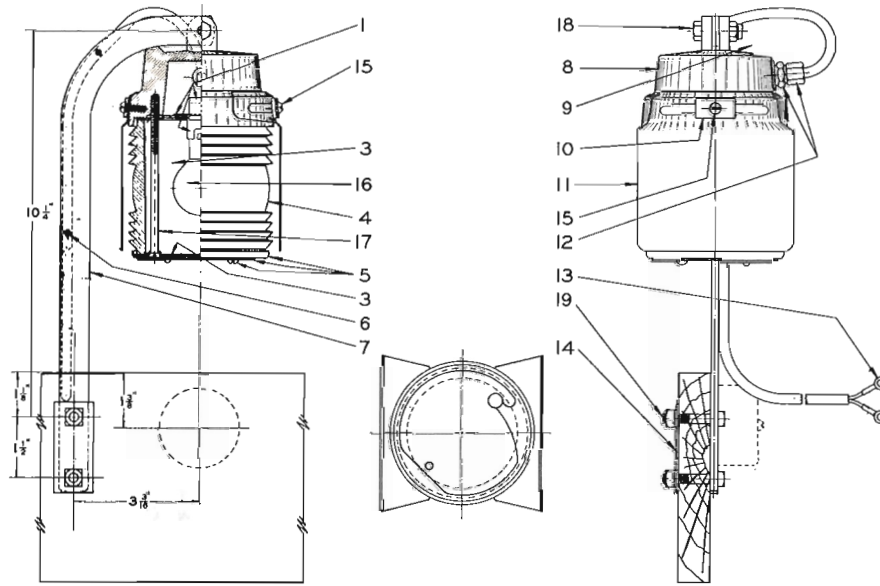
Ref. A

Type 1573-50 Gate Light is available with 30° Spreadlite or Optical Type Lenses. Horizontal and Vertical Alignment is adjustable. Aluminum construction limits weight at 2¹/₄ lbs. S.C.B.B. lamp receptacle provided; lamp bulb not furnished unless specified.

Ref. No.	Description	Piece No.
T	Type 1573-50 Gate Light Complete, with 30° Spreadlite Lens (Red), Without Electric Lamp unless specified.....	1573-50
REPLACEMENT PARTS		
1	Gate Light Body Assembly.....	1573-6
2	30° Spreadlite Lens, 5 ³ / ₈ " Diameter, Red.....	5330
3	Lens Ring	0500-106S-B
4	Adjusting Washer	1563-15
5	Washer, Steel	1563-16
6	Washer Plate	1563-5
7	Lamp Receptacle Assembly	6001-5
8	Clamp	1573-3
9	Insulator Bushing	1563-8
10	Mounting Bracket	1563-2A
11	Lamp, Incandescent, S.C.B.B., S-11 Bulb (Specify Voltage and Wattage).....	
12	Mach. Bolt, 1/4"-20 x 1 1/2" Lg. sq. hd. steel and sq. nut.....	
13	Cap Screw, 5/16"-18 x 1 1/4" Lg. hex. hd. steel.....	
14	Mach. Screw, No. 8-32 x 5/8" Lg. rd. hd. brass and hex. nut.....	



Gate Light—Type 1585 Fresnel Lens

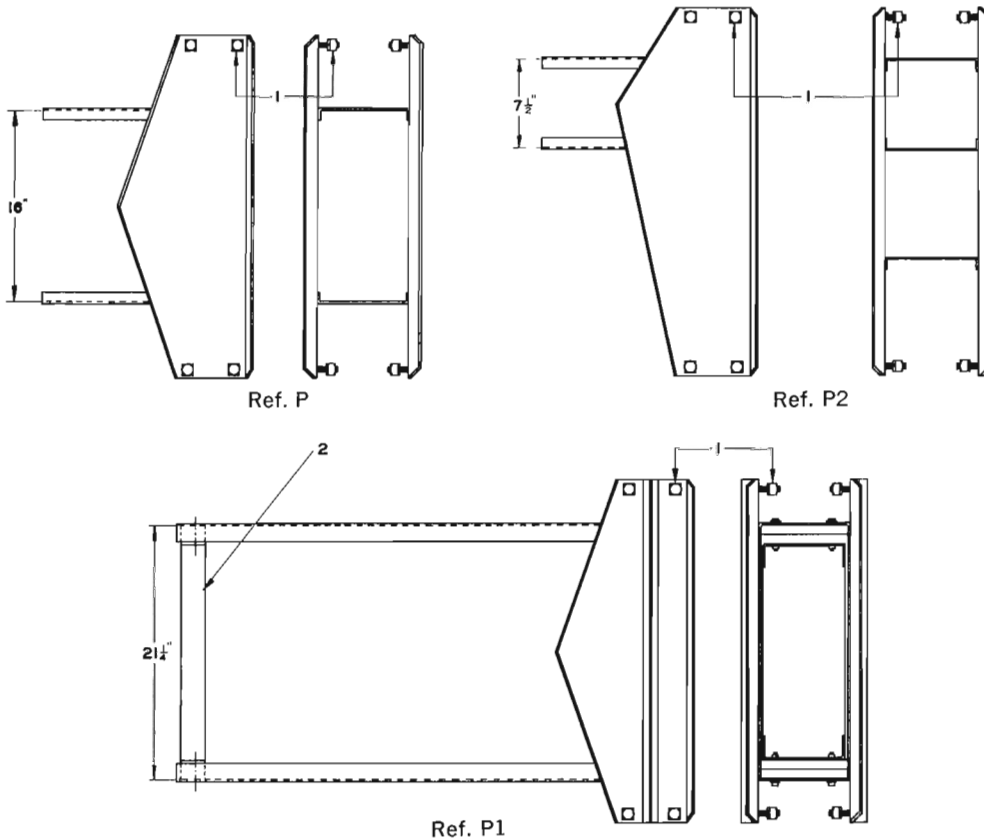


Type 1585 Gate Light is equipped with a 3 5/8" diameter, red, 360° Fresnel Lens, shielded to provide indication to cross traffic only. A constant vertical axis is provided by the suspension mounting bracket. Wt. 2 lbs.; S.C.B.B. lamp receptacle; lamp bulb not furnished unless specified.

Ref. No.	Description	Piece No.
T2	Type 1585 Gate Light Complete with Mounting Bracket and Shields.....	1585
T3	Same as Ref. T2, Less Shields.....	1585-40
T4	Subassembly of Gate Light, with Shields, Less Mounting Bracket.....	1585-18AX
T5	Same as Ref. T4, Less Mounting Bracket and Shields.....	1585-40AX
T6	Subassembly of Mounting Bracket (Includes Items 6, 7, 14 and 19).....	1585-15A
REPLACEMENT PARTS		
1	Lamp Receptacle, Cord, Bracket Assembly.....	1585-12B
3	Gasket.....	1575-10
4	Fresnel Lens, 360°, Red, Plastic.....	1575-11P
5	Cover and Retaining Ring Subassembly.....	1585-11
6	Wire Retainer.....	1573-9
7	Mounting Bracket.....	1585-9
8	Housing.....	1585-3
9	1/4"-20 Dualock Nut.....	90163
10	Shield Clamp.....	1585-7
11	Shield.....	1585-2
12	Compression Connector.....	1580-7
13	Terminal.....	31887
14	Washer Plate.....	1575-16
15	Mach. Screw, No. 10-24 x 1/2" Lg. rd. hd. brass.....	
16	Lamp, Incandescent, S.C.B.B., Type S-11 Bulb (Not furnished unless Specified).....	
17	Stove Bolt, 3/16" (10-24) x 4" Lg. fl. hd. stl.....	
18	Pivot Screw.....	1585-14
19	Mach. Bolt, 1/4"-20 x 1 1/2" Lg. sq. hd., sq. nut and Internal Lockwasher.....	

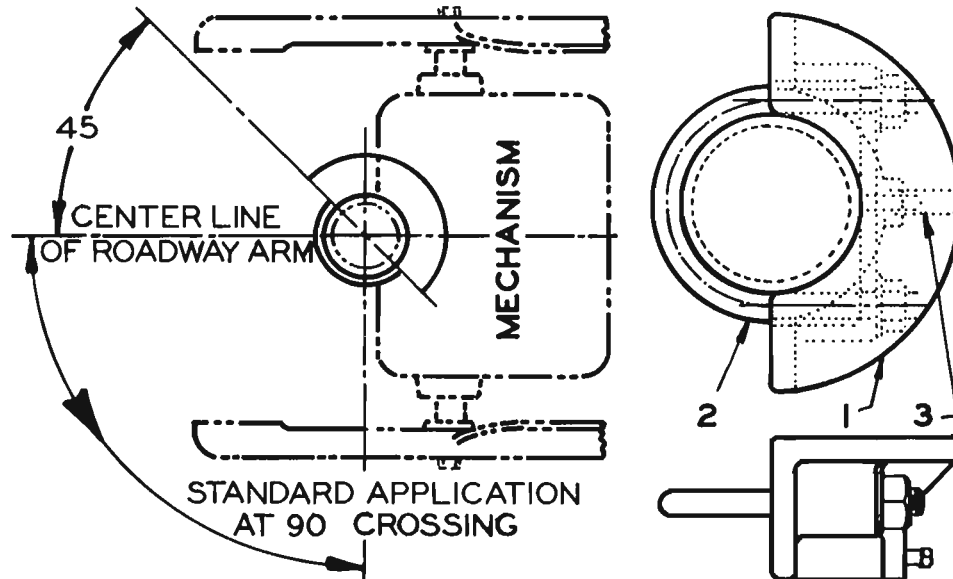


Gate Arm Support For Model 10 Signals Types 3565-105, 3565-105X, 3565-205



Ref. No.	Description	Piece No.
P	Gate Arm Support for use with Roadway Arms 14' to 38' Long Inclusive. (Includes Item 1).....	3565-105
P1	Same as Ref. P, but for use with Roadway Arms 39' to 44' Long Inclusive. (Includes Items 1, 2, and shipping blocks).....	3565-105X
P2	Same as Ref. P, but for use with Sidewalk Arms 18' Long or Less. (Includes Item 1)	3565-205
REPLACEMENT PARTS		
1	Mach. Bolt, 1/2"-13 x 1 3/4" Lg. hex. hd., sq. nut and Lockwasher.....	
2	Inner Brace	3565-113

Mechanism Support For Model 10 Signals Type 3565-380A



Ref. L

Because, on occasion, only one man is available to service a gate mechanism or damaged gate arm, we offer our No. 3565-380A Mechanism Support illustrated above. One such support complete is furnished with each mechanism.

The device may be secured permanently to the mast, or carried as part of a maintainer's servicing equipment.

Procedure is as follows—

Attach support to mast and against the under side of the mechanism.

Loosen mechanism clamp bolts.
Remove $\frac{3}{8}$ " cap screws holding the conduit flange to the junction box base.

When traffic permits, open "Motor Up" and "Slot" circuits in Mechanism.

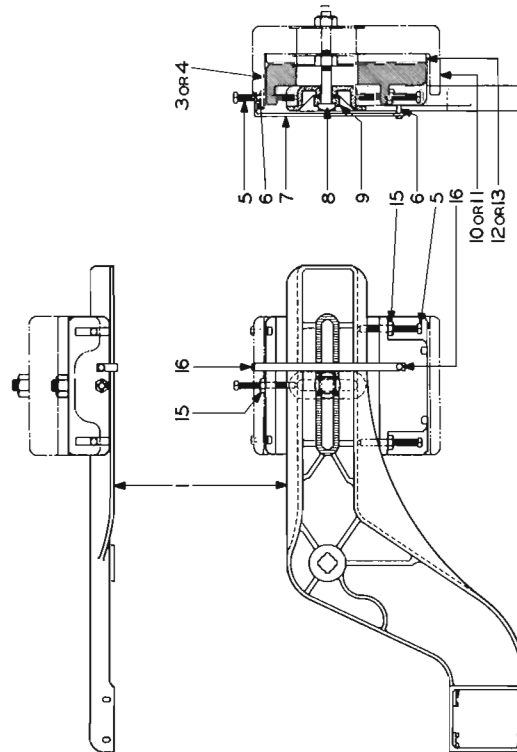
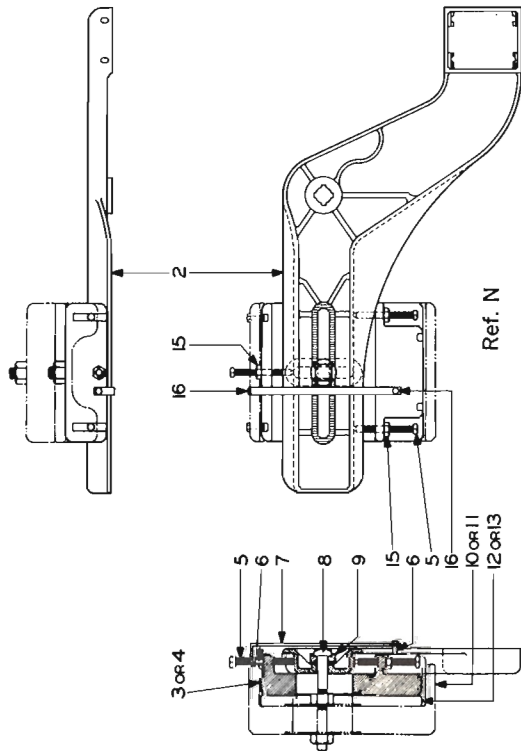
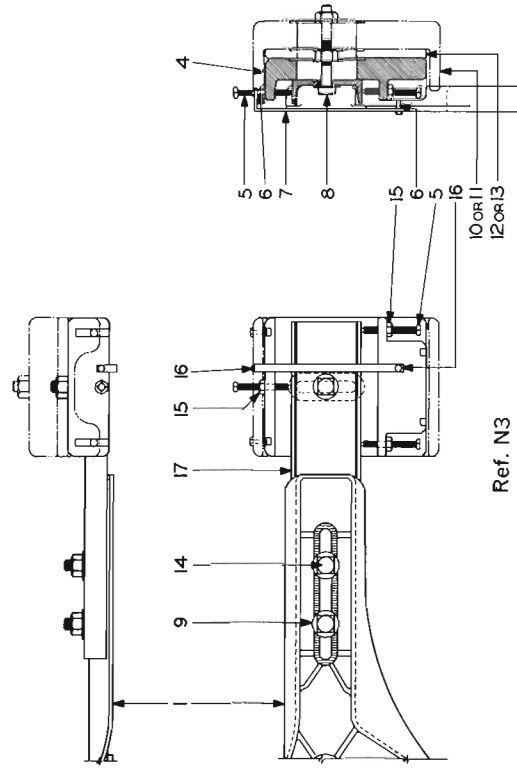
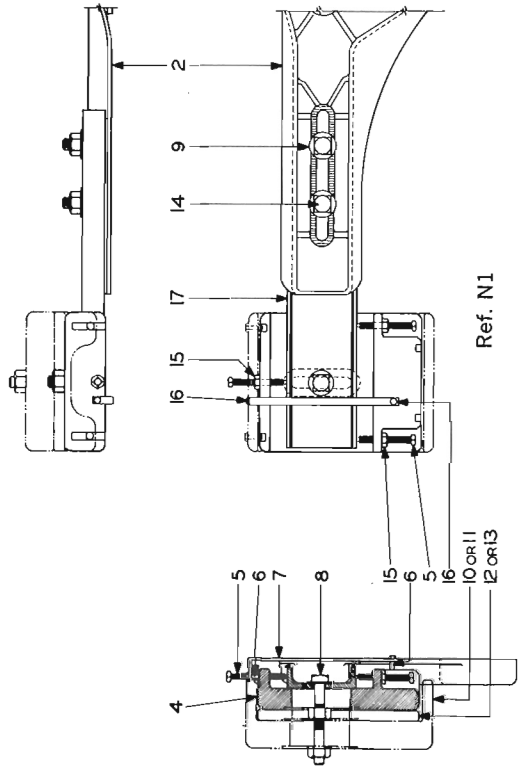
Swing mechanism and gate assembly away from tracks until arm is parallel to curb or highway edge.

After repair is completed, reverse procedure, being careful not to restore "Slot" and "Motor Up" wires until mechanism is restored to its normal position.

Ref. No.	Description	Piece No.
L	Mechanism Support Complete for 5" I.D. Pipe Mounting.....	3565-380A
REPLACEMENT PARTS		
1	Mechanism Support only.....	3565-380
2	"U" Bolt for 5" I.D. Pipe Mounting.....	0700-276
3	Set Screw, $\frac{1}{2}$ "-13 x $\frac{1}{4}$ " Lg. sq. hd. Cup Pt. Stl.....	



Gate and Counterweight Arm For Model 10 Signals

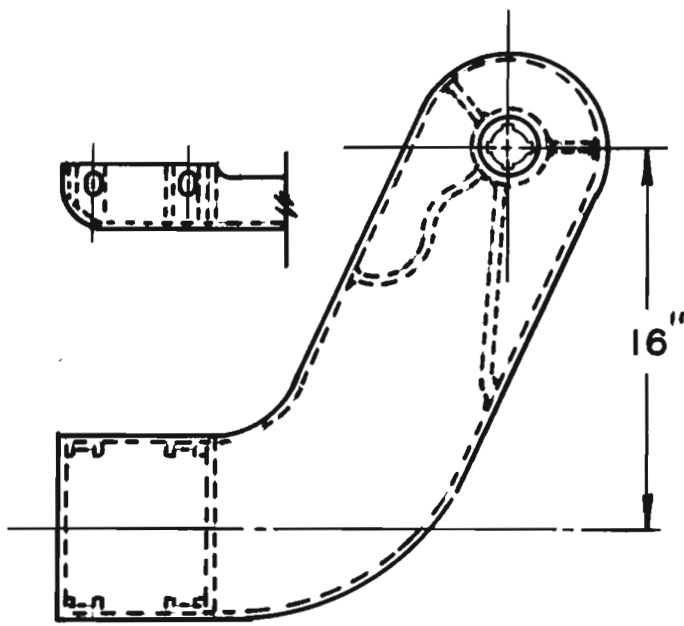




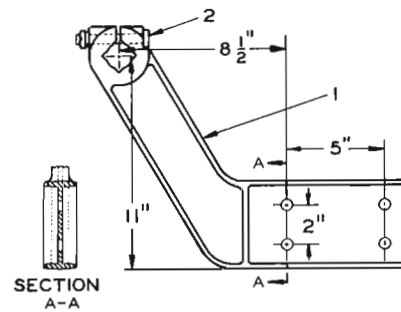
Gate and Counterweight Arm For Model 10 Signals

Ref. No.	Description	Piece No.
N	Gate and Counterweight Arm Complete for roadway arms 25' to 30' Lg., Inclusive for left side of mechanism. Specify length of arm.....	3565-102L
N1	Same as Ref. N, but for 31' to 44' Lg. Gate Arm.....	3565-102L
N2	Same as Ref. N, but for Right side and for 14' to 30' Lg. Gate arms inclusive.....	3565-103R
N3	Same as Ref. N2, but for 31' to 44' Lg. Gate Arm.....	3565-103R
N4	Gate and Counterweight arm complete for sidewalk arms 18' Lg. or less.....	3565-103RX
REPLACEMENT PARTS		
1	Right Hand Counterweight Arm only.....	3565-103
2	Left Hand Counterweight Arm only.....	3565-102
3	Adjustable Counterweight Complete—85 lbs.....	3562-236A
4	Adjustable Counterweight Complete—160 lbs.....	3562-226A
4A	Counterweight only—160 lbs.....	3562-226
5	Set Screw, $\frac{5}{8}$ "-11 x 6" Lg., sq. hd. Dog Point Stl.....	3562-211
6	Sleeve	3562-232
7	Retaining Strap	3562-233
8	Counterweight Mounting Bolt 6" Lg. with hex. nut and plain washer.....	3562-182-6
8A	Same as Ref. 8, but 7" Lg.....	3562-182-7
8B	Same as Ref. 8, but 8" Lg.....	3562-182-8
8C	Same as Ref. 8, but 9" Lg.....	3562-182-9
8D	Same as Ref. 8, but 10" Lg.....	3565-182-10
9	Clamp Washer	3565-104
10	Counterweight—100 lbs.	3562-229
11	Counterweight—200 lbs.	3562-230
12	Counterweight—25 lbs.	3562-228
13	Counterweight—50 lbs.	3562-227
14	Mach. Bolt, 1"-8 x 3 $\frac{1}{2}$ " Lg. sq. hd. stl. and 2 plain washers.....	
15	Hex. Nut $\frac{5}{8}$ "-11, steel.....	
16	Cap Screw, $\frac{3}{8}$ "-16 x 1 $\frac{3}{4}$ " Lg., hex. hd. stl.....	
17	Counterweight Extension Arm (For Ref. N1 and N3 only).....	3565-174

Gate Support Arm and Sidewalk Arm Bracket For Model 10 Signals



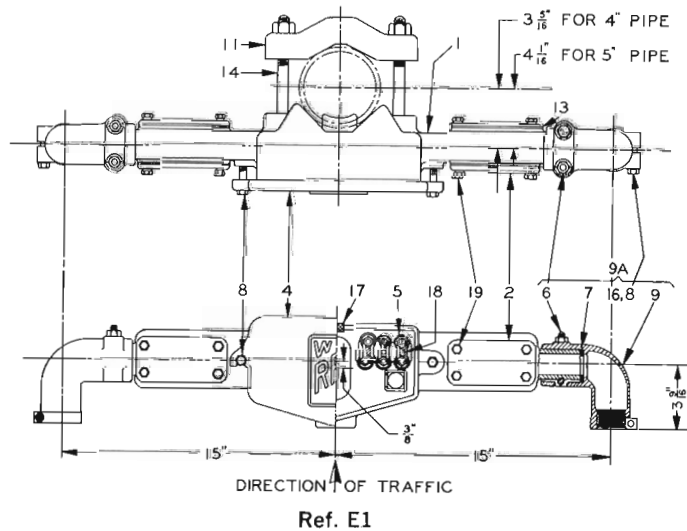
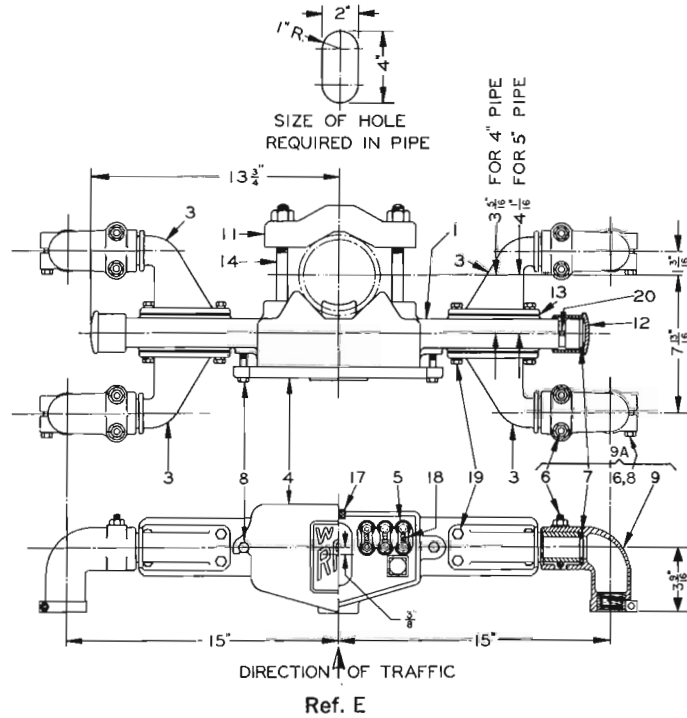
Ref. N5



Ref. V

Ref. No.	Description	Piece No.
N5	Gate Support Arm Complete, for use with Roadway Arm 14' to 24' Long	
V	Inclusive Sidewalk Arm Bracket Complete, for use with Sidewalk Arm 18' Long or Less....	3565-101 3565-111
REPLACEMENT PARTS		
1	Sidewalk Arm Bracket (Casting only).....	3565-111A
2	Mach. Bolt, 1/2"-13 x 3 1/2" Lg. sq. hd. stl., hex. nut and Lock Washer.....	

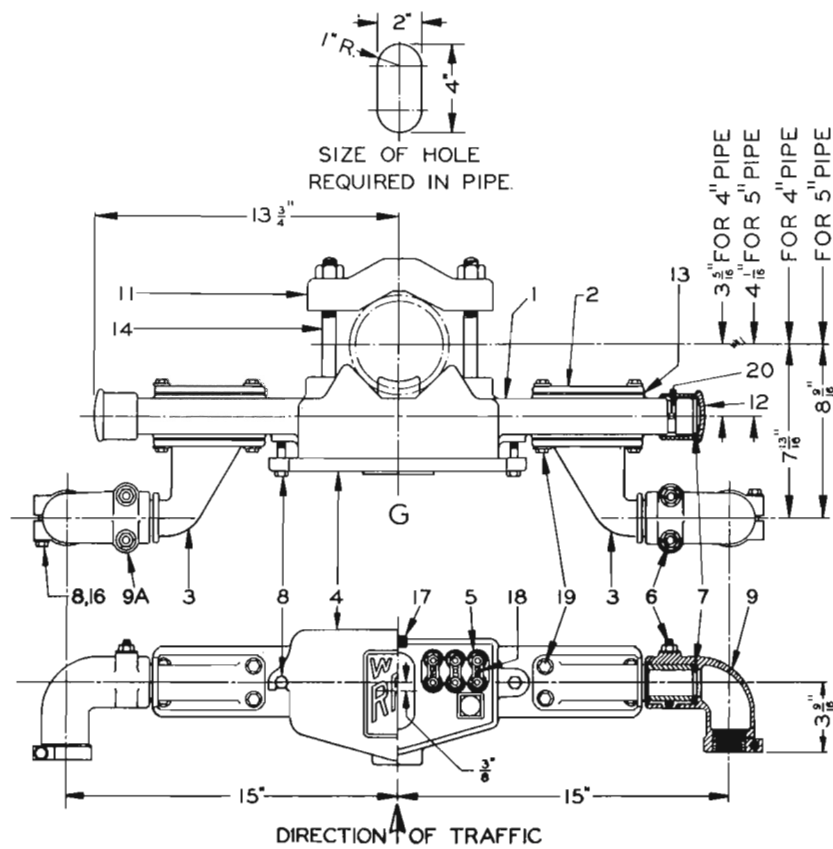
Junction Box Cross Arm For Two-Way Indication Type 960-3 and 5



Ref. No.	Description	Piece No.
E	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units. (Specify Pipe Size).....	960-5
E1	Same as Ref. E but for Two Light Units.....	960-3



Type 960-83 Junction Box Cross Arm For One-Way Indication



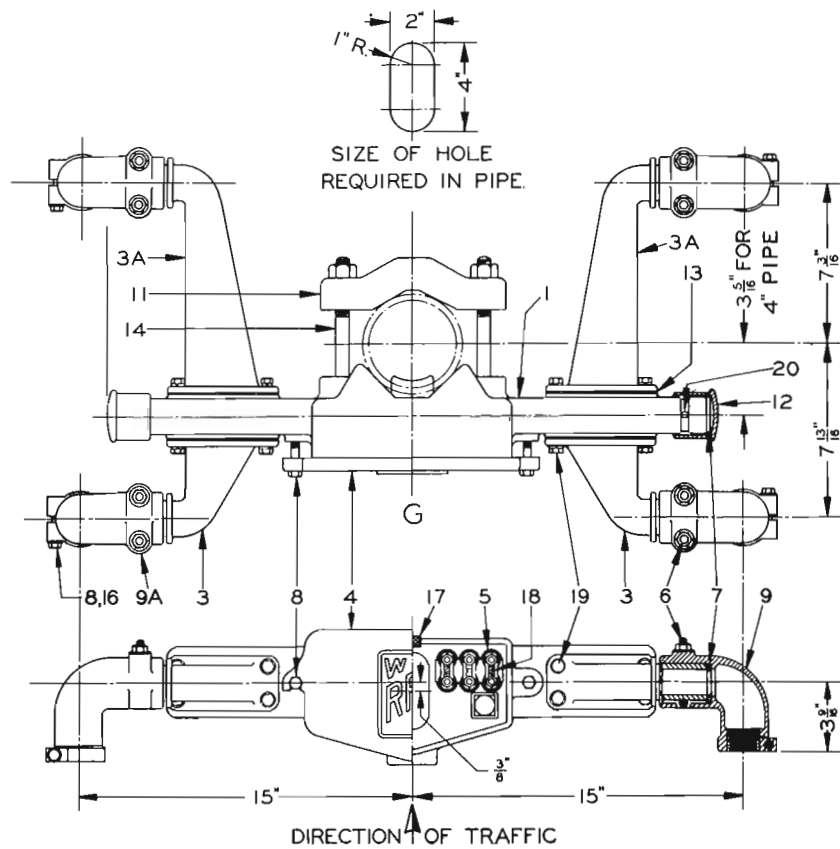
Ref. E2

Ref. No.	Description	Piece No.
E2	Junction Box Cross Arm Assembly for Mounting Two 970-201 Light Units. (Specify Pipe Size).....	960-83

For Replacement Parts Listing see Pages 3-44 and 3-45.



Type 960-88 Junction Box Cross Arm For Two-Way Indication



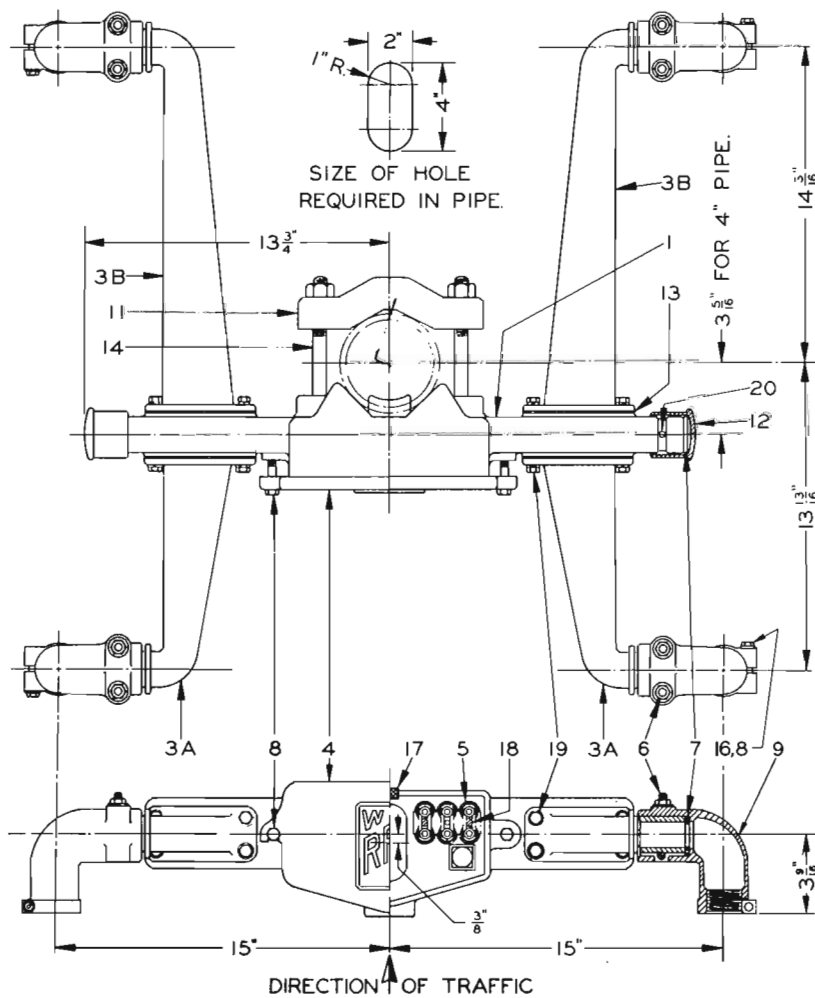
Ref. E3

Ref. No.	Description	Piece No.
E3	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units. (Specify Pipe Size).....	960-88

For Replacement Parts Listing see Pages 3-44 and 3-45.



Type 960-5XX Junction Box Cross Arm For Two-Way Indication

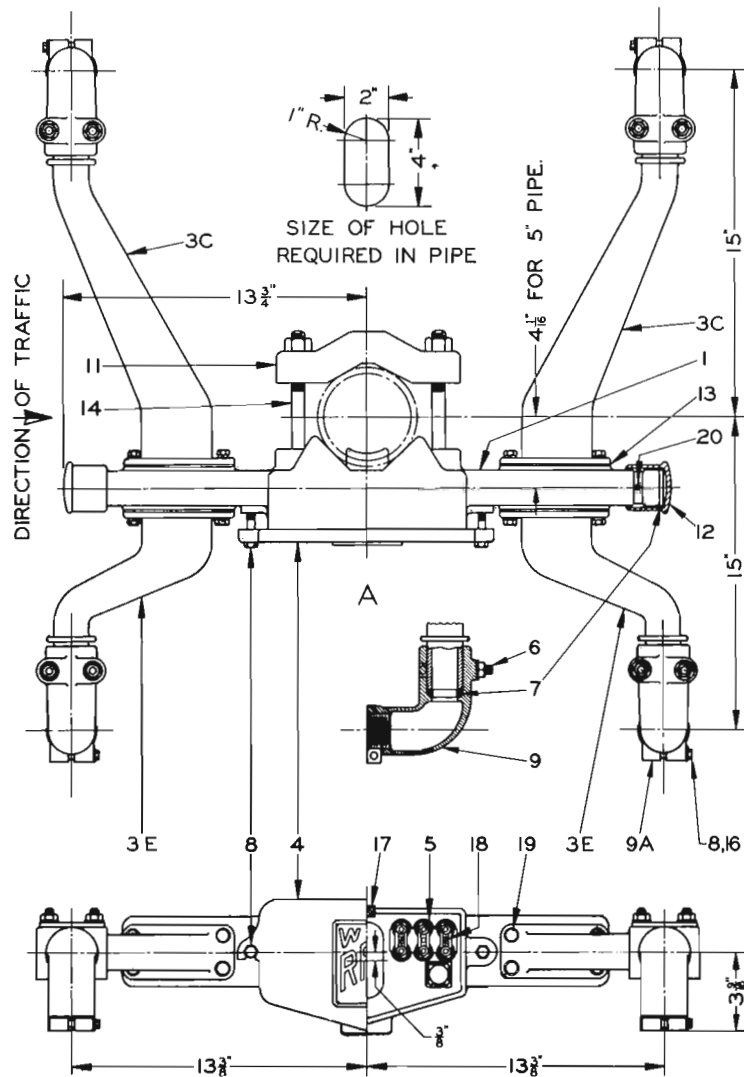


Ref. E4

Ref. No.	Description	Piece No.
E4	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 4" I.D. Pipe Mounting).....	960-5XX

For Replacement Parts Listing see Pages 3-44 and 3-45.

Type 960-54 Junction Box Cross Arm For Two-Way Indication



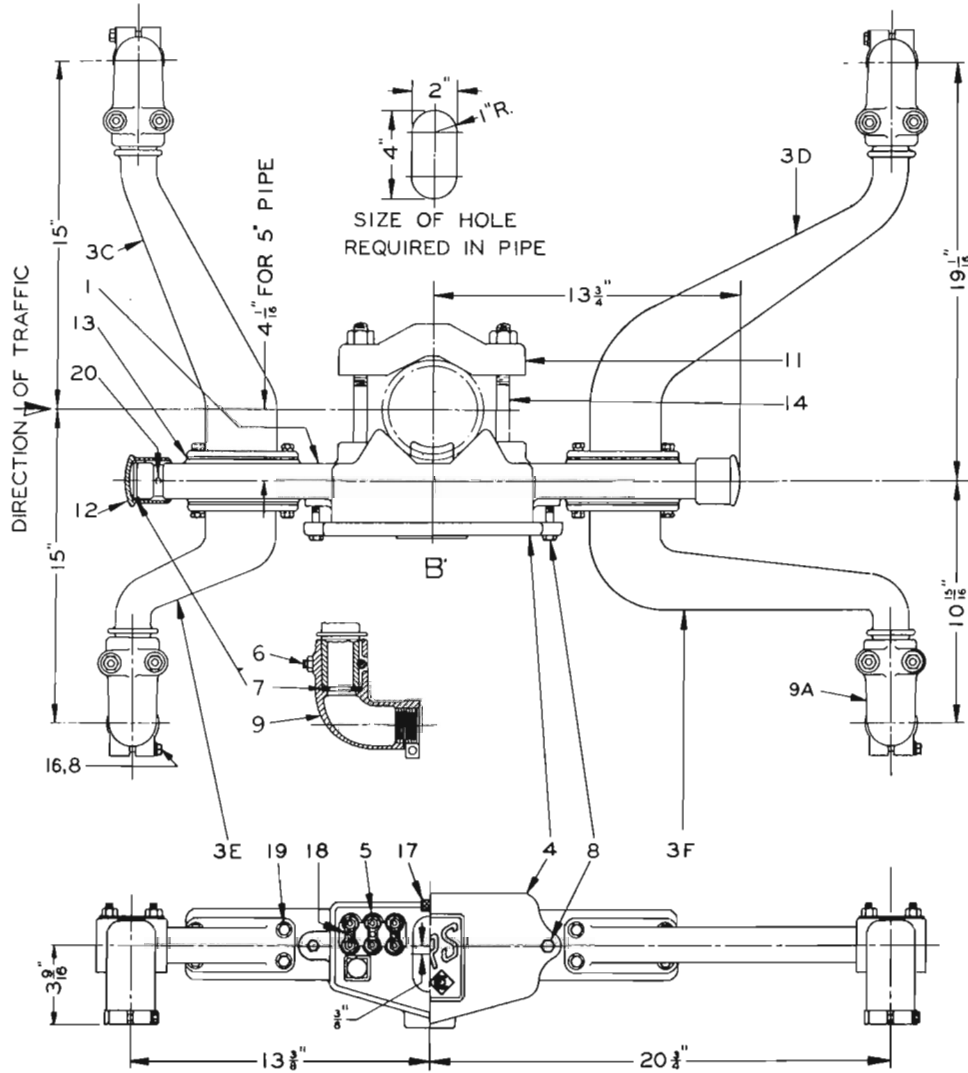
Ref. E5

Ref. No.	Description	Piece No.
E5	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 5" I.D. Pipe Mounting).....	960-54

For Replacement Parts Listing see Pages 3-44 and 3-46.



Type 960-74R Junction Box Cross Arm For Two-Way Indication

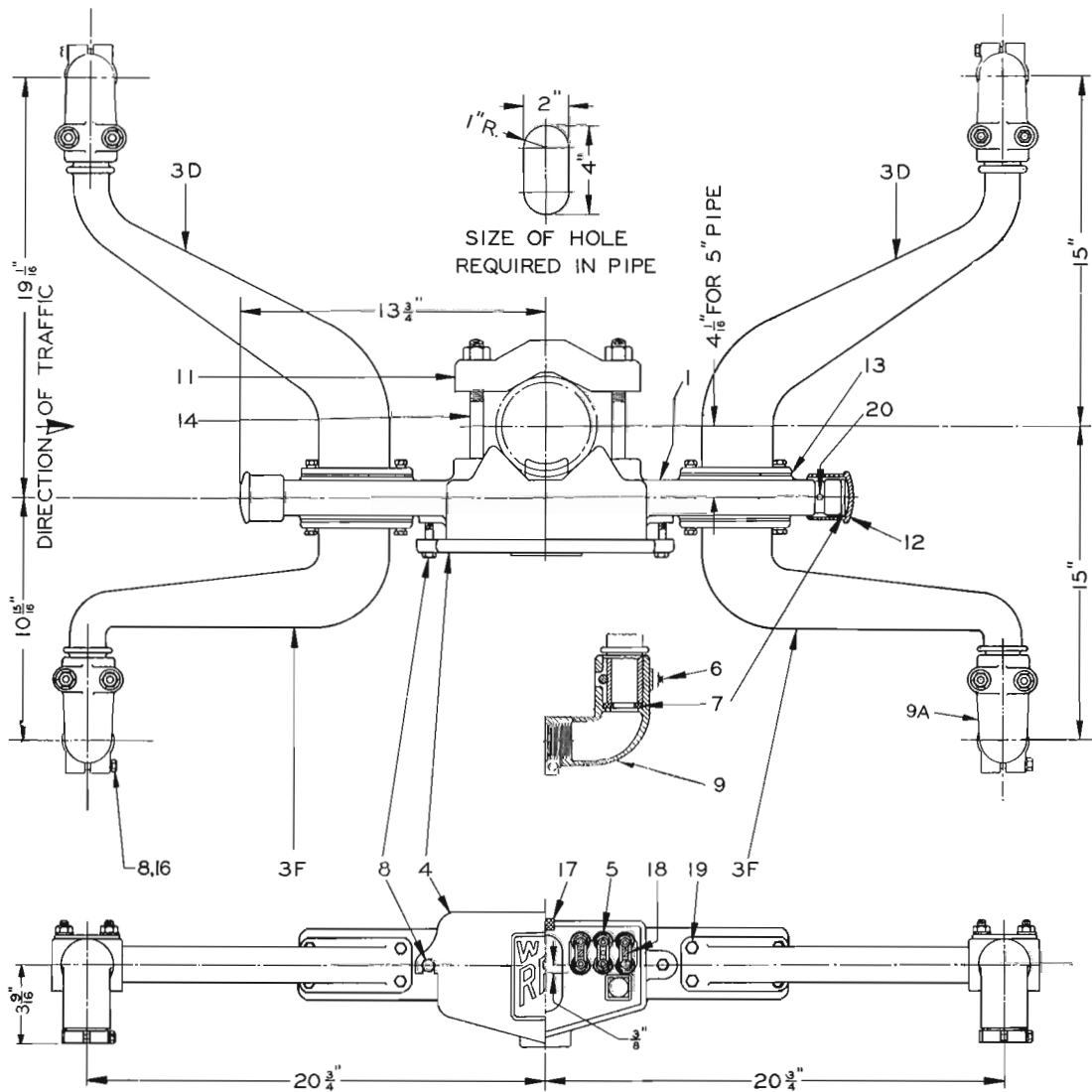


Ref. E6

Ref. No.	Description	Piece No.
E6	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 5" I.D. Pipe Mounting).....	960-74R

For Replacement Parts Listing see Pages 3-44 and 3-45.

Type 960-84 Junction Box Cross Arm For Two-Way Indication



Ref. E7

Ref. No.	Description	Piece No.
E7	Junction Box Cross Arm Assembly for Mounting Four 970-201 Light Units (For 5" I.D. Pipe Mounting).....	960-84

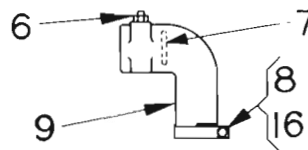


Junction Box Cross Arms

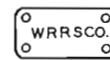
REPLACEMENT PARTS LISTING FOR PAGES 3-37 TO 3-43



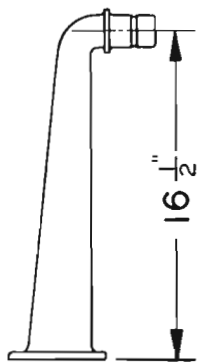
E 8



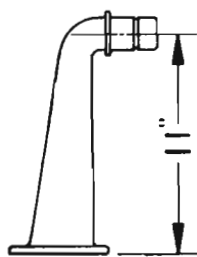
E 9



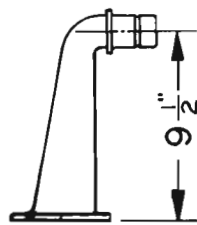
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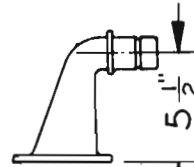
3B



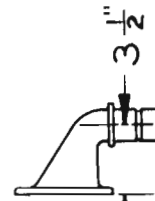
3G



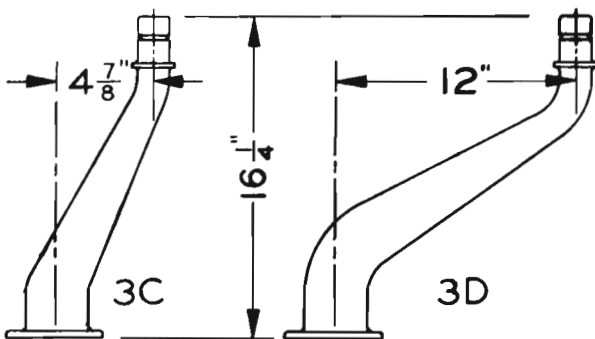
3A



3H

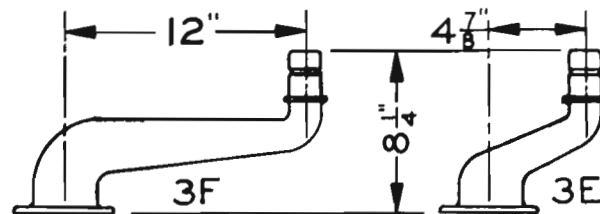


3



3C

3D



3F

3E

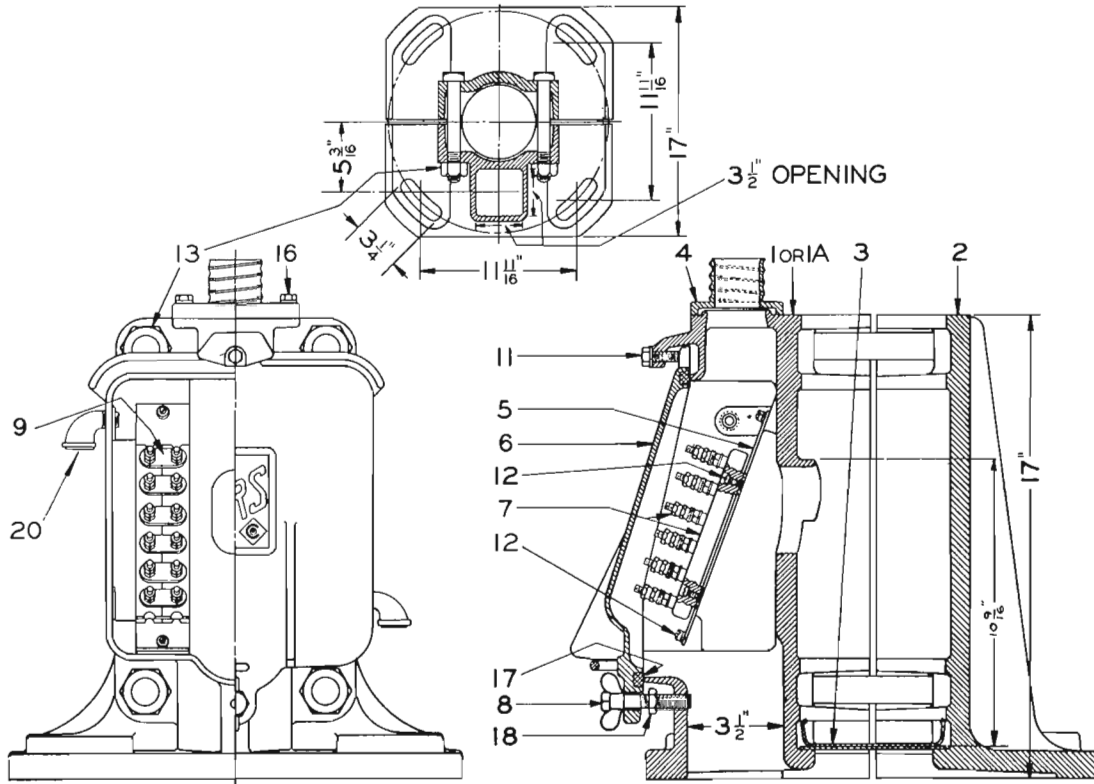


Junction Box Cross Arms

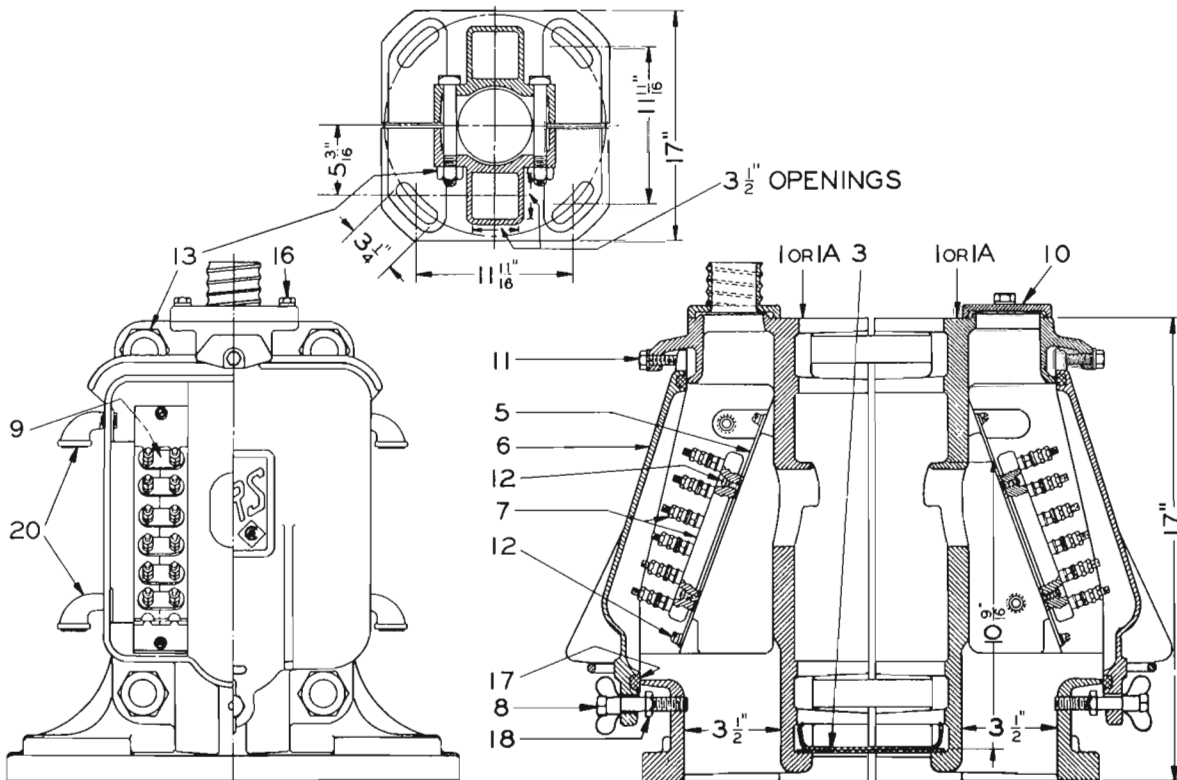
REPLACEMENT PARTS LISTING FOR PAGES 3-37 TO 3-43

Ref. No.	Description	Piece No.
E8	Sub-assembly of Junction Box Cross Arm (Includes Items 1, 4, 5, 7, 12, 15, 16, 18, 19 and 20).....	950A-62
E9	Sub-assembly of Supporting Bracket (Includes Items 6, 7, 8, 9 and 16).....	960A-163
REPLACEMENT PARTS		
1	Junction Box Cross Arm (Casting only).....	950A-22
2	Cover Plate	950A-39
3	Bracket 3 $\frac{1}{2}$ "	950A-57
3A	Bracket 9 $\frac{1}{2}$ "	950A-47
3B	Bracket 16 $\frac{1}{2}$ "	950A-46
3C	Bracket 16 $\frac{1}{4}$ " x 4 $\frac{7}{8}$ "	950A-67
3D	Bracket 16 $\frac{1}{4}$ " x 12"	950A-77
3E	Bracket 8 $\frac{1}{4}$ " x 4 $\frac{7}{8}$ "	950A-66
3F	Bracket 8 $\frac{1}{4}$ " x 12"	950A-76
3G	Bracket 11"	950A-37
3H	Bracket 5 $\frac{1}{2}$ "	950A-36
4	Cover, Complete with Packing.....	950A-21
5	Terminal Block, Complete.....	2506-106
6	"U" Bolt, $\frac{3}{8}$ "-16, Complete with Nuts.....	950-31
7	Gasket, Sponge Rubber.....	950-28
8	Cap Screw, $\frac{3}{8}$ "-16 x 2" Lg. hex. hd., stl.....	
9	Supporting Bracket	960A-131
11	Adaptor Clamp	950A-34
12	Cap	950A-29
13	Gasket, Cork	950-27
14	Mach. Bolt, $\frac{5}{8}$ "-11 x 7 $\frac{1}{2}$ " Lg. sq. hd. stl. and hex. nut for 5" Pipe Mounting.....	
14A	Same as Ref. 14, but for 4" Pipe Mounting.....	
16	$\frac{3}{8}$ " Lock Washer.....	
17	Torchwick Packing $\frac{3}{8}$ " Dia. x 27" Lg.....	
18	Mach. Screw, No. 10-32 x $\frac{5}{8}$ " Lg. fil. hd., stl.....	
19	Cap Screw, $\frac{3}{8}$ "-16 x $\frac{7}{8}$ " Lg. hex. hd. stl. and Lock Washer.....	
20	Set Screw, $\frac{1}{4}$ "-20 x $\frac{1}{2}$ " Lg., sq. hd. Cup Pt., stl.....	

Type 2149 Junction Box Clamp Type Base



Ref. B9



Ref. B11



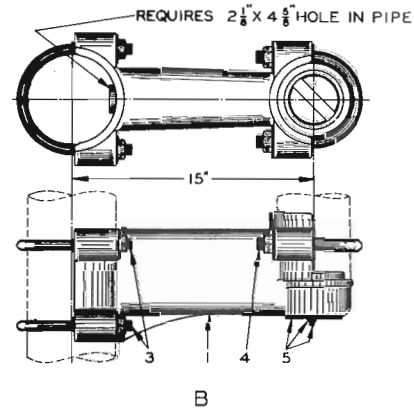
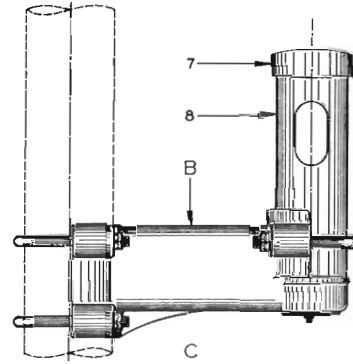
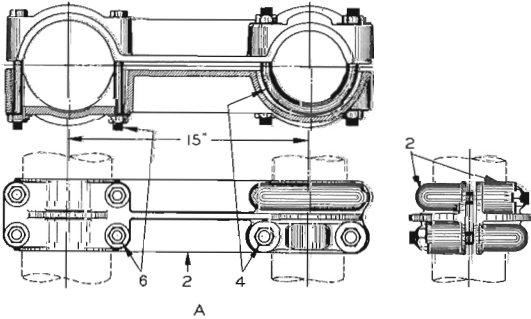
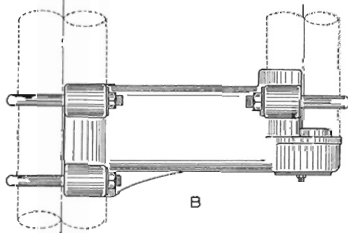
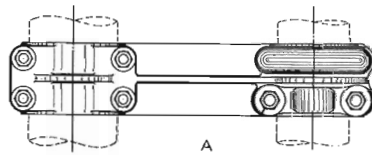
Type 2149 Junction Box Clamp Type Base

Type 2149 Bases are regularly furnished with conduit flange (Ref. 4) for 1½" flexible metallic conduit unless specified for 2" conduit. A cover (Ref. 10A) tapped 1½" pipe thread is furnished for "sealtite" connector.

Ref. No.	Description	Piece No.
B9	Type 2149 Split base with one Junction Box half with 24 binding posts, ventilators and conduit flange. (Cast Iron).....	2149-111C
B10	Same as Ref. B9, less ventilators.....	2149-111
B11	Same as Ref. B9, but with two Junction Box halves.....	2149-112E
B12	Same as Ref. B11, less ventilators.....	2149-112
REPLACEMENT PARTS		
1	Junction Box Half, (Without Terminals, Cover, Ventilators and Fittings, for Ref. B10 and B12).....	2149-15
1A	Same as Ref. 1, but for Ref. B9 and B11.....	2149-15C
2	Split Base Half.....	2149-13
3	Pipe Shield.....	2149-24
4	Conduit Flange for 1½" Conduit.....	2149-117
4A	Conduit Flange for 2" Conduit.....	2149-17
5	Terminal Mounting Plate.....	2149-25
6	Cover with Packing Ref. 17.....	2149-16
7	Terminal Strip (12 post).....	2508-106
8	Thumb Screw.....	2149-18A
9	Connector.....	7323-2
10	Blank Cover.....	2149-22
10A	Cover Plate, tapped 1½" pipe thread.....	2149-22G
11	Cap Screw, ⅜"-16 x 7/8" Lg. hex. hd. stl. and plain washer.....	
12	Mach. Screw, ¼"-20 x 5/8" Lg. fil. hd. stl.....	
13	Mach. Bolt, 1"-8 x 7½" Lg. sq. hd. stl. and hex. nut.....	
14	Pipe Plug, ¾" Std.....	
15	Pipe Reducer Bushing, 1¼" x ¾" Std.....	
16	Cap Screw, ⅜"-16 x 1½" Lg., hex. hd., stl. and lock washer.....	
17	Packing, Flax or Jute, ⅜" sq. x 3'-2½" Lg.....	
18	Hex. Jam Nut, ½"-13 Std., stl.....	
19	Pipe Plug, 1¼" Std.....	
20	Ventilator.....	1143-16

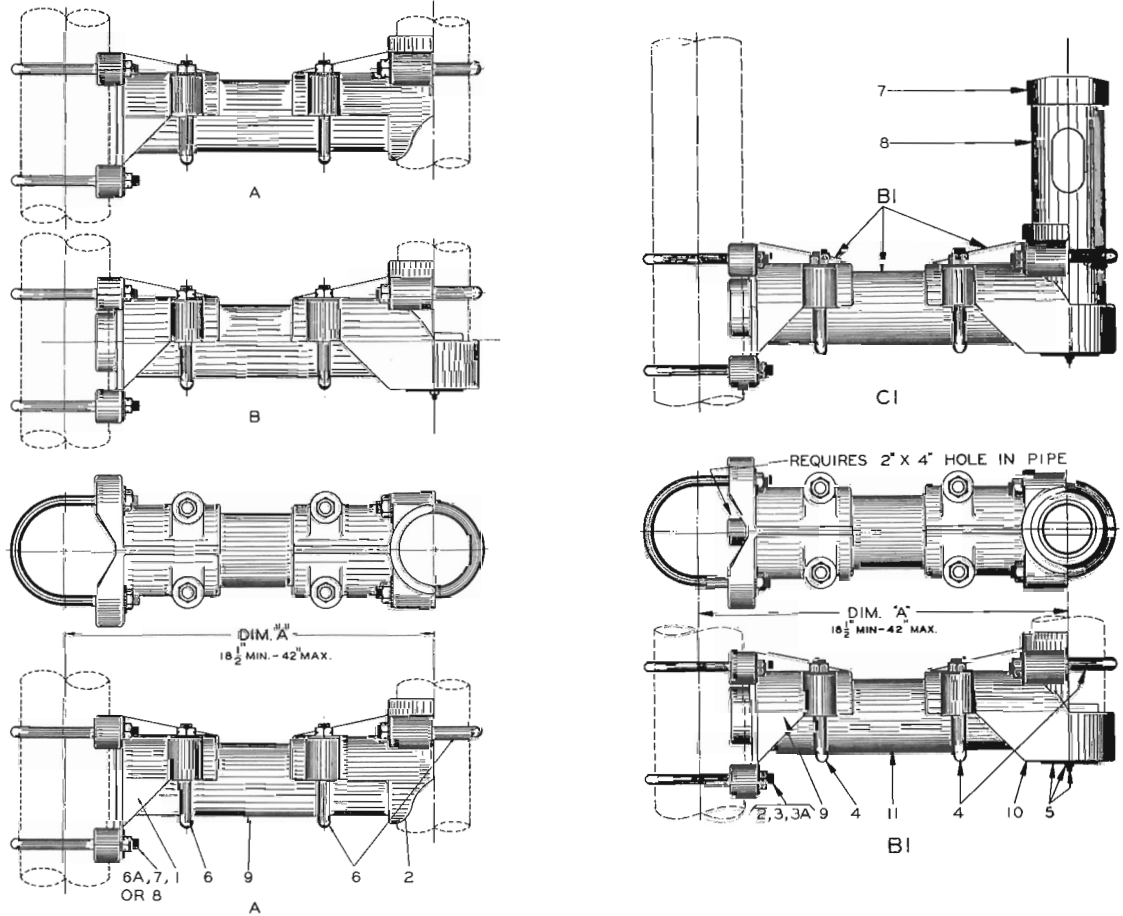


Upper and Lower Supporting Brackets For Offset Mast Type Model 10 Signals Type 3565-65 Type 3565-67 Type 3565-367



Ref. No.	Description	Piece No.
A	Upper Supporting Bracket Assembly.....	3565-65
B	Lower Supporting Bracket Assembly.....	3565-67
C	Supporting Bracket and Dowel Mast Assembly.....	3565-367
REPLACEMENT PARTS		
1	Upper Bracket Casting Only.....	3565-69
2	Upper Bracket Casting Only.....	3565-68
3	"U" Bolt for 5" I.D. Pipe.....	1264-5
4	"U" Bolt for 4" I.D. Pipe.....	3565-163
5	Wire Opening Cover and Clamp Subassembly.....	3565-162A
6	Mach. Bolt, 5/8"-11 x 7" Lg. Sq. Hd. Steel, Hex. Steel Nut and Plain Washer.....	
7	Tap-on Pinnacle	110A-6
8	Dowel, 4" I.D. x 14" Lg. (May be turned in Socket to any Angle).....	714-8

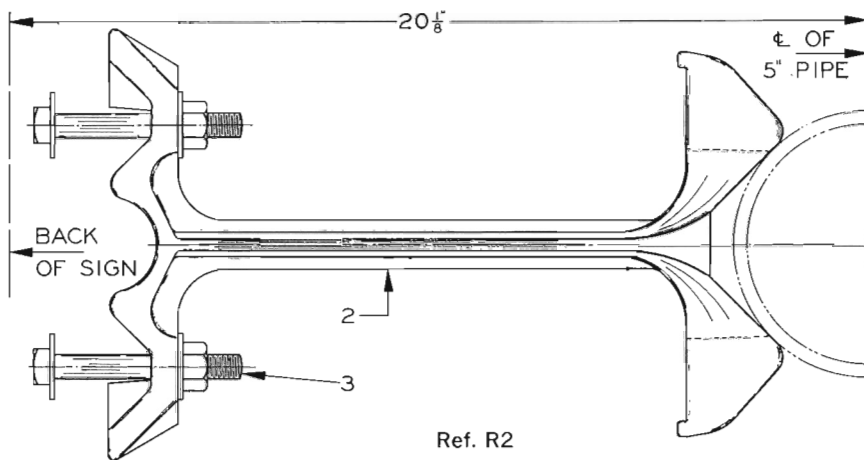
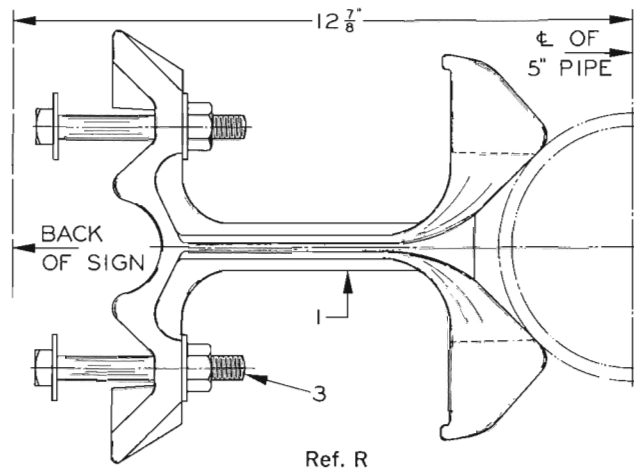
Upper and Lower Supporting Brackets For Offset Mast Type Model 10 Signals Type 3565-165 Type 3565-167 Type 3565-267



Ref. No.	Description	Piece No.
A	Upper Supporting Bracket Assembly (Specify Dimension "A" in inches).....	3565-165
B	Lower Supporting Bracket Assembly (Specify Dimension "A" in inches).....	3565-167
C	Supporting Bracket and Dowel Mast Assembly (Specify Dimension "A" in inches)	3565-267
REPLACEMENT PARTS		
1	Inner Support	3565-169
2	Outer Support	3565-164
3	Inner Support	3565-168
4	Outer Support	3565-166
5	Wire Opening Cover and Clamp Sub-Assembly.....	3565-162A
6	"U" Bolt for 4" I.D. Pipe.....	3565-163
6A	"U" Bolt for 4" I.D. Pipe.....	1264-4
7	"U" Bolt for 5" I.D. Pipe.....	1264-5
8	"U" Bolt for 6" I.D. Pipe.....	1264-6
9	Pipe, 4" I.D. (Length as Required).....	714-8
10	Dowel, 4" I.D. x 14" Lg. (May be turned in Socket to any Angle).....	110A-6
11	Tap-on Pinnacle	110A-6



Extension Brackets For Crossing Signs Type 3366-40 Type 3366-140



Ref. No.	Description	Piece No.
R	Type 3366-40 Extension Bracket (Cast Iron) Complete with Bolts, Nuts and Washers	3366-40
R1	Same as Ref. R, but aluminum.....	3366A-40
R2	Type 3366-140 Extension Bracket (Cast Iron) Complete with Bolts, Nuts and Washers	3366-140
R3	Same as Ref. R2, but aluminum.....	3366A-140
REPLACEMENT PARTS		
1	Extension Bracket, gray iron casting only.....	3366-41
1A	Same as Ref. 1, but aluminum casting.....	3366A-41
2	Extension Bracket, gray iron casting only.....	3366-141
2A	Same as Ref. 2, but aluminum casting.....	3366A-141
3	Mach. Bolt, 1/2"-13 x 4" Lg., sq. hd., stl., hex. nut and 2 Plain Washers.....	



SECTION 5

Bells

CONTENTS

	Page No.
Gong Type Highway Cross Bells.....	5-2 to 5-15
Motor Driven Bells for Locomotives and Passenger Cars.....	5-16 & 5-17
Locomotive Type Bell	5-20 & 5-21
Mounting Fittings for Highway Crossing Bells.....	5-26

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632

Type 222 Highway Crossing Bell For Top of Post Mounting

6 to 16 Volts D.C.

CAST ALUMINUM HOUSING

12" STEEL GONG

Approximately 200 Strokes Per Minute



The low voltage Type 222 Highway Crossing Bells, commonly used with Flashing Lights and Automatic Gates, have magnet coils of 10 Ohms total resistance with an adjustable series resistance allowing the current through the coils to be adjusted to the proper operating value of 600* milliamperes at any voltage from 6 to 16. Therefore the one bell mechanism is applicable to nearly all highway crossing signal installations.

The five sizes of mounting sockets are attached, as required, to provide for mounting the bell on pipe masts of 3", 3½", 4", 5" and 6" inside diameter, as specified.

The case, cover, mounting socket and rain shield are of cast aluminum making the total weight of the bell such that one man can easily place it atop a crossing signal mast.

The operating principle of the Type 222 bells was adopted in the year 1919. At that time careful calculations were made to determine the exact indicated weight of each moving component and extensive tests were conducted including the selection of the desired temper of the phosphor bronze hammer support, the correct thickness, alloy and shape of the bell-steel gong to insure the smooth oscillation of the movement and the constant, even, stroke for which the Type 222 bells are noted.

The standard Type 222 Bells are furnished with steel hammers producing a loud, clear sound wave for maximum audibility. For use in residential areas, near hotels or motels, or wherever the loud penetrating sound might be disturbing, a bakelite-faced hammer will be furnished when specified.

**NOTE: During operation the contact is closed approximately 1/3 of the time. For purposes of calculating battery drain a continuous current flow of 225 millamperes should be assumed.*

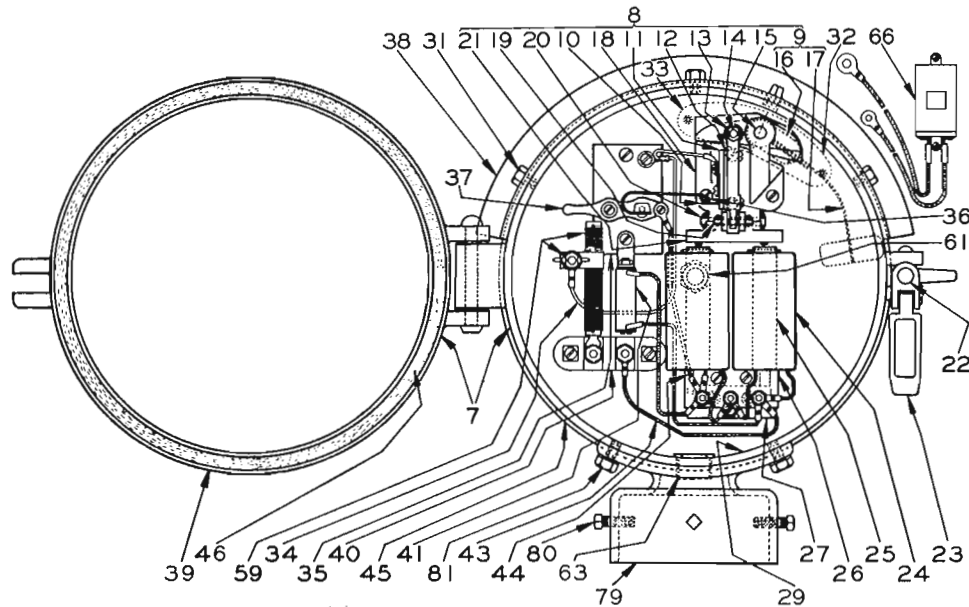


Type 222 Highway Crossing Bell For Top of Pipe Mounting

6 to 16 Volts D.C.

Approximately 200 Strokes Per Minute

Type 222 Bells for operation on higher voltages and for mounting on the side of the pipe mast or on flat surfaces are described on following pages.



Ref. A

Ref. No.	Description	Piece No.
A	Type 222 Bell, 6 to 16 volts D.C., for mounting on 3½" I.D. pipe. (Specify loud or soft tone hammer).....	0222BR
A1	Same as Ref. A but for mounting on 4" I.D. pipe.....	0222CR
A2	Same as Ref. A but for mounting on 3" I.D. pipe.....	0222DR
A3	Same as Ref. A but for mounting on 5" I.D. pipe.....	0222FR
A4	Same as Ref. A but for mounting on 6" I.D. pipe.....	0222HR

SPECIFY: Loud or Soft Tone Hammer. (Loud Tone Hammer will be furnished unless otherwise specified.)

For Replacement Parts Listing see Pages 5-8 and 5-9

Type 222A Highway Crossing Bell For Side of Post or Wall Mounting

6 to 16 Volts D.C.

CAST ALUMINUM HOUSING

12" STEEL GONG

Approximately 200 Strokes Per Minute



The mechanism of the low voltage Type 222A Highway Crossing Bell, for side of post or flat surface mounting, is identical with that of the type for top of post mounting, described on page 5-2.

The cover, however, is provided with slots so that "U" bolts of appropriate size can be used to mount the bell on the side of a pipe post of any specified diameter from 3" I.D. to 8" I.D. Or, by the use of bolts or lag screws, the bell can be mounted on a flat surface or column.

A terminal block is mounted in the cover for termination of control wires and a flexible wire connection to the terminal in the housing. This

allows the mechanism to be swung open for inspection or servicing.

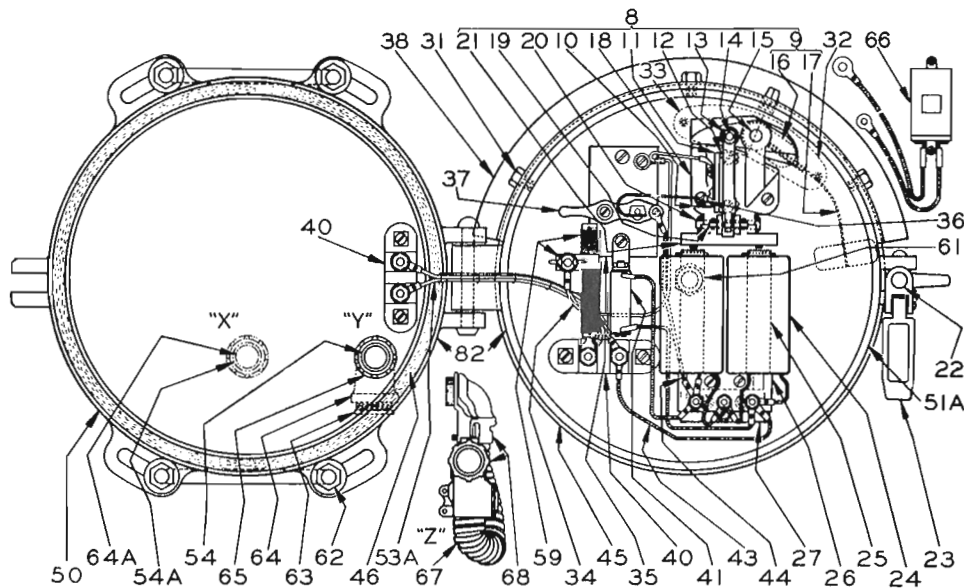
When the bell is mounted on the side of the mast of a cantilever type Crossing Signal it is convenient to use the flexible connection "Z" with one item 68 in the threaded opening at "Y" and the other in a pipe-tapped hole in the mast. When mounted on an "I" beam column or wood post, as in a shop building, the outside wire entrance "Y" is often most adaptable.

If mounted on the side of a pipe post it may be desirable to bring the control wires up inside the pipe and directly into the bell through the entrance "X".

Type 222A Highway Crossing Bell For Side of Pipe or Wall Mounting

6 to 16 Volts D.C.

Approximately 200 Strokes Per Minute



Ref. B

Ref. No.	Description	Piece No.
B	Type 222A Bell, 6 to 16 volts D.C., for mounting on side of pipe, direct wire entrance to pipe, view "X". (Specify size of pipe and loud or soft tone hammer).....	0222A1R
B1	Same as Ref. B but with outside wire entrance "Y".....	0222AR
B2	Same as Ref. B but with flexible connection "Z".....	0222ARP

SPECIFY: Size of pipe and loud or soft tone hammer. (Loud tone hammer will be furnished unless otherwise specified).

For Replacements Parts Listing see Pages 5-8 and 5-9



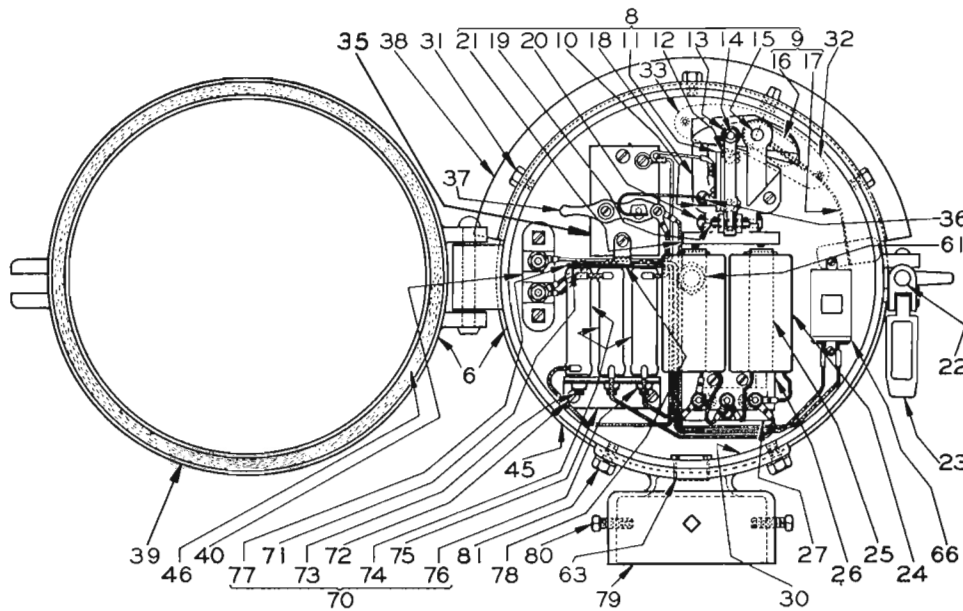
Type 222 Highway Crossing Bell For Top of Pipe Mounting

For 24, 32, 64, 120, 250, 300 and 600 Volts D.C.
Approximately 200 Strokes Per Minute

The mechanisms of Type 222 Bells for operation on commonly used D. C. voltages higher than 16 are essentially the same as described on pages 5-2 to 5-5. Magnet coils of appropriately higher resistance are combined with vitreous enameled resistors as necessary to allow the required current flow in the coils at the specified voltage. In addition a spark suppres-

or, item 66 in the diagram, is provided.

Standard designs are available for operation on the commonly encountered voltages of 24, 32, 64, 120, 250, 300 and 600 volts. Special arrangements can be worked out for other voltages, not exceeding 600, if required.



Ref. C

Ref. No.	Description	Piece No.
C	Type 222 Bell, 24 to 600 Volt D.C. for mounting on 3½" I.D. pipe. (Specify operating voltage and loud or soft tone hammer).....	0222B
C1	Same as Ref. C but for mounting on 4" I.D. pipe.....	0222C
C2	Same as Ref. C but for mounting on 3" I.D. pipe.....	0222D
C3	Same as Ref. C but for mounting on 5" I.D. pipe.....	0222F
C4	Same as Ref. C but for mounting on 6" I.D. pipe.....	0222H

SPECIFY: Operating Voltage and Loud or Soft Tone Hammer. (Loud Tone Hammer will be furnished unless otherwise specified.)

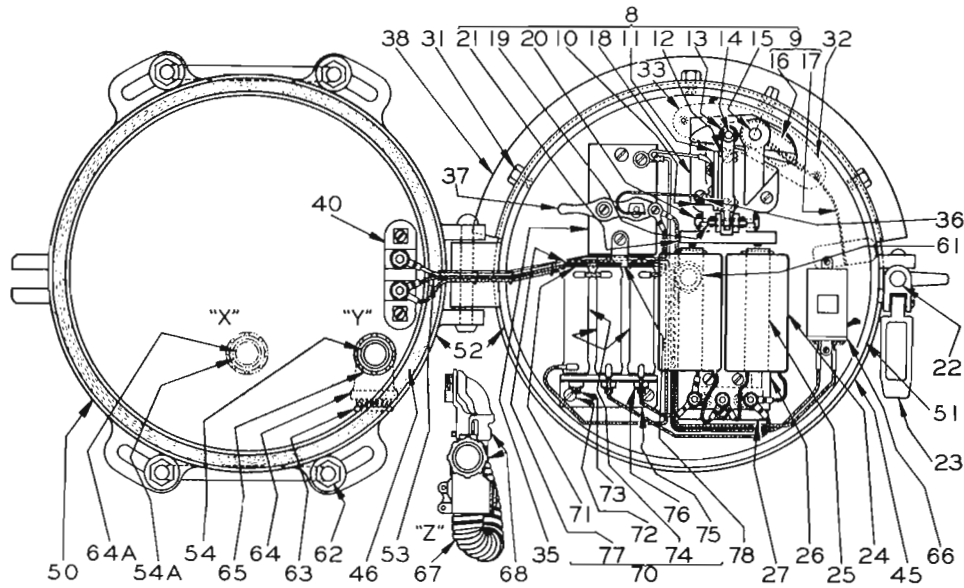
For Replacement Parts Listing see Pages 5-8 and 5-9



Type 222A Highway Crossing Bell For Side of Post or Wall Mounting

For 24, 32, 64, 120, 250, 300 and 600 Volts D.C.
Approximately 200 Strokes Per Minute

Physically the Type 222A Bells, for operation on the higher voltages, are identical with those described on page 5-4. Electrically they are as described on the opposite page, 5-6.



Ref. D

Ref. No.	Description	Piece No.
D	Type 222A Bell, 24 to 600 volts D.C., for mounting on side of pipe, direct wire entrance to pipe, view "X". (Specify operating voltage, size of pipe and loud or soft tone hammer).....	0222A1
D1	Same as Ref. D but with outside wire entrance "Y".....	0222A
D2	Same as Ref. D but with flexible connection "Z".....	0222AP

SPECIFY: Operating Voltage, size of pipe and Loud or Soft Tone Hammer. (Loud Tone Hammer will be furnished unless otherwise specified.)

For Replacement Parts Listing see Pages 5-8 and 5-9



Highway Crossing Bells Type 222 and Type 1203

REPLACEMENT PARTS

All Type 222 and Type 1203 Highway Crossing Bells now have cast aluminum Case, Cover, Mounting Socket and Rain Shield. Cast Iron parts are no longer available. However the cast

aluminum components are interchangeable with the cast iron parts and can be used for replacement.

Ref. No.	Description	Piece No.
6	Case and Cover Subassembly for Ref. C Bells.....	1249-20A
7	Case and Cover Subassembly for Ref. A Bells.....	1249-20
8	Movement Base Assembly Complete (Includes items 9 thru 21).....	1215
9	Oscillator and Hammer Assembly (Includes items 16 and 17).....	1215-1
10	Moving Contact (with Silver Contact).....	1210-5
10a	Moving Contact (with Platinum Contact).....	1210-5B
11	Link Insulator	1210-4
12	Insulation Strip	1210-10
13	Operating Link	1209-4
14	Operating Link Stud.....	1209-6
15	Oscillator Stud	1209-8
16	Oscillator with Bushing and Stud (Includes item 14).....	1209-13
17	Hammer Complete with Reenforcement Springs (For Loud Tone).....	1210-17
17a	Hammer Complete with Reenforcement Springs (Bakelite Faced for Soft Tone).....	1210-20
18	Movement Base only.....	1209-1
19	Operating Link Pin Complete with Cotter Pins.....	1209-9
20	Armature Pin Complete with Cotter Pins.....	1209-10
21	Armature	1209-2
22	Locking Bolt	1410-11CA
23	Locking Hasp and Nut.....	1410-31CA
24	Magnet Coil (Specify Resistance of Bell).....	1231-3
25	Magnet Core	1209-7
26	Terminal Block complete.....	1249-7
27	Magnet Bracket	1209-3
28	Case for Type 1203 Bell.....	1203-12A
29	Case for Ref. A (6-16 volt Bell).....	1206A-10
30	Case for Ref. C Bells.....	1206C-10
31	Cap Screw, 5/16" — 18 x 5/8" lg. stl., hex. hd.....	
32	Right Hand Dust Guard.....	1248-1
32a	Right Hand Dust Guard (fish type).....	1248-3
33	Left Hand Dust Guard.....	1248-2
34	Flexible Lead Wire (Included in Item 59).....	1222-11
35	Contact Block	1210-3
36	Contact Finger (With Silver Contacts).....	1222-10
36a	Contact Finger (With Platinum Contacts).....	1222-10B
37	Contact Finger Support.....	1209-14
38	Rain Shield	1208-CA
39	Cover for Ref. A and C Bells (Includes Packing).....	1217-1CA
40	Porcelain Terminal Block.....	1056-16
41	Non-arcng Resistance Complete.....	1235
43	Flexible Wire Lead.....	1222-14
44	Flexible Wire Lead.....	1222-13
45	Steel Gong	1211
46	Cover Packing Strip.....	1217-2
50	Cover for Ref. B1 & D1 (Outside Wire Entrance).....	1207-5CA
50a	Cover for Ref. B & D (Wire entrance into pipe).....	1218-1CA
50b	Cover for Ref. B2 & D2 (flexible conduit entrance).....	1207A-5CA



Highway Crossing Bells Type 222 and Type 1203

REPLACEMENT PARTS

(Continued)

Ref. No.	Description	Piece No.
51	Case for Ref. D, D1, D2.....	1206B-10CA
51a	Case for Ref. B, B1 and B2.....	1206-10CA
52	Case and Cover Subassembly for Ref. D1.....	1249-5B
52a	Case and Cover Subassembly for Ref. D.....	1249-4B
52b	Case and Cover Subassembly for Ref. D2.....	1249-4A
53	Flexible Wire Lead.....	1222-18
53a	Flexible Wire Leads for Ref. B.....	1222-22
54	Elbow Wire Outlet for Ref. B1 and D1 (Outside Wire Entrance) (Includes Items 63, 64 and 65).....	1222-15
54a	Straight Wire Outlet for Ref. B1 and D1 (Wire Entrance Into Pipe) (Includes Items 64A and 65).....	1222-16
59	Variable Resistance Unit.....	1210-28
61	Cap Screw, 1/2"-13x7/8" Lg. Hex Hd., Steel and Steel Lock Washer.....	
62	U-Bolt for 4" I.D. pipe.....	1207-1
62a	U-Bolt for 5" I.D. pipe.....	1207-2
62b	U-Bolt for 3 1/2" I.D. pipe.....	1207-3
62c	U-Bolt for 3" I.D. pipe.....	1207-4
62d	U-Bolt for 6" pipe.....	1207-8
62e	Hinged "U" Bolt for 8" pipe.....	3364-33
63	3/4" Chase Nipple.....	
64	3/4" Street El.....	
64a	3/4" Pipe Nipple.....	
65	3/4" Conduit Bushing.....	
66	Non-arcng Condenser.....	1101-87A
67	3/4" Penflex Conduit, 18" Lg.....	
68	3/4" 90° Squeeze Connector.....	
70	Subassembly of Shunt Resistance for 250 Volts D.C.....	1237-25
70a	Subassembly of Shunt Resistance for 600 Volts D.C.....	1237-25B
70b	Subassembly of Shunt Resistance for 300 Volts D.C.....	1237-25C
71	Washer.....	1115
72	Mach. Screw, 1/4"-20x1/4" Lg., Rd. Hd., Brass.....	
73	Stove Bolt, 1/4"-20x4" Lg., Rd. Hd., Steel.....	
74	Resistance Unit, 350 Ohms.....	1222-17
74a	Resistance Unit, 700 Ohms.....	1222-17B
74b	Resistance Unit, 400 Ohms.....	1222-17C
75	Mounting Bracket.....	1290-2
76	Square Nut, 1/4"-20, Steel.....	
77	Plain Brass Washer.....	
78	Wire Clip.....	1012-13
79	Socket for 3" I.D. pipe (Includes Items 80 and 81).....	1206-3B-CA
79a	Socket for 3 1/2" I.D. pipe (Includes Items 80 and 81).....	1206-2B-CA
79b	Socket for 4" I.D. pipe (Includes Items 80 and 81).....	1206-4B-CA
79c	Socket for 5" I.D. pipe (Includes Items 80 and 81).....	1206-5B-CA
79d	Socket for 6" I.D. pipe (Includes Items 80 and 81).....	1206-6B-CA
80	Set Screw 5/16"-18x3/4" Lg. Cup Pt. Steel.....	
81	Cap Screw 5/16"-18x5/8" Lg. Hex. Hd., Steel and Lockwasher.....	
82	Case and Cover Subassembly for Ref. B1.....	1249-4
82a	Case and Cover Subassembly for Ref. B.....	1249-5
82b	Case Cover Subassembly for Ref. B2.....	1249-5A
83	Wire Cable (For 1203 Bells Only).....	1203-24
85	Cover for 1203 Bell, drilled for rectifier and terminal blocks only.....	1203-9C
85a	Cover for 1203 Bell, drilled for rectifier, 60 cycle transformer and terminal blocks.....	1203-9A
85b	Same as Ref. 85a except drilled for 25 cycle transformer.....	1203-9B
86	Rectifier only for 12-16 volt input, 25 or 60 cycles.....	1203-10
87	Transformer only, (specify primary voltage and frequency).....	1203-11



Type 1203 Highway Crossing Bell

FOR NORMAL LOW VOLTAGE A.C. OPERATION WITH D.C. RESERVE

12" Gong

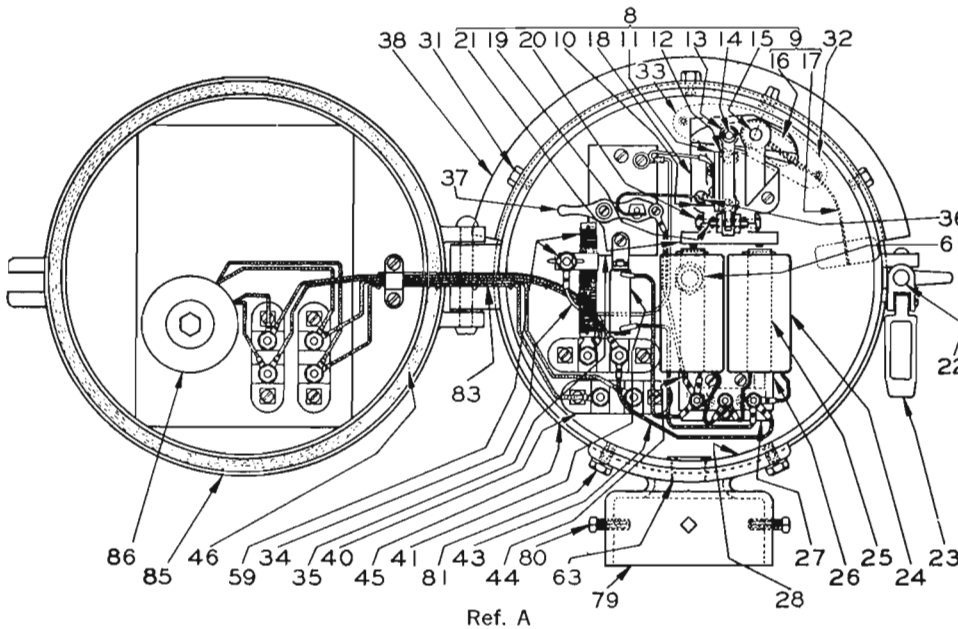
Approximately 200 strokes per minute

Type 1203 Highway Crossing Bells consist of standard Type 222 bell mechanisms with a deepened cover in which to mount a copper oxide rectifier or a transformer and rectifier to supply direct current to the operating mechanism.

The Type 1203BR to 1203HR Bells may be operated directly from a 12-16 volt A.C. source, either .25 or 60 cycles, by connecting to the

binding posts of the lower terminal block in the housing. When desired the bell can be normally operated from the A.C. source with D.C., approximately 2 volts lower than the A.C. supply, automatically applied to the upper block in case of A.C. power failure.

Variable resistance, item 59 in the diagram, is used to adjust to the input voltage applied within the range 12 to 16.



Ref. No.	Description	Piece No.
A	Type 1203 Bell for normal low voltage A.C. with D.C. reserve for mounting on top of 3½" I.D. pipe. Specify operating voltage and loud or soft tone hammer	1203BR
A1	Same as Ref. A but for mounting on 4" I.D. pipe.....	1203CR
A2	Same as Ref. A but for mounting on 3" I.D. pipe.....	1203DR
A3	Same as Ref. A but for mounting on 5" I.D. pipe.....	1203FR
A4	Same as Ref. A but for mounting on 6" I.D. pipe.....	1203HR

SPECIFY: Operating Voltage and Loud or Soft Tone Hammer. (Loud Tone Hammer will be furnished unless otherwise specified.)

NOTE: Type 1203 Highway Crossing Bell can be mounted on the side of a pole or flat surface by use of the Gooseneck Bracket shown on page 5-26.

For Replacement Parts Listing see pages 5-8 and 5-9.

Type 1203 Highway Crossing Bell

FOR OPERATION ON COMMERCIAL A.C. POWER

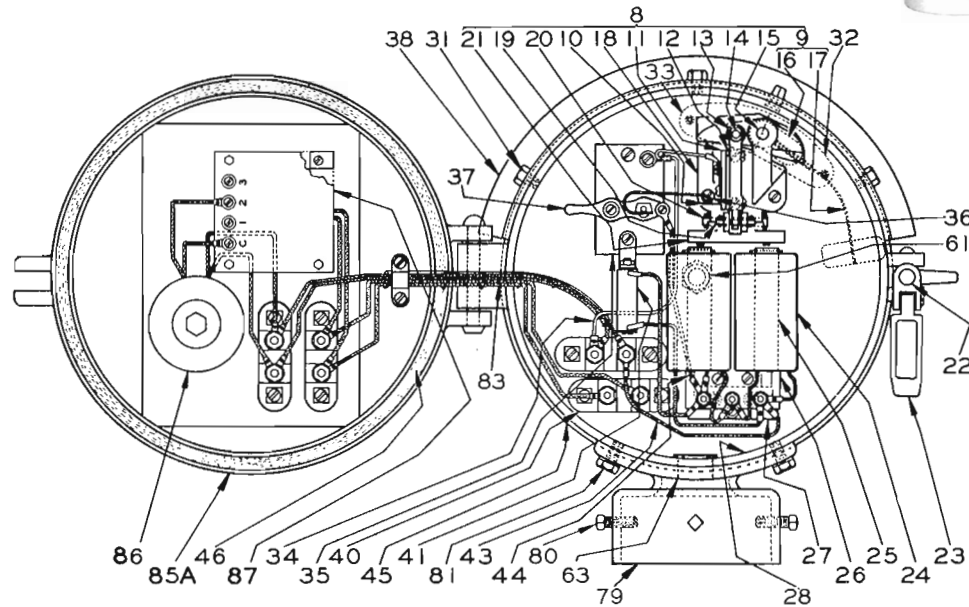
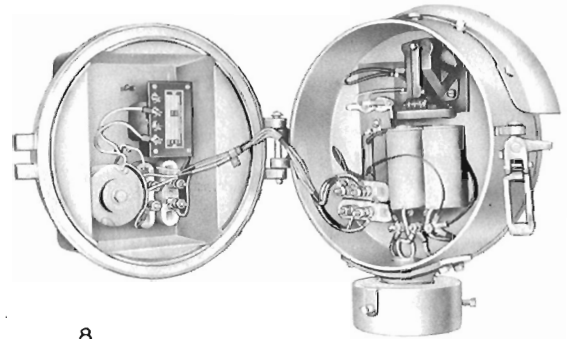
115 or 230 Volts 25 or 60 Cycles

12" Gong

Approximately 200 strokes per minute

The Type 1203B to 1203H Bells are the same as the 1203BR to 1203HR except that a transformer is provided to reduce commercial sources of 115 or 230 volts to 12-16 volts for the rectifier input. Secondary taps on the transformer provide the necessary adjustment for variations in A.C. line voltage.

When ordering Bells with transformers it is necessary to specify the voltage and frequency of the A.C. supply.



Ref. B

Ref. No.	Description	Piece No.
B	Type 1203 Bell A.C. operation for mounting on top of 3 1/2" I.D. pipe. Specify operating voltage, frequency (115 or 230 volts, 25 or 60 cycles), and loud or soft tone hammer.....	1203B
B1	Same as Ref. B but for mounting on 4" I.D. pipe.....	1203C
B2	Same as Ref. B but for mounting on 3" I.D. pipe.....	1203D
B3	Same as Ref. B but for mounting on 5" I.D. pipe.....	1203F
B4	Same as Ref. B but for mounting on 6" I.D. pipe.....	1203H

SPECIFY: Operating Voltage and Frequency (115 or 230 volts, 25 or 60 cycles) and Loud or Soft Tone Hammer. (Loud Tone Hammer will be furnished unless otherwise specified.)

NOTE: Type 1203 Highway Crossing Bell can be mounted on the side of a pole or flat surface by use of the Gooseneck Bracket shown on page 5-26.

For Replacement Parts Listing see pages 5-8 and 5-9.



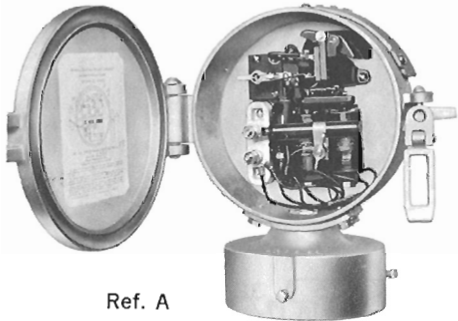
Type 1275 Pedestrian Crossing Bell

For 6 to 16 Volts D.C.

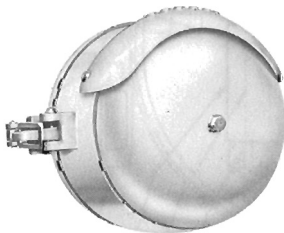
CAST ALUMINUM HOUSING 8" STEEL GONG

Approximately 225 Strokes Per Minute

Bakelite Faced Soft-tone Hammer



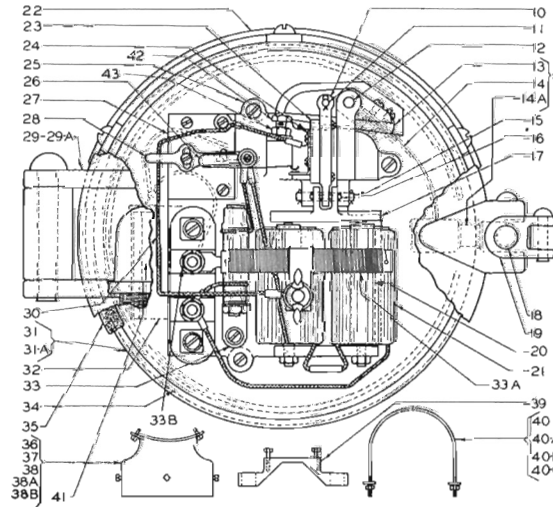
Ref. A



Ref. B

Type 1275 Pedestrian Crossing Bell was especially designed for use in residential areas where too loud a warning might prove offensive. It is identical with the well-known Type 222 Bell except that it is built with an 8" gong and proportionally smaller parts. The Type 1275 bell is equipped with a variable resistance for 6 to 16 volts D.C. operation.

It is furnished with either a mounting socket, attached to the base, for mounting on the top of a pipe post or with adaptor clamps and "U" bolts for mounting on the side of the mast, as listed below.



Ref. No.	Description	Piece No.
A	Type 1275 Pedestrian Crossing Bell for mounting on top of 3½" I.D. pipe post	1275BR
A1	Same as Ref. A but for mounting on 4" I.D. pipe post.....	1275CR
A2	Same as Ref. A but for mounting on 3" I.D. pipe post.....	1275DR
A3	Same as Ref. A but for mounting on 5" I.D. pipe post.....	1275FR
A4	Same as Ref. A but for mounting on 6" I.D. pipe post.....	1275HR
B	Type 1275 Pedestrian Crossing Bell with adaptor clamps and "U" Bolts, for mounting on side of pipe post. (Specify I.D. of pipe).....	1275AR

For Replacement Parts Listing see opposite page.



Type 1275 Pedestrian Crossing Bell

Cast aluminum parts furnished for the Case, Cover, Mounting Socket and Rain Shield are interchangeable with cast iron parts formerly used.

REPLACEMENT PARTS

Ref. No.	Description	Piece No.
9	Assembly of oscillator and hammer.....	1275-3B
10	Operating link	1282
11	Operating link stud.....	1293
12	Oscillator pin	1294
13	Oscillator complete with bushings and stud.....	1280-1
14	Hammer complete with bakelite head.....	1299B
14a	Bakelite head only.....	1299-5B
15	Armature pin	1292
16	Link bracket pin.....	1291
17	Armature	1281-1
18	Locking bolt	1410-11CA
19	Locking hasp and nut.....	1410-31CA
20	Magnet core	1296
21	Magnet coil (2 required).....	1297-3-5
22	Rain shield	1284CA
23	Contact mounting block.....	1287
24	Moving contact	1288
25	Base plate	1283
26	Contact finger	1289
27	Contact mounting block.....	1286
28	Contact finger support.....	1285
29	Door complete (for side of pole mounting).....	1276-5CA
29a	Door complete (for top of pole mounting).....	1276-3CA
30	Flexible wire lead.....	1288-1
31	Bell case (for top of pole mounting).....	1277CA
31a	Bell case (for side of pole mounting).....	1277-1CA
32	¼ M.F. condenser.....	1101-87B
33	Non-arcing resistance.....	1235
33a	Variable resistance unit.....	1210-28A
33b	Variable resistance unit spacer.....	1290-5
34	Steel gong	1295
35	Felt door packing strips.....	1276-4
36	Case socket for 4" I.D. pipe w/mounting screws and set screws.....	1278-3CA
37	Case socket for 3½" I.D. pipe w/mounting screws and set screws.....	1278-4CA
38	Case socket for 3" I.D. pipe w/mounting screws and set screws.....	1278-5CA
38a	Case socket for 5" I.D. pipe w/mounting screws and set screws.....	1278-5ACA
38b	Case socket for 6" I.D. pipe w/mounting screws and set screws.....	1278-6CA
39	Clamp for mounting bell to side of pole (2 required).....	1279-1
40	U-bolt for mounting bell to 4" I.D. pole (2 required).....	1276-11
40a	U-bolt for mounting bell to 3½" I.D. pole (2 required).....	1276-10
40b	U-bolt for mounting bell to 3" I.D. pole (2 required).....	1276-13
40c	U-bolt for mounting bell to 5" I.D. pole (2 required).....	1276-12
41	Wire outlet (used only on 1275A bell).....	1222-15
42	No. 10-24x1/2" long hex head steel cap screw.....	
43	No. 10-24 steel hex nut.....	



Type 555 Highway Crossing Bell

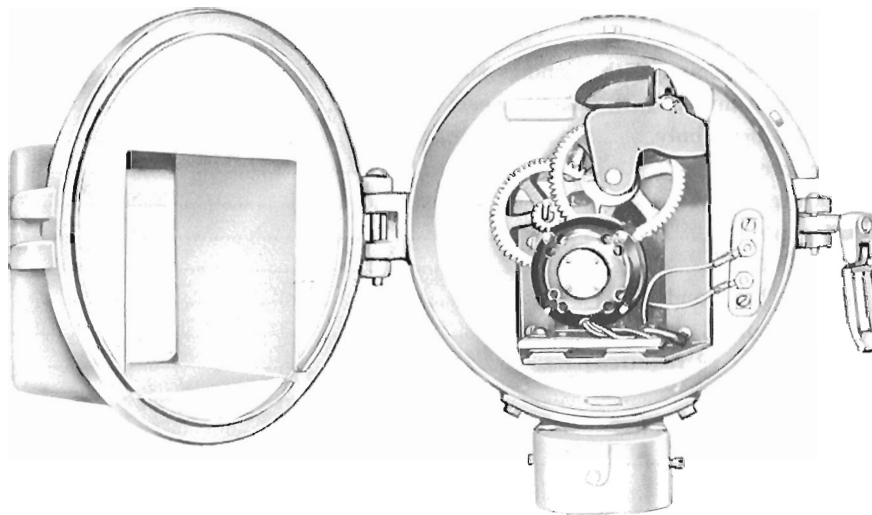
Motor Driven

For 6 to 600 Volts D.C. or 115 or 230 Volts A.C., 25 or 60 cycles

CAST ALUMINUM HOUSING

12" STEEL GONG

Approximately 112 Strokes Per Minute



The Type 555 Gong Type Crossing Bell is of the same general appearance as the Type 222 Bell except that the hinged cover is enlarged to house the motor driven mechanism, consisting of a motor, two gears and a bell hammer. A cam mounted on one of the gear wheels engages and raises a weight to a certain point and then, due to gravity, allows it to drop. The bell hammer is connected to this operating weight by a shaft which causes the hammer to strike the gong a sharp heavy blow when the weight drops, giving a clear penetrating sound. The hammer blows are so timed that the sound waves of one blow

are not broken up by subsequent waves.

This bell can be furnished for operation on any specified direct current voltage from 6 to 600; or for use on alternating current commercial lighting circuits of 115 or 230 volts, either 25 or 60 cycle, as specified.

Special versions of this bell have been developed for use on Diesel locomotives and on "Push-Pull" suburban passenger cars.

For illustrations and details see pages 5-16 & 5-17.

Ref. No.	Description	Piece No.
A	Type 555 Bell for mounting on top of 3½" I.D. pipe post. Specify D.C. voltage or A.C. voltage and frequency.....	0555B
A1	Same as Ref. A but for mounting on 4" I.D. pipe post.....	0555C
A2	Same as Ref. A but for mounting on 3" I.D. pipe post.....	0555D
A3	Same as Ref. A but for mounting on 5" I.D. pipe post.....	0555F
A4	Same as Ref. A but for mounting on 6" I.D. pipe post.....	0555H

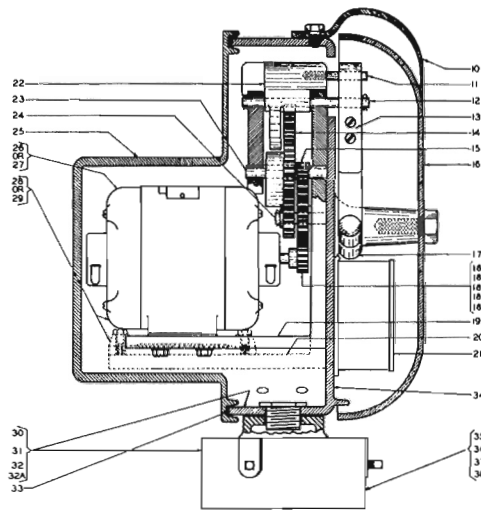
Type 555C Bell can be mounted on the side of pole or flat surface by use of the Gooseneck Bracket shown on page 5-26.



Type 555 Highway Crossing Bell

(Continued)

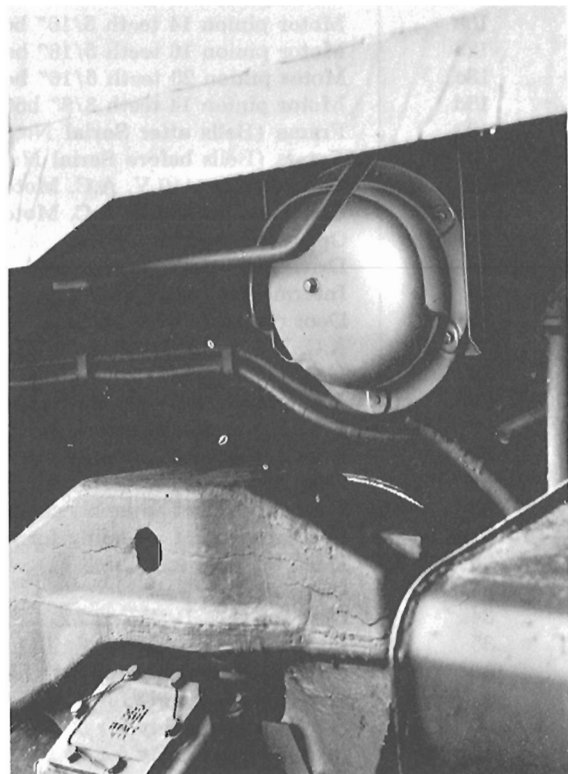
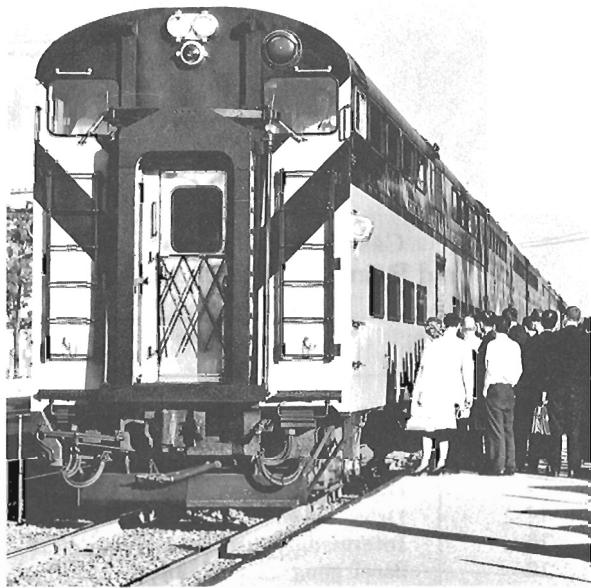
REPLACEMENT PARTS



Cast aluminum parts furnished for the Case, Cover, Mounting Socket and Rain Shield are interchangeable with cast iron parts formerly used.

Ref. No.	Description	Piece No.
10	Rain Shield	1208-CA
11	Operating weight stud.....	1508-4
12	Operating weight shaft.....	1508-3
13	Hammer support	1508-2
14	Drive Gear	1410-1
15	Intermediate gear and pinion.....	1410-16
16	Steel gong	1211
17	Hammer with reinforcements.....	1210-17
18	Motor pinion 12 teeth 5/16" bore.....	1410-15
18a	Motor pinion 14 teeth 5/16" bore.....	1410-15A
18b	Motor pinion 16 teeth 5/16" bore.....	1410-15B
18c	Motor pinion 20 teeth 5/16" bore.....	1410-15C
18d	Motor pinion 14 teeth 3/8" bore.....	1410-15D
19	Frame (Bells after Serial No. 600).....	1411-3-CA
20	Frame (Bells before Serial No. 601).....	1411-1
21	Capacitor for 110 V. A.C. Motor.....	1508-19
21a	Capacitor for 230 V. A.C. Motor.....	1508-19A
22	Operating weight	1508-1
23	Drive gear shaft.....	1410-17
24	Intermediate gear stud.....	1508-14
25	Door complete with packing.....	1507-1
26	A.C. Motor (Bells after Serial No. 600) (Specify voltage and frequency).....	0700-220
27	D.C. Motor (Bells after Serial No. 600) (Specify voltage).....	0700-219
28	A.C. Motor (Bells before Serial No. 601) (Specify voltage and frequency).....	1410-34
29	D.C. Motor (Bells before Serial No. 601) (Specify voltage).....	1410-35
30	Case and socket assembly for mounting on 3½" I.D. pipe.....	1506-1A
31	Case and socket assembly for mounting on 4" I.D. pipe.....	1506-2A
32	Case and socket assembly for mounting on 3" I.D. pipe.....	1506-3A
32a	Case and socket assembly for mounting on 5" I.D. pipe.....	1506-4A
33	Door Packing	1217-2
34	Case for A.C. Bell.....	1506-CA
34a	Case for D.C. Bell.....	1506A-CA
35	Socket subassembly for 3" I.D. pipe.....	1206-3B-CA
36	Socket subassembly for 3½" I.D. pipe.....	1206-2B-CA
37	Socket subassembly for 4" I.D. pipe.....	1206-4B-CA
38	Socket subassembly for 5" I.D. pipe.....	1206-5B-CA
38a	Socket subassembly for 6" I.D. pipe.....	1206-6B-CA

Type 555ACN Motor Driven Bells
FOR DIESEL LOCOMOTIVES
OR
"PUSH-PULL" PASSENGER CARS
74 Volts D.C. or 115 Volts 60 Cycles
Typical Installations

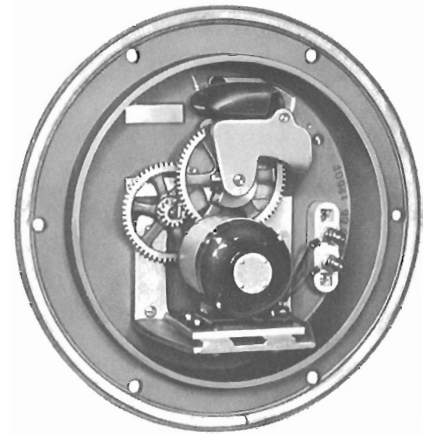




Type 555ACN Motor Driven Bells

FOR DIESEL LOCOMOTIVES and "PUSH-PULL" PASSENGER CARS
74 volts D.C. or 115 volts, 60 cycles

CAST ALUMINUM HOUSING 12" BELL-STEEL GONG



The Type 555ACN Gong Type Motor Driven Bell has an operating mechanism which is generally similar to that of the Type 555 Highway Crossing Bell, consisting of a 1/50 horsepower motor, two gears and a bell hammer. A cam mounted on one of the gear wheels engages and raises a weight to a certain point and then allows it to drop. The bell hammer is connected to the operating weight which causes the hammer to strike the bell-steel gong a sharp heavy blow when the weight drops, giving a clear penetrating sound. The hammer blows are so timed that the sound waves of one blow are not broken up by subsequent sound waves.

This type of mechanism is well adapted for use on Diesel locomotives, "Push-Pull" type passenger cars and other moving vehicles. Swaying and jolting motions do not interfere with the even spacing of the hammer blows which usually occurs with vibrating bells.

For "Push-Pull" cars and most locomotive applications the Type 555ACN-115 and Type 555ACN-74 bells are used. They have a flange for mounting the bell in the bulkhead with the gong on the outside and the mechanism on the inside for easy access for service and inspection.

The Type 555ACN-74C Bell has a cover to enclose the mechanism so that the entire bell may be mounted externally, as below the running board on a locomotive, or similar location.

Type 555ACN-115 Bell is equipped with an A.C. motor for operation from the 115 volt, 60-cycle, car lighting circuit.

Type 555ACN-74 and Type 555ACN-74C Bells are equipped with 74 volt D.C. motors for operation from the Diesel engine starting battery.

Ref. No.	Description	Piece No.
A	Type 555ACN Motor Driven Bell, bulk-head mounting, for 115 volt, 60 cycle operation.....	0555ACN-115
A1	Same as Ref. A but for 74 volt D.C. operation.....	0555ACN-74
B	Type 555ACN-74C Motor Driven Bell, fully enclosed, for 74 volt D.C. operation.....	0555ACN-74C

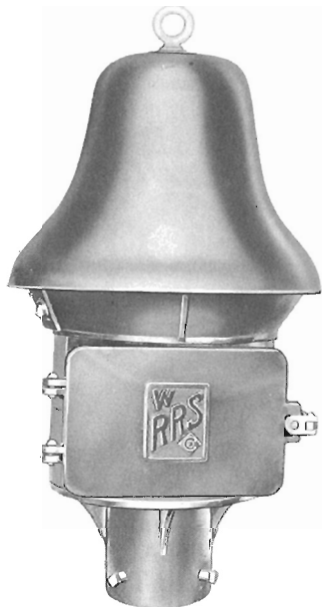


Type AL-50 Locomotive Type Bell Motor Driven

For 10 or 110 Volts D.C. and 115 or 230 Volts A.C., 25 or 60 cycles

16" LOCOMOTIVE GONG

Approximately 32 Strokes Per Minute



The Type AL-50 Motor Driven Locomotive Type Bell is particularly adapted for use where a very penetrating audible warning is required, as in industrial areas and inside plants or mills with high ambient noise level.

The mechanism is extremely simple, consisting of a motor and a train of gears to drive a cam to raise a weight, which, being attached to the clapper, delivers heavy, evenly-timed blows to the inside of the 16" bell-steel gong. The motor and gears are mounted on a removable base.

The bell may be equipped with a motor to operate on any commercial A.C. voltage and frequency or on 10 volts or 110 volts D.C., as specified.

Ref. No.	Description	Piece No.
A	Type AL-50 Locomotive type bell for mounting on top of 4" I.D. pipe post. (Specify D.C. voltage or A.C. voltage and frequency).....	AL-50C
A1	Same as Ref. A but for mounting on 5" I.D. pipe post.....	AL-50F

Type AL-50C Bell can be mounted on the side of pole or flat surface by use of the Gooseneck Bracket shown on page 5-26.

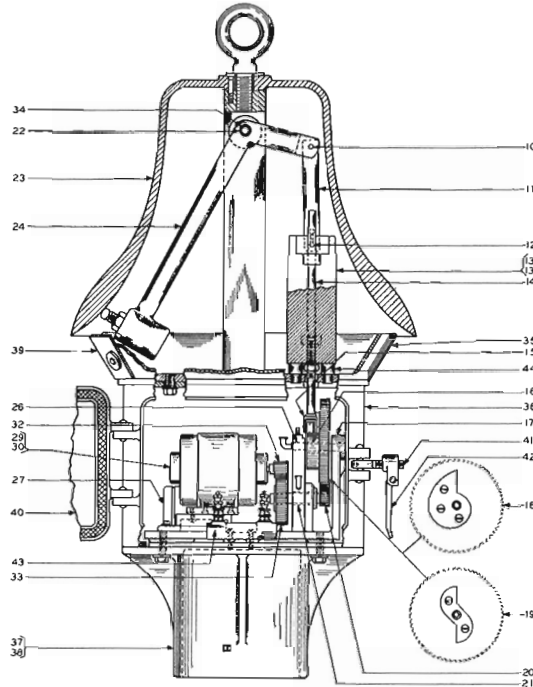
For Replacement Parts Listing see opposite page



Type AL-50 Locomotive Type Bell

REPLACEMENT PARTS

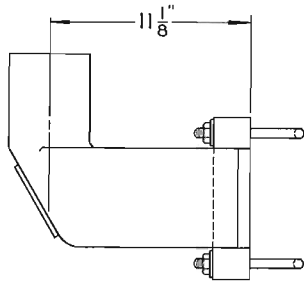
For bells with 3-piece mechanism housing



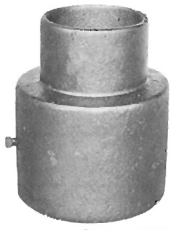
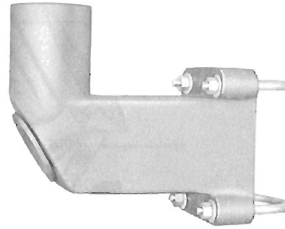
Ref. No.	Description	Piece No.
10	Connecting link pin.....	0050-18
11	Connecting link	0050-26
12	Operating weight pin.....	0050-32
13	Operating weight with bumpers..... (For Bells shipped before April 15, 1957.)	0050-5
13a	Operating weight only..... (For Bells shipped after April 15, 1957.)	0050-51A
14	Guide stud	0050-20
15	Roller assembly	0050-10
16	Bushing	0050-16
17	Mechanism frame	0050-3
18	Drive gear and single step cam.....	0050-33
19	Drive gear and double step cam.....	0050-34
20	Shaft gear	0050-24
21	Bushing	0050-15
22	Bushing	990-13
23	Steel gong	990-11
24	Clapper complete	0050-23
26	Gear shaft with oil cup.....	0050-35
27	Capacitor for 115 Volt A.C. motor.....	0700-210
27a	Capacitor for 230 Volt A.C. motor.....	0700-210A
29	D.C. motor (specify voltage).....	Dg. 0050-28
30	A.C. motor (Specify voltage and frequency).....	Dg. 0050-29
32	Motor pinion	0050-25
33	Connecting gear	0050-7
34	Clapper pivot pin.....	990-31
35	Gong Support	990-150A
36	Mechanism housing	990-152A
37	Base socket for 4" pipe post.....	990-154A
38	Base socket for 5" pipe post.....	990-155A
39	Hand hole cover with screws.....	990-156B
40	Housing cover with packing.....	990-151B
41	Hasp eye bolt.....	1410-11
42	Locking hasp	1410-30
43	Terminal Strip	1056-14
44	Bumper	0050-22



Mounting Fittings for Highway Crossing Bells



Gooseneck Bracket
Ref. A



Reducer
5" to 4" I.D. Pipe
Ref. B



Adaptor for Mounting
Bells on Flat Surfaces
Ref. C and D

Gooseneck Brackets are furnished for Bell Sockets 4½" I.D. (equivalent to 4" I.D. pipe post.) Gooseneck Brackets may be used with bolts or lag screws to mount bells on the side of buildings or other vertical surfaces.

Ref. No.	Description	Piece No.
A	Type 873 Gooseneck Bracket complete with "U" bolts for 4" I.D. Pipe Mounting	873-29B
A1	Same as Ref. A but for 3½" I.D. pipe mounting.....	873-28B
A2	Same as Ref. A but for 5" I.D. pipe mounting.....	873-30B
A3	Same as Ref. A but for 3" I.D. pipe mounting.....	873-27B
A4	Same as Ref. A but for 6" I.D. pipe mounting.....	873-31B
A5	Same as Ref. A but for 8" I.D. pipe mounting.....	873-32B
B	Reducer for 5" to 4" I.D. pipe.....	990-63
C	Adaptor for mounting bell with socket for 4" I.D. pipe on top of any flat surface.....	216-2
D	Adaptor for mounting bell with socket for 3" I.D. pipe on top of any flat surface.....	216-3



Type 1275 Pedestrian Crossing Bell

Cast aluminum parts furnished for the Case, Cover, Mounting Socket and Rain Shield are interchangeable with cast iron parts formerly used.

REPLACEMENT PARTS

Ref. No.	Description	Piece No.
9	Assembly of oscillator and hammer.....	1275-3B
10	Operating link	1282
11	Operating link stud.....	1293
12	Oscillator pin	1294
13	Oscillator complete with bushings and stud.....	1280-1
14	Hammer complete with bakelite head.....	1299B
14a	Bakelite head only.....	1299-5B
15	Armature pin	1292
16	Link bracket pin.....	1291
17	Armature	1281-1
18	Locking bolt	1410-11CA
19	Locking hasp and nut.....	1410-31CA
20	Magnet core	1296
21	Magnet coil (2 required).....	1297-3-5
22	Rain shield	1284CA
23	Contact mounting block.....	1287
24	Moving contact	1288
25	Base plate	1283
26	Contact finger	1289
27	Contact mounting block.....	1286
28	Contact finger support.....	1285
29	Door complete (for side of pole mounting).....	1276-5CA
29a	Door complete (for top of pole mounting).....	1276-3CA
30	Flexible wire lead.....	1288-1
31	Bell case (for top of pole mounting).....	1277CA
31a	Bell case (for side of pole mounting).....	1277-1CA
32	¼ M.F. condenser.....	1101-87B
33	Non-arcing resistance.....	1235
33a	Variable resistance unit.....	1210-28A
33b	Variable resistance unit spacer.....	1290-5
34	Steel gong	1295
35	Felt door packing strips.....	1276-4
36	Case socket for 4" I.D. pipe w/mounting screws and set screws.....	1278-3CA
37	Case socket for 3½" I.D. pipe w/mounting screws and set screws.....	1278-4CA
38	Case socket for 3" I.D. pipe w/mounting screws and set screws.....	1278-5CA
38a	Case socket for 5" I.D. pipe w/mounting screws and set screws.....	1278-5ACA
38b	Case socket for 6" I.D. pipe w/mounting screws and set screws.....	1278-6CA
39	Clamp for mounting bell to side of pole (2 required).....	1279-1
40	U-bolt for mounting bell to 4" I.D. pole (2 required).....	1276-11
40a	U-bolt for mounting bell to 3½" I.D. pole (2 required).....	1276-10
40b	U-bolt for mounting bell to 3" I.D. pole (2 required).....	1276-13
40c	U-bolt for mounting bell to 5" I.D. pole (2 required).....	1276-12
41	Wire outlet (used only on 1275A bell).....	1222-15
42	No. 10-24x1/2" long hex head steel cap screw.....	
43	No. 10-24 steel hex nut.....	



SECTION 6

Terminal Housings

CONTENTS

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Terminal Housings (Pedestal Type).....	6-3 to 6-13
Pole Terminal Housings.....	6-15 to 6-41
Flexible Connections	6-56
Padlocks	6-61

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632

Type 1155 Terminal Housing



Type 1155 Terminal Housing is made of cast iron and can hold as many as four A.A.R. Terminals which may be installed in the head casting. Different kinds of connectors and bushings can be used. Standard height, 17" overall; riser, 2" I.D.; head 5" sq. by 3¼" deep. A riser is also available to provide 24" overall height, if specified.

Ref. No.	Description	Piece No.
A	Type 1155 Terminal Housing with two fibre bushings and one A.A.R. terminal block.....	1155-187
A1	Same as Ref. A but with two A.A.R. terminal blocks.....	1155-188
A2	Same as Ref. A but with three A.A.R. terminal blocks.....	1155-189
B	Type 1155 Terminal Housing with two 3/4" pipe tap holes, one on each side, for flexible metal conduit connection.....	1155-126
C	Type 1155 Terminal Housing with one 14" long rubber house, one 2-post terminal strip and one 3-post terminal strip.....	1155-143
E	Type 1155 Terminal Housing with two connectors (for .750" to .812" dia. cable), one on each side and two 4-post terminal strips.....	1155-163
F	Type 1155 Terminal Housing with two cable grips (for .375" to .500" dia. cable) on one side.....	1155-176
G	Type 1155 Terminal Housing with two porcelain bushings (Federal A2) on one side and one A.A.R. terminal block.....	1155-158
H	Type 1155 Terminal Housing with one 1½" dia. hole on one side and with two 4-post terminal strips.....	1155-131
H1	Same as Ref. H but with one 1" pipe tap hole.....	1155-131A
H2	Same as Ref. H but with two 1" tap holes with one on each side.....	1155-131B
H3	Same as Ref. H but with two 1" pipe tap holes on one side.....	1155-131C
J	Type 1155 Terminal Housing with one 1" squeeze connector and one A.A.R. terminal block.....	1155-171
J1	Same as Ref. J but with two A.A.R. terminal blocks.....	1155-172
J2	Same as Ref. J but with three A.A.R. terminal blocks.....	1155-173
J3	Same as Ref. J but with four A.A.R. terminal blocks.....	1155-174
J4	Same as Ref. J but with one 1½" squeeze connector and four A.A.R. terminal blocks	1155-175
J5	Same as Ref. J but less A.A.R. terminal block.....	1155-170
J6	Same as Ref. J but less connector and with four A.A.R. terminal blocks.....	1155-175A
K	Type 1155 Terminal Housing with one connector (for .500" to .625" dia. cable) and one A.A.R. terminal block.....	1155-155A
K1	Same as Ref. K less connector.....	1155-155B
L	Type 1155 Terminal Housing with one connector (for .500" to .625" dia. cable) and two A.A.R. terminal blocks.....	1155-161
L1	Same as Ref. L but with one A.A.R. terminal block.....	1155-161A
M	Type 1155 Terminal Housing with one 1½" straight squeeze connector and one A.A.R. terminal block.....	1155-110F
N	Type 1155 Terminal Housing with one 1½" straight squeeze connector and five 2-post terminal blocks (1" c.c.).....	1155-145
P	Type 1155 Terminal Housing with one fibre bushing less pipe and base.....	1155-157
P1	Same as Ref. P plus No. 7321 resistance unit.....	1155-157R

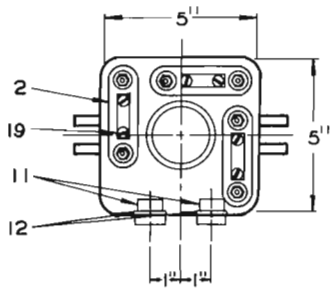
Replacement parts list on following page



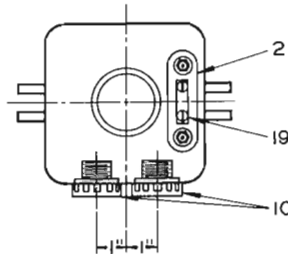
Type 1155 Terminal Housing

Ref. No.	Description	Piece No.
REPLACEMENT PARTS		
1	Pipe and Base sub-assembly for 17" overall height.....	1155-58
1A	Same as Ref. 1 but for 24" overall height.....	1155-58F
2	A.A.R. terminal block with connector.....	1056-5
2A	Same as Ref. 2 less connector.....	1056-10
3	Terminal strips with two terminal posts.....	2508-102
3A	Same as Ref. 3 but with three terminal posts.....	2508-103
3B	Same as Ref. 3 but with four terminal posts.....	2508-104
4	1" terminal block with connector.....	2506-102
5	Resistance Unit.....	7321
6	Top casting for Ref. H.....	1155-123K2
6A	Top casting for Ref. H1.....	1155-23UA
6B	Top casting for Ref. H2.....	1155-123L4
6C	Top casting for Ref. H3.....	1155-23BL
6D	Top casting for Ref. B.....	1155-123C4
6E	Top casting for Ref. C.....	1155-23S
6F	Top casting for Ref. E.....	1155-23CL
6G	Top casting for Ref. F.....	1155-23AZ
6H	Top casting for Ref. G.....	1155-23W
6J	Top casting for Ref. A, A1, A2.....	1155-123E4
6K	Top casting for Ref. J, J1, J2, J3.....	1155-123H2
6L	Top casting for Ref. J4, J6, L.....	1155-123K2
6M	Top casting for Ref. J5.....	1155-123H1
6N	Top casting for Ref. K.....	1155-123C2
6P	Top casting for Ref. K1.....	1155-123
6R	Top casting for Ref. L & L1.....	1155-123B2
6T	Top casting for Ref. M.....	1155-23CX
6U	Top casting for Ref. N.....	1155-23MA
7	Cover.....	1155-122
8	Connector for .750" to .812" dia. cable Ref. E.....	
8A	Connector for .375" to .500" dia. cable Ref. F & K.....	
8B	Connector for .500" to .625" dia. cable Ref. J.....	
9	1" Straight Squeeze Connector Ref. J & L.....	
9A	1½" Straight Squeeze Connector Ref. J & M.....	
10	Porcelain Bushing for .4687" to .8125" dia. cable Ref. G.....	
11	Fibre Bushing 1/2" I.D. Ref. A.....	1165-12
11A	Fibre Bushing, 1/4" I.D. Ref. P.....	1165-12B
12	Retaining Spring for fibre bushing Ref. A & N.....	531
13	Eyebolt.....	1247-4
14	Wing Nut.....	1247-5
15	3/16" dia. x 1½" lg. Rd. Hd. Rivet (brass).....	
16	7/16" dia. x 18" lg. Torchwick packing.....	
17	337" I.D. x 7/8" O.D. plain washer (brass).....	
18	3/8" x 5/8" lg. cup point set screw (steel).....	
19	No. 10 - 32 x 3/4" lg. Rd. Hd. Machine Screw (brass).....	
20	Bushing—2" dia. conduit for Ref. C.....	
21	Lock Nut—2" dia. conduit for Ref. C.....	
22	Clamp for Ref. C.....	1143-24
23	Sleeve, for Ref. C (steel).....	1143-25
24	Rubber hose—3 ply, 1¼" I.D. x 1¼" O.D., 14" lg. for Ref. C.....	
25	1/4" - 20 x 1¼" lg. Hex. Hd. Cap. Scr. for Ref. C (steel).....	
26	1/4" - 20 Hex. Nut for Ref. C (steel).....	
27	Mach. Screw No. 8-32 x 1/4" lg. Rd. Hd. for Ref. C.....	
28	Cover Plate for Ref. C.....	
29	3/4" std. lock nut for Ref. E.....	
30	Bracket, Dilecto Grade M for Ref. P.....	1155-26
31	Washer, Dilecto Grade L for Ref. P.....	0300-241
32	No. 10 - 32 x 1¼" lg. Rd. Hd. Mach. Screw for Ref. P.....	

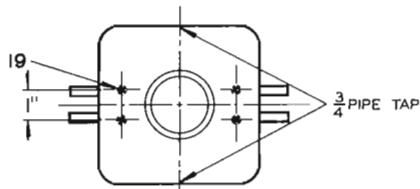
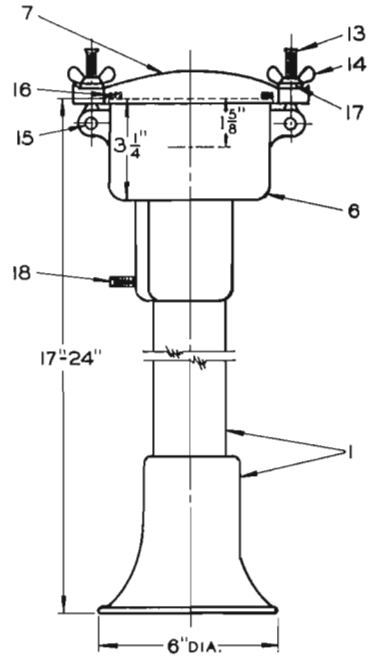
Type 1155 Terminal Housing



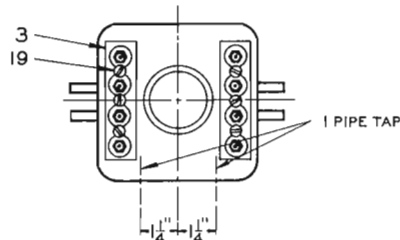
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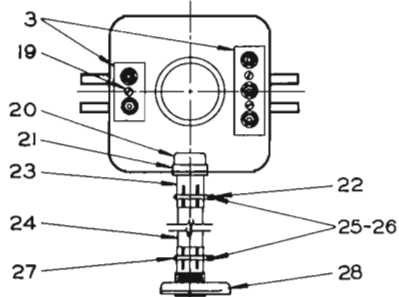
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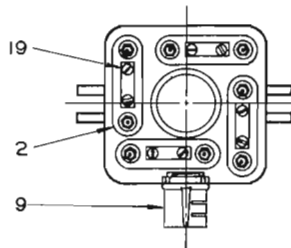
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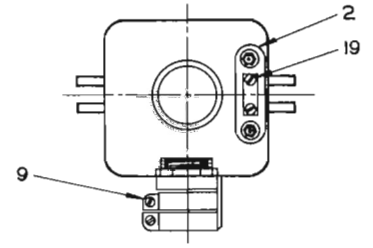
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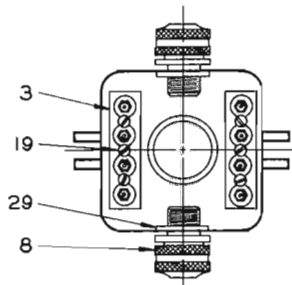
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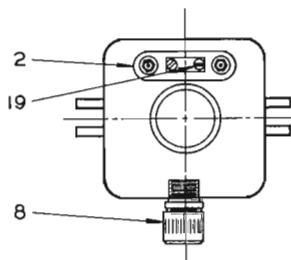
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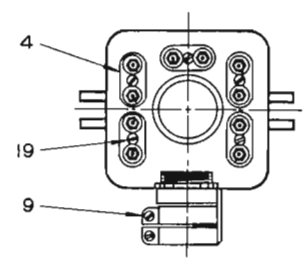
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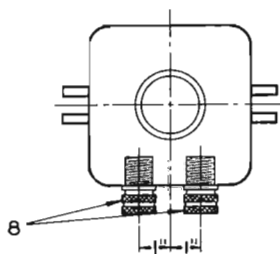
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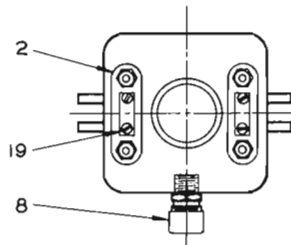
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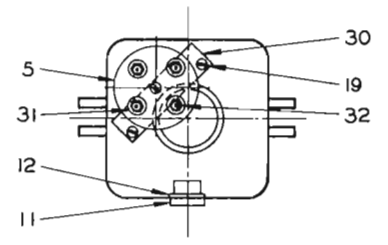
Ref. N



Ref. F

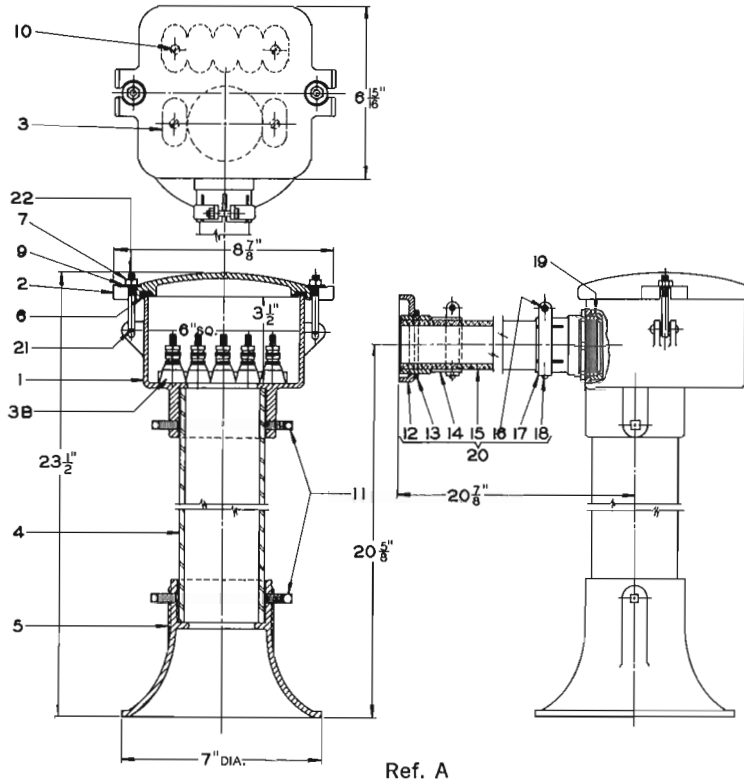


Ref. L

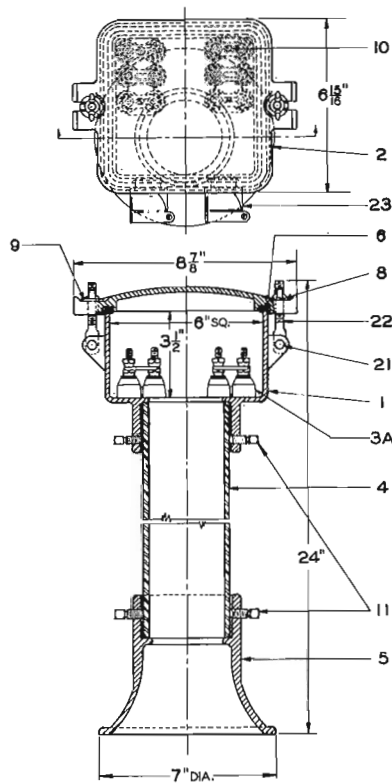


Ref. P

Type 1182 Terminal Housing



Ref. A



Ref. B



Type 1182 Terminal Housing

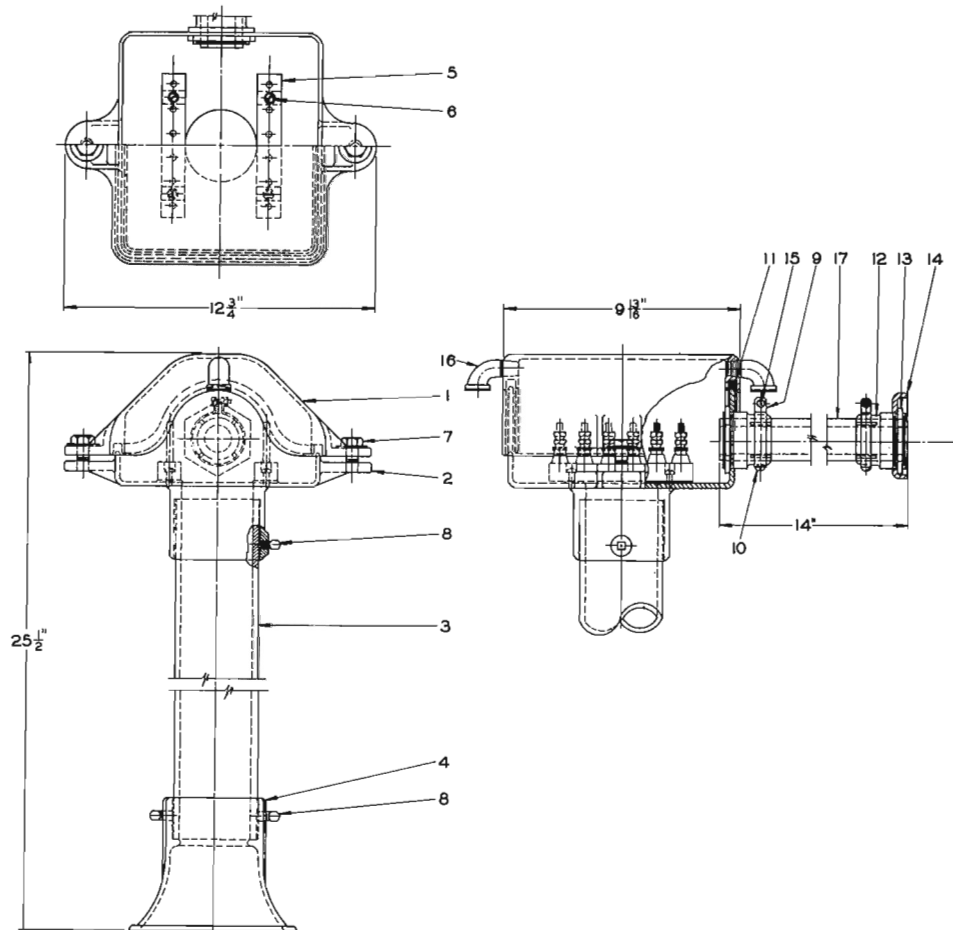
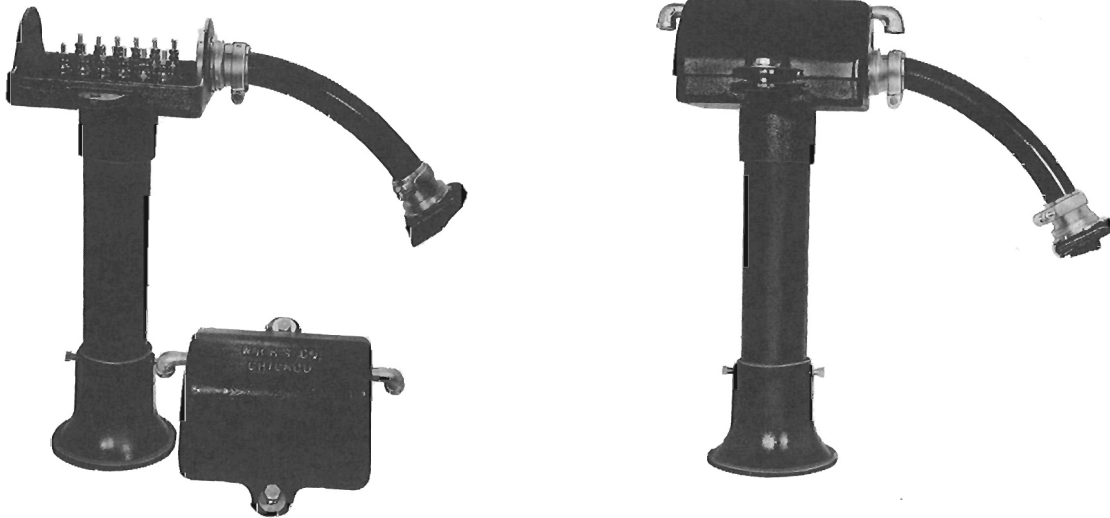


The 1182 Terminal Housing has the Riser offset leaving mounting space for more terminals in the box. Terminals, Connectors and Riser other than those listed can be furnished if specified on order.

Ref. No.	Description	Piece No.
A	Type 1182 Terminal Housing, complete with flexible connection for U.S. & S. Co. Switch Circuit Controller and eight Terminal Blocks.....	1182-22
B	Type 1182 Terminal Housing, complete with two 1/2" straight squeeze connectors and six Terminal Blocks.....	1182-10A
<u>REPLACEMENT PARTS</u>		
1	Top Casting for Ref. A.....	1182-11E
1A	Top Casting for Ref. B.....	1182-11G
2	Cover	1182-12
3	Terminal Block for Ref. A.....	2506-102
3A	Terminal Block for Ref. B.....	2506-106
3B	Terminal Block for Ref. A.....	2506-110
4	3" I.D. x 15" lg. std. pipe.....	
5	Foot	1103-12
6	1/2" dia. x 24" lg. Torchwick packing.....	
7	5/16" - 18 hex. nut.....	
8	Wing Nut	1247-5
9	5/16" plain washer, stl.....	
10	No. 10—32 x 5/8" lg. rd. hd. machine screw, brass.....	
11	3/8"—16 x 3/4" lg. cup point set screw, stl.....	
12	Cover plate	1705-18
13	2" conduit locknut	
14	Sleeve	1182-25
15	2" O.D. x 1 1/2" I.D. Rubber hose 19 1/2" lg.....	
16	1/4" - 20 x 1 1/4" lg. hex. hd. mach. screw and hex. nut, stl.....	
17	Clamp	1182-15
18	No. 8-32 x 1/4" lg. rd. hd. mach. screw, brass.....	
19	2" conduit bushing	
20	Flexible Connector, complete with cover for U-5 switch circuit controller, includes items 12 to 18.....	1182-24U
21	3/16" x 1 1/4" lg. rd. hd. rivet, brass.....	
22	Eye bolt	1247-6
23	1/2" straight squeeze connector.....	



Type 1143 Terminal Housing





Type 1143 Terminal Housing

Type 1143 Terminal Housing has a rounded top cover and is furnished with two 6-post terminal strips and one 1¼" I.D. x 14" long rubber hose connection with cover plate for specified switch circuit controller.

It may also be equipped, as required, for use with switch machines and other similar apparatus.

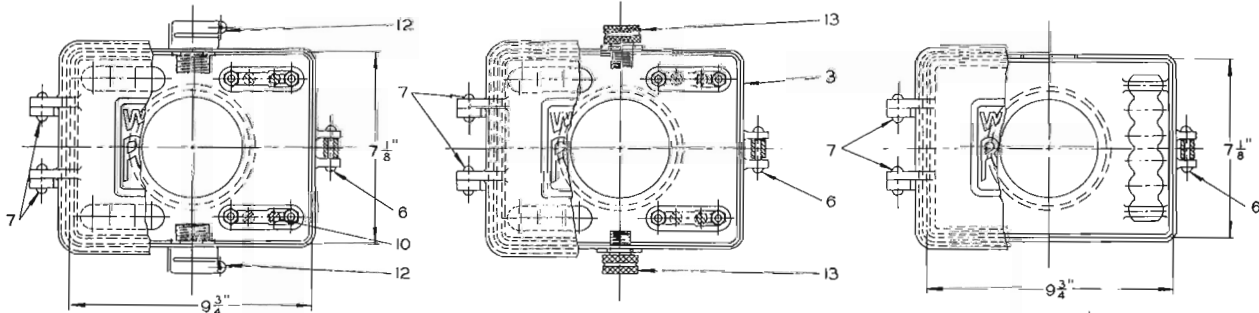
Ref. No.	Description	Piece No.
A	Type 1143 Terminal Housing with one outlet complete with rubber hose and cover plate for connecting to U.S. & S., U.5 switch circuit controllers.....	1143-1
A-1	Same as Ref. A but for G.R.S. Model 5 circuit controllers.....	1143-1A
REPLACEMENT PARTS		
1	Cover	1143-13
2	Top Casting	1143-11
3	3" Std. Pipe 15" long (steel).....	
4	Foot casting	1103-12
5	Terminal Strip (6 post).....	2508-106
6	No. 10-32 x 5/8" lg. rd. hd. mach. scr. (brass).....	
7	1/2" - 13 x 1¼" lg. hex. hd. cap, scr. and 2 washers (cadmium plated).....	
8	3/8" - 16 x 1/2" lg. sq. hd. cup point set scr. (cadmium plated).....	
9	2" I.D. Clamp.....	1143-15
10	No. 8-32 x 1/4" lg. rd. hd. mach. scr. (cadmium plated).....	
11	3/8" Torchwick packing 38" lg.....	
12	Sleeve	1143-25
13	2" std. conduit lock nut.....	
14	Cover plate for US&S U-5 switch circuit controller.....	1705-1B
14A	Cover plate for GRS Model 5 switch circuit controller.....	1702-1B
15	1/4"-20 x 1¼" lg. hex hd. mach. scr. and hex nut.....	
16	Ventilator	1143-16
17	1¼" I.D. x 1¼" O.D. 3 ply Rubber hose.....	



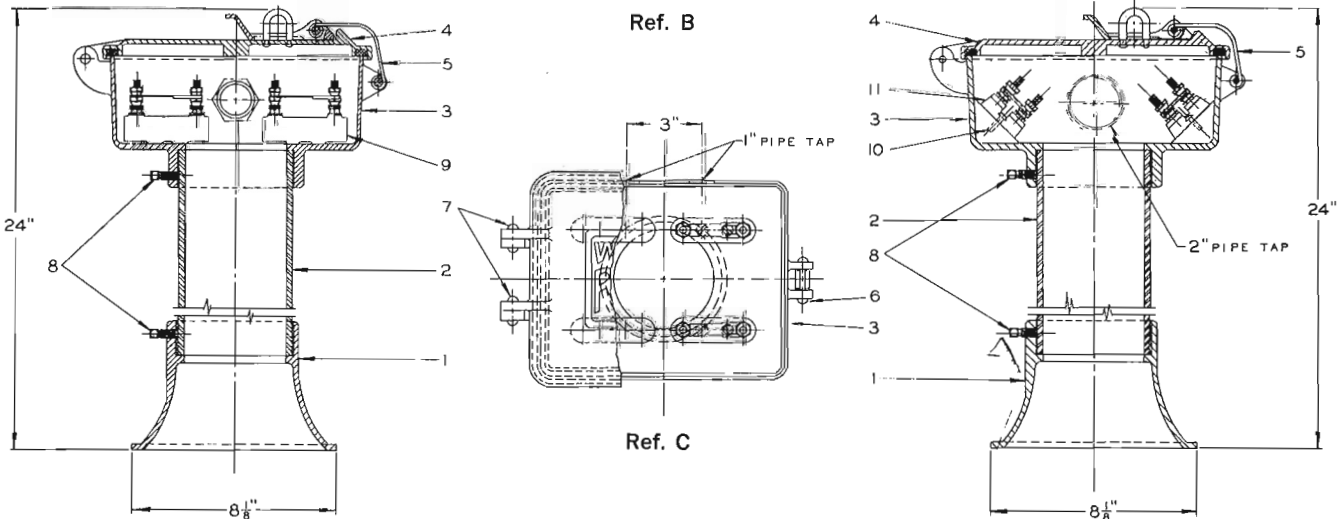
Type 1233 Terminal Housing



Ref. A



Ref. B



Ref. A

Ref. D

Ref. C



Type 1233 Terminal Housing

Type 1233 Terminal Housing consists of a terminal box $9\frac{3}{8}''$ x $6\frac{3}{4}''$ x $3\frac{5}{8}''$ deep in which as many as 24 A.A.R. binding posts can be provided (either 12 No. 10565 A.A.R. Terminal Blocks or 2 Type 2506 Twelve post Multiple Unit Terminal strips.) Pipe riser is four inches inside diameter. Overall height is 24 inches.

When required, a squeeze connector (specify size) will be mounted in one or two sides of the terminal box.

Standard assemblies call for 4 No. 10565 A.A.R. Terminal Blocks or 2 Type 2506 Twelve-Post Multiple Unit Terminal Strips. Other combinations of terminals can be furnished if specified on order.

Ref. No.	Description	Piece No.
A	Type 1233 Terminal Housing complete with four A.A.R. terminals No. 1056-5E and two 1" squeeze connectors, one on each side.....	1233-4E
A1	Same as Ref. A less 1" squeeze connector but drilled for same.....	1233-4EA
A2	Same as Ref. A but with two 3/4" squeeze connectors, one on each side.....	1233-4F
A3	Same as Ref. A less squeeze connectors, but drilled for two 1" connectors.....	1233-4
B	Type 1233 Terminal housing complete with four A.A.R. terminals No. 1056-5E and two 3/4" cable grips for .437" to .562" OD Cables.....	1233-4J
C	Type 1233 Terminal Housing complete with four A.A.R. terminals No. 1056-5E and two 1" pipe taped holes on one side.....	1233-4G
D	Type 1233 Terminal Housing complete with twelve A.A.R. terminals No. 2506-112 and one 2" pipe taped hole.....	1233-12K
D1	Same as Ref. D but with two 1" pipe taped holes, one on each side.....	1233-12ER
D2	Same as Ref. D but with one 1" pipe taped hole.....	1233-12EP
D3	Same as Ref. D less pipe taped hole.....	1233-12
D4	Same as Ref. D but drilled for one 3/4" squeeze connector.....	1233-12B
D5	Same as Ref. D but drilled for one 1" squeeze connector.....	1233-12C
D6	Same as Ref. D but drilled for one 1 1/4" squeeze connector.....	1233-12D
D7	Same as Ref. D but drilled for one 1 1/2" squeeze connector.....	1233-12E
D8	Same as Ref. D but complete with one 2" squeeze connector.....	1233-12F

Replacements Parts List on following page



Type 1233 Terminal Housing

Ref. No.	Description	Piece No.
<u>REPLACEMENT PARTS</u>		
1	Foot Casting.....	A-233-2
2	4" Standard Pipe, 15" lg.....	
3	Case for Ref. A & A1.....	1233-1HA
3A	Case for Ref. A2 & B.....	1233-1L
3B	Case for Ref. A3.....	1233-1
3D	Case for Ref. C.....	1233-1K
3E	Case for Ref. D1.....	1233-1J
3F	Case for Ref. D2.....	1233-1JA
3G	Case for Ref. D3.....	1233-1A
3H	Case for Ref. D4.....	1233-1B-1
3J	Case for Ref. D5.....	1233-1B-2
3K	Case for Ref. D6.....	1233-1B-3
3L	Case for Ref. D7.....	1233-1B-4
3M	Case for Ref. D8.....	1233-1B-5
4	Cover with staple and packing.....	1265-5X
5	Hasp complete.....	1265-40
6	5/16" x 1 1/4" lg. rd. brass rivet.....	
7	1/4" x 1" lg. rd. brass rivet.....	
8	3/8" x 3/4" lg. steel cup point set screw.....	
9	A.A.R. Terminal Block.....	1056-5
10	No. 10-32 x 3/4" lg. rd. hd. mach. screw brass.....	
11	A.A.R. Terminal Strip.....	2506-112
12	3/4" Squeeze Connector.....	
12A	1" Squeeze Connector.....	
12B	1 1/4" Squeeze Connector.....	
12C	1 1/2" Squeeze Connector.....	
12D	2" Squeeze Connector.....	
13	3/4" Cable grip for .437" to .562" O.D. cable.....	



Type 1183 Terminal Housing

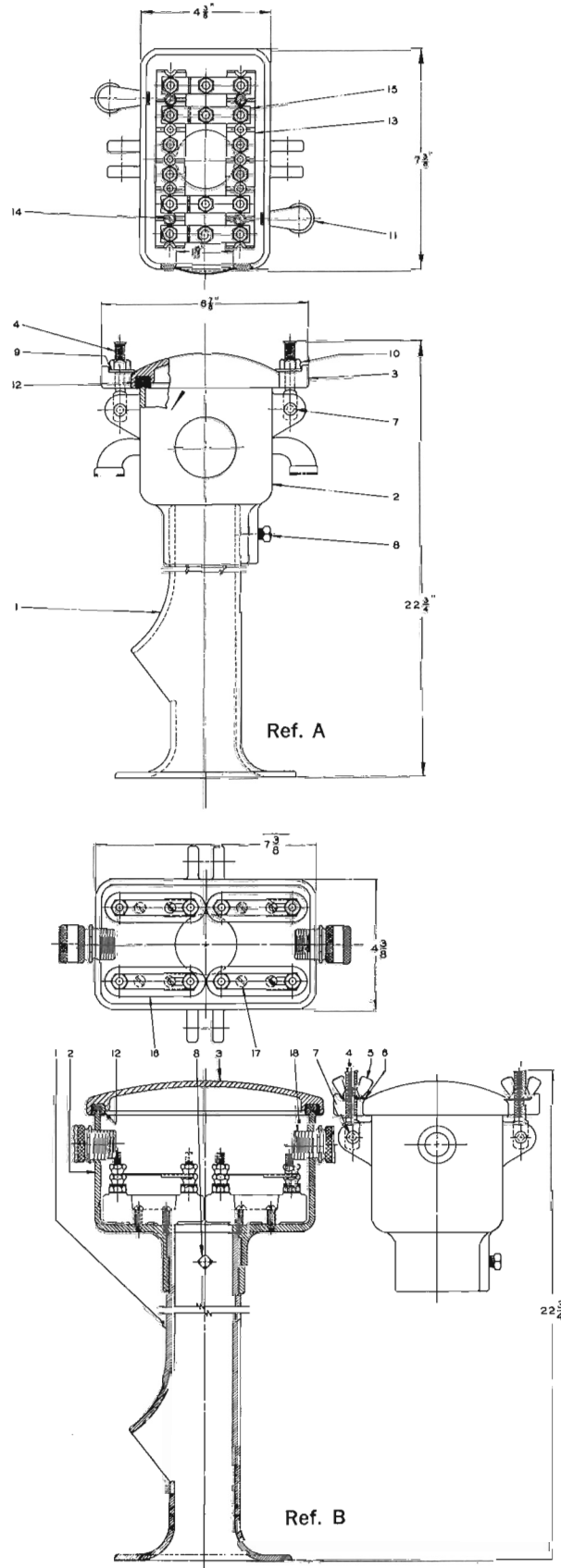


Type 1183 Terminal Housing is made of cast iron and can hold as many as four A.A.R. Terminals which may be installed in the head casting. Different kinds of connectors and bushings can be used. Standard height, 22 $\frac{3}{4}$ " overall; riser, 2" I.D.; head 4 $\frac{3}{8}$ " x 7 $\frac{3}{8}$ " x 3 $\frac{3}{4}$ " deep.

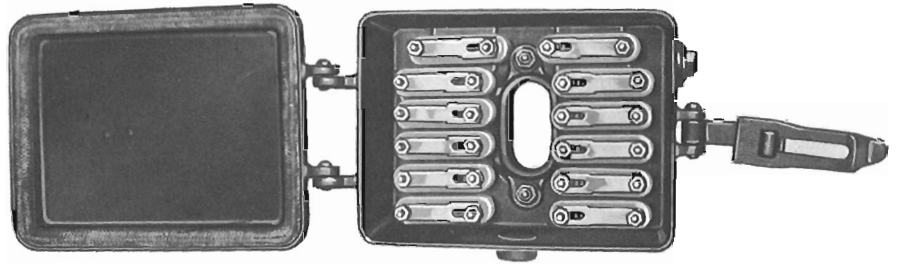
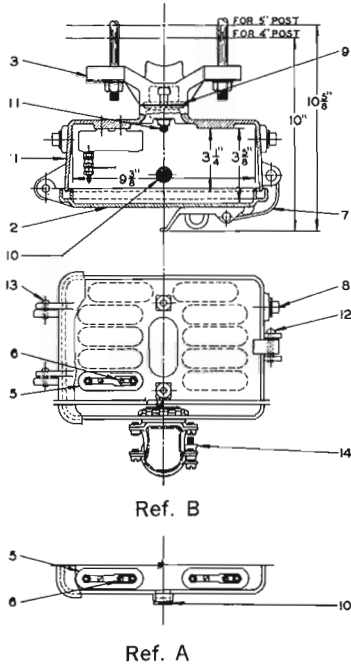
Ref. No.	Description	Piece No.
A	Type 1183 Terminal Housing complete with two No. 2508-106 A.A.R. Terminal Strip and four test links and two ventilators.....	1183-94
B	Type 1183 Terminal Housing complete with four No. 1056-5 A.A.R. Terminal Blocks and two cable grips for .625" to .750" O.D. cable.....	1183-80
B1	Same as Ref. "B" less terminal blocks but with two cable grips for .375" to .500" O.D. cable.....	1183-85
<u>REPLACEMENT PARTS</u>		
1	Riser	1183-17
2	Case for Ref. A.....	1183-23K
2A	Case for Ref. B.....	1183-23G
3	Cover	1183-22
4	Eye Bolt	1247-6B
5	Wing Nut	1247-5
6	.337" I.D. x 7/8" O.D. Pl. washer.....	
7	3/16" dia. x 1 $\frac{1}{2}$ " lg. rd. hd. rivet.....	
8	3/8" - 16 x 3/4" lg. sq. hd. set screw, cup pt.....	
9	5/16" plain washer	
10	5/16" - 18 Hex. nut	
11	Ventilator for Ref. A only.....	1143-16
12	3/8" sq., 22 $\frac{1}{2}$ " long, jute packing.....	
13	A.A.R. terminal strip for Ref. A only.....	2508-106
14	No. 10 - 32 x 5/8" lg. rd. hd. mach. screw brass.....	
15	Test switches for Ref. A only.....	280
16	A.A.R. Terminal Block.....	1056-5
17	No. 10 - 32 x 3/4" lg. rd. hd. mach. sc.....	
18	Cable grip for .625" to .750" O.D. cable.....	
18A	Cable grip for .375" to .500" O.D. cable.....	

See illustrations on following page

Type 1183 Terminal Housing



Type 1265 Terminal Housing



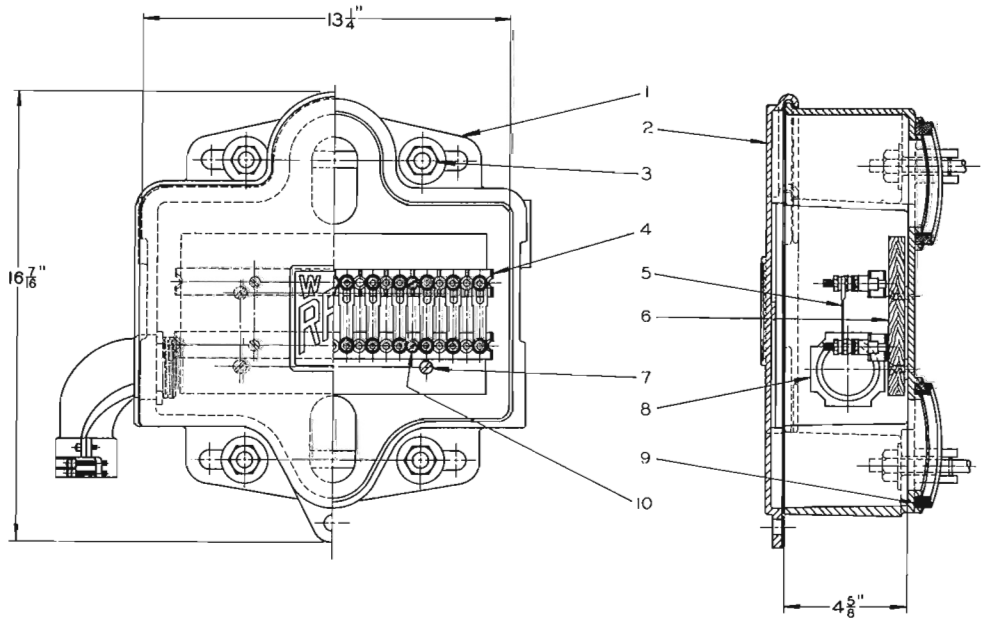
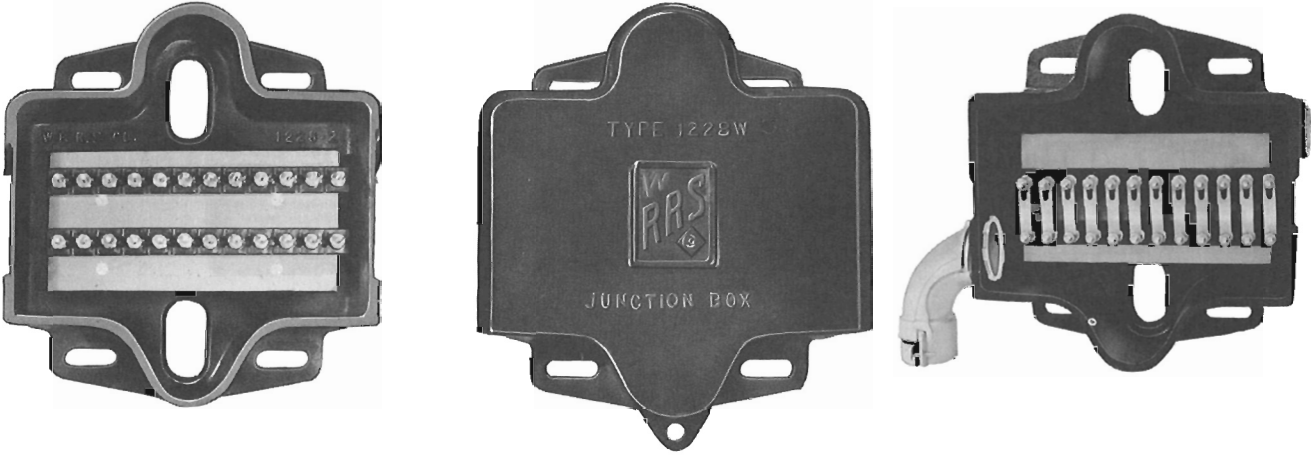
Ref. A

Type 1265 Terminal Box is provided for mounting on 4" or 5" I.D. pipe as specified. It contains 12 or less A.A.R. porcelain terminal blocks for the connection of parkway cables and the wires that run to flashing light signal units, bells, or other apparatus mounted on the pole. Furnished with 12 terminal blocks, unless otherwise specified.

Ref. No.	Description	Piece No.
A	Type 1265 Terminal Housing with 12 A.A.R. Terminal Blocks type 1056-5. (Specify for use on 4" or 5" I.D. pipe post).....	1265
A1	Same as Ref. A but 8 A.A.R. Terminal Blocks type 1056-5 only.....	1265-B
A2	Same as Ref. A but 5 A.A.R. Terminal Blocks type 1056-5 only.....	1265-D
B	Type 1265 Terminal Housing with 10 A.A.R. Terminal Blocks type 1056-5 (unless otherwise specified) and one 2" 90° squeeze connector. (Specify for use on 4 or 5 inch I.D. pipe post.....)	1265-20C
B1	Same as Ref. B less "U" bolt.....	1265-20CL
<u>REPLACEMENT PARTS</u>		
1	Case for Ref. A.....	1265-1AC
1A	Case for Ref. A1.....	1265-1AD
1B	Case for Ref. A2.....	1265-1AE
1C	Case for Ref. B and B1.....	1265-1J
2	Cover	1265-5
3	Clamp	1265-102
4	"U" bolt for 4" pipe.....	3364-2
4A	"U" bolt for 5" pipe.....	3364-5
5	A.A.R. Terminal Block.....	1056-5
6	No. 10-32 x 3/4" lg. Rd. Hd. Mach. Scr. Brass.....	
7	Hasp Assembly	1265-40
8	1/2" Pipe Plug.....	
9	7/16" x 11" lg. Torchwick packing.....	
10	Ventilator for Ref. A, A1, and A2 only.....	1265-6A
11	1/2"-13 x 2" lg. Sq. Hd. bolt and hex nut.....	
12	5/16" x 1 1/4" lg. Rd. Hd. Rivet, brass.....	
13	1/4" x 7/8" lg. Rd. Hd. Rivet, brass.....	
14	2"-90° Squeeze Connector for Ref. B and B1 only.....	



Type 1228 Terminal Housing





Type 1228 Terminal Housing

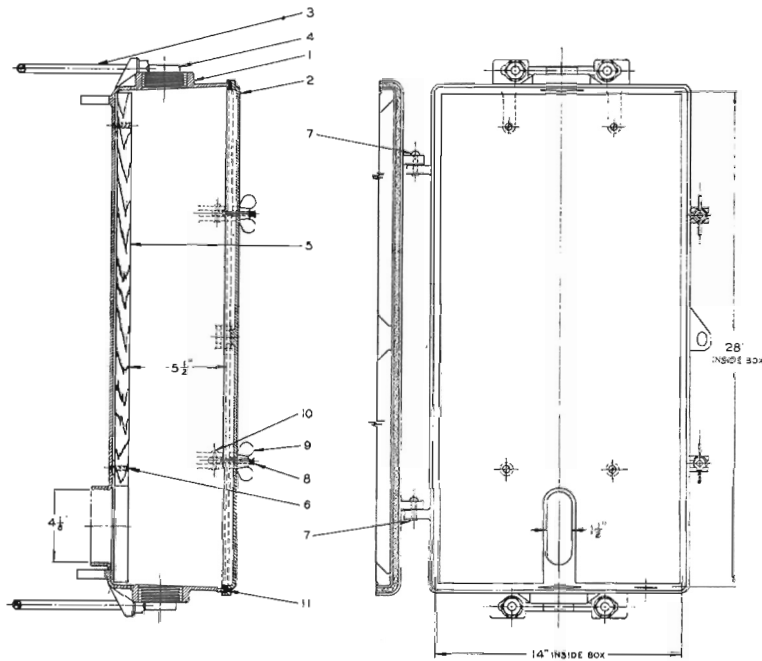
Type 1228 Terminal Housing is used for clamping to 4", 5", 6" or 8" pipe post. It has a slide cover which can be removed when raised 3". It is especially useful for mounting behind a ladder where a terminal box with hinged cover would prove awkward.

A terminal board in the back provides for mounting terminals, resistors, etc. Two openings in the back permit easy entrance of cable and wires from the mast. (Specify I.D. of pipe post.)

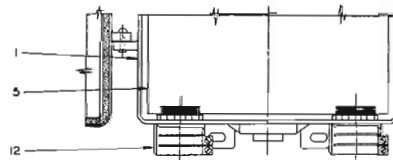
Ref. No.	Description	Piece No.
A	Type 1228 W Terminal Housing, complete with one 2"-90° squeeze connector and two 12 post Terminal Strips.....	1228W
A1	Same as Ref. A less 2"-90° squeeze connector.....	1228WB
A2	Same as Ref. A less 2"-90° squeeze connector and the Terminals Strips.....	1228WBA
A3	Same as Ref. A less 2"-90° squeeze connector (for use on 15'0" steel cantilever signal only).....	1228WC
A4	Same as Ref. A but with one 1½"-90° squeeze connector.....	1228WP
<u>REPLACEMENT PARTS</u>		
1	Case for Ref. A.....	1228-2A
1A	Case for Ref. A1.....	1228-2B
1B	Case for Ref. A3.....	1228-2C
1C	Case for Ref. A4.....	1228-2D
2	Cover	1228-3
3	4" "U" Bolt with hex. nuts and washers.....	1228-13
3A	Same as Ref. 3 but 5".....	3364-5
3B	Same as Ref. 3 but 6".....	3364-34
3C	Same as Ref. 3 but 8".....	3364-33
4	Terminal Strip	2508-112
5	Connector	1056-4
6	Wood Panel	1228-14
7	1/4"-20 x 1" lg. csk flat hd. mach. screw.....	
8	2"-90° Squeeze Connector with conduit lock nut.....	
9	3/8" x 5/8" x 11/16" felt packing.....	
10	No. 10 x 1" lg. rd. hd. wood screw, blued.....	



Type 1247 Terminal Housing



Ref. A



Ref. B



Type 1247 Terminal Housing



Type 1247 Terminal Housing is 14" wide, 28" high and 5½" deep, inside measurements. The door is held secured by two large wing nuts and provision is made for padlocking. The capacity of the box is 60 No. 10565 A.A.R. terminal blocks or 120 terminals of the multiple unit terminal strip type.

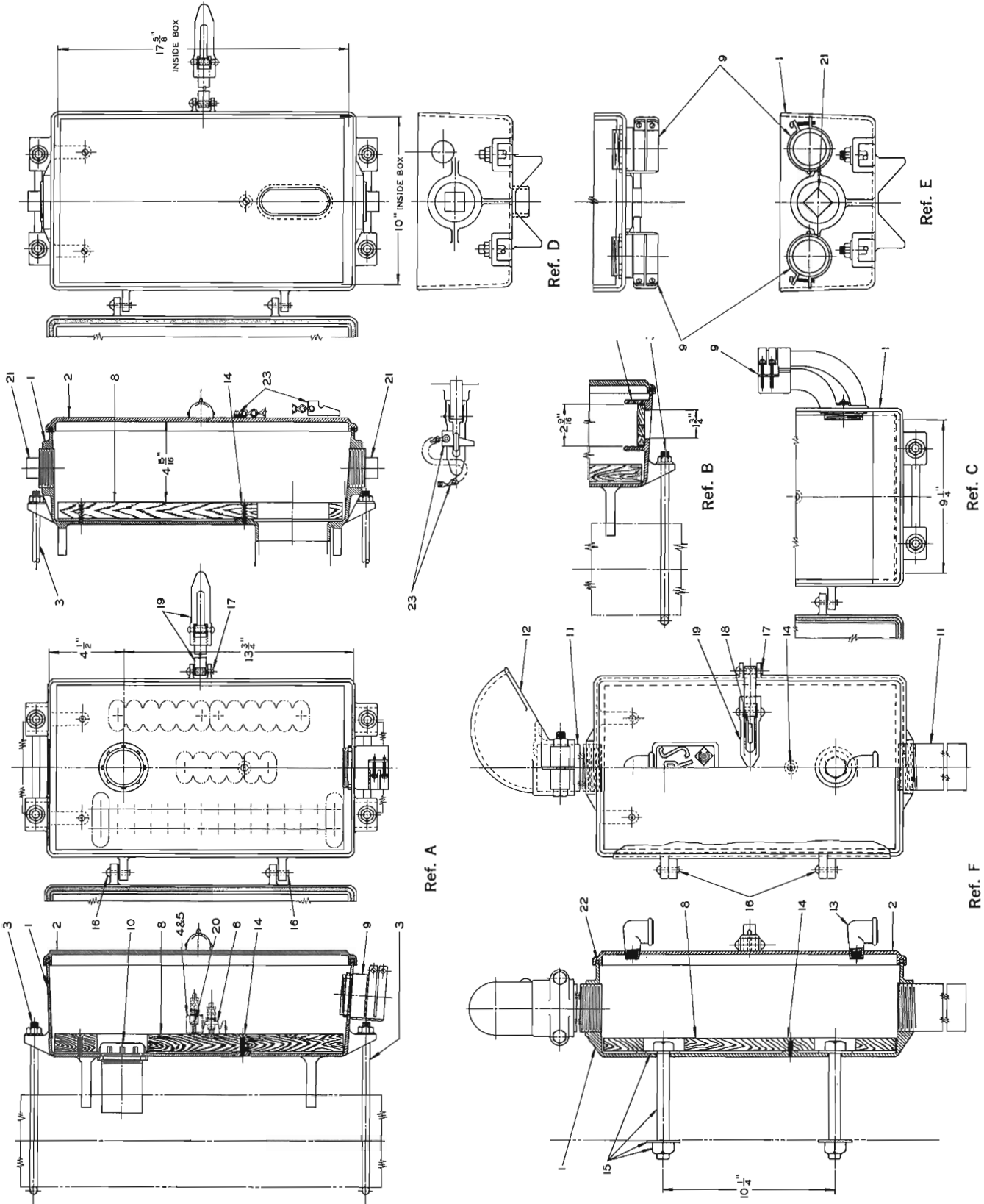
This type housing can be furnished with many variations in design such as different types of outlets at top and bottom and en-

trances into the pole. The standard assembly of each has a 2" pipe plug top and bottom and a 4½" x 1½" projection outlet in the back near the bottom of the box for entrance into the pole. Housings are complete with terminal board and "U" bolts for 4" I.D. pipe unless otherwise specified.

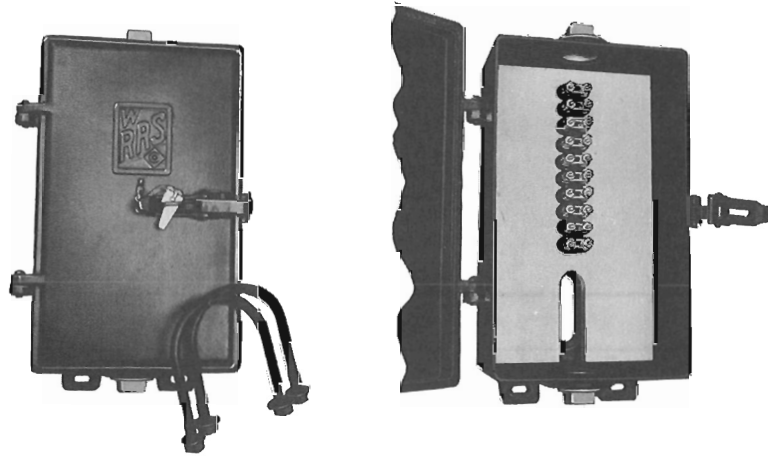
These housings are also furnished for mounting on a flat surface in which case the projection outlet in the back is omitted.

Ref. No.	Description	Piece No.
A	Type 1247 Terminal Housing complete with "U" bolts for 4" I.D. pipe, unless otherwise specified.....	1247-30
A1	Same as Ref. A but for Flush Mounting.....	1247-32
B	Type 1247 Terminal Housing complete for Flush Mounting and with 2" squeeze connector at the bottom of housing.....	1247-32B
REPLACEMENT PARTS		
1	Case for Ref. A.....	1247-1
1A	Case for Ref. A1.....	1247-1B
1B	Case for Ref. B.....	1247-1BXA
2	Cover	1247-3
3	"U" Bolt	1246-4
4	2" Standard Pipe Plug.....	
5	1" x 14" x 28" Wood Backboard	
6	No. 10-32 x 1½" lg. fl. hd. mach. screw.....	
7	5/16" x 1¼" long brass rivet.....	
8	Eyebolt	1247-6
9	Wing Nut	1247-7
10	3/16" x 1½" long brass rivet.....	
11	7/16" D. Torchwich packing, 86" lg.....	
12	2" Squeeze Connector.....	

Type 1246 Terminal Housing



Type 1246 Terminal Housing



Type 1246 Terminal Housing is 10" wide, 17 $\frac{5}{8}$ " high and 4 $\frac{3}{4}$ " deep, inside measurements. The door is held firmly closed by a spring loaded hasp and staple to which a padlock may be applied. The capacity of the box is 30 No. 10565 A.A.R. terminal blocks or 72 terminals of the multiple unit terminal strip type.

These housings are also furnished for mounting on a flat surface in which case the projection outlet in the back of the box is omitted.

Ref. B and C Terminal boxes are furnished with a two-piece wood cover at bottom of box which may be drilled for entrance of several cables of various diameters.

Ref. No.	Description	Piece No.
A	Type 1246 Terminal Housing with one 2" pipe nipple with bushing and lock nut on back of box and one 2" straight squeeze connector at the bottom of box, and 30 Type 1056-5 A.A.R. porcelain terminal blocks and "U" bolts for mounting. (Specify for 4" or 5" I.D. pipe).....	1246-13
A1	Same as Ref. A but with 5 Type 2506-6 terminal blocks or fewer, as specified.....	1246-14
A2	Same as Ref. A but with 5 Type 1056-5 A.A.R. porcelain terminals and three 5 ohm Type 1110 resistance units.....	1246-15
A3	Same as Ref. A less terminal blocks.....	1246-16
B	Type 1246 Terminal Housing with one 2" pipe nipple with bushing and lock nut on back of box and "U" bolts for mounting on 4" or 5" I.D. pipe as specified	1246-21
B1	Same as Ref. B but with ten Type 1056-5 A.A.R. porcelain terminal blocks.....	1246-21A
B2	Same as Ref. B but with Type 1246-5A "U" Bolts for 4" or 5" pipe.....	1246-21C
B3	Same as Ref. B but less terminals and "U" bolts.....	1246-21L
C	Type 1246 Terminal Housing with ten No. 1056-5 Terminal blocks, one 2" pipe nipple with bushing and lock nut on back of box and one 2" 90° squeeze connector on side of box. (Specify for mounting 4" or 5" I.D. pipe).....	1246-21P
C1	Same as Ref. C less "U" bolts.....	1246-21PL
C2	Same as Ref. C but with 1 $\frac{1}{2}$ " 90° squeeze connector.....	1246-21PA
C3	Same as Ref. C2 less "U" bolts.....	1246-21PAL
D	Type 1246 Terminal Housing with a projection outlet in back with 2" pipe lugs at top and bottom and with "U" bolts for 4" or 5" I.D. pipe, as specified.....	1246-30
E	Type 1246 Terminal Housing with 2" pipe plugs at top and bottom and with two 2" straight squeeze connectors in bottom, and with "U" bolts for 4" or 5" I.D. pipe, as specified.....	1246-33A
E1	Same as Ref. E but with 1 $\frac{1}{4}$ " straight squeeze connector.....	1246-33AX
F	Type 1246 Terminal Housing for flush mounting with two 2 $\frac{1}{2}$ " x 18" lg. pipe at top and bottom and one cable outlet complete for top, with two air ventilators on front of box with U-bolts for 4" or 5" I.D. pipe, as specified.....	1246-40

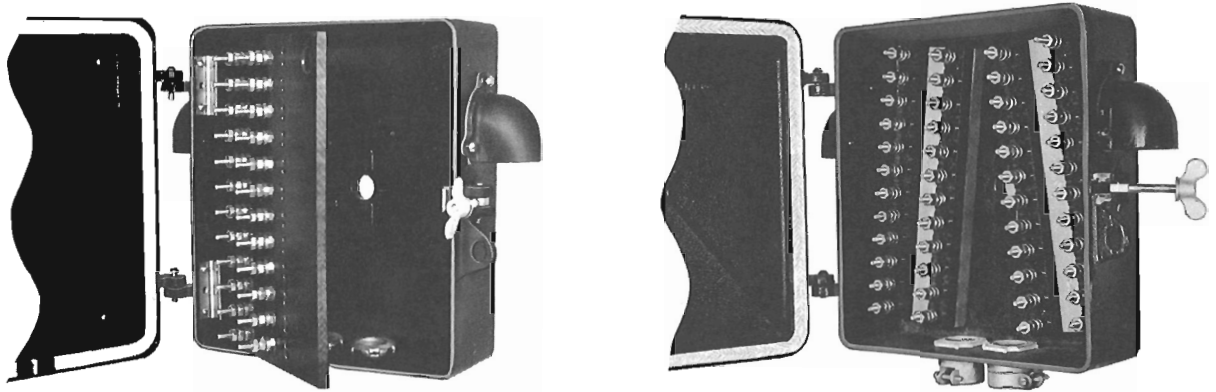
Replacement Parts listing on following page.



Type 1246 Terminal Housing

Ref. No.	Description	Piece No.
<u>REPLACEMENT PARTS</u>		
1	Case for Ref. A.....	1246-IEXB
1A	Case for Ref. B.....	1246-1A
1B	Case for Ref. C and C1.....	1246-1AP
1C	Case for Ref. C2 and C3.....	1246-1APA
1D	Case for Ref. D.....	1246-1BX
1E	Case for Ref. E.....	1246-1BA
1F	Case for Ref. E1.....	1246-1BAX
1G	Case for Ref. F.....	1246-1C
2	Door	1246-3A
2A	Door for Ref. F only.....	1246-3VA
3	"U" bolt for 4" I.D. pipe complete.....	1246-4
3A	"U" bolt for 5" I.D. pipe complete.....	1246-5
3B	"U" Bolt with extra long thread for use on either 4" or 5" pipe.....	1246-5A
4	No. 1110 Adjustable Resistance unit (5-ohm).....	1110-7
5	A.A.R. porcelain terminal block.....	1056-5
6	A.A.R. terminal strip	2506-112
7	1/2" x 1 1/4" x 10" lg. Entrance board.....	
8	1" x 10" x 17 1/2" lg. Wood backboard.....	
9	2" Straight Squeeze Connector.....	
9A	1 1/4" Straight Squeeze Connector.....	
9B	2" 90° Squeeze Connector.....	
9C	1 1/2" 90° Squeeze Connector.....	
10	2" x 2" lg. pipe nipple with bushing block nut.....	
11	2 1/2" x 18" lg. pipe, threaded one end only.....	
12	2 1/2" Cable Outlet complete.....	1181-7
13	90° Ventilator for cover.....	1143-16
14	No. 10-32 x 1 1/2" lg. flat head mach. screw.....	
15	3/4" x 6 1/2" hex. hd. mach. bolt with hex. nut and plain washer for flush mounting	
16	5/16" x 1 1/4" lg. rivet, bronze.....	
17	5/16" x 2" lg. rivet, bronze.....	
18	Staple	1265-4
19	Hasp complete	1265-40
20	No. 10 x 1" lg. rd. hd. wood screw.....	
21	2" Std. pipe plug.....	
22	3/8" dia. Torchwick packing 58" lg.....	
23	Lock Wedge complete with No. 8-32 x 3/8" lg. rd. hd. mch. screw.....	1246-39

Type 1236 Pole Terminal Housing



Ref. C

Ref. A

Type 1236 Pole Terminal Housing can be equipped with as many as 48 binding posts. A 7/8" hole is provided in the back of the box for through bolt mounting on 4" or larger diameter pipe or on wood poles.

Standard assembly, as illustrated above, includes four A.A.R. Type 1054 (WRRSCo. No. 2508-112) 12-post multiple unit terminal strips, two 1 1/4" squeeze connectors and 2" dia. hooded outlets on the sides of the box with fibre protective bushings.

Inside dimensions: 13 1/4" high x 11 3/4" wide x 4" deep.

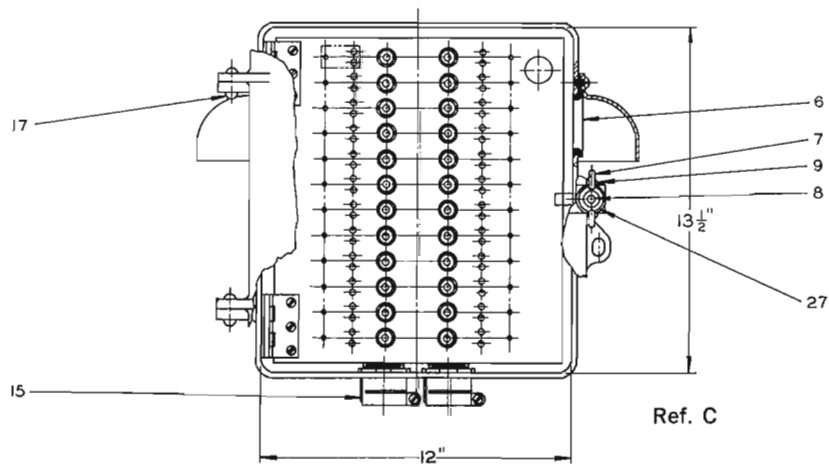
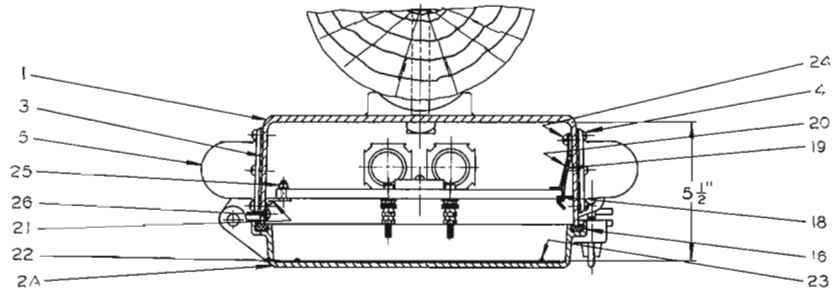
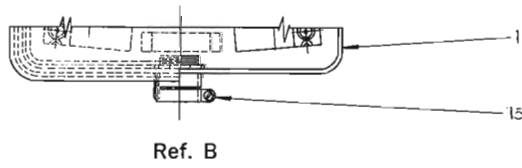
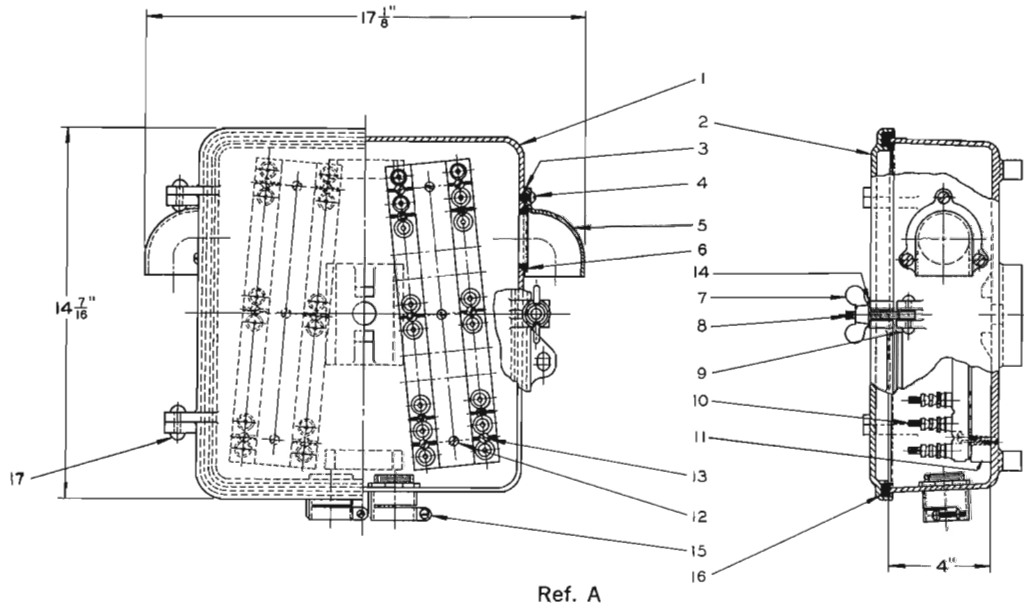
Terminal and squeeze connector combinations other than those listed can be furnished if specified on order.

The special design, with hinged terminal board, Ref. C., is an example of the versatility.

Ref. No.	Description	Piece No.
A	Type 1236 Pole Terminal Housing complete with two 1 1/4" squeeze connectors and four No. 2508-112 A.A.R. terminal strips.....	1236-54
A1	Same as Ref. A but two No. 2508-112 A.A.R. terminal strips.....	1236-57
A2	Same as Ref. A less terminals.....	1236-50
A3	Same as Ref. A but with two 1 1/2" squeeze connectors.....	1236-52B
B	Type 1236 Pole Terminal Housing complete with one 1 1/4" squeeze connector and two No. 2508-112 A.A.R. terminal strips.....	1236-52
B1	Same as Ref. B but with one 1 1/2" squeeze connector and four No. 2508-112 A.A.R. terminal strips.....	1236-54A
C	Type 1236 Pole Terminal Housing complete with two 1 1/4" squeeze connectors and hinged ebony asbestos terminal board.....	1236-100

Replacement Parts shown on following pages

Type 1236 Pole Terminal Housing



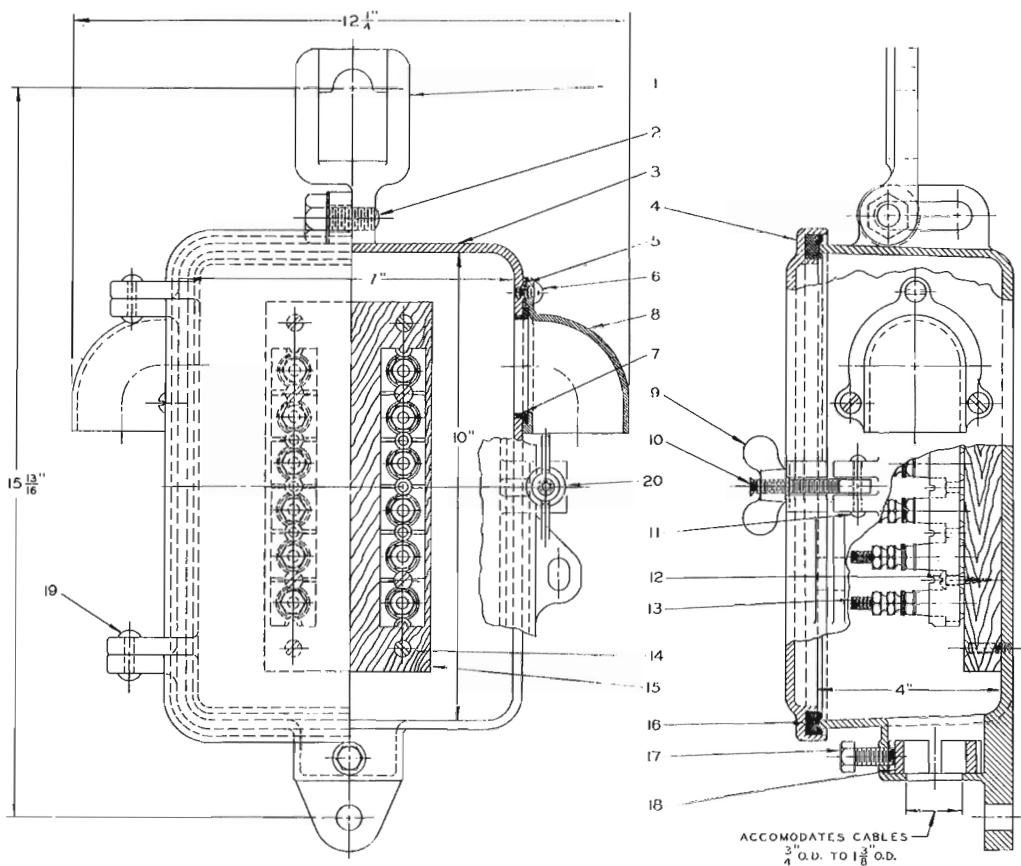


Type 1236 Pole Terminal Housing

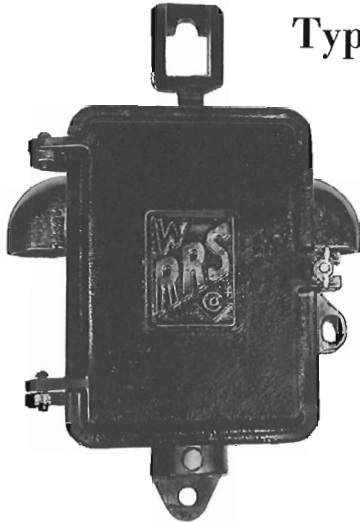
Ref. No.	Description	Piece No.
<u>REPLACEMENT PARTS</u>		
1	Case for Ref. A, A1, and A2.....	1236-1
1A	Case for Ref. B.....	1236-1A
1B	Case for Ref. B1.....	1236-1E
1C	Case for Ref. A3.....	1236-1G
1D	Case for Ref. C.....	1236-1C
2	Cover	1236-11
2A	Cover for Ref. C only.....	1236-21
3	Gasket	1232-18
4	1/4"-20 x 5/8" lg. rd. hd. mach. scr.....	
5	Cable hood	1232-15
6	Bushing, Fibre	1232-19
7	Wing Nut	1247-7
8	Eye Bolt	1247-6
9	3/16" Rivet, 1 1/2" lg.....	
10	A.A.R. Terminal Strip.....	2508-112
11	3 3/8" x 12" x 1" wood backboard.....	1236-12
12	No. 10-32 x 1" lg. fl. hd. mach. scr.....	
13	No. 10-1" lg. blue, rd. hd. wood screw.....	
14	3/8" std. washer.....	
15	1 1/4" Squeeze Connector.....	
15A	1 1/2" Squeeze Connector.....	
16	1/2" Dia. Trochwick packing 54" lg.....	1236-24
17	1/4" Rivet 1" lg.....	
18	Sub-assembly of ebony asbestos terminal board.....	1236-30
19	Spring Latch	1236-23
20	Spring Stop	1236-23A
21	2 1/2" fast pin butt hinge.....	1236-28
22	Insulator	1236-27
23	Type "U" No. 6 x 1/4" lg. parker kalon rd. hd. drive scr.....	
24	No. 10-32 x 5/16" lg. rd. hd. machine screw.....	
25	No. 10-32 x 5/8" lg. fl. hd. mach. scr. hex nut and pl. washer.....	
26	No. 10-32 x 1/4" lg. rd. hd. machine screw.....	
27	Washer, .337" I.D. x 7/8" O.D. x 1/16" thick.....	



Type 1232 Pole Terminal Housing



Type 1232 Pole Terminal Housing



Type 1232 Pole Terminal Housing measures 10" high by 7" wide by 4" deep inside measurements. The assembly shown above is equipped with two A.A.R. 6-post multiple unit terminal strips for connections. An adjustable hanger is furnished at the top of the box for attachment to the through bolt on the crossarm. A 5/8" diameter hole is provided in the projection at the bottom of the box to secure the box to the pole.

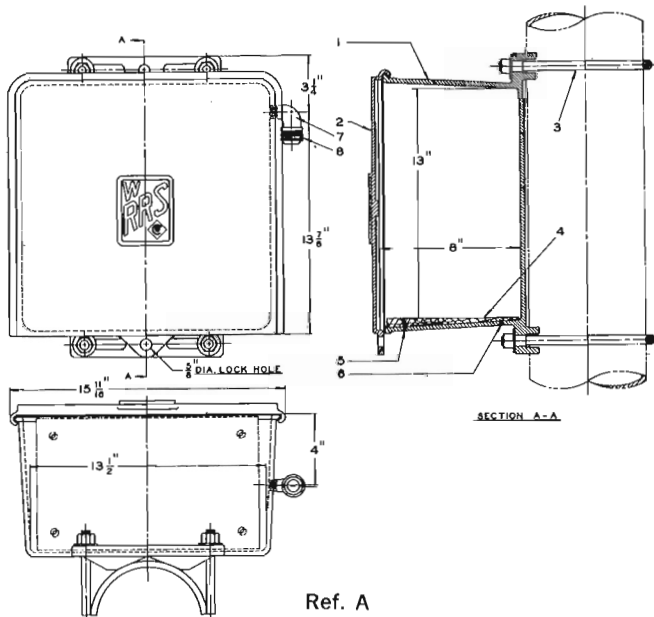
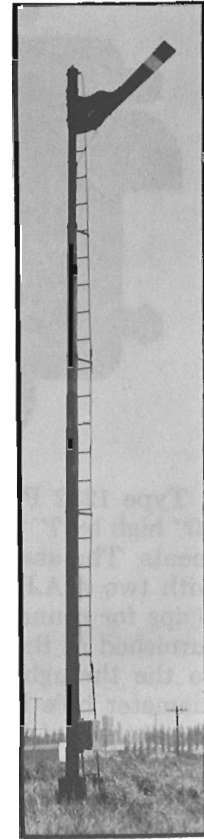
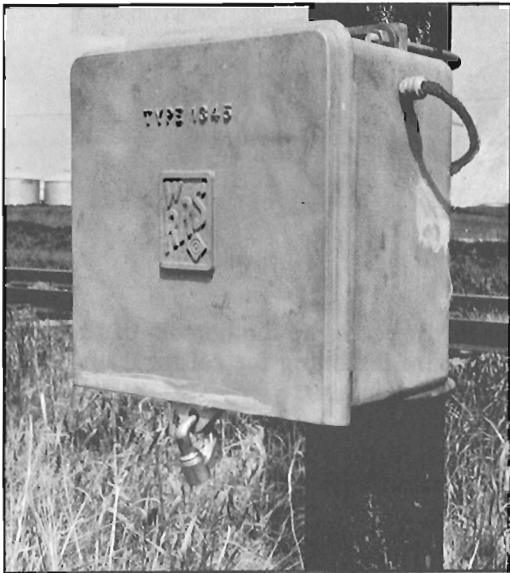
Clamps in the recess at the bottom of the box provide a secure fastening for cables from 3/4" to 1 1/4" outside diameter.

2" dia. hooded openings in the sides of the box are protected with fibre bushings, for line wire entrances.

Terminal combinations other than those listed can be supplied if specified on order.

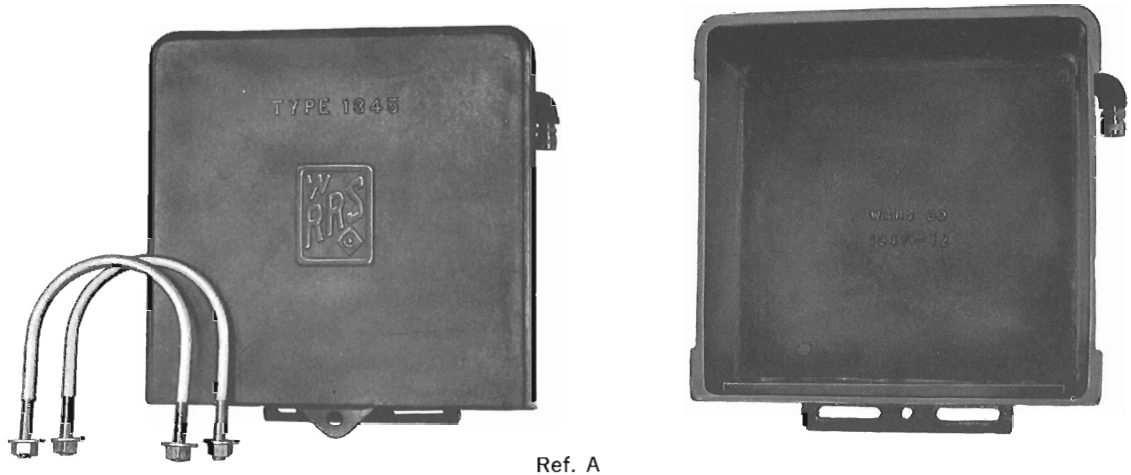
Ref. No.	Description	Piece No.
A	Type 1232 Terminal Housing complete with two 6-post terminal strips.....	1232-53
A1	Same as Ref. A with one 6-post Terminal Strip.....	1232-51
A2	Same as Ref. A less Terminal Strips.....	1232-50
REPLACEMENT PARTS		
1	Hanger	1232-16
2	No. 1/2" - 13 x 1" lg. cap scr. and washer.....	
3	Pole box	1232-1
4	Cover	1232-11
5	Gasket	1232-18
6	1/4"-20 x 5/8" lg. rd. mach. scr.....	
7	Fibre Bushing	1232-19
8	Cable Hood	1232-15
9	Wing Nut	1247-7
10	Eye Bolt	1247-6
11	3/16" Rivet 1 3/8" lg., rd. hd.....	
12	No. 10 x 1" lg. blue rd. hd. wood scr.....	
13	Terminal Strip	2508-106
14	No. 10-32 x 1" lg. fl. csk. mach. scr.....	
15	Mounting Board	1232-23
16	1/2" dia. Torchwick Packing 36" lg.....	
17	3/8"-16 x 1" lg. hex. hd. cap scr.....	
18	Clamp Block	1232-17
19	1/4" Rivet 1" lg. rd. hd.....	
20	Washer, 7/8" O.D. x 3/37" I.D. x .064" thick.....	

Type 1345 Terminal or Battery Housing





Type 1345 Terminal or Battery Housing



Type 1345 Housing consists of case and cover of aluminum castings. It can be mounted on a 4", 5" or 6" pipe mast as specified. It has a sliding cover which can be removed when raised 3" so it can be mounted behind a signal ladder. It can be furnished with a wood bottom as illustrated, or with a wood backboard, for mounting a battery or a relay with terminals, resistors, etc., as required.

Ref. No.	Description	Piece No.
A	Type 1345 Terminal Housing complete with one 3/8"-90° street elbow with cable grip and wood shelf. Specify diameter of mast.....	1345-50PL
<u>REPLACEMENT PARTS</u>		
1	Case	1345-12C
2	Cover	1345-13
3	"U" Bolt (Specify I.D. of pipe mast).....	3364
4	Shelf (Redwood)	1345-15
5	No. 10-32 x 3/4" lg. fl. hd. mach. screw (brass).....	
6	No. 10-32 x 1/2" lg. fl. hd. mach. screw (brass).....	
7	3/8"-90° Street Elbow	
8	Cable grip (for .375" to .437" O.D. cable).....	



SECTION 7

Bootlegs

CONTENTS

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WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

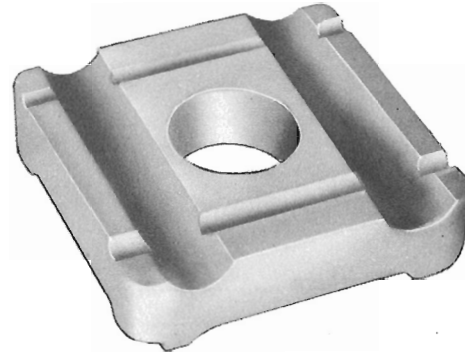
MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

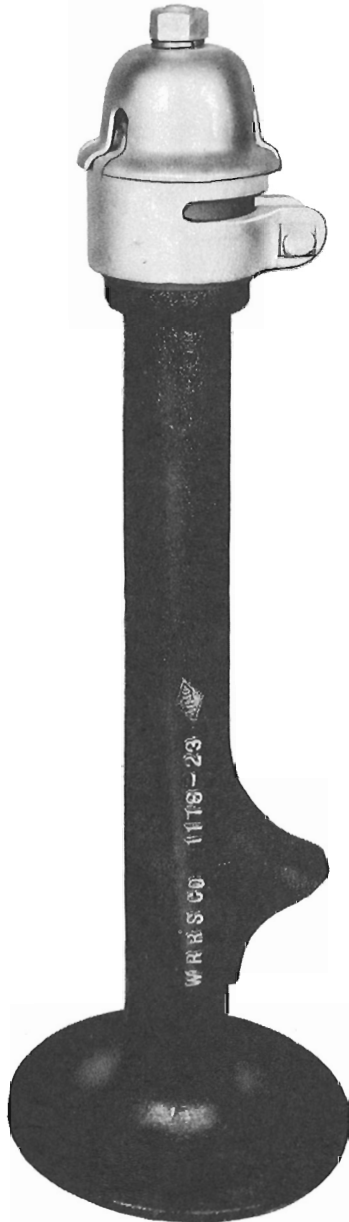
2742 WEST 36TH PLACE CHICAGO, ILL. 60632



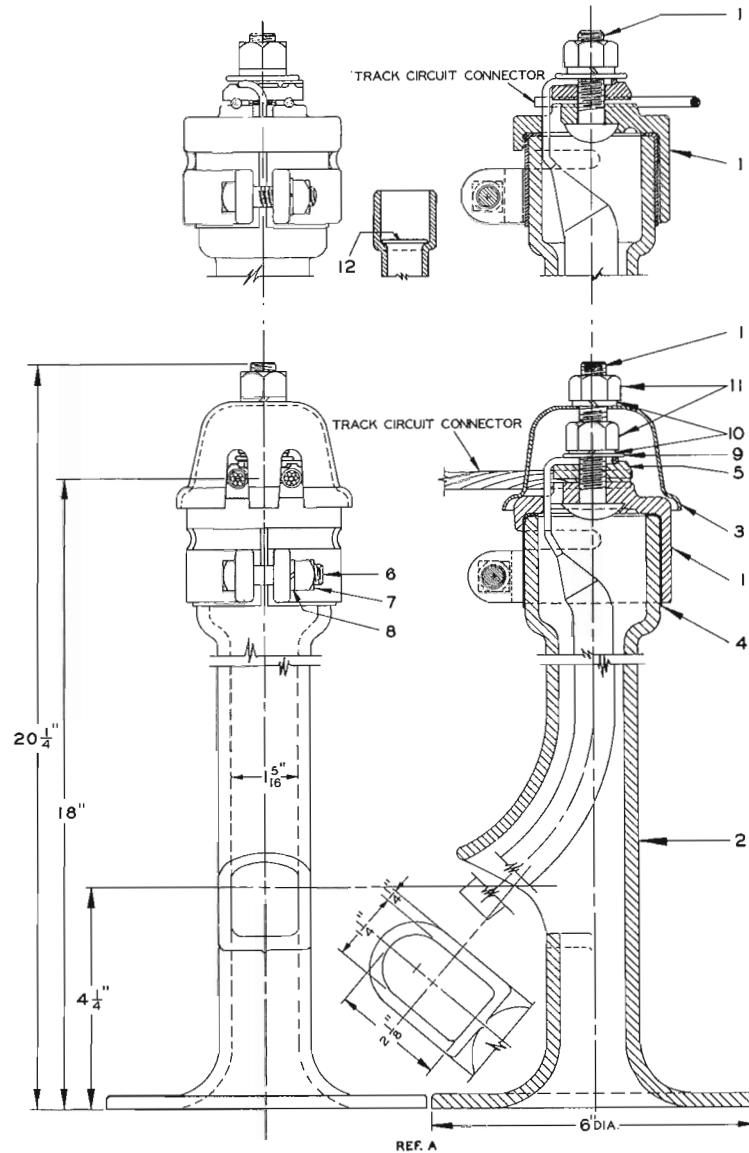
Type 1184 Bootleg



No. 1184-17 Universal Clamp



No. 1184-24AR





Type 1184 Bootleg

Type 1184 Parkway Cable Bootlegs have been designed for use with either one or two single conductor plug type track circuit connectors or one duplex conductor track circuit connector. The cast bronze clamping member is of universal design with grooves to accommodate any of the stranded conductors listed on A.A.R., Signal Section, Drawings 1631 and 1632. The Bootlegs are furnished with or without the slotted cover, as desired.

The riser is of cast grey iron, 1¼" inside diameter, and has a side entrance for the parkway cable, located 4¼" above the bottom of the base.

The height from the bottom of the base to the rail connectors is 18". Overall height of the bootleg with cover is 20¼" and that of the one without a cover is 19½".

The malleable iron bootleg head and the slotted steel cover are hot galvanized. All other hardware is cadmium plated except the 1/2" lock washers which are bronze, unplated.

The bootleg head is insulated from the riser by a 1/16" thick hard fibre sleeve.

The clamping bolt is permanently attached to the head casting.

Ref. No.	Description	Piece No.
A	Type 1184 Bootleg complete, with cover.....	1184-24AR
A1	Same as Ref. A, but without cover.....	1184-24BR
A2	Same as Ref. A without cover but with black fibre washer (Ref. 12) in riser....	1184-24CR
A3	Same as Ref. A less riser.....	1184-24A
A4	Same as Ref. A less riser and cover.....	1184-24B
A5	Same as Ref. A less riser and cover but with black fibre washer (Ref. 12) to be placed in riser.....	1184-24CRB
REPLACEMENT PARTS		
1	Head Casting and Carriage bolt as used with cover.....	1184-7
1A	Same as Ref. 1 but as used without cover.....	1184-7B
2	Riser	1178-23
3	Cover	1184-36
4	Insulating cap	1184-6
5	Universal clamp	1184-17
6	3/8" - 16 x 1½" lg. sq. hd. bolt, stl. (cad. pl.).....	
7	3/8" - 16 sq. nut, stl. (cad. pl.).....	
8	3/8" lock washer, stl. (cad. pl.).....	
9	Washer, rounded edge, stl. (cap. pl.).....	1186-12
10	1/2" lock washer, bronze.....	
11	1/2" - 13 hex. nut stl. (cad. pl.).....	
12	Black fibre washer.....	1184-29



Type 1186-32 Bootlegs

The Type 1186-32 Parkway Cable Bootlegs are designed for use with two parkway cable wires and two single conductor or one duplex conductor track circuit connectors. The mechanical clamp is of universal design to accommodate any of the stranded conductors listed on A.A.R., Signal Section, Drawings 1631 and 1632.

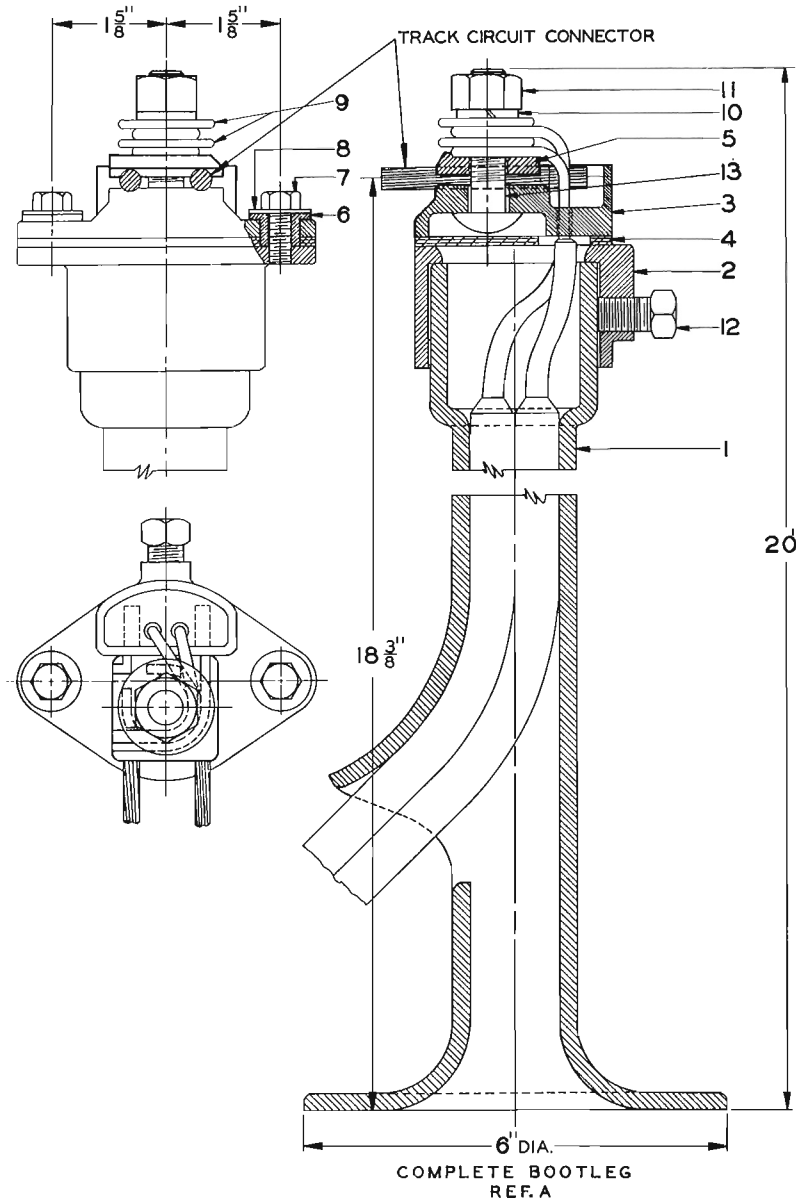
Parkway Cable wires are brought up through two holes in the bottom of the solderwell and

terminated under rounded-edged, flat, washers on the 1/2" bolt.

Track circuit connectors enter the solderwell, when required, through holes of appropriate size, drilled flush with the bottom of the grooves in the bootleg head. Thus the cable wires and track circuit connectors are mechanically supported and electrically connected by pressure on the bolt assembly. Soldered electrical connection can be made, when desired, by pouring molten solder into the well.



No. 1186-32AIR





Type 1186-32 Bootlegs

The holes in the bottom of the solderwell are for use with #6 to #10 solid conductor parkway cable wires. The ordering reference table, below, shows the data for the various sizes of stranded track circuit connector which each design will accommodate.

The riser is of cast grey iron, 1/4" inside diameter, and has a side entrance for the parkway cable, located 4/4" above the base.

The height from bottom to the track circuit connectors is 18 3/8" and the overall height of the bootleg is 20".

The cap is of cast grey iron secured to the riser by a 1/2", cup point set screw. The grooved head and solderwell casting is malleable iron insulated from the cap by a hard fibre plate. Cap screws are Everdue bronze insulated from the head casting by Nylon Bushings. The head and cap castings are hot-galvanized. All other hardware is cadmium plated except the 1/2" lockwasher which is bronze, unplated.

The Universal Clamp illustrated on page 7-2 is supplied with this bootleg.

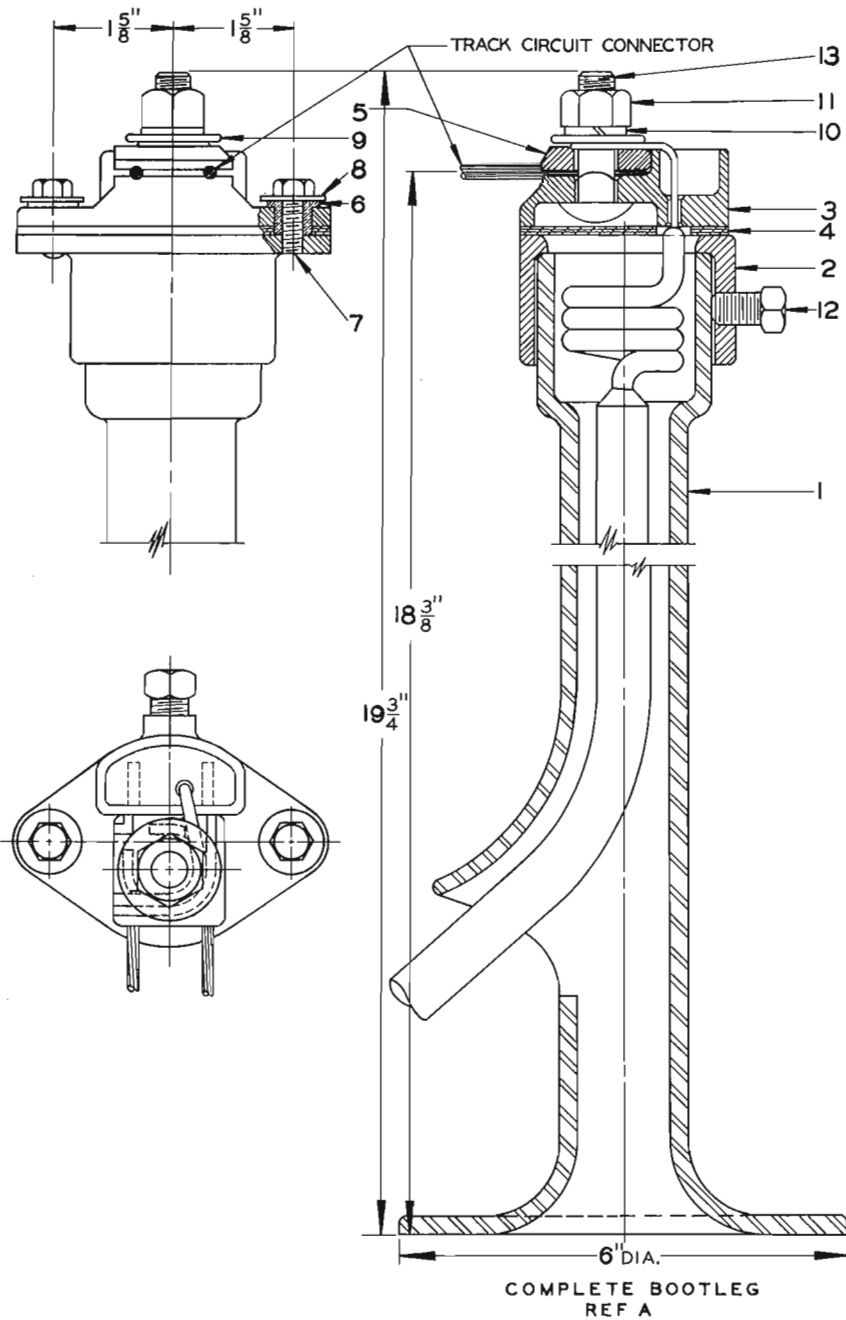
Ref. No.	Description	Solderwell Drilled for Track Circuit Connector Strand	Piece No.
A	Type 1186-32 Bootleg complete.....	Not drilled	1186-32AR
A1	Type 1186-32 Bootleg complete.....	3/16" dia.	1186-32BR
A2	Type 1186-32 Bootleg complete.....	7 - #12 A.W.G.	1186-32CR
A3	Type 1186-32 Bootleg complete.....	7 - #10 A.W.G.	1186-32DR
A4	Type 1186-32 Bootleg complete.....	7 - #12 B.W.G.	1186-32ER
A5	Type 1186-32 Bootleg complete less riser.....	Not drilled	1186-32A
A6	Type 1186-32 Bootleg complete less riser.....	3/16" dia.	1186-32B
A7	Type 1186-32 Bootleg complete less riser.....	7 - #12 A.W.G.	1186-32C
A8	Type 1186-32 Bootleg complete less riser.....	7 - #10 A.W.G.	1186-32D
A9	Type 1186-32 Bootleg complete less riser.....	7 - #12 B.W.G.	1186-32E
<u>REPLACEMENT PARTS</u>			
1	Riser		1178-23
2	Cap		1186-8
3	Head, not drilled for track circuit connector.....		1186-72G
3A	Head, drilled for 3/16" dia. strand.....		1186-72E
3B	Head, drilled for 7 - #12 A.W.G. strand.....		1186-72D
3C	Head, drilled for 7 - #10 A.W.G. strand.....		1186-72C
3D	Head, drilled for 7 - #12 B.W.G. strand.....		1186-72A
4	Insulating plate		1186-9
5	Universal clamp		1184-17
6	Insulating bushing, nylon.....		1184-10N
7	5/16" - 18 x 7/8" hex. hd. cap. sc., bronze.....		
8	Washer 11/32" I.D. x 11/16" O.D. x 1/16" thick, bronze.....		
9	Washer, rounded edge, stl. (cad. pl.).....		1186-12
10	1/2" lock washer, bronze.....		
11	1/2" - 13 hex. nut, stl. (cad. pl.).....		
12	1/2" - 13 x 3/4" sq. hd. cup pt. set screw, stl. (cad. pl.).....		
13	Carriage bolt 1/2" - 13 x 2" lg. (cad. pl.).....		



Type 1186-33 Bootlegs



No. 1186-33





Type 1186-33 Bootlegs

The Type 1186-33 Parkway Cable Bootlegs are identical with the Type 1186-32 Bootlegs, described on the preceding pages, except that they are designd for use with one Parkway Cable, and therefore, have but one hole drilled in the bottom of the solderwell for one #6 to #10 A.W.G., solid conductor parkway cable wire.

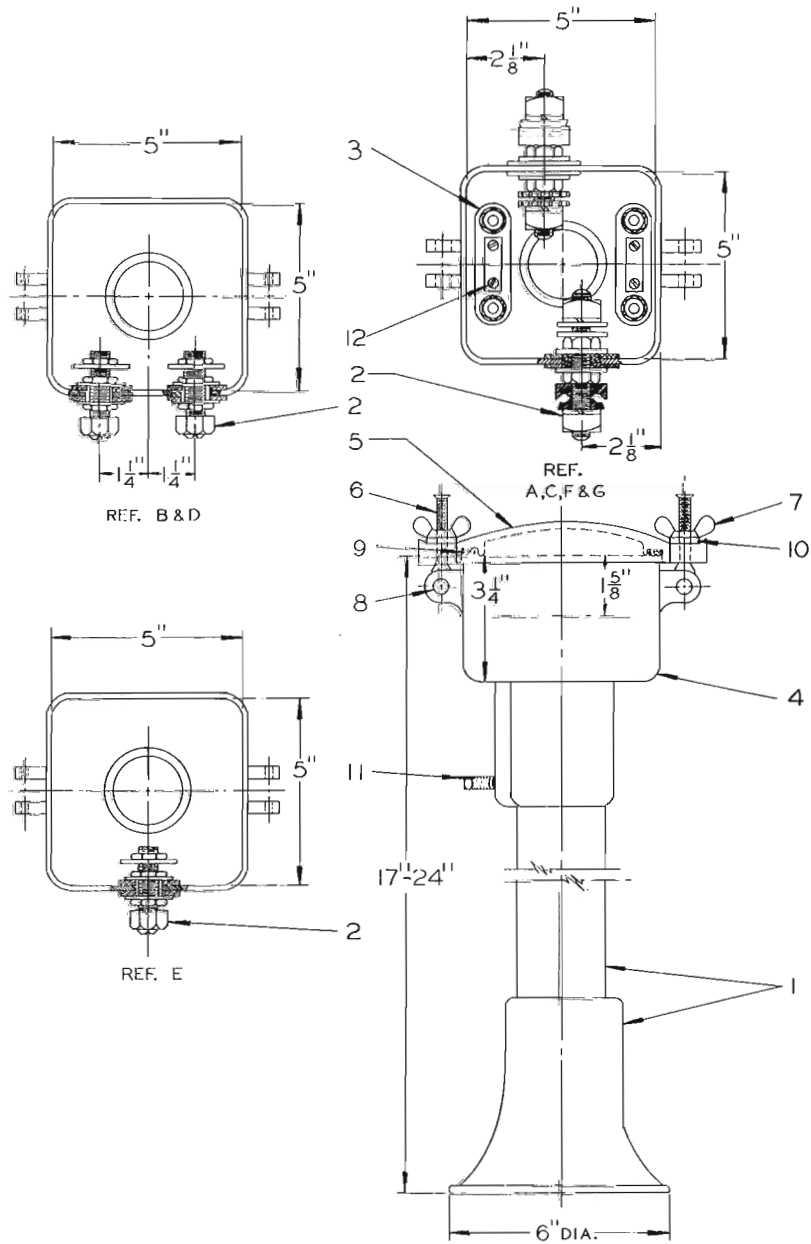
Ref. No.	Description	Solderwell Drilled for Track Circuit connector strand	Piece No.
A	Type 1186-33 Bootleg complete.....	Not Drilled	1186-33AR
A1	Type 1186-33 Bootleg complete.....	3/16" dia.	1186-33-BR
A2	Type 1186-33 Bootleg complete.....	7 - #12 A.W.G.	1186-33CR
A3	Type 1186-33 Bootleg complete.....	7 - #10 A.W.G.	1186-33DR
A4	Type 1186-33 Bootleg complete.....	7 - #12 B.W.G.	1186-33ER
A5	Type 1186-33 Bootleg complete less riser.....	Not Drilled	1186-33A
A6	Type 1186-33 Bootleg complete less riser.....	3:16" dia.	1186-33B
A7	Type 1186-33 Bootleg complete less riser.....	7 - #12 A.W.G.	1186-33C
A8	Type 1186-33 Bootleg complete less riser.....	7 - #10 A.W.G.	1186-33D
A9	Type 1186-33 Bootleg complete less riser.....	7 - #12 B.W.G.	1186-33E
<u>REPLACEMENT PARTS</u>			
1	Riser		1178-23
2	Cap		1186-8
3	Head, not drilled for track circuit connector.....		1186-71G
3A	Head, drilled for 3/16" dia. strand.....		1186-71E
3B	Head, drilled for 7 #12 A.W.G. strand.....		1186-71D
3C	Head, drilled for 7 #10 A.W.G. strand.....		1186-71C
3D	Head, drilled for 7 #12 B.W.G. strand.....		1186-71A
4	Insulating plate		1186-9
5	Universal clamp		1184-17
6	Insulating bushing, nylon.....		1186-10N
7	5/16" - 18 x 7/8" hex. hd. cap. scr., bronze.....		
8	Washer 11/32" I.D. x 11/16" O.D. x 1/16" thick, bronze.....		
9	Washer, rounded edge, stl. (cad. pl.).....		1186-12
10	1/2" lock washer, bronze.....		
11	1/2" - 13 hex. nut, stl. (cad. pl.).....		
12	1/2" - 13 x 3/4" sq. hd. cup pt. set screw, stl. (cad. pl.).....		
13	Car. bolt 1/2" x 1 3/4" lg. (cad. pl.).....		



Type 1155 Bootleg



No. 1155-161B





Type 1155 Bootleg

Type 1155 Bootleg has an extra large head. As many as four A.A.R. porcelain terminals may be installed in the head. Any connector shown on pages 7-10 and 7-11 may be furnished with this bootleg. Type 1155-31 Mechanical Connector for 7 - #10 A.W.G., 7 - #12 A.W.G., or 7 - #14½ B.W.G. strands is especially popular in Type 1155 Bootleg assemblies.

Standard height, 17" overall; riser 2" I.D.; head 5" sq. by 3¼" deep.

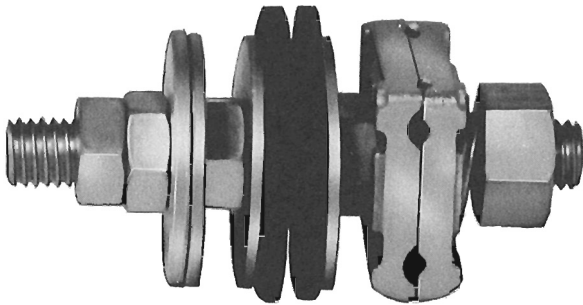
A riser is also available, when specified, to provide 24" overall height.

Ref. No.	Description	Piece No.
A	Type 1155 Bootleg with two type 1170-41 connectors and two A.A.R. terminal blocks	1155-161B
B	Type 1155 Bootleg with two type 1170-39A connectors on one side.....	1155-276
B1	Same as Ref. B less connectors.....	1155-276A
C	Type 1155 Bootleg with two type 1170-39A connectors, one on each side.....	1155-277
D	Type 1155 Bootleg with two type 1170-32 connectors on one side.....	1155-278
E	Type 1155 Bootleg with one type 1170-41 connector.....	1155-161C
F	Type 1155 Bootleg with one type 1155-241 connector.....	1155-185
F1	Same as Ref. F less pipe and base.....	1155-185A
G	Type 1155 Bootleg with two type 1155-241 connectors, one on each side.....	1155-186
G1	Same as Ref. G less pipe and base.....	1155-186A
REPLACEMENT PARTS		
1	Pipe and base sub-assembly for 17" overall height.....	1155-58
1A	Pipe and base sub-assembly for 24" overall height.....	1155-58F
2	Connector for Ref. A.....	1170-41
2A	Connector for Ref. B&C.....	1170-39A
2B	Connector for Ref. D.....	1170-32
2C	Connector for Ref. E.....	1170-41
2D	Connector for Ref. F&G.....	1155-241
3	AAR terminal block.....	1056-10
4	Top casting for Ref. A.....	1155-23BF
4A	Top casting for Ref. B&D.....	1155-23Z
4B	Top casting for Ref. C.....	1155-23ZA
4C	Top casting for Ref. E.....	1155-123D1
4D	Top casting for Ref. F.....	1155-23BG
4E	Top casting for Ref. G.....	1155-23BH
5	Cover	1155-122
6	Eyebolt	1247-4
7	Wing nut	1247-5
8	3/16" dia. x 1½" lg. rd. hd. rivet (brass).....	
9	7/16" dia. x 18" lg. Torchwick Packing.....	
10	.337" I.D. x 7/8" O.D. plain washer (brass).....	
11	3/8" - 16 x 5/8" lg. cup point set screw, stl.....	
12	No. 10 - 32 x 3/4" lg. rd. hd. machine screw (brass).....	

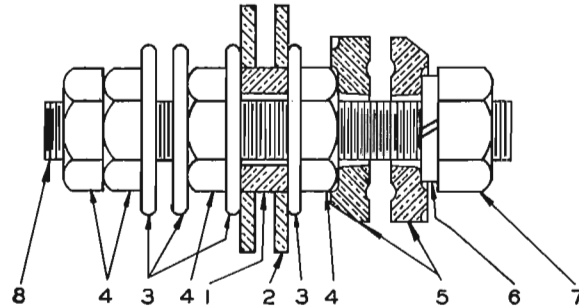
(For connector parts see page 7-11)



Type 1155 Connector



Ref. A

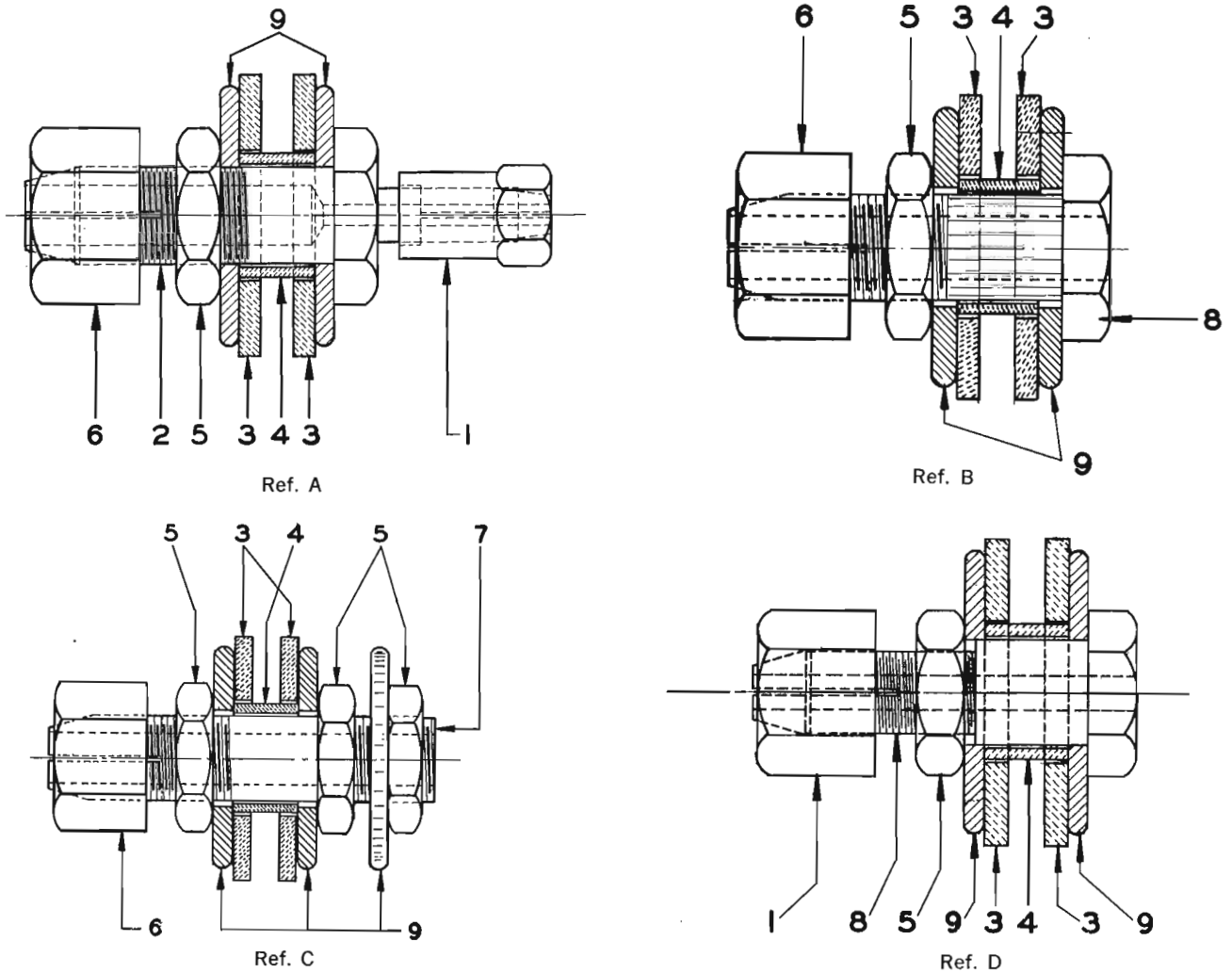


This connector consists of a 1/2" threaded steel rod 4' long, with steel washers, steel hex. nuts for clamping to the wall of the bootleg, hex. nuts for terminating the wires, complete with bronze universal wire clamps, and necessary bakelized canvas insulation. All steel parts are hot galvanized.

Type 1155-241 (Ref. A) has a 3/8" long insulating bushing for 3/16"-1/4" thick wall and Type 1155-241A (Ref. A1) has a 5/8" long insulating bushing for 5/16"-3/8" thick wall. Both types are used for #6 A.W.G. wire and 7 #10 A.W.G., 7 #12 A.W.G., or 7 #14½ A.W.G. strands.

Ref. No.	Description	Piece No.
A	Type 1155 Connector with 1" O.D. x 9/16" I.D. x 3/8" lg. insulating bushing....	1155-241
A1	Same as Ref. A but with 5/8" lg. insulating bushing.....	1155-241A
REPLACEMENT PARTS		
1	Insulating bushing 1" O.D. x 9/16" I.D. x 3/8" lg.....	1155-34
1A	Insulating bushing 1" O.D. x 9/16" I.D. x 5/8" lg.....	1155-34A
2	Insulating washer	1155-35
3	1/2" standard steel washer (cad. pl.).....	1155-36
4	1/2"-13 hex. jam nut.....	
5	Universal clamp	1184-17
6	1/2" standard lock washer.....	
7	1/2"-13 standard hex. nut.....	
8	Threaded rod 1/2"-13	1155-40

Type 1170 Connectors



These connectors are made of hollow brass studs with brass clamps and lock nuts, electro galvanized steel washers, and highest grade bakelized canvas insulation. Ref. A connector is for terminating #9 A.W.G. solid copper wire and strand composed of 7 #10 A.W.G. wires.

Ref. No.	Description	Piece No.
A	Type 1170 Connector complete (used with Type 1155-278 bootleg).....	1170-32
B	Type 1170 Connector complete for 7 #10 A.W.G. strand.....	1170-39
B1	Same as Ref. B but for 7 #12 A.W.G. strand.....	1170-39A
B2	Same as Ref. B but for 7 #14½ A.W.G. strand.....	1170-39B
B3	Same as Ref. B but for 3/8" strand.....	1170-39C
B4	Same as Ref. B but for 7 #12 B.W.G. strand.....	1170-39D
B5	Same as Ref. B but for .251" dia. strand.....	1170-39F
C	Type 1170 Connector complete (used with Type 1155-161B and 1155-161C).....	1170-41
D	Type 1170 Connector complete for 3/16" stranded bond.....	1170-139
D1	Same as Ref. D but less Ref. 3, 4 and 9.....	1170-139X



Type 1170 Connectors

Ref. No.	Description	Piece No.
<u>REPLACEMENT PARTS</u>		
1	Clamp nut.....	
1A	Clamp nut for Type 1170-139 connector.....	
2	Terminal bolt.....	1170-29
3	Bakelized canvas washer 1/8" thick x 3/4" I.D. x 1 1/8" O.D.....	1170-137
4	Bakelized canvas bushing.....	1170-30
5	Brass lock nut, 1/4" thick.....	1170-34
5A	Brass lock nut for Type 1170-139 connector.....	1170-35
6	Brass clamp nut.....	1170-36
7	Hollow brass stud.....	1170-136
8	Brass bolt for 7-#10 A.W.G. strand.....	1170-37
8A	Brass bolt for 7-#12 A.W.G. strand.....	1170-44
8B	Brass bolt for 7-#14 1/2 A.W.G. strand.....	1170-38
8C	Brass bolt for 3/8" strand.....	1170-38A
8D	Brass bolt for 7-#12 B.W.G. strand.....	1170-38B
8E	Brass bolt for .251" dia. strand.....	1170-38C
8F	Brass bolt for 3/16" strand.....	1170-38D
9	Washer, 7/64" thick x 9/16" I.D. x 1 3/8" O.D. stl. electro galvanized or cad. plated.....	1170-38E 1170-138



Channel Pins TINNED



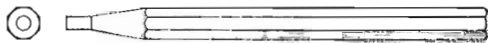
Single-Grooved Pin (A.A.R. 10861)



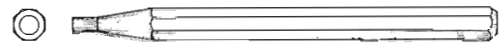
Double-Grooved Pin (A.A.R. 10862)

Ref. No.	Description	Piece No.
A	Single-Grooved Channel Pin, Tinned.....	339
B	Double-Grooved Channel Pin, Tinned.....	342

Channel Pin Punches and Sets



Ref. C



Ref. D



Ref. E



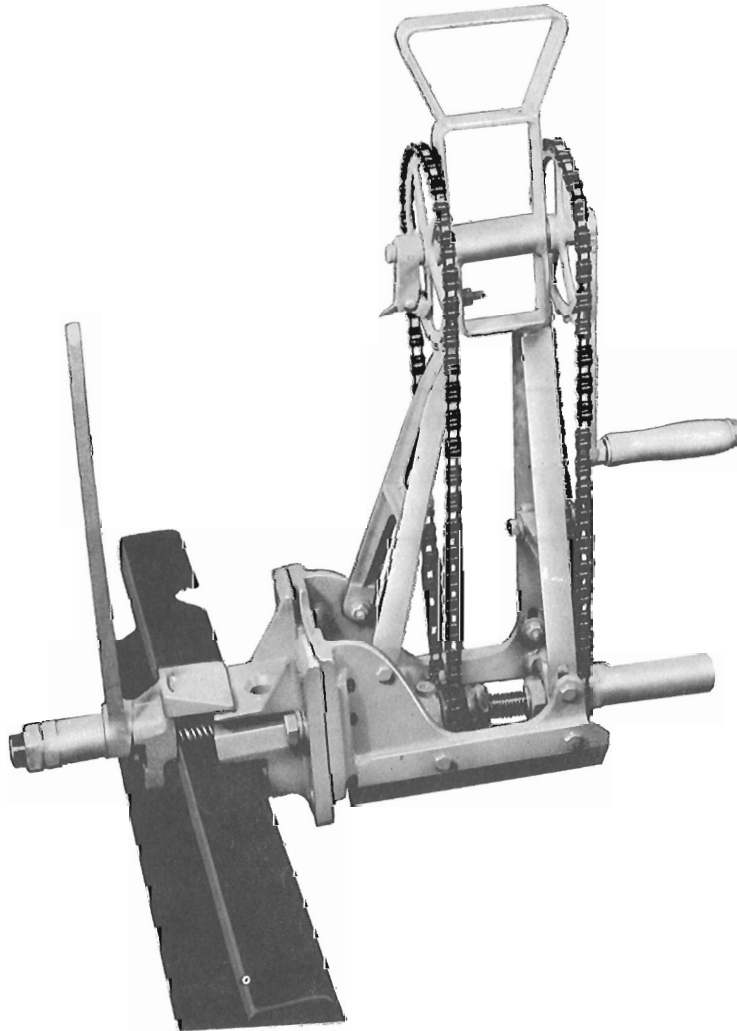
Ref. F

For Single-Grooved 9/32" Pins

For Double-Grooved 3/8" Pins

Ref. No.	Description	Piece No.
C	Standard Channel Pin Punch for 9/32" single grooved pins.....	1852
D	Standard Channel Pin Drift Punch for 9/32" single grooved pins.....	1853
E	Standard Channel Pin Punch for 3/8" double grooved pins.....	1855
F	Standard Channel Pin Drift Punch for 3/8" double grooved pins.....	1856

Bonding Drill



BONDING DRILL

The Western BW Bonding Drill is engineered to give Signalmen a safe economical means of accurately drilling holes in either the head or web of rail.

The Western BW Bonding Drill is a light weight, one-man tool, that can be easily carried and clamped to a rail head enabling the efficient drilling of bonding holes in all types and weight of rail from 80 to 150 pounds.

Simple attachment and precision adjustment features insure ease of operation and absolute accuracy. These features have won wide approval and acceptance as standard equipment by the Nation's leading railroads.

FEATURES

Frame constructed of light weight, high strength, malleable iron. Efficient lubrication of all bearings is attained through ball-valve oil fittings.

Depth gauge adjusting nuts which are easily set to accurately determine the depth of hole to be drilled.

Positive drilling feed is provided through a special gear reduction system.

Drill rigidly mounted to the head of a rail with one single movement of the clamp lever.

Adjustable so the drill may be positioned to drill at any height in either web or head of rail.



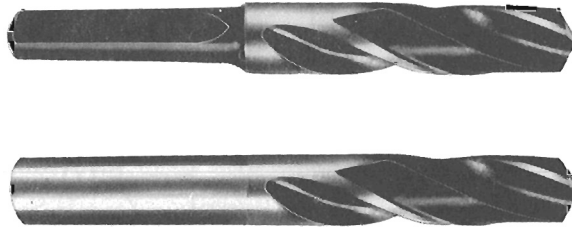
Bonding Drill

The Western BW Bonding Drill is available with various types of chuck and spindle assemblies for use with 9/32" or 3/8" diameter drill bits, as specified in listing below.

Ref. No.	Description	Piece No.
A	Type HD-185 Bonding Drill with 9/32" Hyduty chuck and spindle.....	HD185-A
B	Type HD-185 Bonding Drill with 3/8" Hyduty chuck and spindle.....	HD185-B
C	Type HD-185 Bonding Drill with 9/32" set screw spindle.....	HD185-C
D	Type HD-185 Bonding Drill with 3/8" set screw spindle.....	HD185-D
E	Type HD-185 Bonding Drill with 3/8" collet chuck and spindle.....	HD185-E

See pages 7-18 to 7-20 for Replacement Parts.

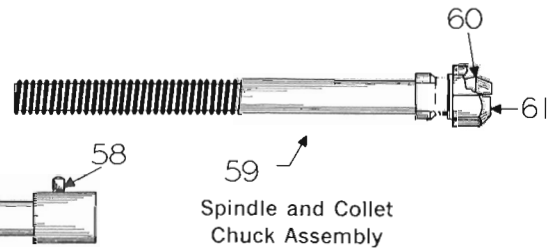
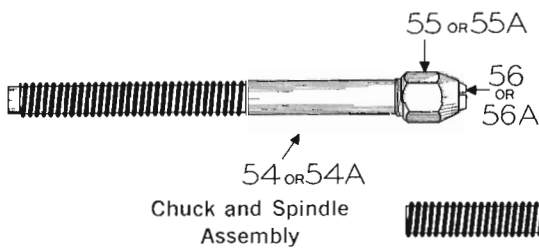
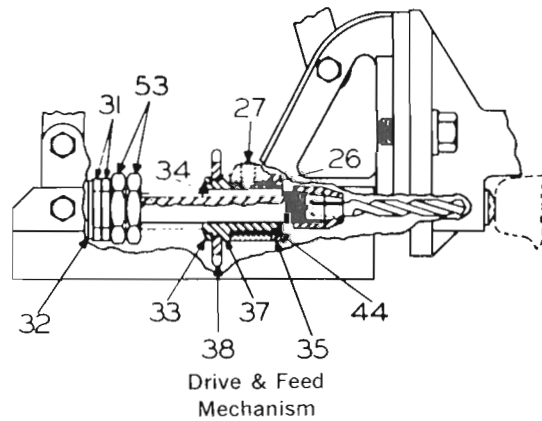
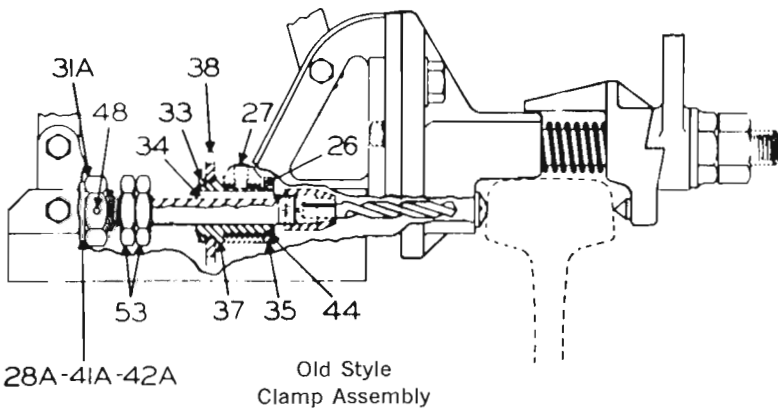
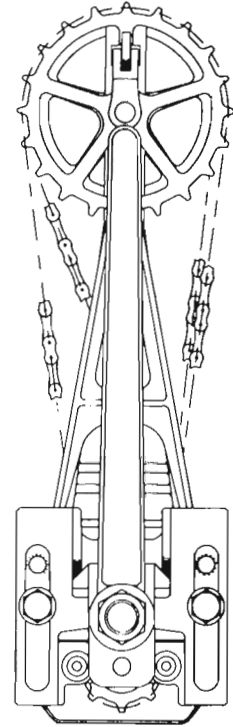
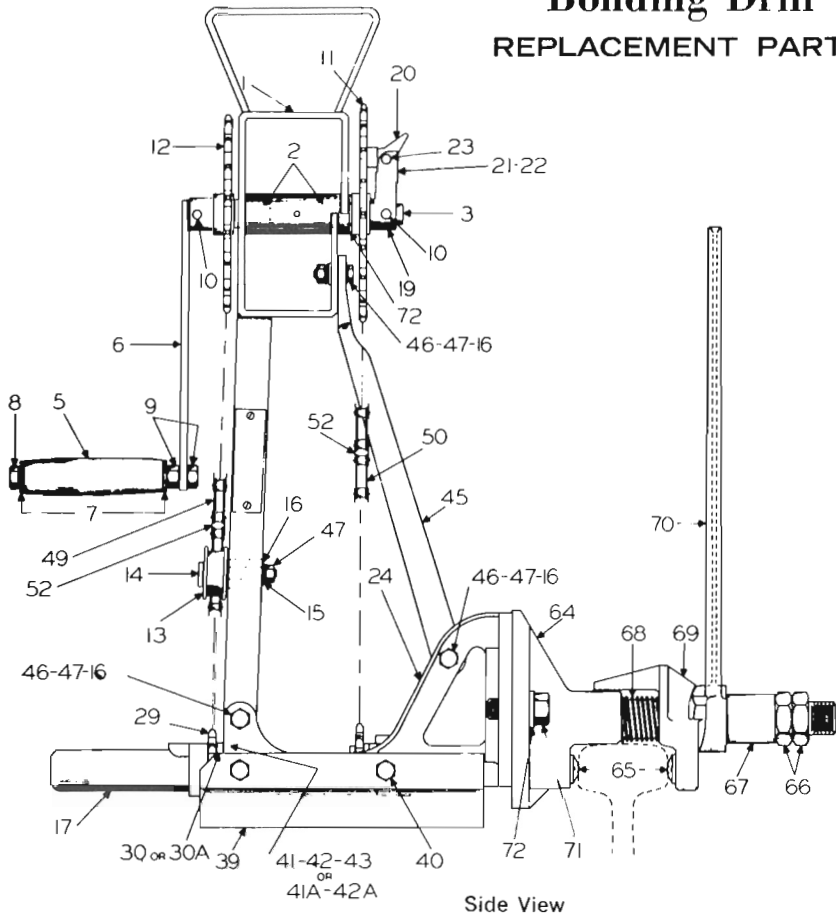
Bonding Drill Bits



Made of the toughest high speed steel for long performance, accurate hole size and user satisfaction. All sizes are 3" long.

Ref. No.	Description	Piece No.
A	High Speed bonding drill bit, 9/32" dia., flatted shank.....	1452
B	High Speed bonding drill bit, 3/8" dia., with 9/32" flatted shank.....	1454
B1	Same as Ref. B but with 3/8" flatted shank.....	1455
B2	Same as Ref. B but with 3/8" round shank.....	1455R

Bonding Drill REPLACEMENT PARTS



57 or 57A
Set Screw Spindle Assembly



Bonding Drill

REPLACEMENT PARTS

Ref. No.	Qty. Reg.	Description	Piece No.
1	1	Upper frame and bushing assembly (18-20) Gear Ratio.....	HD-161
2	2	*Upper frame bushing.....	HD-68
3	1	Crankshaft	HD-3
4	1	Crank Assembly complete.....	HD-177
5	1	*Crank handle	HD-19
6	1	*Crank	HD-13
7	2	*Flat washer 3/8" nom. dia.....	106263
8	1	*Crankshaft capscrew 7/16" - 14 x 5 1/2" hex.....	250481
9	2	*Hex. nut 7/16" - 14.....	102636
10	2	Crankshaft pins	251754
11	1	Crank feed sprocket—20 teeth.....	HD-105
12	1	Crank feed sprocket—18 teeth.....	HD-106
13	1	Idler sleeve	HD-93
14	1	Idler to frame brace stud.....	HD-94
15	1	Lock washer 5/16" dia.....	103320
16	6	Flat washer 5/16" nom. dia.....	103340
17	1	Feed screw shield.....	MS-608-A
18	1	Pawl arm assembly complete.....	HD-176
19	1	*Pawl arm	HD-16
20	1	*Pawl	HD-17
21	1	*Pawl plunger	HD-32
22	1	*Pawl spring	HD-34
23	1	Pawl rivet 3/16" dia. x 7/8" button hd.....	104070
24	1	Lower frame and bushing assembly.....	HD-158
26	1	*Drive sleeve bushing	HD-48
27	2	*Frame Oilers	250389
28	1	Feed sprocket assembly complete.....	HD-210
28A	1	Feed sprocket assembly complete.....	HD-232
29	1	*Feed sprocket—7 teeth.....	HD-7
30	1	*Feed nut	HD-24
30A	1	*Feed nut	HD-229
31	2	Feed nut adjusting nut.....	HD-27
31A	1	Feed nut adjusting nut.....	HD-231
32	1	Feed nut adjusting nut washer.....	HD-28
33	1	Drive sleeve locknut.....	HD-29
34	1	Drive sleeve key.....	HD-76
35	1	Drive sleeve collar.....	HD-30
36	1	Drive sleeve assembly complete.....	HD-206
37	1	*Drive sleeve	HD-4
38	1	*Drive sleeve sprocket—8 teeth.....	HD-9
39	1	Lower frame shield.....	HD-66
40	4	Shield capscrew 3/8" - 16 x 1 1/2".....	106974
41	1	Bearing.....	M-2984
41A	1	Bearing.....	M-3408
42	1	Washer	M-2985
42A	1	Washer	M-3411
43	1	Washer	M-2986
44	1	Drive collar pin 1/8" dia. x 1 3/4" lg.....	HD-203
45	1	Frame brace	HD-154
46	5	Capscrew 5/16" - 18 x 1 1/4" lg. hex. hd.....	100122

*Parts Indented are included in the Part under which they are Indented.

Replacement Parts List continued on following page.



Bonding Drill

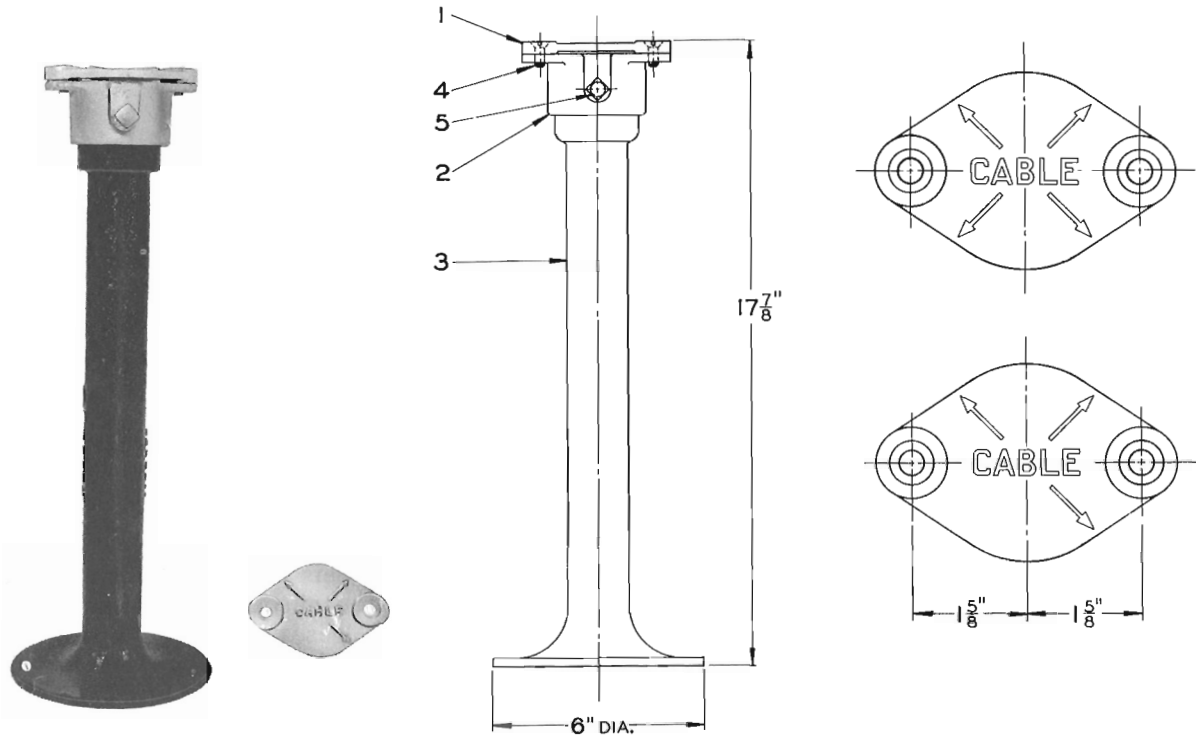
REPLACEMENT PARTS

(continued)

Ref. No.	Qty. Reg.	Description	Piece No.
47	6	Hex. nut 5/16" - 18.....	102634
48	1	No. 10 - 24 x 1/4" lg. hex socket cup point set screw.....	
49	1	Feed chain — 47 links.....	HD-207
50	1	Feed chain — 48 links.....	HD-187
52	2	Chain connecting link.....	251045
53	2	Feed depth gauging nut.....	HD-103
CHUCK AND SPINDLE ASSEMBLY (For 9/32" Flatted Shank Bit)			
54	1	Chuck and Spindle Assembly.....	HD-97
55	1	*Chuck only	HD-72
56	1	*Jaw only	HD-71
(For 3/8" Flatted Shank Bit)			
54A	1	Chuck and Spindle assembly.....	HD-98
55A	1	*Chuck only	HD-78
56A	1	*Jaw only	HD-79
SETSCREW SPINDLE ASSEMBLY (For 9/32" Flatted Shank Bit)			
57	1	Setscrew Spindle Assembly.....	HD-178
58	1	Spindle Setscrew 5/16" - 18 x 1/2" squarehead.....	102881
(For 3/8" Flatted Shank Bit)			
57A	1	Setscrew Spindle Assembly.....	HD-179
58	1	Spindle Setscrew 5/16" - 18 x 1/2" squarehead.....	102881
SPINDLE AND COLLET CHUCK ASSEMBLY (For 3/8" Round Shank Bit)			
59	1	Spindle and Collet Chuck Assembly.....	M-3192
60	1	Collet only	M-3189
61	1	Spindle nut only.....	M-3190
CURRENT TYPE C RAIL CLAMP ASSEMBLY			
63	1	Rail Clamp assembly.....	M-3185
64	1	*Stationary jaw assembly complete.....	M-3186
65	3	*Stationary and movable jaw points.....	M-2989
66	2	*Stationary jaw check nut—1" - 14 hex.....	115781
67	1	*Stationary jaw spacer.....	HD-223
68	1	*Moveable jaw release spring.....	HD-123
69	1	*Moveable jaw assembly complete.....	M-3187
70	1	*Moveable jaw hand clamping lever.....	HD-122
71	2	Stationary jaw capscrew—5/8" - 11 x 1 1/2".....	100184
72	3	Special washer	P-175
73	2	Stationary jaw wrench (not shown).....	HD-225
HD183 OLD STYLE TYPE C RAIL CLAMP ASSEMBLY (No longer in Production; order Ref. 63)			

*Parts Indented are included in the Part under which they are Indented.

Cable Marker



Type ES 1692 Cable Marker is for marking the route of the underground cable. By removing an arrow with a chisel the reversible top can be used for 90° turn or straight through designation.

Ref. No.	Description	Piece No.
A	Type ES 1692 Cable Marker complete.....	ES 1692
<u>REPLACEMENT PARTS</u>		
1	Reversible Cable Marker Plate.....	ES 1692-1
2	Cap.....	1186-8
3	Riser	1178-23
4	5/16" - 18 x 3/4" lg. fl. hd. mach. sc.....	
5	1/2" - 13 x 3/4" lg. sq. hd. cup pt. steel set sc.....	



Victolac Universal Black

INSULATING PAINT

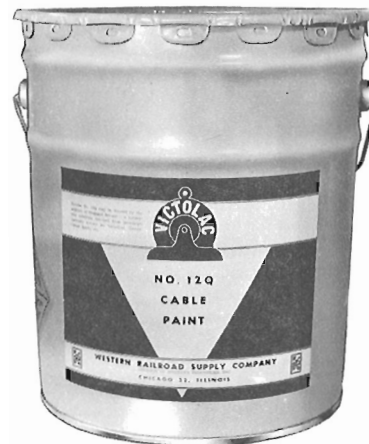
CABLE PAINT



Ref. A



Ref. B



Ref. F

Victolac Universal Black, of the volatile thinner type, is unexcelled for use in painting and insulating soldered and taped joints, junction boxes, switchboards, cables, battery racks, storage batteries, transformers, switch rod or rail insulations, and in fact, for all purposes where an insulating and protective paint or varnish is required.

Victolac No. 11 is the ideal material in its field, because while it dries quickly with a permanent hard, glossy surface, it will never chip, crack, nor deteriorate the insulation or other material with which it comes in contact. At the

same time, it offers positive permanent protection against the effects of weather, moisture, acids, alkalies, gases, etc. It is quick drying, suitable for both indoor and outside use.

Victolac No. 12Q is a slightly slower drying compound meeting the requirements of A.A.R., Signal Section Specification, No. 181. It is recommended for painting braid-covered cables, wood battery racks, etc.

Furnished in one pint, one gallon and five-gallon containers, also 55-gallon, one-time shipping drums.

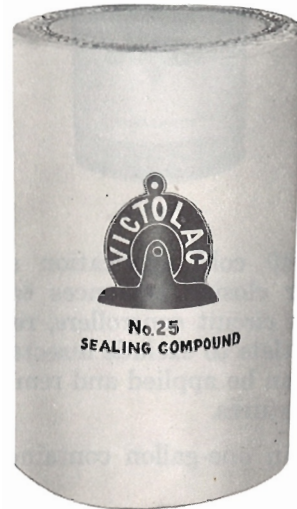
Ref. No.	Description	Piece No.
A	Victolac No. 11 Universal Black Insulating Paint in one-pint can.....	11P
B	Victolac No. 11 Universal Black Insulating Paint in one-gallon can.....	11G
C	Victolac No. 11 Universal Black Insulating Paint in five-gallon can.....	11G5
D	Victolac No. 11 Universal Black Insulating Paint in 55-gallon one-time shipping drum.....	11G55
E	Victolac No. 12Q Universal Black Cable Paint in one-gallon can.....	12G
F	Victolac No. 12Q Universal Black Cable Paint in five-gallon can.....	12G5
G	Victolac No. 12Q Universal Black Cable Paint in 55-gallon one-time shipping drum.....	12G55

Victolac Parkway Cable Sealing Compound

FUSIBLE ASPHALTIC BASE TYPE



Ref. A



Ref. B



Ref. C

Victolac No. 25 is a high grade insulating material which is unequalled for application to parkway cable bootlegs, junction boxes, and trunking where sealing is desirable to prevent corrosion and deterioration. It will not absorb moisture, is dense and very adhesive, sets with practically no shrinkage, is pliable at all times (even in coldest weather), is free from all chemical impurities, and is acid-proof. It meets A.A.R., Signal Section, Specification No. 184.

Victolac No. 25 is especially suitable for use where there is a wide fluctuation in prevailing temperatures, as it has a remarkably constant volume notwithstanding temperature changes. For voltages up to 6,000. Melting point 180° F. Furnished only in 25-lb. cakes or 100-lb. cylindrical cartons.

Victolac No. 78: an especially high grade compound for voltages up to 22,000. Dielectric strength 940 volts per mil. Melting point 169° F. Furnished in one-gallon containers.

Ref. No.	Description	Piece No.
A	Victolac No. 25 in twenty-five lb. cake.....	25-25
B	Victolac No. 25 in 100-lb. carton.....	25-100
C	Victolac No. 78 in one-gallon can.....	78-1

Cold Application Sealing Compounds

A.A.R., SIGNAL SECTION SPECIFICATION NO. 188



Ref. A

No. WL640 cold application sealing compound is for closing entrances to mechanism cases, switch circuit controllers, relay housings and cable outlets to exclude insects, vermin and rodents. It can be applied and removed at ordinary temperatures.

Available in one-gallon containers packed 4 to a carton.

SIGNAL CEMENT



Ref. B

A plastic cement for sealing lenses in place, wire entrances in relay cases, bootlegs, cable junction boxes, cabinets, etc. It is elastic, adhesive, and will not run in heat. It retains these qualities for years, permitting removal of wires and the running of new wires without replacing the wire entrance seal. Furnished in gray or black. The ingredients are not toxic to the skin, yet they repel rodents.

Available in one gallon containers, packed four to the case. Supplied in gray or black.

Ref. No.	Description	Piece No.
A	Cold working sealing compound, one-gallon container.....	WL640
B	Signal Cement, one-gallon container, gray.....	7202
B1	Same as Ref. B, but black.....	7209



SECTION 19

Presence Detector

CONTENTS

	Page No.
Type FSD-1A.....	19-2 to 6

WESTERN RAILROAD SUPPLY COMPANY

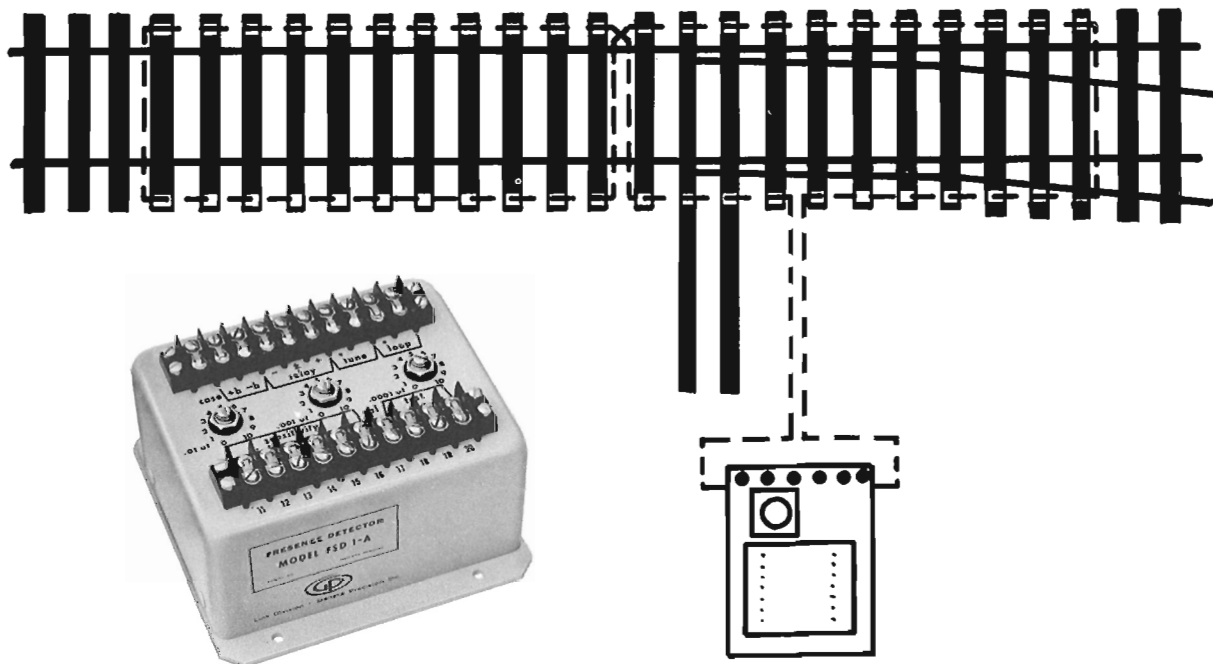
DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632

Type FSD-1A Link Fail-Safe Presence Detector



The Link Type FSD-1A Presence Detector indicates the occupancy of a section of track by proximity detection rather than by the physical contact of wheels on rails. It requires a loop of wire at the track from 30 to 100 feet long. Whenever a car is over all or a part of this loop, its presence is detected.

The device uses solid state circuitry with fail-safe operating characteristics. Its principal applications are:

- a. Detector locking of classification yard switches
- b. As a substitute for short track circuits

The Presence Detector operates on 12V. DC, 160 milliamps. A suitable power unit, Type PS-4, to drive up to six detectors is available.

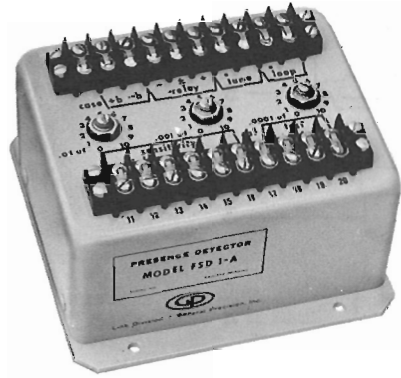
When two or more loops are to be laid in close proximity, it is necessary to detune one or two detectors, by means of a tuning unit, which mounts on the terminals of the detector. Two units, Types LFA-1 and LFA-2 giving two separate frequency shifts, are available.

The DLT-1 Dummy Loop is an inductance which can be used for bench testing of Presence Detectors.

The Calibrator, PBC-1, permits a rapid check of the Detector.

It is recommended that Presence Detectors be installed in a housing at track side. Terminal housing type 1233-50 or 1233-51 is recommended.

Type FSD-1A Link Fail-Safe Presence Detector



Ref. A



Ref. B



Ref. C



Ref. D

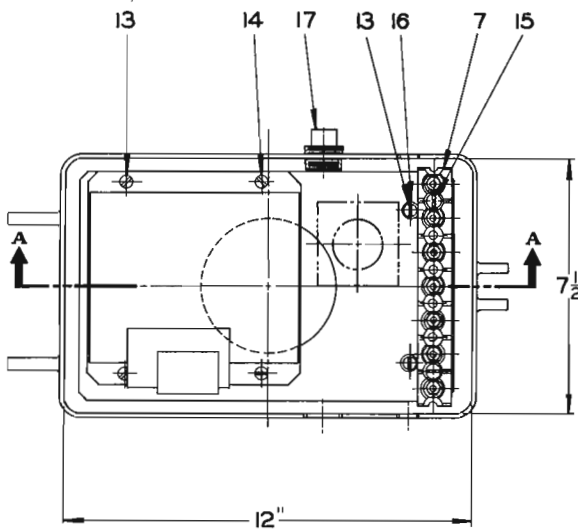
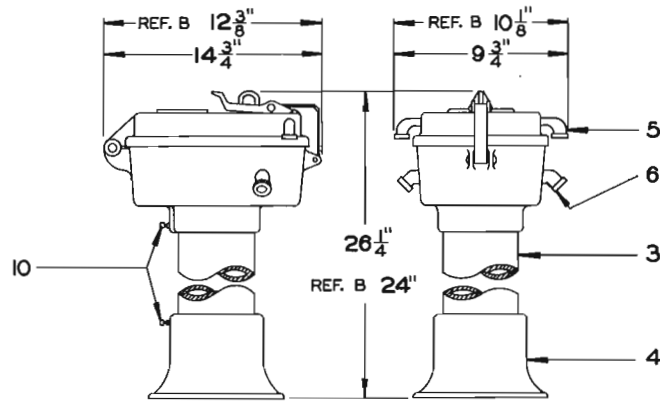


Ref. E

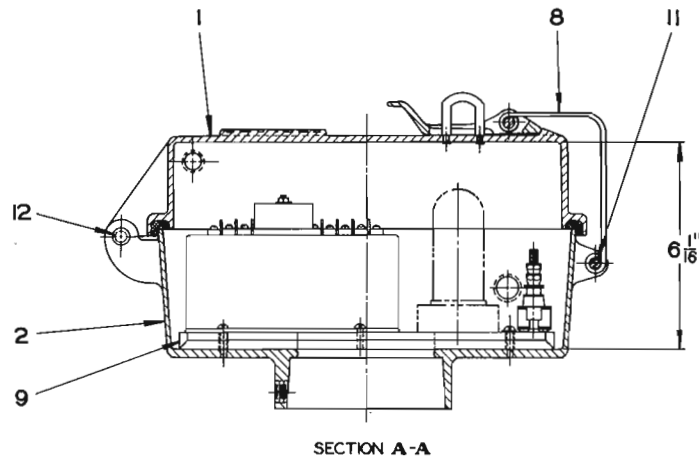
These accessories are not shown in exact size relationship.

Ref. No.	Description	Piece No.
A	Link Fail-Safe Presence Detector.....	FSD-1A
B	Power Supply 117V-50-60 cycles, 12.5 V-1.0A, DC.....	PS-4
C	Push Button Calibrator.....	PBC-1
D	Dummy Loop	DLT-1
E	Loop Frequency Adapter (red)	LFA-1
E1	Loop Frequency Adapter (black).....	LFA-2

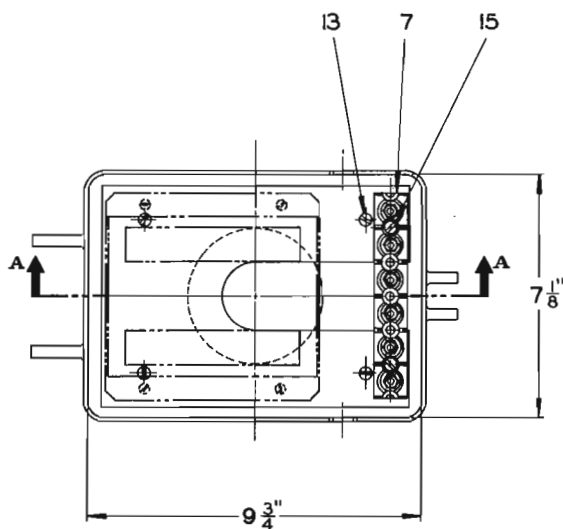
Type FSD-1A Link Fail-Safe Presence Detector



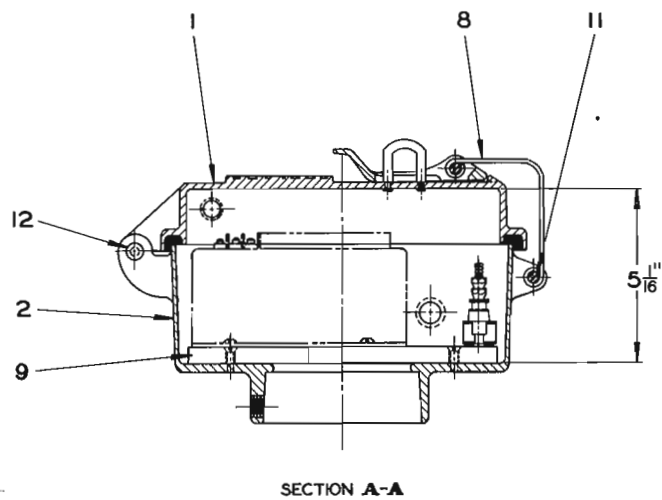
Ref. A & B



SECTION A-A



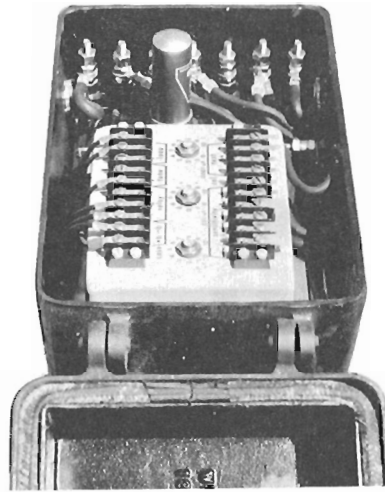
Ref. C



SECTION A-A



Type FSD-1A Link Fail-Safe Presence Detector



Ref. A

Ref. No.	Description	Piece No.
A	Link Fail-Safe Presence Detector with terminal housing, Clare HGP-1041, or equal, relay, 1000 ohms, 1 form D contact and Octal socket base with screw terminals and a terminal strip, wired complete. (specify Ref. B or B1 terminal housing)	1233-52F
A1	Same as Ref. A less relay and base.....	1233-52FA
B	Terminal Housing for presence detector and relay with two - 1" dia. holes and one - 1" pipe plug used in Ref. A and A1.....	1233-52C
B1	Terminal Housing for presence detector and relay without 1" dia. holes.....	1233-52
C	Terminal Housing for presence detector only.....	1233-50
REPLACEMENT PARTS		
1	Cover for Ref. B and B1.....	1265-16B
1A	Cover for Ref. C.....	1265-15C
2	Top Casting for Ref. B.....	1233-1UC
2A	Top Casting for Ref. B1.....	1233-1U
2C	Top Casting for Ref. C.....	1233-1T
3	4" dia. x 15" lg. Std. pipe.....	
4	Foot	1233-2
5	Ventilator	1143-16
6	Cable grip for .250" to .375" dia. cord.....	
7	Seven post terminal block for Ref. A and A1.....	2508-107
7A	Six post terminal block for Ref. C.....	2508-106
8	Hasp for Ref. B and B1.....	1003-54B
8A	Hasp for Ref. C.....	1003-54A
9	Wood Base for Ref. B and B1.....	1233-53
9A	Wood Base for Ref. C.....	1233-51
10	3/8" x 3/4" lg. cup pt. set screw, steel (cad. pl.).....	
11	5/16" x 1 1/4" lg. rd. hd. rivet, brass (nickel pl.).....	
12	1/4" x 1" lg. rd. hd. rivet (nickel pl.).....	
13	No. 10 - 32 x 7/8" lg. rd. hd. mach. scr. (nickel pl.).....	
14	No. 10 - 1/2" lg. rd. hd. wood scr. (nickel pl.).....	
15	No. 12 x 3/4" lg. rd. hd. wood scr. (nickel pl.).....	
16	No. 10 plain washer, brass (nickel pl.).....	
17	1" pipe plug for Ref. B only (Galv.).....	



Type FSD-1A Link Fail-Safe Presence Detector



Typical Installation



SECTION 20

Lightning Arresters

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	Page No.
Rare-Gas	20-2 to 20-6
Air-Gap	20-21 to 20-25
Pole Line Lightning Arresters	20-30 & 20-31
Coil Shunts	20-36

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



WRRS Rare-Gas Arresters

Rare-gas arresters provide the maximum protection available for signal and communication circuits, against both lightning strikes and also induced voltage overloads. The types described in the following pages are available to meet all applications that arise in everyday use. Many have, in addition to the rare-gas cartridges, spark gaps and fuses where these are required.

PHYSICAL CHARACTERISTICS

The following paragraphs list the performance features of a typical WRRS rare-gas cartridge, when tested in accordance with A.A.R., Signal Section, Specification 52:

- 1—In tests from a 2000 mF discharge bank the cartridge can safely carry 4000 amp. surges at 20-second spacing. See Fig. 1.
- 2—The discharge and return to normal after a stroke, is very rapid. Fig. 2 shows a 4.2 Kilovolt stroke; the peak discharge current is 680 amps.
- 3—The cartridge meets the AAR 10/20 test, that is, a wave front rising at the rate of 10 KV/microsecond to a 20 KV crest can be carried.
- 4—Continuous current capacity is 2 amps.
- 5—The metal electrodes help maintain the unit's constant characteristics under repeated strokes. Fig. 3 shows the unit passing repeated rapid strokes. Fig. 4 shows a carbon electrode type under identical conditions. It is rapidly approaching the destruction point.

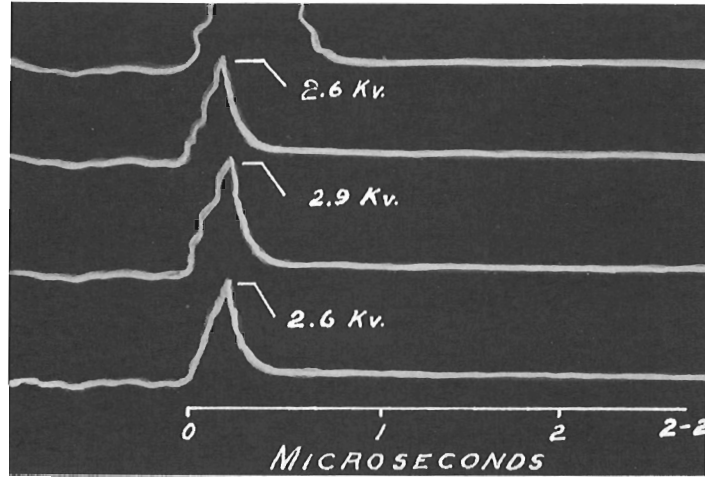


Figure No. 1

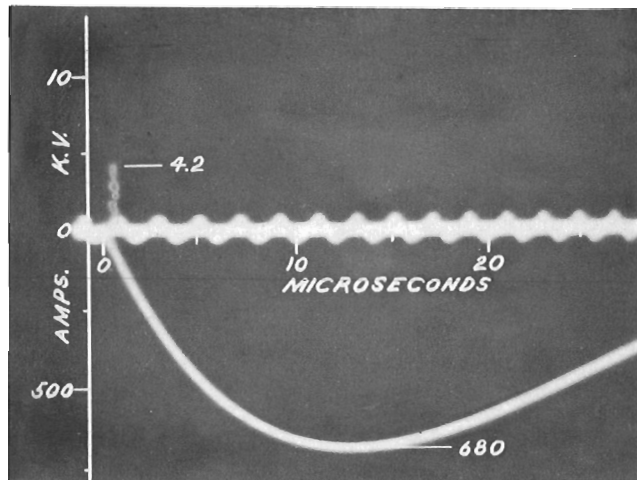


Figure No. 2

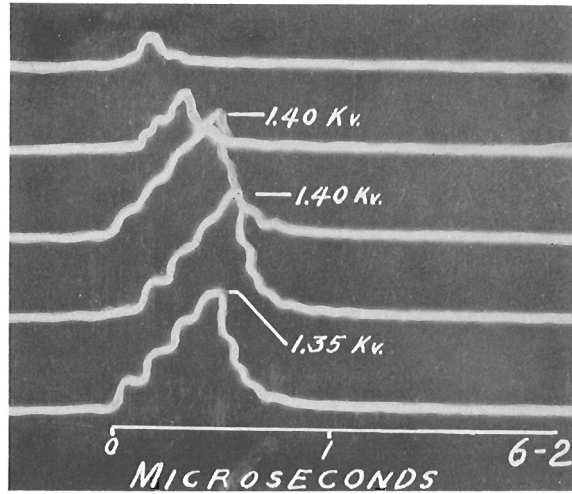


Figure No. 3

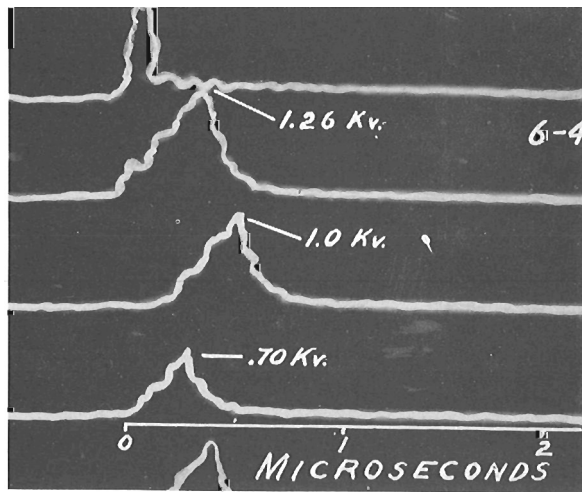
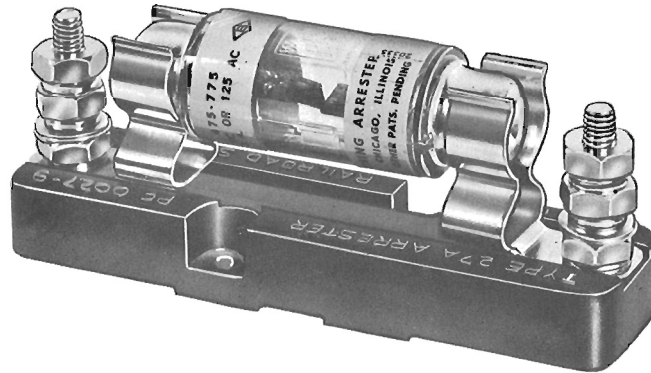


Figure No. 4

Types 27-A and No. 27-AHD Lightning Arresters

5 1/8" long, 1 1/4" wide, 2 1/4" high



The base of this arrester is molded bakelite and carries two binding posts, one for line and instrument, and one for ground.

Type 27-A arrester is for use on signal circuits of 30 volts D.C. or 125 volts A.C. maximum and on communication circuits up to 450 volts D.C.

Breakdown ranges: 200-400 volts and 475-775 volts at 60 cycles.

Type 27-AHD arrester is equipped with a heavy-duty rare-gas cartridge and is for use on signal circuits of 30 volts D.C. or 125 volts A.C. maximum, and on communication circuits up to 450 volts D.C.

Breakdown range: 475-775 volts at 60 cycles.

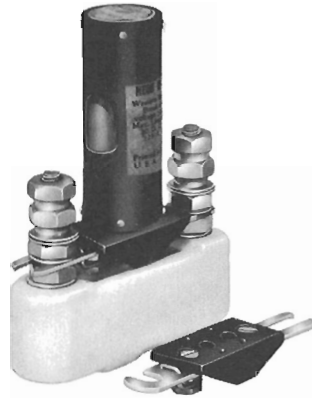
Ground hook plates and wood screws are furnished with each arrester.

Ref. No.	Description	Piece No.
A	Type 27-A Arrester complete with rare-gas cartridge, 200-400 V.B.D.....	0027-A-1Y
A1	Same as Ref. A but 475-775 V.B.D.....	0027-A-1G
A2	Same as Ref. A less cartridge.....	0027-10
B	Type 27-AHD Arrester complete with rare-gas cartridge 475-775 V.B.D.....	0027-AHD
REPLACEMENT PARTS		
1	Cartridge Clip	0027-8A
2	Base (Bakelite)	0027-9
3	Rare-gas cartridge only, breakdown range 200-400 volts.....	0027-1Y
3A	Same as Ref. 3 but 475-775 volts.....	0027-1G
4	Heavy-duty rare-gas cartridge only, breakdown range 475-775 volts.....	0027-1GHD
5	Ground Hook Plate.....	0027-15



Types 275 and 275-TC Lightning Arresters

3 3/8" long, 1" wide, 4 3/16" high



These types of rare-gas arresters are arranged for mounting on A.A.R. porcelain terminals and may therefore be banked on 1" centers. The mounting unit is so designed that it may be mounted on one terminal, as illustrated, or on the diagonally opposite binding posts of two terminals mounted side by side on 1" centers.

The cartridge plugs into the mounting unit, thus permitting easy removal for inspection or test or when high voltage megger line tests are being made.

The Type 275 arrester has break-down range of 200-400 or 475-775 volts at 60 cycles and is intended for use on signal circuits of 30 volts

D.C. or 125 volts A.C. maximum, and on communication circuits up to 450 volts D.C.

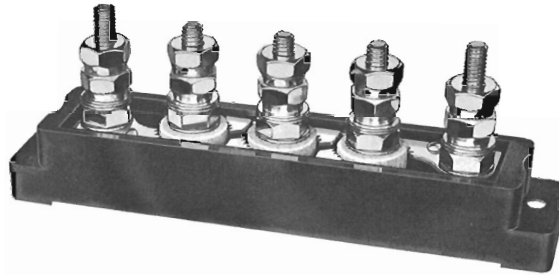
The Type 275-TC is a special, low break-down, arrester intended for the protection of low voltage lamp filaments. It should be mounted in the lamp housing and connected in multiple with the lamp to be protected. Recommended for the protection of lamps up to 13.5 volts.

The A.A.R. porcelain terminal is furnished with references A and B unless otherwise specified. Wood screws for mounting and a ground hook plate are furnished with each complete arrester.

Ref. No.	Description	Piece No.
A	Type 275 Arrester complete with rare-gas cartridge, 200-400 V.B.D.....	0275-1
A1	Same as Ref. A but 475-775 V.B.D.....	0275-2
A2	Same as Ref. A, less terminal block.....	0275-3
A3	Same as Ref. A1, less terminal block.....	0275-4
B	Type 275-TC Arrester complete with rare-gas cartridge.....	0275-30
B1	Same as Ref. B less terminal block.....	0275-31
REPLACEMENT PARTS		
1	Cartridge for Ref. A, 200-400 V.B.D.....	0275-6
1A	Cartridge for Ref. A1, 475-775 V.B.D.....	0275-7
1B	Cartridge for Ref. B, 60 to 90 V.B.D.....	0275-27
2	Mounting contact strip.....	0275-39
3	A.A.R. Terminal Block.....	1056-14A
4	Ground Hook Plate.....	0035-6

Type 345 Lightning Arrester

6" Long x 1¼" Wide x 2½" High



The Type No. 345 Lightning Arrester incorporates the latest improvements in the line to rail and line to earth grounding type of arrester. It is sturdily built of molded bakelite with studs molded in position, insuring proper air gaps for the life of the arrester. It accommodates two line circuits and provides a means of discharging to both rails and ground. Due to its construction, circuit wires do not cross ground wires, and since there are three distinct paths to ground for each circuit, the danger of foreign substances shorting the gaps is minimized. The height of the 345 is considerably less than any other arrester of this type. All sparking points are copper to silicate of carbide.

Two wood screws for mounting and 3 ground hook plates furnished with each arrester.

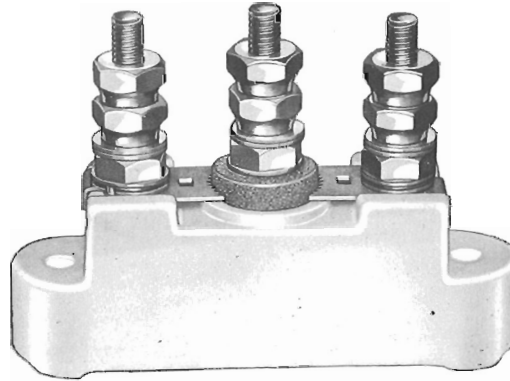
This arrester may be furnished as a non-air-gap type if specified.

Ref. No.	Description	Piece No.
A	Type 345 Lightning Arrester complete.....	0345-1
REPLACEMENT PARTS		
1	Base (with binding post inserts).....	0345-11
2	Spark Plate	0345-13
3	Ground Hook Plate	0027-15
4	Silicate of Carbide Disc.....	1021



Type 105-B Lightning Arrester

3 7/8" long, 1" wide, 2 7/8" high



This arrester has already become one of the most popular of Railroad Signal types. In a very small space it combines all of the proven desirable protective mediums — silicate of carbide disc with choke coil of No. 14 wire.

The terminals of the choke coil are brought to the surface and are visible for inspection. All parts are made of heavy metal and are carefully adjusted—insuring real protection to your signal apparatus.

We call particular attention to the very small size of the base, being 3 7/8" long by 1" wide, which makes it very adaptable to locations where available space for lightning protective apparatus is limited.

Wood screws and ground hook plate are furnished with each arrester.

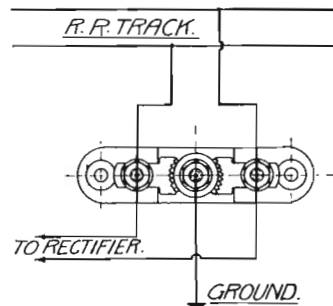
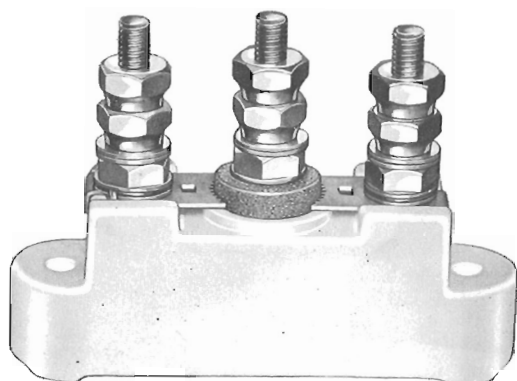
Ref. No.	Description	Piece No.
A	Type 105B Lightning Arrester complete, air-gap type, with silicate of carbide disc.....	0105-B
REPLACEMENT PARTS		
1	Silicate of carbide disc.....	1021
2	Spark gap plates.....	0105-3
3	Ground Hook Plate	0035-6



Type 110 Duplex Track Arrester

NON-AIR GAP

3 7/8" long, 1" wide, 2 7/8" high



Type 110 Arrester consists of a porcelain base on the top of which is mounted a silicate of carbide disc. On both sides of this disc are placed brass plates which make connection with two outside binding posts forming a non-air gap protective medium between the binding posts and the silicate of carbide disc; this disc is positioned by the ground binding post. The two outer binding posts are intended to be connected directly to the track as shown in diagram. This arrangement forms an economical and efficient medium of lightning protection having advantages of the regular lightning path to ground as well as the shunt feature combined. No choke coils are used in this combination.

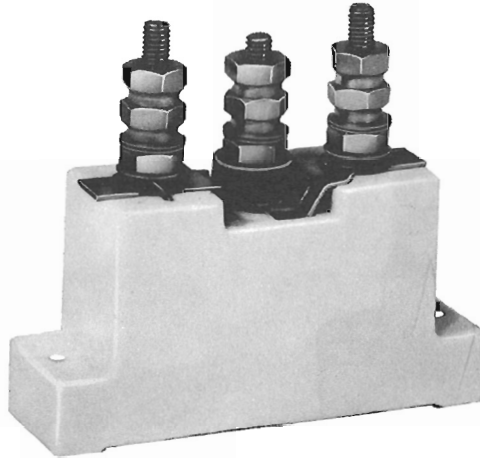
Two #8x1 1/4" Round Head Blued wood screws and one ground hook plate are furnished with each arrester.

Ref. No.	Description	Piece No.
A	Type 110 Duplex Track Arrester complete.....	0110
REPLACEMENT PARTS		
1	Silicate of carbide disc.....	0105-7
2	Spark gap plate.....	0105-3
3	A.A.R. binding post complete with nuts and washers.....	107010
4	Porcelain base only.....	0105-1
5	Ground hook plate.....	0035-6



Type 6 Quenched Gap Lightning Arrester

4½" long, 3¼" high, 1¼" wide



The carbon or silicate of carbide discs used are ¼" thick by ¾" in diameter and are of a special mechanical strength to eliminate the possibility of disintegration.

On the inside of the porcelain base are two recesses each containing a helical reactance coil. The upper end of each of these coils is connected to the post which holds the copper plates in place, while the lower end of the coils are connected together, thus placing the two coils in series. The design is such that there is a heavy wall of porcelain between each reactance

coil and the center post, thus there is absolutely no danger of a spark occurring on the inside of the block.

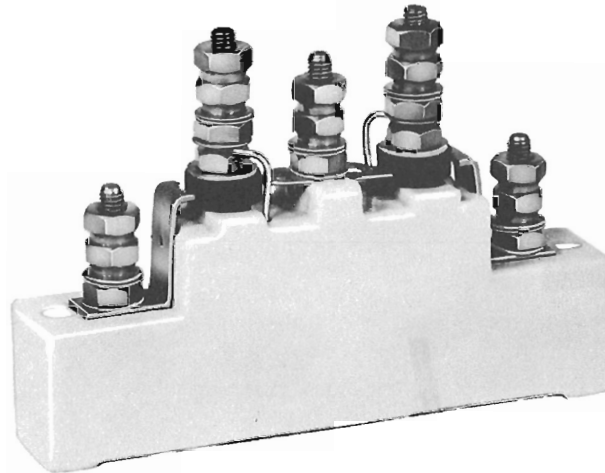
After the reactance coils have been placed in position, the whole inner part of the block is completely filled with insulating compound.

Type 6 arrester is constructed upon a heavy porcelain containing block and is equipped with standard A.A.R. binding posts, nuts and washers. A copper strip for connecting ground posts, and wood screws for mounting are furnished.

Ref. No.	Description	Piece No.
A	Type 6 Lightning Arrester, Quenched Gap, with carbon disc.....	0006-3EN
A1	Same as Ref. A but with silicate of carbide disc.....	0006-4EN
REPLACEMENT PARTS		
1	Carbon disc	1086-1
2	Silicate of carbide disc.....	1021
3	Porcelain base	1069
4	Spark plate	1084-N
5	Bakelite quench gap washer.....	1012-18
6	Ground connection plate.....	1012-14

Type 3 Lightning Arrester

1½" wide, 5⅞" long, 3⅜" high



The rail grounding feature is incorporated in the Type 3 arrester in addition to the regular choke coil and spark gap construction of the Type 6.

All posts are rigidly mounted in a porcelain base in such a manner that they are in a straight line, allowing the arrester to be made very narrow.

This arrester has five binding posts, as follows: Two for rail connections, one for man made ground connection, one for line connection and one for instrument connection. All sparking points are copper to silicate of carbide.

Type 3 Lightning Arresters are designed to protect low voltage circuits. The Type 3HB Lightning Arrester, having silicate of carbide discs on all five binding posts, is designed to protect 110 volt A.C. circuits. The silicate of carbide discs on the ground binding posts increase the resistance between line and ground, without impeding the free passage of lightning surges, and prevent the line current from following through when lightning or static discharges have established a path to ground.

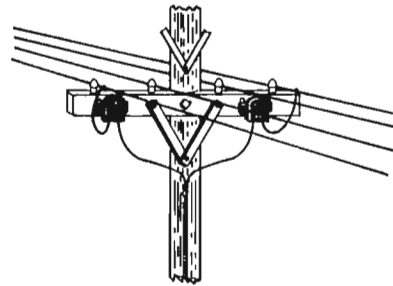
Three copper ground connection plates and two wood screws are supplied with each arrester.

Ref. No.	Description	Piece No.
A	Type 3 Lightning Arrester, not filled with sealing compound.....	0003-2
A1	Same as Ref. A but with base filled with sealing compound.....	0003-2F
B	Type 3HB Lightning Arrester, for 110 volt A.C. circuits, not filled with sealing compound.....	0003-6
B1	Same as Ref. B but with base filled with sealing compound.....	0003-6F
REPLACEMENT PARTS		
1	Silicate of carbide disc.....	1021
2	Porcelain base	1041
3	Center spark plate	1012-22
4	End spark plate.....	1012-12
5	Bakelite Quench-gap washer.....	1012-18
6	Lead cushion washer.....	0003-19
7	Ground connection plate.....	1012-13



Type R2003 Lightning Arrester

110-250 AND 440-750 VOLTS — A. C. OR D. C.



This arrester is extremely efficient owing to the fact that it will operate on a very close margin above the normal line voltage. It is of the valve type and provided with large surfaces over which repeated discharges may pass without affecting the operating characteristics of the arrester. This arrester may be used either as a protection between the line and ground or as a shunt across transformer or instrument terminals. Each arrester is tested in our laboratory before shipping to insure its functioning at the proper voltage. Provisions are made so this arrester may be connected on the cross-arm or pole proper without the danger of cracking the housing.

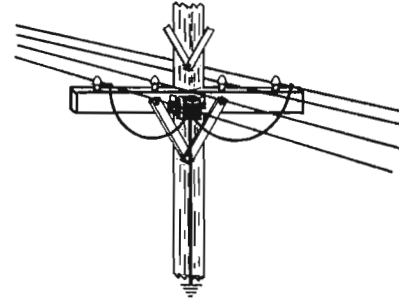
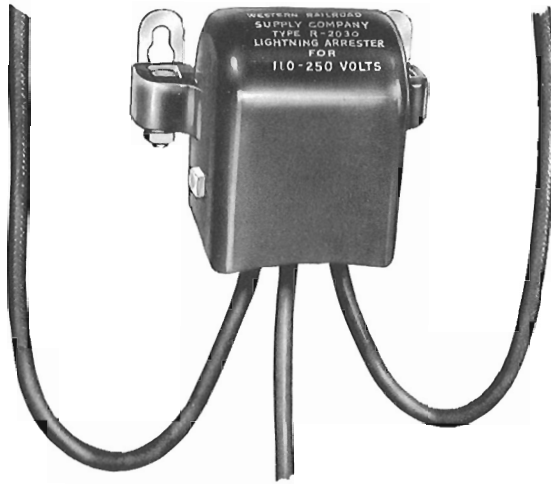
This arrester is made with dependability as the ultimate object. Notwithstanding the extremely high value of this product, the cost of the arrester is low and its installation will be found inexpensive compared with the results obtained.

Ref. No.	Description	Piece No.
A	Type R-2003 Lightning Arrester complete for 110-250 volt line (36" leads).....	2003-32
A1	Same as Ref. A but for 440-750 volt line.....	2003-36



Type R2030 Lightning Arrester

110-250 AND 440-750 VOLTS — A. C. OR D. C.



Type R2030 Lightning Arrester is similar to Type R2003 shown on opposite page and the same desirable construction features and advantages are furnished. It is of the valve type and provided with large surfaces over which repeated discharges may pass without affecting the operating characteristics of the arrester.

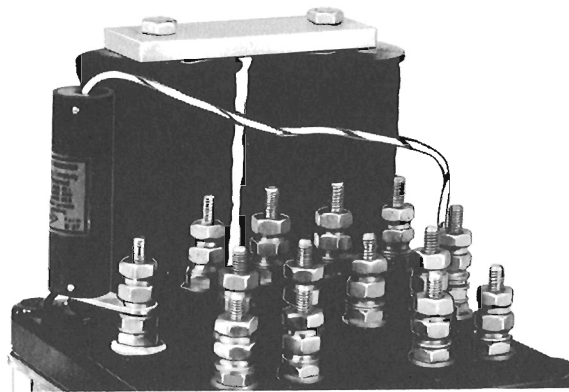
Type R2030 differs from R2003 in that the three wire terminals of the arrester provide for two connections to line and one to ground. Thus, the obvious advantages of one arrester replacing two of the R2003 type and the conserving of cross-arm space, will be noted.

From the standpoint of service, efficiency and dependability, the Type R2030 Lightning Arrester is unsurpassed in its particular field of application.

Ref. No.	Description	Piece No.
A	Type R-2030 Lightning Arrester, Complete for 110-250 volt line (36" leads).....	2030-32
A1	Same as Ref. A but for 440-750 volt line.....	2030-36
A2	Same as Ref. A but with "T" connectors on line leads and clamp connector on ground lead.....	2030-33

Type R-2013 Coil Shunts

Adjustable to all spacings up to 6 inches; or over if specially called for.



The advantage of shunts for the protection of relay and searchlight signal coils cannot be fully appreciated unless the rare-gas tube types are used, especially when it is considered that in a rare-gas a spark will occur at potentials of 1/50 of the voltage required in air. It will have the same relative efficiency compared with the air-gap shunt as the rare-gas tube arrester has, compared with the air-gap arrester. In order for the air-gap shunt to be efficient it is necessary to have the plates so closely positioned that there is a constant danger of short-circuiting or fusing. This condition is entirely eliminated by the rare-gas shunt, in which electrodes are widely spaced and further protected by being in a sealed chamber, insuring minimum maintenance.

The shunts consist of a rare-gas tube enclosed in a heavy shell fitted with a clip connection on one end and flexible connection on the other end.

This construction permits this shunt to be applied to apparatus having different post spacings.

Ref. No.	Description	Piece No.
A	Type R-2013 Rare-Gas Coil Shunt, 200-400 volt breakdown.....	2013-1



SECTION 21

Resistance Units

CONTENTS

	Page No.
Adjustable	21-2 to 21-10
Fixed.....	21-21 to 21-23

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

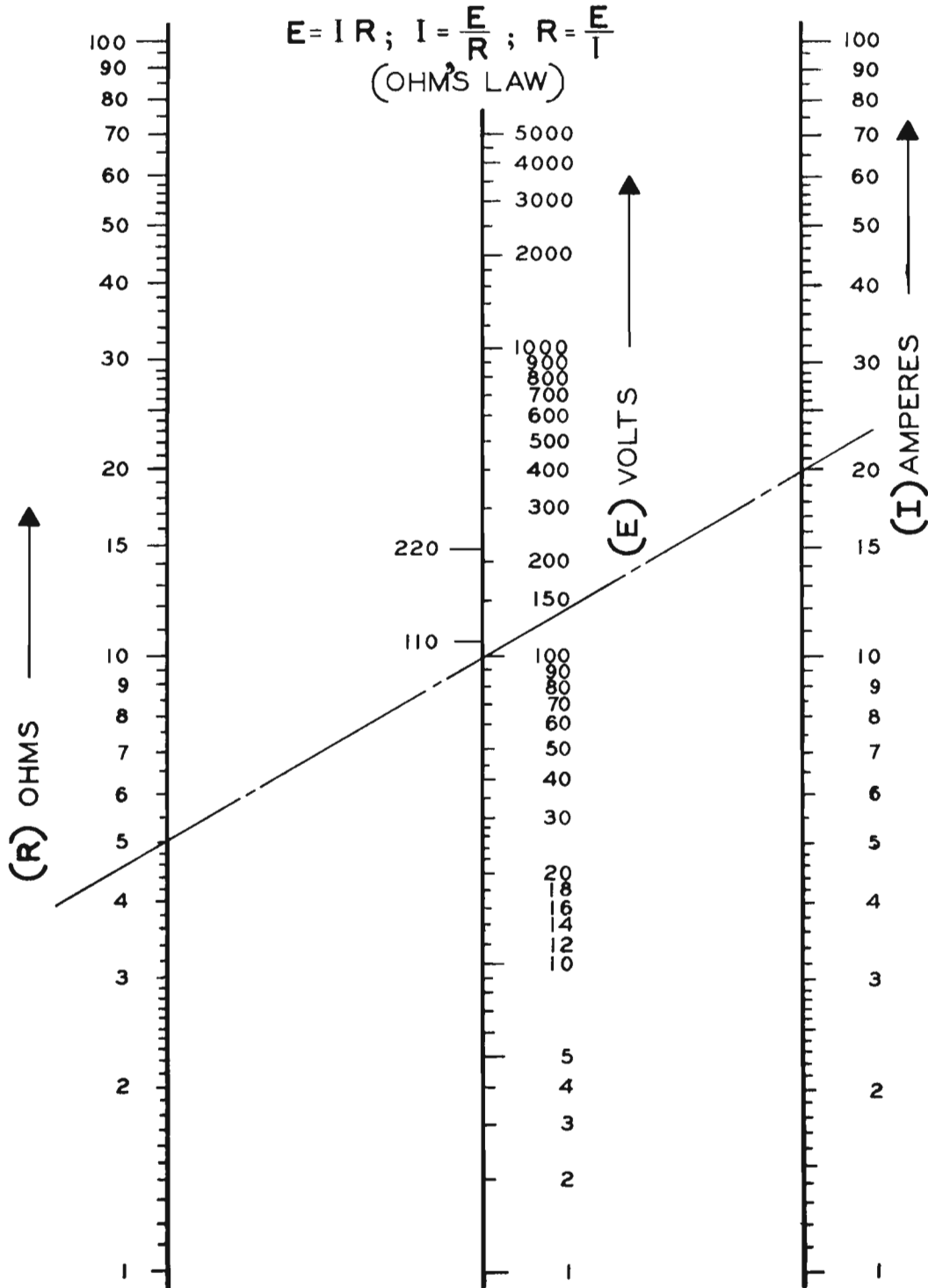
MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



Ohm's Law Calculator



DIRECTIONS

LAY STRAIGHT EDGE ON ANY TWO KNOWN VALUES AND READ UNKNOWN VALUE ON THIRD SCALE.

Adjustable Resistance Unit No. 7321

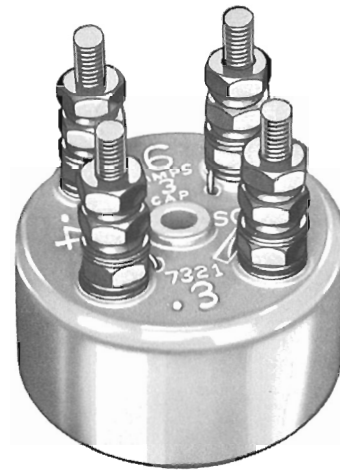
ROUND BASE TYPE — 0.9 OHM

Type No. 7321 Variable Resistance Unit was primarily designed for use in primary battery track circuits for which it has been eminently satisfactory. It consists of a circular porcelain block in which four A.A.R. non-turning posts are mounted.

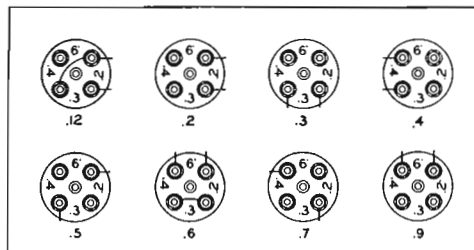
The wire in this unit is continuous and is looped under the different binding posts on the surface of the porcelain, thus doing away with all soldered connections. No. 16 Nichrome wire is used.

For most locations it is desirable that the base of these resistance units be filled with sealing compound. In others, the extra heat dissipation of open wire is an advantage and sealing compound is omitted.

Packed one in a carton with one blued wood screw for mounting.



2 3/4" dia., 3" high

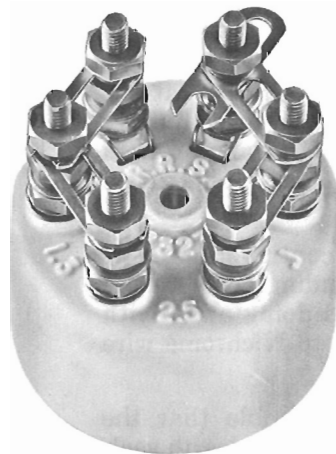


Resistances Obtainable

Ref. No.	Description	Piece No.
A	Type 7321 Adjustable Resistance Unit.....	7321-F
A1	Same as Ref. A but not filled with sealing compound.....	7321

Type 7327 Adjustable Track Resistance Unit

0.1 TO 2.5 OHMS



3" dia., 3/4" high

Type No. 7327 Track Resistance Unit is adjustable from 0.1 ohm to 2½ ohms in 0.1 ohm steps. One continuous piece of No. 18 B&S gauge bare Nichrome resistance wire is used, which is looped to the binding posts on the surface of the block. Resistance values are plainly embossed on the porcelain block.

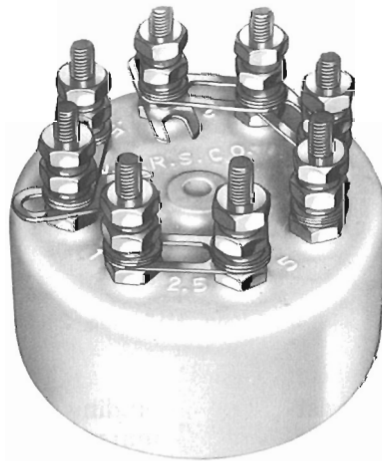
For most locations it is desirable that the base of these resistance units be filled with sealing compound. In others, the extra heat dissipation of open wire is an advantage and sealing compound is omitted.

Packed one in a carton with one blued wood screw for mounting.

Ref. No.	Description	Piece No.
A	Type 7327 adjustable Track Resistance Unit.....	7327F
A1	Same as Ref. A but not filled with sealing compound.....	7327
REPLACEMENT PARTS		
1	Shunting plate	7323-2

Type 7323 Universal Adjustable Track Resistance

5 OHM 10 OHM



3 3/4" dia., 3 1/4" high

The standard No. 7323 Universal Adjustable Track Resistance is adjustable in 1/10 ohm steps from 1/10 ohm to 5 ohms. It was specially designed for use in track circuits where storage battery is used, but it is universally adaptable to track circuits fed by either storage or primary battery.

The resistance consists of No. 18 enameled nichrome wire in the 2 1/2 and 1 ohm steps and No. 16 in the smaller steps. The No. 18 will carry 5 amperes and the No. 16 will carry 6 amperes without overheating. Ample protection against lightning and accidental high currents is provided.

Special type 7323 Adjustable Resistance unit,

having a total resistance of 10 ohms, is available. Steps of .02, .02, .05, .05, 1, 2.5 and 5.1 ohms are provided.

Connections should be made to posts either side of space marked 5 or 10 and shunting plates removed from spaces marked with the resistance values desired in the circuit.

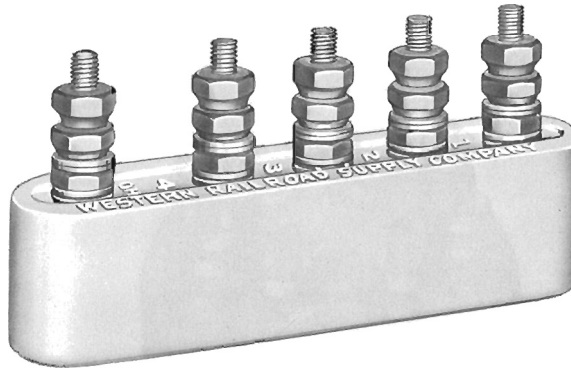
For most locations it is desirable that the base of these resistance units be filled with sealing compound. In others, the extra heat dissipation of open wire is an advantage and sealing compound is omitted.

Packed one in a carton with one blued wood screw for mounting.

Ref. No.	Description	Piece No.
A	Type 7323 Universal Track Resistance, 5 ohms.....	7323-F
A1	Same as Ref. A but 10 ohms.....	7323-6
A2	Same as Ref. A but not filled with sealing compound.....	7323
REPLACEMENT PARTS		
1	Shunting Plate	7323-2



Narrow Type E1702 Adjustable Resistance Unit



5½" long, 1¼" wide, 2¾" high

The resistance of the Type No. E1702 Resistance unit are accurately measured. A single continuous piece of heavy nichrome wire is used. Each tapped portion is brought to the surface of the porcelain where it is securely fastened to

binding posts where it can be seen. Standard units are made with resistances from one-tenth to one ohm. They can also be furnished with two ohms and 10 ohms total resistance on the same basis, and other values as shown.

TYPICAL SCHEDULE OF RESISTANCES FOR 1 OHM UNIT

- Connect 1 and 2—0.1 ohm
- Connect 2 and 3—0.2 ohm
- Connect 3 and 4—0.3 ohm
- Connect 4 and 5—0.4 ohm
- Connect 2 and 4—0.5 ohm
- Connect 1 and 4—0.6 ohm
- Connect 3 and 5—0.7 ohm
- Connect 1 and 5 and strap between 2 and 3—0.8 ohm
- Connect 2 and 5—0.9 ohm
- Connect 1 and 5—1.0 ohm

Ref. No.	Description	Piece No.
A	Type E 1702 Resistance Unit complete, 1 Ohm. (Steps 0.1, 0.2, 0.3, 0.4 Ohm).....	E1702-11
A1	Same as Ref. A but 2 Ohms. (Steps 0.2, 0.4, 0.6, 0.8 Ohm).....	E1702-12
A2	Same as Ref. A but 10 Ohms. (Steps 1, 2, 3, 4 Ohms).....	E1702-13
A3	Same as Ref. A but 2.3 Ohms. (Steps 0.4, 0.5, 0.6, 0.8 Ohm).....	E1702-16
A4	Same as Ref. A but 1.5 Ohms. (Steps 0.1, 0.2, 0.4, 0.8 Ohms).....	E1702-19
A5	Same as Ref. A but 6 Ohms. (Steps 0.5, 1, 2, 2.5 Ohms).....	E1702-23
A6	Same as Ref. A but 5.25 Ohms. (Steps 0.35, 0.70, 1.4, 2.8 Ohms).....	E1702-27
REPLACEMENT PARTS		
1	Shunting Plate	E7323-2



Type E1705 Adjustable Resistance Unit

0.1 TO 5.0 OHMS



4 $\frac{1}{16}$ " long, 1 $\frac{1}{16}$ " wide, 3 $\frac{3}{16}$ " high (overall)

This type of adjustable resistance unit meets any track circuit need where storage batteries are used. It can also be used on primary battery track circuits if desired.

While the unit was designed large enough so that a very heavy nichrome wire could be used to provide protection against burn-outs due to lightning or accidental high currents, yet it is compact and occupies very little space. A continuous piece of No. 16 nichrome wire is used for .1, .2, and .4 ohm steps of the unit. A continuous piece of No. 19 nichrome wire is used for .8, 1.5, and 2 ohm steps. The two sides are connected above the base by a copper connector.

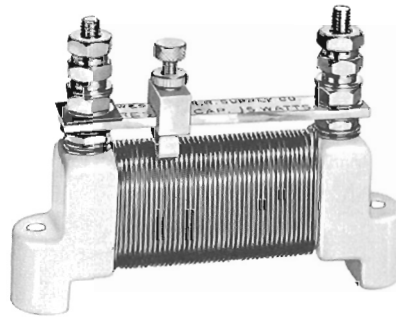
As in our other types of resistance units, there are no soldered or hidden connections in this 5-ohm unit. Each tapped portion of the resistance is brought to the surface of the porcelain, where it is securely fastened to A.A.R. binding posts so that the wires are visible.

Adjustable in 1/10 ohm steps from 1/10 ohm to 5 ohms

Ref. No.	Description	Piece No.
A	Type E-1705 Adjustable Resistance Unit complete with one connecting plate and six shunting plates, 5 ohm.....	E1705-12
REPLACEMENT PARTS		
1	Shunting plate	7323-2

Type 1110 Adjustable Slide Resistance Unit

4 $\frac{1}{8}$ " long, 1" wide, 3 $\frac{1}{8}$ " high



21 Turn Resistor

Standard Type No. 1110 Slide Resistance Units have resistances as specified in the tables below.

On Western adjustable Slide Resistance Units, the slider can be loosened, moved and re-tightened without losing contact with the resistance wire, an exclusive feature, and construction is such that should the slider become broken, the total resistance of the winding is then in the circuit.

The bare michrome wire used in 21 turn and 42 turn units is wound in grooves in the porcelain and when enamel wire is wound turn-to-turn the space is completely filled so the wire will not move under pressure of the slider as adjustments are made.

Two wood screws are furnished with each resistance unit for mounting.

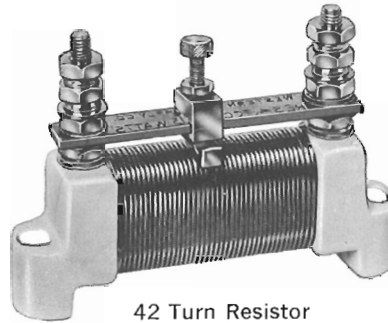
RATING IN WATTS — 15 MAXIMUM

Ref. No.	Description	Total Resistance in ohms	Ohms per step	Piece No.
A	Type 1110 Variable Resistance with 21 turns....	1.0	0.05	1110-1
A1	Same as Ref. A except.....	1.5	0.075	1110-2
A2	Same as Ref. A except.....	2.26	0.10	1110-3
A3	Same as Ref. A except.....	2.88	0.13	1110-4
A4	Same as Ref. A except.....	3.56	0.16	1110-5
A5	Same as Ref. A except.....	4.50	0.225	1110-6



Type 1110 Variable Slide Resistance Unit

4 3/8" long, 1" wide, 3 3/8" high

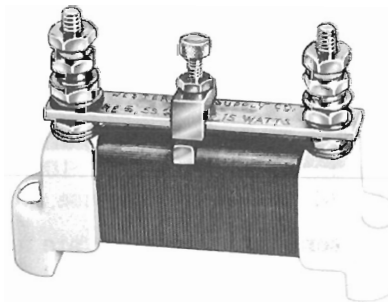


42 Turn Resistor

RATING IN WATTS — 15 MAXIMUM

Ref. No.	Description	Total Resistance in ohms	Ohms per step	Piece No.
B	Type 1110 Variable Resistance with 42 turns.....	2.81	0.067	1110-4D
B1	Same as Ref. B except.....	3.50	0.083	1110-5D
B2	Same as Ref. B except.....	4.50	0.107	1110-6D
B3	Same as Ref. B except.....	5.69	0.133	1110-7D
B4	Same as Ref. B except.....	7.03	0.167	1110-8D
B5	Same as Ref. B except.....	8.90	0.212	1110-9D
B6	Same as Ref. B except.....	11.21	0.267	1110-10D
B7	Same as Ref. B except.....	14.24	0.339	1110-11D
B8	Same as Ref. B except.....	17.84	0.425	1110-12D
B9	Same as Ref. B except.....	22.73	0.541	1110-13D
B10	Same as Ref. B except.....	28.66	0.682	1110-14D
B11	Same as Ref. B except.....	36.31	0.866	1110-15D
B12	Same as Ref. B except.....	45.53	1.084	1110-16D
B13	Same as Ref. B except.....	57.81	1.376	1110-17D
B14	Same as Ref. B except.....	71.89	1.706	1110-18D
B15	Same as Ref. B except.....	91.80	2.186	1110-19D
B16	Same as Ref. B except.....	115.91	2.711	1110-20D

Resistor wound turn-to-turn with enamel wire.

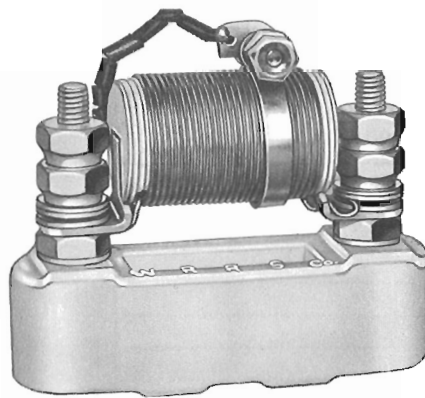


RATING IN WATTS — 15 MAXIMUM

Ref. No.	Description	Total Resistance in Ohms	Ohms per step	Piece No.
C	Type 1110 Variable Resistance with enameled wire wound turn-to-turn	21.12	.0475	1110-111
C1	Same as C except.....	30.18	.0333	1110-112
C2	Same as C except.....	42.0	.0237	1110-113
C3	Same as C except.....	59.59	.0168	1110-114
C4	Same as C except.....	84.54	.0118	1110-115
C5	Same as C except.....	121.40	.0082	1110-116
C6	Same as C except.....	135.53	.0074	1110-117
C7	Same as C except.....	243.62	.0041	1110-118

Type 1915 Resistance Unit

2-OHMS 5-OHMS
VARIABLE



3 $\frac{3}{8}$ " long, 1" wide, 2 $\frac{3}{8}$ " high

The No. 1915 Resistance Units have resistances as specified in the table below. Highest quality porcelain and resistance wire are used. The resistance wire is wound on the porcelain spool and is secured to the mounting brackets both mechanically and by soldering. Adjustment of resistance is made by means of a movable clamp ring.

Construction is such that should the clamp ring become loosened or broken, the total resistance of the winding will be in the circuit.

The No. 1915 Resistance Units are furnished complete mounted on an A.A.R. 10565 porcelain terminal block unless otherwise specified.

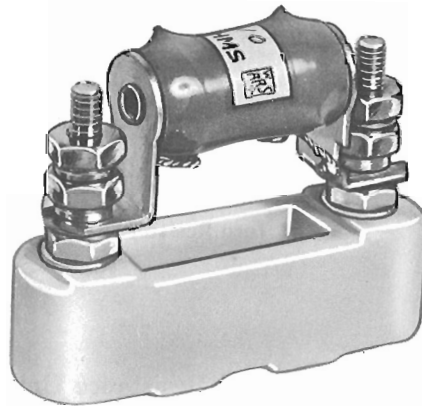
Two wood screws for mounting are furnished.

RATING IN WATTS — 25 MAXIMUM

Ref. No.	Description	Piece No.
A	Type 1915 Variable Resistance Unit 2.0 Ohms.....	1915-1
A1	Same as Ref. A but 5.0 Ohms.....	1915-3
REPLACEMENT PARTS		
1	Resistance only for Ref. A.....	1915-11
2	Resistance only for Ref. A1.....	1915-13
3	Porcelain terminal	1056-10E

Type 1240 Vitrohm Resistor Units for Railway Signal, Telegraph and Telephone Systems

**Duty, Continuous. Type, Wire Wound. Vitreous Enamelled.
.01 to 5,000 Ohms**



Vitrohm Fixed Resistors have proven highly successful in railroad signal and communication circuits. Many engineers have found that they can depend on these resistors for their accuracy and dependability.

Vitrohm resistors will endure a repeated heating and cooling cycle from 340°C to -20°C and prolonged exposure to high humidity and electrolysis without any effect upon either the Vitrohm enamel or the resistance wire.

Smooth cylindrical ceramic cores having a high density, high dielectric strength, low porosity body with a thermal coefficient of expansion selected to match that of the body.

Resistance wire especially manufactured to meet rigid uniform characteristics and ability to

withstand excessive overloads under exacting service conditions.

Terminals of high heat-resistant, high tensile-strength alloy, especially selected to insure proper expansion, good adherence to the enamel and strong anchorage to the core. They are clamped and welded securely to the core.

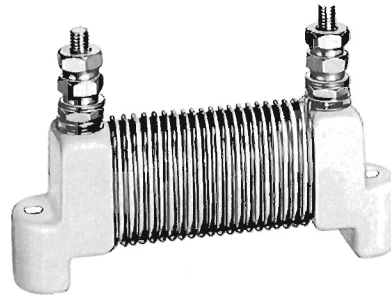
Junction between resistance wires and terminals are first mechanically joined then silver brazed to insure a permanent, positive, low-resistance bond between wire and terminals.

Vitrohm enamel is a hard, tough moisture and acid resisting vitreous cover possessing high heat conductivity. It completely seals the resistance wire and provides an excellent mechanical protection for the wires, terminals and their junctions.

Ref. No.	Description	Piece No.
A	Type 1240 Vitrohm Resistor, maximum continuous dissipation 15 watts, specify resistance.....	1240
A1	Same as Ref. A less terminal block.....	1240-1
REPLACEMENT PARTS		
1	Porcelain terminal	1056-10E

Type 1120 Fixed Resistance Units

4 $\frac{1}{8}$ " long, 1" wide, 3 $\frac{1}{8}$ " high



21 Turn Resistor

Type No. 1120 Fixed Resistance Units have resistances as specified below. Only the highest quality porcelain and resistance wire are used in their manufacture. The construction of Type No. 1120 is the same as that of the long-proven Type No. 1110 except that the slider-bar and slider have been omitted so that the resistance of the unit is fixed and not variable.

Two wood screws are furnished with each unit.

RATING IN WATTS — 15 MAXIMUM

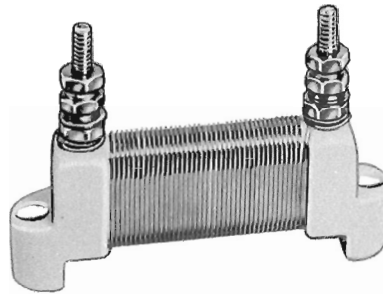
Ref. No.	Description	Total Resistance in Ohms	Piece No.
A	Type 1120 Fixed Resistance with 21 turns.....	1.0	1120-1
A1	Same as Ref. A except.....	1.5	1120-2
A2	Same as Ref. A except.....	2.26	1120-3
A3	Same as Ref. A except.....	2.88	1120-4
A4	Same as Ref. A except.....	3.56	1120-5
A5	Same as Ref. A except.....	4.50	1120-6



Type 1120 Fixed Resistance Units

4³/₁₆" long, 1" wide, 3³/₁₆" high

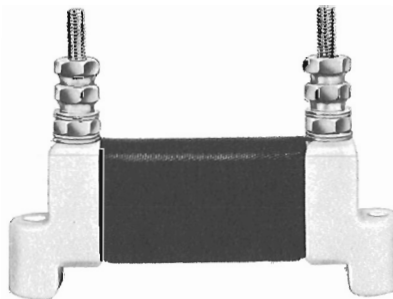
42 Turn Resistor



RATING IN WATTS — 15 MAXIMUM

Ref. No.	Description	Total Resistance in Ohms	Piece No.
B	Type 1120 Fixed Resistance with 42 turns.....	2.81	1120-4D
B1	Same as Ref. B except.....	3.50	1120-5D
B2	Same as Ref. B except.....	4.50	1120-6D
B3	Same as Ref. B except.....	5.69	1120-7D
B4	Same as Ref. B except.....	7.03	1120-8D
B5	Same as Ref. B except.....	8.90	1120-9D
B6	Same as Ref. B except.....	11.21	1120-10D
B7	Same as Ref. B except.....	14.24	1120-11D
B8	Same as Ref. B except.....	17.84	1120-12D
B9	Same as Ref. B except.....	22.73	1120-13D
B10	Same as Ref. B except.....	28.66	1120-14D
B11	Same as Ref. B except.....	36.31	1120-15D
B12	Same as Ref. B except.....	45.53	1120-16D
B13	Same as Ref. B except.....	57.81	1120-17D
B14	Same as Ref. B except.....	71.89	1120-18D
B15	Same as Ref. B except.....	91.80	1120-19D
B16	Same as Ref. B except.....	115.91	1120-20D

Resistor
Wound Turn-to-turn
with enameled wire



RATING IN WATTS — 15 MAXIMUM

Ref. No.	Description	Total Resistance in Ohms	Piece No.
C	Type 1120 Fixed Resistance with enameled wire wound turn-to-turn....	21.12	1120-111
C1	Same as Ref. C except.....	30.18	1120-112
C2	Same as Ref. C except.....	42.0	1120-113
C3	Same as Ref. C except.....	59.59	1120-114
C4	Same as Ref. C except.....	84.54	1120-115
C5	Same as Ref. C except.....	121.40	1120-116
C6	Same as Ref. C except.....	135.53	1120-117
C7	Same as Ref. C except.....	243.62	1120-118



SECTION 22

Terminal Blocks

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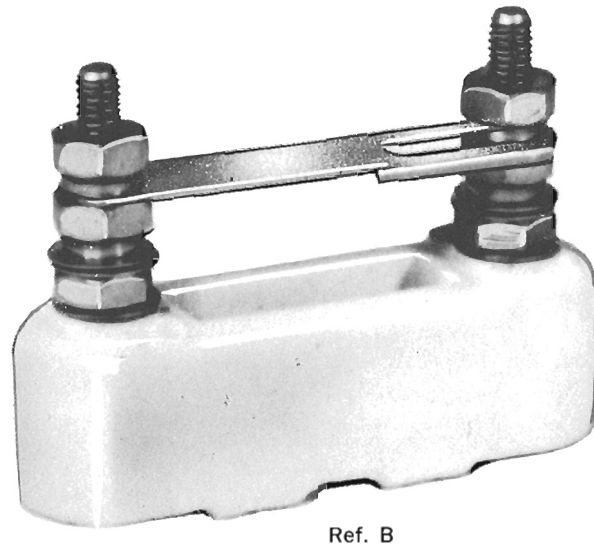
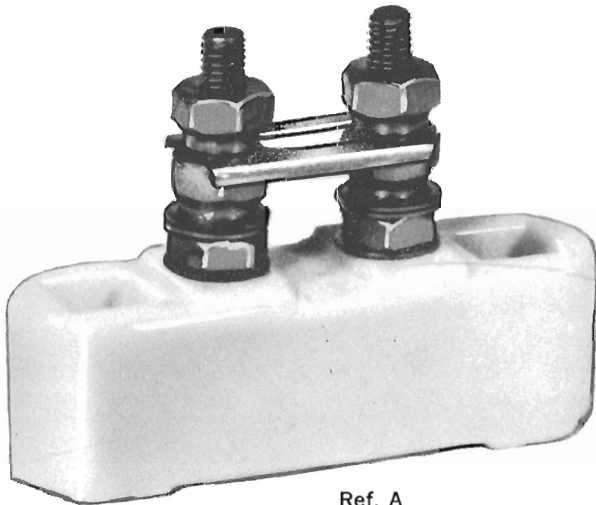
GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



A. A. R. Porcelain Terminal Blocks

3 3/8" long, 1" wide, 2 1/16" high



Terminal Block bases are dry process, glazed, homogeneous white porcelain. They will more than meet A.A.R., Signal Section, specifications for moisture absorption.

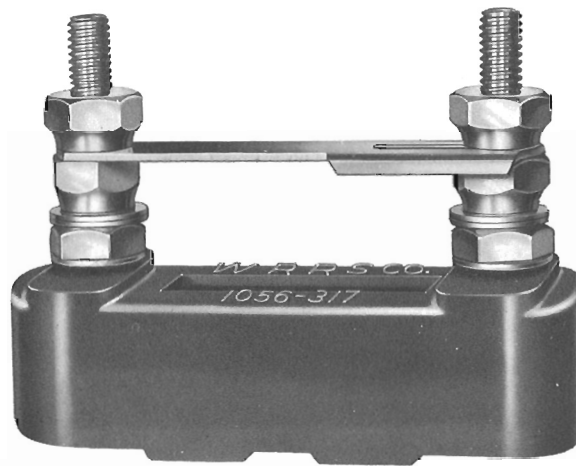
Binding Posts are Everdure Bronze. Nuts are brass and washers are chamfered copper. Connectors are half-hard copper.

All metal parts are nickel plated.

Ref. No.	Description	Piece No.
A	Type 1056 Porcelain Terminal complete with connector with Binding Posts 1" c.c. A.A.R. No. 105614.....	1056-3E
A1	Same as Ref. A less connector.....	1056-9E
B	Type 1056 Porcelain Terminal complete with connector with Posts 2 3/8" c.c. A.A.R. No. 105615.....	1056-5E
B1	Same as Ref. B less connector.....	1056-10E
REPLACEMENT PARTS		
1	Short copper connector A.A.R. No. 10761.....	1056-2
2	Long copper connector A.A.R. No. 10762.....	1056-4

A.A.R. Bakelite Terminal Block

3 $\frac{3}{8}$ " long, 1" wide, 2 $\frac{1}{4}$ " high



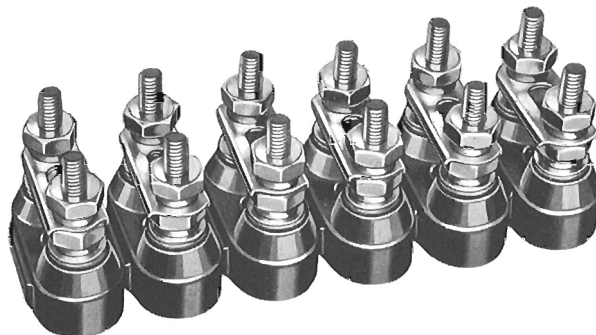
This terminal is constructed of the best bakelite with Everdur Bronze posts firmly molded into the block on 2 $\frac{3}{8}$ " centers.

Everdur bronze posts are nickel plated. Post protrudes from block 1 $\frac{3}{8}$ ".

Ref. No.	Description	Piece No.
A	Type 1056 Bakelite Terminal complete with connector.....	1056-305
A1	Same as Ref. A less connector.....	1056-310
REPLACEMENT PARTS		
1	Long copper connector A.A.R. No. 10762.....	1056-4

Type No. 2506 Terminal Strip

6" long, 2" wide, 1½" high



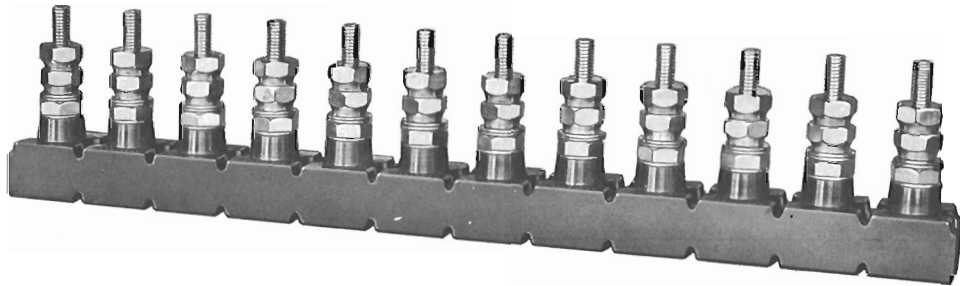
Type No. 2506 Terminal Strip consists of twelve Everdur Bronze bolts securely molded in a bakelite base, complete with nuts and washers. The spacing of the bolts is 1" in each direction. The block is so formed that it can easily be cut into sections. Each of the six sections is drilled so that sections can be mounted independently. The 2506 unit has become popular, due to the fact that it can easily be divided into smaller units, that it takes up very little space, and that no matter how many times it is handled it will always offer a secure, sturdy terminal.

To save installation time required to remove nuts and washers to enable wire terminals to be applied to the binding posts, 24 washers, 24 nuts and, when specified, 6 connectors are packed in a transparent plastic bag for each terminal strip.

Ref. No.	Description	Piece No.
A	Type 2506, 12 Post, Terminal Strip, complete with nuts, washers, and connecting links No. 1056-2.....	2506-106
A1	Same as Ref. A less connectors.....	2506-306
A2	Same as Ref. A but with flat connecting links No. 219-5.....	2506-406
REPLACEMENT PARTS		
1	Short copper connector A.A.R. No. 10761.....	1056-2
2	Short copper flat connector for Ref. A2.....	219-5



Type No. 2508 Terminal Strip



Designed in strict accordance with A.A.R. Signal Section, Drawing 1054.

Type 2508 Multiple Unit Terminal Strip is equipped with 12 Everdur Bronze bolts firmly molded in bakelite.

The units can be staggered for through wire connections to single posts, or placed side by side for 1" connectors, or spaced in parallel for 2 3/8" connectors.

Twelve post units can easily be cut into shorter sections.

To save installation time required to remove nuts and washers to enable wire terminal to be applied to the binding posts, only the first washer and the clamp nut are applied at the factory. 24 binding nuts and 24 washers are packed in a transparent plastic bag for each terminal strip.

Ref. No.	Description	Piece No.
A	Type 2508, 12 Post, Terminal Strip with nuts and washers.....	2508-112



Binding Posts, Nuts and Washers

A.A.R. STANDARD No. 14-24 THREAD



Ref. A



Ref. 2



Ref. 3



Ref. 1



Ref. 4



Ref. 5



Ref. 6



Ref. 7



Ref. 8

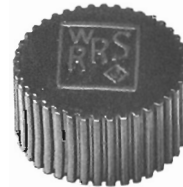
All parts are furnished nickel plated.

Ref. No.	Description	Piece No.
A	Binding Post assembly complete, Everdur bronze, 1 7/8" long A.A.R. No. 107010..	107010
A1	Same as Ref. A but 1 1/2" long.....	107010-A
A2	Same as Ref. A but 2 1/4" long.....	107010-B
REPLACEMENT PARTS		
1	Binding Post only Everdur bronze 1 7/8" long.....	10709
1A	Same as Ref. 1 but 1 1/2" long.....	10709-A
1B	Same as Ref. 1 but 2 1/4" long.....	10709-B
2	Binding Nut	10706
3	Chamfered Washer	10708
4	Clamp Nut	10707
5	Cup Washer.....	5008
6	Short copper connector A.A.R. No. 10761.....	1056-2
7	Long copper connector A.A.R. No. 10762.....	1056-4
8	Short copper flat connector.....	219-5

Binding Post Insulating Sleeve and Cap FOR POWER SUPPLY CIRCUITS OF 110 VOLTS AND HIGHER



Insulating Sleeve
9/16" inside diam.



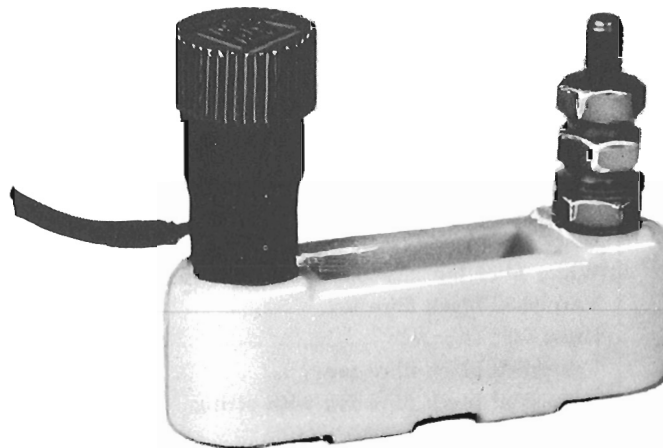
Insulating Cap
Red or Black

To prevent the possibility of a short circuit where binding posts are closely grouped, Western Railroad Supply Company advocates the use of the insulating caps and sleeves illustrated above.

The insulating cap is reinforced by a metal insert to safeguard against the stripping of threads. The cap is also knurled to make handling easier.

The sleeve is furnished in standard length for A.A.R. binding posts which show an exposed length of 1 1/4". Sleeves can be furnished, however, for posts of other lengths. Specify the dimension above the surface of the post to be protected.

Red caps are generally used to designate the positive of D.C. circuits, or the "hot" side of A.C. supply circuits.



Showing application of Sleeve
and Cap to Terminal Block

Ref. No.	Description	Piece No.
A	Type R2000 Insulating Sleeve 1 1/8" long, used on type 1056 terminal blocks and 2305 disconnect switch.....	R2000-2
A1	Same as Ref. A but 7/8" long, used on type 2506 terminal strips.....	R2000-2A
A2	Same as Ref. A but 1 1/2" long, used on type 2508 terminal strips.....	R2000-2B
B	Type R2000 Insulating Cap, black.....	R2000-1
B1	Same as Ref. B but, red.....	R2000-1R



Marking Tags

1/16 INCH THICK

Fibre—Black, Red, Gray, White—Aluminum or Brass

Black fibre tags 1/16" thick will be furnished unless other color or aluminum or brass is specified.



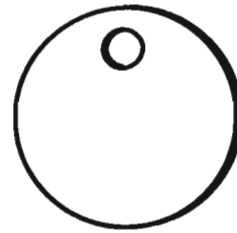
Ref. A



Ref. B



Ref. C



Ref. D



Ref. E

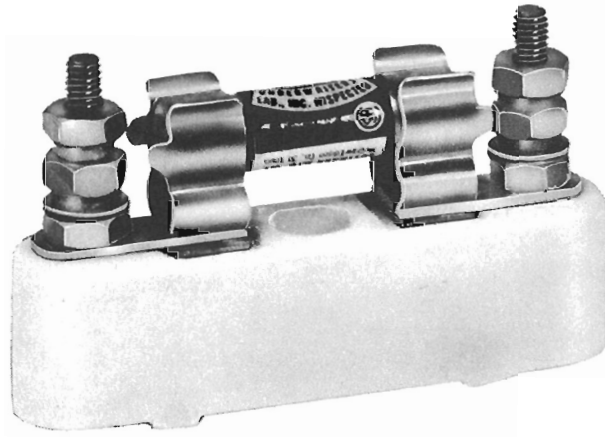


Ref. F

Ref. No.	Size In Inches	Diameter of Hole in Inches	Description	Piece No.
A	7/8 x 1 1/2	1/2	Black fibre tag	16222
A1	7/8 x 1 1/2	1/2	White fibre tag.....	16222W
A2	7/8 x 1 1/2	1/2	Varnished black fibre tag.....	16222V
B	5/8 x 1 1/2	1/8	Brass tag	5600-7B
B1	5/8 x 1 1/2	1/8	Varnished black fibre tag.....	5600-7V
B2	5/8 x 1 1/2	1/8	Varnished black fibre tag with string.....	5600-7VS
C	7/8 x 1 1/2	3/8 with 3/16 wing	Aluminum tag	16221A
C1	7/8 x 1 1/2	3/8	Black fibre tag.....	16221
C2	7/8 x 1 1/2	3/8	White fibre tag.....	16221W
C3	7/8 x 1 1/2	3/8	Varnished black fibre tag.....	16221V
D	1 3/16 Diam.	3/16	Aluminum tag	16223A
D1	1 3/16 Diam.	3/16	Brass tag	16223B
E	3/8 Long	3/8 I.D. 1/2 O.D.	Black tubular fibre tag.....	5600-11
E1	3/8 Long	1/4 I.D. 1/2 O.D.	Black tubular fibre tag.....	5600-12
E2	1" Long	3/8 I.D. 1/2 O.D.	Black tubular fibre tag.....	5600-26
F	1/2 x 2 3/8	3/8 with 1/2 wing	Black fibre tag with two holes spaced 2" c.c.....	5600-14
F1	1/2 x 2 3/8	3/8 with 1/2 wing	Varnished black fibre tag with holes spaced 2" c.c.....	5600-14V
F2	1/2 x 2 3/8	3/8 with 1/2 wing	White fibre tag with holes spaced 2" c.c.....	5600-14W



Porcelain Base Fuse Block



4 1/8" long, 1" wide, 2 1/16" high

Standard Fuse Terminal Block Mounting accommodates A.A.R. fuses 9/16" in diameter by 2" long. One No. 10 x 1 1/2" long round head blued wood screw is furnished with each fuse block.

Ref. No.	Description	Piece No.
A	Type 2302 Fuse Block, complete with 9/16" x 2" A.A.R. fuse, state amperage....	2302
REPLACEMENT PARTS		
1	A.A.R. cartridge fuse only, state amperage rating.....	2702
2	Fuse block only.....	2302-6





SECTION 23

Test and Disconnect Switches

CONTENTS

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Strap Key	23-5
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WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

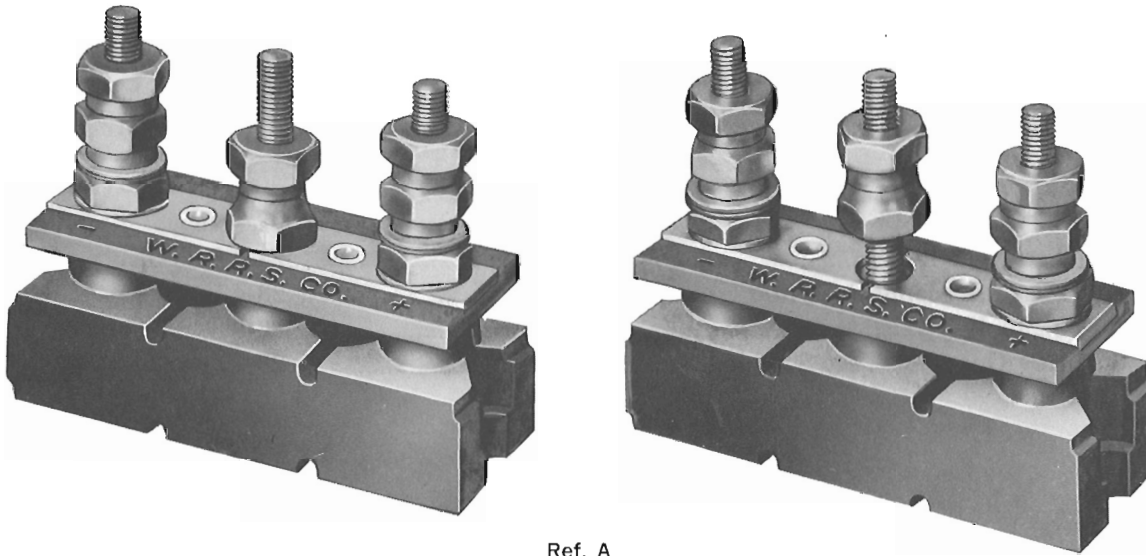
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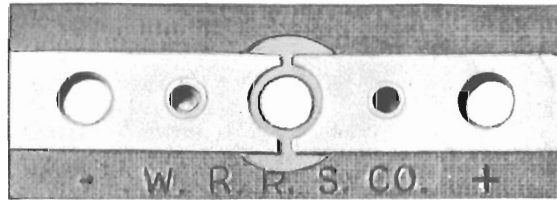
2742 WEST 36TH PLACE CHICAGO, ILL. 60632



Type 0255 Test Switch



Ref. A



Ref. A1

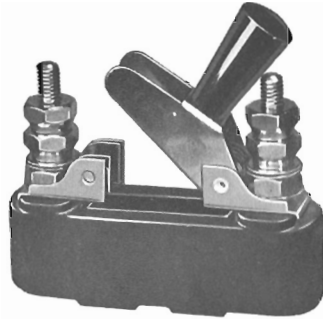
The Type 0255 Test Switch is suitable for testing circuits in crossing signal installations and similar applications. It consists of a 3-hole link, made to fit a standard 3-post terminal strip. The circuit between the outer terminals can be opened, for test purposes, by releasing the middle nuts.

The link alone is available, or the complete switch, including the 3-post terminal block.

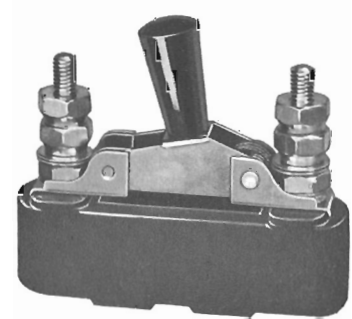
Ref. No.	Description	Piece No.
A	Type 0255 Test Switch with terminal block.....	0255-103
A1	Same as Ref. A less terminal block.....	0255-101



McKeen Test Switch



The McKeen Test Switch
Single Pole Single Throw



The McKeen Test Switch offers a safe means of taking meter readings at any location without danger of disrupting signal or other circuits.

The McKeen Switch consists essentially of a single pole, single throw switch mounted on a moulded black bakelite A.A.R. terminal block so constructed as to allow mounting in the circuit at any point where meter readings are frequently taken. Tests can be made by attaching the meter leads to the binding posts before opening the switch thus allowing the current to flow through the meter. The switch may then be closed and the leads removed, all of which is accomplished, obviously, without opening any circuit.

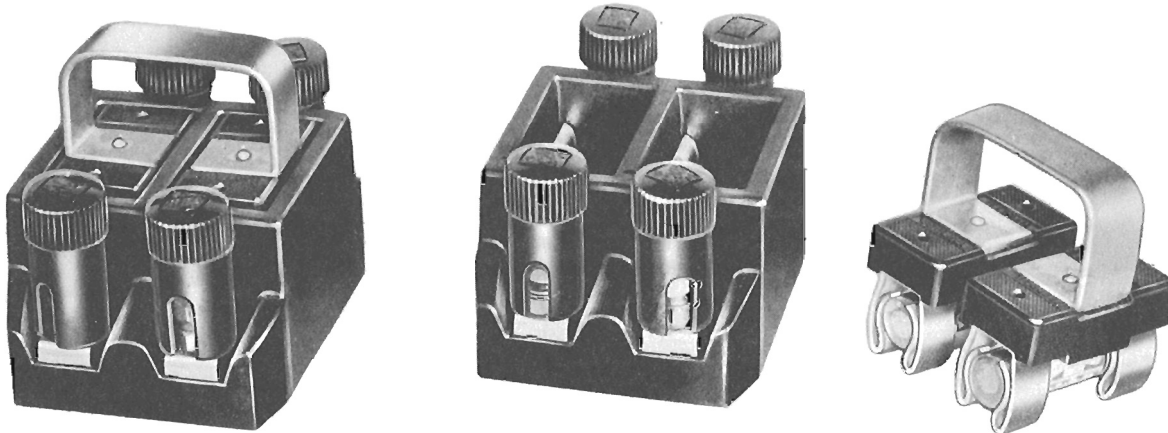
Strong springs and heavy wiping action insure perfect contact at the front contact of the switch while a soldered, flexible pigtail provides a solid electrical path in multiple with the hinge at the heel of the switch.

The standard Test Switch, when opened, will remain open until closed again by hand. A coil spring is installed on the "self-restoring" type to force the hinged blades closed when the handle is released.

Ref. No.	Description	Piece No.
A	Type 0250 McKeen Test Switch.....	0250-101
A1	Same as Ref. A but self-restoring.....	0250-1



Type 2305 Disconnect Switch



4½" long x 3⅛" wide x ¾" high over handle.

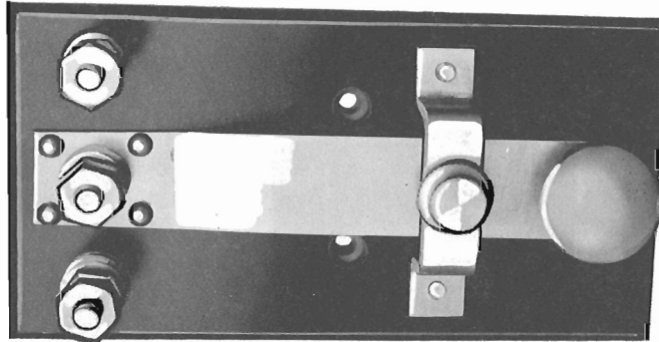
Type 2305 Two-Pole Disconnect Switches provide a dead front fuse-disconnect switch for use on two wire incoming A.C. power circuits. Main body as well as fuse holders are made of molded bakelite. Binding posts are A.A.R. No. 14-24 standard. Insulating sleeves and caps are provided on all binding posts to eliminate possibility of accidental shorts or physical contact with current carrying parts.

Disconnects are furnished two-pole with common handle as illustrated above. Fuses are standard A.A.R. cartridge type, 2" long. Mounting holes are for No. 10 screws.

**IF FUSES ARE TO BE FURNISHED SPECIFY RATING
UP TO 30 AMPERES MAXIMUM**

Ref. No.	Description	Piece No.
A	Type 2305 Disconnect Switch (without fuses).....	2305-12
A1	Same as Ref. A but complete with fuses (specify rating).....	2305-32
REPLACEMENT PARTS		
1	Two-pole fuse holder only.....	90101-62
2	Fuse clip only, for fuse holder.....	90101-55
3	Fuse clip only, for base.....	90101-56

Type 41 Strap Key

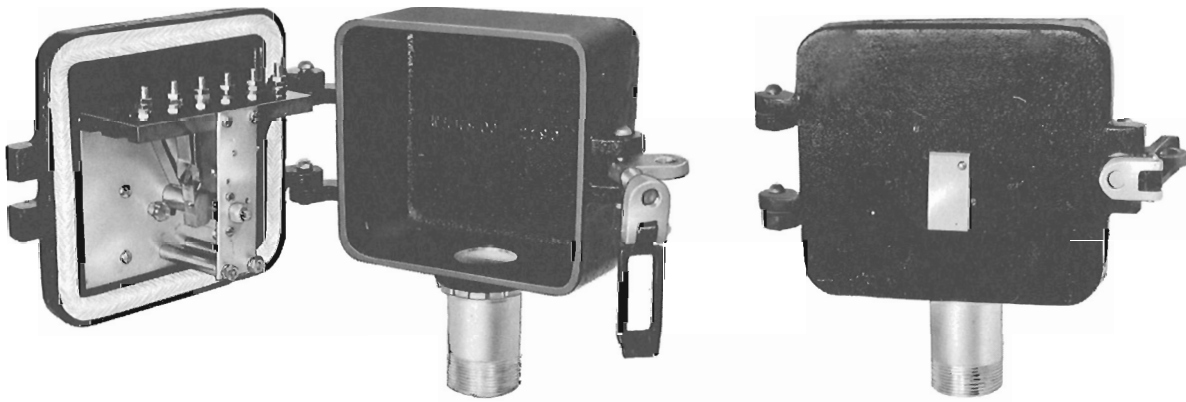


Base Dimensions — 3 $\frac{3}{8}$ " x 5 $\frac{3}{4}$ "

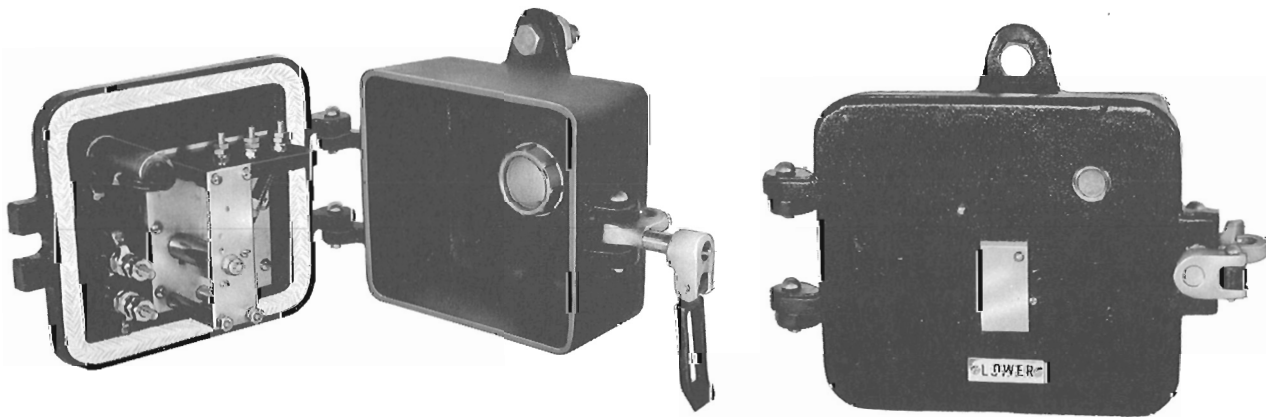
Type 41 Strap Key is substantially made with a bakelite base and is provided with three standard A.A.R. binding posts and upper and lower platinum contacts. The contact spring is made of heavy phosphor bronze and gives strong pressure against the contact. It is so arranged that it can be used for normally open or normally closed circuits, or both.

Ref. No.	Description	Piece No.
A	Type 41 Strap Key complete.....	0041
REPLACEMENT PARTS		
1	Knob for Strap Key.....	0041-3
2	Bridge	0041-4
3	Knurled Lock Nut	445
4	Contact Screw	444

Type 2190 Key Operated Test Switch



Ref. A



Ref. B

Type 2190 Key Operated Test Switch



Type 2190 Key Operated Test Switch Boxes are provided with one or two dependent front and back contacts for any use desired such as the testing of crossing signals or for the control of signals at crossings during switching operations at, or near, a crossing signal installation. The switch is operated only with the standard switch key of the railroad to which it is being shipped. When operated to the reverse position, the key can not be removed. The contact must be restored to normal to release the key.

The 1½" pipe nipple furnished with Ref. B test boxes is intended for use in installing the test box atop an instrument case in one of the tapped holes for cable outlet. This box can, of course, be mounted on any 1½" pipe. A 1¼" pipe nipple of sufficient length to extend into a sheet metal instrument case is supplied with the flush mounting type.

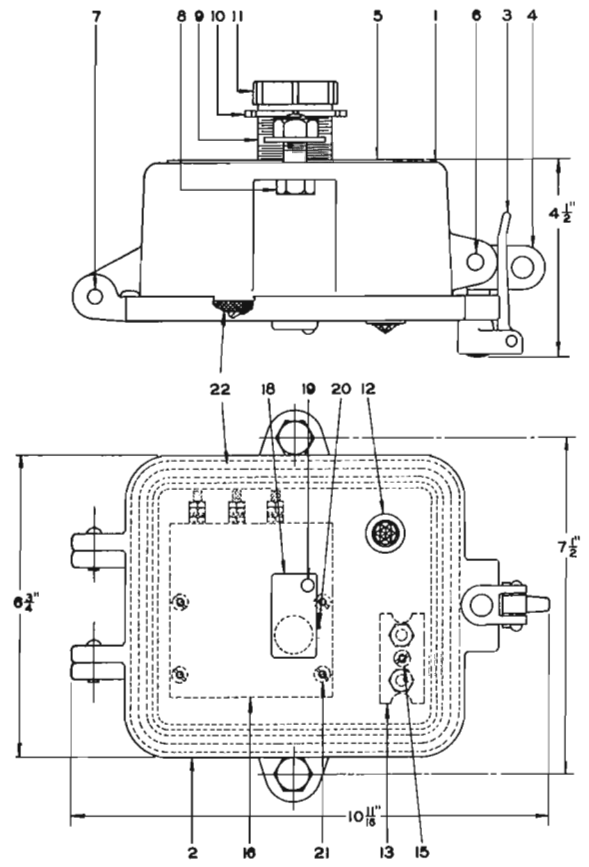
The keyhold cover is weighted to insure coverage to keep rain, snow, etc. out of the keyhole.

Ref. No.	Description	Piece No.
A	Type 2190 Key Operated Test Switch Box for flush mounting; one key switch and one light indicator. One set of contacts, with one normal open and one normal closed dependent contact. Indicating lamp 18-24 V. candelabra screw base. (Specify key to be used).....	2190-612L
A1	Same as Ref. A less light indicator.....	2190-612
B	Type 2190 Key Operated Test Switch Box for mounting on top of threaded 1½" pipe or nipple; with one key switch. One set of contacts with one normal open and one normal closed dependent contact. (Specify key to be used).....	2190-611
B1	Same as Ref. B but with two sets of contacts, each set with one normal open and one normal closed dependent contact.....	2190-621
B2	Same as Ref. B but with one set of contacts with two normal open and two normal closed dependent contacts and with terminal strip.....	2190-651

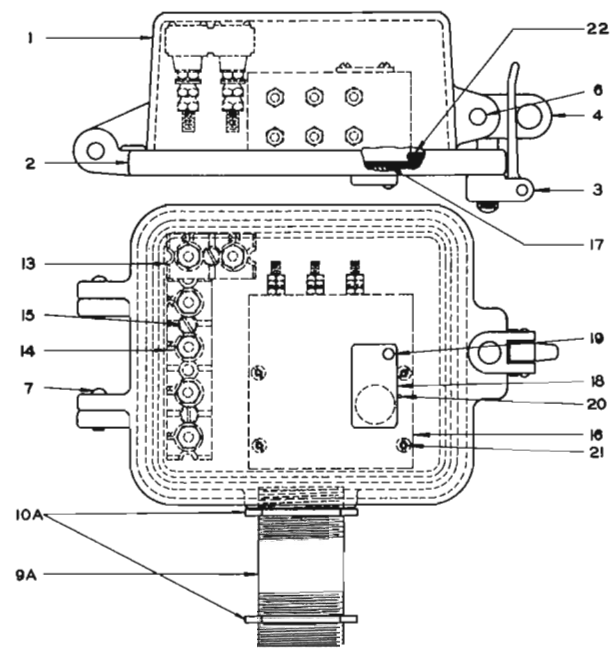
See following page for replacement parts



Type 2190 Key Operated Test Switch



Ref. A



Ref. B

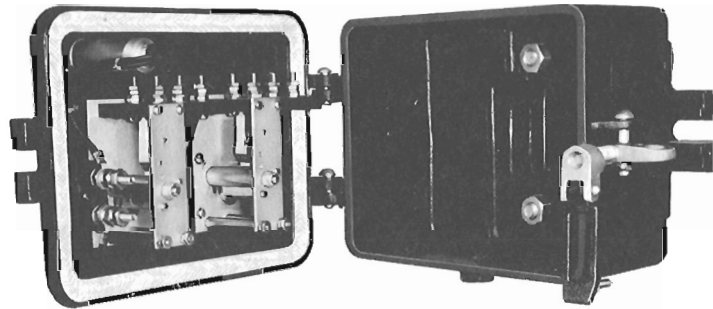


Type 2190 Key Operated Test Switch

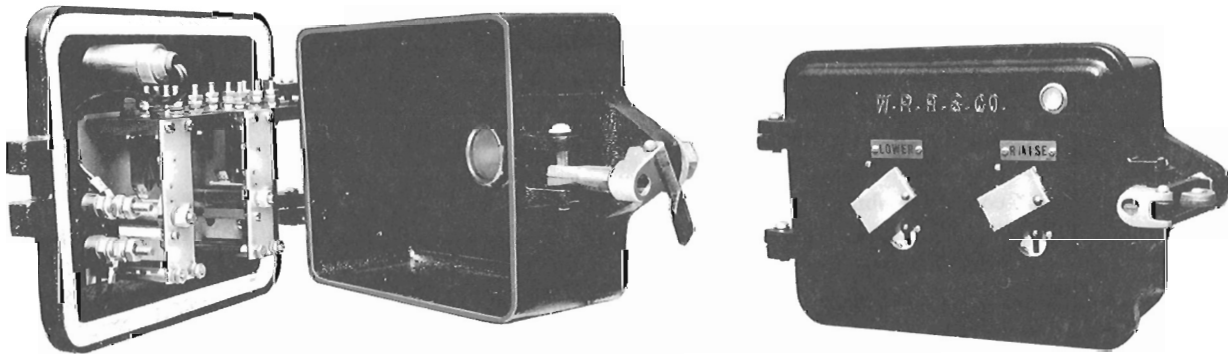
Ref. No.	Description	Piece No.
REPLACEMENT PARTS		
1	Case for Ref. A and A1.....	2190-12
1A	Case for Ref. B and B1.....	2190-11
1B	Case for Ref. B2.....	2190-11A
2	Cover for Ref. A.....	2190-227L
2A	Cover for Ref. A1 and B.....	2190-227
2B	Cover for Ref. B1.....	2190-210
2C	Cover for Ref. B2.....	2190-227A
3	Hasp complete	1410-31
4	Hasp eye bolt.....	1410-11
5	Gasket	2190-34
6	1/4" x 1 3/4" lg. rd. hd. rivet (brass).....	
7	1/4" x 1" lg. rd. hd. rivet (brass).....	
8	1/2" x 1 1/2" lg. hex. hd. bolt, hex. nut and washer.....	
9	1 1/4" x 1 5/8" lg. close pipe nipple for Ref. A.....	
9A	1 1/2" pipe nipple — 3 1/2" lg. for Ref. B.....	
10	1 1/4" pipe locknut for Ref. A.....	
10A	1 1/2" pipe locknut for Ref. B.....	
11	1 1/4" conduit bushing.....	
12	Lamp indicator complete.....	90803-48W
13	2-post Terminal strip.....	2508-102
14	4-post Terminal strip.....	2508-104
15	No. 10 - 32 x 5/8" lg. rd. hd. mach. screw.....	
16	Key mechanism, specify key to be used (See page 23-20 for details).....	
17	Separator	2190-530
18	Keyhold cover	2190-29
19	1/8" x 3/8" lg. rd. hd. rivet (brass).....	
20	1/16" x 5/16" lg. pin (brass).....	
21	No. 10 - 32 x 3/8" lg. rd. hd. machine screw (brass).....	
22	Torchwick Parking 1/2" dia. x 2 5/2" lg.....	

Key Operated Test Switches

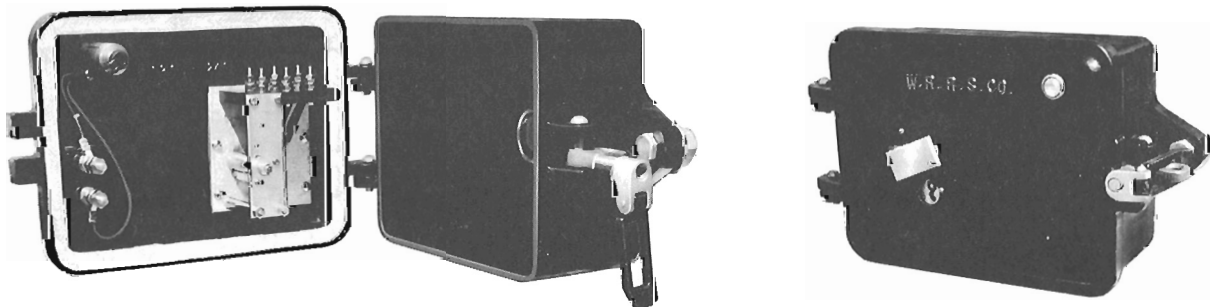
Types 1245, 1246 and 1266



Ref. A



Ref. B



Ref. C



Key Operated Test Switches

Types 1245, 1246 and 1266

Type 1245 Key Operated Test Switch Boxes provide separately housed test switches and, if specified, indicator lamps for the use of signalmen and other authorized persons to make periodic tests of crossing signals. Furnished with adaptor clamps and U-Bolts for mounting on the side of a 4" or 5" I.D. pipe. Lamp receptacle is for candelabra screw base, G 6 bulb, lamp.

A 1½" pipe nipple of sufficient length to extend into a sheet metal instrument case is supplied with the flush mounting types.

Type 1246 Key Operated Test Switch Boxes are identical with Type 1245 except that they are for flush mounting.

Type 1266 Key Operated Test Switch Boxes are identical with Type 1246 except with one key operated switch.

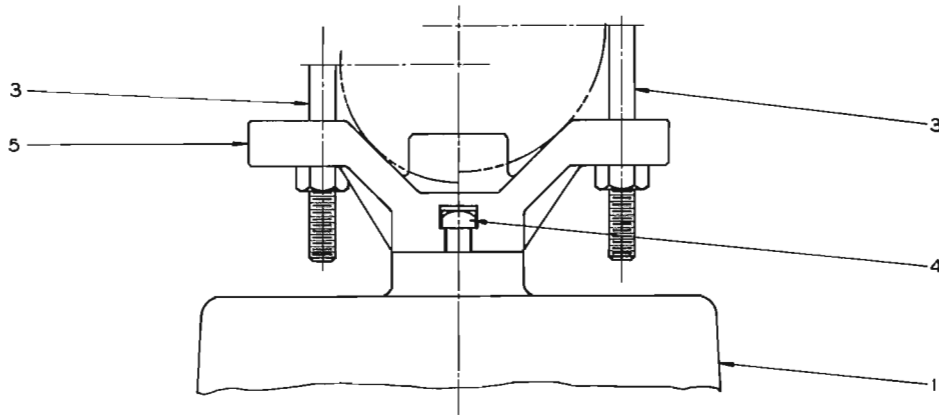
The key operated mechanism is so made that only the specified switch key or other designated key will operate the contacts.

Ref. No.	Description	Piece No.
A	Type 1245 Key Operated Test Switch Box for pole mounting; two key switches and one light indicator. Each key operates two sets of front and back dependent contacts. Indicating lamp 18-24 V. candelabra screw base. (Specify designation plate wording, I.D. of pipe and key to be used).....	1245-612HX
A1	Same as Ref. A less indicating lamp, but each key with one set of front and back dependent contacts.....	1245-602H
B	Type 1246 Key Operated Test Switch Box for flush mounting; two key switches and one light indicator. Two sets of front and back dependent contacts. Indicating lamp 18-24 V. candelabra screw base. (Specify designation plate wording and key to be used).....	1246-612HX
B1	Same as Ref. B less indicating lamp.....	1246-602H
B2	Same as Ref. B less indicating lamp but left key with two sets of front and back dependent contacts and right key with one set of front and back dependent contacts	1246-602HB
C	Type 1266 Key Operated Test Switch Box for flush mounting; one key switch and one light indicator. Two sets of front and back dependent contacts. (Specify designation plate wording and key to be used).....	1266-614HX

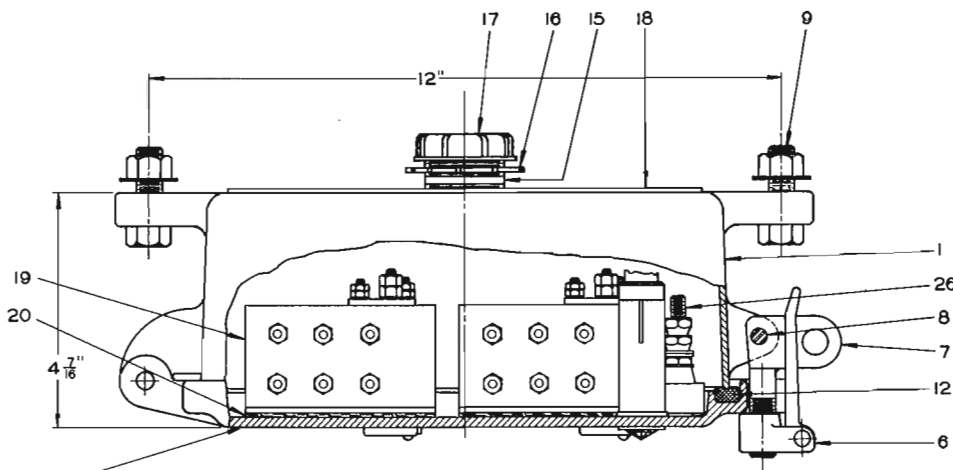


Key Operated Test Switches

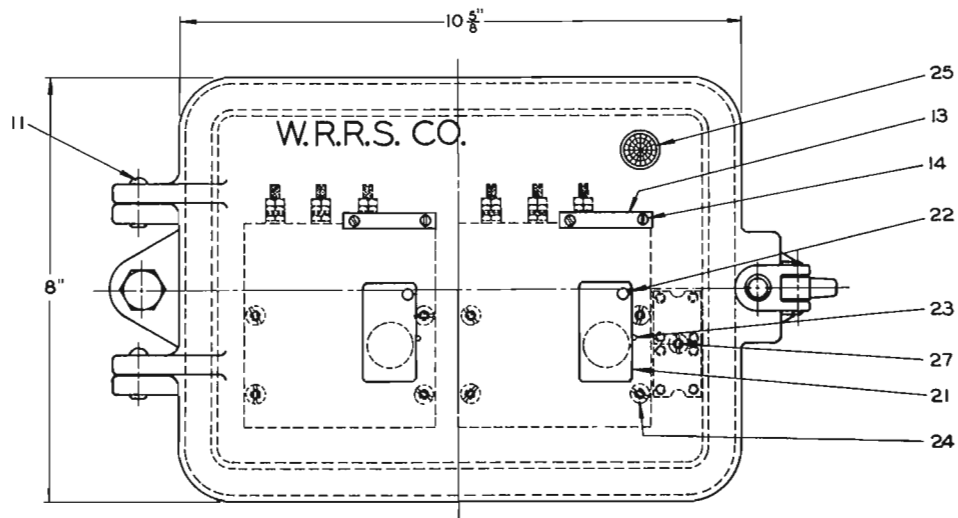
Types 1245, 1246 and 1266



REF. A



REF. B & C





Key Operated Test Switches

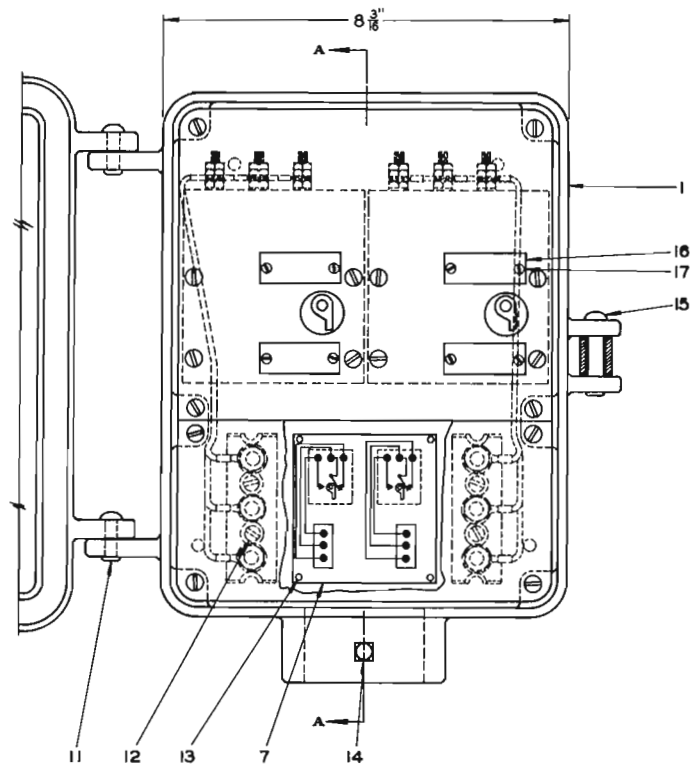
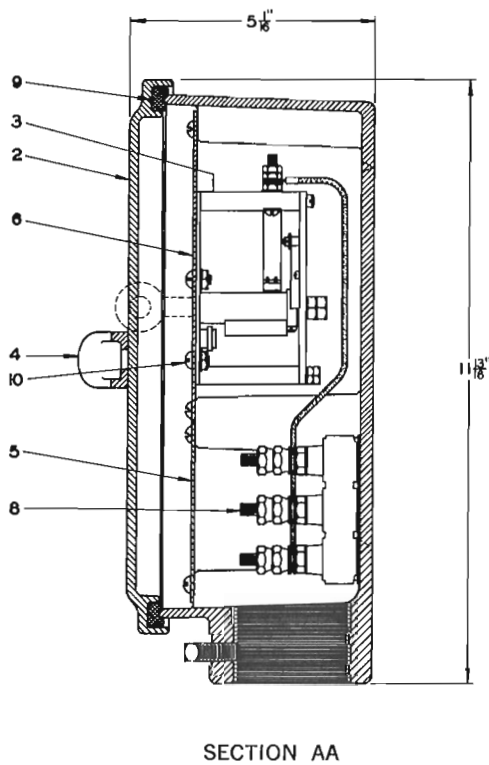
Types 1245, 1246 and 1266

Ref. No.	Description	Piece No.
REPLACEMENT PARTS		
1	Case for Ref. A and A1.....	1265-1C
1A	Case for Ref. B, B1, B2, and C.....	1266-5
2	Cover for Ref. A and B.....	1265-560
2A	Cover for Ref. A1, B1, and B2.....	1265-555
2B	Cover for Ref. C.....	1265-556
3	"U" bolt for 5" pipe.....	3364-5
3A	"U" bolt for 4" pipe.....	3364-2
4	1/2" - 13 x 2" lg. sq. hd. mach. bolt, hex. nut and pl. washer.....	
5	Clamp	1265-102
6	Sub-assembly of locking hasp.....	1410-31
7	Hasp eye bolt.....	1410-11
8	5/16" x 1 1/8" lg. rivet (brass).....	
8A	5/16 x 1 3/4" lg. rd. hd. rivet for Ref. C only (brass).....	
9	1/2" - 13 x 2" lg. sq. hd. bolt and hex. nut.....	
9A	1/2" - 13 x 2" lg. hex. hd. mach. bolt, hex. nut and washer for Ref. C only.....	
10	Ventilator for Ref. A and A1 only.....	1265-6
11	1/4" x 7/8" lg. rivet (brass).....	
12	7/16" x 33" lg. torchwick packing.....	
13	Designation plate (brass) state wording.....	
14	No. 4-36 x 1/4" lg. rd. hd. mach. screw (brass).....	
15	1 1/4" x 1 1/2" lg. close pipe nipple.....	
16	1 1/4" pipe locknut.....	
17	1 1/4" pipe bushing.....	
18	Gasket	
19	Key Mechanism, specify key to be used (see page 23-20 for details).....	
20	Separator	2190-530
21	Keyhole cover	2190-29
22	1/8" x 3/8" lg. rd. hd. rivet (brass).....	
23	1/16" x 5/16" lg. pin (brass).....	
24	No. 10-32 x 3/8" lg. rd. hd. mach. screw (brass).....	
25	Lamp indicator complete.....	90803-48W
26	Terminal block	2508-12
27	No. 10-32 x 5/8" lg. rd. hd. mach. screw (brass).....	



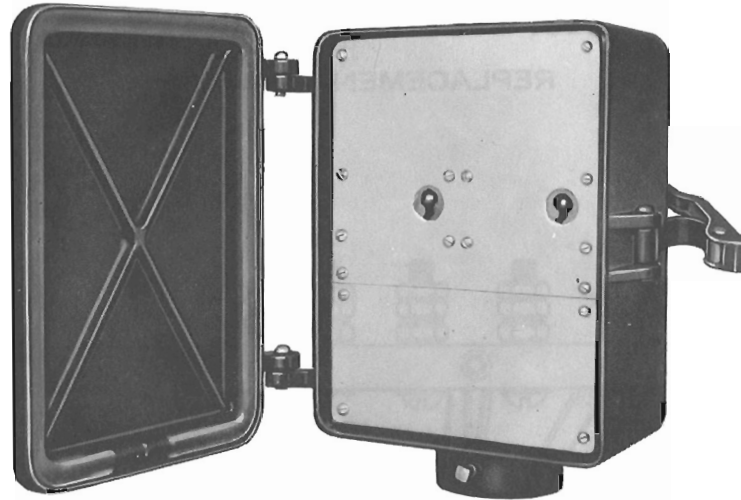
Type 1245 Key Operated Test Switch

FOR PIPE MOUNTING





Type 1245 Key Operated Test Switch FOR PIPE MOUNTING



In Type 1245 Key Operated Test Switch Boxes the key mechanism is totally enclosed in a cast iron box. This box can be locked with any type of padlock so that only authorized personnel can open the door to gain access to the test switches.

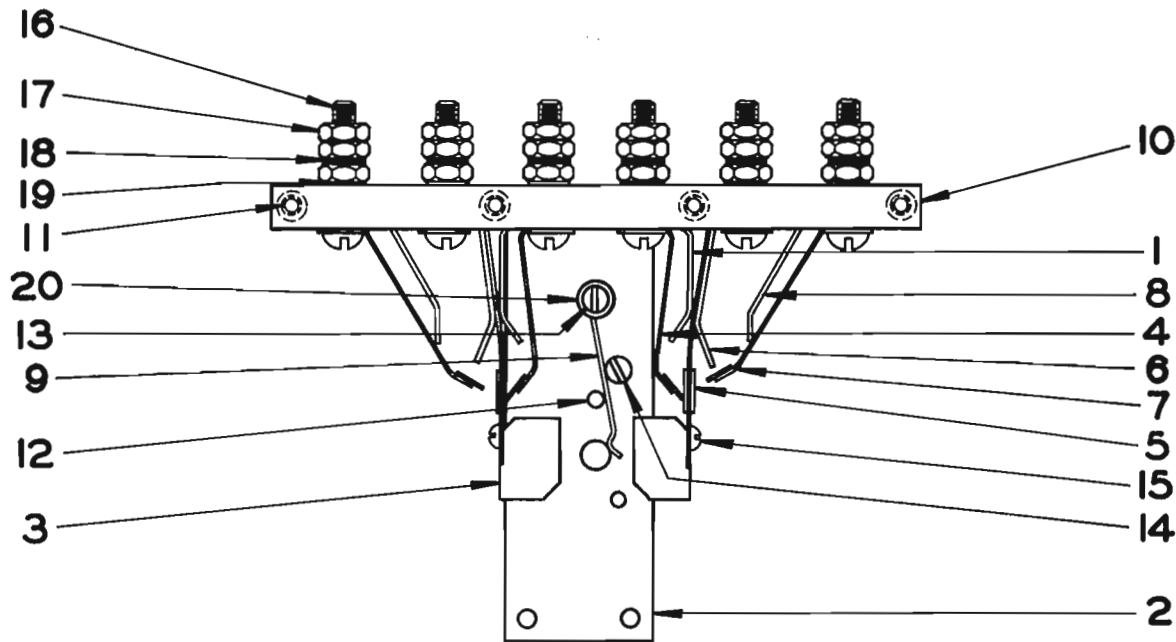
Type 1245 Key Operated Test Switch Boxes are for mounting on top of 2" pipe with two key operated switches.

Ref. No.	Description	Piece No.
A	Type 1245 Key Operated Test Switch Box for 2" pipe mounting; two key switches. Two sets of contacts, each set with one normally open and one normally closed dependent contact. (Specify key to be used and designation plate wording)	1245-670
REPLACEMENT PARTS		
1	Case	1245-671A
2	Cover	1245-672A
3	Key Mechanism, specify key to be used (see page 23-20 for details)	2190-541AB
4	Hasp complete	1265-40
5	Lower Panel	1245-673
6	Upper Panel	1245-674
7	Wiring Diagram Plate.....	1245-675
8	Terminal Block	2508-103
9	1/2" dia. Torchwick Packing 35 3/4" long.....	
10	No. 10-32 x 3/8" lg. rd. hd. mach. sc. with hex. nuts and lock washer (brass).....	
11	1/4" x 1" lg. rd. hd. rivet (brass).....	
12	No. 10-32 x 5/8" lg. rd. hd. mach. sc.....	
13	Type "U" No. 0 x 3/16" lg. Parker Kalon dr. scr.....	
14	3/8" - 16 x 3/4" lg. sq. hd. cup pt. set scr.....	
15	5/16" x 1 1/2" lg. rd. hd. rivet (brass).....	
16	Designation plate (specify wording).....	
17	No. 4 - 36 x 1/8" lg. rd. hd. mach. screw (brass).....	



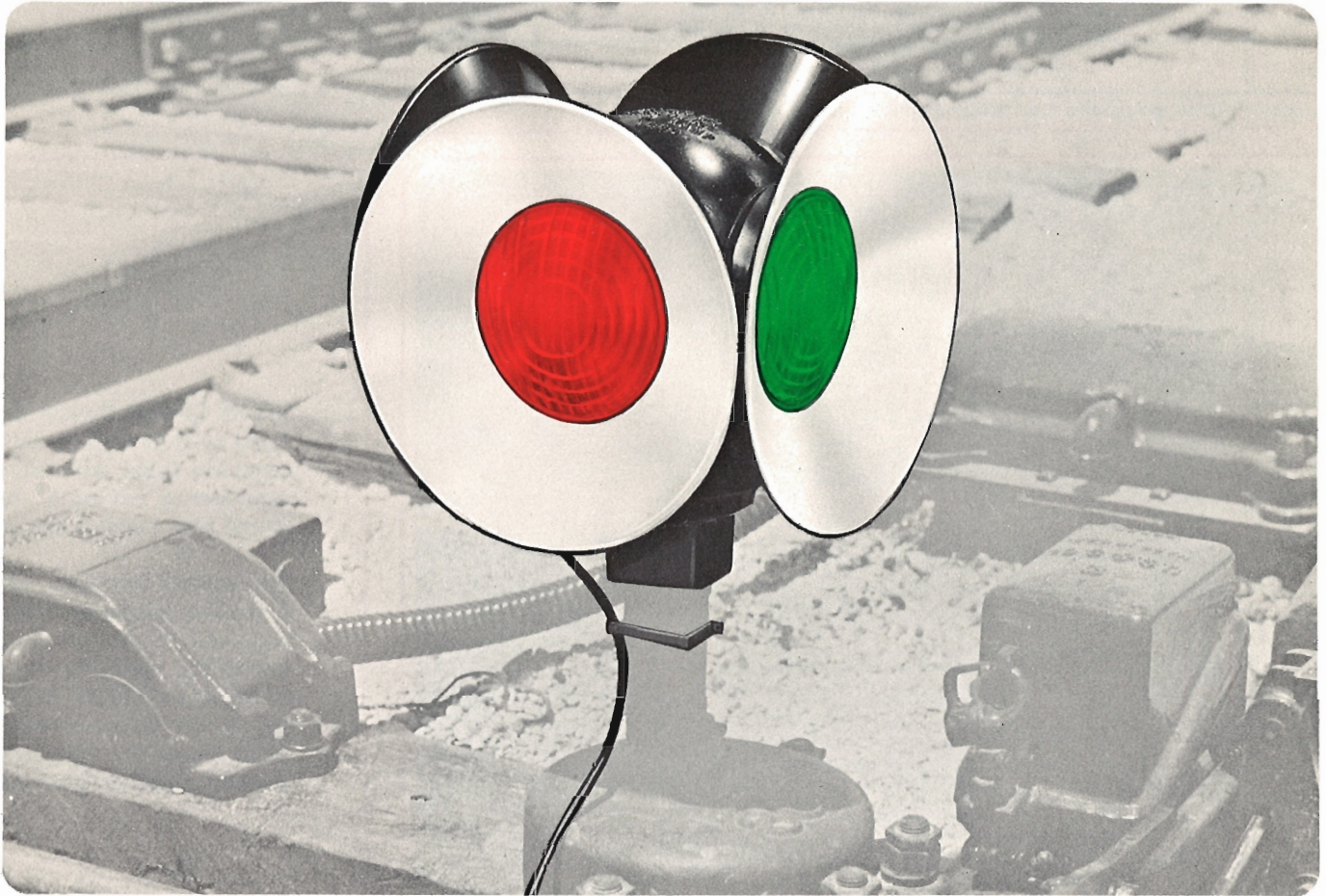
Contact Mechanism for Type 1245, 1246, 1266 and 2190 Test Boxes

REPLACEMENT PARTS



Ref. No.	Description	Piece No.
1	Short Reinforcing Spring.....	0300-60
2	Back Plate	2190-517
3	Insulating Block	2190-522A
4	Front Contact	2190-523
5	Movable Contact	2190-524
6	Movable Contact Keeper.....	2190-525
7	Back Contact	2190-526
8	Back Contact Keeper.....	2190-527
9	Detent Spring	2190-528
10	Contact Block.....	2190-532
11	No. 8-32 x 1/4" lg. fil. hd. mach. screw (brass)	
12	No. 6-32 x 5/16" lg. fil. hd. mach. screw (steel).....	
13	No. 6-32 x 3/8" lg. fil. hd. mach. screw (brass).....	
14	No. 6-32 x 1/8" lg. fil. hd. mach. screw (brass).....	
15	No. 4-36 x 1/4" lg. rd. hd. mach. screw (brass).....	
16	No. 10-32 x 1 1/8" lg. rd. hd. mach. screw (brass).....	
17	No. 10-32 Hex. Nut (brass).....	
18	No. 10 Plain Washer (brass).....	
19	No. 10 Internal Everlock Washer (steel).....	
20	No. 6 Plain Washer (brass).....	

WRRS ELECTRIC SWITCH LAMPS REDUCE SWITCH LIGHTING COST 50%



Available for Operation from Commercial Current or Primary Battery

Change over to Western Electric Switch Lamps today. Savings will amortize cost in two years.

Two Types of Switch Lamps available:

Type 1880

(Illustrated Above)

Type 1870

(Illustrated on Pages 2, 3 and 4)

Here are the reasons scores of railroads are standardizing on Western Electric Switch Lamps:

- Heavy cast iron construction designed to last a lifetime.
- Steady, clear light—brighter than oil lamp light.
- Theftproof—no loss of bulbs through theft—can be opened only with AAR, Signal Section, socket wrench.
- Safe—no inflammable kerosene to handle.
- Eliminates chance for error in changing lenses, as red and green lenses are different in size, Type 1870 only.



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

General Offices and Factory

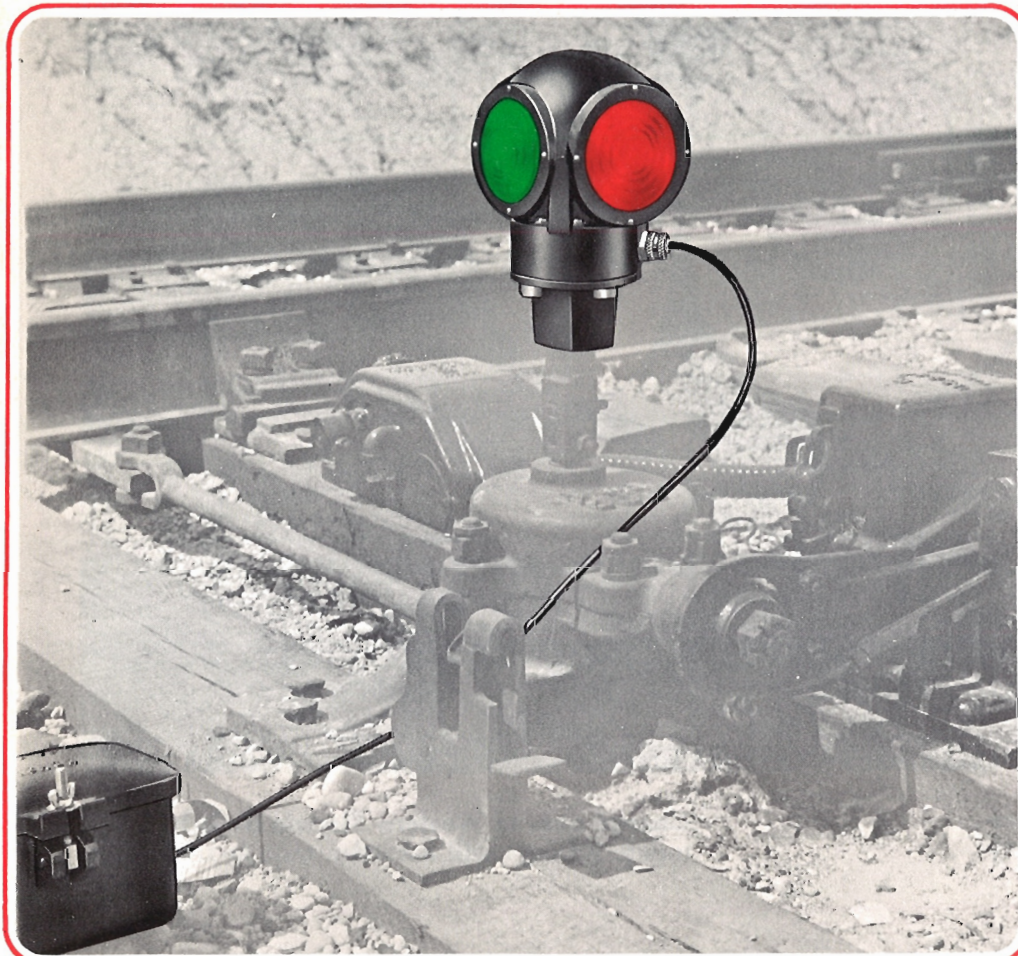
2742 West 36th Place, Chicago, Illinois 60632

Western Switch Lamps are furnished in two sizes for operation with air-depolarized primary battery or with commercial current

STANDARD LENS COMBINATIONS

LAMP TYPE:	LENS DESCRIPTION:	COLOR:
1870	GLASS ONLY	
	4½" dia., 3" F., 5° hor. sp., 2½° V. sp., 10° up. def.	2-Red 2-Green
1880	GLASS OR PLASTIC	
	5⅝" dia., 3½" F., 30° hor. sp., 10° up. def.	2-Red 2-Green

Lenses in yellow, purple and lunar white available upon request.



WRRS Electric Switch Lamp Type 1870 (shown on left) is regularly fitted with electric type lenses having 5° horizontal 2½° vertical spread.

For special locations where a greater width of beam is required (at curves and in yards, for instance) the use of lenses having 30° horizontal spread is recommended. Such lenses can be used on Switch Lamps 1870 and 1880.

FEATURES (Applicable to all Types)

- Heavy cast iron construction.
- Single contact or double contact bayonet candelabra base or medium screw base lamp receptacle.
- With two or four day-indication targets, as specified.
- With or without stone guards.
- With or without bulbs.
- All lamps equipped with theft-resisting screw arrangements to prevent unauthorized opening of lamp or its removal from switch staff.
- Targets are porcelain enamel finish and are also available with Reflex Reflecting Sheet surfaces.

IMPORTANT:

Please note that the Switch Lamps shown in this brochure have now been re-designed to include: Cast Aluminum Housing, Base, and Base Socket.

Type 1880-A . . . 43% Less Weight
Type 1870-A . . . 47% Less Weight

PLASTIC LENSES

Guaranteed Against Breakage for 1 Year!

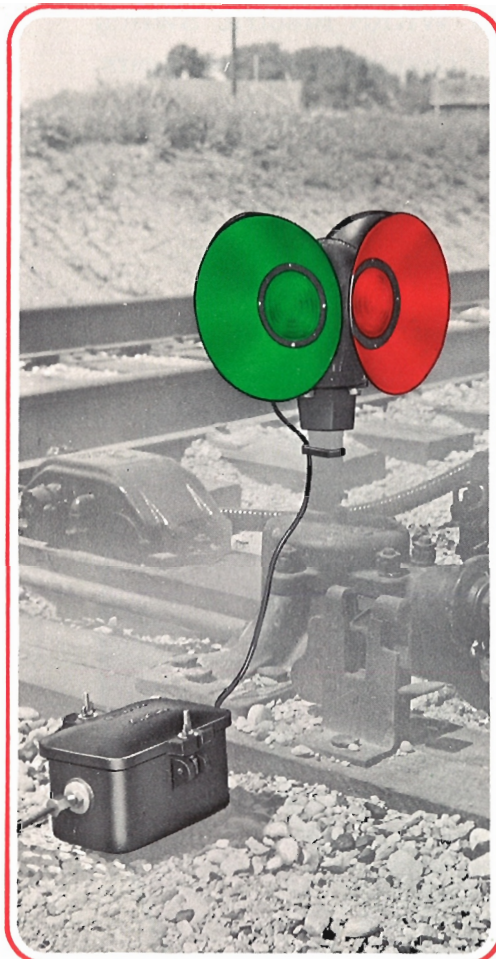
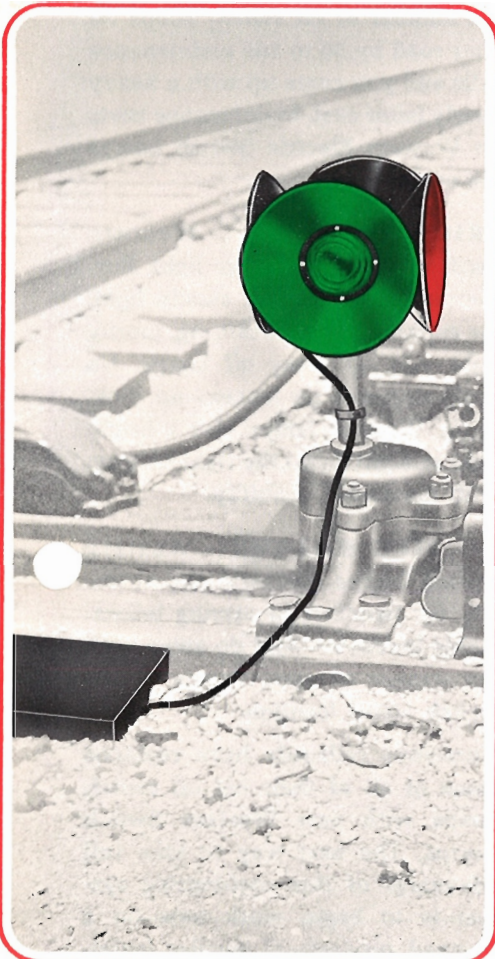
We can make this unprecedented guarantee because Western Plastic Lenses are practically unbreakable. They are molded in one piece of acrylic plastic. The colors and transmission values are accurate and uniform, will not fade or darken, and meet AAR requisites. They have proved excellent under all operating conditions; easy to clean and economical to maintain.

1880-21

5⅝" SWITCH LAMP LENSES, No. 9-21

Focus 3½", horizontal spread 30°, upward deflection 10°. Available in red, yellow, green, purple, and lunar white. Can be used on electric or kerosene switch lamps. Specify color when ordering.

Western Gives You Two Complete Package Units...for operation with Air-Depolarized Primary Battery or for operation with Commercial Current



For Air-Depolarized Primary Battery:

One WRRS Electric Switch Lamp complete with lenses and bulb (specify lens sizes and colors—also targets or stone guards; or both, if desired).

One No. 1245A-40P "Everlast" Battery Box, complete, includes:

- a. Battery Box to accommodate any of the following: Two Carbone No. 500 cells, One Edison No. 2SJ1 or 2SL2 Carbonaire battery, one Eveready T-2600 or one Eveready CF212.
- b. 4 to 15-feet of 2-conductor neoprene covered cable (as specified).
- c. 3 cable clamps (for securing cable to switch stand staff).

For Commercial Current:

One Western Switch Lamp complete with lenses and bulb. (Specify type number, lens sizes and colors—also targets or stone guards, if desired.)

One WRRS underground cable terminal (Type 1183-50) in which transformer is housed, complete with 15-feet of 2-conductor neoprene covered cable and three cable clamps.

This transformer will operate 10-volt, 0.3 ampere lamps from 115-volt, 60 cycle source. One transformer will handle one, two, three or four lamps.

"EVERLAST" BATTERY BOX, Type 1245A-40P,

made of reinforced fiberglass plastic, has had recent design improvements which include: 2 preformed ridges at base of box, which serve to elevate the battery from the box, thereby eliminating need for a wooden platform; cover held in position by two brass retaining studs, which allow cover to be removed when required. Stainless steel hasp now located on end of box. As ever, box is impervious to chemical attack, from ballast damage, assures long service life, and design permits adequate ventilation, yet sheds spray, sleet, snow and rain.



Cut Switch Lighting Costs

50%

with New Western Switch Lamps

Savings from installation of new WRRS Electric Switch Lamps will pay for the entire cost of changeover in two years.



LOW MAINTENANCE COST—Your old oil switch lamps require one or two trips weekly for inspection, maintenance, or refilling. Multiply the number of oil switch lamps on your road by 50 to 100 maintenance calls and you come up with a heavy yearly labor cost. Maintenance costs on Western Electric Switch Lamps are negligible.

BRIGHTER LIGHT — Western Switch Lamps give more light. Furthermore, it is bright, steady light, far superior to the flickering, murky light cast by many oil lamps. No sooty deposits on lenses—no flickering. Western lamps cast a bright light straight down the right-of-way, with maximum visibility.

NO FIRE HAZARD — Western Switch Lamps eliminate the necessity for handling or storing inflammable kerosene—and do away with the danger of open flames at the switch stand location.

Numerous railroads have replaced some or all of their old oil switch lamps with new Western Switch Lamps. The best way to take full advantage of this cost-cutting system is to begin work now on a planned program of regular installations—by districts or divisions, or by yards or terminals.

IMPORTANT:

Please note that the Switch Lamps shown in this brochure have now been re-designed to include: Cast Aluminum Housing, Base, and Base Socket.

Type 1880-A . . . 43% Less Weight
Type 1870-A . . . 47% Less Weight



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

General Offices and Factory

2742 West 36th Place, Chicago, Illinois 60632



SECTION 40

Protector Mountings
Fuses — Arresters
Drainage Units

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WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

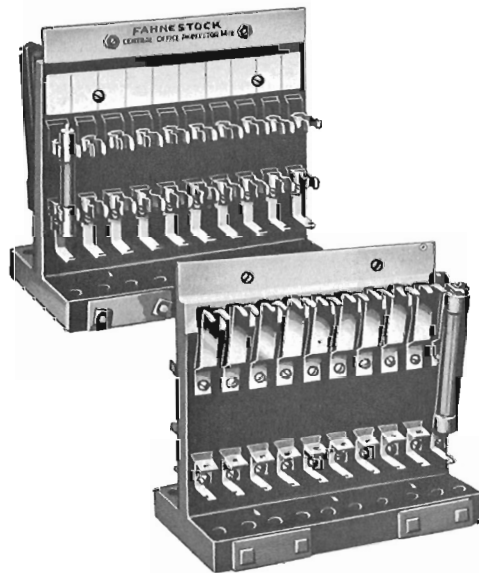
GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



Fahnestock Office Protector Mounting No. 1-B

10 WIRE



Without Cover

The Office Protector Mounting No. 1-B, without cover, as illustrated, was developed for office use where it is mounted on a frame. It consists of a molded base $7\frac{1}{4}$ " long and $4\frac{1}{2}$ " wide. Overall width (over bolt heads and nuts) $5\frac{1}{4}$ ". Phosphor bronze springs and clips accommodate line and office fuses, as well as arresters for the complete protection of 10 lines. As shown, the 8/10 Ampere heat-coil fuses are installed on one side of the mounting and the line fuses and arresters on the opposite side.

No. 1-B Line Fuses, No. 52-B Instrument Fuses and No. 26-27 or similar protectors are accommodated by this protector mounting.

This mounting meets the requirements of AAR, Communications & Signal Section, Specifications.

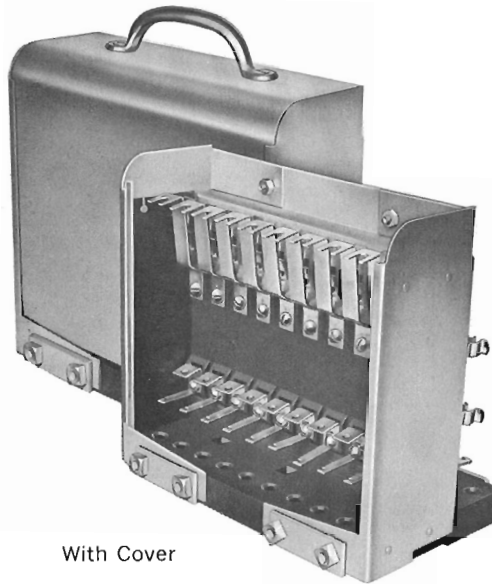
Side inserts and slide cover are available for these protector mountings.

See opposite page for ordering references.



Fahnestock Office Protector Mounting No. 1-B

10 WIRE



With Cover

Illustrated is the Office Protector Mounting No. 1-B with cover and sides. This mounting is similar to that shown on the opposite page, except that it is equipped with a sliding cover which fits over the line side. With this cover and the side plates, the line fuses and arresters are afforded mechanical protection, and the enclosure keeps dust and dirt from the arrester and fuse parts, also eliminating all hazard of fire spreading from one protector to another.

This is ideal for large offices where a relatively large number of conductors must be protected within a limited space.

Ref. No.	Description	Piece No.
1	Office Protector Mounting No. 1-B, without cover, fuses or arresters.....	90230-1
2	Office Protector Mounting No. 1-B, with cover, without fuses or arresters.....	90230
3	Set of side inserts and slide cover (for application to open protector mountings)	90230-SC
4	White Designation Strip.....	90230-DS

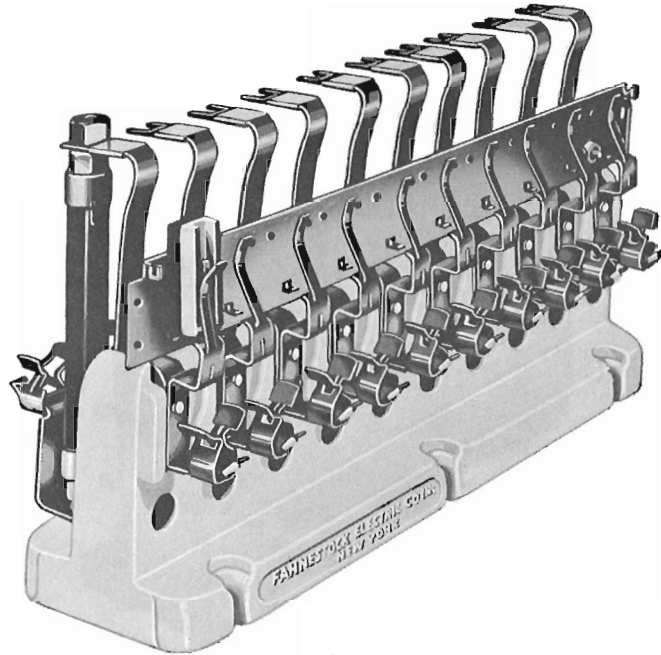
See Pages 40-6 and 40-7 for Fuse References



Fahnestock Protector Mounting No. 2-B

6-WIRE

10-WIRE



10 Wire

Protector Mounting No. 2-B widely used by Railroad, Telephone and Telegraph companies for the protection of line circuits and instruments, meets AAR requirements in every detail. It is made for six and ten wires and will take No. 1-B line fuses and 26-27 or other similar protectors.

All parts are made from the best bronze obtainable and are assembled and screwed securely to a base made of the highest quality porcelain. Special Fahnestock clips assure tight electrical connection without soldering. Soldering lugs are also provided.

DIMENSIONS

Width of base 2 7/8". Height of base 3". Height overall 5 1/2".

Length of bases—6 wire, 6"—10 wire, 10".

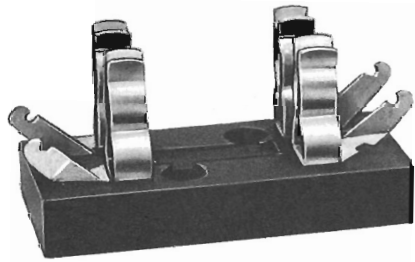
Ref. No.	Description	Piece No.
1	Protector Mounting No. 2-B, 6 Wire, without Fuses or Arresters.....	90228
2	Protector Mounting No. 2-B, 10 Wire, without Fuses or Arresters.....	90229

See Pages 40-6 and 40-7 for Fuse References

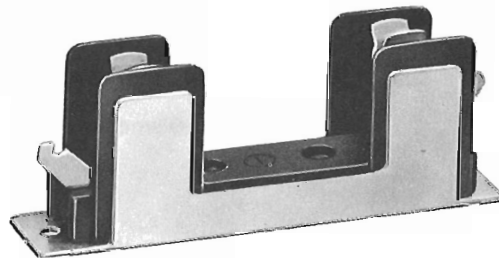


Fahnestock Fuse Blocks

For No. 52-B and No. 57-A Fuses



No. 8-B
1½" Wide, 3" Long, 1½" High



No. 10-B
¾" Wide, 4" Long, 1½" High

The fuse blocks shown herewith mount the cartridge fuses of ⅜" diameter of the sizes most generally required in protecting communication equipment. The No. 8-B block mounts two fuses with ferrules spaced 1¼" apart, including No. 52-B, while the No. 10-B block mounts a single fuse with ferrules 1⅞" apart, including No. 57-A. The Block Mounting No. 1-B shown on page 41-8 will accommodate the Fuse Block No. 8-B.

In both, the insulating parts are substantial and of fire resisting material. The clips are made from spring phosphor bronze so formed as to insure a permanent, snug and low resistance contact.

They meet the requirements of AAR, Communications & Signal Section, Specifications.

Ref. No.	Description	Piece No.
1	Fuse Block, No. 10-B, Single, without fuse.....	90226
2	Fuse Block, No. 8-B, Double, without fuses.....	90227
3	Fuse Block, No. 8-B, Double, with No. 52-B fuses.....	90227-1
4	Fuse Block, No. 10-B, Single, with No. 57-A fuse.....	90226-1



Fuses



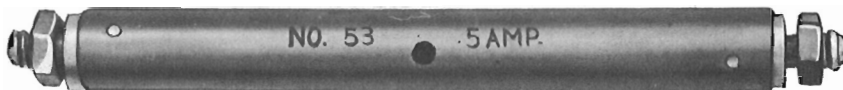
No. 1-B— $\frac{3}{16}$ " Diameter, $4\frac{1}{32}$ " Long, 7 and 10 Amperes



No. 1-C— $\frac{3}{16}$ " Diameter, $4\frac{1}{32}$ " Long, 7 and 10 Amperes



No. 51-B— $2\frac{1}{32}$ " Diameter, $4\frac{3}{32}$ " Long, 14 Amperes



No. 53-L— $\frac{7}{16}$ " Diameter, $3\frac{3}{4}$ " Long, 5 and 7 Amperes

No. 55— $\frac{7}{16}$ " Diameter, $4\frac{1}{16}$ " Long, 7 Amperes

See opposite page for ordering references.



Fuses



No. 52-B— $\frac{25}{64}$ " Dia., $2\frac{1}{16}$ " Long; 8/10 Ampere



No. 54-A— $\frac{25}{64}$ " Dia., $1\frac{1}{8}$ " Long; 5 Amperes
 No. 54-B— $\frac{25}{64}$ " Dia., $3\frac{1}{16}$ " Long; 2 Amperes



No. 57-A— $\frac{25}{64}$ " Dia., $2\frac{5}{8}$ " Long; 1, 3, 5, 6 and 10 Amperes
 No. 57-B— $\frac{25}{64}$ " Dia., $2\frac{5}{8}$ " Long; 4/10 and 1 Ampere
 No. 57-C— $\frac{25}{64}$ " Dia., $2\frac{5}{8}$ " Long; $\frac{1}{2}$ Ampere

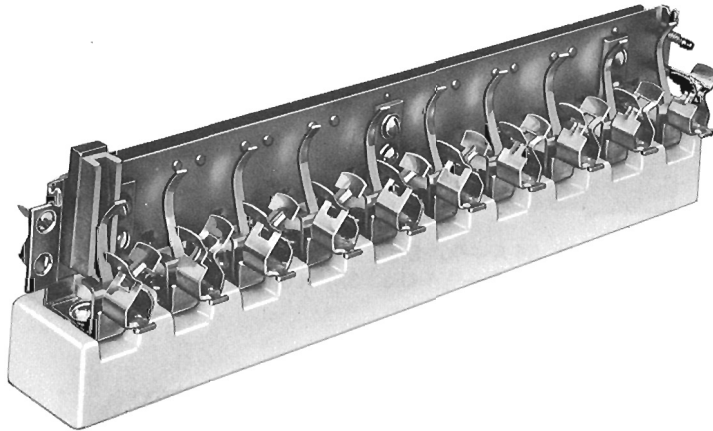
All fuses listed meet AAR, Communications & Signal Section, Specifications or requirements, and are used in Unit Switchboards, Protector Mountings, Central Office Protector Mountings, Sub-Station Protector Mountings and Arresters, as well as in Fuse Blocks.

Ref. No.	Description	Piece No.
1	Fuse No. 1-B— 7 Ampere—Line Fuse.....	90250-1-7
2	Fuse No. 1-B—10 Ampere—Line Fuse.....	90250-1
3	Fuse No. 1-C— 7 Ampere—Line Fuse.....	90250-2-7
4	Fuse No. 1-C—10 Ampere—Line Fuse.....	90250-2
5	Fuse No. 51-B—14 Ampere—Line Fuse.....	90250-3
6	Fuse No. 52-B—8/10 Ampere—Heat-Coil Instrument Fuse.....	90250-4
7	Fuse No. 54-A— 5 Ampere—Instrument Fuse.....	90250-5
8	Fuse No. 54-B— 2 Ampere—Instrument Fuse.....	90250-6
9	Fuse No. 57-A— 1 Ampere—Instrument Fuse.....	90250-7
10	Fuse No. 57-A— 3 Ampere—Instrument Fuse.....	90250-8
12	Fuse No. 57-A— 5 Ampere—Instrument Fuse.....	90250-7-5
13	Fuse No. 57-A— 6 Ampere—Instrument Fuse.....	90250-7-6
14	Fuse No. 57-A—10 Ampere—Instrument Fuse.....	90250-9
15	Fuse No. 57-B—4/10 Ampere—Instrument Fuse.....	90250-11
16	Fuse No. 57-B— 1 Ampere—Instrument Fuse.....	90250-11-1
17	Fuse No. 57-C— $\frac{1}{2}$ Ampere—Instrument Fuse.....	90250-10
18	Fuse No. 53-L—5 Ampere for No. 40-B and No. 440 Arresters.....	0040-9
19	Fuse No. 53-L—7 Ampere for No. 40-B and No. 440 Arresters.....	0040-9-7
20	Fuse No. 55—7 Ampere for No. 1225-100 Arrester.....	1225-105



Fahnestock Arrester Mounting No. 3-A

6 WIRE 10 WIRE



Base 1¼" Wide, Overall Width 2", Height 2½"
Length, 6 Wire—6", 10 Wire 10"

For use where the paper cable to be protected is of the type in which a single layer of paper is used for insulation, or where the cable is intended for low voltage circuits, the Arrester Mounting No. 3-A will be found preferable to the No. 4-B type with Cable Arrester No. 2-B. Arrester mounting No. 3-A may be equipped with any of the various types of protectors with breakdown ratings of from 300 to 1000 volts D.C. to meet the requirements for protection of various kinds of cable.

This mounting is available in either 6-wire or 10-wire sizes. Connections can be tapped into the cable or the circuits can be carried through the mounting as desired. Both solder lugs and Fahnestock clips are provided for the connections. Provision is made for connection of the ground wire by means of nuts and washers on the screws attached to the ground plate. The ground plate of adjacent mountings can be connected together by inserting the ground connection screws of one plate in holes provided in the adjacent end of the next mounting.

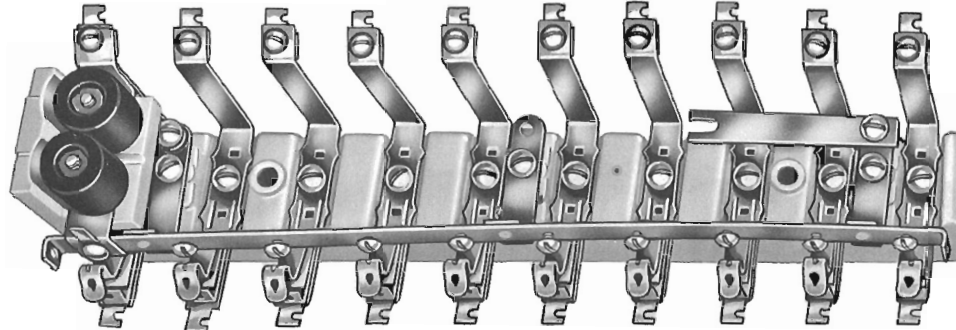
Ref. No.	Description	Piece No.
1	Arrester Mounting, No. 3-A, 6 wire, without arresters.....	90243-6
2	Arrester Mounting, No. 3-A, 10 wire, without arresters.....	90243-10



Fahnestock Arrester Mounting No. 4-B

6 WIRE 10 WIRE

Cable Arrester No. 2-B



Base width— $1\frac{3}{8}$ " , overall width— $3\frac{1}{4}$ " , overall height $2\frac{5}{8}$ "
 Length—6 wire 6" , 10 wire 10"

Cable Arrester No. 2-B and the Arrester Mounting No. 4-B have proven themselves a phenomenal success. Their use by nearly all railroads to protect cables of almost every type has reduced circuit interruptions due to grounded arresters to almost nil. The protective ability of this arrester and the convenience of the mounting are due to the design and the selection of the most suitable materials.

Where circuits in cables, protected with protector blocks, are frequently interrupted by the grounding of the latter, such interruptions will be almost entirely eliminated by the substitution of the Arrester Mounting No. 4-B equipped with Cable Arrester No. 2-B. Arrester air gaps are normally set for 1200-1500 volts breakdown.

This mounting is available in either 6-wire or

10-wire sizes and can be used in an aerial distribution box or in a cable terminal. Connections can be tapped onto the circuits or the circuits can be carried through the mounting, as desired. Soldering lugs are provided for permanent line and cable connections. For temporary connections, as in an emergency or for testing, these mountings are equipped with Fahnestock bronze clips on the cable side and screws on the line side. Provision is made for attaching ground wire of No. 9 B&S Ga. or smaller and a connecting link is supplied with each mounting to carry the ground connection to adjacent mountings. These devices meet AAR, Communications & Signal Section, Specifications.

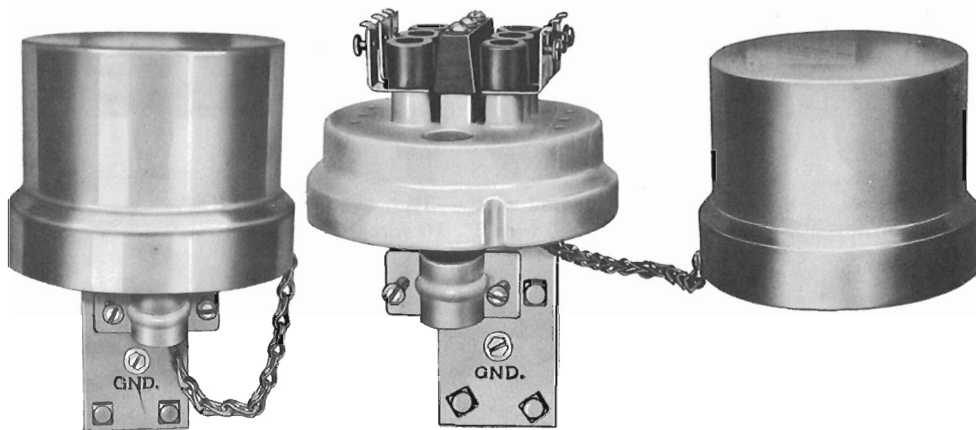
On special order air gaps will be set for 875-1050 volt breakdown and color coded yellow. Reference 4, below.

Ref. No.	Description	Piece No.
1	Arrester Mounting, No. 4-B, 6 Wire, without Arresters.....	90233-6
2	Arrester Mounting, No. 4-B, 10 Wire, without Arresters.....	90233-10
3	Cable Arrester, No. 2-B, 1200-1500 volt breakdown.....	90233-1
4	Cable Arrester, No. 2-B, 875-1050 volt breakdown.....	90233-1Y



Fahnestock Arrester Terminal No. 18-A

SIX-WIRE



The No. 18-A Arrester Terminal is a 3-pair (6-wire) pole arrester and dry-spot. It provides, in one unit, a pole terminal and trouble-free protection for three-pair drops to booths, way-stations, etc.

Its use reduces circuit interruptions and maintenance of protectors because frequent grounding of protectors, caused by lightning, is avoided.

Where cable has a metallic sheath the supporting clamp automatically provides the ground connection. However, a ground wire may be used and attached to conveniently located screws in the mounting bracket. Gaps are set for 1200 to 1500 volts breakdown. Circuits may be half-tapped or carried through, as preferred.

Cover is in one piece and chained to avoid loss.

Diameter 4 $\frac{3}{4}$ "—Cover Height 3 $\frac{5}{8}$ "—Bracket Length 4 $\frac{3}{8}$ ".

On special order gaps will be set for 875-1050 volt breakdown and color coded yellow.

Ref. No.	Description	Piece No.
1	Arrester Terminal, No. 18-A, 6 wire.....	90241



Fahnestock Arrester Terminal No. 19-A

TWO-WIRE



The No. 19-A Arrester Terminal was specially designed to provide inexpensive protection for one pair. It has all the features of Arrester Terminal, No. 18-A, having long dry-spot and carbon-to-carbon gap set for 1200 to 1500 volt breakdown.

Ideal for protection of one-pair drops to booths, shelter boxes or offices where one communication circuit, only, is involved. The ground wire connects to screws in the mounting bracket. Line connections are made by soldering to lugs adjacent the carbons or arresters may be ordered with heavily insulated leads 18 inches long, for tapping to line wires.

Cover is in one piece and chained to avoid loss.

Diameter 3 1/8" —Cover Height 2 3/4" —Bracket Length 3 1/2".

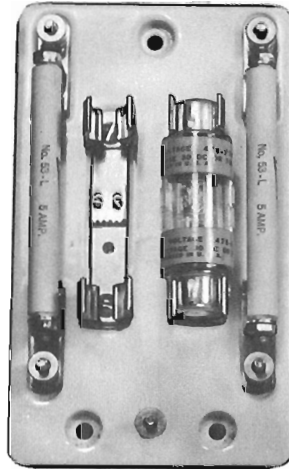
On special order gaps will be set for 875-1050 volt breakdown and color coded yellow.

Ref. No.	Description	Piece No.
1	Arrester Terminal, No. 19-A, 2 wire.....	90244
2	Arrester Terminal, No. 19-A, 2 wire, with lead wires.....	90244-1



Type No. 40-B Lightning Arrester

6¾" long, 4" wide, 2½" high



View with one rare-gas arrester cartridge removed, showing spark gap.

This arrester is recommended for all telephone and train dispatching circuits, being designed to accommodate the usual two wires or pair of such circuits.

The arrester is equipped with line fuses having a rated break-down for 2000 volts, complying with the requirements of The National Board of Fire Underwriters.

Type 40-B comes equipped with fuses having nutted ends.

For use on communication circuits up to 450 volts D.C.

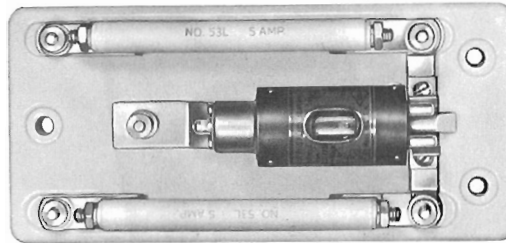
Breakdown range 475-775 volts at 60 cycles—
315-530 volts, R.M.S., A.C.

Ref. No.	Description	Piece No.
2	Type 40-B Arrester complete with rare-gas cartridges.....	0040-B
4	Rare-gas cartridge only	0027-1G
5	Fuse, No. 53L, 5 Amperes.....	0040-9
5a	Fuse No. 53L, 7 Amperes.....	0040-9-7
6	Arrester base complete only.....	0040-7
7	Cartridge clip only	0027-6
8	Spark gap plate only.....	0026-6
9	Porcelain base only.....	0040-1
10	Fuse holder spring and clip (set of two each).....	{0440-2
11	Binding Post Hexagon Nut, No. 8-32 thread.....	{0440-4



Type No. 440 Arrester

7" long, 3 1/8" wide, 2 1/2" high



The Type 440 Arrester is equipped with a Triplepath cartridge and thus, by bringing the two line wires into the same rare-gas chamber as the ground connection, the maximum degree of protection is secured; and, due to the fact that both sides of the line are in the same cartridge chamber, there is a decided shunting or balancing effect which equalizes both sides of the line whenever they become unbalanced due to static disturbances.

In addition, this arrangement of the three electrodes in one tube relieves either side of the line when subjected to abnormal conditions and immediately carries all such disturbances to ground.

This arrester is equipped with line fuses hav-

ing a rated breakdown for 2000 volts, complying with the requirements of the National Board of Fire Underwriters.

Type No. 440-M Lightning Arrester has all of the features of the standard No. 440 Arrester with the addition of auxiliary spark-gaps, designed to carry off surges in excess of the capacity of the rare-gas tube or to function in place of the rare-gas cartridge should the tube become damaged and in-operative.

For use on communication circuits up to 450 volts D.C.

Breakdown range 475-775 volts at 60 cycles - 315-530 volts, R.M.S., A.C.

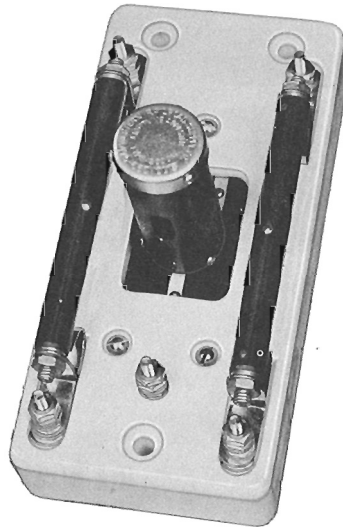
Ref. No.	Description	Piece No.
3	Type 440 Arrester complete with rare-gas cartridge and 5 amp. fuses.....	0440
3a	Type 440-M Arrester complete with rare-gas cartridge and 5 amp. fuses.....	0440-M
6	Rare-gas cartridge only.....	0440-12
7	Porcelain base complete, less cartridge and fuses, standard.....	0440-13
7a	Porcelain base complete, with auxiliary spark gaps, less cartridge and fuses.....	0440-13M
8	Fuse connection spring.....	0440-2
9	Fuse connection clips (one set of two).....	0440-4
10	Cartridge clip (ground end).....	0440-8
11	Cartridge clip (line end).....	0390-7
12	Binding Post Hexagon Nut, No. 8-32 thread.....	
13	Fuse, No. 53L, 5 Amperes.....	0040-9



Type 1225 Lightning Arrester

FOR USE AS A TELEPHONE PROTECTOR

7" Long, 3¼" Wide, and 3 $\frac{9}{16}$ " High



The Type 1225 Arrester is provided with a Triplepath cartridge and thus, by bringing the two line wires into the same rare-gas chamber as the ground connection, the maximum degree of protection is assured; and, due to the fact that both sides of the line are in the same cartridge chamber, there is a decided shunting or balancing effect which equalizes both sides of the line whenever they become unbalanced due to static disturbances.

In addition this arrangement of the three electrodes in the one tube relieves either side of the line when subjected to abnormal conditions, and immediately carries all such disturbances to ground.

Performance characteristics of the Arrester

element are given on opposite page.

The arrester is also equipped with line fuses having a rated breakdown for 2000 volts, complying with the requirements of the National Board of Fire Underwriters.

No asbestos sheet or separate fuse block is required for mounting.

For use on communication circuits up to 450 volts D.C.

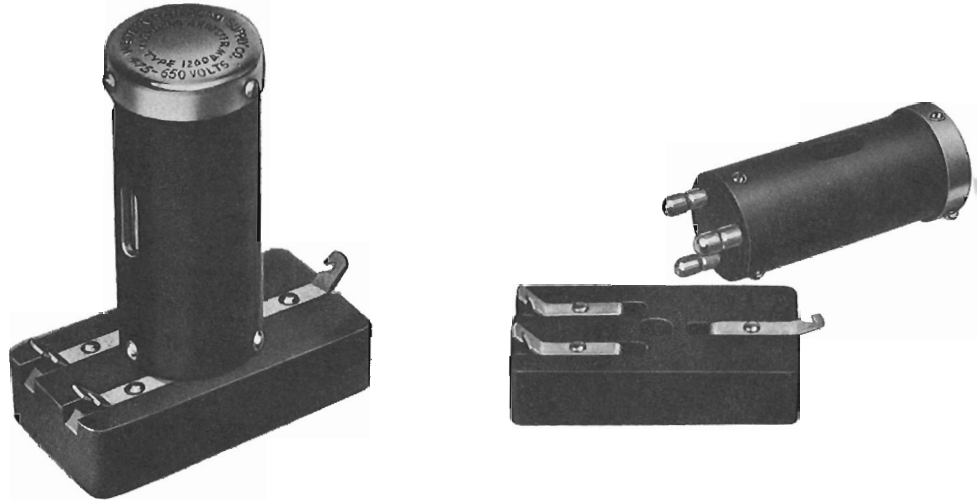
Breakdown range 475-650 volts D.C., = 315-530 volts R.M.S., A.C.

Three No. 10 blued wood screws 1½" long are furnished for mounting.

Ref. No.	Description	Piece No.
1	Type 1225 Lightning Arrester complete.....	1225-100
2	Rare-gas cartridge only.....	1200-1
3	Fuse only (7 amperes unless otherwise specified).....	1225-105
4	Fuse connection spring.....	0440-2
5	Fuse connection clips (one set of two).....	0440-4
6	Bakelite receptacle complete with wire leads, less cartridge.....	1225-104
7	Porcelain base complete with bakelite receptacle, less cartridge and fuses.....	1225-101



Type 1200DW Lightning Arrester



The type 1200DW rare-gas arrester is of the Triplepath, automatic-bridging type, affording protection for two lines to one ground and the equalizing effect of having both line and ground electrodes in one rare-gas chamber.

Performance characteristics are:

- a) Continuous current rating is 2 amperes.
- b) Rare-gas arresters provide protection on a wavefront rising at the rate of 10 KV/micro-second to a peak of 20 KV crest.
- c) A peak surge of 680 amperes will decay to zero in approximately 40 microseconds.
- d) Successive 4000-amp. surges, at 20 second intervals can be discharged without change of characteristics.
- e) The unit does not have any adverse effect on carrier circuits.

Type 1200DW is intended for use on communication circuits up to 450 volts D.C.

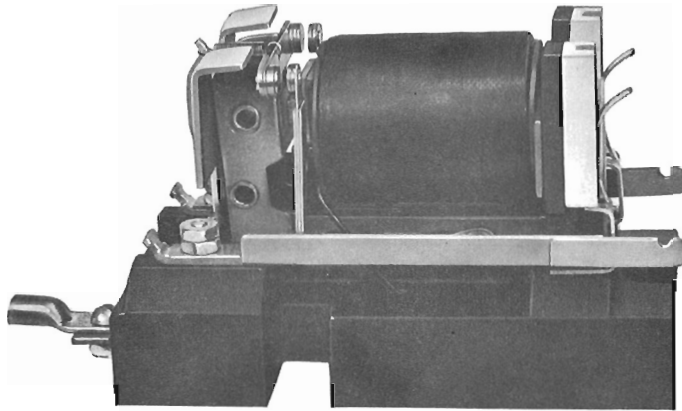
Breakdown range, 475-650 volts D.C. = 315-350 volts, R.M.S., A.C.

Wood screws for mounting are furnished with each arrester.

Ref. No.	Description	Piece No.
1	Type 1200DW Arrester complete with rare-gas cartridge.....	1200-DW
4	Rare-gas cartridge only.....	1200-1
5	Bakelite receptacle complete, less cartridge.....	1200-2



Fahnestock Arrester Relay No. 3-A



Base size 4½" x 2". Relay height 2¾"

The No. 3-A Arrester Relay will be found invaluable where communication circuits are subject to frequent and heavy induction from power circuits. Their efficiency under such conditions is attested to by their use for many years by the railroads and by telephone and telegraph companies. This relay will pull up within a cycle on currents of 1½ amperes or more and will release when the current reduces to 0.4 ampere.

The arrester springs will accommodate any of the generally used 1¼" x ⅜" arresters. No. 26-27 Protectors are furnished with each relay.

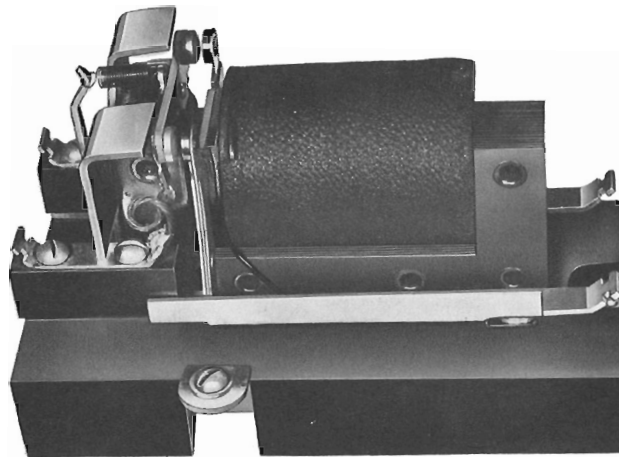
All parts are corrosion resisting to insure permanently reliable operation under all atmospheric conditions.

See AAR, Communications Section, Specification 4-19 for Application and Installation Data

Ref. No.	Description	Piece No.
1	Arrester Relay, No. 3-A, Complete with 26-27 Protectors.....	90232



Fahnestock Arrester Relay No. 4-A



Base Size 4½" x 2", Relay Height 2⅞"

The long and satisfactory experience with Arrester Relays of the 3-A type in protecting telephone and the lower frequency carrier circuits has led to its adaptation to the higher frequency carriers of the C, K and J types.

Most of these circuits are protected in part by balancing or arrester coils fitted with low voltage arresters, which have proven very satisfactory against lightning alone. Where, however, the line is also exposed to power induction, the arresters ground too frequently for the continuity of service expected from such expensive circuits.

The only satisfactory method so far developed to keep these arresters from grounding permanently is to shunt them within less than a ½ cycle after the incidence of the surge, and

keep them shorted while the heavy current continues in the line.

Methods of doing so without reducing the efficiency of the balancing coils have been thoroughly worked out, using the Arrester Relay No. 4-A and are described in AAR, Communications Sections, specification 4-24.

Arrester Relay No. 4-A differs, electrically, from the well known No. 3-A type, in that the coil terminals are separate and the two pairs of contacts are insulated from each other and connected to separate terminals. In all other respects, it is similar to the 3-A, so as to give unfailing service.

Protector Drainage Units, including Arrester Relay No. 4-A, are described on Pages 40-23 and 40-24.

Ref. No.	Description	Piece No.
2	Arrester Relay No. 4-A.....	90232-1



C.D.I. Protector Drainage Units

FOR OPEN WIRE CARRIER CIRCUITS

To meet the demand for easily installed protector drainage equipment for open wire carrier, several units have been developed to meet the commonly encountered conditions. They follow the recommendations and requirements of AAR, Communications Section, Specification 4-24 in which the subject of protector drainage is quite thoroughly discussed. The use of Protector Drainage will greatly increase the stability of carrier circuits under adverse lightning conditions and where disturbances are caused by induction from adjacent power supply lines, minimizing the likelihood of hits and clicks.

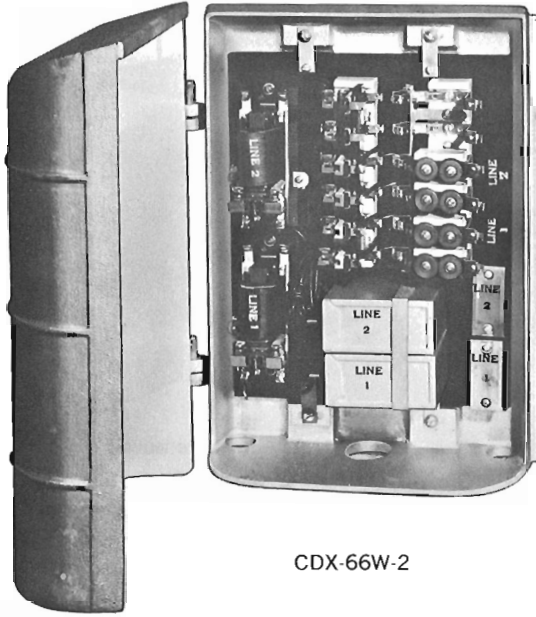
Several types of standard units have been designed for one and two carrier pairs. They consist of arrester relay No. 4-A, arrester balancing or retardation coils, office protectors and cable or back-up arresters compactly arranged and internally wired so that the only connections to be made when installing the units are two to the line pair and one to ground.

While the Arrester Relay may not always be considered essential, and units are available without this feature, its use is recommended since it insures against permanent grounding of the arresters. The coil of the relay is connected in series between the center tap of the arrester balancing coil and ground. The relay contacts, which are insulated from each other, short circuit the two balancing coil arresters for the duration of any discharge of more than two amperes, lasting longer than 1/100 second.

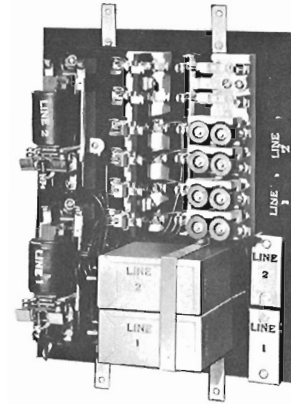
Many features must be carefully considered in the selection of the proper components, design, manufacture and application of protector drainage equipment. One of the Standard Units will usually be found to be suitable. However special units are at times necessary to meet the existing conditions. Given information as to the characteristics of the carrier circuits involved, we will gladly submit recommendations for Protector Drainage Equipment. Your inquiries are solicited.



Protector Drainage Unit CDX-66



CDX-66W-2



CDX-66-2

The CDX-66 Protector Drainage Unit consists of a bakelite base 9" x 11½" on which are mounted the necessary arrester relays, protector and back-up arresters and drainage coils for application to one or two carrier circuits as specified. All components are completely wired to line and ground terminals ready for installation.

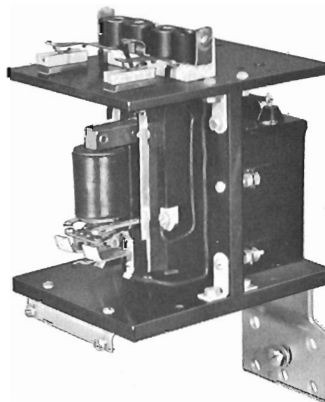
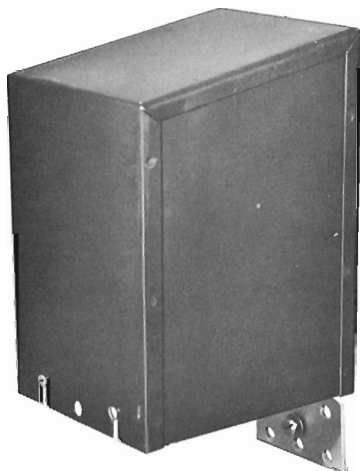
This type of unit is appropriate for mounting in cable boxes, or in an office on a rack or wall. For mounting in exposed locations, such as on a pole or the outside of a building, the unit is furnished mounted in a weatherproof cast aluminum box.

Ref. No.	Description	Piece No.
1	Protector Drainage Unit CDX-66-1 for cable box or office mounting, complete with arrester relay 4A, protectors and back-up arresters and balancing coils for protecting one circuit.....	90625-1
2	Protector Drainage Unit CDX-66-2, similar to CDX-66-1, except it is equipped for protecting two circuits.....	90625-2
3	Protector Drainage Unit CDX-66W-1, similar to CDX-66-1, except it is mounted in weatherproof cast aluminum box for outdoor mounting.....	90625-11
4	Protector Drainage Unit CDX-66W-2, similar to CDX-66-2, except it is mounted in weatherproof cast aluminum box for outdoor mounting.....	90625-12

Replacement Parts List will be furnished upon request.



Protector Drainage Units CDX-70 and 71



CDX-70 with cover removed

The increasing use of higher frequency carrier circuits has created a need for a protector drainage unit suitable for crossarm mounting adjacent to the line wires in order to minimize the length of the line taps required. The CDX-70 type of Protector Drainage Unit has been specifically designed to meet this need, although it will also be found to make a desirable type of installation even on the lower frequency circuits.

This unit consists of the necessary arrester relay No. 4A, balancing coil, protectors and back-up arresters compactly arranged on bakelite mountings with a weatherproof cover of aluminum with a baked dull black finish. A heavy galvanized bracket is provided for attaching the unit to the crossarm between the line wires of the pair to which it is connected. Line

taps enter through the base of the unit in order to insure its weatherproof characteristics under all conditions, and the terminals to which these are attached are equipped with both screw connecting and soldering lugs.

Protector Drainage Unit CDX-71 is similar to the CDX-70 except that the arrester relay is omitted. A second drainage coil together with its associated protectors may be mounted in the same housing so that it is applicable to two circuits. When equipped for two circuits, the unit is mounted on the crossarm between the two pairs of wires to which it is connected, and the line taps enter the base at opposite sides to provide maximum separation as a protection against crosstalk at the higher frequencies.

Ref. No.	Description	Piece No.
1	Protector Drainage Unit CDX-70 for crossarm mounting, complete with arrester relay 4A, protectors, back-up arresters and balancing coils for protecting one circuit.....	90637
2	Protector Drainage Unit CDX-71-1 similar to CDX-70, except less arrester relay 4A, for protecting one circuit.....	90638-1
3	Protector Drainage Unit CDX-71-2 similar to CDX-71-1, except equipped to provide protection for two circuits.....	90638-2

Replacement Parts List will be furnished upon request.



SECTION 41

Terminal Blocks
Pole Boxes — Dry Spot
Transposition Brackets

CONTENTS

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Cast Aluminum Terminal and Arrester Boxes.....	41-10
Wood Cable Boxes.....	41-11
Cross Connecting Rings	41-12
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Radio Transmitter Identification Tags.....	41-18

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

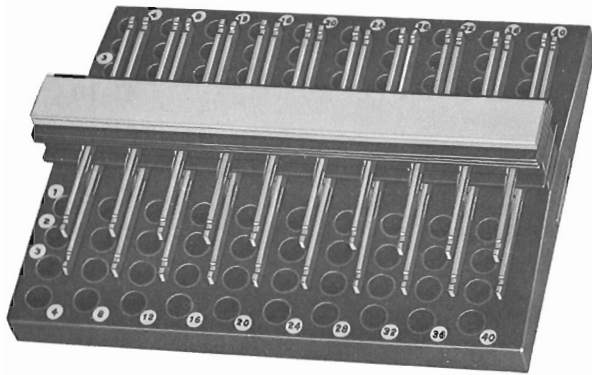
GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



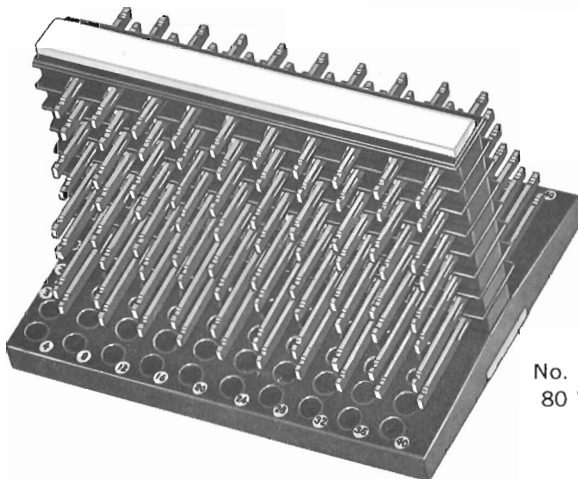
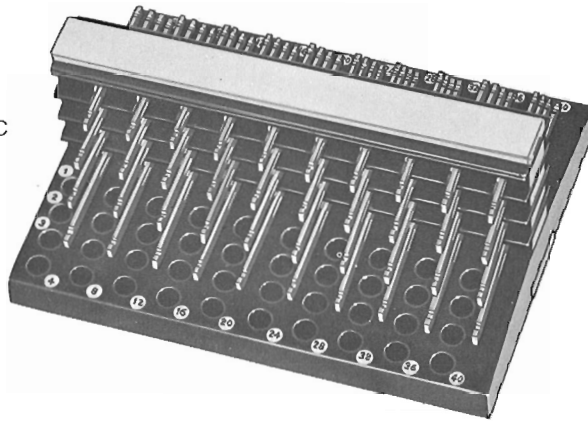
Fahnestock Terminal Blocks

21 TYPE 10 TO 200 WIRES



No. 221C
20 Wire

No. 421C
40 Wire



No. 821C
80 Wire



Fahnestock Terminal Blocks

21 TYPE 10 TO 200 WIRES

The 21 Type Terminal Blocks, three sizes of which are illustrated on the opposite page, are, as can be seen, a much improved version of the design formerly used by most railroads and communication companies. They are available with any number of strips from one to 20; 10 wire to 200 wire capacity.

The molded bakelite fanning strip base, by providing a separate hole for each pair or group of wires insures greater insulation and much easier installation. The well tinned phosphor bronze terminal lugs are mounted in molded bakelite strips and each strip, as well as each terminal lug, is independently replaceable.

The base block for all sizes is 5" in length. Width of the base blocks up to the 80 wire size is 4", while the width for larger sizes is 4 $\frac{3}{4}$ ".

Each strip is $\frac{5}{16}$ " thick with ten terminals on $\frac{1}{2}$ " centers.

Thickness at the center of base block is $\frac{1}{2}$ ".

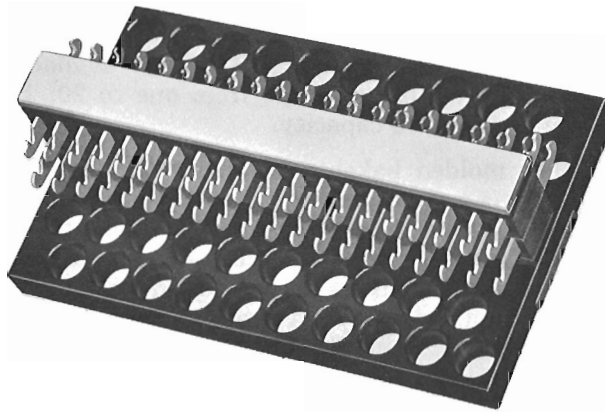
These blocks meet the requirements of AAR, Communications & Signal Section, specifications.

Ref. No.	Description	Piece No.
1	Terminal Block, 121C, 10 Wire.....	121C
2	Terminal Block, 221C, 20 Wire.....	221C
3	Terminal Block, 321C, 30 Wire.....	321C
4	Terminal Block, 421C, 40 Wire.....	421C
5	Terminal Block, 521C, 50 Wire.....	521C
6	Terminal Block, 621C, 60 Wire.....	621C
7	Terminal Block, 821C, 80 Wire.....	821C
8	Terminal Block, 1021C, 100 Wire.....	1021C
9	Terminal Block, 1221C, 120 Wire.....	1221C
10	Terminal Block, 1621C, 160 Wire.....	1621C
11	Terminal Block, 1821C, 180 Wire.....	1821C
12	Terminal Block, 2021C, 200 Wire.....	2021C



Fahnestock Terminal Blocks

20CB TYPE 20 TO 200 WIRES



No. 220CB

The 20CB Terminal Blocks are a compact series that will terminate from 20 to 200 wires. The bakelite fanning strips are 5" long by 3" wide. This makes these blocks interchangeable with the well known 21C-type on racks and mountings. The lugs, in rows of 20, are of well tinned phosphor bronze and spaced on $\frac{1}{4}$ " centers.

Ref. No.	Description	Piece No.
1	Terminal Block, Type 20CB, 20 Wire.....	220CB
2	Terminal Block, Type 20CB, 40 Wire.....	420CB
3	Terminal Block, Type 20CB, 60 Wire.....	620CB
4	Terminal Block, Type 20CB, 80 Wire.....	820CB
5	Terminal Block, Type 20CB, 100 Wire.....	1020CB
6	Terminal Block, Type 20CB, 120 Wire.....	1220CB
7	Terminal Block, Type 20CB, 160 Wire.....	1620CB
8	Terminal Block, Type 20CB, 180 Wire.....	1820CB
9	Terminal Block, Type 20CB, 200 Wire.....	2020CB



Fahnestock Terminal Blocks

26CB TYPE 26 TO 520 WIRES



No. 426CB

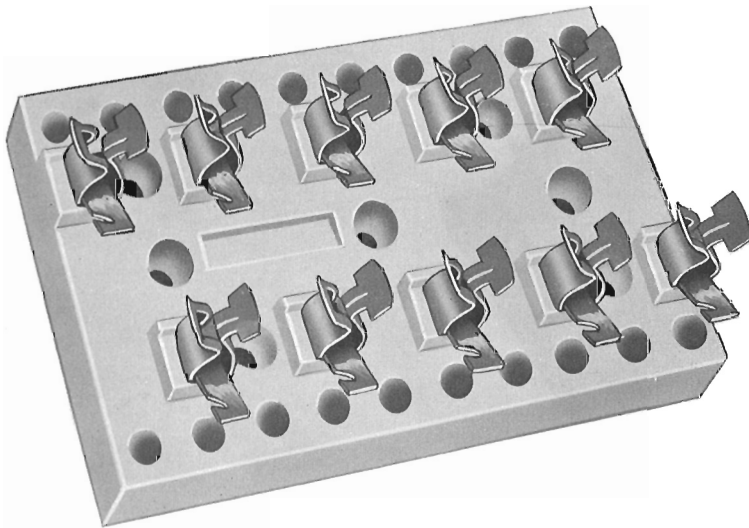
The 26CB Terminal Blocks provide a compact series suitable for terminating from 26 up to 520 wires. They are similar in general design to the well known 21C-type, but with shorter terminal lugs. The bakelite fanning strips are 8" long by 3" wide. Mounting hole centers are 1 3/8" x 7 1/2" for 8" shelf spacing. The lugs are of heavily tinned phosphor bronze, mounted 26 per row on 1/4" centers.

Ref. No.	Description	Piece No.
1	Terminal Block, Type 26CB, 26 Wire.....	126CB
2	Terminal Block, Type 26CB, 52 Wire.....	226CB
3	Terminal Block, Type 26CB, 104 Wire.....	426CB
4	Terminal Block, Type 26CB, 156 Wire.....	626CB
5	Terminal Block, Type 26CB, 208 Wire.....	826CB
6	Terminal Block, Type 26CB, 260 Wire.....	1026CB
7	Terminal Block, Type 26CB, 520 Wire.....	2026CB

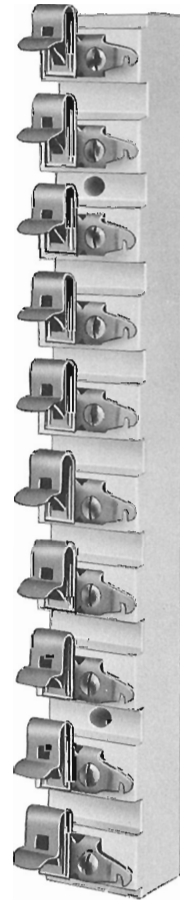


Fahnestock Terminal Blocks

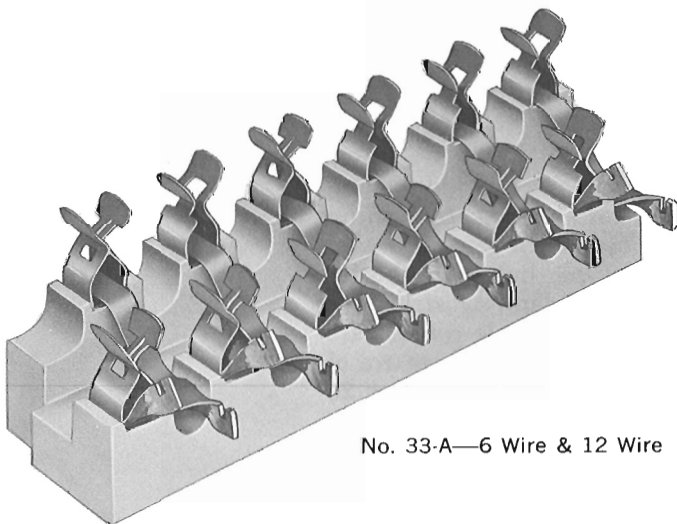
No. 13-B No. 14-B No. 23-B No. 33-A



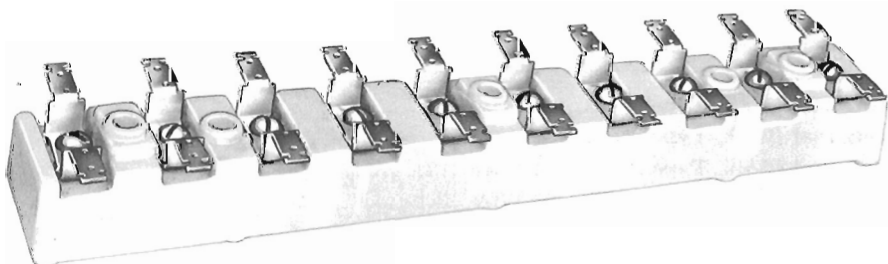
No. 23-B—10 Wire



No. 13-B
6 Wire
and
10 Wire



No. 33-A—6 Wire & 12 Wire



No. 14-B—6 Wire & 10 Wire



Fahnestock Terminal Blocks

No. 13-B No. 14-B No. 23-B No. 33-A No. 33-B

Illustrated are four styles of terminal blocks that have been found to meet various space requirements in communication and signal service, where connections have to be changed under conditions rendering soldering inconvenient. They will be familiar to many. Such improvements as experience has indicated, have been incorporated.

These blocks have been found invaluable by telegraph and telephone companies, radio stations, and manufacturers for providing a reliable connection between fixed cabling and wires to apparatus and batteries. Connections are easy to open for testing and changes.

The fixed cable conductors are terminated on the soldering lugs and the connection is made by inserting the wire from the apparatus, or battery, in the clip.

These blocks provide the only form of connection (excepting soldered joints) that has been found permanently satisfactory for use even under the severest conditions of exposure and vibration in such extremely sensitive circuits as are used in broadcasting. These Terminal

Blocks meet the requirements of the AAR, Communications & Signal Section, specifications.

The 13-B type is available in both 6 and 10 wire sizes, each providing one-inch spacing between wires. The blocks are 1¼" wide, 1½" high and either 6" or 10" long. The clips, the lugs and the screws are all of extra heavy bronze.

The 23-B block is usually mounted on a metal strap under which the cable or wires run. It is 5" long, 3¼" wide and 1¾" high overall. The clips are 1" apart, but, being staggered, they provide ½" spacing between wires.

The 33-A block, with the same spacing between wires as the 23-B, differs from it in the omission of fanning strip holes. The 33-A block is available in the 6 and 12 wire sizes, each 2¼" wide and either 3" or 6" long. The clips and lugs, as in the 13-B and 23-B blocks, are of heavy phosphor bronze.

The 33-B block is similar to the 33-A block except that it has solder lugs only.

A fourth style, the 14-B block, is identical with 13-B, except it has solder terminals only, for permanent connections.

Ref. No.	Description	Piece No.
1	Terminal Block, No. 13-B, 6 Wire.....	90222-6
2	Terminal Block, No. 13-B, 10 Wire.....	90222-10
3	Terminal Block, No. 23-B, 10 Wire.....	90223-10
4	Terminal Block, No. 33-A, 6 Wire.....	90224-6
5	Terminal Block, No. 33-A, 12 Wire.....	90224-12
6	Terminal Block, No. 33-B, 6 Wire.....	90224-6B
7	Terminal Block, No. 33-B, 12 Wire.....	90224-12B
8	Terminal Block, No. 14-B, 6 Wire.....	90219-6
9	Terminal Block, No. 14-B, 10 Wire.....	90219-10



Block Mountings No. 1-B and 2-B



Block Mounting AAR No. 1-B is made in accordance with AAR, Communications Section, Specification 2-G-7 and conforms to drawing C 1189. Made from 1/8" thick, quarter-hard, cold rolled steel the mounting is 1" wide, 10" long and stands off the mounting surface 2". Holes for attaching this mounting to terminal cabinet switchboards, protector terminal cabinets, etc., are on 8 1/2" centers.

Especially designed to accommodate Terminal Blocks shown on Pages 41-2 to 41-7 and Fuse Block No. 8-B shown on Page 40-5 this mounting finds many uses.

Block Mounting No. 2-B is designed after W.U. 2-B. Measuring 20" overall length, with mounting holes on 19" centers, it is formed from 1/8" x 1 1/4" quarter hard steel and contains 12 holes, 3/8" diameter for accommodating terminal blocks.

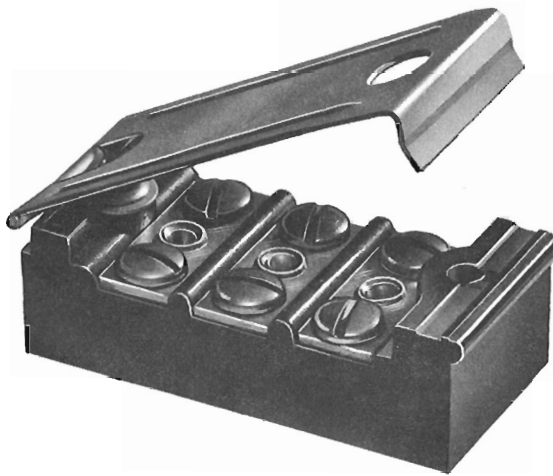
Both items are finished with one coat red oxide primer and one coat gray enamel, unless otherwise specified.

Ref. No.	Description	Piece No.
1	Block Mounting, No. 1-B.....	90237-1B
2	Block Mounting, No. 2-B.....	90237-2B



Fahnestock Connecting Block No. 7-B

3-WIRE



2¼" Long, 1" Wide, ¾" High

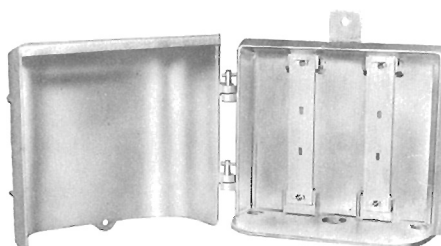
The No. 7-B Connecting Block is sturdy and compact. Its small dimensions make it ideal as a junction block for telephone and Morse sets. It is provided with large screws and a captive cover. They are packed 20 to a carton with No. 6—1¾" long, Rd. Hd. blued wood screws.

Ref. No.	Description	Piece No.
1	Connecting Block, No. 7-B, 3 Wire.....	90225

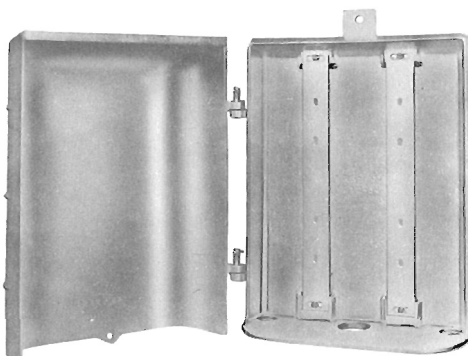


Cast Aluminum Terminal & Arrester Boxes

12 PAIR 24 PAIR 36 PAIR



12 Pair— $9\frac{1}{16}$ " high, $10\frac{1}{8}$ " wide, $4\frac{1}{16}$ " deep



24 Pair— $15\frac{1}{16}$ " high, $10\frac{5}{8}$ " wide, $4\frac{1}{16}$ " deep
36 Pair— $29\frac{3}{4}$ " high, $10\frac{5}{8}$ " wide, $4\frac{1}{16}$ " deep

Cast Aluminum Terminal or Arrester Boxes are made in exact accordance with AAR, Communications Section, Specification 1-A-82, and conform to Drawings 2931, 2932 and 3917. The capacity stated is based on the use of Terminal Blocks No. 33A. When Terminal Blocks No. 13A or No. 14B, or Arrester Mountings No. 3A or No. 4A are used the capacities are reduced by one-half. See Drawings C-2718 and C-2719.

The No. 1212-36 Box has a capacity of 36 pair when Terminal Blocks No. 33A are used, or a capacity of 26 pair when Terminal Blocks No. 13A or No. 14B, or Arrester Mountings No. 3A or No. 4A are used.

Holes in bottom are close to the back for use with cable. When the large hole is to be used for conduit, the order should so state, giving size of conduit.

Ref. No.	Description	Piece No.
1	Cast Aluminum Pole Box—12 Pair.....	1212-12
2	Cast Aluminum Pole Box—24 Pair.....	1212-24
3	Cast Aluimnum Pole Box—36 Pair.....	1212-36



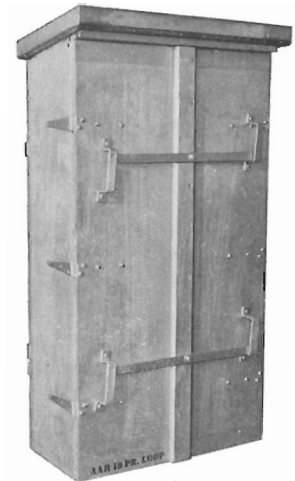
Wood Cable Boxes

12 PAIR TO 90 PAIR

Wood Cable Boxes listed below are constructed of redwood in accordance with AAR, Communications Section, specification 1-A-54 and drawings referred to therein. See, also, Drawings C-2715, C-2716, and C-2717, specification 1-A-6.

The boxes are in two series which are of the same general design except for their depth. Those in the first series are of a depth suitable for use where arrester protection only is required. The second series of boxes have sufficient depth to be used where fuses and arrester protection is required.

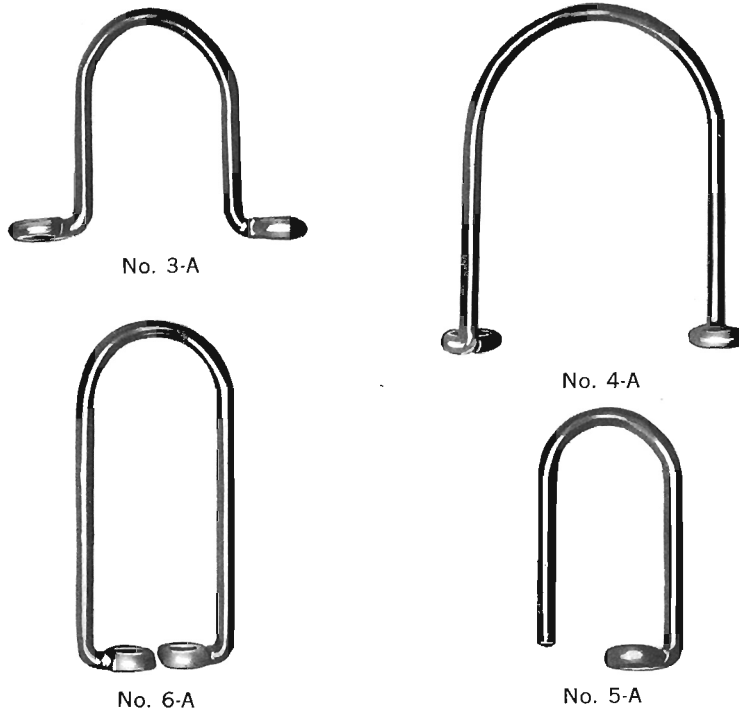
Unless otherwise specified boxes are made from good grade redwood, equipped with hot-galvanized hardware, given one coat of sealer inside and out and one coat of aluminum paint on the outside and on the inside of the doors. Fire resistant paint is not applied unless specifically mentioned on orders.



Ref. No.	Description	AAR Number	Piece No.
Series 1; for use where Cable Arrester Protection only is required.			
1	Wood Cable Box, 12 Pair.....	AAR-12-A	90320
2	Wood Cable Box, 12 Pair Loop.....	AAR-12-A-L	90321
3	Wood Cable Box, 18 Pair.....	AAR-18-A	90322
4	Wood Cable Box, 25 Pair.....	AAR-25-A	90323
5	Wood Cable Box, 18 Pair Loop.....	AAR-18-A-L	90324
6	Wood Cable Box, 25 Pair Loop.....	AAR-25-A-L	90325
7	Wood Cable Box, 36 Pair.....	AAR-36-A	90326
8	Wood Cable Box, 50 Pair.....	AAR-50-A	90327
9	Wood Cable Box, 60 Pair.....	AAR-60-A	90328
10	Wood Cable Box, 75 Pair.....	AAR-75-A	90329
11	Wood Cable Box, 90 Pair.....	AAR-90-A	90330
Series 2; for use where Fuses and Cable Arrester Protection is required.			
12	Wood Cable Box, 12 Pair.....	AAR-12-B	90331
13	Wood Cable Box, 12 Pair Loop.....	AAR-12-B-L	90332
14	Wood Cable Box, 18 Pair.....	AAR-18-B	90333
15	Wood Cable Box, 25 Pair.....	AAR-25-B	90334
16	Wood Cable Box, 18 Pair Loop.....	AAR-18-B-L	90335
17	Wood Cable Box, 25 Pair Loop.....	AAR-25-B-L	90336
18	Wood Cable Box, 36 Pair.....	AAR-36-B	90337
19	Wood Cable Box, 50 Pair.....	AAR-50-B	90338
20	Wood Cable Box, 60 Pair.....	AAR-60-B	90339
21	Wood Cable Box, 75 Pair.....	AAR-75-B	90340
22	Wood Cable Box, 90 Pair.....	AAR-90-B	90341



Cross Connecting Rings



Illustrations Approximately Half Actual Size

These standard sizes of cross connecting rings are commonly used on racks, in cabinets and many other locations to support wires or cables in either horizontal or vertical runs. They are accurately formed from No. 6 BWG heavy galvanized wire, and all holes for mounting screws are $\frac{1}{4}$ " diameter.

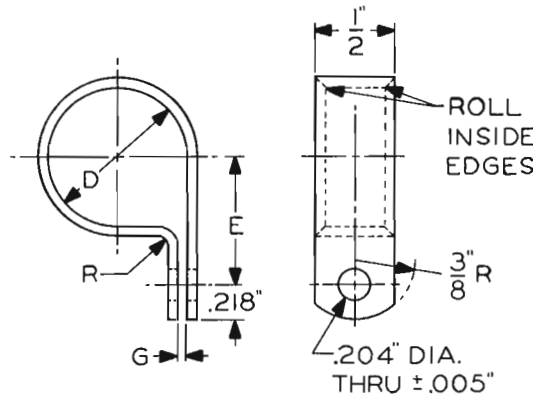
Ref. No.	Description	Piece No.
1	Cross Connecting Ring, No. 3-A, 2"	90249-3
2	Cross Connecting Ring, No. 4-A, 3"	90249-4
3	Cross Connecting Ring, No. 5-A, 1 $\frac{1}{4}$ "	90249-5
4	Cross Connecting Ring, No. 6-A, 2"	90249-6



Plastic Wire Clamps, Loop Type

CELLULOSE

NYLON



These Plastic Clamps have proved their merit in innumerable wiring applications. They permit ease and speed of assembly without sacrifice of tensile and impact strength. Being of insulating material and having rolled inside edges they greatly minimize the danger of short circuits or grounds. Virtually self-locking, they do not loosen from vibration.

They are ideal for anchoring wires and cables in all communication applications.

The Ethyl-Cellulose series is recommended for use inside buildings.

The Nylon series is recommended for use where temperatures are extreme, either hot or cold.

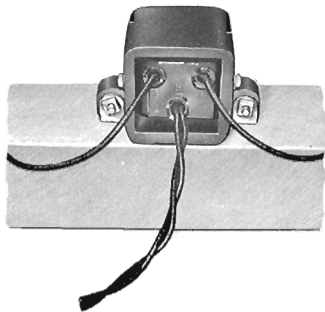
Sizes from 1/8" to 1 1/2", as listed below, are available packed 500 of one size to a carton.

When dimension G in illustration is 1/16", the diameter "D" is as shown in table below. Radius "R" is 1/32" on references 2 to 8 inclusive and 1/16" on larger sizes. Material is 1/16" thick ±1/64".

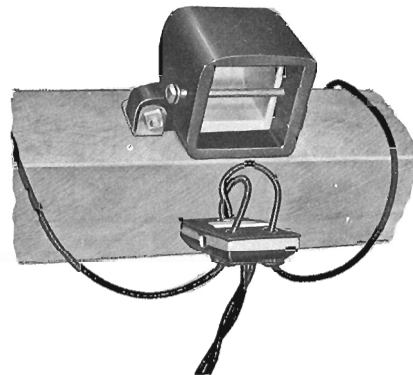
Ref. No.	Description	Diameter, Inches Dimension "D"	Dimension "E" Inches	Ethyl Cellulose Piece No.	Nylon Piece No.
2	Plastic Wire Clamp.....	1/8	21/64	742-2	1953-2A
3	Plastic Wire Clamp.....	3/16	25/64	742-3	1953-3A
4	Plastic Wire Clamp.....	1/4	27/64	742-4	1953-4A
5	Plastic Wire Clamp.....	5/16	29/64	742-5	1953-5A
6	Plastic Wire Clamp.....	3/8	31/64	742-6	1953-6A
7	Plastic Wire Clamp.....	7/16	17/32	742-7	1953-7A
8	Plastic Wire Clamp.....	1/2	9/16	742-8	1953-8A
9	Plastic Wire Clamp.....	9/16	5/8	742-9	1953-9B
10	Plastic Wire Clamp.....	5/8	41/64	742-10	1953-10B
11	Plastic Wire Clamp.....	11/16	21/32	742-11	1953-11B
12	Plastic Wire Clamp.....	3/4	49/64	742-12	1953-12B
14	Plastic Wire Clamp.....	7/8	13/16	742-14	1953-14B
16	Plastic Wire Clamp.....	1	29/32	742-16	1953-16B
18	Plastic Wire Clamp.....	1- 1/8	31/32	742-18	1953-18B
19	Plastic Wire Clamp.....	1- 3/16	1- 1/32	742-19	Not Avail.
20	Plastic Wire Clamp.....	1- 1/4	1- 5/32	742-20	1953-20B
24	Plastic Wire Clamp.....	1- 1/2	1-15/32	742-24	1953-24B



Dry Spot Type No. 90387



Dry Spot Assembled
in Typical Mounting
on Crossarm



Base Removed, Showing
Retaining Bolt and
Typical Loops in Legs

Designed especially for use where drops are made from open wire carrier lines, the Dry Spot No. 90387 provides a compact anchorage. The twisted pair is fed up through one hole in the base, loops are formed, and the legs pushed out through the remaining two holes.

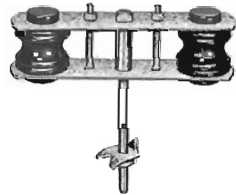
The porcelain housing is designed to permit the gasketed base to be inserted with either the single hole or pair of holes located adjacent to the crossarm.

Three #10 x 1¼" wood screws, packed in a coin envelope, are supplied with each unit for mounting to crossarms.

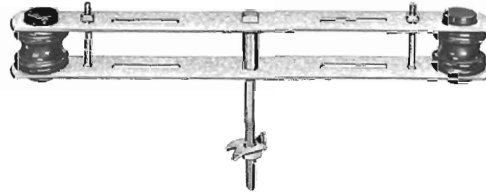
Ref. No.	Description	Piece No.
1	Dry Spot No. 90387.....	90387



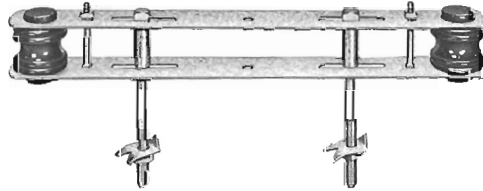
McKeen Break Arms



R-5012



R-5019



R-5016

Designed for quick and easy installation when line drops are made. McKeen Break Arms combine simplicity of construction with light weight. Exceptional strength and immunity from grounds assure dependability.

Requiring no drilling of extra holes in cross-arms, McKeen Break Arms are mounted, using $\frac{1}{2}$ " x $7\frac{1}{2}$ " machine bolts, in existing pin holes.

Solid porcelain insulators are clamped between galvanized steel plates with suitable pipe spacers and carriage bolts. A special lock washer is supplied with every mounting bolt.

On new construction R-5012, with $7\frac{1}{4}$ " insulator spacing, can be used. Where a through wire on an existing line must be cut for a line drop, R-5019, with 19" insulator spacing, permits tying around the insulators without taking slack out of adjacent spans.

Where dead-ending at poles having double crossarms is necessary, R-5016 affords a solid anchorage supported by both crossarms. Slotted mounting holes accommodate mounting bolts on centers from 7" to 12".

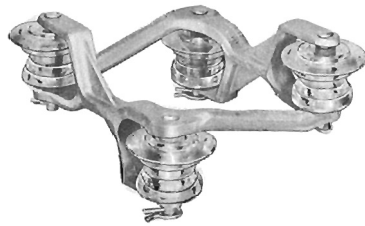
Ref. No.	Description	Piece No.
1	McKeen Break Arm, Type R-5012.....	R-5012
2	McKeen Break Arm, Type R-5019.....	R-5019
3	McKeen Break Arm, Type R-5016.....	R-5016



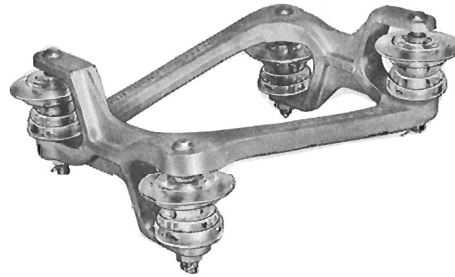
Case Aluminum Transposition Brackets

SPAN TYPE

POINT TYPE



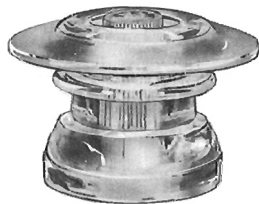
SE-1611, Span Type, Right Hand Shown
SE-1590, Span Type, Left Hand, Not Shown



SE-1786, Span Type, Right Hand, Shown
SE-1795, Span Type, Left Hand, Not Shown



SE-1648, Point Type, Right Hand, 8" Wire Spacing, Shown
SE-1780, Point Type, Left Hand, 8" Wire Spacing, Not Shown
SE-1650, Point Type, Right Hand, 6" Wire Spacing, Not Shown



Glass Insulator



Rubber Insulator

"Case" Transposition Brackets, sturdily constructed of light weight aluminum, are offered in three series. All come equipped with pins and cotter pins. Either No. 1088 glass insulators or RC-1 rubber insulators may be used with "Case" brackets. They should be specified as separate items on the order for brackets.



Case Aluminum Transposition Brackets

SPAN TYPE

POINT TYPE

Span type brackets, SE-1611 and SE-1590, are offered for use where pole spacing is normal and wire tension does not exceed 3,000 lbs. per pair. Exact location of transposition point is easily maintained, regardless of distance from crossarms. Wire spacing of 8" is provided when used with matching insulators.

"High-Strength" span type brackets, SE-1786 and SE-1795, are designed for use on river crossings or other extra long spans where wire tension is abnormally high. Wire spacing is 8". Brackets will withstand wire tension of 6,000 lbs. per pair.

Point type, crossarm mounted brackets SE-1648 and SE-1780, for 8" wire spacing, and SE-1650 for 6" wire spacing may be applied to crossarms having pin holes on either 8" or 12" centers, using 1/2" x 6" bolts. Wire tension up to 3,000 lbs. per pair can be carried.

A variety of transposition patterns can be devised by alternate or repetitive use of right or left hand brackets. Reference table shows direction of throw.

Glass insulators of matching design are supplied separately to order for use with "Case" brackets. Equipped with rubber bushings, they provide rugged, yet resilient anchorage for span wires.

Rubber insulators may be substituted for glass in areas where breakage is prevalent.

Ref. No.	Description	Piece No.
1	Span Type Transposition Bracket, SE-1611, Right Hand.....	91150
2	Span Type Transposition Bracket, SE-1590, Left Hand.....	91151
3	High-Strength Span Type Transposition Bracket, SE-1786, Right Hand.....	91152
4	High-Strength Span Type Transposition Bracket, SE-1795, Left Hand.....	91153
5	Point Type Transposition Bracket, SE-1648, Right Hand.....	91154
6	Point Type Transposition Bracket, SE-1780, Left Hand.....	91155
7	Point Type Transposition Bracket, SE-1650, Right Hand.....	91156
8	Glass Insulator for Transposition Bracket, Hemingray 1088.....	91157
9	Rubber Insulator for Transposition Bracket, RC-1.....	91158



Radio Transmitter Identification Tags



Typical Designs (Full size)

These tags meet the F.C.C. requirements for identification of mobile radio transmitters. The tags are etched on polished aluminum sheet with a black background. Lettering is to customer's individual requirements, but usually states: 1, Station Call sign, 2, Licensee, 3, Location of Transmitter records, 4, Operating frequency.

Most tags measure either 3" x 1-⁷/₁₆" or 4-¹/₈" x 1-⁷/₈" as illustrated above but, any size can be prepared to individual order. Four self tapping screws are provided with each tag, for mounting.

Ref. No.	Description	Piece No.
1	Radio Transmitter Identification Tags (State lettering required).....	90170



SECTION 42

Cords — Plugs — Jacks
Panels — Strips — Boxes
Cabinets — Switchboards

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Telegraph and Telephone Jacks, Lamp Jack.....	42-8 to 13
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WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



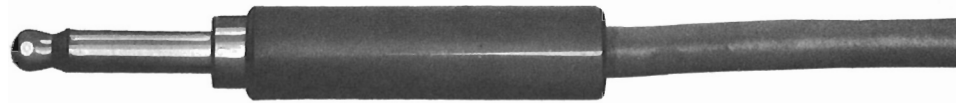
Fahnestock Test and Patching Cords

CORDS ONLY

CORDS WITH PLUGS



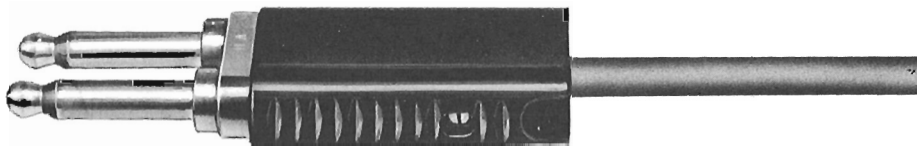
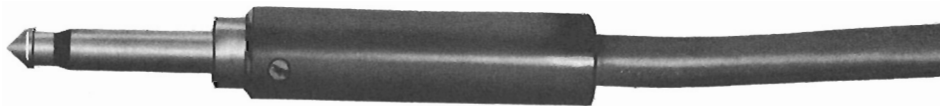
No. 5-B with No. 1-C Plugs



No. 5-C with No. 3-B Plugs



No. 5-C with No. 7-B Plug, Spade Terminals and Cord Holder



No. 241-A Twin Plugs with Cord

Test and Patching Cords are furnished with Plastic Insulation of which Black, White, Red and Green colors are available. Color is permanent; cords can be cleaned with damp rag. Insulation will not absorb moisture or be injured in any way by perspiration. All cord conductors are soldered to terminal lugs for attaching to plugs. Plugs can be furnished with red or black shells as required.

Standard Test and Patching Cords as listed on following pages are furnished unless other color combinations are specified. Red cord is used only on polarity-reversing patching cords.



Fahnestock Test and Patching Cords

CORDS ONLY

CORDS WITH PLUGS

Single Conductor Cords

Ref. No.	Description	Piece No.
	No. 5-B, 1/4" Diameter, Black Plastic, Single Conductor, Test and Patching Cord equipped with No. 1-C single conductor plugs, with black shell on, each end.	
1	Test and Patching Cord, No. 5B—1-Foot long.....	90246-1
2	Test and Patching Cord, No. 5B—2-Feet long.....	90246-2
3	Test and Patching Cord, No. 5B—3-Feet long.....	90246-3
4	Test and Patching Cord, No. 5B—4-Feet long.....	90246-4
5	Test and Patching Cord, No. 5B—5-Feet long.....	90246-5
6	Test and Patching Cord, No. 5B—6-Feet long.....	90246-6
	No. 5-B, 1/4" Diameter, Black Plastic, Single Conductor, Test Cord equipped with No. 1-C single conductor plug, with black shell, on one end, and with cord fastener and cord holder on other end.*	
11	Single Conductor Cord, No. 5B—1 Foot long.....	90246-11
12	Single Conductor Cord, No. 5B—2 Feet long.....	90246-12
13	Single Conductor Cord, No. 5B—3 Feet long.....	90246-13
14	Single Conductor Cord, No. 5B—4 Feet long.....	90246-14
15	Single Conductor Cord, No. 5B—5 Feet long.....	90246-15
16	Single Conductor Cord, No. 5B—6 Feet long.....	90246-16
	No. 5-B, 1/4" Diameter, Black Plastic, Single Conductor, Test Cord equipped with No. 1-C single conductor plug, with black shell, on one end, and a cord fastener on the other end.*	
21	Single Conductor Cord, No. 5B—1 Foot long.....	90246-21
22	Single Conductor Cord, No. 5B—2 Feet long.....	90246-22
23	Single Conductor Cord, No. 5B—3 Feet long.....	90246-23
24	Single Conductor Cord, No. 5B—4 Feet long.....	90246-24
25	Single Conductor Cord, No. 5B—5 Feet long.....	90246-25
26	Single Conductor Cord, No. 5B—6 Feet long.....	90246-26
	No. 5-B, 1/4" Diameter, Black Plastic, Single Conductor, Test and Patching Cord ONLY equipped with a soldering lug only at each end for attaching to No. 1-C single conductor plugs.	
27	Single Conductor Cord only, No. 5-B—1 Foot long.....	90246-27
28	Single Conductor Cord only, No. 5-B—2 Feet long.....	90246-28
29	Single Conductor Cord only, No. 5-B—3 Feet long.....	90246-29
30	Single Conductor Cord only, No. 5-B—4 Feet long.....	90246-30
31	Single Conductor Cord only, No. 5-B—5 Feet long.....	90246-31
32	Single Conductor Cord only, No. 5-B—6 Feet long.....	90246-32
47	1/4" Diameter Single Conductor Black Plastic Cord, in bulk.....	90246-47

Continued on Next Page

Standard cords as listed above are furnished unless other color combinations are specified.

*Spade Terminals furnished when specified.



Fahnestock Test and Patching Cords

CORDS ONLY

CORDS WITH PLUGS

(continued)

Double Conductor Cords

Ref. No.	Description	Piece No.
	No. 5-C, 1/4" Diameter, Green Plastic, Double Conductor, Test and Patching Cord equipped with No. 3-B ball tip double conductor plug, with red shell, on each end.	
51	Test and Patching Cord, No. 5-C—1 Foot long.....	90247-1
52	Test and Patching Cord, No. 5-C—2 Feet long.....	90247-2
53	Test and Patching Cord, No. 5-C—3 Feet long.....	90247-3
54	Test and Patching Cord, No. 5-C—4 Feet long.....	90247-4
55	Test and Patching Cord, No. 5-C—5 Feet long.....	90247-5
56	Test and Patching Cord, No. 5-C—6 Feet long.....	90247-6
	No. 5-C, 1/4" Diameter, Green Plastic, Double Conductor, Cord equipped with No. 3-B ball tip double conductor plug, with red shell, on one end only; nothing on other end, for attaching to portable phones, etc.	
61	Double Conductor Cord, No. 5-C with 1 plug No. 3-B—1 Foot long.....	90247-11
62	Double Conductor Cord, No. 5-C with 1 plug No. 3-B—2 Feet long.....	90247-12
63	Double Conductor Cord, No. 5-C with 1 plug No. 3-B—3 Feet long.....	90247-13
64	Double Conductor Cord, No. 5-C with 1 plug No. 3-B—4 Feet long.....	90247-14
65	Double Conductor Cord, No. 5-C with 1 plug No. 3-B—5 Feet long.....	90247-15
66	Double Conductor Cord, No. 5-C with 1 plug No. 3-B—6 Feet long.....	90247-16
	No. 5-C, 1/4" Diameter, Green Plastic, Double Conductor, Cord equipped with one No. 3-B ball tip double conductor plug, with red shell, on one end and two spade terminals and cord holder on other end.	
67	Double Conductor Cord, No. 5-C—1 Foot long.....	90247-17
68	Double Conductor Cord, No. 5-C—2 Feet long.....	90247-18
69	Double Conductor Cord, No. 5-C—3 Feet long.....	90247-19
70	Double Conductor Cord, No. 5-C—4 Feet long.....	90247-20
71	Double Conductor Cord, No. 5-C—5 Feet long.....	90247-21
72	Double Conductor Cord, No. 5-C—6 Feet long.....	90247-22
	No. 5-C, 1/4" Diameter, Green Plastic, Double Conductor, Cord ONLY equipped with two soldering lugs only at each end for attaching to double conductor plugs No. 3-B or No. 7-B.	
73	Double Conductor Cord Only, No. 5-C—1 Foot long.....	90247-23
74	Double Conductor Cord Only, No. 5-C—2 Feet long.....	90247-24
75	Double Conductor Cord Only, No. 5-C—3 Feet long.....	90247-25
76	Double Conductor Cord Only, No. 5-C—4 Feet long.....	90247-26
77	Double Conductor Cord Only, No. 5-C—5 Feet long.....	90247-27
78	Double Conductor Cord Only, No. 5-C—6 Feet long.....	90247-28

Continued on Next Page

Standard cords as listed above are furnished unless other color combinations are specified.



Fahnestock Test and Patching Cords

CORDS ONLY

CORDS WITH PLUGS

(continued)

Double Conductor Cords

Ref. No.	Description	Piece No.
	No. 5-C, 1/4" Diameter, Green Plastic, Double Conductor, Cord ONLY equipped with two soldering lugs on one end for attaching to double conductor plugs No. 3-B or No. 7-B and with two spade terminals and cord holder on other end.	
79	Double Conductor Cord Only, No. 5-C—1 Foot long.....	90247-29
80	Double Conductor Cord Only, No. 5-C—2 Feet long.....	90247-30
81	Double Conductor Cord Only, No. 5-C—3 Feet long.....	90247-31
82	Double Conductor Cord Only, No. 5-C—4 Feet long.....	90247-32
83	Double Conductor Cord Only, No. 5-C—5 Feet long.....	90247-33
84	Double Conductor Cord Only, No. 5-C—6 Feet long.....	90247-34
	No. 5-D, 1/4" Diameter, Green Plastic, Double Conductor, Test and Patching cord equipped with No. 7-B—Spear tip double conductor plugs, with red shell, on each end.	
101	Test and Patching Cord, No. 5-B—1 Foot long.....	90248-1
102	Test and Patching Cord, No. 5-D—2 Feet long.....	90248-2
103	Test and Patching Cord, No. 5-D—3 Feet long.....	90248-3
104	Test and Patching Cord, No. 5-D—4 Feet long.....	90248-4
105	Test and Patching Cord, No. 5-D—5 Feet long.....	90248-5
106	Test and Patching Cord, No. 5-D—6 Feet long.....	90248-6
	No. 5-D, 1/4" Diameter, Green Plastic, Double Conductor, Cord equipped with one No. 7-B—Spear tip double conductor plug with red shell, on one end only; nothing on other end, for attaching to portable phones, etc.	
111	Double Conductor Cord, No. 5-D with 1 plug No. 7-B—1 Foot long.....	90248-11
112	Double Conductor Cord, No. 5-D with 1 plug No. 7-B—2 Feet long.....	90248-12
113	Double Conductor Cord, No. 5-D with 1 plug No. 7-B—3 Feet long.....	90248-13
114	Double Conductor Cord, No. 5-D with 1 plug No. 7-B—4 Feet long.....	90248-14
115	Double Conductor Cord, No. 5-D with 1 plug No. 7-B—5 Feet long.....	90248-15
116	Double Conductor Cord, No. 5-D with 1 plug No. 7-B—6 Feet long.....	90248-16

Continued on Next Page

Standard patching cords as listed above are furnished unless other color combinations are specified.



Fahnestock Special Cords

(continued)

Double Conductor Cords

Ref. No.	Description	Piece No.
	Receiver Cords	
	No. 5-E, ¼" Diameter, Black Plastic, Double Conductor, Receiver Cord equipped with receiver tips on one end and spade terminals on other end.	
153	Receiver Cord, No. 5-E—Double Conductor, Black Plastic, 2'6" long.....	90248-26
156	Receiver Cord, No. 5-E—Double Conductor, Black Plastic, 5'6" long.....	90248-56
	Twin Plug Cords	
161	No. 5-C Green Plastic Double Conductor Cord with No. 241-A Twin Plug each end, 6' long..... <i>(Other lengths furnished as specified)</i>	90268
	"Y" Cord	
163	Green, Double Conductor "Y" Cord, 3' long, with No. 3-B Plugs.....	90247-103
	Double Conductor Bulk Cords	
165	Green, ¼" Diameter, Double Conductor Cord, in bulk.....	90247-50G
166	White, ¼" Diameter, Double Conductor Cord, in bulk.....	90247-50W
167	Red, ¼" Diameter, Double Conductor Cord, in bulk.....	90247-50R
168	Black, ¼" Diameter, Double Conductor Cord, in bulk.....	90247-50B



Single and Double Conductor Plugs



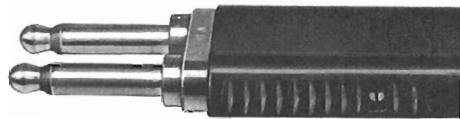
Single Conductor Plug No. 1-C, Ball Tip



Double Conductor Plug No. 3-B, Ball Tip



Double Conductor Plug No. 7-B, Spear Tip



Twin Plug No. 241A

Single and Double Conductor Plugs are of highest quality and accurate as to dimensions to insure correct circuit connections in all types of standard telephone and telegraph jacks. All are insulated to withstand a 1000 volt A.C. test.

Their mechanical construction and all other characteristics meet the requirements of the AAR, Communications & Signal Section.

The Standards are Black Shell for Single Conductor Plugs, Red Shell for Double Conductor Plugs.

Ref. No.	Description	Piece No.
1	Single Conductor Plug No. 1-C, with Black Shell.....	90261-1
2	Single Conductor Plug No. 1-C, with Red Shell.....	90261-2
3	Double Conductor Plug No. 3-B, Ball tip, with Black Shell.....	90262-1
4	Double Conductor Plug No. 3-B, Ball tip with Red Shell.....	90262-2
5	Double Conductor Plug No. 7-B, Spear tip, with Black Shell.....	90263-1
6	Double Conductor Plug No. 7-B, Spear tip, with Red Shell.....	90263-2
7	Twin Plug No. 241A, for No. 410A Jack.....	90266

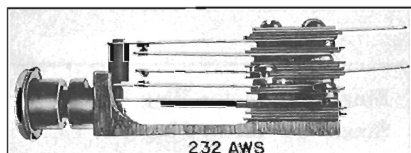
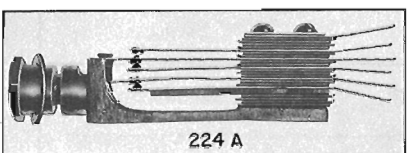
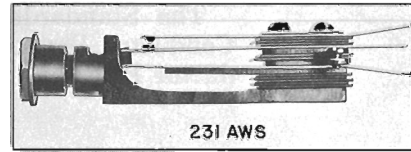
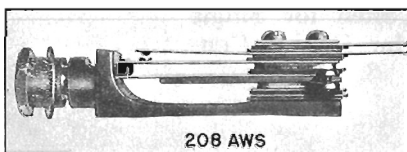
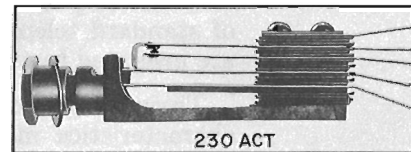
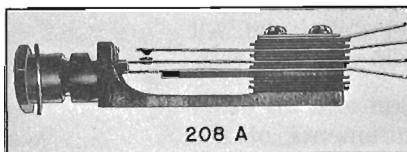
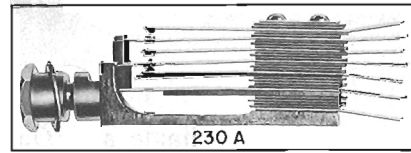
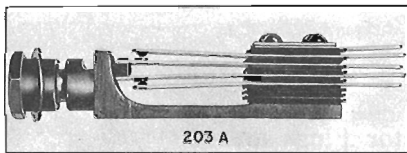
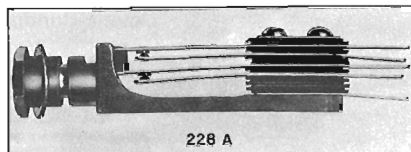
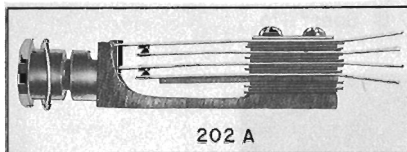
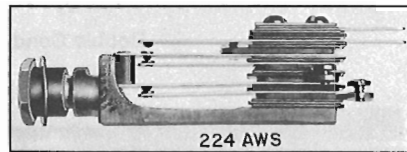
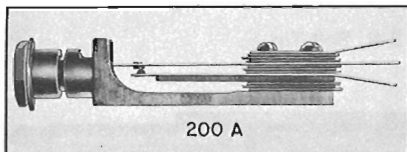


Fahnestock Telegraph and Telephone Jacks

CAST BRASS FRAMES NICKEL SILVER SPRINGS

HEAVY DUTY SILVER-ZINC ALLOY CONTACTS

(Panel and Card Holder shown on Page 42-14)





Fahnestock Telegraph and Telephone Jacks

CAST BRASS FRAMES NICKEL SILVER SPRINGS

HEAVY DUTY SILVER-ZINC ALLOY CONTACTS

These Telegraph and Telephone Jacks are constructed on the conventional cast brass frames and have the long used, comparatively flexible, nickel silver springs. Contacts are the heavy duty silver-zinc alloy type which have proven so extremely successful in service, because of their permanent low resistance characteristics.

Insulation material is of the finest quality to withstand excess potentials. Each individual jack is given a 1000 volt insulation breakdown test and low voltage continuity test before shipment.

These jacks meet AAR, Communications & Signal Section, requirements.

Note: Suffix letters "WS" denote screw connections instead of solder lugs on certain springs as illustrated.

Saw-tooth contacts will be furnished when specified on order.

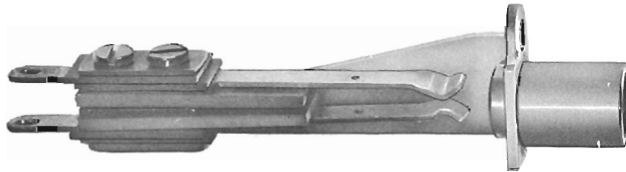
Panels and Card Holders for use with these jacks are shown and described on Page 42-14.

Ref. No.	Description	Piece No.
1	Telegraph Jack, No. 200A.....	200A
2	Telegraph Jack, No. 202A.....	202A
3	Telegraph Jack, No. 203A.....	203A
4	Telegraph Jack, No. 208A.....	208A
5	Telegraph Jack, No. 208A1C.....	208A1C
6	Telegraph Jack, No. 208AWS, 2 springs with screw connections.....	208AWS
7	Telegraph Jack, No. 224A.....	224A
8	Telegraph Jack, No. 224AWS, 4 springs with screw connections.....	224AWS
9	Telegraph Jack, No. 228A.....	228A
10	Telegraph Jack, No. 228AWS, 3 springs with screw connections.....	228AWS
11	Telegraph Jack, No. 230A.....	230A
12	Telegraph Jack, No. 230ACT.....	230ACT
13	Telegraph Jack, No. 231AWS, 2 springs with screw connections.....	231AWS
14	Telegraph Jack, No. 232AWS, 4 springs with screw connections.....	232AWS
15	Telegraph Jack, No. 233A (not illustrated).....	233A

See also, Pages 42-11 to 42-13



Fahnestock Lamp Jack No. 3-A



No. 3-A Lamp Jack



T-2 Slide Base Lamp



Lamp Cap

The No. 3-A Lamp Jack is offered for use in switchboards, panel boards, or as an indicator light where panel space is limited. Space requirement is same as single mounted telephone jacks shown on the following page.

Telephone switchboard lamps, slide type T-2, illustrated above, but not supplied with jacks, are used. A special Lamp Extractor of black vulcanized fibre is a handy tool designed to remove lamps quickly and easily.

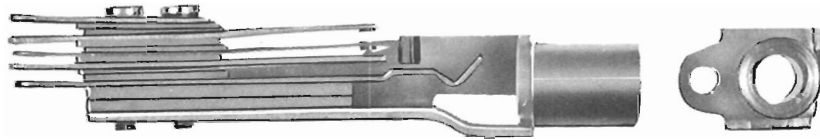
Opalescent lamp caps in white, red, amber, and green, fit inside of the jack ferrule.

Ref. No.	Description	Piece No.
1	Lamp Jack No. 3-A, without lamp cap.....	90264
2	Lamp Jack No. 3-A, with lamp cap, color as specified. Piece No. suffix letter is initial of color. Example shown denotes white.....	90264(W)
3	Lamp Cap for Lamp Jack No. 3-A. Color designation same as Ref. No. 3 above.....	90817-5(W)
4	Lamp Extractor	90264-5
5	Slide Base Lamp—T-2, 24 Volt, 40 M. A.....	15-02
6	Lamp cap extractor	90264-6

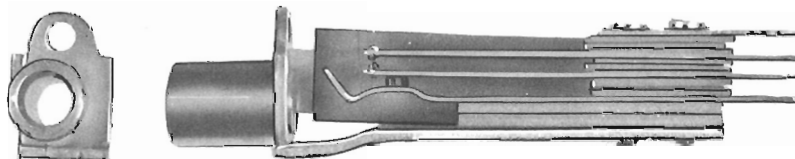


Fahnestock Telephone Jacks

SINGLE MOUNTED



Type A



Type C

Single mounted jacks all have punched and formed frames with turned brass bushings. The inner end of the bushing is spun into the frame.

Silver-zinc alloy contact points in phosphor bronze spring insure permanently low resistance contacts. Terminals of all springs are heavily tinned for easy soldering and are arranged to accommodate at least two No. 16 B&S gauge wires. When specified screw connections will be furnished on certain contacts in types 215 and 236 as used in Jack Boxes shown and described on Pages 42-18 and 42-19. The suffix letters "WS" are used to designate jacks having screw connections.

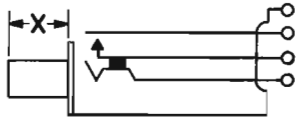
Every jack is subjected to a 1000 volt insulation breakdown test and a low voltage continuity test before shipment.

No. 6-32 Rd. Hd. Nickle Plated Brass Machine Screws $\frac{3}{8}$ " long are furnished for mounting.

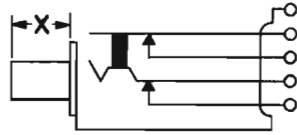


Fahnestock Telephone Jacks

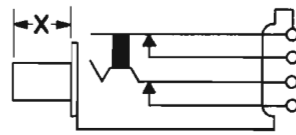
SINGLE MOUNTED



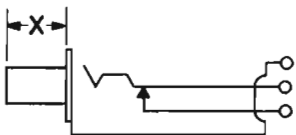
215



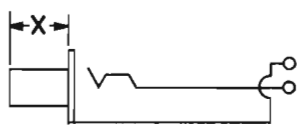
216



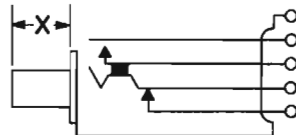
217



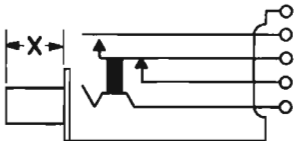
218, 219



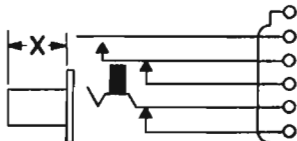
223



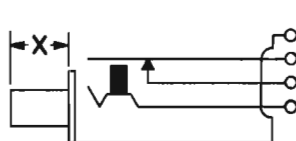
225



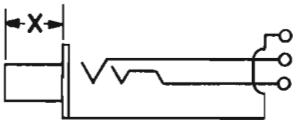
226



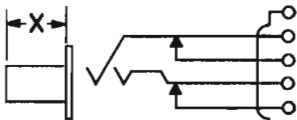
236



237



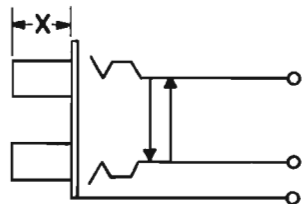
238, 246



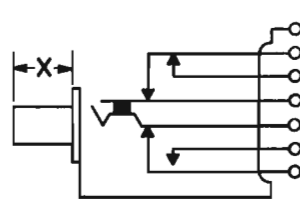
239, 248



303



410A



438

See preceding and following pages for additional information and references



Fahnestock Telephone Jacks

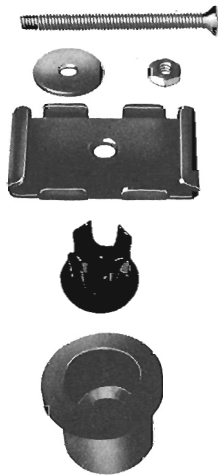
SINGLE MOUNTED

Ref. No.	Description	Sleeve Length "X"	Piece No.
1	Telephone Jack.....	37/64"	215A
2	Telephone Jack.....	37/64"	215C
2a	Telephone Jack.....	37/64"	215CWS
3	Telephone Jack.....	37/64"	216A
4	Telephone Jack.....	37/64"	216C
5	Telephone Jack.....	37/64"	217A
6	Telephone Jack.....	37/64"	217C
7	Telephone Jack.....	37/64"	218A
8	Telephone Jack.....	37/64"	218C
9	Telephone Jack.....	37/64"	219A
10	Telephone Jack.....	37/64"	219C
10a	Telephone Jack.....	35/64"	220A
10b	Telephone Jack.....	35/64"	220C
21	Telephone Jack.....	37/64"	223A
22	Telephone Jack.....	37/64"	223C
25	Telephone Jack.....	37/64"	225A
26	Telephone Jack.....	37/64"	225C
27	Telephone Jack.....	37/64"	226A
28	Telephone Jack.....	37/64"	226C
37	Telephone Jack.....	37/64"	236A
38	Telephone Jack.....	37/64"	236C
38a	Telephone Jack.....	37/64"	236CWS
39	Telephone Jack.....	37/64"	237A
40	Telephone Jack.....	37/64"	237C
41	Telephone Jack.....	35/64"	238A
42	Telephone Jack.....	35/64"	238C
43	Telephone Jack.....	35/64"	239A
44	Telephone Jack.....	35/64"	239C
45	Telephone Jack.....	35/64"	240A
46	Telephone Jack.....	35/64"	241A
48	Telephone Jack.....	35/64"	243A
56	Telephone Jack.....	1/2"	246A
57	Telephone Jack.....	1/2"	246C
58	Telephone Jack.....	1/2"	248A
59	Telephone Jack.....	1/2"	248C
65	Telephone Jack.....	35/64"	280C
67	Telephone Jack.....	35/64"	285A
70	Telephone Jack.....	37/64"	303A
71	Telephone Jack.....	37/64"	303C
75	Telephone Jack.....	35/64"	394C
80	Telephone Jack.....	37/64"	410A
81	Telephone Jack.....	35/64"	411C
101	Telephone Jack.....	37/64"	438A
102	Telephone Jack.....	37/64"	438C

See two preceding pages for additional information



Fahnestock Jack Panels and Card Holders



Card Holder No. 34-A is of brass with dull black finish and is furnished complete with one No. 3-48 screw, washer and nut for mounting as shown.

A clear celluloid card cover is offered to keep designation markings clean and legible.

Green, Orange and Red Celluloid card covers are also available when specified.

No. 4-C Jack Panel is of molded composition and will accommodate 16 jacks of the types illustrated and listed on Pages 42-8 and 42-9. The panel is 8" high and 5 1/4" wide.

Jack Panel No. 4-CB is identical except black, laminated Bakelite sheet.

Filler Panel 1-A (Not illustrated) is a sheet metal panel formed to fit on a rack in place of the No. 4-C Jack Panel and be secured by the same four screws, its face being flush with the front of No. 4-C Panels.

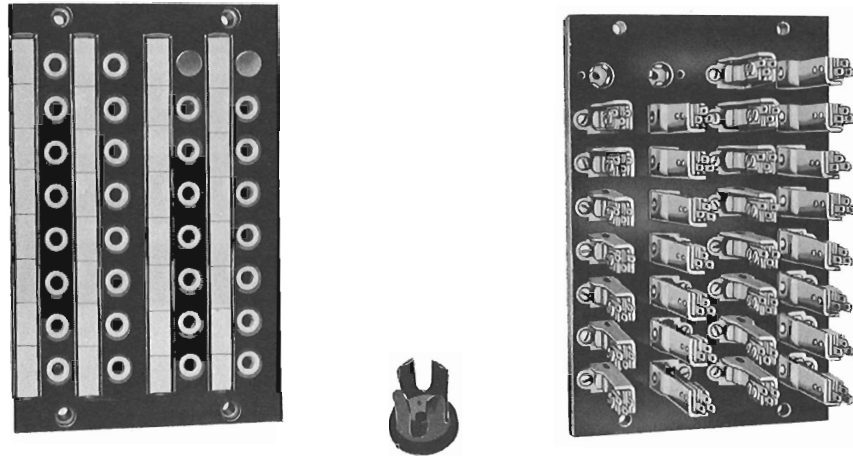
The filler button is of black bakelite with spring holder. It remains securely in place and enhances the appearance where a full panel of jacks is not used.

Plug seat bushings are turned from black bakelite rod to accurate dimensions.

Ref. No.	Description	Piece No.
1	Card Holder, No. 34-A complete with No. 3-48 screw, washer and nut.....	90242
2	Celluloid Card Cover for Card Holder, No. 34-A.....	1056-103
3	White Bristolboard Card.....	1056-102
4	Filler Button for Jack Panel, No. 4-C.....	90242-1
5	Jack Panel, No. 4-CB—Accommodates 16 Telegraph Jacks (Bakelite).....	90224-B
6	Jack Panel, No. 4-C—Accommodates 16 Telegraph Jacks.....	90224
7	Filler Panel, No. 1-A (not illustrated).....	E.S.-1650
8	Plug-seat Bushing No. 1-A.....	90242-2



Fahnestock Jack Panel No. 5-D



The Type 5-D Jack Panel is interchangeable with the Jack Panel, 4-C, and Filler Panel, 1-A, shown and listed on opposite page, but has a capacity of 32 Jacks of the type shown on pages 42-11 to 42-13. When it is necessary to add capacity to switchboards equipped with the 4-C panels it can be accomplished with the 5-D panels without increasing the space used.

These panels will be furnished completely equipped with jacks as may be specified. When ordered with less than 32 jacks the unused spaces will be blanked with filler buttons.

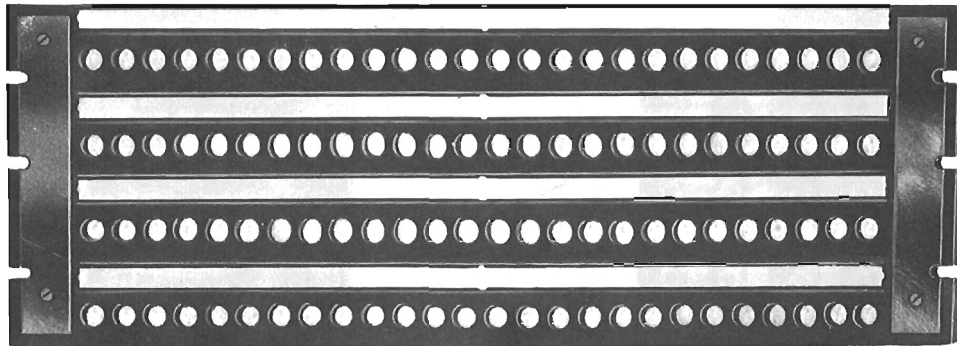
Designation Strips with white card and celluloid cover are regularly supplied, as illustrated.

Ref. No.	Description	Piece No.
1	Jack Panel, No. 5-D with designation strips.....	90224-32
2	Jack Panel, No. 5-D with 32 No. 218-C Jacks.....	90224-32-218C
3	Jack Panel, No. 5-D with 32 No. 217-C Jacks.....	90224-32-217C
4	Jack Panel, No. 5-D with Jacks and Filler Buttons as specified.....	90224-32X
5	Filler Button.....	90385-2
6	Designation Strip complete with card and celluloid.....	90242-8



Fahnestock Jack Panel No. 5-E

FOR MOUNTING ON STANDARD 19" RACKS



Type No. 5E Jack Panels are designed for 19" rack mounting. Notched openings along the edges match the standard rack drilling. Individual holes, including blind, tapped holes, accommodate Type C jacks, as shown on pages 42-11 to 42-13.

The 104 position panel contains four rows of 26 holes. Rows are on $1\frac{3}{4}$ " centers. Holes are on $\frac{5}{8}$ " centers. Overall height of panel is 7".

The 130 position panel contains five rows of 26 holes. Rows are on $1\frac{3}{4}$ " centers. Holes are on $\frac{5}{8}$ " centers. Overall height of panel is $8\frac{3}{4}$ ".

The 90 position panel has six rows of 15 holes. Rows are on $1\frac{3}{4}$ " centers. Holes are on 1"

centers. Overall height of panel is $10\frac{1}{2}$ ".

The 80 position panel has four rows of 20 holes. Rows are on $1\frac{3}{4}$ " centers. Holes are on $1\frac{3}{8}$ " centers. Overall height of panel is 7".

Each row is provided with a designation strip complete with card and celluloid cover.

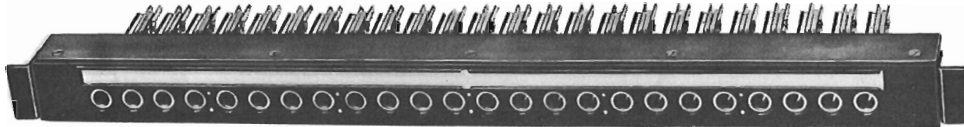
Many applications are found for these panels equipped with type 215C or 218C jacks. Other types of jacks or combinations will be supplied as specified on orders. Where less than the full complement of jacks are required the No. 90385-2 filler button will be installed in any holes not occupied by jacks.

Ref. No.	Description	Piece No.
1	Jack Panel No. 5E, 104 position, complete with designation strips.....	90274-104
2	Jack Panel No. 5E, 104 position, complete with designation strips and 104 No. 215C Jacks.....	90274-215
3	Jack Panel No. 5E, 104 position, complete with designation strips and 104 No. 218C Jacks.....	90274-218
4	Jack Panel No. 5E, 104 position, complete with designation strips and 104 No. 236C Jacks.....	90274-236
5	Jack Panel No. 5E, 104 position, complete with designation strips, Jacks and filler buttons as specified.....	90274-104X
6	Designation Strip with card and celluloid cover.....	90242-26
7	Jack Panel No. 5E, 90 position, complete with designation strips.....	90274-90
8	Jack Panel No. 5E, 80 position, complete with designation strips.....	90274-80
9	Jack Panel No. 5E, 130 position, complete with designation strips.....	90274-130

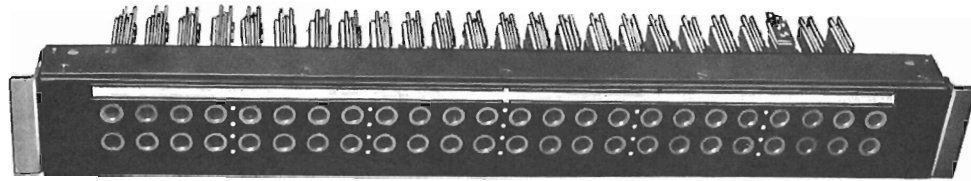


Fahnestock Telephone Jack Strips No. 56

FOR 19" RACK, 24, 26, 48, OR 52 JACKS



No. 0056-24-218A, height 1 1/4 inches



No. 0056-48-218A, height 2 1/4 inches



Telephone Jack Strips No. 56 furnish a convenient assembly for mounting on standard 19-inch racks and may be equipped with any of the telephone type jacks shown on pages 42-11 to 42-13. Panels are of molded black bakelite. The most popular strips of this type are equipped with Type 218A Jacks.

No. 0056-24-218A is equipped with 24 No. 218A Jacks in one row, while No. 0056-48-218A is equipped with two rows of 24, a total of 48 No. 218A Jacks, as illustrated.

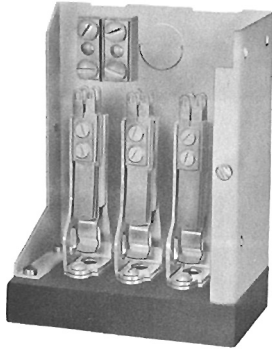
No. 0056-26-218A is equipped with 26 No. 218A Jacks in one row. No. 0056-52-218A is equipped with 52 No. 218A Jacks in two rows of 26 Jacks each. Each jack strip is provided with a designation strip as shown, complete with card and celluloid cover.

Inquiries and orders for these jack strips having other than No. 218A jacks should state the type or types of jacks desired, and specify the order of arrangement from left to right.

Ref. No.	Description	Piece No.
1	Jack Strip with 24 No. 218A Jacks, single row.....	0056-24-218A
2	Jack Strip with 24 Jacks as specified, single row.....	0056-24X
3	Jack Strip, for 24 Jacks, single row, without jacks.....	0056-24
4	Jack Strip with 26 No. 218A Jacks, single row.....	0056-26-218A
5	Jack Strip with 26 Jacks as specified, single row.....	0056-26X
6	Jack Strip for 26 Jacks, single row, without jacks.....	0056-26
7	Jack Strip with 48 No. 218A Jacks, two rows.....	0056-48-218A
8	Jack Strip with 48 Jacks as specified, two rows.....	0056-48X
9	Jack Strip for 48 Jacks, two rows, without jacks.....	0056-48
10	Jack Strip with 52 No. 218A Jacks, two rows.....	0056-52-218A
11	Jack Strip with 52 Jacks as specified, two rows.....	0056-52X
12	Jack Strip for 52 Jacks, two rows, without jacks.....	0056-52
13	Designation Strip with card and celluloid cover.....	90242-24



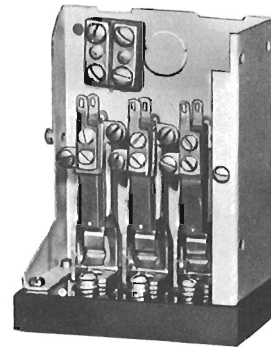
Fahnestock Jack Boxes



Solder Connections



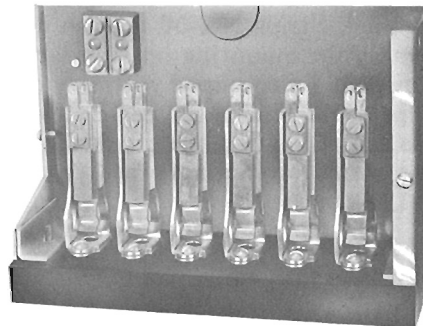
No. 90385 Series
Three Lines
Size—2" High x 3½" Wide x 4¾" Deep



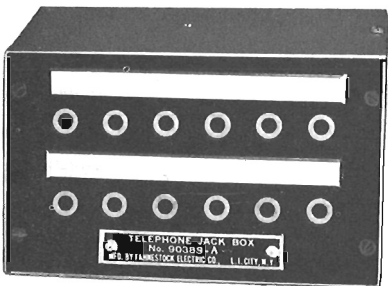
Screw Connections



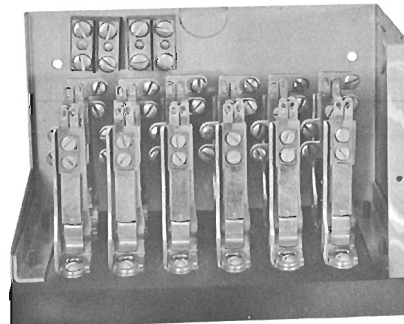
No. 90386 Series
Six Line



Jacks available with solder connections or screw connections.
Size—2½" High x 6½" Wide x 4¾" Deep



No. 90389 Series
Twelve Line



Jacks available with solder connections or screw connections.
Size—4" High x 6½" Wide x 4¾" Deep



Fahnestock Jack Boxes

Compact and sturdy, these standard jack boxes offer numerous improvements over older types. Cases are made of sheet steel, heavily cadmium plated and painted. Jacks and terminals are mounted on durable bakelite panels and blocks. Knock-outs are so located in case and cover that wires or cable may be brought in through bottom, back or sides as found most convenient. A special knock-out is provided for entrance of a cord when it is desired to use an attached cord and plug. All jack boxes are equipped with a terminal block for cord connections.

The standard boxes are equipped with type 215C or 236C jacks having soldering lugs or with 215 CWS or 236 CWS jacks having screw connections, as ordered.

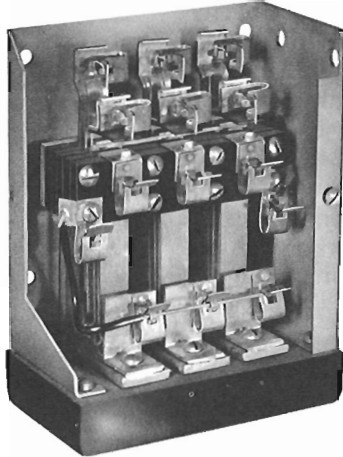
Note: No. 215 Jack has same spring combinations as No. 208A. No. 236 Jack has same spring combinations as No. 224A.

Special jack boxes in these three case sizes will be furnished to order with any of the Type C jacks shown on pages 42-11 to 42-13 that may be specified.

Ref. No.	Description	Piece No.
1	Three-line Jack Box with No. 215C jacks, solder connections.....	90385B
2	Three-line Jack Box with No. 215CWS jacks, screw connections.....	90385BWS
3	Three-line Jack Box with No. 236C jacks, solder connections.....	90385D
4	Three-line Jack Box with No. 236CWS jacks, screw connections.....	90385DWS
5	Three-line Jack Box with three jacks as specified.....	90385X
6	Three-line Jack Box with Terminal, less jacks.....	90385-1
11	Six-line Jack Box with No. 215C jacks, solder connections.....	90386A
12	Six-line Jack Box with No. 215CWS jacks, screw connections.....	90386AWS
13	Six-line Jack Box with No. 236C jacks, solder connections.....	90386B
14	Six-line Jack Box with No. 236CWS jacks, screw connections.....	90386BWS
15	Six-line Jack Box with six jacks as specified.....	90386X
16	Six-line Jack Box with terminals, less jacks.....	90386-1
21	Twelve-line Jack Box with No. 215C jacks, solder connections.....	90389A
22	Twelve-line Jack Box with No. 215CWS jacks, screw connections.....	90389AWS
23	Twelve-line Jack Box with No. 236C jacks, solder connections.....	90389B
24	Twelve-line Jack Box with No. 236CWS jacks, screw connections.....	90389BWS
25	Twelve-line Jack Box with twelve jacks as specified.....	90389X
26	Twelve-line Jack Box with terminals, less jacks.....	90389-1
31	Designation strip, card and celluloid, for three-line jack box.....	90385-3
32	Designation strip, card and celluloid, for six- or twelve-line box.....	90385
33	Filler button	90385-2



Fahnestock Cordless Table Jack Unit No. 2-C



Cover Removed



2" High, 3¼" Wide, 4¾" Long

A compact and sturdy jack box that has found wide usage in the communication field. It can be used as a cordless table jack by inserting a dummy plug in the proper jack to connect a master telegraph or telephone set to any one of a number of circuits. Also, if desired, each of the three jacks can be used independently with either a single or a double conductor plug.

Connections can be soldered or placed under sturdy bronze Fahnestock clips. The units can be mounted in any one of several positions and ganged if desired. Knockouts are provided in bottom of box and back end of cover.

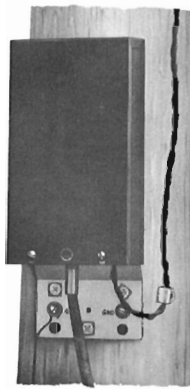
The insulating parts, recently improved, will withstand higher voltages than those in ordinary jacks. It is regularly supplied to function as a cordless table jack but plugs are not included. The common connections can be readily clipped off. The jack contacts are of a special alloy to prevent high resistance connections.

Ref. No.	Description	Piece No.
1	Cordless Table Jack Unit, No. 2-C.....	90220
2	Designation Strip, white enameled (old style).....	90385-4
3	Designation Strip, card and celluloid, as illustrated.....	90385-3

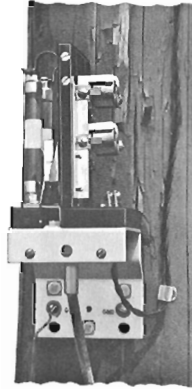


Fahnestock Pole Line Jack Box No. 17-A

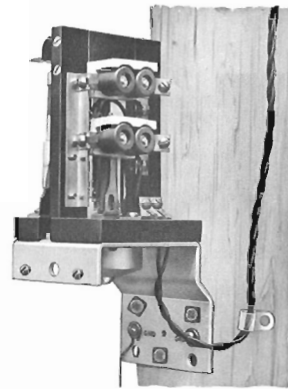
BUGPROOF, DUSTPROOF, WEATHERPROOF



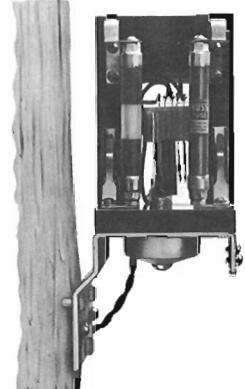
Covered,
as used



Cover
removed



Line
Arresters



Fuses and
Protectors

The No. 17-A Pole Line Jack Box is a safe, economical means of providing for wayside connections of portable telephones to the dispatcher's or other circuit. Nearly any type of portable phone, if equipped with two-conductor cord and plug, may be used, for example, Unifone No. 4565 with 3-B plug.

The line pair terminates on standard arresters, 2-B, which protect the Jack Box at all times. Insertion of the plug in the jack closes silver-alloy contacts connecting the line to the fuses and low voltage protectors, at the same time completing the phone connection to the line. Thus approved protection is afforded the user. Removal of the plug disconnects the fuses and protectors from the line.

The cover is dust- and weather-tight. The opening for insertion of the plug is kept closed by a glass sphere, which always seats tightly, yet is easily displaced when the plug is inserted.

Arresters and protectors ground to the mounting bracket to which the ground wire is to be attached. The drop wires enter the base through holes which fit tightly around the conductors and are counter-bored to admit a short section of the insulation.

The cover is held in place by two bronze screws but provision is made for the use of a padlock or wire seal if necessary.

Ref. No.	Description	Piece No.
1	Pole Line Jack Box, No. 17-A.....	90381
2	Special Jack for No. 17-A Jack Box.....	90381-1
3	Cover only for No. 17-A Jack Box.....	90381-2

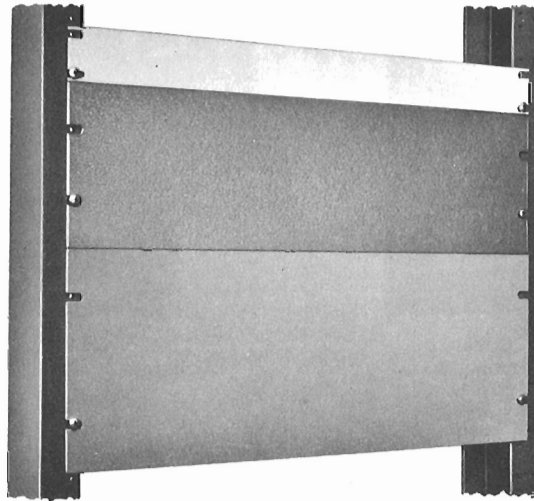
*For Fuse Reference See Section 40, pages 40-6 and 40-7.
For Arrester Reference see Section 40, page 40-9.
Standard Protectors are used.*



Standard Blank Panels for 19" Racks

STEEL

ALUMINUM

 $\frac{1}{8}$ " THICK

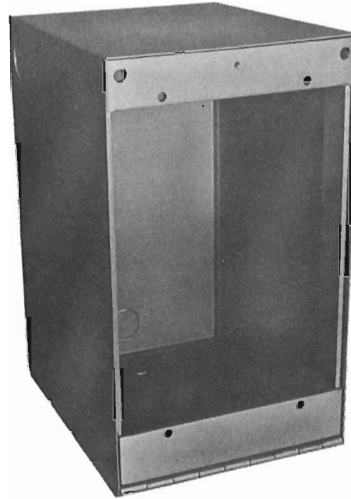
These panels are available in various sizes, to fill spaces on 19" racks. The sides are notched to match standard rack drillings.

Steel panels are normally supplied in hammertone gray finish, unless silver gray is specified. Aluminum panels are unpainted and covered with a surface shield of pressure sensitive paper, but either hammertone gray or silver gray can be supplied, when specified.

Ref. No.	Description	Piece No. Steel	Piece No. Aluminum
2	Panel, 21"	1782— 2S	1782— 2AL
3	Panel, 19 $\frac{1}{4}$ "	1782— 3S	1782— 3AL
4	Panel, 17 $\frac{1}{2}$ "	1782— 4S	1782— 4AL
5	Panel, 15 $\frac{3}{4}$ "	1782— 5S	1782— 5AL
6	Panel, 14"	1782— 6S	1782— 6AL
7	Panel, 12 $\frac{1}{4}$ "	1782— 7S	1782— 7AL
8	Panel, 10 $\frac{1}{2}$ "	1782— 8S	1782— 8AL
9	Panel, 8 $\frac{3}{4}$ "	1782— 9S	1782— 9AL
10	Panel, 7"	1782—10S	1782—10AL
11	Panel, 5 $\frac{1}{4}$ "	1782—11S	1782—11AL
12	Panel, 3 $\frac{1}{2}$ "	1782—12S	1782—12AL
13	Panel, 1 $\frac{3}{4}$ "	1782—13S	1782—13AL



Fahnestock Test Panel Unit No. 8-A



Test Panel Unit No. 8-A is a sheet metal box with hinged front frame made in accordance with AAR, Communications Section, Specification 2-G-55 conforming to drawing 2035. It has been designed for mounting Jack Panel No. 4-C or No. 5-D. (See, also, pages 42-14 and 42-15.)

This unit is $9\frac{1}{2}$ " high x $5\frac{3}{4}$ " wide x 7" deep, with $\frac{1}{2}$ " knock-outs in the left side and bottom near the back and in the back near the bottom. Four $\frac{3}{16}$ " diameter holes are provided in the bottom for securing to a desk. Piano hinge insures strength and permanent alignment of panel frame.

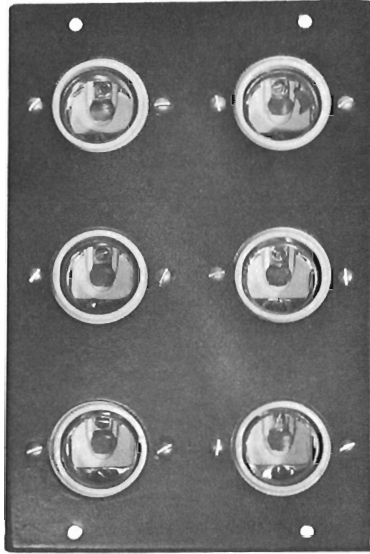
The Test Panel unit is furnished as illustrated or complete with No. 4-C Jack Panel or No. 5-D Jack Panel as specified. It will also be furnished with either of the above mentioned Jack Panels complete with card holders or designation strips, jacks and filler buttons as specified.

Ref. No.	Description	Piece No.
1	Test Panel Unit, AAR-No. 8-A (cabinet only).....	90275
2	Test Panel Unit, AAR-No. 8-A, complete with Jack Panel No. 4-C.....	90275-1
3	Test Panel Unit, AAR-No. 8-A, complete with Jack Panel No. 5-D.....	90275-2
4	Test Panel Unit, AAR-No. 8-A, complete with Jack Panel No. 4-C and Jacks as specified.....	90275-3
5	Test Panel Unit, AAR-No. 8-A, complete with Jack Panel No. 5-D and Jacks as specified.....	90275-4



Lamp Panel No. 5-A

SIX RECEPTACLES



Lamp Panel Unit No. 5-A is similar to that shown on AAR, Communications Section, drawing 2024. It is a sheet metal panel with six lamp receptacles mounted on 2½ inch centers with front of receptacle flush with face of panel.

Receptacles are molded porcelain and are provided with solder lugs which may be removed to make use of screw connections, if desired.

The Lamp Panel will mount in the space required for Jack Panel No. 4-C. The panel is 8" high and 5¼" wide.

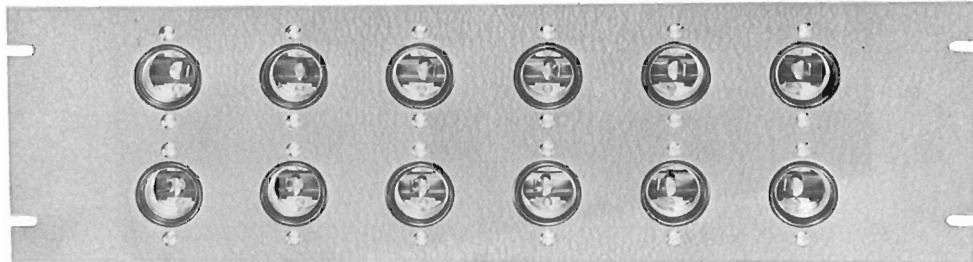
Ref. No.	Description	Piece No.
1	Lamp Panel No. 5-A, 6 receptacles.....	90379
2	Lamp Receptacle, Medium Screw Base.....	90379-30



Lamp Panels for Rack Mounting

SIX RECEPTACLES

TWELVE RECEPTACLES



No. 90378 — Lamp Panel

The trend toward the rack mounting of Communications apparatus has created a demand for lamp or resistance panels which will harmonize with the other equipment designed for mounting on standard 19" racks.

This demand is met by the Lamp Panels illustrated and described on this page.

The Lamp Panel (illustrated) with twelve receptacles mounted in two rows of six, on 2½" centers, is 5¼" high.

The Lamp Panel with six receptacles mounted in a single row, also on 2½" centers, is 3½" high.

Panels are finished in slate gray, crackle enamel unless otherwise specified.

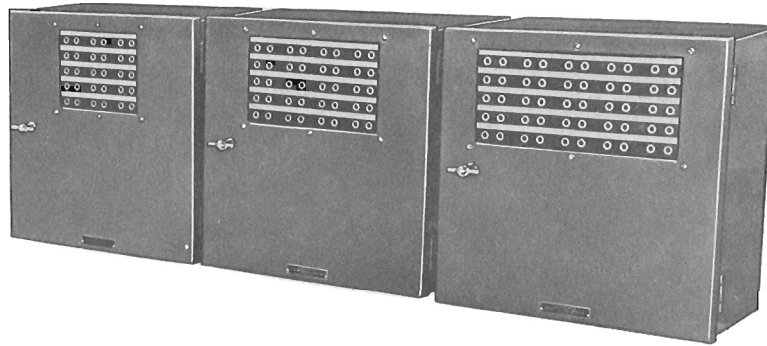
Receptacles are molded porcelain and are provided with solder lugs which may be removed to make use of screw connections, if desired.

Similar panels with special receptacles, other than the medium screw base type, will be manufactured to specifications. Inquiries are solicited.

Ref. No.	Description	Piece No.
1	Lamp Panel, 12 receptacles.....	90378
2	Lamp Panel, 6 receptacles.....	90377
3	Lamp Receptacle, Medium Screw Base.....	90379-30



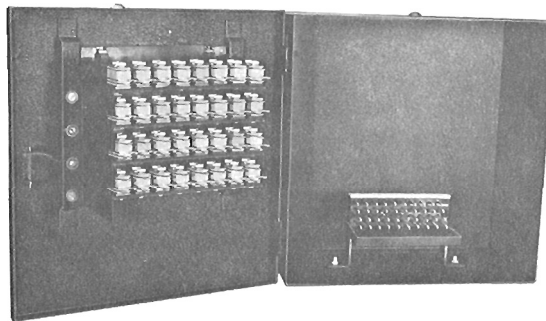
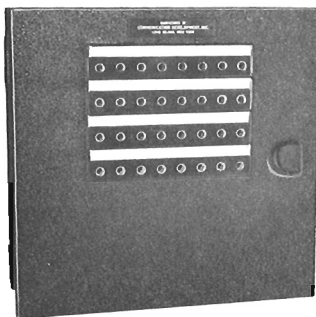
Jack Cabinets



30 Jacks
(15 Pair)

40 Jacks
(20 Pair)

50 Jacks
(25 Pair)



32 Jacks (Special)

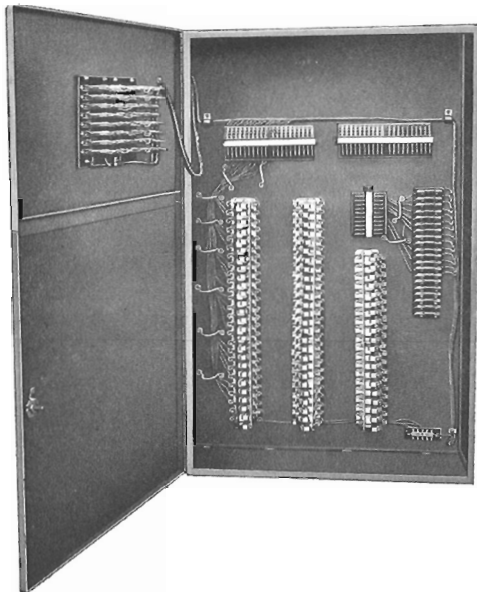
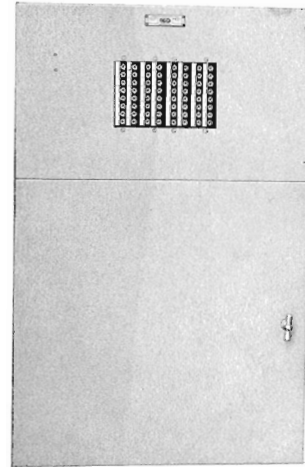
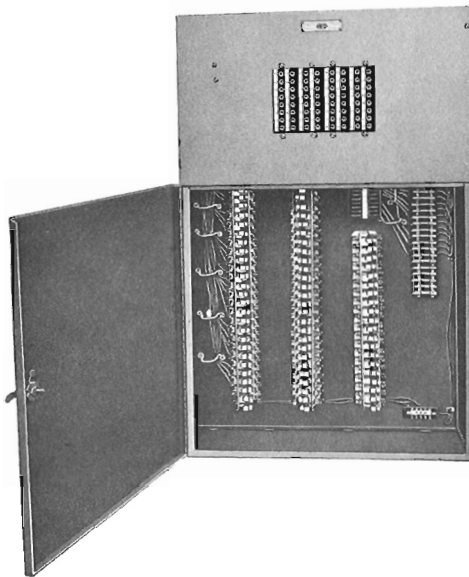
Typical of Jack Cabinets which have been constructed for special requirements are those illustrated above. For this particular need a number of cabinets with thirty, forty and fifty jacks each were furnished. All were in steel cabinets 16" x 16" x 8" deep with hinged covers and wood back boards on which Protector Mountings or Terminal Blocks can be mounted as required.

These Jack Cabinets have proved to be very popular and may be ordered by the references given below.

Ref. No.	Description	Piece No.
1	Jack Cabinet, with 30 No. 218-C Jacks.....	ES1889-30
2	Jack Cabinet, with 40 No. 218-C Jacks.....	ES1889-40
3	Jack Cabinet, with 50 No. 218-C Jacks.....	ES1889-50
4	Jack Cabinet, 16"x16"x8" with number and type of Jacks as specified.....	ES1889-X

C.D.I. Waystation Switchboard Cabinets

CUSTOM BUILT



Waystation switchboard facilities complete with protector mountings, terminals and jacks assembled in steel cabinets and wired as may be specified are custom built to meet most any requirement.

Typical of these cabinets is the one herewith illustrated in which 2 Jack Panels No. 5-D are mounted on the upper door with necessary terminals and protector mountings on the back wall of the cabinet. Protectors are conveniently located for access by opening the lower door only. These assemblies follow in general the AAR, Communications Section, Specification 2-J-33 and can be supplied in many sizes and designs as may be specified, including wiring for AK, AM or AKX circuits or other circuits as required.

Inquiries for Waystation Switchboards or cabinets to meet requirements are solicited.

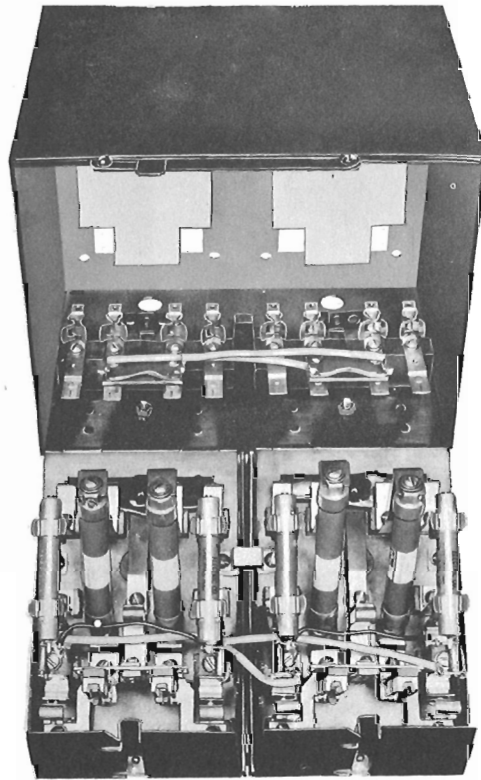


Fahnestock Unit Switchboards

SINGLE CIRCUIT No. 1F

DOUBLE CIRCUIT No. 2F

Equipped throughout with Special Alloy Contacts



No. 2F Fully Open

For many years, railroads that require uninterrupted service on circuits passing through stations which are closed for a good part of the day have found the answer in the installation of Unit Switchboards. These are illustrated above and on opposite page and also in AAR, Communications Section, Spec. 2-J-33. They can, as shown in the AAR specifications, be used on either or both telephone or telegraph circuits in many different arrangements.

Each provides all the protection necessary for the circuit entering it, and the switchboard facilities called for by the circuit requirements. When the station is to be unattended, any likelihood of the circuit being grounded or opened by protector operation, can be eliminated by pulling the panel $\frac{1}{2}$ way out, in which position the line circuit is cut through, without protectors. Pushing the panel in, flush, will cut the office equipment back on the circuit and permit any desired patching.

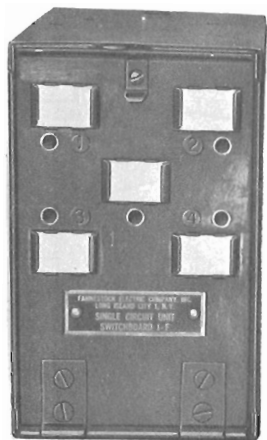


Fahnestock Unit Switchboards

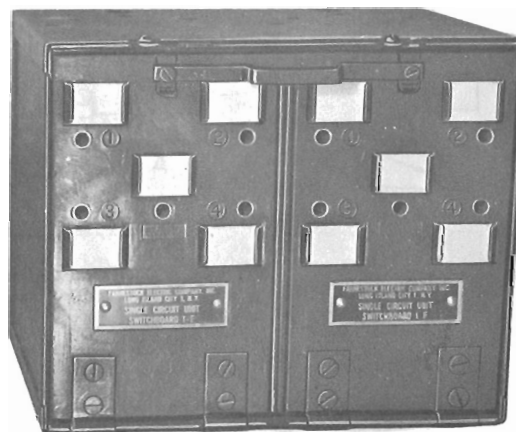
SINGLE CIRCUIT No. 1F

DOUBLE CIRCUIT No. 2F

Equipped throughout with Special Alloy Contacts



Single Circuit
6¹/₁₆" High, 6" Deep, 4¹/₃₂" Wide



Double Circuit
6¹/₁₆" High, 6" Deep, 8¹/₁₆" Wide

These Units are available in two sizes. The Single Circuit Unit, No. 1F, is used on single telegraph circuits and also on bridged telephone drops. The Double Circuit Unit, No. 2F, can be used for 2 telegraph circuits or one telephone circuit cut in an office for test or block work.

All conducting parts are of bronze, contacts are extra large, of an alloy proven satisfactory over a long period. The protectors include 7 or 10 ampere high voltage line fuses and 8/10 ampere heat-coil fuses for protecting the instruments. Arresters and, of course, the fuses, comply with AAR Specifications.

Ref. No.	Description	Piece No.
1	Single Circuit Unit Switchboard, No. 1F.....	90221-1
2	Double Circuit Unit Switchboard, No. 2F.....	90221-2

See page 42-30 for Replacement Parts.
See section 40, pages 40-6 and 40-7, for replacement fuses.

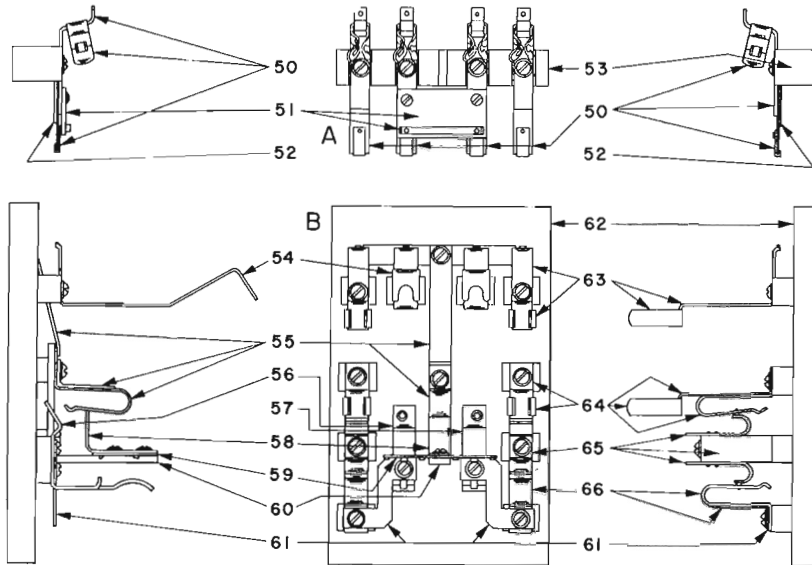


Fahnestock Unit Switch Boards

SINGLE CIRCUIT No. 1F

DOUBLE CIRCUIT No. 2F

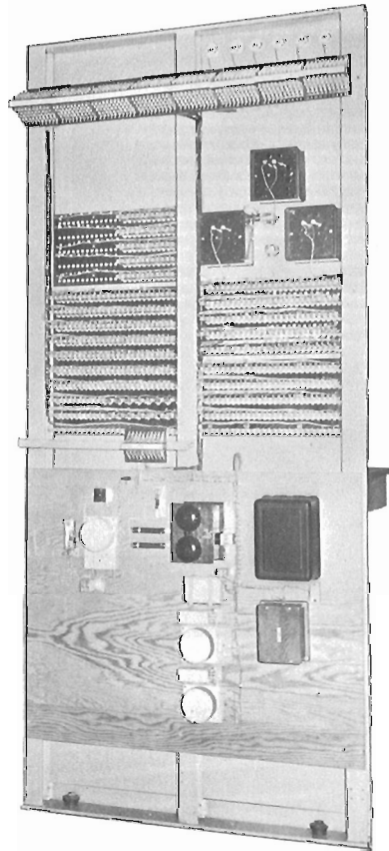
REPLACEMENT PARTS



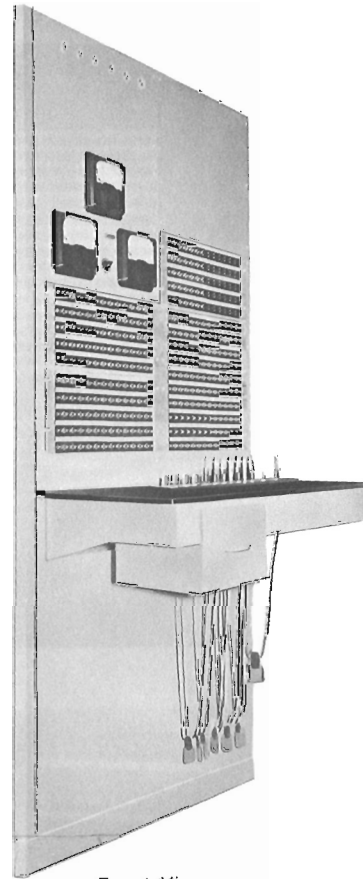
Ref. No.	Description	Piece No.
A	Connecting Block, Assembly.....	43786
B	Complete Panel Assembly, without Fuses and Arresters.....	EX-1548-A
50	Spring	EX-3309
51	Short-circuiting Detail	EX-3307
52	Spring Support	EX-3308
53	Connecting Block	EX-3310
54	Line Contacting Spring.....	EX-1537
55	Ground Clip Complete.....	EX-1805-A
56	Left Arrester Fuse Spring.....	EX-1804
57	Right Arrester Fuse Spring.....	EX-1531
58	Single Stop	EX-1539
59	Ground Plate	EX-1544
60	Ground Plate Post.....	EX-1545
61	Connecting Detail	EX-1806
62	Panel	EX-1548
63	Contact Spring Complete with Fuse Clip.....	EX-1535-A
64	Contact Spring Complete with Fuse Clip.....	EX-1534-A
65	Double Stop	EX-1538
66	Contact Spring with Stiffener.....	EX-1536-A

For Fuse Replacements see section 40, pages 40-6 and 40-7.

C.D.I. Custom Built Wire Chiefs Test Boards



Rear View



Front View

Making use of the No. 5-E Jack Panels and other standard apparatus, Wire Chief's Test Boards are built and completely wired to meet specifications. These Test Boards are furnished complete with meters, Wheatstone Bridge (set in drawer below working shelf), resistance lamp receptacles, drop cords, relays, keys, sounder, repeat coils, sub-set and all other necessary apparatus.

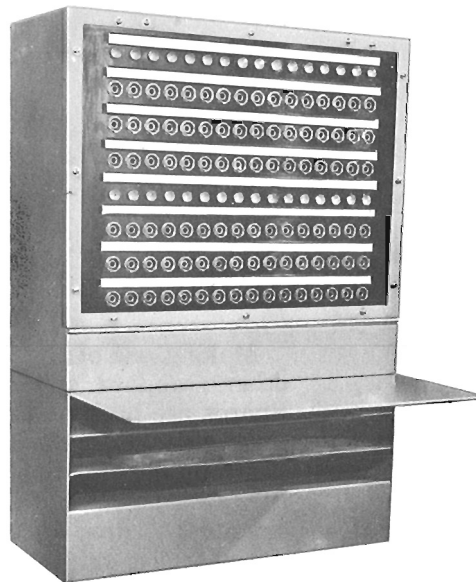
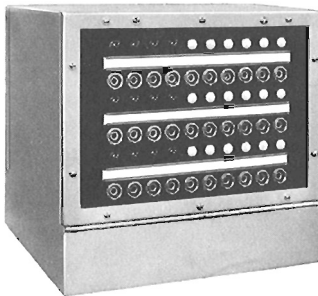
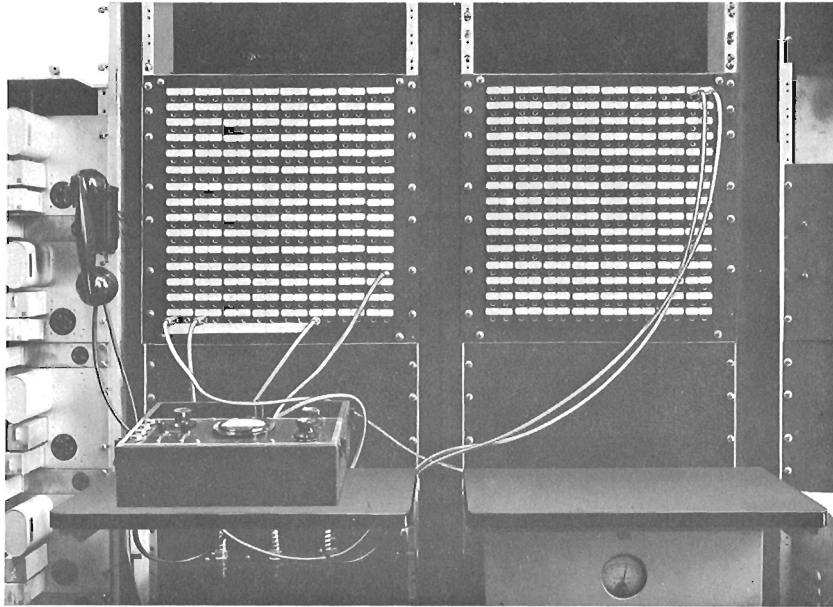
Illustrated above is a typical Wire Chief's Test Board on two 19" by 8" racks. This board was constructed to specifications for one of the Eastern railroads, embodying many ideas which were original with C.D.I. engineers.

Your inquiries for equipment of this nature are solicited.



Test and Patch Panels and Switching Cabinets

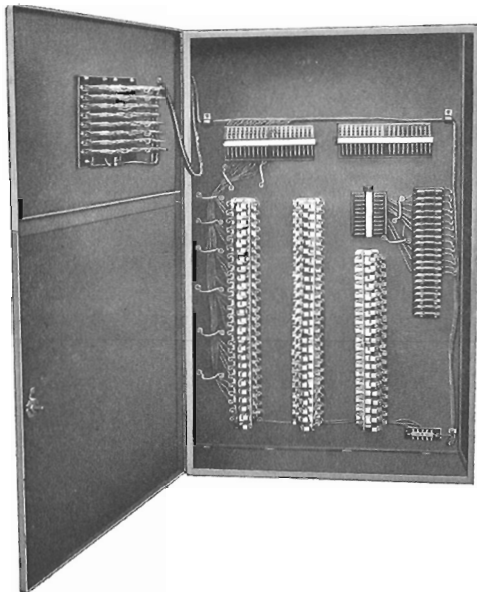
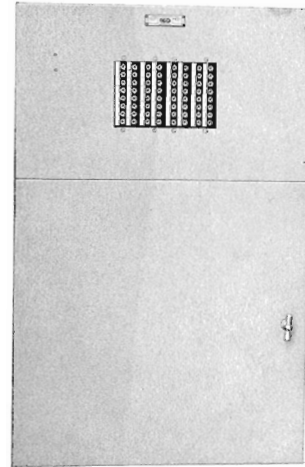
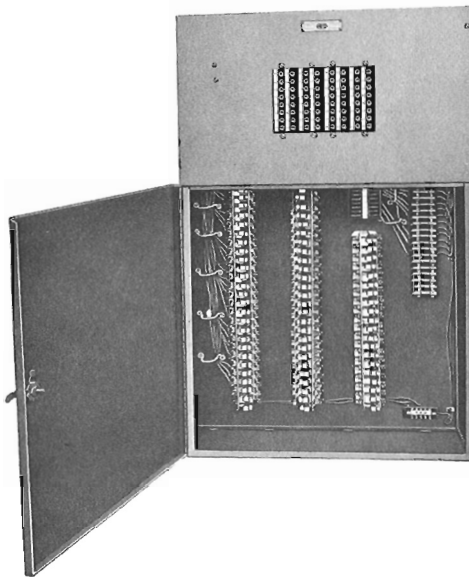
BUILT TO ORDER TO MEET SPECIAL REQUIREMENTS



Given your specifications or an outline of the requisites, we will design and construct Test and Patch Panels, Concentration Units and other similar assemblies to meet any requirement.

C.D.I. Waystation Switchboard Cabinets

CUSTOM BUILT



Waystation switchboard facilities complete with protector mountings, terminals and jacks assembled in steel cabinets and wired as may be specified are custom built to meet most any requirement.

Typical of these cabinets is the one herewith illustrated in which 2 Jack Panels No. 5-D are mounted on the upper door with necessary terminals and protector mountings on the back wall of the cabinet. Protectors are conveniently located for access by opening the lower door only. These assemblies follow in general the AAR, Communications Section, Specification 2-J-33 and can be supplied in many sizes and designs as may be specified, including wiring for AK, AM or AKX circuits or other circuits as required.

Inquiries for Waystation Switchboards or cabinets to meet requirements are solicited.



SECTION 43

Telephones — Sub-sets
Booth and Foot Switches
Telephone Shelters

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	Page No.
“Unifone” Portable Telephone.....	43-2 & 3
C.D.I. Wall Telephones, CDX-26.....	43-4 & 5
C.D.I. Transistorized Telephone Sub-set, CDX-101.....	43-6 & 7
C.D.I. Telephone Sub-set, CDX-25.....	43-8
C.D.I. Impedance Corrector, CDX-TU-2A.....	43-9
Telephone Booth Switch, No. 16-A.....	43-10
Foot-operated Telephone Booth Switch, No. 4516F.....	43-11
Foot Switches	43-12
Fiberglas Telephone Shelter Boxes.....	43-13
Porcelain Base Knife Switches.....	43-14

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



Unifone Portable Telephone No. 4565



Unifone No. 4565

The No. 4565 and No. 4565-F Unifones are high efficiency portable telephones of the local battery type, especially designed for establishing temporary communication over signal, telephone, telegraph, C.T.C., or any other circuits without interfering with the normal operation thereof, and may be used for local or long distance conversations. They have an exceptionally low bridging loss and comply fully with AAR, Communication & Signal Section requirements specification for portable telephone sets.

The No. 4565 Unifone is ideal for establishing the communications required for operation checks when placing new signal systems in service and similar purposes where many phones may be connected on the same line. It may be directly connected to C.T.C. code lines when desired, and may be connected at any point on the dispatcher's telephone circuit to establish regular communication with the dispatcher.

The No. 4565 Unifone weighs 3½ pounds and

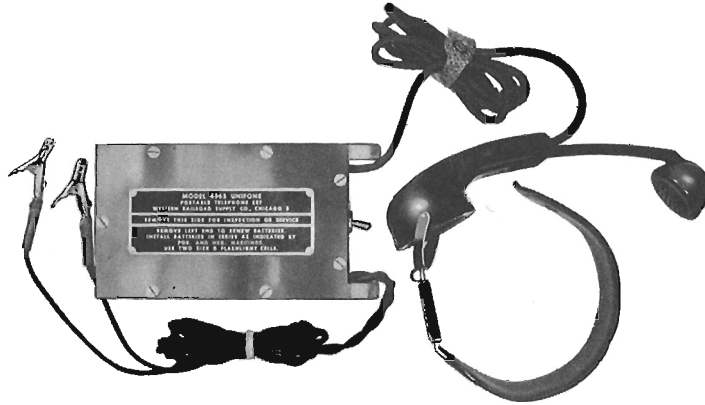
consists of a bakelized linen case 2" x 3¼" x 7" containing the induction coil, condenser and two size "D" flashlight cells; a high fidelity handset with capsule type receiver and transmitter and "push-to-talk" switch; all furnished in heavy canvas carrying case. When specified a canvas carrying case with shoulder strap will be supplied.

Test clips of novel design, selected to avoid any possibility of nicking wires to which they are connected, are regularly furnished on the 5-ft. line connection cord, but No. 3B or No. 7B plugs will be supplied when specified.

The No. 4565-F Unifone is identical with the standard No. 4565 Unifone with the addition of a filter to pass voice frequencies and block all frequencies above 4000 cycles. Thus it is adapted for use on C.T.C. code line or dispatcher's circuits having superimposed telephone or telegraph carrier on the line.



Unifone Portable Telephone No. 4565



The No. 4565-F Unifone, with self-contained filter weighs 4½ pounds and measures 2" x 3¾" x 8⅞".

Head type sets are available, instead of hand sets, for use when operator must have both hands free.

The bakelized linen case is strong and durable to provide for long service. Portable telephone sets of this design have been in use for many years and have received hard usage under service conditions. They have been found to

meet the requirements of the application better than any of the various portable sets known to be available at this time.

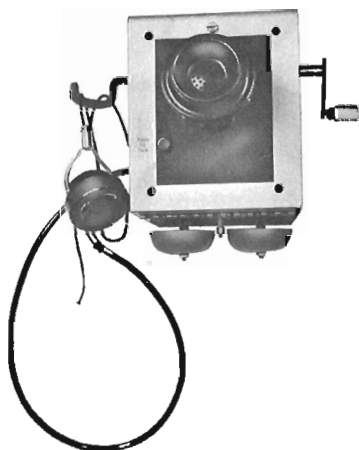
In addition to its use as a communicating device, the No. 4565 portable telephone set offers a convenient means for locating noise sources and other faults on C.T.C. or dispatcher's telephone lines. When used for this purpose, the proximity of the noise source will be indicated by the volume of the noise heard in the receiver when the induction coil is used as an exploring coil.

Ref. No.	Description	Piece No.
1	Unifone Portable Telephone No. 4565 complete with handset in canvas carrying case.....	4565
2	Unifone Portable Telephone No. 4565H complete with headset in canvas carrying case.....	4565H
3	Unifone Portable Telephone No. 4565F complete with handset in canvas carrying case.....	4565F
4	Unifone Portable Telephone No. 4565FH complete with headset in canvas carrying case.....	4565FH
5	Handset with cord for Unifone 4565 and 4565F.....	4565-11
6	Headset with cord for Unifone 4565H and 4565FH.....	4565-51
7	Canvas carrying case only for Unifone 4565 and 4565H.....	4565-55
8	Canvas carrying case only for Unifone 4565F and 4565FH with hand carrying strap.....	4565F-55C
9	Canvas carrying case only for Unifone 4565F and 4565FH with shoulder strap.....	4565F-55S

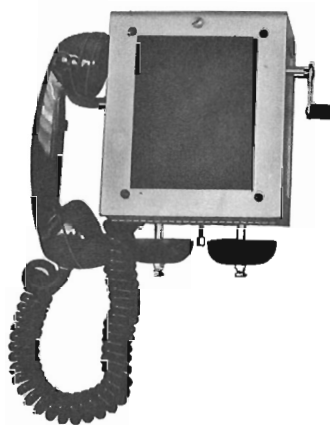
Replacement Parts List will be furnished upon request.



C.D.I. Wall Telephone No. CDX-26



No. CDX-26BG



No. CDX-26BGHS

The Type CDX-26 Wall Telephones make use of a high-impedance, three-winding, induction coil which was especially developed for use where extremely low bridging loss is desired, and a $\frac{1}{2}$ microfarad condenser is used in the line circuit. These telephones are recommended for use where a great many phones are connected across the same line and may be used on any type of circuit.

The telephone is available with generator, bells (2500 ohm ringer), head receiver and panel-mounted transmitter, or special handset with speaker-shunt contact in the push-to-talk button in the handle. Any combination of these components will be furnished as listed in the ordering reference table at the foot of the opposite page. The push-to-talk button of those phones which are equipped with panel-mounted transmitter, also has the speaker-shunt contact.

The sheet metal case is gray hammer-tone finish and measures $7\frac{1}{2}$ " high, $6\frac{1}{4}$ " wide and $5\frac{3}{4}$ " deep. Except when the handset is supplied,

the transmitter and push-to-talk button are mounted on the bakelite panel of the cover, with the induction coil, condenser and a terminal block on the inside. Line and battery wires enter through a knock-out and terminate on a bakelite terminal block on the side of the case. Handset or receiver cord and hook switch connections as well as connections to bell and generator, when used, also terminate on this block. Connections between these two blocks are cabled as shown in an accompanying illustration. The hook switch is also mounted on bakelite, thus electrically insulating every component and the line from the case.

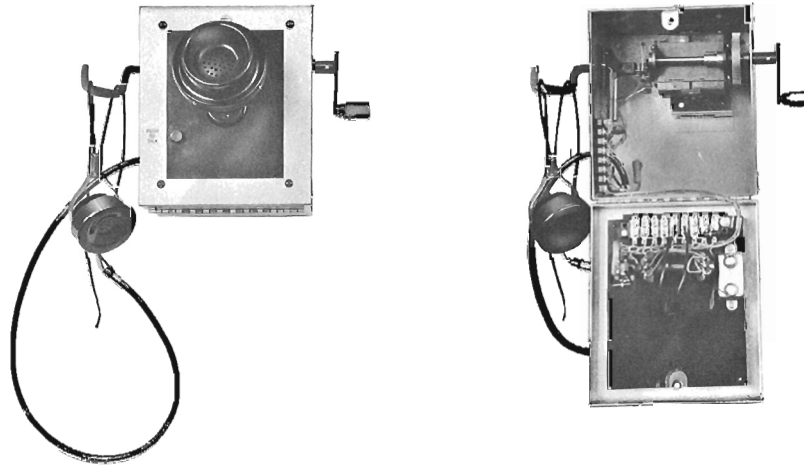
Terminals are provided for foot switch connections so that either the push-to-talk button on the panel or the foot switch, if used, may be operated, as may be most convenient.

The hook switch is equipped with contacts which, with the receiver or handset on the hook, completely disconnect the telephone from the line.



C.D.I. Wall Telephone No. CDX-26

(Continued)



No. CDX-26G

Bells, when used, are mounted under the case with the mechanism inside the case. When the generator is supplied it is securely mounted on a rigid bracket attached to the back of the case.

A battery box, No. CDX-33, for three No. 6 dry cells is also available. It is of a size comparable to the size of the wall telephone case and may be installed above or below it, or elsewhere, as desired.

Ref. No.	Description	Piece No.
1	Wall Telephone, No. CDX-26BG, complete with transmitter, head receiver, bells and generator.....	90361-1
2	Wall Telephone, No. CDX-26B, with transmitter, head receiver and bells, without generator.....	90361-3
3	Wall Telephone, No. CDX-26G, with transmitter, head receiver and generator, without bells.....	90361-5
4	Wall Telephone, No. CDX-26, with transmitter and head receiver, without bells and generator.....	90361-7
5	Wall Telephone, No. CDX-26BGHS, complete with handset, bells and generator.....	90361-2
6	Wall Telephone, No. CDX-26BHS, with handset and bells, without generator	90361-4
7	Wall Telephone, No. CDX-26GHS, with handset and generator, without bells	90361-6
8	Wall Telephone, No. CDX-26HS, with handset, without bells and generator	90361-8
9	Battery Box, No. CDX-33, for three No. 6 dry cells.....	90361-10
10	Head Receiver, complete with cord, for CDX-26.....	90361-20
11	Transmitter, less bracket, for CDX-26.....	90361-21
12	Handset, complete with cord, for CDX-26.....	90361-22

Replacement Parts List will be furnished upon request.



C. D. I. Transistorized Telephone Sub-set No. CDX-101

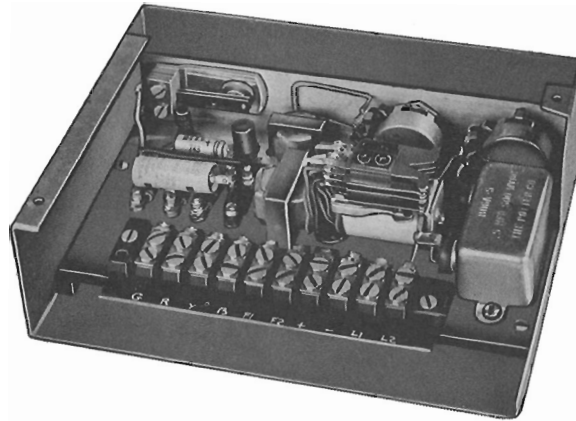


The No. CDX-101 Transistorized Telephone Sub-set is designed for use at stations on dispatching, message and similar circuits, where the attenuation is so high that amplification is necessary in both the transmitting and receiving conditions. The components are contained within a sheet metal case of the same dimensions as that of the sub-set No. CDX-25.

Incorporated in the sub-set is a two-stage transistor amplifier, which operates on the standard 4½ volt transmitter battery. This amplifier is switched, by means of a relay in the sub-set, to permit use of the same amplifying equipment for both transmitting and receiving. The relay is controlled either by a "push-to-talk" button or a foot switch, or both. Separate gain controls are provided for the transmitting and receiving circuits so that these may be adjusted independently to most satisfactorily meet the requirements of each installation. The controls are normally arranged for screw driver adjustment through the front panel of the sub-set. However, when so specified, external knobs will be furnished on either the receiving or transmitting gain controls, or both. Where it is desired to have the gain control adjustment inaccessible except by removal of the sub-set cover, the holes in the front panel may be blanked, as desired, by means of an insert plate furnished in each sub-set.



C. D. I. Transistorized Telephone Sub-set No. CDX-101



Cover Removed

In the transmitting condition, the No. CDX-101 Sub-set is capable of an output up to 10 db greater than that of a standard sub-set and in the receiving condition, gains up to 30 db may be realized.

The sub-set is designed to operate with the standard F-2 transmitter and HA-2 receiver capsules so that it may be substituted in an existing installation for a No. CDX-25 or other, similar, standard sub-set, or used with the standard three-wire desk stand, without additional equipment.

A diode in the battery circuit protects the transistors from possible damage due to incorrect connection of the battery.

Ref. No.	Description	Piece No.
1	Transistorized Sub-set, No. CDX-101, with gain controls screw driver adjusted through front panel.....	90360-2A
2	Transistorized Sub-set, No. CDX-101, with external knob gain control in receiving circuit only.....	90360-3A
3	Transistorized Sub-set, No. CDX-101, with external knob gain control in transmitting circuit only.....	90360-4A
4	Transistorized Sub-set, No. CDX-101, with external knob gain control in both transmitting and receiving circuits.....	90360-5A

Replacement Parts List will be furnished upon request.



C.D.I. Telephone Subset No. CDX-25



Front View



Cover Removed

The No. CDX-25 Telephone Subset makes use of a high-impedance, three winding, induction coil especially developed for use where extremely low bridging loss is desired, and a 1/2 microfarad condenser is used in the line circuit. This Subset is recommended for use where a great many phones are connected across the same line and it is useful on any type of circuit.

The components are enclosed in a sheet metal box measuring 4 5/8" x 6 1/2" x 2 1/8". The push-to-talk button is in the 2" x 6 1/2" bakelite front panel and is located 1" from the left end. Knock-outs for wire or cable entrance are provided in the bottom and right end of the case. A smaller knock-out is provided in each end for the telephone cord. The cover is removable without disturbing the wires or telephone cord.

Termination of the components is such that the same subset may be used under a number of conditions, as follows:

1. With a desk stand; using the hook switch in the

usual manner and the push-button in the subset to push-to-talk.

2. In the same manner as above except with a foot switch instead of the push-to-talk button in the subset.
3. In the same manner as above with both the foot switch and the push-button effective, so that either may be used to talk, whichever is most convenient.
4. With a hand set having the push-to-talk button in the handle; instead of using the push-button in the subset.
5. With a head receiver and separate transmitter; using either the push-button or a foot switch, or both as in No. 3, above.
6. The push-to-talk button is equipped with speaker shunt contacts, which may be extended to foot switch connections, so that the subset may be used with loud speaker and separate transmitter with both the push-button and foot switch effective.

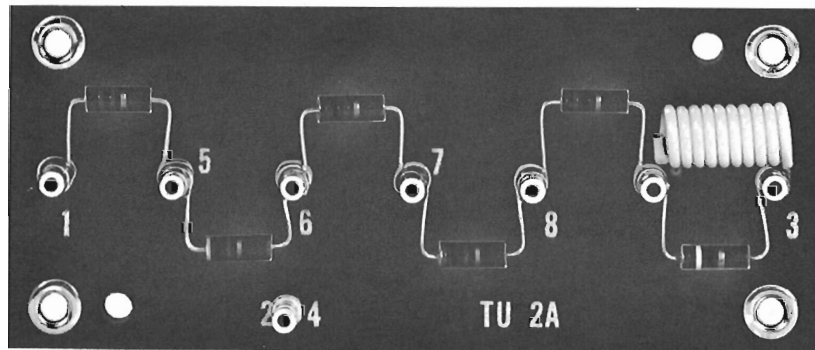
The No. CDX-25 Subset operates to best advantage with W.E.Co. No. 635B (F2) transmitter and No. 716B (HA2) receiver although other similar transmitters and receivers may be used.

Ref. No.	Description	Piece No.
1	Telephone Subset, No. CDX-25.....	90360

Replacement Parts List will be furnished upon request.



Impedance Corrector for Dispatcher Circuits, No. CDX-TU-2A



Many Dispatcher Circuits are long and have a large number of bridged telephones. Where 2-wire voice repeaters are used to improve transmission, the gain at which these can operate is far below the optimum, owing to the impedance irregularities of the bridged dispatcher telephones.

Type CDX — TU-2A Impedance Corrector has been designed to correct this trouble. It is a compact circuit board, mounting resistors and a strap, so that a wide range of values can be selected at will. With a uniform impedance from all bridging dispatcher telephones the voice repeaters can be set for maximum gain and stability.

One Impedance Corrector is required at each telephone. An application sheet shows how to set up the strapping correctly.

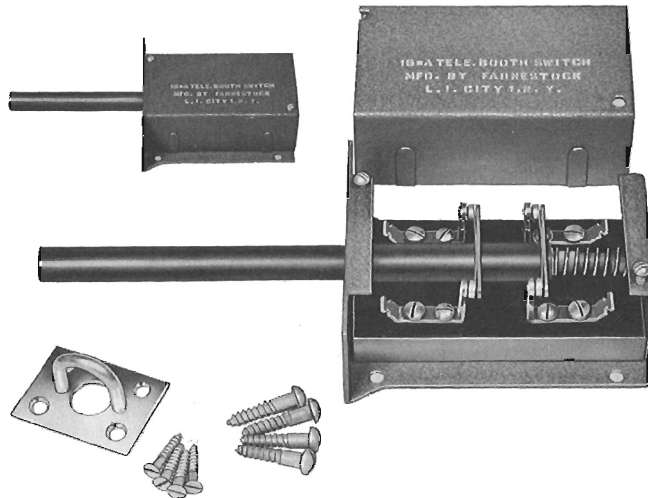
Ref. No.	Description	Piece No.
1	Impedance Corrector CDX-TU-2A.....	90648



Fahnestock Booth Switch No. 16-A

4 $\frac{1}{8}$ " x 3 $\frac{1}{4}$ " x 1 $\frac{1}{2}$ "—PUSH-ROD EXTENDS 4 $\frac{1}{4}$ "

Meets requirements of AAR, Communications Section,
Spec. 4-1 for the protection of equipment in booths or boxes.



The No. 16-A Booth Switch is intended to automatically connect and disconnect the telephone equipment from the line, upon opening or closing the door of a booth or shelter box. It can be mounted in any of several positions on the door frame so as to be actuated by the door or in the door jamb or booth wall, with the push-rod extending through the special staple so that it is actuated by the hasp. Special staple and all necessary screws are supplied with each booth switch.

The push-rod, of bakelized canvas, extends

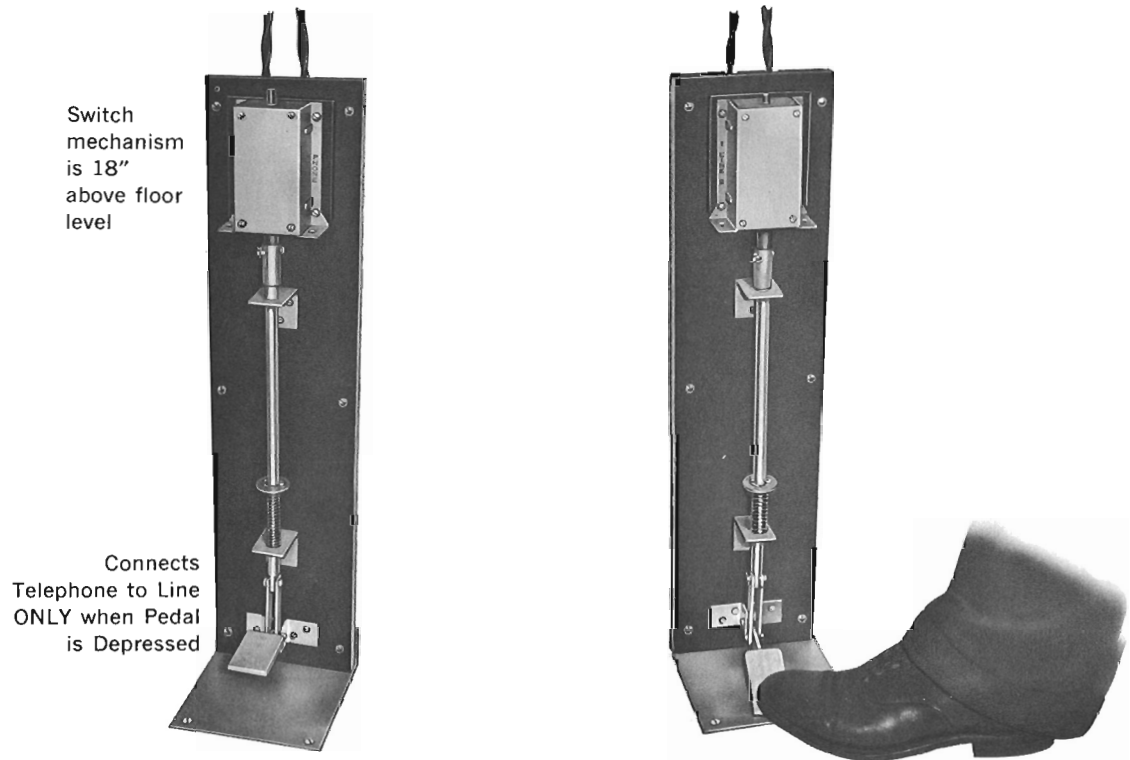
4 $\frac{1}{4}$ " and can easily be cut to any shorter length required.

A specially treated coil spring, which will not lessen in tension, due to age, provides the proper contact pressure when the booth or box door is open. Silver alloy contacts insure noiseless transmission year after year. They are extra large and so mounted on phosphor bronze as to cause a wiping action as the contacts close. Air gap distance with contacts open is 9/32" each or a total of 9/16". Surface leakage distance between fixed contacts is 15/16".

Ref. No.	Description	Piece No.
1	Booth Switch, No. 16-A.....	90380
2	Push-rod only	90380-1
3	Fixed Contacts, set of 4.....	90380-2
4	Moving Contacts, set of 2.....	90380-3
5	Coil Spring	90380-4
6	Flanged bushing, Bakelized canvas.....	90380-5
7	Sleeve bushing, Bakelized canvas.....	90380-6
8	Special Staple	90380-7



Foot-operated Telephone Booth Switch No. 4516F



The No. 4516-F Foot-operated Booth Switch especially proves its value in situations where these problems are encountered:

When the telephone is in such frequent use that it is more convenient to leave the booth door open, allowing easier access.

In locations where drifting snow or high water could interfere with the normal opening and closing of the door.

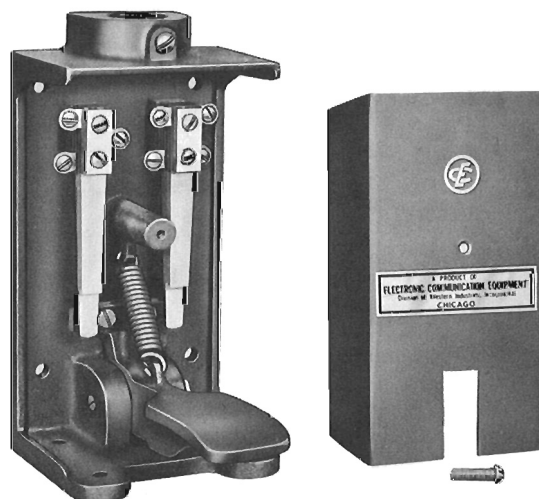
The Steel Floor Plate is supplied for use in booths having wood floors to prevent the peddle from digging into the floor. It is recommended that it should also be used in booths with concrete floors to insure the correct travel of the push rod.

Ref. No.	Description	Piece No.
1	Type 4516F, Foot-operated Telephone booth switch complete with floor plate....	4516-F

*Switch Mechanism is the same design as Booth Switch No. 16A shown opposite.
Replacement Parts List will be furnished upon request.*



No. 8000 Series Foot Switch



The No. 8000 series Foot Switches are of rugged construction with cast iron case and heavy gauge sheet steel cover.

Long life is assured by the use of nickel-silver springs and paladium contacts.

Screw type terminals facilitate installation.

Top of case is tapped $\frac{1}{2}$ " pipe thread.

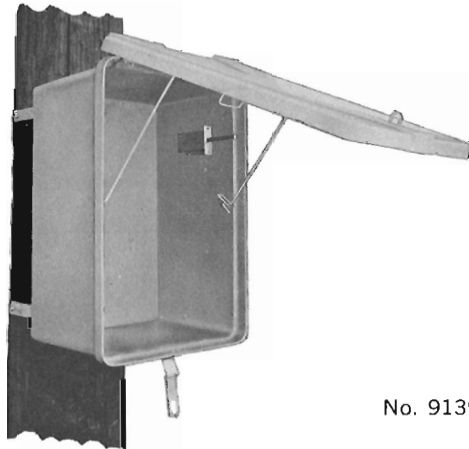
Four standard contact arrangements are available as listed in reference table.

Ref. No.	Description	Piece No.
1	Type No. 8000 Foot Switch with 1 make contact (1-B).....	8001-1B
2	Type No. 8000 Foot Switch with 1 make and 1 break-make contacts (3-B).....	8002-3B
3	Type No. 8000 Foot Switch with 1 break-make, and 1 break-make-make contacts (3-C).....	8003-3C
4	Type No. 8000 Foot Switch with 1 break-make, 1 make and 1 break-make-make contacts (3-D).....	8004-3D
5	Foot Lever, 12" long, with two support brackets.....	P-8601-1A
6	Foot Lever, 24" long, with two support brackets.....	P-8602-1B
7	Metal Conduit, 3/4" dia. x 24" long, with bushing and pipe strap.....	P-8603-2A

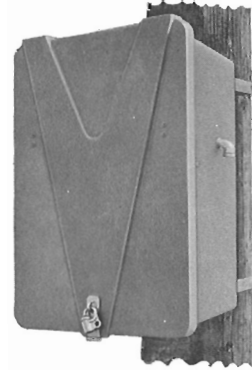
Replacement Parts List will be furnished upon request.



Fiberglas Telephone Shelter Box



No. 91398



The sturdiness and desirable characteristics of Fiberglas Telephone Shelter Boxes has been proven by a number of years of service under varying climatic conditions, in all parts of the United States and in Mexico.

The Type No. 91398 Shelter Box is similar in design, but not quite as wide as the Type "A" shelter shown on AAR Drawing T & T 1897. The backboard, imbedded in the Fiberglas, is 18" wide by 28" high of 3/4" thick fir plywood. The box is 13 3/4" deep and has a smooth Masonite writing surface on the bottom.

A plywood pad is provided near the upper right corner for mounting a No. 16-A Booth Switch, or equivalent, when desired.

The unique hold-open device is self seating when the cover is raised and cannot slip or be loosened by a high wind, yet it is easily operated with one hand to lower the cover.

The shelter boxes are available with either clamps and "U" bolts for mounting on 4" I.D. pipe posts or with through-bolts and braces for mounting on wood line poles of various diameters.

The No. 91398 Fiberglas Telephone Shelter Boxes are normally furnished in grey gloss but other colors can be supplied on special order. The natural grey gloss finish needs no painting.

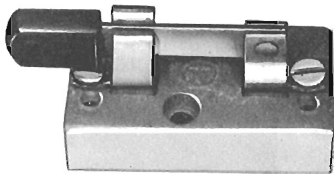
All metal parts are electro-galvanized with aluminum fastenings.

Ref. No.	Description	Piece No.
5	Shelter Box, for pipe post mounting.....	91398-1
6	Shelter Box, for wood pole mounting.....	91398-2

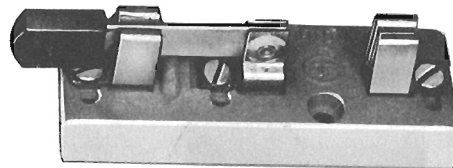


Knife Switches

25 AMPERE

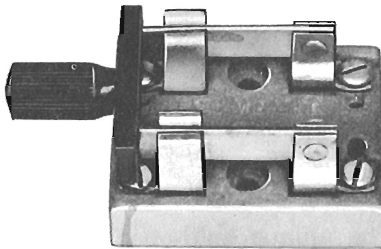


No. 707
Base Size 1 1/4" x 2 3/8"

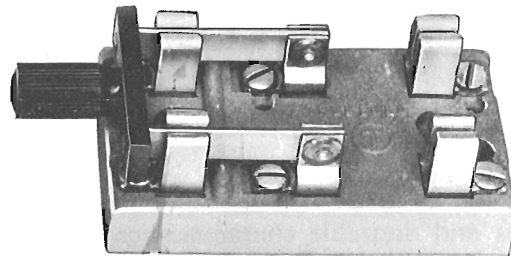


No. 708
Base Size 1 1/4" x 3 5/8"

Height 1 1/4"—Handle extends 1/2" over base



No. 709
Base Size 2" x 2 3/8"



No. 710
Base Size 2" x 3 5/8"

Height 1 3/8"—Handle extends 7/8" over base.

The porcelain base knife switches with return bend blade clips insure the lowest possible contact resistance. Screws anchoring the clips and hinges are recessed approximately 3/16" in the bottom of the base. Recesses may be filled with sealing wax or other insulating compound if deemed necessary when the switches are to be mounted on metal panels or frames. Minimum surface leakage distance between all clips, hinges and connecting screw extensions is 3/4". Capacity, 25 amperes.

Ref. No.	Description	Piece No.
2	No. 707 S.P.S.T. Porcelain Base Knife Switch.....	707
3	No. 708 S.P.D.T. Porcelain Base Knife Switch.....	708
4	No. 709 D.P.S.T. Porcelain Base Knife Switch.....	709
5	No. 710 D.P.D.T. Porcelain Base Knife Switch.....	710



SECTION 44

Switching Cabinets
Concentration Units
Printer Controls

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WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

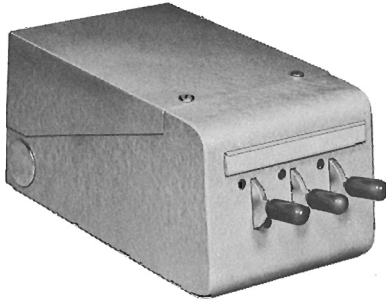
GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632

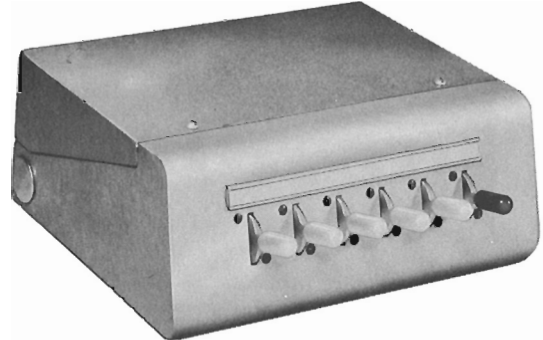


C.D.I. Desk Type Switching Cabinet CDX-75

LEVER KEY TYPE



Four line and ringing key



Ten line and ringing key



Five line and ringing key
with indication lights

Standard wiring of the lever key type switching cabinet provides for connecting the telephone set to any one of the incoming lines. The commons to the telephone set are series connected through the keys to prevent two lines being accidentally patched together. Each position of the line keys is equipped with a separate set of Form "B" contacts for releasing a lock-up relay circuit. Wiring to all keys and lamp jacks is terminated on a barrier terminal mounted across the back of the cabinet in a convenient position for terminating the incoming cable.

When specified a buzzer is installed in the cabinet for audible indication.

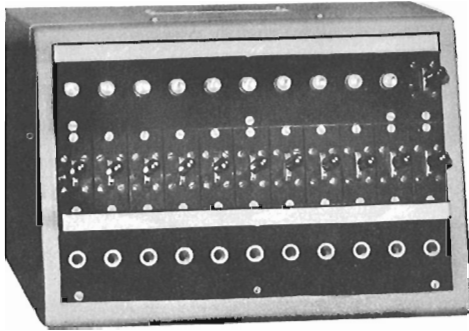
Ref. No.	Description	Piece No.
1	Switching Cabinet, 3 Lever Keys, for 4 lines plus ringing.....	90633-1
2	Switching Cabinet, 3 Lever Keys, for 4 lines plus ringing, with signal lights.....	90633-2
3	Switching Cabinet, 6 Lever Keys, for 10 lines plus ringing.....	90633-3
4	Switching Cabinet, 6 Lever Keys, for 5 lines plus ringing, with signal lights.....	90633-4



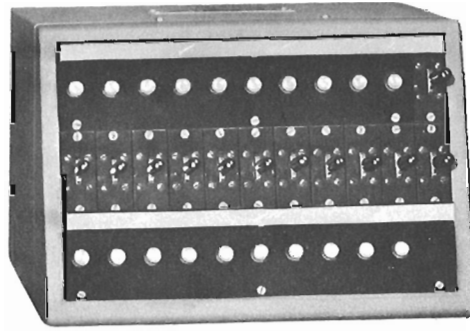
C.D.I. Concentration Units

SWITCHING CABINETS

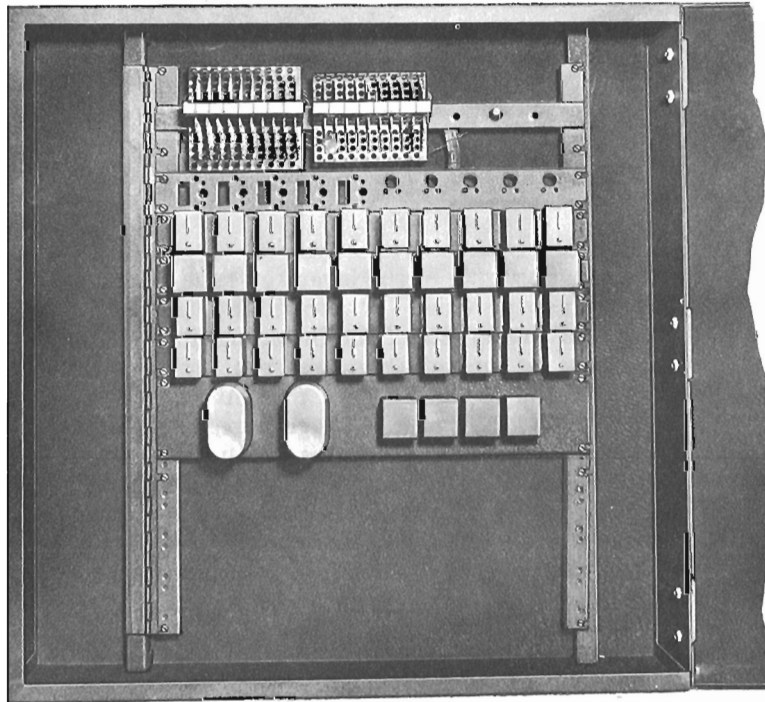
RELAY CABINETS



Ten Line Switching Cabinet
Lamp, Key and Jack
with Dial and Ringing Keys



Ten Line Switching Cabinet
Lamp and Key
with Dial and Ringing Keys



Ten Line Relay Cabinet for use
with either of above Switching Cabinets



C.D.I. Concentration Units

SWITCHING CABINETS

RELAY CABINETS

Concentration Units comprising switching cabinets and relay cabinets are made in standard 6, 10, 12 and 20 line sizes. All four sizes of switching cabinets can be furnished with lamp and key arrangement for use where patching jacks are not required. Dial and ringing keys are provided in this style only when specified. Construction conforms to AAR, Communications Section, Specification 2-G-73.

The 6 and 10 line sizes can be furnished with lamps, keys and jacks. These sizes include dial and ringing keys as illustrated.

The relays and associated apparatus are mounted on a relay frame which can be installed in a cabinet as illustrated or mounted on standard 19" rack, as desired. When installed in a cabinet the frame is attached to a hinged member which allows the gate to be swung to the left for access to the wiring for inspection and service.

This equipment will be assembled and wired for magneto, magneto-delay or selector circuits as specified. We will be glad to submit our suggestions concerning such equipment upon being informed as to the requirements.

Ordering references given below should be supplemented by information as to the type of circuit for which the equipment is to be wired.

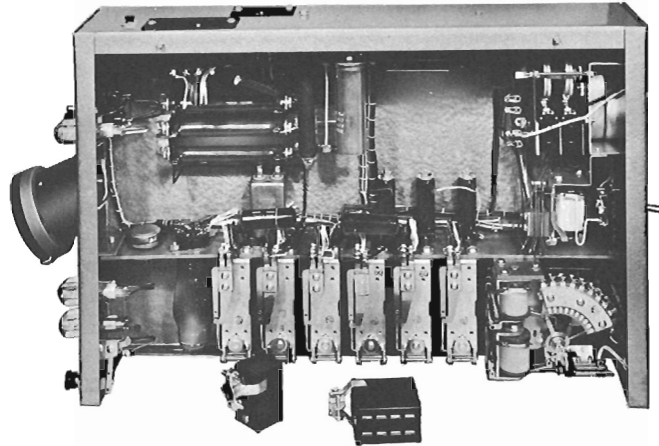
Ref. No.	Description	Piece No.
1	Switching Cabinet for 6 line concentration unit, lamp, key and jack.....	1675-4
2	Switching Cabinet for 6 line concentration unit, lamp and key.....	1675-5
3	Relay Cabinet, 6 line (for either of above).....	1675-7
4	Switching Cabinet for 10 line concentration unit, lamp, key and jack.....	1675
5	Switching Cabinet for 10 line concentration unit, lamp and key.....	1675-2
6	Relay Cabinet, 10 line (for either of above).....	1675-1
7	Switching Cabinet for 12 line concentration unit, lamp and key.....	1675-13
8	Relay Cabinet, 12 line (for above).....	1675-14
9	Switching Cabinet for 20 line concentration unit, lamp and key.....	1675-11
10	Relay Cabinet, 20 line (for above).....	1675-12



C.D.I. Printer Selector No. CDX-15T and CDX-15R



CDX 15 TA
Showing Dial End



CDX 15 TA
Cover Removed

TABLE MOUNTING TYPE CDX-15

The Printer Selector is an automatic station selecting device which provides a means of establishing printer communication over a party line system. Up to seven stations can thus be connected into a network. By means of this equipment, a calling station can select any one or group of other stations to receive a transmission. All connections are controlled by a conventional telephone dial. This is all accomplished electrically; no addition of function levers or other mechanical alteration of printers being required.

When a station connection is dialed by the calling station, the receiving station printer motor is started automatically. At the end of

the transmission it is stopped by pushing the disconnect button at the calling station. All uncalled stations remain idle. When specified, an answer-back feature can be provided.

A built-in power supply can also be furnished, when specified, for local battery supply.

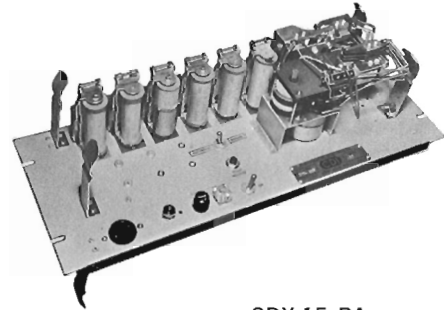
The CDX-15 Table Mounting Type Printer Selector (including answer-back unit, and power supply when furnished) is assembled in a metal cabinet, measuring 16½" high, 3½" wide, and 12" deep. Suitably spaced holes provide for mounting at the side of the printer table with dial at table top level.



C.D.I. Printer Selector No. CDX-15T and CDX-15R



CDX-15 RA with Dial Case



CDX-15 RA Cover Removed

RACK MOUNTING TYPE CDX-15R

The CDX-15R Rack Mounting Type Printer Selector is similar in all respects to the CDX-15T Table Mounting Type, except that the dial, indicator lights and disconnect switch are contained in a separate case.

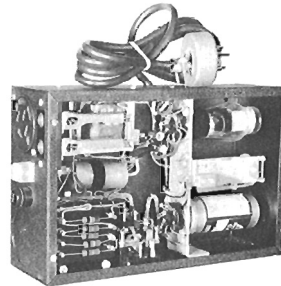
The 5¼" high panel mounts on a standard 19" rack, while the dial case, 4½" square with sloping front, can be mounted conveniently on the printer table.

When answer-back units are required, be sure to specify dial call numbers for each station.

Ref. No.	Description	Piece No.
1	Table Mounting Type Printer Selector, No. CDX-15T without answer-back unit or power supply.....	90311
2	Table Mounting Type Printer Selector, No. CDX-15TA with answer-back unit, without power supply.....	90312
3	Table Mounting Type Printer Selector, No. CDX-15TP with built-in local D.C. power supply, without answer-back unit.....	90311-2
4	Table Mounting Type Printer Selector, No. CDX-15TAP complete with built-in local D.C. power supply and answer-back unit.....	90311-3
5	Rack Mounting Type Printer Selector, No. CDX-15R with dial case, without answer-back unit or power supply.....	90311-1
6	Rack Mounting Type Printer Selector, No. CDX-15RA with dial case and answer-back unit, without power supply.....	90312-2
7	Rack Mounting Type Printer Selector, No. CDX-15RP with dial case and power supply, without answer-back unit.....	90311-4
8	Rack Mounting Type Printer Selector, No. CDX-15RAP complete with dial case, built-in power supply and answer-back unit.....	90312-4
11	Dial case only CDX-15D for rack mounted selectors complete with dial, disconnect switch, and indicator lights.....	90311-11
12	Power Supply unit only, No. CDX-15PS.....	90311-12
13	Answer-Back unit only CDX-15AB.....	90311-13



C.D.I. Printer Motor Control No. CDX-39



The CDX-39 Printer Motor Control has been designed to automatically start the motors of printers in remote offices whenever messages are to be transmitted to these offices. It is ideally suited for off-line offices and other locations where the office is open only during certain hours of the day. It is extensively used for yard printers which operate only infrequently to receive train consists, etc. It permits messages to be transmitted to such offices at any time without the necessity of continuously operating the printer motor.

Two relays and a No. 2050 gas tube are so connected that on the first signal received the contacts of the motor control relay will apply energy to the printer motor. A time delay circuit is incorporated to continue the operation of the motor for from 30 to 130 seconds, depending on adjustment made, after the printer has received the last space signal, thus keeping the motor running for up to two minutes on a marking signal.

The circuits are so arranged that failure of the tube or other component will result in motor operation.

A pair of binding posts, normally strapped, may be used, when desired, for connections to a push-button for local starting of the motor for direct keyboard operation.

All parts are contained in a sheet metal cabinet $6\frac{1}{2}'' \times 10\frac{1}{2}'' \times 3\frac{1}{4}''$, which will conveniently mount under the printer table. Jacks are provided for cording the printer magnets and receiving loop into the Printer Control unit. The A.C. receptacle is poled to accept the four-prong plug from the printer motor, and a suitable cord is furnished to connect to the A.C. receptacle under the printer table. Installation is simply a matter of mounting the cabinet under the printer table and plugging in the several cords.

Ref. No.	Description	Piece No.
1	Printer Motor Control, No. CDX-39.....	90364

Replacement Parts List will be furnished upon request.



SECTION 45

Impulse Repeaters
Ringing Equipment
Telegraph Terminals
Telegraph Repeaters
Remote Testing & Patching Equipment

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Telegraph Key and Sounder.....	45-16

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

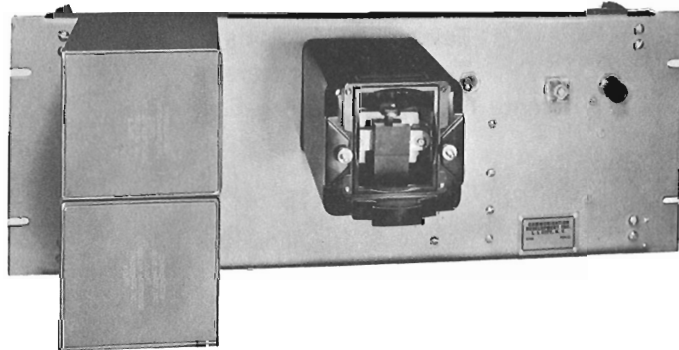
MANUFACTURERS & DISTRIBUTORS

GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632



C.D.I. 3½ Cycle Impulse Repeater No. CDX-31



The Type CDX-31 three and one-half cycle impulse repeater offers a convenient and economical means of extending the distance over which ringing signals may be transmitted. It will operate on any line-ringing voltage in common use.

The equipment, consisting of a Type BR impulse repeating relay, filter network, circuit breaker, terminals for lines and D.C. power supply and a toggle switch for disconnecting the D.C. supply, is all compactly mounted on a 7" high panel for 19" rack mounting.

In operation the impulse repeating relay is connected directly to the line to receive incoming ringing signals, and the output is connected to the out-going line, either directly or through a No. 70A coil, or equivalent, depending on whether inductive or non-inductive ringing is required.

The No. CDX-31-1 Repeater is equipped with the Type BR1 impulse repeating relay for use on non-inductive ringing circuits.

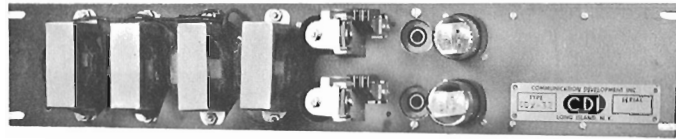
The No. CDX-31-2 Repeater is equipped with the Type BR2 impulse repeating relay for use on inductive ringing circuits.

Ref. No.	Description	Piece No.
1	Three and one-half cycle Impulse Repeater with Type BR1 relay, No. CDX-31-1	90357
2	Three and one-half cycle Impulse Repeater with Type BR2 relay, No. CDX-31-2	90357-2

Replacement Parts List will be furnished upon request.



C.D.I. 20 Cycle Impulse Repeater No. CDX-32



Back of 3½" high panel—for 19" rack mounting

The No. CDX-32 Electronic 20 Cycle Impulse Repeater is extensively used to repeat 20 cycle ringing signals on voice frequency circuits. The equipment is designed to operate on a 20 cycle line potential as low as 1 volt. The input circuits are sharply tuned to accept 20 cycles and offer a high loss to higher frequencies, thus eliminating the possibility of false ringing due to voice frequencies.

The No. CDX-32 Impulse Repeater is a dual device with independent identical circuits and relays for East-to-West and West-to-East operation.

Signals are received on the grid of a 6SN7 tube and amplified to operate a relay in the plate circuit. When this relay is operated it will

feed a source of 20 cycles to the line at full potential. "Sub-cycle" or other similar ringers may be used as the 20 cycle source to the contacts of the relay.

Power requirements are as follows:

Heaters—6.3 volts, 1.2 amperes.

Plates—150-250 volts D.C.

Idle—5 milliamperes, Maximum.

Ringing—15 milliamperes, Maximum.

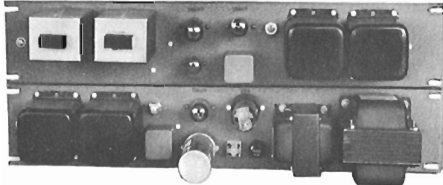
Because of the small power consumption, this repeater can usually be supplied from associated equipment. However, Power Supply No. CDX-35, shown and described in Section 46, page 46-3, will furnish the requirements of up to eight No. CDX-32 Impulse Repeaters.

Ref. No.	Description	Piece No.
1	20 Cycle Impulse Repeater, No. CDX-32.....	90315

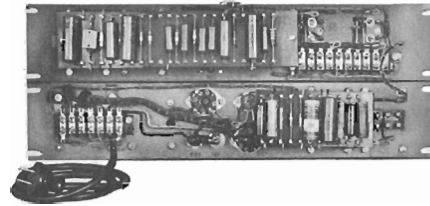
Replacement Parts List will be furnished upon request.



C.D.I. 1000/20 Cycle Voice Frequency Ringing Equipment, No. CDX-43



CDX-43RR
CDX-43PS
Front View



CDX-43RR
CDX-43PS
Rear View

The Type CDX-43 Voice Frequency Ringing Equipment is primarily intended for use in ringing over carrier telephone channels or over telephone lines which will not permit direct 20-cycle ringing. It employs a 1000-cycle tone which is interrupted at a frequency of 20 cycles. When connected in the circuit between the P.B.X. switchboard, or magneto set and the line or carrier drop, this equipment is capable of providing reliable signaling over any voice frequency facility which offers a usable talking circuit.

The equipment consists of a Power Supply-Ringer Oscillator Panel, No. CDX-43PS, and a Ringer-Receiver Panel, No. CDX-43RR.

The components of the Power Supply-Ringer Oscillator are assembled on a 3½" high panel for standard 19" rack mounting. One such panel, No. CDX-43PS, is capable of supplying as many as six of the Ringer-Receiver Panels, No. CDX-43RR. The Power Supply requires a

12AU7 tube and the Ringer Oscillator employs a 5Y3GT tube. The Power Supply-Ringer Oscillator is designed for operation from a 115 volt, 60 cycle source.

The components of the Ringer-Receiver, No. CDX-43RR, are also assembled on a 3½" high panel for standard 19" rack mounting. Two 12AU7 and one 6AL5 tubes are employed. A separate Ringer-Receiver panel is required for each telephone circuit, but, as above stated, up to six Ringer-Receivers may be operated from one Power Supply-Ringer Oscillator.

A separate source of 20-cycle ringing current is required for operating the local switchboard signals or the bells of magneto sets.

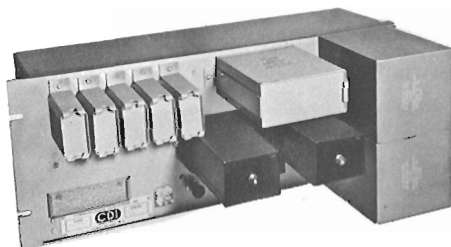
It is desirable to mount the Power Supply-Ringer Oscillator Panel and as many Ringer-Receiver Panels as required (up to six) on the same 19" rack, with the Power Supply-Ringer Oscillator at the bottom of the group.

Ref. No.	Description	Piece No.
1	Power Supply-Ringer Oscillator, No. CDX-43PS.....	90382
2	Ringer-Receiver, No. CDX-43RR.....	90382-1

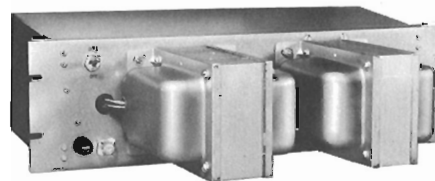
Replacement Parts List will be furnished upon request.



C.D.I. Selector Ringing Panel No. CDX-44 For A.C. Selector Circuits



Ringing Panel



Power Supply

The No. CDX-44 Selector Ringing Panel is used for transmitting $3\frac{1}{2}$ cycle impulses for the operation of A.C. selectors. The equipment is assembled on a 7" high panel for standard 19" rack mounting.

Relays are of the "plug-in" type so that a spare relay may be quickly substituted during periods of maintenance operation, thereby eliminating interference to ringing on important dispatching and message circuits.

Relay contacts are of the heavy-duty type and those of the reversing relay are shunted by spark-killing resistance-capacitance combinations, to insure long, trouble free operation. A suitable wave-shaping filter, consisting of inductance coils and capacitance units, is provided. The condensers are of the sealed, high voltage, oil filled type to insure maximum reliability.

Heavy-duty toggle switches are connected in the battery supply and line circuits to facilitate opening these circuits for test or maintenance purposes. The entire equipment is protected against excessive current, which may be due to line short circuits, by a quick acting circuit breaker which can be reset by means of a "trip-

free" push button in the face of the panel, or, if specified, by an electrical, remote control reset. A neon indication lamp is provided to show the presence of main D.C. potential.

The relay used to connect the ringing equipment to the line during transmission of ringing impulses is equipped with back contacts which are wired to a terminal block for connection to a bell or P.B.X. drop for message circuit operation. When specified, high breakdown condensers of 0.01 mfd. capacity will be furnished, connected from line to drop contacts of this relay to provide for audible ring-back signals to a P.B.X. switchboard.

Relays are designed for normal 12 volt operation, but a strapped resistance is provided so that a 24 volt supply may be used, if desired, by removing the strap from across the resistance. Units equipped for remote electrical reset of circuit breaker may also be operated from either 12 or 24-volt supply.

When specified, these panels can be supplied with a hinged wall-mounting bracket for use where rack mounting is not convenient.

Ref. No.	Description	Piece No.
1	Selector Ringing Panel with manual reset circuit breaker and push button on panel, No. CDX-44.....	90368
2	Selector Ringing Panel with electrical reset circuit breaker on panel for remote control, No. CDX-44RC.....	90368-1
3	Selector Ringing Panel, No. CDX-44B with Ring-back condensers.....	90368C
4	Selector Ringing Panel, No. CDX-44BRC with Ring-back condensers.....	90368-1C
5	Hinged Bracket for wall mounting of Selector Ringing Panel, No. CDX-44HB....	90368-2
6	Power Supply Panel, CDX-44PS.....	90368-3

Replacement Parts List will be furnished upon request.

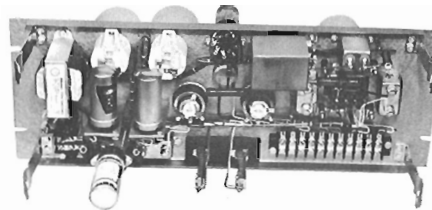


C.D.I. Bridging Polar Telegraph System, No. CDX-52

Patents Pending



CDX-52T Front View



CDX-52T Rear View, Cover Removed

The Bridging Polar Telegraph System utilizes polar transmission in a single line, direct current telegraph system. It may be applied to either grounded or metallic circuits. The advantages of the system over the conventional series system are manifold.

Application of the Bridging Polar Telegraph System should open up an entirely new field for utilization of circuits previously considered unsuited for printer operation, and for the improvement of many marginal circuits now in use. In this category are simplex channels on telephone circuits, both two-wire and four-wire phantom groups, since the leakage and capacitance of such circuits will be less important factors in the operation of printer channels. It will be possible to connect intermediate telegraph or printer stations to these channels merely by bridging coils across the telephone circuit. These coils can be of such high impedance as to have little or no effect on either voice transmission or

ringing on the telephone circuit.

Since stations of this system are bridge connected to the circuit, it is possible to connect or disconnect stations at will, in much the same manner as is done with telephone equipment, without in any way affecting the operation of the circuit. Furthermore, circuits equipped with this apparatus may be patched together or disconnected from one another without the necessity of making any re-adjustments of the individual circuits. It is, therefore, possible to provide switching arrangements which, like those of telephone circuits, are extremely simple when compared with those required for series telegraph circuits.

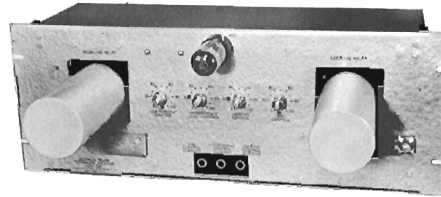
An outstanding advantage of this system is its ability to operate with practically no deterioration of signal under conditions of very high line resistance or excessive line leakage. This is due to the fact that it is necessary to effect only

Continued on following page



C.D.I. Bridging Polar Telegraph System, No. CDX-52

Patents Pending



CDX-52R Front View

a relatively small change in potential at any station in order to satisfactorily actuate the receiving apparatus. In actual service printers operating over lines several hundreds of miles in length, with relatively high leakage, have maintained excellent range even under extreme wet weather conditions, which would render a similar, conventional, telegraph line completely inoperative. The system can also be made practically immune to most cases of inductive interference, since the grid bias on the tubes in the receiving equipment can be adjusted to cut off above the highest point of interfering potentials and still respond to the signal potentials as long as these have higher values.

The system is so designed that the transmitting apparatus, which is used at each station for sending polar signals, stands disconnected from the line when in the normal, idle, position, with the result that there is no potential on the line except during actual transmission.

Due to the transmitting apparatus becoming automatically disconnected from the line at the end of transmissions and to the very high impedance of the input circuits of the receiving apparatus, any number of stations may be bridge connected to the line, thus facilitating two-way, party-line, operation. This insures that receiving stations distant from any transmitting station in the system will follow transmitted signals with the same fidelity as a receiving station adjacent to the transmitting station.

Receiving apparatus is so arranged that the receiving relay connected to the telegraph or printer equipment is actuated by the plate current from one 6BL7-GT tube. One half of the tube, when in conducting condition, causes the relay to transmit a spacing signal, and the other half, when in conducting condition, causes it to transmit a marking signal. By connecting the grid circuits of the tube to the line circuit through suitable limiting resistances, the tube

Continued on following page



C.D.I. Bridging Polar Telegraph System, No. CDX-52

Patents Pending



CDX-52L Front View

elements are caused to become conducting or non-conducting, in accordance with the positive or negative potentials on the line, resulting from the polar transmission. The receiving relay is electrically locked in the position to which last operated, and because the last signal of any transmission is always a marking signal, the receiving equipment is maintained in a closed circuit condition during periods when the circuit is idle. WECO. No. 255A or AECO. series PTW, type No. 203 are used for the receiving and locking relays, but are not furnished with the receiver. All other relays and tube are included. Since the printer in the receiving loop operates directly from the contacts of the relay on the No. CDX-52R panel the WECO. No. 255A relay usually used in the printer receiver should be omitted.

The Transmitter utilizes one 6BL7-GT tube and two WECO. No. 275C or Clare No. HG-1003 relays, which are furnished. One WECO. No. 255A or AECO. series PTW, type No. 203 relay is also required but is not supplied with the transmitter.

The Bridging Polar Telegraph System requires that a source of 115 volts, 60 cycles, be connected to each transmitting and receiving panel. The No. CDX-52T transmitter requires both positive and negative D.C. power supply of approximately 130 volts. No D.C. power supply is required for the No. CDX-52R receiver, other than that normally associated with the receiving loop.

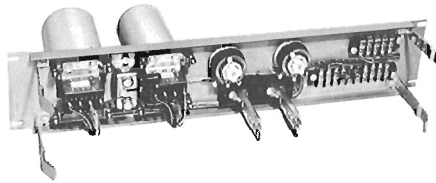
The panels of the transmitter and receiver are each 7" high for standard 19" rack mounting.

Continued on following page



C.D.I. Bridging Polar Telegraph System, No. CDX-52

Patents Pending



CDX-52L Rear View, Cover Removed

In locations where it is desired to extend the sending legs as a single loop, or to interconnect with a single line telegraph or printer circuit, or a half-duplex terminal, a Bridging Polar Telegraph Auxiliary Set, No. CDX-52A, is required. No additional power supply is necessary for this auxiliary set, which is assembled on a 3½" high panel. A WECo. No. 255A or AECo. series PTW, type 203 relay is required but is not furnished with the set.

A local printer may be connected between two Bridging Polar Telegraph sets, when the sets are interconnected to form a repeater, by utilizing a Bridging Polar Telegraph Local Set, No. CDX-52L, which is also assembled on a 3½" high panel. Two relays are needed for the Local Set but are not furnished with it. Either WECo. No. 255A or AECo. series PTW, type 203 relays may be used.

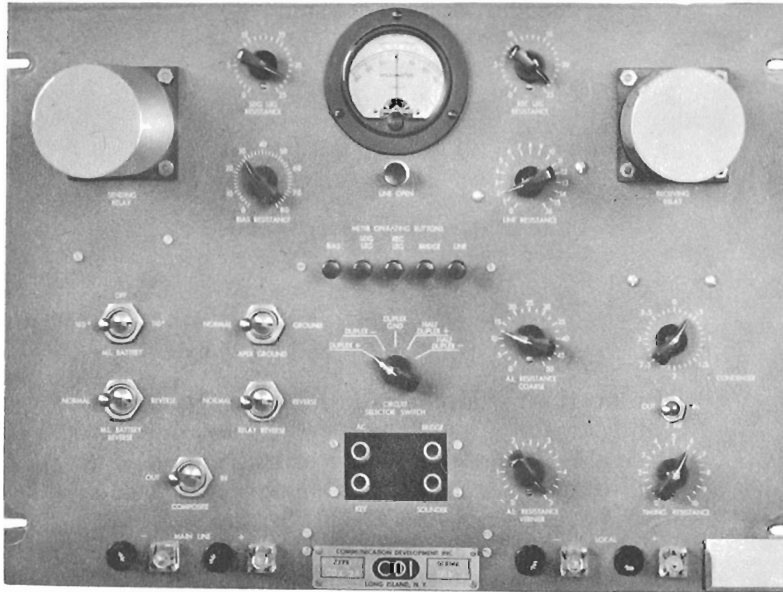
Ref. No.	Description	Piece No.
1	Bridging Polar Telegraph Transmitter, No. CDX-52T, less sending relay.....	90652-1
2	Bridging Polar Telegraph Receiver, no. CDX-52R, less locking and receiving relays.....	90652-2
3	Bridging Polar Telegraph Auxiliary Set, No. CDX-52A, less relay.....	90652-3
4	Bridging Polar Telegraph Local Set, No. CDX-52L, less relays.....	90652-4
5	Bridging Polar Telegraph Circuit Recloser, No. CDX-52CR.....	90652-5

Replacement Parts List will be furnished upon request.



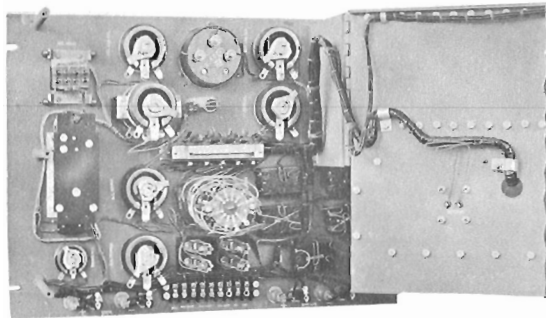
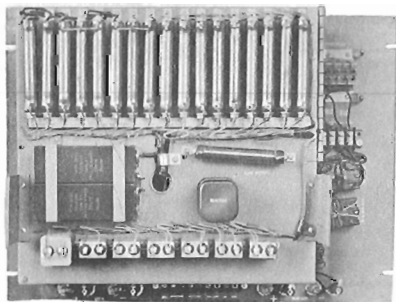
C.D.I. Duplex Terminal No. CDX-2A

FULL DUPLEX HALF DUPLEX REPEATER



No. CDX-2A Duplex Terminal with No. 255A Relays

Arranged on a 13 $\frac{5}{16}$ inch high panel for 19 inch rack mounting, all controls are accessible from the front.



All fixed resistors and capacitors are mounted on a rear panel as illustrated to the left. Removal of two screws permits the gate to be swung open, giving access to the control devices which are mounted on the front panel.



C.D.I. Duplex Terminal No. CDX-2A

FULL DUPLEX HALF DUPLEX REPEATER

The Type CDX-2A Duplex Terminal provides a reliable, full-margin Teletype circuit over a single wire, simplex or composite circuit. May be used as full duplex or half duplex terminal, as "Bust-up" duplex, or, with two connected back-to-back, as full duplex repeater.

Circuits can be instantly changed, as required, by the manipulation of the switches; no connections need be changed by unsoldering and re-soldering.

Also available on specification with necessary jacks and switch to permit use as direct-point repeater. (Reference No. 5)

It is supplied with 17B, WECO. 255A or AECO. Series PTW Type 203 relays, or with sub-bases only for whichever type is specified.

Artificial line resistance is continuously adjustable from 0 to 5000 ohms and capacity is adjustable in 0.1 MF steps from 0 to 5½ MF. A 1000 ohm rheostat in series with the capacity provides for timing adjustment.

Push buttons provide the means for connecting the meter to measure bias, sending leg, receiving leg, bridge balance and line current.

Four jacks are provided for monitoring repeaters and to connect key and sounder if desired.

Full details and circuit diagrams will be supplied promptly upon request.

Ref. No.	Description	Piece No.
1	Duplex Terminal, CDX-2A, complete with No. 17-B relays.....	ES1678-2
2	Duplex Terminal, CDX-2A, complete with No. 255-A relays.....	ES1678-1
3	Duplex Terminals, CDX-2A, with Sub-bases for No. 17-B relays (without relays)	ES1678
4	Duplex Terminal, CDX-2A, with 18-B sub-bases for No. 255-A or Type 203 relays (without relays).....	ES1678-3
5	Duplex Terminal, Point Type Repeater with 18-B sub-bases for 255A Relays (without Relays).....	90639

Replacement Parts List will be furnished upon request.

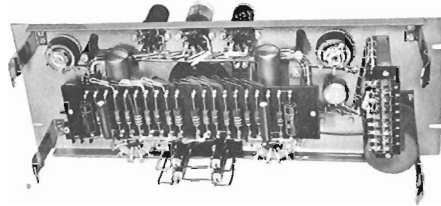


C.D.I. Electronic Single Line Repeater No. CDX-17

FOR MORSE OR PRINTER CIRCUITS



CDX-17 Front View



CDX-17 Rear View, Cover Removed

The No. CDX-17 Electronic Single Line Repeater was especially designed for use where personnel is not available for close supervision. The potentiometer and rheostat adjustments may be so set that no changes will be required to compensate for the line leakage up to 40 milliamperes.

Nearly any requirement for repeating single line Morse or printer signals can be met with the No. CDX-17 Repeater. Polarity of the line battery may be either positive or negative, as selected by means of a rotary switch, and operation may be to the opposite polarity or to ground at the distant end of the circuit.

Power requirements with positive battery to line are 90 milliamperes positive battery and 10 milliamperes negative battery. With negative

battery to line the requirements are 20 milliamperes positive battery and 70 milliamperes negative.

To maintain proper tube voltage the power supply for the No. CDX-17 Repeater should be 130 volts D.C. held to $\pm 5\%$.

Four rectifying elements of the No. CDX-16 Power Supply, shown and described in Section 46, pages 46-4 and 46-5, are recommended for use with this repeater; two elements for line and two for tube circuits. Rheostats on the power-supply are not desirable.

Two 6SH7 tubes and one 6SN7 tube are used.

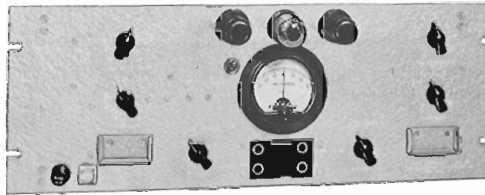
If relays require replacement, use C.P. Clare HG 1003 or WECO. 275C or equivalent.

Ref. No.	Description	Piece No.
1	Electronic Single Line Repeater, No. CDX-17.....	90317-1

Replacement Parts List will be furnished upon request.



C.D.I. Electronic Inverse Neutral Hub Repeater, No. CDX-18



The CDX-18 Hub Repeater is designed to give true "Hub" operation, that is, "hubs" can be connected to or disconnected from the hub connection without disturbing the individual circuit line-ups or adjustments. This provides great flexibility and is essential when teletype circuits are switched into or out of a conference network. It also provides for operation, as a single circuit, of a number of individual circuits all radiating from the same location.

This repeater employs the same fundamental principles of operation as the CDX-17 Electronic Single Line Repeater which has proven so satisfactory under all types of operating conditions. As is the case with the CDX-17 Single Line Repeater, the CDX-18 Hub Repeater, when operating on a 60M.A. line, will accept line leakage of 40M.A. without requiring adjustment of the repeater.

All the apparatus for two "hubs", including relays and tubes, is assembled on one 7" high

panel for standard 19" rack mounting. One CDX-18 panel may be used by itself as a single line repeater. The CDX-18-1H Hub Repeater, wired complete for two "hubs", but equipped with relays and tubes for one "hub" only, is available for use where an odd number of "hubs" is required.

To maintain proper tube bias it is important that a source of 130 volts D.C. supply, with a regulation of $\pm 5\%$, be used with the CDX-18 Repeater. Line battery of approximately 130 volts is not critical.

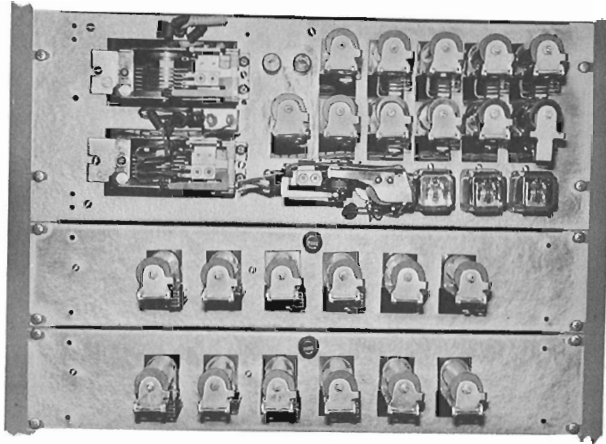
Four rectifying elements of the CDX-16 type Power Supply, shown and described in Section 46, pages 46-4 and 46-5 are recommended for use with this repeater; two elements for line and two elements for tube bias. Rheostats, which can be supplied on the CDX-16 power supply, should not be used for this service. If relays require replacement, use C.P. Clare HG1003 or WECO. 275C or equivalent.

Ref. No.	Description	Piece No.
1	Electronic Inverse Neutral Hub Repeater equipped for two hubs, No. CDX-18	90371
2	Electronic Inverse Neutral Hub Repeater equipped for one hub, No. CDX-18-1H	90371-1

Replacement Parts List will be furnished upon request.



CDI Remote Testing and Patching Equipment No. CDX-150



The CDX-150 Remote Testing and Patching Equipment was designed to enable a wire chief to carry out routine tests and fault locating at distant unattended offices.

The equipment consists of a Transmitting Unit, to be located in the Wire Chief's office, and a Master Control Panel, together with one or more Line Panels, at the remote locations.

The Transmitting Unit is used for the Wire Chief to set up and release the test conditions at the remote office. Means are provided for him to use alternate paths, where available, to the Master Control Panel. A regular telephone-type dial switch transmits the instructions.

The Master Control Panel, located at the remote site, receives the instructions from the wire chief, picks up the required line pairs and applies the test conditions. These conditions can be arranged to meet most test procedures and include shorts, grounds, disconnections, etc. The whole system works on a sequence basis; any test set-up remains in operation until the Wire Chief sends a "release" instruction. By this means it is possible to carry out fault locations involving more than one particular test at the remote station, for instance, "Short 1-2 West, Disconnect 3-4 West."

Two versions of the panel enable it to carry out 50 or 100 functions. One function is to pick up a line, or apply a specific test, or release a test, etc. There is one master release, to terminate tests and restore all circuits to normal.



CDI Remote Testing and Patching Equipment No. CDX-150

The Line Panel mounts the relays by which individual lines are picked up. One panel can terminate 2 lines, that is, 2 pairs East, 2 pairs West.

This equipment mounts on standard 19" racks and requires a 24-volt D.C. power supply. For small offices, wall cabinets are available.

Apart from direct line tests, it can be used for cross-patching, controlling stand-by facilities or monitoring other equipment. Two or more Master Control Panels can be installed at different remote stations, enabling tandem tests to be carried out.

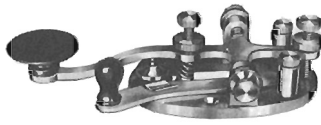
Ref. No.	Description	Piece No.
1	Transmitting Unit, CDX-150-T.....	90643-T
2	Master Control Panel, 50 functions, equipped with one 60 m/a plug-in control relay, CDX-150-C1-1.....	90643-C1-1
3	Master Control Panel, 50 functions, equipped with two 60 m/a plug-in control relays, CDX-150-C1-2.....	90643-C1-2
4	Master Control Panel, 50 functions, equipped with three 60 m/a plug-in control relays, CDX-150-C1-3.....	90643-C1-3
5	Master Control Panel, 100 functions, equipped with one 60 m/a plug-in control relay, CDX-150-C2-1.....	90643-C2-1
6	Master Control Panel, 100 functions, equipped with two 60 m/a plug-in control relays, CDX-150-C2-2.....	90643-C2-2
7	Master Control Panel, 100 functions, equipped with three 60 m/a plug-in control relays, CDX-150-C2-3.....	90643-C2-3
8	Line Panel for two through Circuits, (4-wires) CDX-150-P.....	90643-P
9	Wall Cabinet for one Master Control Panel and two Line Panels, CDX-150-CAB2.....	90643-CAB2
10	Wall Cabinet for one Master Control Panel and four Line Panels, CDX-150-CAB4.....	90643-CAB4
11	Wall Cabinet for one Master Control Panel and six Line Panels, CDX-150-CAB6.....	90643-CAB6
12	Plug-in Receive Relay, CDX-150-R.....	90643-R
13	Master Control Panel, 50 functions, less plug-in relays, CDX-150-C1.....	90643-C1-0
14	Master Control Panel, 100 functions, less plug-in relays, CDX-150-C2.....	90643-C2-0

Replacement Parts List will be furnished on request.

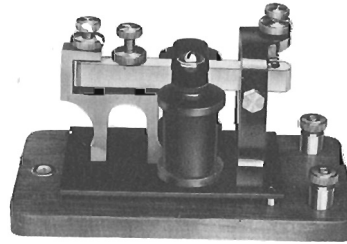


Telegraph Instruments

KEY SOUNDER



Key



Sounder

The base of the M-100 Key, equipped with binding posts, is brass with a lacquer finish. Lever is nickel plate finish. Contacts are platinum.

The tone quality and instant action of this correctly designed sounder are well and widely known. All adjustments are simple and accurate. Bar frame is black enamel and has a brass sounding bar, brass bridge, and black lacquered steel sounder plate. It is mounted on a mahogany finished wood base equipped with brass binding posts and rubber mounting feet. Resistance value, 4 ohms.

Ref. No.	Description	Piece No.
1	Type M-100 Telegraph Key.....	90234
2	Type 112-S Sounder, 4 Ohm.....	90235-4



SECTION 46

Power Supplies
Battery Eliminators

CONTENTS

	Page No.
C.D.I. Power Supply, No. CDX-35.....	46-3
C.D.I. Power Supply, No. CDX-16.....	46-4 & 5
Telegraph Office Power Supply, Types "SK" and "SKJ".....	46-6 & 7
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Fahnestock "C" Bias Eliminator, No. 16-A.....	46-10

WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.

MANUFACTURERS & DISTRIBUTORS

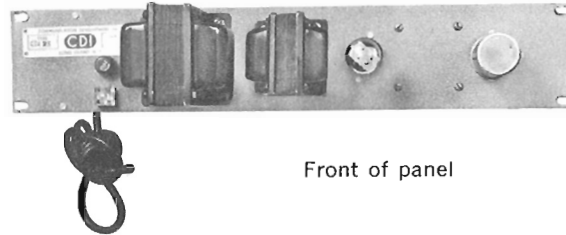
GENERAL OFFICES and FACTORY

2742 WEST 36TH PLACE CHICAGO, ILL. 60632

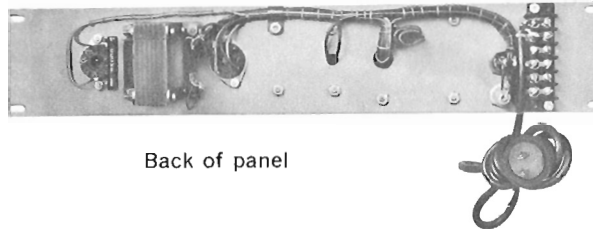


C.D.I. Power Supply No. CDX-35

FOR 20 CYCLE IMPULSE REPEATER



Front of panel



Back of panel

The No. CDX-35 Power Supply will furnish the necessary filament and plate energy for the operation of up to 8 No. CDX-32 20 cycle Impulse Repeaters, described in section 45, or equivalent devices.

The A.C. output for filament heating is at 6.3 volts with a capacity of 9.5 amperes.

The D.C. output is 250 milliamperes at 250 volts. Full-wave rectifier tube 5Y3 is used with suitable filter network to provide smooth D.C. energy for all devices, similar to the Impulse Repeater, within its capacity.

Components are mounted on a 3½" high panel for 19" rack mounting. The unit is furnished with 3-foot cord and attachment plug, A.C. line fuse and blown-fuse indicator.

Ref. No.	Description	Piece No.
1	Power Supply, No. CDX-35.....	90316

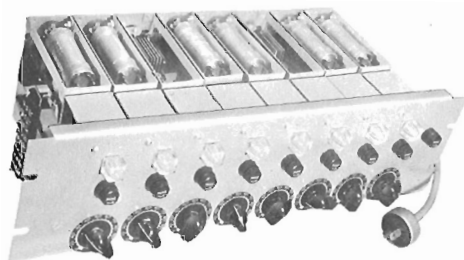
Replacement Parts List will be furnished upon request.



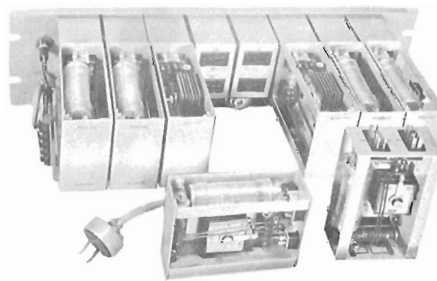
C.D.I. Power Supply No. CDX-16

INPUT: 115 VOLTS, 60 CYCLES

D.C. OUTPUT: 135 VOLTS, 100 MILLIAMPERES PER UNIT



CDX-16G
Front View



CDX-16G
Rear View—Units Removed

The Type CDX-16 Power Supply provides a convenient source of power for small telegraph offices for operation of Repeaters, Duplex Sets, Wire-Chief's Circuits, Answer-backs, etc. Using half-wave Selenium rectifier elements it provides up to eight individual sources of potential, either positive or negative to ground as selected. Normal D. C. output of each element is 135 volts, 100 milliamperes. Two or more elements may be connected in parallel when greater current output is required.

The unique feature of this Power Supply is the ease with which the polarity of each rectifier may be selected. Each unit is an individual, half-wave rectifier with a 100 ohm current limiting resistance and 80 microfarad capacitor. When plugged into the receptacle with the word POSITIVE at the top the output is positive to ground. With the word NEGATIVE at the top the output is negative to ground.

Two types are available, both of which are assembled on 5¼" high panels for standard 19" rack mounting and are equipped with three-foot

cord and fused attachment cap for A. C. connection.

The No. CDX-16G Standard Power Supply is a transformerless rectifier, regularly equipped with receptacles for eight plug-in rectifier units, eight ¼ ampere, type AGC, fuses with blown-fuse indicators and drilled for eight rheostats. The 2500 ohm rheostats are furnished only when specified, but the rheostat connection for each rectifier circuit is bridged by a wire loop of sufficient length to allow it to be cut for connecting through the rheostat should it be added. The mounting holes for the rheostats are fitted with apparatus blanks when rheostats are not furnished. A fuse holder containing a 3 ampere, type AGC, fuse connected in the ungrounded side of the A. C. supply is also mounted in the face of the panel. Because this is a transformerless type of rectifier the A. C. connecting cord is equipped with a polarized type of attachment cap to insure that the common side of the D. C. output circuits will be connected to the grounded neutral side of the A. C. supply circuit.



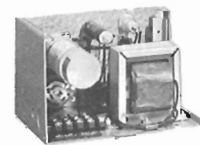
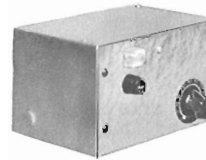
C.D.I. Power Supply No. CDX-16

INPUT: 115 VOLTS, 60 CYCLES

D.C. OUTPUT: 135 VOLTS, 100 MILLIAMPERES PER UNIT



CDX-16T



CDX-16TS

The No. CDX-16T Power Supply is similar in every respect to the No. CDX-16G type, except that it is equipped with an isolation transformer and only six receptacles for plug-in rectifiers, six fuses with blown fuse indicators and drilling for six rheostats.

For application where only a single rectifier is required the No. CDX-16TS Single Power Supply is recommended. In this unit the same components as are used in the No. CDX-16T Power Supply, including an isolation transformer, are

mounted in a sheet metal box 4" high, 6½" wide and 4⅝" deep. This unit may be mounted beneath, or on the side of a table, on the wall or in any convenient location. Each Single Power Supply is equipped with a three-foot cord and attachment cap for A. C. connection.

In ordering Power Supply panels No. CDX-16G or No. CDX-16T please specify the number of plug-in rectifier units and rheostats, if any, to be supplied with each panel.

Ref. No.	Description	Piece No.
1	Power Supply No. CDX-16G, complete with eight rectifier units and eight rheostats.....	90342-16
2	Power Supply No. CDX-16G, complete with eight rectifier units, without rheostats	90342-8A
3	Power Supply Panel only No. CDX-16G, with eight receptacles for rectifier units and eight rheostats, without rectifiers.....	90342-8B
4	Power Supply Panel only No. CDX-16G, with eight receptacles for rectifier units, without rheostats and without rectifiers.....	90342-8
5	Power Supply No. CDX-16G, complete with rectifiers and rheostats as specified.....	90342-X
8	Power Supply No. CDX-16T, complete with six rectifier units and six rheostats.....	90342-12
9	Power Supply No. CDX-16T, complete with six rectifier units, without rheostats	90342-6A
10	Power Supply Panel only No. CDX-16T, with six receptacles for rectifier units and six rheostats, without rectifiers.....	90342-6B
11	Power Supply Panel only No. CDX-16T, with six receptacles for rectifier units, without rheostats and without rectifiers.....	90342-6
12	Power Supply No. CDX-16T, complete with rectifiers and rheostats as specified.....	90342-6X
13	Single Power Supply No. CDX-16TS, complete.....	90342-16TS
14	Plug-in Rectifier Unit only, No. CDX-16P.....	90342-1
15	Rheostat only, 2500 ohms resistance, No. CDX-16R.....	90342-2

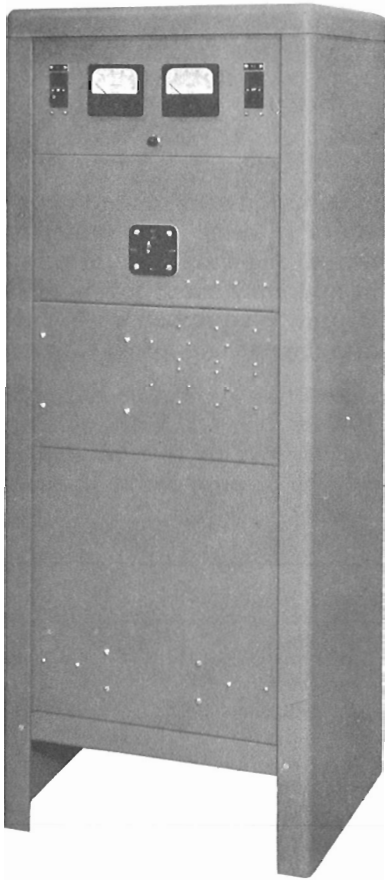
Replacement Parts List will be furnished upon request.



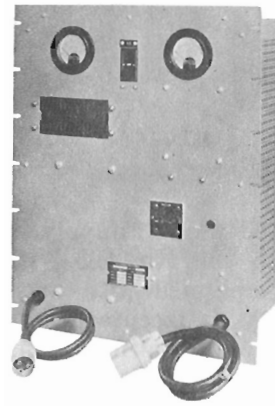
Telegraph Office Power Supply – Types SK and SKJ

120 VOLTS D.C.

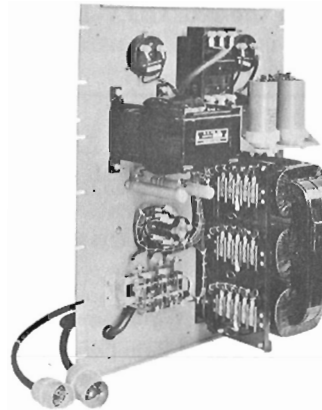
7.5, 15 AND 45 AMPERES



Type SK



Type SKJ (Front)



Type SKJ (Rear)

These Silicon Rectifier Power Supplies were designed to provide a source of 120 volts Direct Current for the operation of Telegraph Legs, Printers, Perforators, etc.

Three standard sizes are available.



Telegraph Office Power Supply—Types SK and SKJ

120 VOLTS D.C. 7.5, 15 AND 45 AMPERES

(continued)

The Type SKJ-8120 is for operation on 105-125/210-240 volts, 60 cycles, single phase, having an output of 7.5 amperes at 120 volts D.C. with maximum ripple component of 0.65 volt, r.m.s., efficiency of approximately 85% at full load and output regulation of 11%.

The Type SKJ-15120 is for operation on 199-240 volts, 60 cycles, 3 phase, having an output of 15 amperes at 120 volts D.C. with maximum ripple component of 0.3 volt, r.m.s., efficiency of approximately 87% at full load and output regulation of 7%.

Both of above are assembled on standard 19" rack panels 28" high.

The Type SK-45120 is for operation on 205-240 volts, 60 cycles, 3 phase, having an output of 45 amperes at 120 volts, D.C. with maximum ripple component of 0.4 volt, r.m.s., efficiency of approximately 90% and output regulation of 11%.

This larger type is mounted in a floor cabinet 22" x 18" x 56" high, as illustrated.

In all three models the input and output protection is by means of circuit breakers and the silicon rectifier elements are protected by "Amp-Trap" fuses. Output Voltmeter and Ammeter are also provided.

Transformer taps allow adjustment of the primary to match the normal input line voltage. With the three-position "HIGH-MED-LOW" selector switch the output can be set at the desired voltage.

Ref. No.	Description	Piece No.
1	Type SKJ-8120 Power Supply, 7.5 amp., 120 volt D.C. output, for 105-125/210-240 volt, 60 cycle, 1 phase, operation.....	SKJ-8120
2	Type SKJ-15120 Power Supply, 15 amp., 120 volt D.C. output, for 199-240 volt, 60 cycle, 3 phase, operation.....	SKJ-15120
3	Type SK-45120 Power Supply 45 amp., 120 volt D.C. output, for 205-240 volt, 60 cycle, 3 phase operation.....	SK-45120



Electrox Battery Eliminators

TYPE A3V



The Type A3V Electrox Battery Eliminator supplies smooth, noiseless D. C. current for the operation of one telephone transmitter and replaces the two dry cells commonly used. It operates direct from 115 volts, 60 cycles which should be connected to the two flexible leads. Screw terminals are provided for the D. C. output connections.

It consists of transformer, full-wave copper oxide rectifying element, choke and condenser filter system, and is housed in a tubular case 2½" in diameter by 3½" high. It may be placed in the battery compartment of the phone or mounted separately on the wall or shelf by means of a clamp mounting ring furnished when specified.

TYPE No. 6001

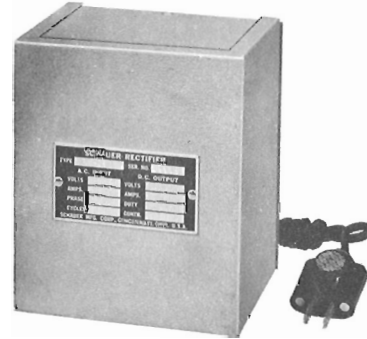
IMPEDANCE UNIT



To avoid cross-talk when a Type PA-05004 Eliminator is used to supply energy to more than one operator's position, one No. 6001 Impedance Unit is required for each position.

TYPE PA-05004

Type PA-05004 Electrox Battery Eliminator is designed to supply directly from a 115 volt,



60 cycle source, a constant, humless direct current suitable for the operator's circuit on magneto switchboards and similar purposes where 4 volts at not to exceed ½ ampere, is required. Maximum ripple on the D. C. output is 50 millivolts.

It is equipped with power-off relay which automatically transfers the load to stand-by dry cells in case of A. C. power failure. Since these cells are in use only occasionally, they will usually be serviceable for the shelf life.

This eliminator consists of an isolation type transformer, full-wave copper oxide rectifying element, choke and condenser filter system. A four-foot attachment cord with fused plug, using ½ ampere AGC fuses, is provided for A. C. connection. Screw terminals are conveniently located for D. C. output and stand-by battery.

The attractively finished steel cabinet is 5½" x 6½" x 4" deep, arranged for wall mounting.

Ref. No.	Description	D. C. Output		Size, Inches	Piece No.
		Volts	Amp.		
1	Type A3V Electrox Eliminator.....	3	0.15	2½ D.x3½ H.	A3V
2	Type A3V Eliminator with mounting ring.....	3	0.15	2½ D.x3½ H.	A3V-1C
4	Type PA-05004 Eliminator with Power-Off Relay.....	4	0.5	4x5½x6½	PA-05004
5	Mounting Clamp Ring for A3V Eliminator.....				90611
6	Type No. 6001 Impedance Unit.....				6001

Replacement Parts List for Type PA-05004 will be furnished upon request.



Electrox Battery Eliminators

FOR OPERATION OF LOCAL SOUNDERS

TYPE D-02002



The Type D-02002 Electrox Battery Eliminator is a very small and compact rectifier designed especially for the operation of one or two 4 ohm local sounders. Operating from 115 volts, 60 cycles, it supplies a direct current output of 1.5 volts, 0.25 ampere.

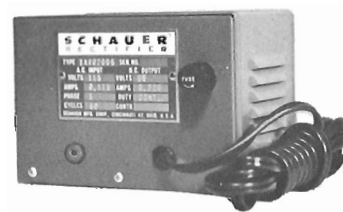
It consists of isolation transformer and full-wave copper-oxide rectifying element housed in a tubular case 2½" in diameter by 4¾" high with four-foot attachment cord and fused plug with ½ ampere AGC fuses and with screw terminals for D. C. output connections. A clamp mounting ring for securely attaching the Eliminator to wall, shelf or table is furnished when specified.

TYPE TAR-05006

The Type TAR-05006 Electrox Battery Eliminator was designed to operate several local sounders and similar low voltage instruments without the use of batteries. D. C. output is of suitable smoothness to operate telegraph sounders without hum, chattering or other interference, permitting perfect signal reading at all times.

This Battery Eliminator consists of an isolation transformer, variable resistor to adjust the output to requirements, full-wave Electrox rectifying element, four foot attachment cord and fused plug with ½ ampere fuses and suitable

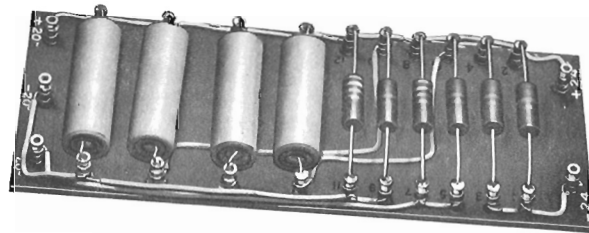
output terminals. Each Eliminator is housed in a steel cabinet, with removable cover, arranged for wall mounting; size 4" x 4¼" x 6¼". It supplies a direct current output of 6 volts at ½ ampere.



Ref. No.	Description	D. C. Output		Piece No.
		Volts	Amps.	
1	Type D-02002 Electrox Battery Eliminator Only.....	1.5	0.25	D-02002-F
2	Type D-02002 Eliminator with Mounting Ring.....	1.5	0.25	D-02002F-1C
3	Type TAR-05006 Electrox Battery Eliminator.....	6	0.5	TAR-05006
5	Mounting Clamp Ring for D-02002.....			.90611
6	Type AGC Fuse (Specify ½ Ampere).....			0303-9



Fahnestock "C" Bias Eliminator No. 16-A



The No. 16-A "C" Bias Eliminator is designed to replace the 22½ volt dry battery commonly used to supply grid bias for amplifying tubes of C5 carrier terminals and C1 repeaters. Several years' experience with a large number of these filter assemblies indicates that it provides a satisfactory, trouble free substitute for the dry batteries and that it in no way adversely affects the transmission performance of the "C" carrier system.

The "C" Bias Eliminator is a dual filter network mounted on an insulating panel 2¾" wide x 6⅞" long. This size permits the unit to be placed in the compartment from which the two 22½ volt dry batteries are removed, making installation very simple.

The filter network is designed to furnish the required 16½ to 19 volt negative bias to the "C" carrier amplifiers from the negative 24 volt rectifier that supplies the "C" carrier pilot regulator panel. The filter networks remove the A.C. ripple from the negative 24 volt supply and reduce it to the required 16½ to 19 volts. The time constant is long enough to hold the output at a constant potential when the input varies over a range of several volts while the "C" carrier regulator relays are pulsing.

Ref. No.	Description	Piece No.
1	"C" Bias Eliminator, No. 16-A.....	90358



WESTERN RAILROAD SUPPLY COMPANY



DIVISION OF WESTERN INDUSTRIES, INC.

2742 WEST 36TH PLACE CHICAGO, ILLINOIS 60632

PRICE SCHEDULE FOR CATALOG SECTIONS 40 to 46 COMMUNICATION DEVICES AND ACCESSORIES

Prices Effective April 1, 1967

(Subject to Change Without Notice)

Prices shown are F.O.B. our plant, Chicago, Illinois, or Long Island City, N.Y.: except Electrox Products, which are F.O.B. Chicago, Illinois, or Cincinnati, Ohio

**SUPERSEDES PRICE SCHEDULE
FOR E.C.E. CATALOG SECTION "K",
PART No. 2, of Feb. 1, 1966**

SECTION 40

Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*		
40-3	1	1-B	90230-1	\$32.20	40-10	1	18-A	90241	\$14.00		
	2		90230	39.20	40-11	1	19-A	90244	6.30		
	3		90230-SC	10.00				90244-1	7.00		
	4		90230-DS	.49				40-4	2	40-B	0040-B
1	2-B	90228	9.80	0027-16	2.38						
2		90229	12.60	0040-9	49.50C						
40-5		1	10-B	90226	1.70	5a	0040-9-7				49.50C
		2	8-B	90227	1.40	6	0040-7	6.25			
	3	8-B and 52B	90227-1	3.10	7	0027-6	.30				
40-7	4	10-B and 52B	90226-1	2.45	8	0026-6	.40				
	1	1-B	90250-1-7	50.00C	9	0040-1	1.10				
	2		90250-1	50.00C	10	0040-2 and 4	.30 pr.				
	3		1-C	90250-2-7	60.00C	11		.05			
4	1-C		90250-2	80.00C	40-13	3	440	0440	9.00		
5	51-B	90250-3	44.00C	3a				0440-M	10.80		
6	52-B	90250-4	98.00C	6				0440-12	4.40		
7	54-A	90250-5	13.00C	7				0440-13	6.25		
8	54-B	90250-6	17.00C	7a				0440-13M	6.25		
9	57-A	90250-7	18.20C	8				0440-2	.15		
10	57-A	90250-8	18.20C	9				0440-4	.15		
12	57-A	90250-7-5	18.20C	10				0440-8	.50		
13	57-A	90250-7-6	18.20C	11				0390-7	.25		
14	57-A	90250-9	20.00C	12					.05		
15	57-B	90250-11	51.20C	13				0040-9	49.50C		
16	57-B	90250-11-1	51.20C	40-14				1	1225	1225-100	10.20
17	57-C	90250-10	40.00C							2	1200-1
18	53-L-5	0040-9	49.50C		3	1225-105	49.50C				
19	53-L-7	0040-9-7	49.50C		4	0440-2	.15				
40-8	1	3-A	90243-6		8.40	5	0440-4			.15	
	2		90243-10		13.30	6	1225-104			2.25	
40-9	1	4-B	90233-6		8.40	7	1225-101			5.75	
			90233-10	12.60	40-15	1	1200	1200DW	4.85		
			90233-1	2.10				1200-1	4.35		
			90233-1Y	2.10				1200-2	1.05		

Continued on page 2

*Price each unless otherwise indicated.



WESTERN RAILROAD SUPPLY COMPANY

DIVISION OF WESTERN INDUSTRIES, INC.



2742 WEST 36TH PLACE CHICAGO, ILLINOIS 60632

Price Schedule of April 1, 1967

SECTION 40 (Continued)

Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*
40-16	2	"CD"	CD2 to 8	\$ 1.85	40-21	1	90649	90649-1	\$ 52.00
	4	"MCD"	MCD2 to 8	1.85		2		90649-2	93.00
						3		90649-3	186.00
40-17	1	105-B	105-B	2.25	40-23	1	CDX-66-1	90625-1	233.00
	10	105-B 1	105-B 1	2.15		2	CDX-66-2	90625-2	327.00
40-18	1	3-A	90232	36.40		3	CDX-66W-1	90625-11	257.00
						4	CDX-66W-2	90625-12	345.00
40-19	2	4-A	90232-1	42.00	40-24	1	CDX-70	90637	170.00
40-20	1	CDX-72-1	90624-1	114.00		2	CDX-71-1	90638-1	118.00
	2	CDX-72-2	90624-2	144.00		3	CDX-71-2	90638-2	177.00

SECTION 41

Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*	
41-3	1	21C	121C	\$ 5.60	41-7	1	13B	90222-6	\$ 2.80	
	2		221C	6.30		2	13-B	90222-10	3.50	
	3		321C	7.30	3	23-B	90223-10	4.90		
	4		421C	7.70	4	33-A	90224-6	2.25		
	5		521C	8.40	5	33-A	90224-12	3.65		
	6		621C	9.10	6	33-B	90224-6B	2.40		
	7		821C	10.50	7	33-B	90224-12B	3.50		
	8		1021C	11.90	8	14-B	90219-6	2.80		
	9		1221C	15.40	9	14-B	90219-10	3.50		
	10		1621C	18.20	41-8	1	1-B	90237-1B	3.50	
	11		1821C	19.60		2	2-B	90237-2B	4.95	
	12		2021C	21.70						
41-4	1	20CB	220CB	6.30	41-9	1	7-B	90225	.91	
	2		420CB	7.70						
	3		620CB	9.10		41-10	1	1212	1212-12	25.00
	4		820CB	10.50	2		1212-24		30.00	
	5		1020CB	11.90	3		1212-36		48.90	
	6		1220CB	14.00	41-11	1 to 22	AAR-12 etc.	90320 to 90341	On Appli- cation	
	7		1620CB	17.50						
	8		1820CB	19.60						
	9		2020CB	21.70						
41-5	1	26CB	126CB	7.70	41-12	1	3-A	90249-3	15.50C	
	2		226CB	9.10		2	4-A	90249-4	25.00C	
	3		426CB	10.50		3	5-A	90249-5	25.65C	
	4		626CB	11.90		4	6-A	90249-6	28.00C	
	5		826CB	14.00						
	6		1026CB	15.40						
	7		2026CB	30.80						

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*Price each unless otherwise indicated



WESTERN RAILROAD SUPPLY COMPANY
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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*		
41-13	2	742	742-2	\$26.00M	41-13	10	1953	1953-10B	\$65.60M		
	3		742-3	26.40M		11		1953-11B	68.80M		
	4		742-4	28.60M		12		1953-12B	70.25M		
	5		742-5	31.35M		14		1953-14B	74.60M		
	6		742-6	32.05M		16		1953-16B	76.80M		
	7		742-7	33.00M		18		1953-18B	81.70M		
	8		742-8	35.10M		20		1953-20B	104.40M		
	9		742-9	38.55M		24		1953-24B	112.00M		
	10		742-10	41.70M							
	11		742-11	42.90M		41-14		1	90387	3.05	
	12		742-12	44.00M							
	14		742-14	49.80M	41-15	1	R-5012	2.20			
	16		742-16	55.55M		2	R-5019	2.75			
	18		742-18	57.75M		3	R-5016	2.75			
	19		742-19	58.35M							
	20		742-20	59.70M	41-17	1	SE-1611	91150	3.20		
	24		742-24	65.35M		2	SE-1590	91151	3.20		
	41-13		2	1953	1953-2A	37.00M		3	SE-1786	91152	5.75
			3		1953-3A	42.50M		4	SE-1795	91153	5.75
			4		1953-4A	44.35M		5	SE-1648	91154	3.00
			5		1953-5A	47.55M		6	SE-1780	91155	3.00
			6		1953-6A	52.50M		7	SE-1650	91156	3.10
			7		1953-7A	57.20M		8	1088	91157	.20
			8		1953-8A	60.65M		9	RC-1	91158	.39
9		1953-9B	62.60M		41-18	1	90170	On Appli- tion			

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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*		
42-3	1	5B-1Ft.	90246-1	\$ 7.00	42-3	21	5B-1Ft.	90246-21	\$ 4.90		
	2		5B-2Ft.	90246-2		7.30		22	5B-2Ft.	90246-22	5.00
	3		5B-3Ft.	90246-3		7.40		23	5B-3Ft.	90246-23	5.20
	4		5B-4Ft.	90246-4		7.50		24	5B-4Ft.	90246-24	5.30
	5		5B-5Ft.	90246-5		7.80		25	5B-5Ft.	90246-25	5.50
	6		5B-6Ft.	90246-6		8.00		26	5B-6Ft.	90246-26	5.90
								27	5B-1Ft.	90246-27	2.10
								28	5B-2Ft.	90246-28	2.30
								29	5B-3Ft.	90246-29	2.40
								30	5B-4Ft.	90246-30	2.60
								31	5B-5Ft.	90246-31	2.70
								32	5B-6Ft.	90246-32	2.80
	11		5B-1Ft.	90246-11		7.00					
	12		5B-2Ft.	90246-12		7.30					
	13		5B-3Ft.	90236-13		7.40					
	14		5B-4Ft.	90246-14		7.50					
15	5B-5Ft.	90246-15	7.80	47	Bulk	90246-47	50.00C'				
16	5B-6Ft.	90246-16	8.00								

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*Price each unless otherwise indicated.



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Page No.	Ref. No.	Code No.	Piece Each*	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*		
42-4	51	5C-1Ft.	90247-1	\$ 8.40	42-6	161	5E-6Ft.	90268-6	\$20.20		
	52	5C-2Ft.	90247-2	8.50		161a	5E-18 In.	90268-2	19.60		
	53	5C-3Ft.	90247-3	8.70		161b	5E-3Ft.	90268-3	19.70		
	54	5C-4Ft.	90247-4	8.90		161c	5E-4Ft.	90268-4	19.80		
	55	5C-5Ft.	90247-5	9.30		163	"Y" 3Ft.	90247-103	22.40		
	56	5C-6Ft.	90247-6	9.50			163a	"Y" 5Ft.	90247-105	23.80	
	61	5C-1Ft.	90247-11	5.60		165	bulk green	90247-50G	70.00C'		
	62	5C-2Ft.	90247-12	5.80			166	bulk white	90247-50W	70.00C'	
	63	5C-3Ft.	90247-13	6.00			167	bulk red	90247-50R	70.00C'	
	64	5C-4Ft.	90247-14	6.20			168	bulk black	90247-50B	70.00C'	
	65	5C-5Ft.	90247-15	6.30			42-7	1	1-C	90261-1	1.30
	66	5C-6Ft.	90247-16	6.50				2	1-C	90261-2	1.30
	67	5C-1Ft.	90247-17	6.80				3	3-B	90262-1	2.20
	68	5C-2Ft.	90247-18	7.00				4	3-B	90262-2	2.20
	69	5C-3Ft.	90247-19	7.30		5		7-B	90263-1	2.25	
	70	5C-4Ft.	90247-20	7.60		6		7-B	90263-2	2.25	
	71	5C-5Ft.	90247-21	7.80	7	241-A		90266	7.30		
	72	5C-6Ft.	90247-22	8.20	42-9	1		200A	200A	2.80	
	73	5C-1Ft.	90247-23	2.60		2	202A	202A	3.50		
	74	5C-2Ft.	90247-24	2.70		3	203A	203A	3.60		
	75	5C-3Ft.	90247-25	2.80		4	208A	208A	3.60		
	76	5C-4Ft.	90247-26	2.90		5	208AIC	208AIC	5.40		
	77	5C-5Ft.	90247-27	3.00		6	208AWS	208AWS	4.50		
	78	5C-6Ft.	90247-28	3.10		7	224A	224A	3.50		
	42-5	79	5C-1Ft.	90247-29		3.00	8	224AWS	224AWS	4.60	
		80	5C-2Ft.	90247-30	3.10	9	228A	228A	3.50		
		81	5C-3Ft.	90247-31	3.20	10	228AWS	228AWS	4.90		
		82	5C-4Ft.	90247-32	3.50	11	230A	230A	5.60		
83		5C-5Ft.	90247-33	3.60	12	230ATC	230ATC	5.30			
84		5C-6Ft.	90247-34	3.90	13	231AWS	231AWS	5.20			
101		5D-1Ft.	90248-1	8.40	14	232AWS	232AWS	6.50			
102		5D-2Ft.	90248-2	8.50	15	233A	233A	4.80			
42-6	103	5D-3Ft.	90248-3	8.70	42-10	1	3A	90264	1.55		
	104	5D-4Ft.	90248-4	8.90		2	3A	90264(W)	2.00		
	105	5D-5Ft.	90248-5	9.10		3		90819-5(W)	.60		
	106	5D-6Ft.	90248-6	9.50		4		90264-5	2.25		
	111	5D-1Ft.	90248-11	8.40		5		15-02	.85		
	112	5D-2Ft.	90248-12	8.50		6		90264-6	3.25		
	113	5D-3Ft.	90248-13	8.70	42-13	1 or 2	215A or C	215A or C	1.45		
	114	5D-4Ft.	90248-14	8.90		2a	215CWS	215CWS	1.85		
	115	5D-5Ft.	90248-15	9.10		3 or 4	216A or C	216A or C	1.80		
	116	5D-6Ft.	90248-16	9.50		5 or 6	217A or C	217A or C	2.05		
	42-6	153	5E-2-1/2Ft.	90248-26		2.30	7 or 8	218A or C	218A or C	1.12	
		156	5E-5-1/2Ft.	90248-56		3.80	9 or 10	219A or C	219A or C	1.35	

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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*	
42-13	10a or 10b	220A or C	220A or C	\$ 2.15	42-17	1	56-24	0056-24-218A	\$45.10	
	21 or 22	223A or C	223A or C	1.35		2		0056-24X	On Application	
	25 or 26	225A or C	225A or C	1.75		3		0056-24	18.20	
	27 or 28	226A or C	226A or C	2.10		4		56.26	0056-26-218A	48.80
	37 or 38	236A or C	236A or C	2.25		5			0056-26X	On Application
	38a	236CWS	236CWS	2.80		6			0056-26	19.60
	39 or 40	237A or C	237A or C	1.80		7		56-48	0056-48-218A	81.80
	41 or 42	238A or C	238A or C	1.80		8			0056-48X	112.00
	43 or 44	239A or C	239A or C	1.85		9			0056-48	28.00
	45	240A	240A	2.10		10		56-52	0056-52-218A	86.30
	46	241A	241A	2.10		11			0056-52X	On Application
	47	242C	242C	3.70		12			0056-52	29.40
	48	243A	243A	2.70		13			90242-24	2.50
	56 or 57	246A or C	246A or C	1.40	42-19	1	385B	90385B	16.30	
	58 or 59	248A or C	248A or C	1.90		2	385BWS	90385BWS	17.40	
	61	250A	250A	4.90		3	385D	90385D	18.10	
	65	280C	280C	2.60		4	385DWS	90385DWS	20.30	
	67	285A	285A	2.25		5	385	90385-X	On Application	
	70 or 71	303A or C	303A or C	2.10		6	385	90385-1	11.90	
	75	394C	394C	2.25		11	386A	90386A	36.80	
	80	410A	410A	3.50		12	386AWS	90386AWS	39.00	
81	411C	411C	2.55	13		386B	90386B	41.50		
101 or 102	438A or C	438A or C	2.60	14		386BWS	90386BWS	44.80		
42-14	1	34A	90242	.63	15	386	90386-X	On Application		
	2		1056-103	24.45M	16	386	90386-1	28.00		
	3		1056-102	.10	21	389A	90389A	49.90		
	4		90242-1	.42	22	389AWS	90389AWS	54.10		
	5	4-CB	90224B	21.00	23	389B	90389B	59.10		
	6	4-C	90224	8.40	24	389BWS	90389BWS	65.80		
	7	1-A	ES-1650	5.75	25	389	90389-X	On Application		
	8	1-A	90242-2	1.40	26	389	90389-1	32.20		
42-15	1	5-D	90224-32	21.00	31		90385-3	.70		
	2		90224-32-218C	56.85	32		90385	.85		
	3		90224-32-217C	86.00	33		90385-2	.28		
	4		90224-32X	On Application	42-20	1	2-C	90220	20.30	
	5		90385-2	.25		2		90385-4	.75	
	6		90242-8	.56	3		90385-3	.70		
42-16	1	5-E	90274-104	67.20	42-21	1	17-A	90381	36.40	
	2		90274-215	220.10		2		90381-1	4.90	
	3		90274-218	183.70		3		90381-2	7.00	
	4		90274-236	300.20	42-22	2 to 13	1782	1782-2 thru 13	On Application giving quantity	
	5		90274-104X	On Application						
	6		90242-26	2.90						
	7		90274-90	70.80						
	8		90274-80	70.00						
	9		90274-130	91.00						

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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*
42-23	1	8-A	90275	\$ 25.20	42-30	A	1F & 2F	43786	\$ 4.90
	2		90275-1	33.60		B		EX-1548A	19.60
	3		90275-2	46.20		50		EX-3309	.70
	4		90275-3	On Ap- plication		51		EX-3307	.70
	5		90275-4			52		EX-3308	.28
42-24	1	5A	90379	9.75	53		EX-3310	2.10	
	2		90379-30	.50	54		EX-1537	.98	
42-25	1		90378	24.50	55		EX-1805A	1.10	
	2		90377	16.00	56		EX-1804	.70	
	3		90379-30	.50	57		EX-1531	.70	
42-26	1	ES1889	ES-1889-30	120.00	58		EX-1539	.45	
	2		ES-1889-40	148.00	59		EX-1544	.65	
	3		ES-1889-50	156.00	60		EX-1545	.65	
	4		ES-1889-X	On Ap- plication	61		EX-1806	.60	
42-29	1	1-F	90221-1	39.20	62		EX-1548	5.20	
	2	2-F	90221-2	72.80	63		EX-1535A	.70	
					64		EX-1534A	.70	
					65		EX-1538	1.10	
					66		EX-1536A	1.00	

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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*				
43-3	1	4565	4565	\$ 65.00	43-7	1	CDX-101(3wire)	90360-2A	\$108.00				
	2		4565-H	95.50		2		90360-3A	108.00				
	3		4565-F	85.00		3		90360-4A	108.00				
	4		4565-FH	128.00		4		90360-5A	108.00				
	5		4565-11	28.45	43-8	1	CDX-25	90360	36.00				
	6		4565-51	46.00		43-9		1	CDX-TU-2A	90648	5.50		
	7		4565-55	3.57				43-10		1	16A	90380	26.60
	8		4565F-55C	3.70						2		90380-1	3.40
	9		4565F-55S	3.95						3		90380-2	2.40 Set
43-5	1	CDX-26BG	90361-1	120.00	4		90380-3			3.80 Set			
	2	CDX-26B	90361-3	103.60	5		90380-4			.70			
	3	CDX-26G	90361-5	105.60	6		90380-5			.60			
	4	CDX-26	90361-7	80.40	7		90380-6			.45			
	5	CDX-26BGHS	90361-2	132.00	8		90380-7			1.00			
	6	CDX-26BHS	90361-4	105.60	43-11	1	4516-F		4516-F	38.00			
	7	CDX-26GHS	90361-6	119.00		43-12			1	8000		8001-1B	On Appli- cation
	8	CDX-26HS	90361-8	92.40					2			8002-3B	
	9	CDX-33	90361-10	6.00					3			8003-3C	
	10		90361-20	16.50	4		8004-3D						
				90361-21	13.20	Continued on page 7							
				90361-22	39.60								

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43-12	5	P-8600	P-8601-1A	\$	43-14	2	707	707	\$ 1.35
	6		P-8602-1B			3	708	708	
	7		P-8603-2A			4	709	709	
43-13	5	91398-1	75.00	5		710	710	2.35	
	6	91398-2	75.00						

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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*
44-3	1	CDX-75	90633-1	\$ 70.00	44-7	3	CDX-15TP	90311-2	\$432.00
	2		90633-2	72.00		4	CDX-15TAP	90311-3	456.00
	3		90633-3	102.00		5	CDX-15R	90311-1	408.00
	4		90633-4	102.40		6	CDX-15RA	90312-2	456.00
44-5	1 to 12	1675	1675 to 1675-12	On Appli- cation	7	CDX-15RP	90311-4	432.00	
					8	CDX-15RAP	90312-4	480.00	
					11	CDX-15D	90311-11	48.00	
					12	CDX-15PS	90311-12	32.00	
					13	CDX-15AB	90311-13	48.00	
44-7	1	CDX-15T	90311	396.00	44-8	1	CDX-39	90364	144.00
	2	CDX-15TA	90312	456.00					

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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*	
45-2	1	CDX-31-1	90357	\$264.00	45-12	1	CDX-17	90317-1	\$360.00	
	2	CDX-31-2	90357-2	264.00						
45-3	1	CDX-32	90315	210.00	45-13	1	CDX-18	90371	480.00	
45-4	1	CDX43PS	90382	216.00				2		CDX-18-1H
	45-5	2	CDX43RR	90382-1	216.00	45-15	1	CDX-150	90643-T	90.00
1		CDX-44	90368	324.00	2				90643-C1-1	540.00
45-9	2	CDX-44RC	90368-1	348.00	3				90643-C1-2	576.00
	3	CDX-44B	90368C	324.00	4				90643-C1-3	588.00
	4	CDX-44BRC	90368-1C	336.00	5				90643-C2-1	684.00
	5	CDX-44HB	90368-2	30.00	6				90643-C2-2	710.00
	6	CDX-44PS	90368-3	326.00	7				90643-C2-3	735.00
	8				8				90643-P	180.00
45-11	1	CDX-52T	90652-1	324.00	9				90643-CAB2	43.20
	2	CDX-52R	90652-2	300.00	10				90643-CAB4	57.60
	3	CDX-52A	90652-3	132.00	11				90643-CAB6	72.00
	4	CDX-52L	90652-4	132.00	12				90643-R	36.00
	5	CDX-52CR	90652-5	96.00	13				90643-C1-0	520.00
45-16	1	CDX-2A	ES-1678-2	790.00	1				M-100	
	2		ES-1678-1	790.00						
	3		ES-1678	685.00						
	4		ES-1678-3	690.00						
	5		90639	690.00		2	112-S	90235-4		

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Page No.	Ref. No.	Code No.	Piece No.	Price Each*	Page No.	Ref. No.	Code No.	Piece No.	Price Each*
46-3	1	CDX-35	90316	\$108.00	46-7	1	SKJ	SKJ-8120	\$641.00
						2		SKJ-15120	826.00
46-5	1	CDX-16G	90342-16	360.00		3	SK	SK-45120	1445.00
	2	CDX-16G	90342-8A	300.00					
	3	CDX-16G	90342-8B	180.00	46-8	1	A3V	A3V	9.00
	4	CDX-16G	90342-8	120.00		2		A3V-1C	9.35
	5	CDX-16G	90342-X	On Appli- cation		4	PA	PA-05004	27.00
	8	CDX-16T	90342-12	312.00		5		90611	.25
	9	CDX-16T	90342-6A	264.00		6		6001	8.00
	10	CDX-16T	90342-6B	180.00	46-9	1	D	D-02002F	9.15
	11	CDX-16T	90342-6	144.00		2		D-02002F-1C	9.50
	12	CDX-16T	90342-6X	On Appli- cation		3	TAR	TAR-05006	38.00
	13	CDX-16TS	90342-16TS	70.00		5		90611	.25
	14	CDX-16P	90342-1	36.00		6	AGC	0303-9	.08
	15	CDX-16R	90342-2	8.40	46-10	1	16-A	90358	22.40

*Price each unless otherwise indicated.



MAINTENANCE-OF-WAY EQUIPMENT



To measure America's tomorrow . . . look to the railroads

FOREWORD

We are pleased to present this condensed catalog featuring three of the foremost names in railroad equipment: that of the Buda Division, which was acquired in 1956; the Q and C Division in 1960; and WRRS equipment, engineered by Western Railroad Supply Company.

We have purposely made this catalog concise so that we could highlight all of our maintenance-of-way equipment, yet include some items of our signal and communications division. Adequate information is given for ordering Buda and Q and C equipment. When ordering that of WRRS, please refer to your familiar WRRS General Catalog, Volumes 1 and 2, for complete information.

We assure that all Buda, Q and C, and WRRS equipment is designed and constructed to meet AAR Standards. It is competitively priced, and we pledge fastest possible shipment.



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place

Chicago 32, Illinois

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ELECTRIC SNOW MELTERS

Keep Switches Open...

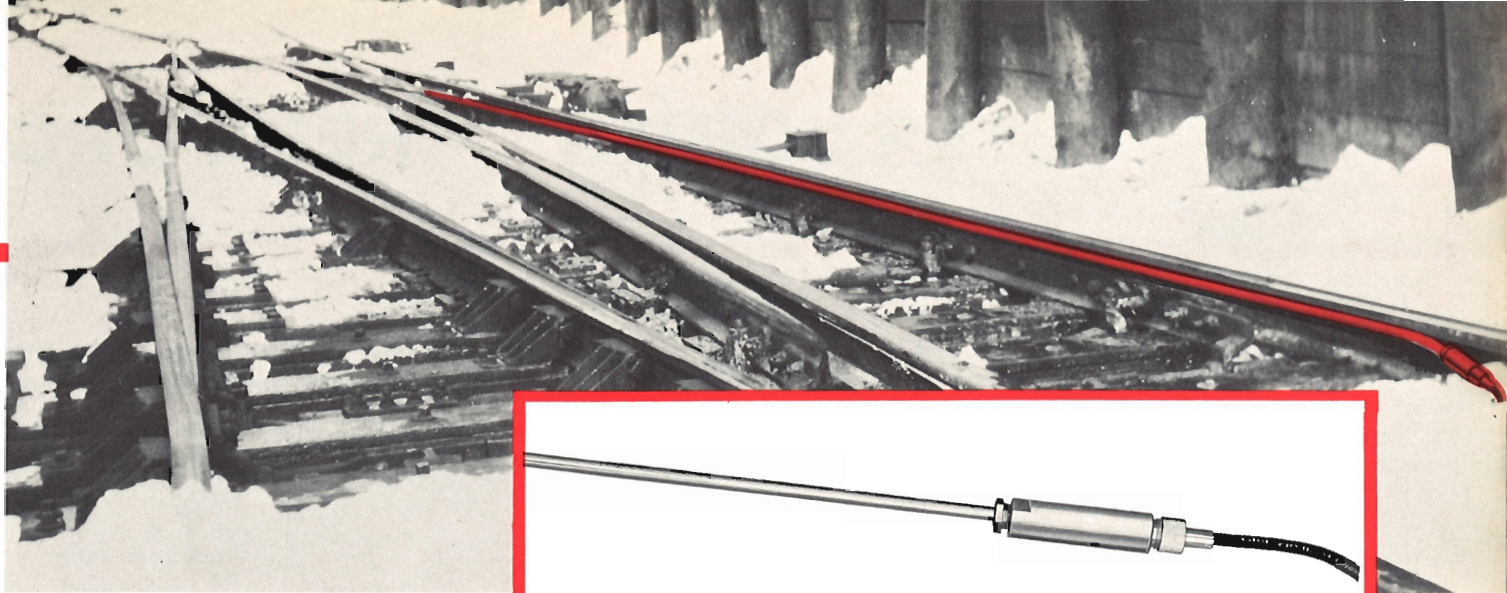
during winter's worst storms

**Your Dependable, Winter-Wise
Solution for Snow-Free Switches**



BALLAST

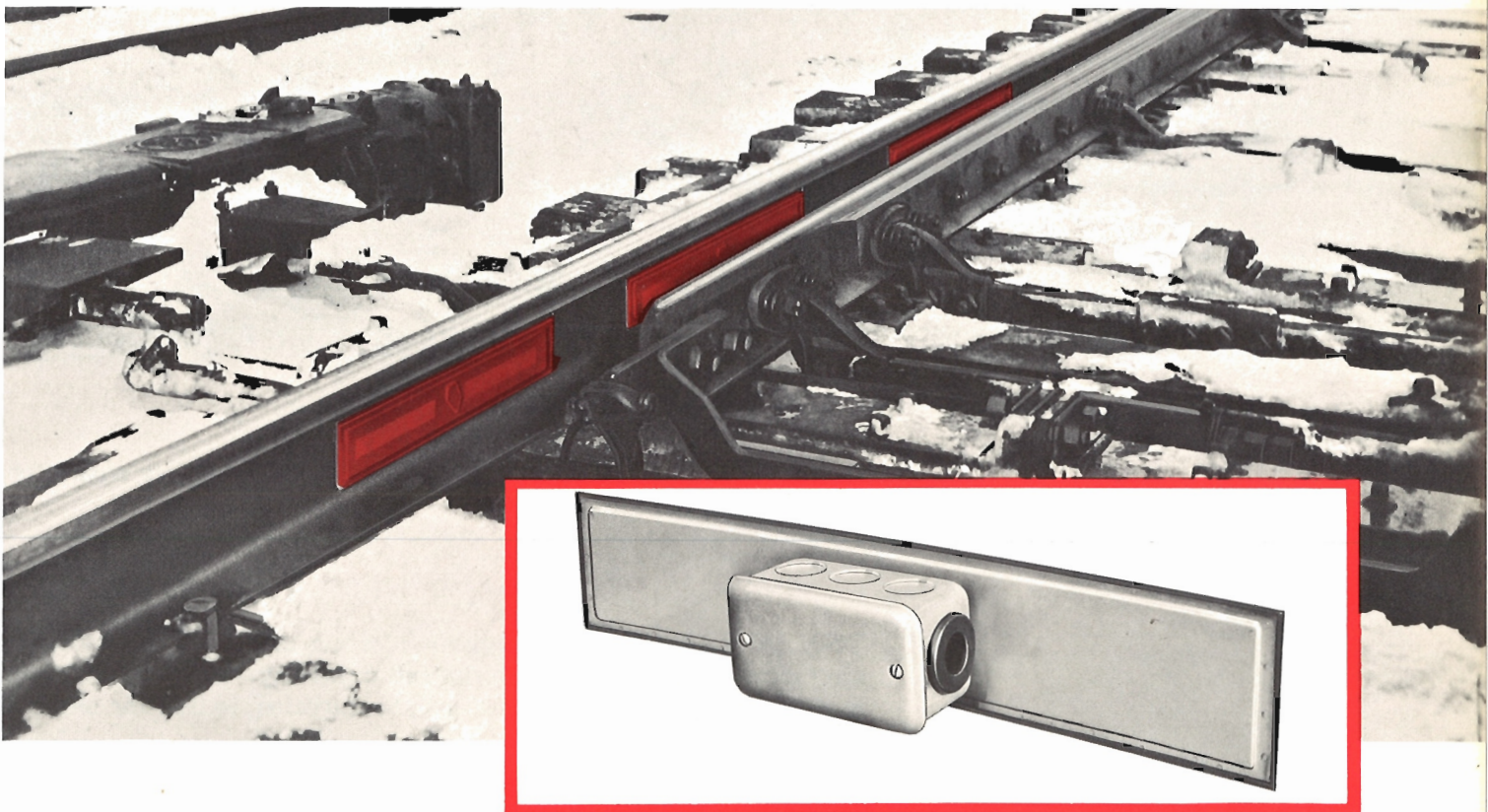
BALLAST units are placed in a series, loosely on the ballast under the switch points, close to base of the rail. They are furnished for either 47 or 55 volts, A.C. or D.C., and can be placed on 110, 220, 440 or 660 volt circuits. Each unit consumes 1000 watts, and attains a temperature of 284 degrees in fifteen minutes with a maximum of 650 degrees in approximately an hour.



TUBULAR

TUBULAR heaters are quickly and permanently attached to stock rails, between movable point and rail, assuring efficient placement of the heated zone. Heater element is enclosed in seamless stainless steel tubing, with brass terminal housing and moisture-proof fittings. Available for A.C. or D.C. Insulated cable lead ten feet long furnished unless otherwise requested. Wattage, voltage and length are supplied to your specifications.

When ordering TUBULAR units specify heated length, voltage and wattage required.



PLATE

PLATE heaters are compact (3" x 15"), with stainless steel housing; rated at 230 volts, 500 watts, A.C. or D.C. Units can be attached to the inside of web of stock rail and spaced to provide the desired level of heat throughout the length of the switch point. To obtain a lower level of heat in the rear portion of switch, two units may be connected in a series. Units assure dependability, minimum maintenance under all operating conditions.



STEP JOINTS

REINFORCED



Q and C Compromise Joints have set a notable in-service record for accuracy and dependability.

***Used
Proven
Preferred***

MAXIMUM DEPENDABILITY

They are designed with particular reinforcement at the center—where strength is vital for maximum rail-end durability—and made of alloy cast steel or of rolled and forged steel, heat treated, to bear the impacts of heavy service.

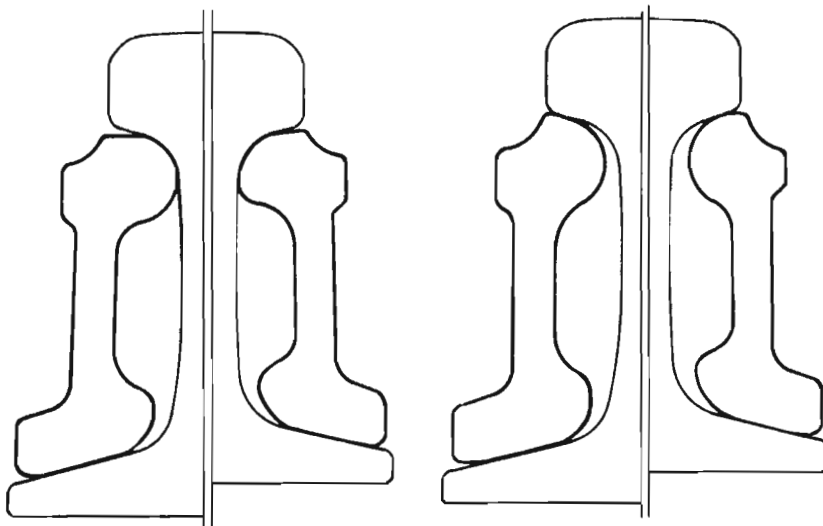
PREVENT RAIL-END BATTER

We can provide the most suitable surface to prevent batter on rail-ends—just specify the average allowance for head wear on old rails—further reducing maintenance cost.



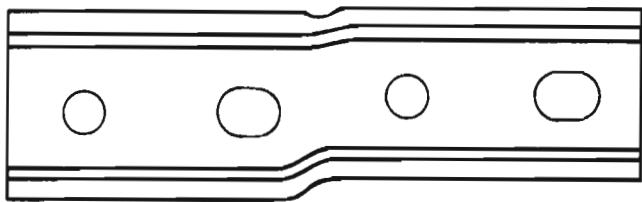
Typical Half Section

To determine a left hand and right hand joint, the observer stands in the center of the track always facing the joint. If the heavy rail is to his left, the joint is left hand. If the heavy rail is to his right, the joint is right hand.



Head-free Joint

Head-contact Joint



Elevation of Joint

Each joint consists of one inside and one outside bar. One R.H. and one L.H. joint form a set.

When ordering specify the following:

- Amount of top rail head wear
- Hole diameters
- Location of holes
- Dimensions of center line of hole above base of rail

Various combinations of cast-steel joints ranging from 60 to 136 lbs. available.

Normally supplied in 24", 30" and 36" lengths.

Rolled-steel joints also available. Ask for them on your next order.

**Let Q and C
Step Joints
demonstrate
real economy
on strength
of merit!**

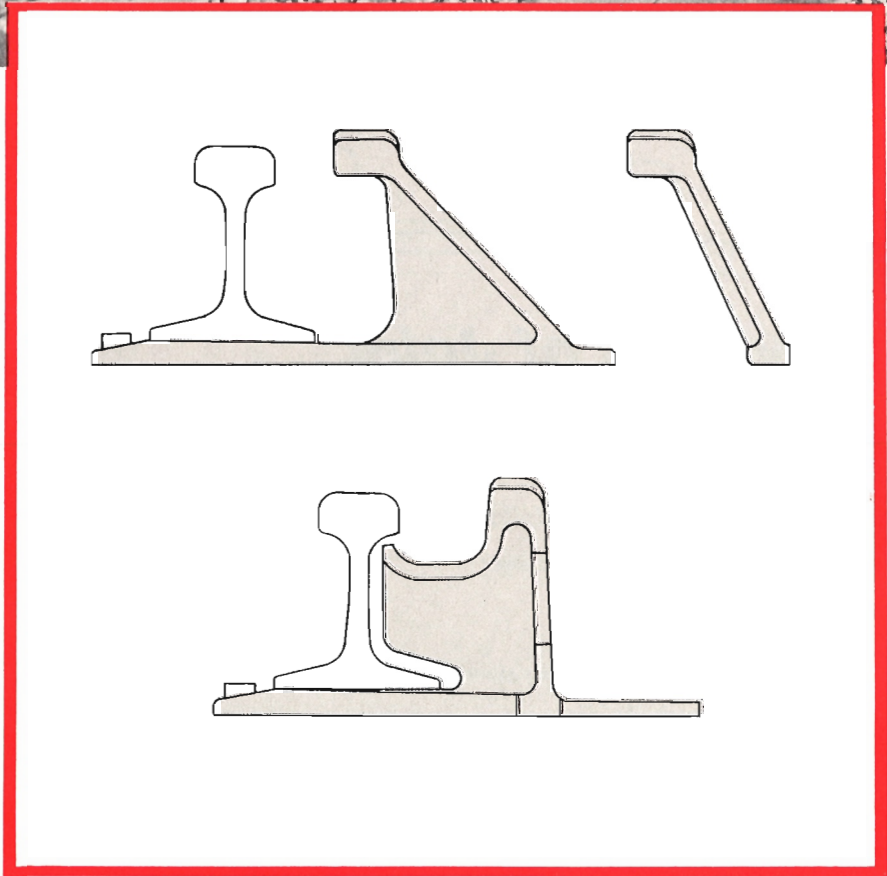


ONE-PIECE GUARD RAIL

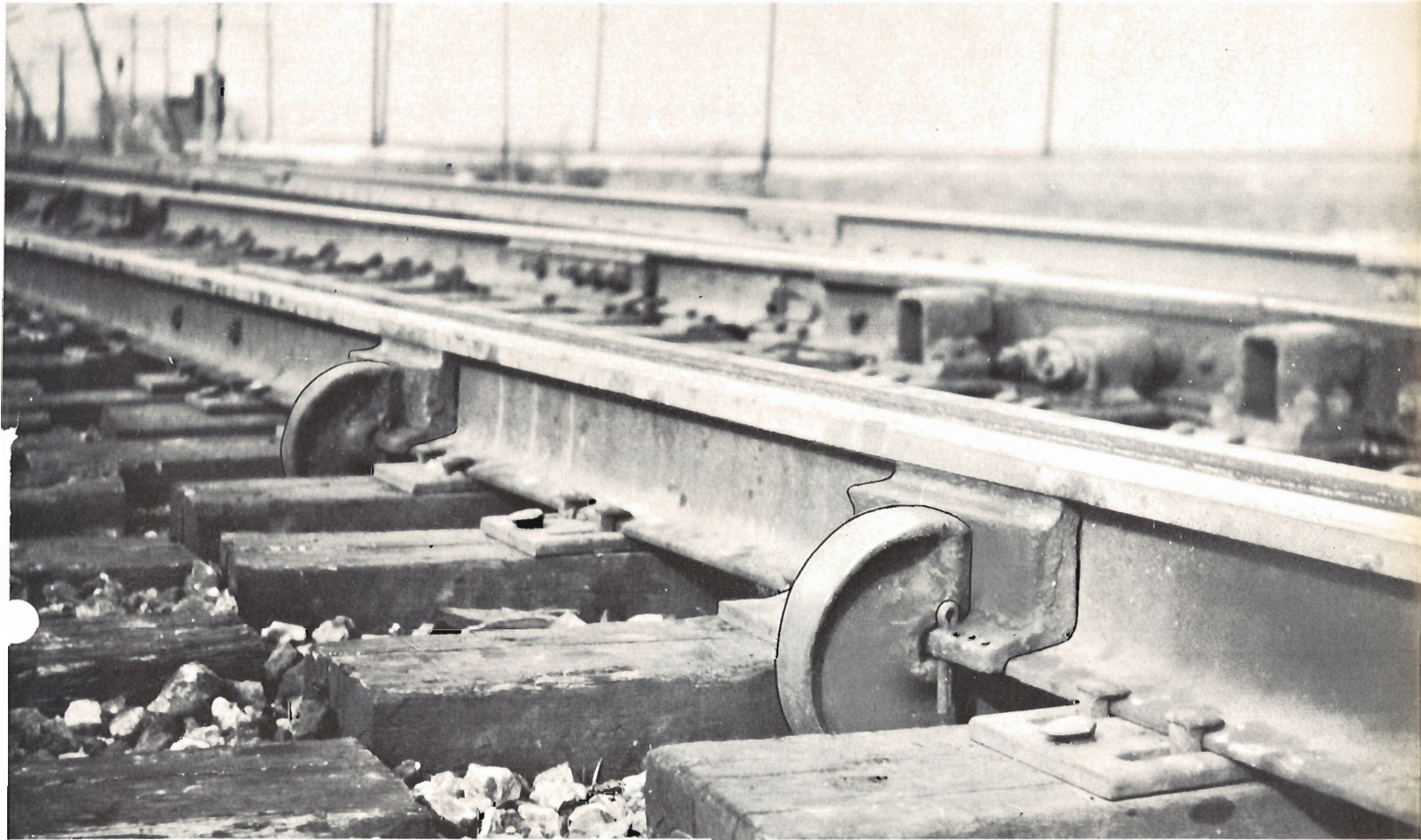


Less Labor Required

... with Q and C Manganese Steel Guard Rail. The sturdy arch design with extra wide plates and bracing will resist the thrusts of the heaviest equipment, and speed up the work of laying rail through turnouts.



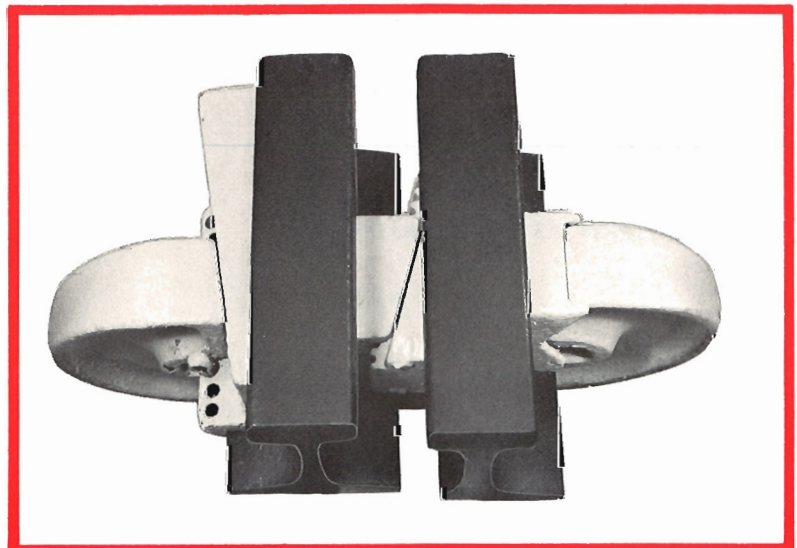
GUARD RAIL CLAMPS



"A BULL DOG GRIP!"

The Q and C Universal Guard Rail Clamp is recognized as a strong and safe means for holding the guard rail against the thrusts of heavy traffic. The wedge, adjustable filler blocks and shoe are malleable iron, designed to assure accurate fitting to the rail section.

The universal design of the yoke permits its use on a wide range of rail sections, which simplifies and reduces inventory.

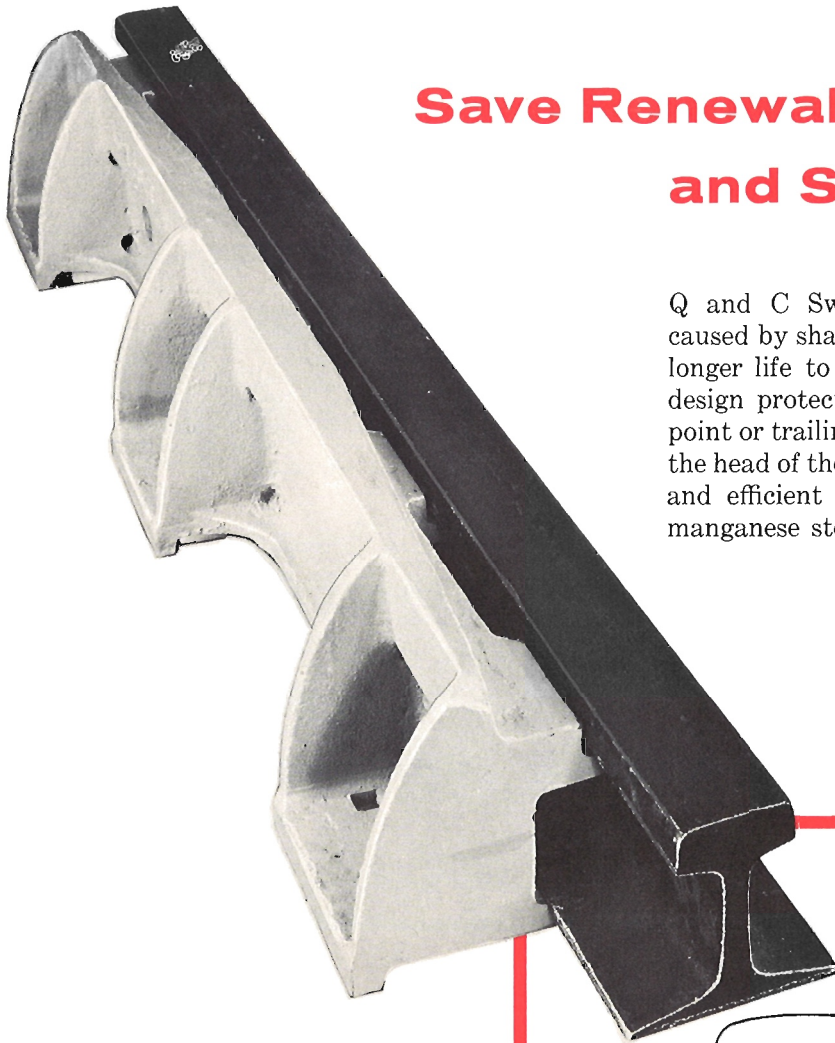




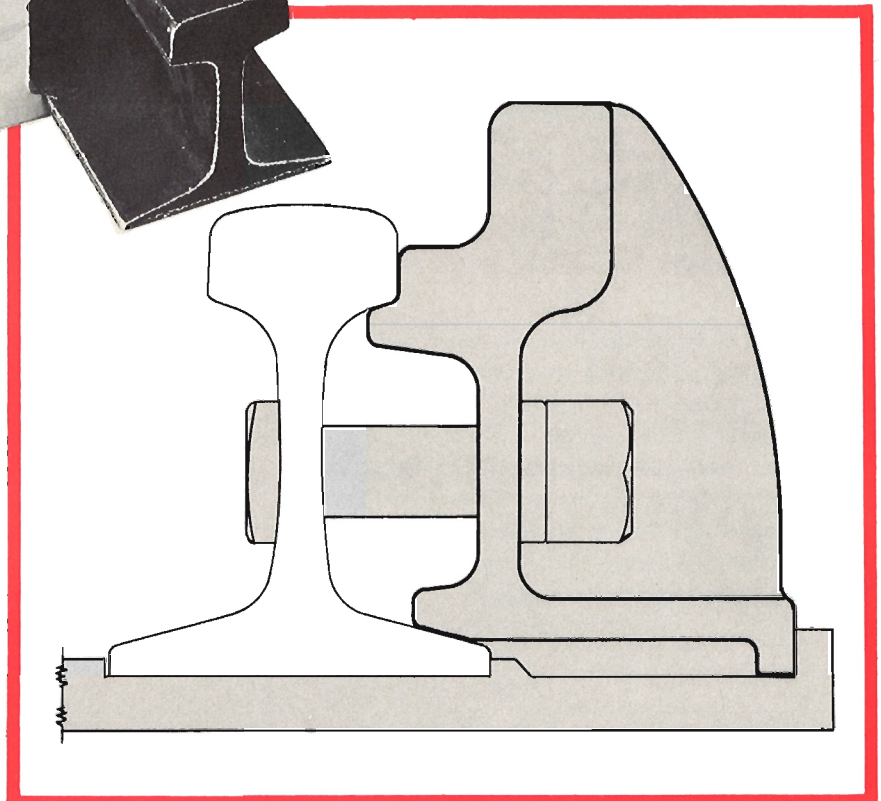
SWITCH POINT GUARDS

Save Renewals of Switch Points and Stock Rails

Q and C Switch Point Guards eliminate derailments caused by sharp flanges climbing on worn points, and give longer life to the point and stock rail. The double-flare design protects the points from wear from either facing point or trailing movements. A full width is maintained on the head of the rail next to the guard, resulting in a durable and efficient fit for the point. They are made of solid manganese steel, properly reinforced.



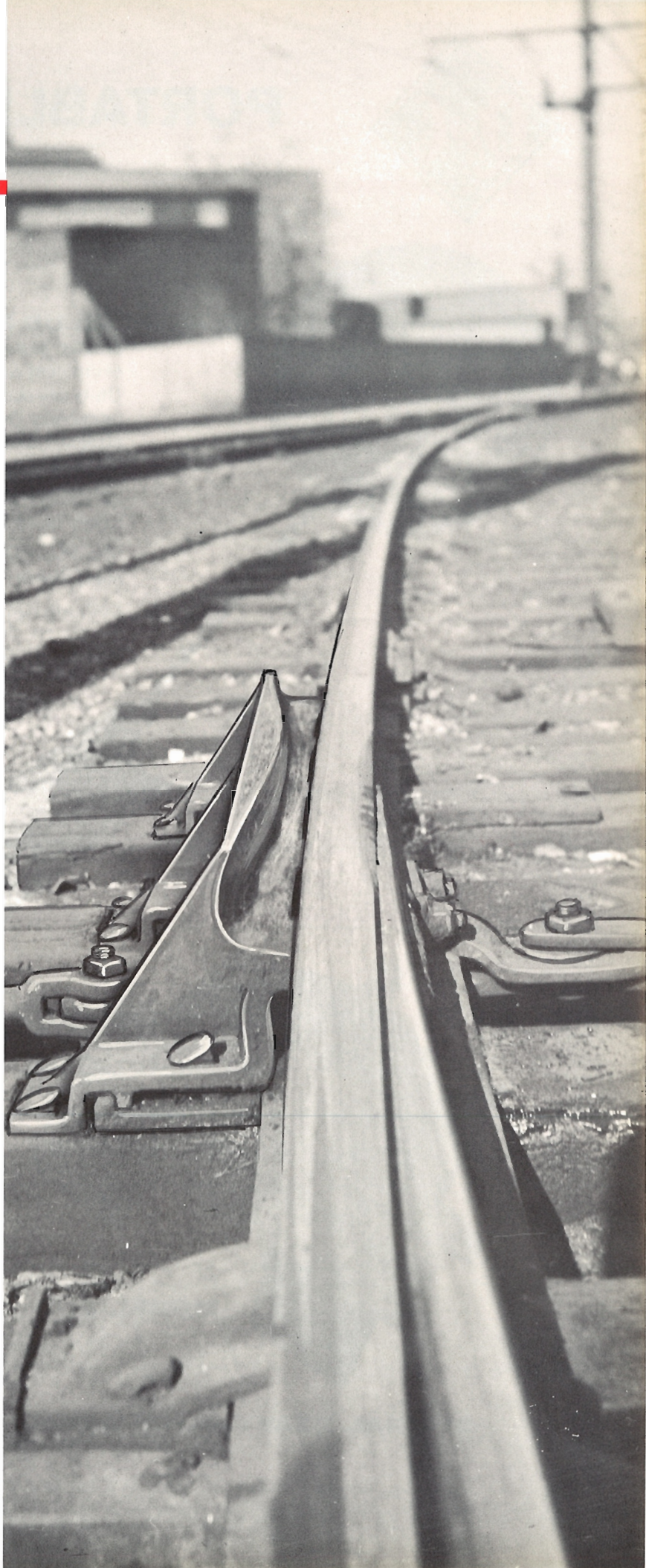
***One piece solid
manganese steel,
properly
reinforced with
integral casting!***



When ordering please specify the following information:

- 1 Tie spacing at the point.
- 2 Type or section number of rail.
- 3 Thickness of slide plate and shoulder.
- 4 Distance from base of rail to inside of shoulder of slide plate.
- 5 Height of shoulder outside of track.
- 6 Location of spike holes in slide plate.
- 7 Height and width of shoulder at base of rail if a double-shoulder slide plate is used.
- 8 If slide plate is for use with adjustable braces please send sketch or blue prints with dimensions.

Q and C Manganese Switch Point Guards will help keep traffic moving in yards and terminals without delays caused by sharp wheel flanges climbing on worn points.





PORTABLE, SLIDING AND

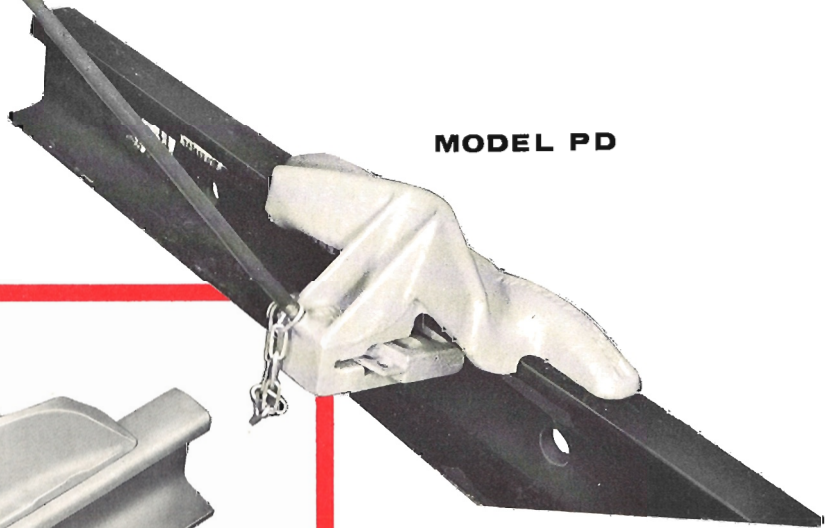


Q AND C BLUE FLAG PORTABLE DERAILS provide greater protection for personnel working on track as well as to equipment and cars set out on sidings, and in similar situations. Units are compact, require no spiking, and are used where only a temporary installation is necessary. A metal disc, permanently attached to the derail, has a hook for attaching a lantern. Derail blocks are the same general design as other Q and C derails.

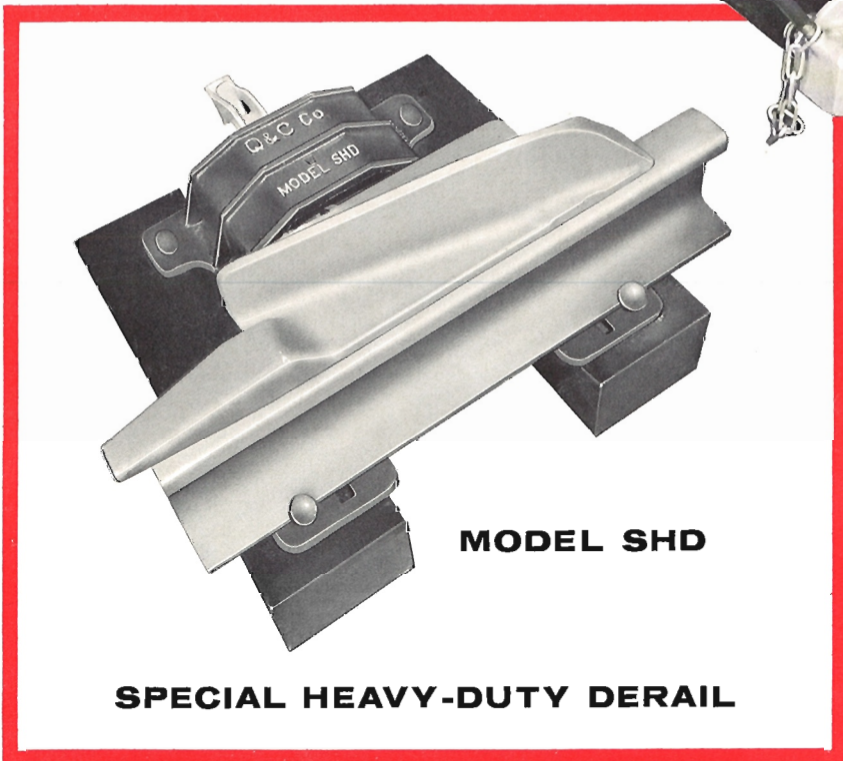
MODEL P Single-End Derail is made in both right hand and left hand; block is 15" long, weight approximately 40 lbs.

MODEL PD Double-End Derail serves as both a right-and-left-hand derail; block is 22" long, weight approximately 55 lbs.

Both are equipped with eccentric discs which automatically lock derails to the rail, also equipped for switchlock or padlock. *One size of derail fits all rail sections from 55 to 130 lbs.*



MODEL PD



MODEL SHD

SPECIAL HEAVY-DUTY DERAIL

**Also available
SPECIAL
HEAVY-DUTY
DERAIL**

*Write us for
further information*

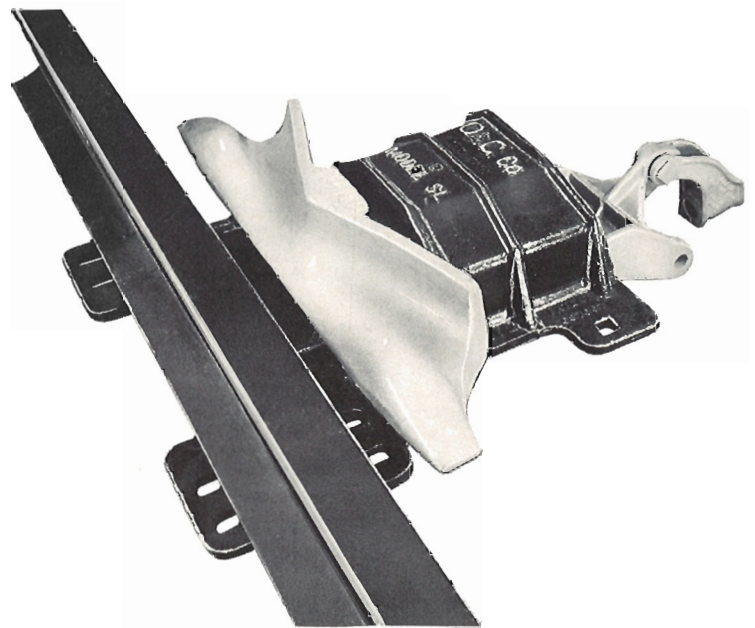
HAND THROW DERAILS



Adjustable Feature

All models are adjustable to heights of rail by raising or lowering the pivot rod. This permits the use of one model over a wide range of rail heights and eliminates the necessity of carrying many sizes in stock; thus, reducing inventory.

Q AND C HAND THROW DERAILS are made for use on rail up to 7 1/8". They are equipped with three lugs—one for locking when fitted to the high rails, another for locking when fitted to low rails, and a third for target stand connection. Designed for use on sidings and spurs, they will derail equipment at ordinary speeds. These derails have a recessed hand grip in the derail block to facilitate its removal or replacement on the rail.



MODEL SL

Q AND C PORTABLE, SLIDING and HAND THROW MODELS

Select the Model for Your Need

MODEL	TYPE	SIZE
Portable Derail PD	Two-Way Throw	Fits all rail sections
Portable Derail P	One-Way Throw*	Fits all rail sections
Sliding Derail SD	Two-Way Throw	Fits rail 5" to 7 1/8" high
Sliding Derail SL	One-Way Throw*	Fits rail 5" to 7 1/8" high
Hinge Derail HS1	Hand Throw One-Way Throw*	Fits rail under 5"
Hinge Derail HS2	Hand Throw One-Way Throw*	Fits rail under 5"
Hinge Derail HL2	Hand Throw One-Way Throw*	Fits rail 4 3/8" to 6 1/4" high
Hinge Derail HL3	Hand Throw One-Way Throw*	Fits rail 6" to 7 1/8" high
Hinge Derail HD2	Hand Throw Two-Way Throw	Fits rail 4 3/8" to 6 1/4" high
Hinge Derail HD3	Hand Throw Two-Way Throw	Fits rail 6" to 7 1/8" high

*Can be supplied with either right or left throw

Operating stands for use with above can be supplied as follows:

MODEL 75M for use with Models SD, SL, SR *only*

MODEL 1240 target stand with target and 5' 10" rod or 6' 10" rod can be supplied for use with Models HS1, HS2, HL2, HL3, HD2, HD3



PORTABLE CAR STOPS



CAR STOPS

SPACE SAVING AND ECONOMICAL—Q and C Car Stops are economical. Require minimum track space and minimum labor. No drilling necessary. Wedge firmly to the rails. One size is suitable for all sections of rail in yards and side tracks. Made of high grade cast steel.

The car stop is suitable for all T sections of rail, 56 lb. 4¼" high to 152 lb. 8" high.

For proper application of the car stop, bolt the two clamp wedges lightly, and drive the car stop casting with a sledge hammer until it grips the rail-head securely and when firmly gripped, then draw the four bolts tight. No further attention is necessary.

- No rail drilling is necessary.
- Ballast and ties are not disturbed.
- Simple in design with few parts.
- Made of high grade cast steel.

The shock of wheels striking the stop is carried down to the rail and is absorbed by the double wedge feature of the device.

AND TRACK SKATES



PORTABLE TRACK SKATE

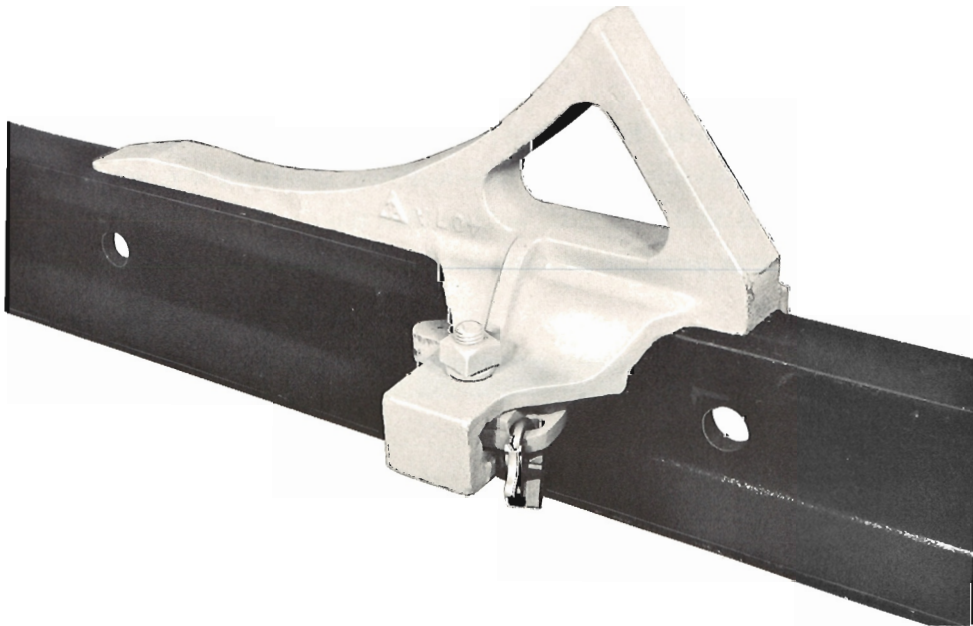
Dependable for Years of Service—
Effectively stops rolling cars with uniform, sliding deceleration and to prevent flat wheels and stop runaway cars on a grade, trestle, or in gravity hump yards.



PORTABLE TRACK SKATE

Locking Type

Universal—Fits all Rails! "Cam-Action" locks securely to rail; adapted for use with standard railroad padlock, and cannot be removed when so locked; light, strong one-piece construction.





EMERGENCY KNUCKLES AND GAGE RODS

Lessens Traffic Delays in Mending "Break-in-Two's"!

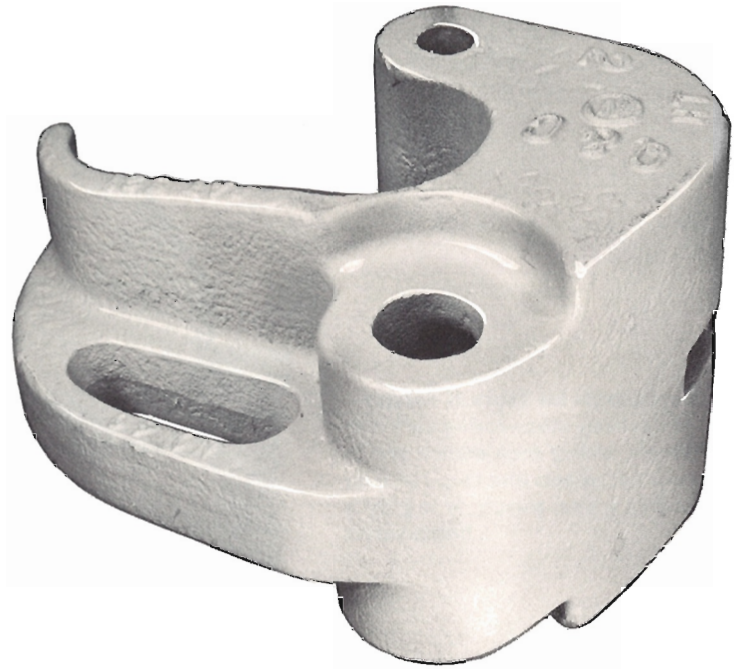
Use where knuckles are face worn or broken, where locking parts are defective or broken, or where pin lug is broken on drawbar. High quality, heat-treated electric steel, lightweight, easy to handle.

Three Types to Meet Your Needs:

No. 397B used on Type D Coupler

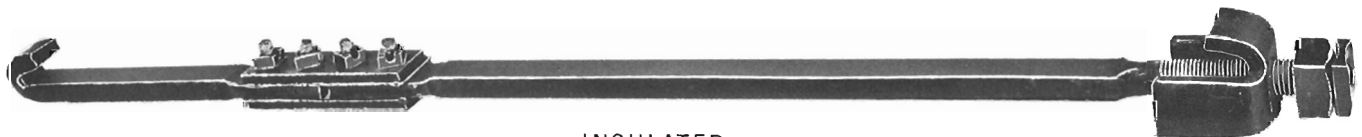
No. 37 used on Type MCB Coupler

No. 40 used on Types D, E, F and H Couplers



Assure Accurate Gage of Rail...

Dependable, heavy steel rods with malleable iron forged shoes; available insulated and non-insulated. Insulated rods will withstand 2000 volts, A.C., not less than three seconds without flash-over or puncture between insulated sections.



INSULATED



NON-INSULATED

WESTERN B-C TRACK LINER



There's no longer any excuse for slow, expensive lining jobs. The Western B-C Track Liner is a modern husky maintenance tool that is rapidly replacing the use of large crews with lining bars for aligning track. On most of the nation's leading railroads this efficient tool has been standard equipment for years. Out of this vast amount of experience can be drawn the following definite conclusions about the advantages of the Western B-C Track Liner:

- For aligning up to and including 112 lb. track, or heavier rail if loosely ballasted, 3 men with track liners can align more rail than eleven men with lining bars. On heavy rail (131 lb. or heavier) usually two additional men are required.
- Liners do not raise the track.
- No digging is necessary at the ends of the ties.
- To clear trains, bars are removed and liners left in position.
- They are light, compact, easy to carry and set under rail. Liner weighs only 28 lbs.
- Liner can frequently be located in position without any digging or shifting of ballast. In some cases with dry, hard ballast and for moving heavy rail it is desirable to set the liner so the front end is approximately 2½ inches lower than the heel of liner.
- Savings effected by liners will pay for themselves in one full day's lining.



CONSTRUCTION FEATURES

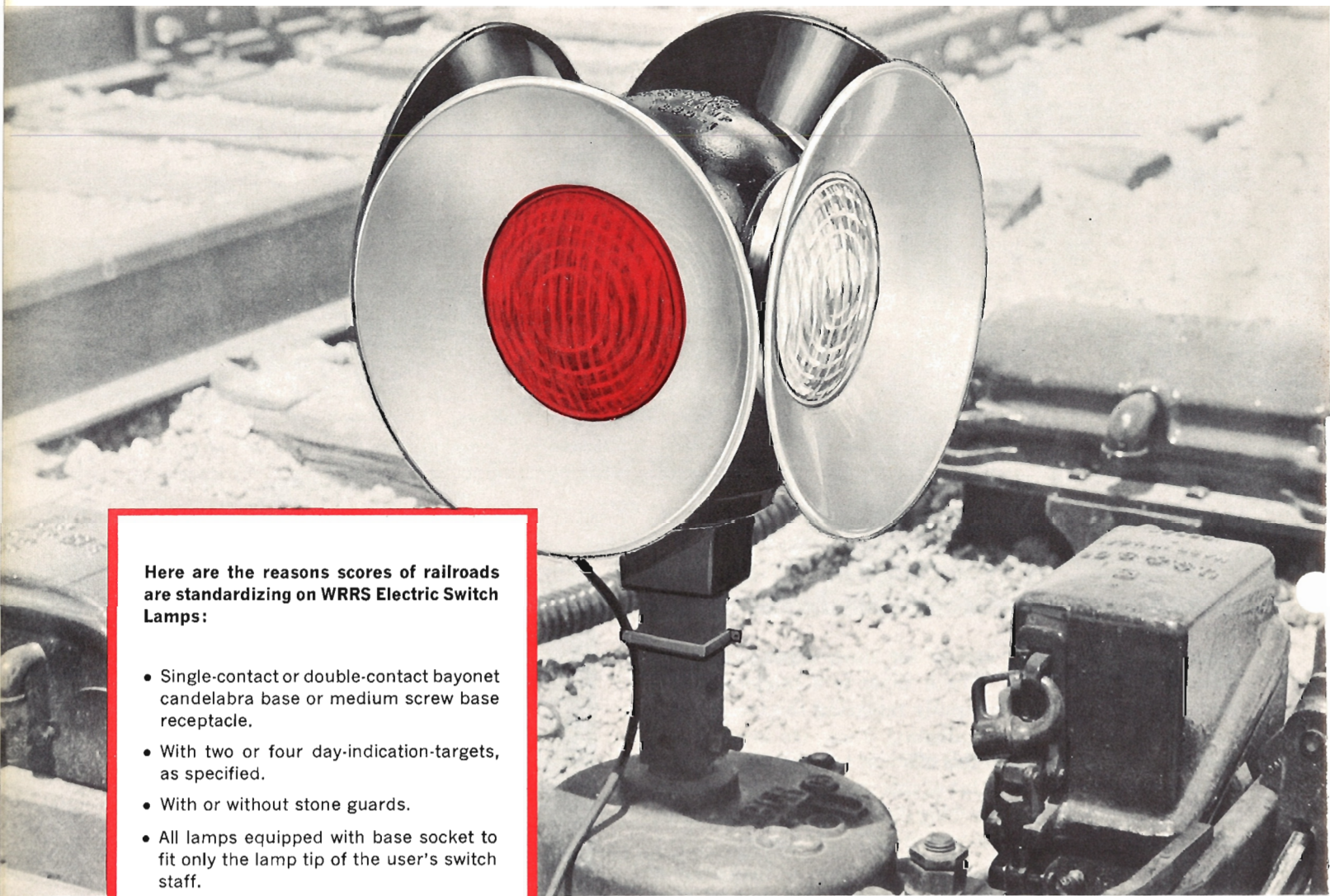
Forward movement comes from a lift on the lining bar—safer and more effective than a downward pull.

Drop forged, heat-treated alloy steel side bars. Withstands rough handling and requires no maintenance. Liner is built for heavy-duty and long life.





ELECTRIC SWITCH LAMPS



Here are the reasons scores of railroads are standardizing on WRRS Electric Switch Lamps:

- Single-contact or double-contact bayonet candelabra base or medium screw base receptacle.
- With two or four day-indication-targets, as specified.
- With or without stone guards.
- All lamps equipped with base socket to fit only the lamp tip of the user's switch staff.
- Targets are porcelain enamel finish and are also available with reflex reflecting sheet surfaces.
- All fasteners are stainless steel.
- Heavy cast-iron construction designed to last a lifetime.
- Steady, clear light—400% brighter than oil lamp light.
- Theftproof—no loss of bulbs, through theft—can be opened only with AAR, signal section, socket wrench.
- Safe—no inflammable kerosene to handle.

WRRS Electric Switch Lamps Reduce Switch Lighting Costs 50%

Available for operation from commercial current or primary battery. Change over to WRRS Electric Switch Lamps today. Savings will amortize cost in two years.

WRRS Electric Switch Lamps are furnished in one size which may be operated by air-depolarized primary battery or commercial current.

Type 1880 5 $\frac{3}{8}$ " diameter red and green lenses.

NOTE: Above switch lamp illustrated with glass lenses. Yellow or lunar white lenses may be substituted for any above mentioned colors. Type 1880 lamp can also be supplied with plastic lenses in red, green and yellow.

SWITCH LIGHT LENSES and PLASTIC ROUNDELS



GUARANTEED Against Breakage for One Year!

We can make this unprecedented guarantee because WESTERN PLASTIC Roundels and Lenses are practically unbreakable. They are molded in one piece of Tenite Butyrate. The colors and transmission values are accurate and uniform, will not fade or darken, and meet AAR requisites. They have proved excellent under all operating conditions; easy to clean and economical to maintain.

5 $\frac{3}{8}$ " SWITCH LAMP LENS, No. 1880-21

Focus 3 $\frac{1}{2}$ ", horizontal spread 30°, upward deflection 10°. Available in red, yellow, green. Can be used on electric or kerosene switch lamps. Specify color when ordering.



8 $\frac{3}{8}$ " HIGHWAY CROSSING RED ROUNDEL, No. 5323-P

Horizontal spread 30°, and downward deflection 15°. Their uniform transmission values eliminate the need for matching roundels of approximate equal light value, when used in pairs.

You can prove it to yourself. Specify WRRS Plastic Lenses and Roundels on your next order. You'll save maintenance time and money.



EVERLAST FIBERGLAS BATTERY BOX

Designed for Durability

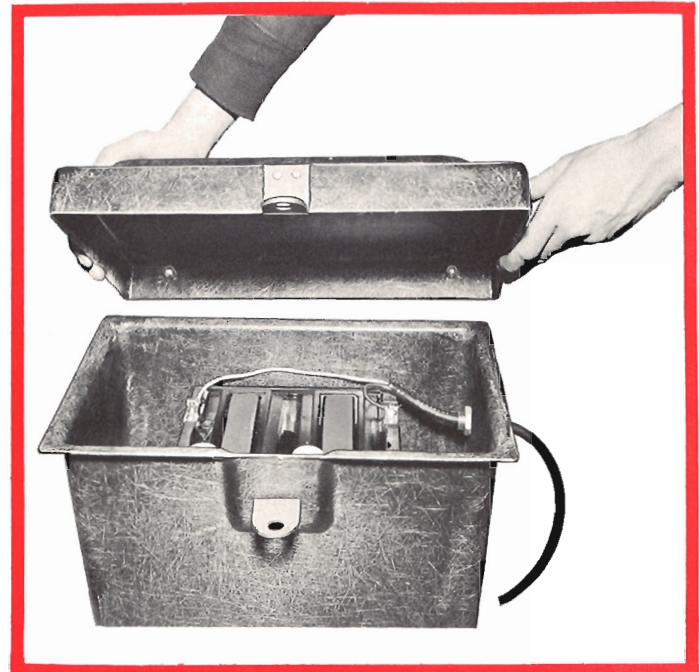
For use with air-depolarized battery in electric switch lighting service, the Everlast Battery Box is constructed of long glass fibers, reinforced to assure dependability and trouble-free service.

THE EVERLAST BATTERY BOX ACCOMMODATES ANY OF THE FOLLOWING:

- One Edison No. 2SJ1 Carbonaire
- One Eveready T-2600
- One Eveready CG-212
- Two Carbone No. 500 Cells

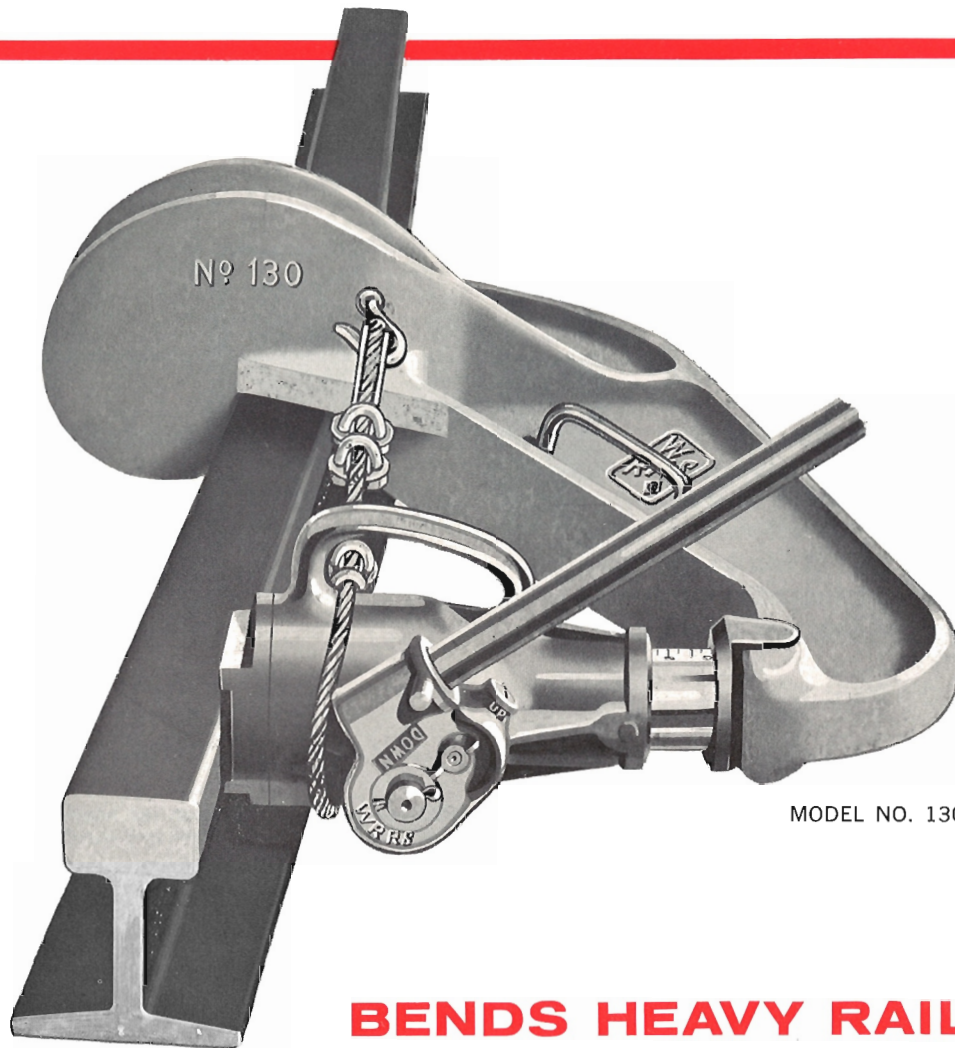
EVERLAST QUALITY FEATURES:

- Completely formed without seams or joints.
- Resists abrasive and corrosive action of ballast and fill.
- Cover reinforced at all corners for greater strength.
- Cover overhang sheds rain, sleet, snow and track spray.
- Rim design eliminates splash from entering the box, yet permits ample ventilation.
- Stainless steel hasps.
- Exterior and interior are non-reflective black.
- Furnished with waterproof cable grip, 15 feet of two-conductor cable, three cable clamps and battery platform.
- Standard package consists of 10 Everlast Battery Boxes.



Ordering Reference: No. 1245-40-PS, Everlast Battery Box, complete.

MECHANICAL JACK-TYPE RAIL BENDER



MODEL NO. 130

BENDS HEAVY RAIL COLD

The Western Jack-Type Bender consists of a steel hook, one end of which fits over the ball of the rail, the other end seating on the cap of the jack. The base of the jack is seated against the side of the rail. With the hook firmly holding a section of rail, the force applied to the jack by power on the lever bar bends the rail.

The curved base of the jack compensates for the required angle when bending rail. The base is deeply slotted, with flanges to hold jack on the rail. The specially shaped cap on the top of the jack fits into a cylindrical bearing in the end of the hook, free to move as the rail is bent. The cap is flanged on one side to hold it securely in place during operation.

A safety cable is furnished with each Rail Bender, unless omission is specified. This cable is supplied to protect the operator from possible injury. The safety cable should be fastened through the jack and connected to the hook before the bending operation is performed.

The Western Rail Bender can be supplied with 25- or 35-ton special journal jacks. 25-ton jack is suitable for bending up to 110 lb. rail. 35-ton jack enables one man to bend any size rail up to 152 lbs.

- Lighter weight than any similar bender of same capacity.
- Safe—jack does not slip out of place with safety cable.
- Timken roller bearing jack facilitates easy operation.
- Saves time and money—stock rail and guard rail bends can be made in the field.
- Scale on jack ram (graduated by $\frac{1}{4}$ ") assures accurate duplication of bends.

SPECIFICATIONS

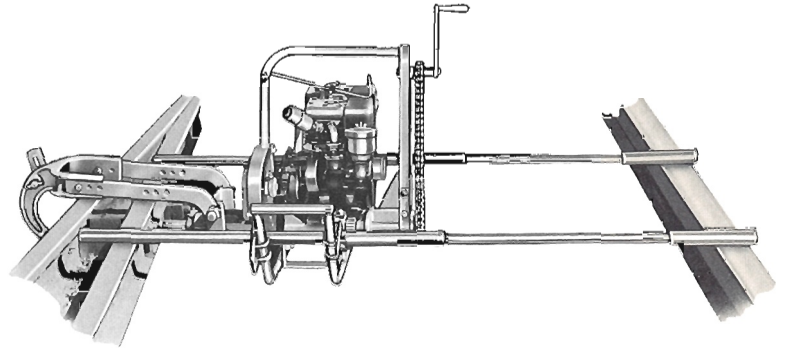
Weight of Steel Hook.....	130 lbs.
Weight of Special No. 2510 Jack.....	40 lbs.
Weight of Special No. 3510 Jack.....	50 lbs.



WESTERN MODEL P

The Lightest, Most Portable, Economical Power Track Drill

The Western Model P Power Track Drill is a tested, carefully engineered track tool that embodies all the advantages that only a track man readily appreciates. It is light, fast, safe and completely dependable . . . a modern, carefully-built machine that provides faster and easier drilling of bolt holes in any weight T rails. It may be instantly released from the rail without stopping or backing off the rail. It can be removed from the track in approximately ten seconds. Adjustments for drilling are quick, easy to make, and accurate.



POWERFUL 3 H.P. ENGINE

Briggs & Stratton, Model 8BR6, 3 H.P., 4 cycle, air-cooled engine. Powerful blower forces an air blast through deep cooling fins and maintains a cool, efficient engine.

LONG OVERCLUTCH HOOK

The wide spread of 15" between rail hooks and drill permits drilling at filler blocks, at switches, and guard rail in track. (Long hook arms are optional.)

1/2 GALLON FUEL TANK

ROPE STARTER

DESIGNED FOR SUPPORT AND LOCATER RODS

Drill can be positioned from the top of the rail by means of locater rods. Locater brackets are provided with two openings for rough adjustment. Fine adjustment is taken care of by means of turn screws fastened to base. Locater rods and brackets are supplied with drill unless omission is specified.

WELDED GEAR HOUSING

Protects internal gears and breakage of lugs. Cover bolted to frame.

IMPROVED SPINDLE

Redesigned sleeve on spindle allows one spindle assembly to handle all flat drills from 7/16" to 1 1/16".

ADJUSTABLE BASE

By means of turn handles and screws, height of drill may be raised or lowered to proper position.

ADJUSTABLE RAIL GUIDE

TIMKEN ROLLER THRUST BEARING

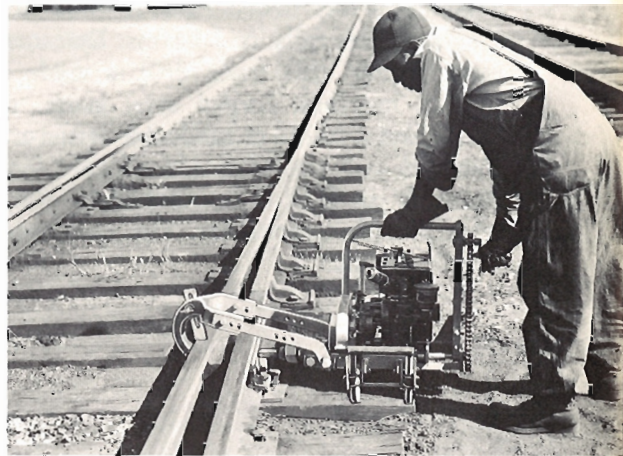
POWER TRACK DRILL

It Pays to Use a Western Power Track Drill

- **ECONOMICAL**—Drill can be quickly set up and located either from the top of the rail or be positioned on the ties and ballast.
- **LOW COST**—With equal power the initial cost is considerably less than heavier type drills. Uses less than one quart of gasoline for an average eight hour shift.
- **PORTABLE**—Only one man is needed to start, operate and release the complete drill from the track and job. One man can push or pull the drill along the rail.
- **SAFE**—On approach of trains, drill can be released and removed from track in approximately ten seconds.
- **DEPENDABLE**—Operates equally well in all kinds of weather.
- **COMPACT**—Complete drill weighs approximately 130 lbs. Locator rods are telescopic.
- **ACCURATE**—Simple adjustments are provided for raising or lowering the drill bit with reference to top of rail. Hand crank controls feed of drill bit.



Conveniently Carried by Two Men



Quickly Drills Through All Types of Rails



Easily Shifted Along Rail



Locaters Support Drill from Top of Rail

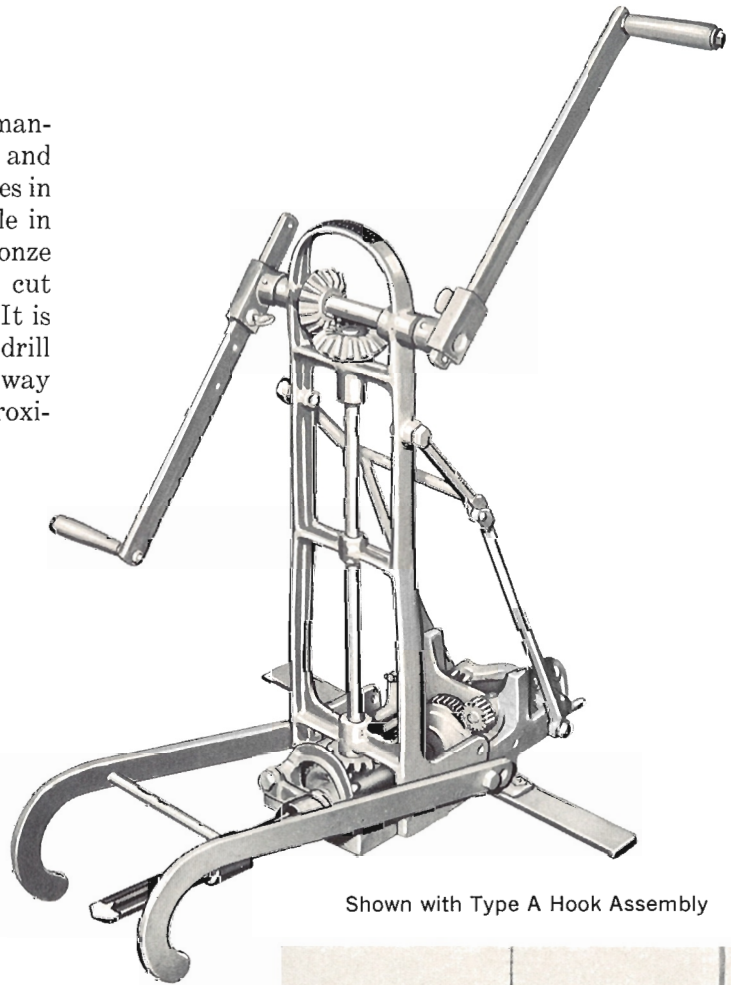


Fast, easy to remove from track . . . Special overclutch hook may be instantly released from the rail and arm hooked out of the way when removing drill.



HY-DUTY PAULUS TRACK DRILL

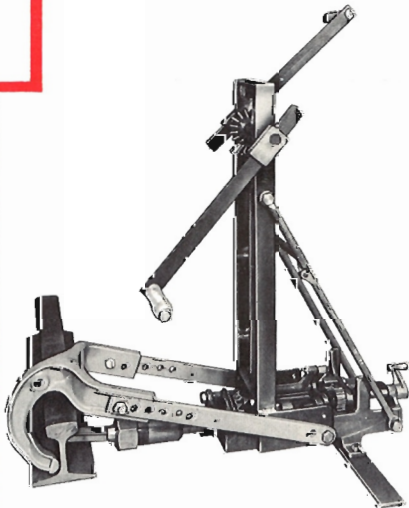
The Western Hy-Duty Paulus Track Drill is a manual-type drill that offers an economical, safe and dependable way to drill rails. It will drill bolt holes in T rails, girder rails, or I beams. Extremely simple in construction, this track drill is made with bronze bushed bearings, forged steel gears, machine cut teeth, and a frame of malleable structural iron. It is compact and one man can quickly lower the drill assembly so that it is completely out of the way when a train approaches. The unit weighs approximately 94 lbs.



Shown with Type A Hook Assembly



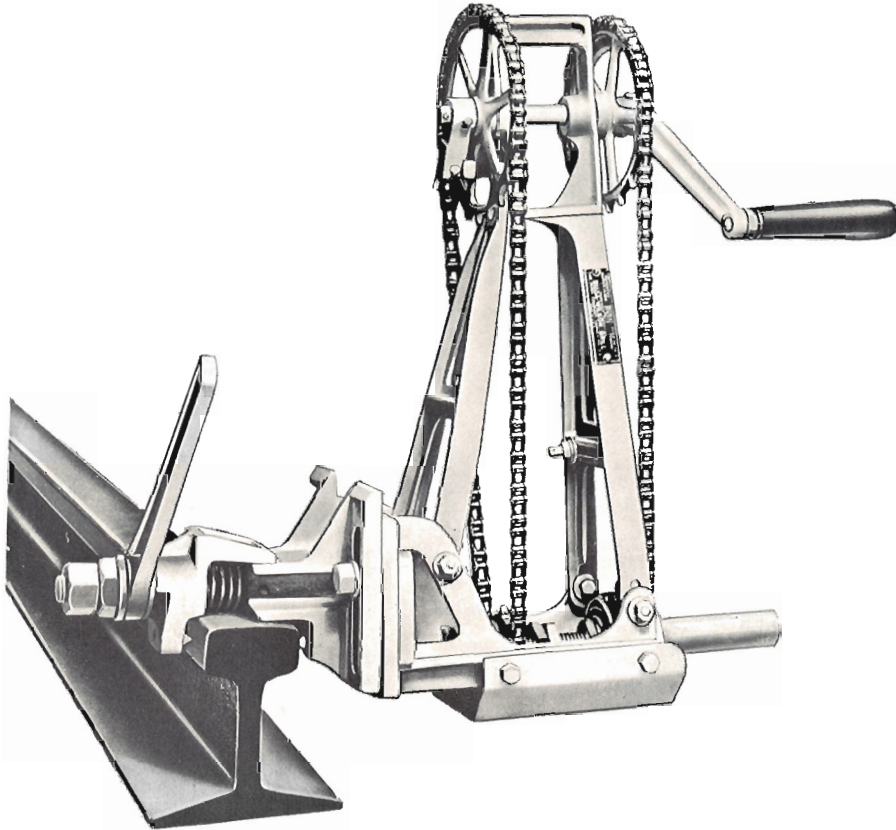
TYPE A Universal, double-hook construction



TYPE B with single overclutch hook for drilling close to end of rail and angle bars

NOTE: Western Hy-Duty Paulus Track Drill equipped with Type A standard overclutch hooks will be furnished unless otherwise specified.

B-W BONDING DRILL



The Western B-W Bonding Drill is engineered to give signalmen and track maintenance men a safe, economical means of accurately drilling holes in either the head or web of rail.

The Western B-W Bonding Drill is a lightweight, one-man tool, that can be easily carried or clamped to a rail head enabling the efficient drilling of bonding holes in all types and weight of rail from 80 to 150 lbs.

Simple attachment and precision adjustment features insure ease of operation and absolute accuracy. These features have won wide acclaim of approval and acceptance as standard equipment by the nation's leading railroads.

Available with any of the following types of chuck and spindle assemblies.



Set screw-type chuck and spindle for use with Western B-W Bonding Drills. Available in $\frac{1}{32}$ " and $\frac{3}{8}$ " sizes, flattened shank.



Hy-duty-type chuck and spindle for Western B-W Bonding Drill is available in $\frac{1}{32}$ " and $\frac{3}{8}$ " sizes. Specify shank diameter of drill bit when ordering.

NOTE: A spindle having a collet chuck is also available to handle a standard $\frac{3}{8}$ " x 3" round shank twist drill bit.

FEATURES

- Frame constructed of lightweight, high strength malleable iron.
- Efficient lubrication of all bearings is attained through ball valve oiler.
- Depth gauge adjusting nuts which are easily set to accurately determine the depth of hole to be drilled.
- Positive drilling feed is provided through a special gear reduction system.
- Drill rigidly mounted to the head of a rail with one single movement of the clamp lever.
- Adjustable so the drill may be positioned to drill at any height in either web or head of rail.



WESTERN BUMPING POSTS

"Roll with the Punch"

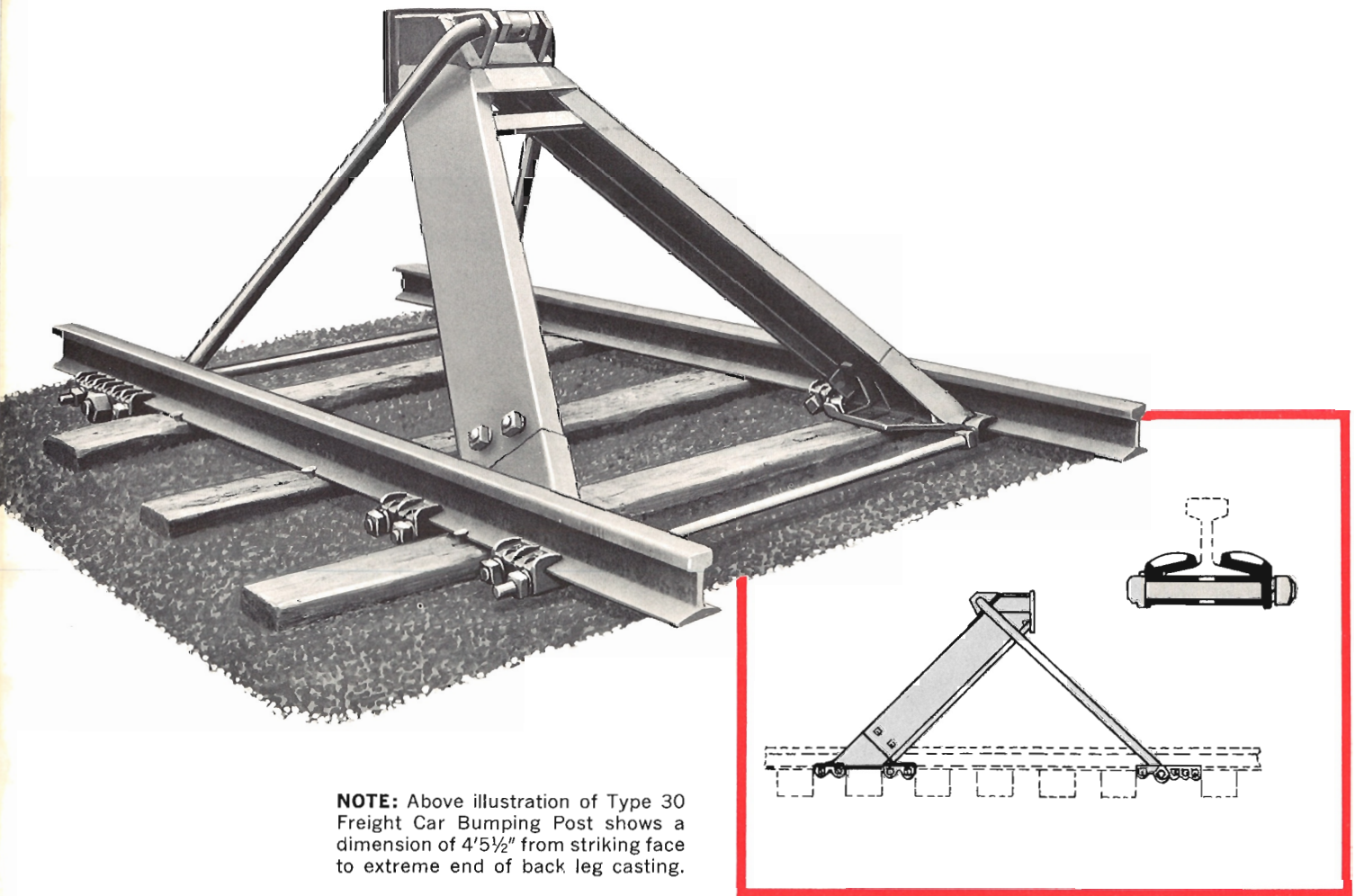
RUGGED CONSTRUCTION and flexibility of track mounting are combined in these Western Bumping Posts. Clamping shoes which grip the base of the rail slide only an inch or two when struck a heavy blow. This is absorbing the shock without damage to post or track!

BUILT-UP STRIKING FACE of heavy rolled-steel plate is welded to sturdy channels forming the compression legs. Yoke bars of round section, threaded at each end, absorb the tension shock. Malleable castings, clamping to the rails, anchor the structure to the track.

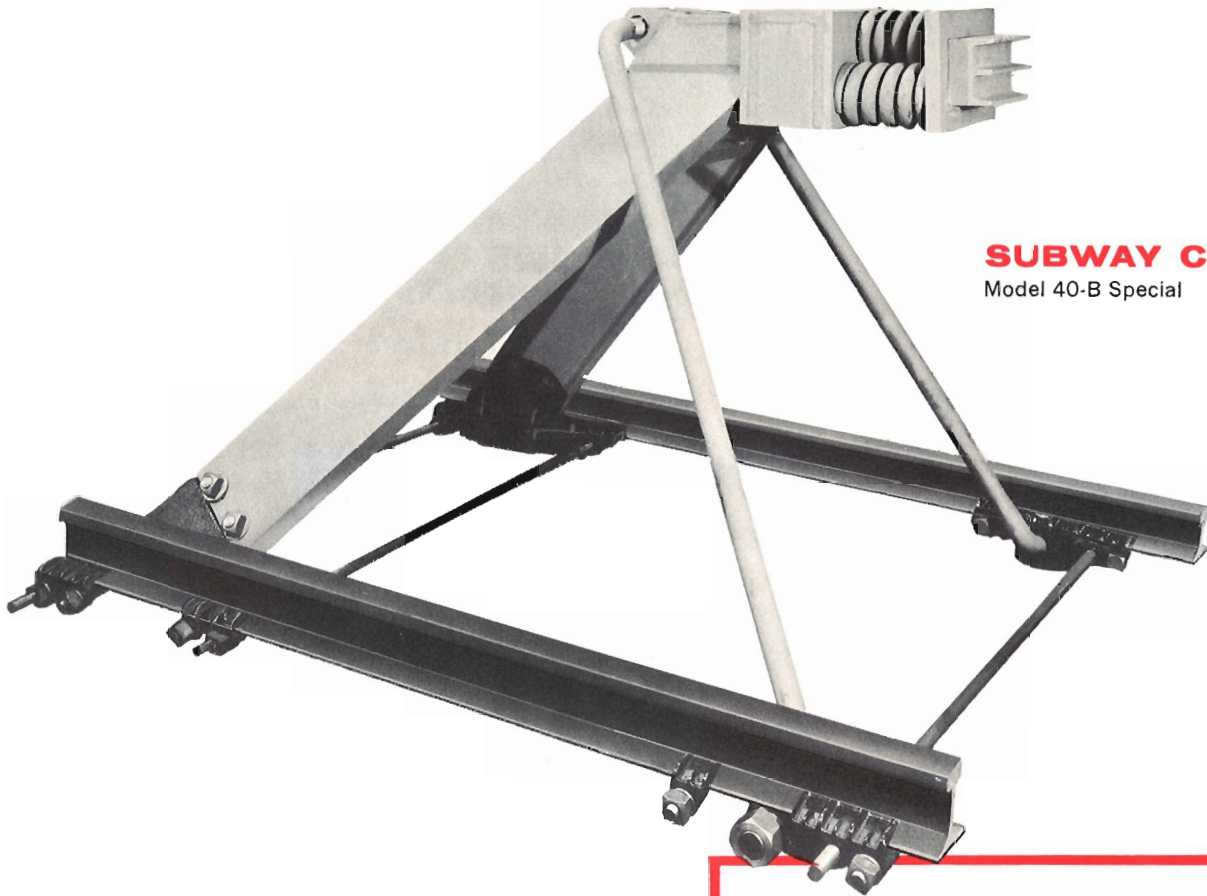
SIMPLE INSTALLATION—No need for auxiliary rails or drilling holes in track! These units can be erected by two men equipped with a wrench in less than an hour. No excavation between ties or temporary removal of rails are necessary. Easy to follow instructions are included with every post assembly.

FREIGHT CAR POST

Model 30



NOTE: Above illustration of Type 30 Freight Car Bumping Post shows a dimension of 4'5½" from striking face to extreme end of back leg casting.

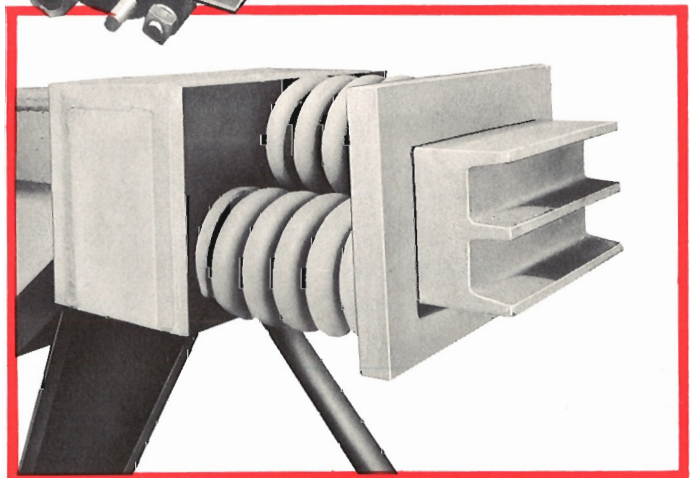


SUBWAY CAR POST

Model 40-B Special

Spring-loaded striking face with anti-climber prevents damage to coupler and lessens impact.

When ordering please specify size and type of rail section on which post is to be mounted.



WESTERN BUMPING POSTS ...

your wise choice for quality, safety, durability and economy

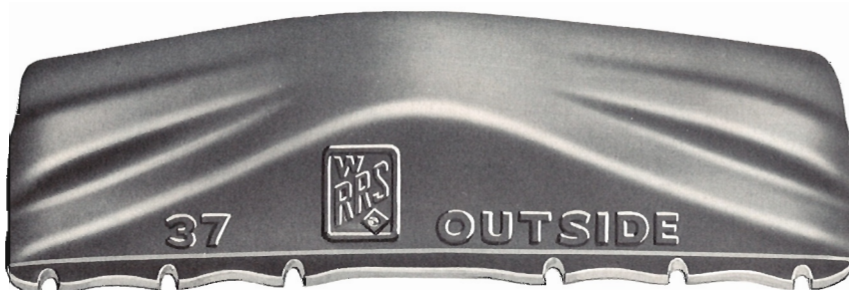


CAR AND LOCOMOTIVE REPLACERS

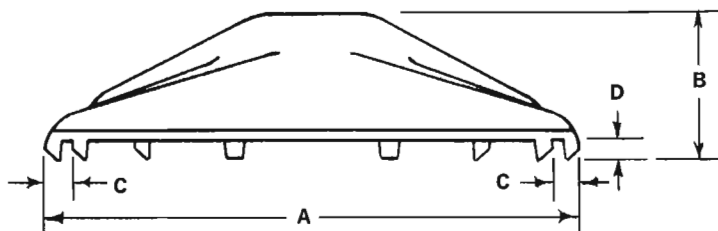
Quality replacers that have no equal, for greater strength, durability . . . yet they are of the lowest possible weight, consistent with structural design and proper distribution of metal. Units permit gradual and easy climb by wheel, with no interference with under-rigging of locomotives and cars. Flanges and ribs engineered to assure accurate guidance of wheels. Replacers can be used on bridges, trestles, curves, planked crossings, around interlocking plants and frogs.



INSIDE REPLACER



OUTSIDE REPLACER



	Inside Replacer Dimensions				Outside Replacer Dimensions		
	A	B	C	D	A	B	D
No. 45 For rail up to 5" high	23½"	6½"	0"	¾"	25¼"	6¾"	¾"
No. 46 For rail up to 6" high	33"	8¾"	1¾"	1¼"	33"	9¼"	1¼"
No. 37 For rail up to 7" high	34½"	9¾"	1¾"	1¼"	34½"	10¼"	1¼"
No. 28 For rail up to 8" high	36"	11¼"	0"	1¼"	36"	11¾"	1¼"

NOTE: Q and C Fewings Car Replacers are no longer available and have been replaced by the following Western numbers:

- Q and C—R or A for 85 lb. or under rail.....order Western No. 46
- Q and C—B type for 100 lb. rail.....order Western No. 37
- Q and C—High B type for 6" rail.....order Western No. 37
- Q and C—B130 type for 112 to 115 lb. rail.....order Western No. 28
- Q and C—B140 type for 127 to 132 lb. rail.....order Western No. 28

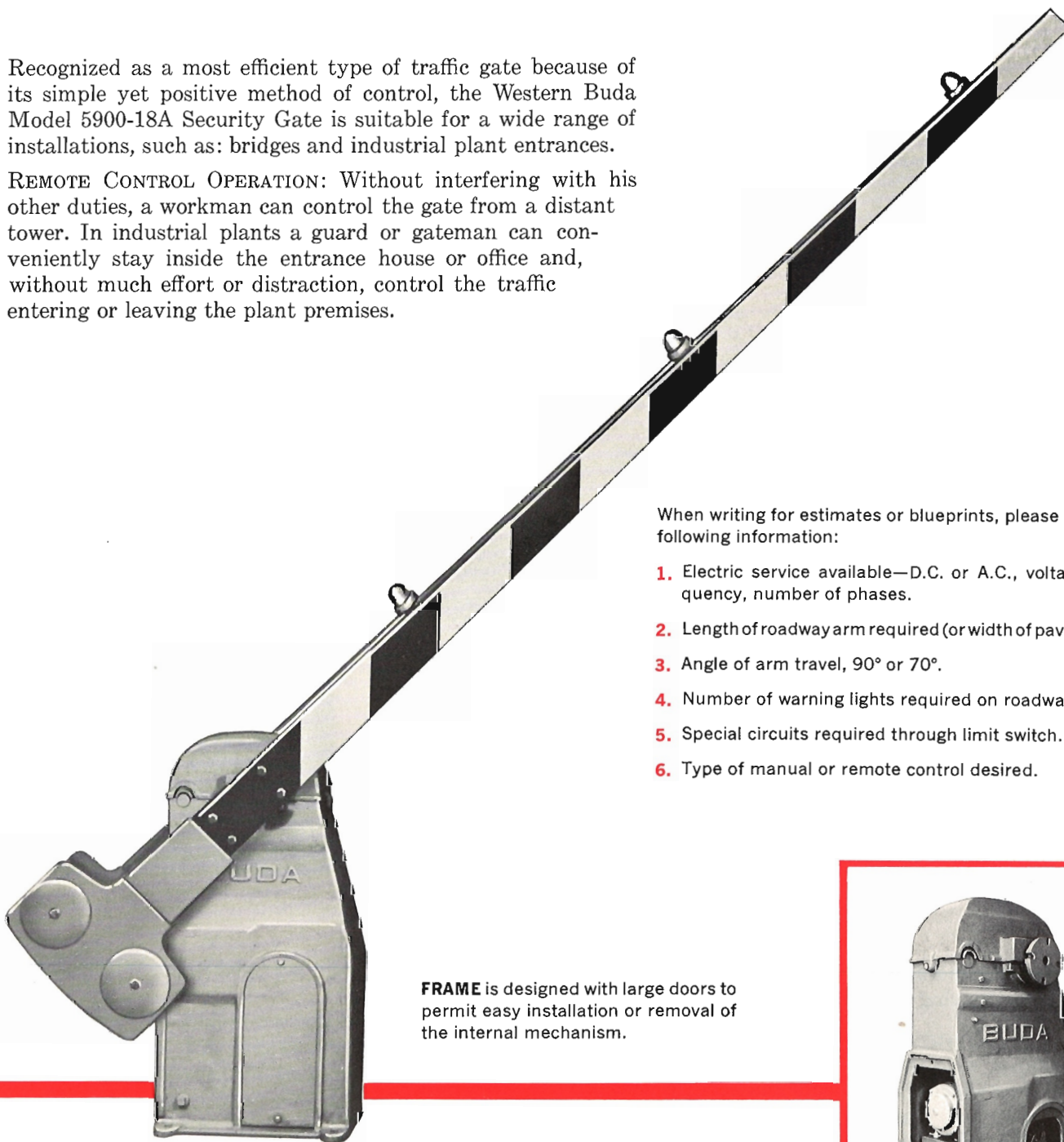
Units are light enough to be handled by one man

WESTERN (BUDA) ELECTRIC SECURITY GATE



Recognized as a most efficient type of traffic gate because of its simple yet positive method of control, the Western Buda Model 5900-18A Security Gate is suitable for a wide range of installations, such as: bridges and industrial plant entrances.

REMOTE CONTROL OPERATION: Without interfering with his other duties, a workman can control the gate from a distant tower. In industrial plants a guard or gateman can conveniently stay inside the entrance house or office and, without much effort or distraction, control the traffic entering or leaving the plant premises.



When writing for estimates or blueprints, please give the following information:

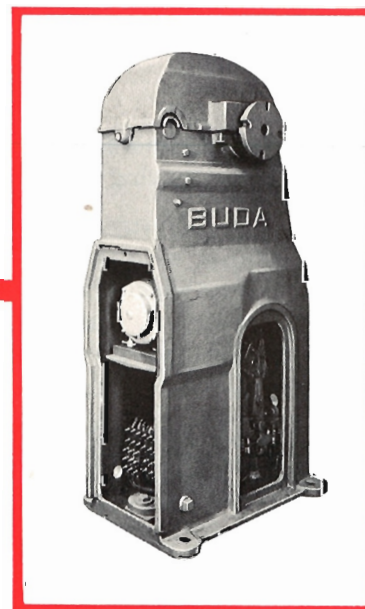
1. Electric service available—D.C. or A.C., voltage, frequency, number of phases.
2. Length of roadway arm required (or width of pavement).
3. Angle of arm travel, 90° or 70°.
4. Number of warning lights required on roadway arm.
5. Special circuits required through limit switch.
6. Type of manual or remote control desired.

FRAME is designed with large doors to permit easy installation or removal of the internal mechanism.

Model 5900-18A

Write for further information

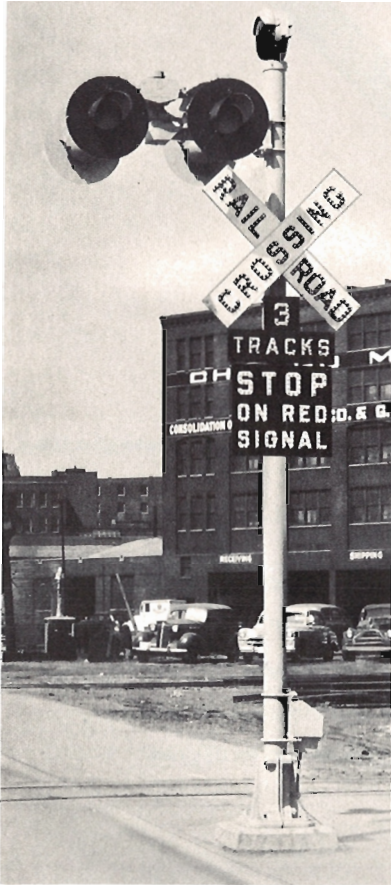
HEAVY-DUTY MOTOR furnished to meet electrical requirements: single-phase A.C.; polyphase A.C. or D.C. Horse-power size varies from one-half to one, depending upon length of gate arm.





FLASHING LIGHT HIGHWAY CROSSING SIGNALS

Designed to meet AAR Specifications



There are innumerable combinations of Flashing Light Type Crossing Signal Assemblies.

The center illustration shows a signal which conforms exactly with the AAR Standard. The others are variations which are frequently employed to meet special conditions. Flashing Light Signal Units can be supplied to provide one-way (2 lights) or two-way (4 lights) indication, as required.

The candle power of the beam projected by WRRS light units exceeds AAR requisites.

Further information is available; see WRRS Catalog, Section D.

WRRS Plastic Roundels are molded of Tenite Butyrate and are interchangeable with AAR Standard 8 $\frac{3}{8}$ " glass convex roundels 30° horizontal spread, 15° downward deflection. The color is uniform, will not fade or darken and meets all AAR requisites for color and transmission.

Specify WRRS Plastic Roundels No. 5323-P on your next order for Flashing Light Signals and for replacements. You'll save maintenance time and money.

MODEL 10 HIGHWAY CROSSING GATE



The Sentinel of Safety! Since 1935 the Model 10 Automatic Highway Crossing Signal has earned recognition with a brilliant record for safety on U.S. and Canadian railways.

DEPENDABLE: Not a single accident has ever occurred due to a Model 10 operational failure.

ECONOMICAL: Yields 39% annual return on investment. There's more information in our WRRS catalog Section G, or write us.



BOOTLEGS AND JUNCTION BOXES



TYPE 1184 BOOTLEG

Designed for clamping solid cable wires and all commonly used single or duplex rail connections to provide a mechanically secure and low resistance electrical connection. These Bootlegs are furnished with or without cover.



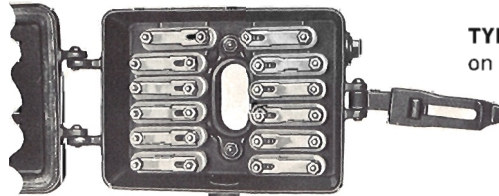
TYPE 1186 BOOTLEG

Similar to Type 1184 except with addition of a solder well so that cable wire and rail connections may be both clamped and soldered.

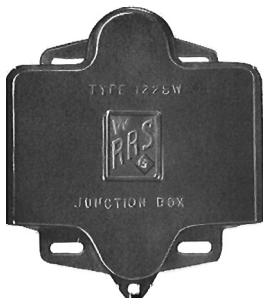
FEATURES OF DESIGN INCLUDE:

- Hot galvanized malleable iron head and steel cover.
- Bronze upper clamp has two sets of grooves to accommodate all sizes of standard rail connections $\frac{3}{16}$ "d. to $\frac{2}{64}$ "d., as shown in AAR Drawing 1631 and 1632.
- Vulcanized fiber insulating sleeve (Type 1184).
- Nylon insulating bushings (Type 1186).
- C. I. Riser with side outlet, $1\frac{1}{4}$ " I.D. top flared to 2" I.D. x 2" deep for potheading recess. Overall height of assembly $18\frac{1}{2}$ ".

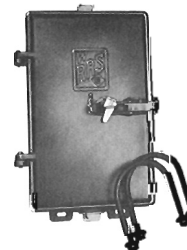
JUNCTION BOXES



TYPE 1265-20 Junction Box. For mounting on side of pipe mast.



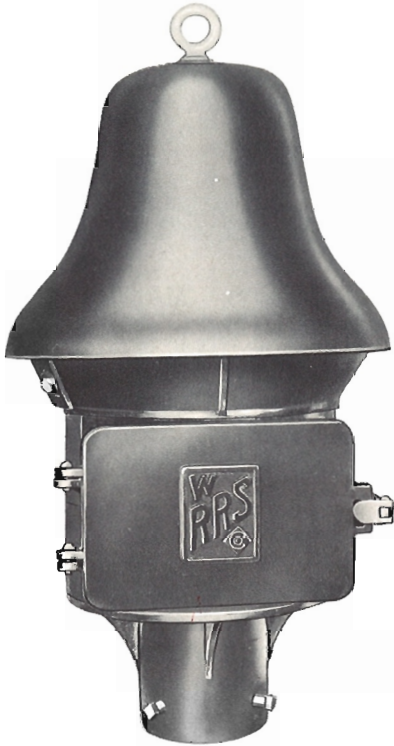
TYPE 1228W Junction Box. Capacity 24 terminal posts. Has slide cover.



TYPE 1246 Junction Box. Capacity 72 terminal posts.
TYPE 1247 Junction Box. Capacity 120 terminal posts.

See Catalog Sections E, G Part No. 1 and K Part No. 2 for additional boxes

AUDIBLE WARNING DEVICES

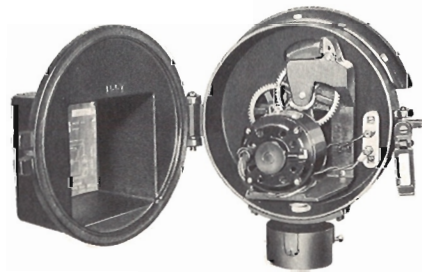


SERIES AL-50. Locomotive type bell, sixteen-inch steel bell, motor driven for any commercial voltage, 52 strokes per minute; loud, clear and penetrating.

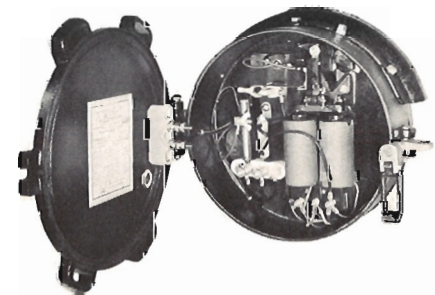
Proven Performance Over 100,000 now in use

Western Audible Warning Devices are available for operation on 16 to 600 volts D.C., 10-12, 110-120, 220-250 volts A.C.

All series are provided with sockets for mounting on 3½", 4" or 5" I.D. pipe posts, except Series 222A for mounting on the side of a post or building.

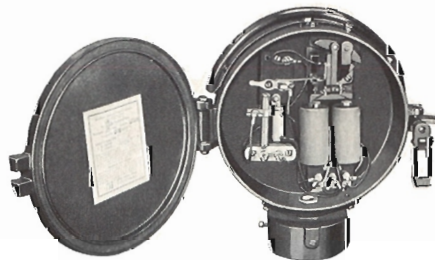


SERIES 555. Twelve-inch steel gong, motor driven, for any commercial voltage, 112 strokes per minute.

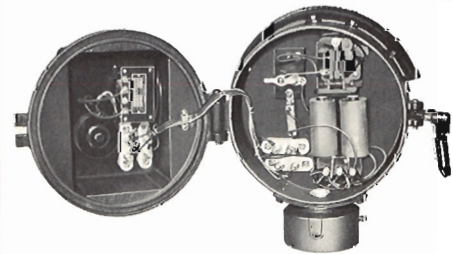


SERIES 222A. Twelve-inch steel gong, 6 to 600 volts D.C. operation, as specified, 200 strokes per minute, can be mounted on side of post or building.

SERIES 1275 (not shown). Same as Series 222 except 8 inch gong (softer tone), 225 strokes per minute, for operation on 6 to 16 volts D.C.



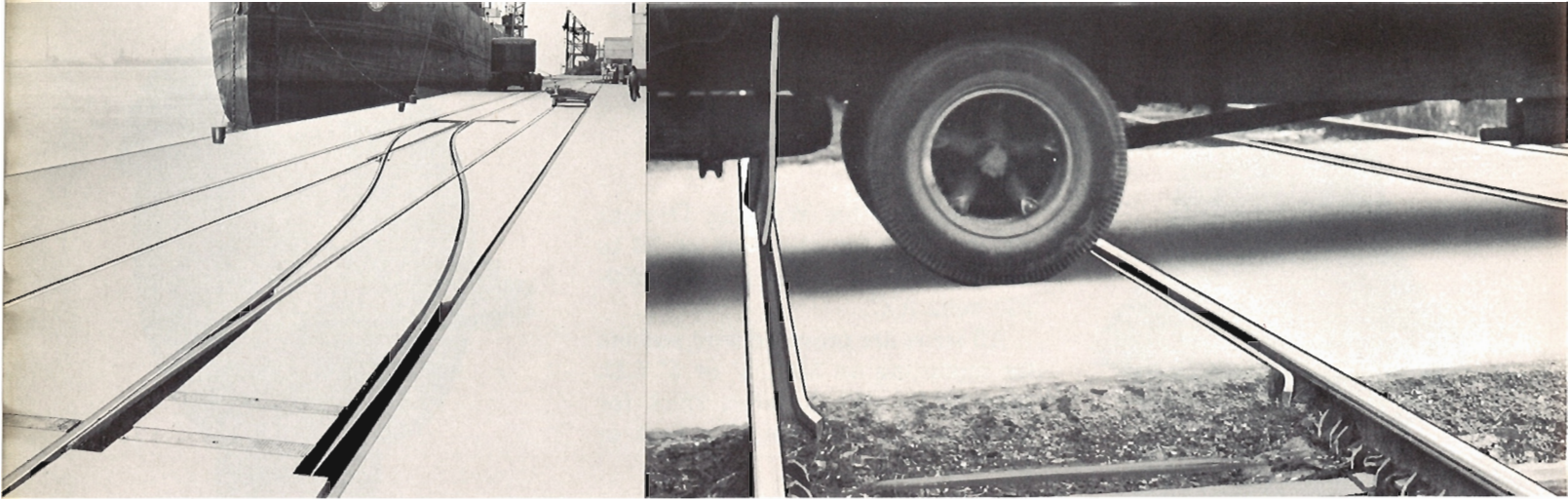
SERIES 222. Twelve-inch steel gong, 6 to 600 volts D.C. operation, as specified, 200 strokes per minute.



SERIES 1203. Twelve-inch steel gong, for operation on A.C., 10-12 volts of any frequency or on 110-125 or 220-250 volts, 25 or 60 cycles, as specified. 200 strokes per minute.

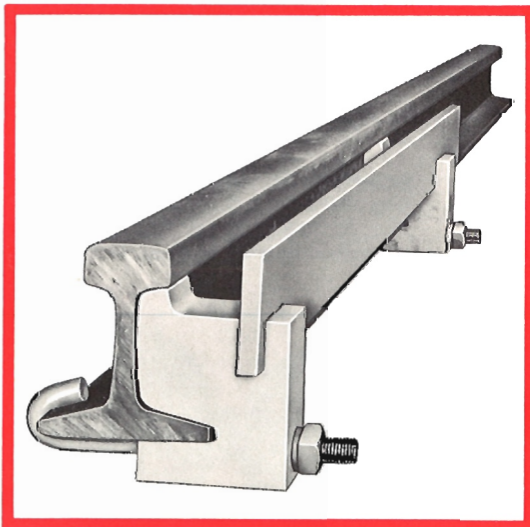


GUARDMASTER FLANGEWAY CROSSING GUARD



Sets New Standards in Smooth Railroad Crossings

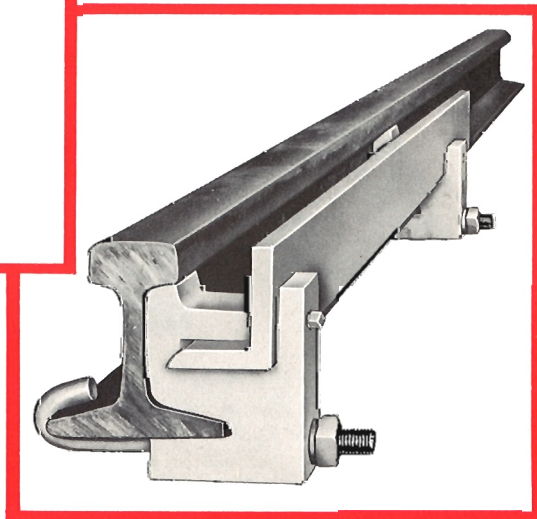
Guardmaster helps you turn a rough railroad crossing into a smooth, efficient one. It is particularly adaptable for all paved public and industrial crossings where railroad tracks are installed. The rigid steel bar provides a smooth surface between tracks so cars, trucks, tractors and other heavy vehicles can cross without bumping, jolting or overturning.



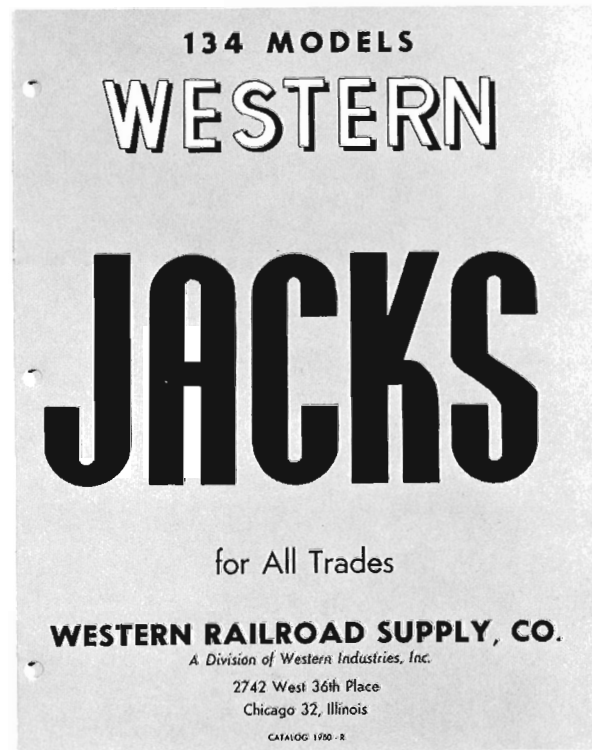
For Use on Concrete or Asphalt Crossings

The blocks would slide over angle end and be located as indicated, approximately 4' 0" centers for concrete surfacing and 3' 0" for asphalt surfacing.

Now you can get this railroad crossing flangeway guard with a heavy angle as running guard. This will provide a floor in the flangeway which some railroads and contractors prefer.



NOTE: Steel castings are available for use on 90-RA and 115-RE rail section; weight per casting—approximately 12 lbs.; can be used with flat bar or angle bar installations.



A full line of jacks for every railroad need . . . if you do not have a copy of our jack catalog, please write for one.



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place

Chicago 32, Illinois

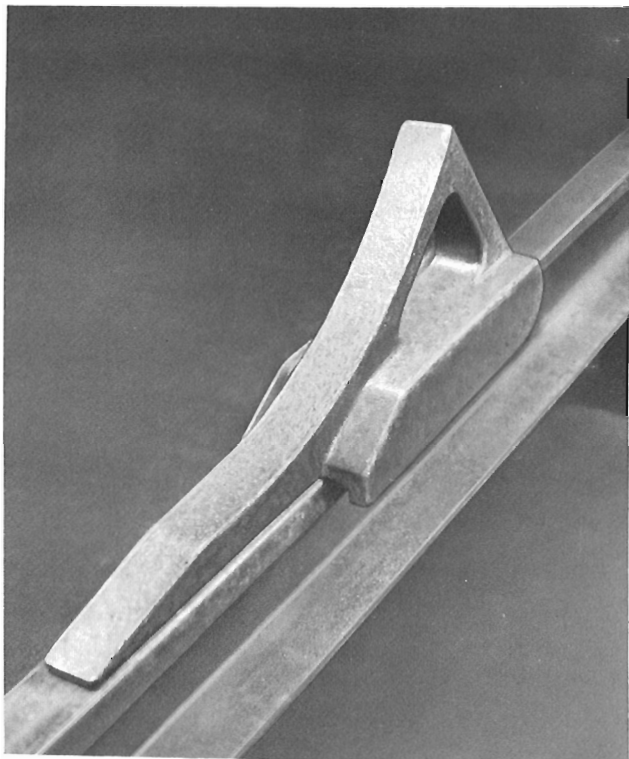
For SAFETY FIRST on Grade, Trestle and in Gravity Hump Yard...

PORTABLE TRACK SKATES

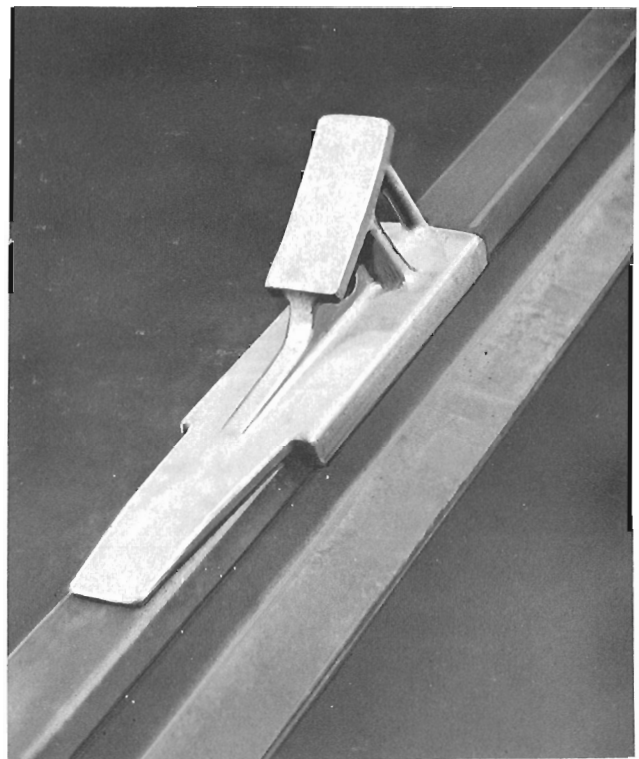
Universal...Fit All Track Sizes



Stop rolling cars with these Q & C, WRRS Portable Track Skates. Sturdily built, they are designed to provide uniform, sliding deceleration of car, thereby prevent wheel flattening and rollback.



Heavy Duty Type 422
Rugged, for years of service
Weigh 110-lbs. per pair



Light Weight Type J-5260-X
Weigh 26-lbs. per pair

They're sturdy, dependable...service proven!



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

Canada: Consolidated Equipment Co., Ltd., Dominion Square Bldg., Montreal 2, Quebec

PRINTED IN U.S.A.

WESTERN

TRACK DRILL BITS

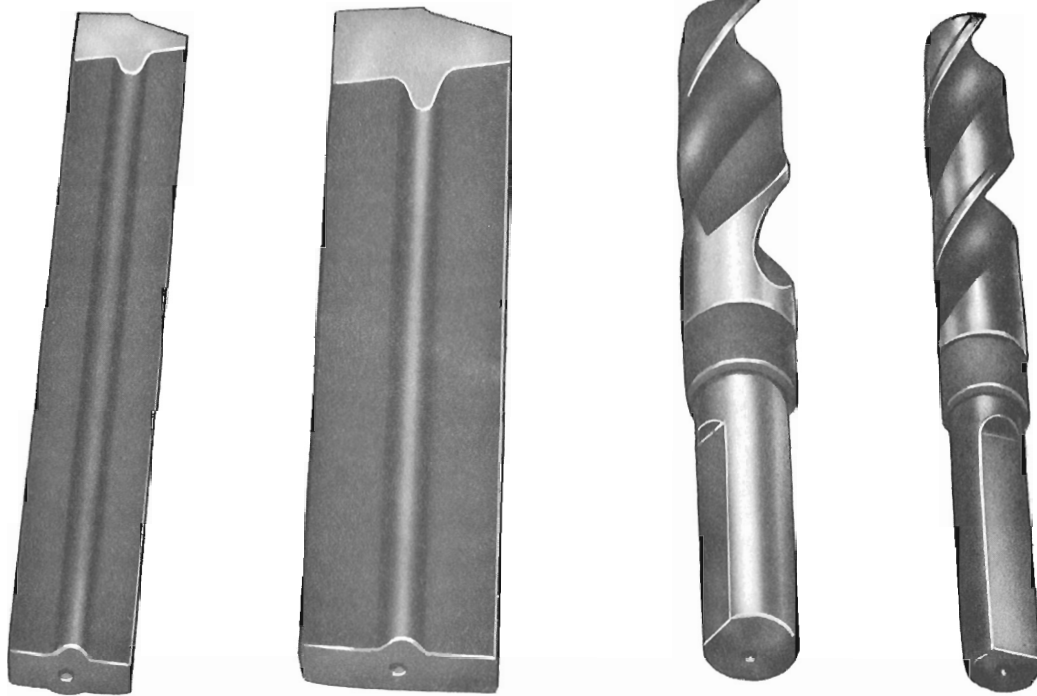


Figure 162

Figure 164

Bits that are Hits for Accuracy and Performance!

These are perfect bores... the kind you like. Constructed of M-10 Moly Vanadium steel, Western Drill Bits are designed for clean, easy operation. Competitively priced, their finer quality assures greater economy in the long run. In stock and ready for immediate shipment:

Fig. 162 - High speed flat drill bits with flat beaded shank

Sizes: 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1", 1-1/16", 1-1/8", 1-3/16", 1-1/4", 1-5/16", 1-3/8", 1-7/16", and 1-1/2"

SPECIAL - Fig. 164: High speed twist drill bit with 5/8" round flattened shank can be furnished on request. Write for additional information and prices.



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago 32, Illinois



Adjustable Hand Throw, Sliding and Portable DERAILS



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

Canada: Consolidated Equipment Co., Ltd., Dominion Square Bldg., Montreal 2, Quebec

Printed in U.S.A.



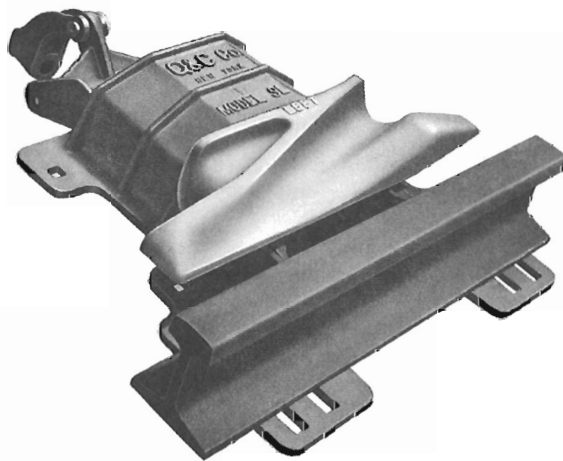
Adjustable HAND THROW DERAIL

Western and Q & C hand throw derails are made in various designs as shown in the accompanying illustrations. The design and construction of these derails embody the most modern and effective methods of derailing rolling stock with this type derail.

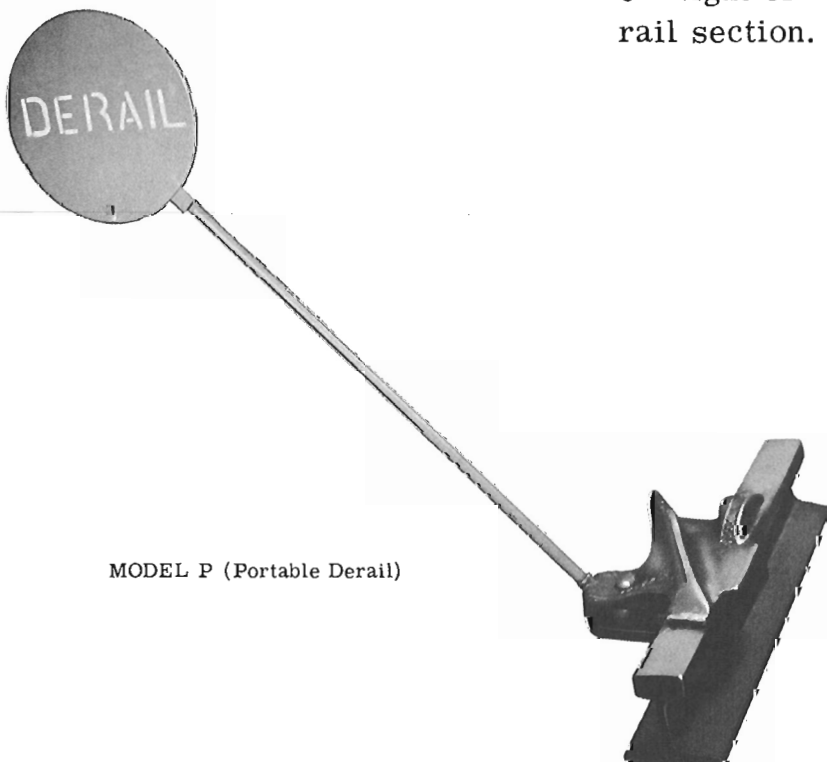
ADJUSTABLE FEATURE. All models are adjustable for various heights of rail. The adjusting is accomplished by raising or lowering the pivot rod in a series of holes found in the brackets. This readily permits the use of one model over a wide range of rail heights and eliminates the necessity of carrying many sizes in stock, thus reducing inventories.

Western and Q & C hand throw derails are designed for installation up to 7-1/8" rail. They are equipped with three lugs as shown in the accompanying illustration, one for locking when fitted to the high rails, one for locking when fitted to low rails and a third for target stand connection. They are designed for use on sidings and spurs and will derail equipment at ordinary speeds. These derails are provided with a recessed handgrip in the derail block to facilitate in removing or placing the derail on the rail.

In ordering Models HS or HL Derails specify whether Right or Left hand derail is desired and specify rail section.



MODEL SL DERAIL



MODEL P (Portable Derail)



MODEL PD (Porta

Portable Type DERAILS

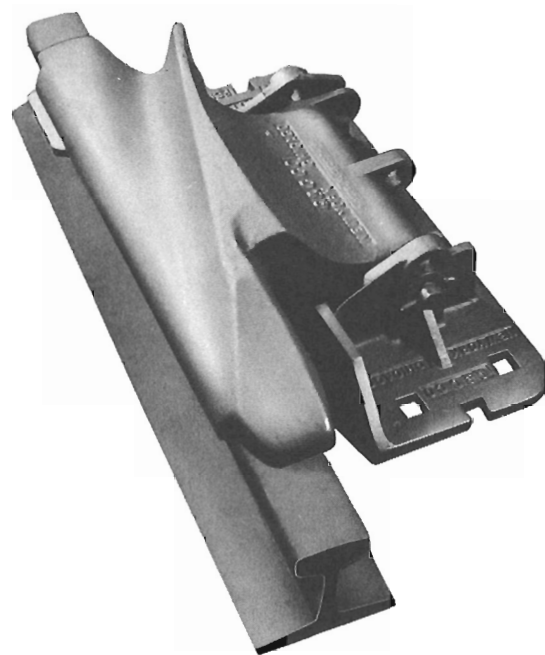


Western and Q & C BLUE FLAG PORTABLE DERAILS are for use where temporary installation only is required. They are self-contained. No spiking is necessary. They are for use in protecting car men engaged on repair tracks as well as protection to outfit cars and work equipment set out on sidings and similar situations.

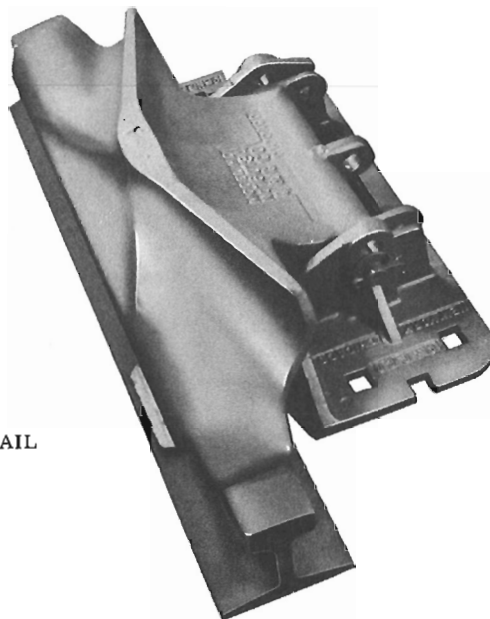
One size of derail fits all rail sections from 55 to 130 pounds. The blue flag is permanently attached to the derail and the blue disc is equipped for attaching a lantern for night service. The derail blocks are the same general design as other Western and Q & C derails.

MODEL P SINGLE END DERAIL. Made in both right hand and left hand and equipped with eccentric cam which automatically locks derail to rail. The derail block is 15" long. The weight of the derail is approximately 40 pounds.

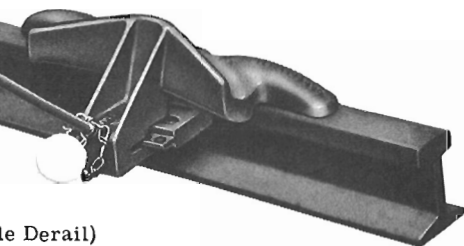
MODEL PD DOUBLE END TYPE; i. e., effecting derailment in either direction and serves as a right and left hand derail combined and equipped with locking wedge. The derail block is 22" long and the weight approximately 60 pounds.



MODEL HL DERAIL
(Left Hand)



MODEL HD DERAIL



(e Derail)

Western and Q & C Model	TYPE		Length Derail Block	Adjustable for Rails	
HS No. 1	One way	Hand throw	17"	40 lb. (3-1/2")	85 lb. (5 1/4")
HS No. 2	"	"	17"	85 lb. (5-1/4")	110 lb. (6 1/4")
HL No. 2	"	"	24"	70 lb. (4-1/2")	105 lb. (6")
HL No. 3	"	"	24"	105 lb. (6")	136 lb. (7 1/8")
HD No. 2	Two way	"	27"	70 lb. (4-1/2")	105 lb. (6")
HD No. 3	"	"	27"	105 lb. (6")	136 lb. (7 1/8")
P	One way	Portable	15"	55 lb. (4-1/16")	130 lb. (6 3/4")
PD	Two way	"	22"	55 lb. (4-1/16")	130 lb. (6 3/4")
SL	One way	Sliding	26"	80 lb. (5")	136 lb. (7 1/8")
SD	Two way	"	32"	80 lb. (5")	136 lb. (7 1/8")

Other Western and Q & C
Track, Car and Locomotive Devices

DERAILS
GAGE RODS
WHEEL STOPS
RAIL BENDERS
GUARD RAIL CLAMPS
MANGANESE SWITCH POINT GUARDS
MANGANESE GUARD RAILS
ANTI-SLIP RAIL TONGS
ELECTRIC SNOW MELTERS
COMPROMISE JOINTS
RERAILERS
EMERGENCY KNUCKLES
TRACK SKATES



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

Canada: Consolidated Equipment Co., Ltd., Dominion Square Bldg., Montreal 2, Quebec

Printed in U.S.A.



Hold Accurate Gage of Rail with WESTERN GAGE RODS

Insulated and Non-Insulated types

Dependable. Assure accurate gage of rail—at curves and ahead of switch locations—with these Western heavy steel Gage Rods.

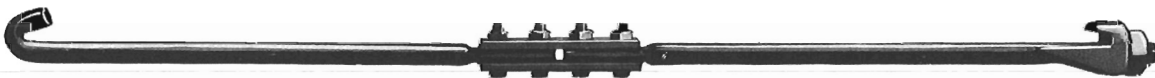
Non-Insulated, Regular



Non-Insulated, Double-clamp



Insulated



Western's Insulated Gage Rods will withstand up to 2000 volts, A.C., for not less than three seconds, without flashover or puncture between insulated sections.

Order now for fast delivery:



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

Canada: Consolidated Equipment Co., Ltd., Dominion Square Bldg., Montreal 2, Quebec



SECTION 59

REVOLVING WARNING LIGHTS

CONTENTS

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Diesel Locomotive Revolving Warning Light, Model D-312	1-2
Federal Revolving Warning Lights	3-6

Diesel Locomotive REVOLVING WARNING LIGHT MODEL D-312



Test application, courtesy Chicago and North Western RR

Provides long range, intense flashes of light cast radially thru 360°

FOR SAFETY AND PROTECTION: When installed on locomotive cab roof, Western's Diesel Locomotive Revolving Warning Light, Model D-312, radiates bright flashes of light . . . to alert humans and to "clear the way."



Diesel Locomotive REVOLVING WARNING LIGHT MODEL D-312

Engineered to withstand shock and vibration, Western's Revolving Warning Light, Model D-312, is built for a lifetime of service.



The Model D-312 operates on 75 V isolated current, with two 75 W sealed-beam lamps. Motor has precision worm and fiber worm gears, protected by heavy duty clutch. Base is die cast aluminum. Dome is high heat resistant, virtually unbreakable

polymer. Ample underdome space allows for cool, quiet running of lamps. Stainless steel retaining band, with single clasp, gives easy access for simple snap-out, snap-on relamping. Unit is fully weatherproof.

Dome available in red, blue, amber or clear white

Dimensions: Height, 11¼ inches; diameter, 9 inches

Net Weight: 9 lbs. Shipping Weight: 11 lbs.

When ordering: Specify model number, voltage and dome color desired



WESTERN RAILROAD SUPPLY COMPANY

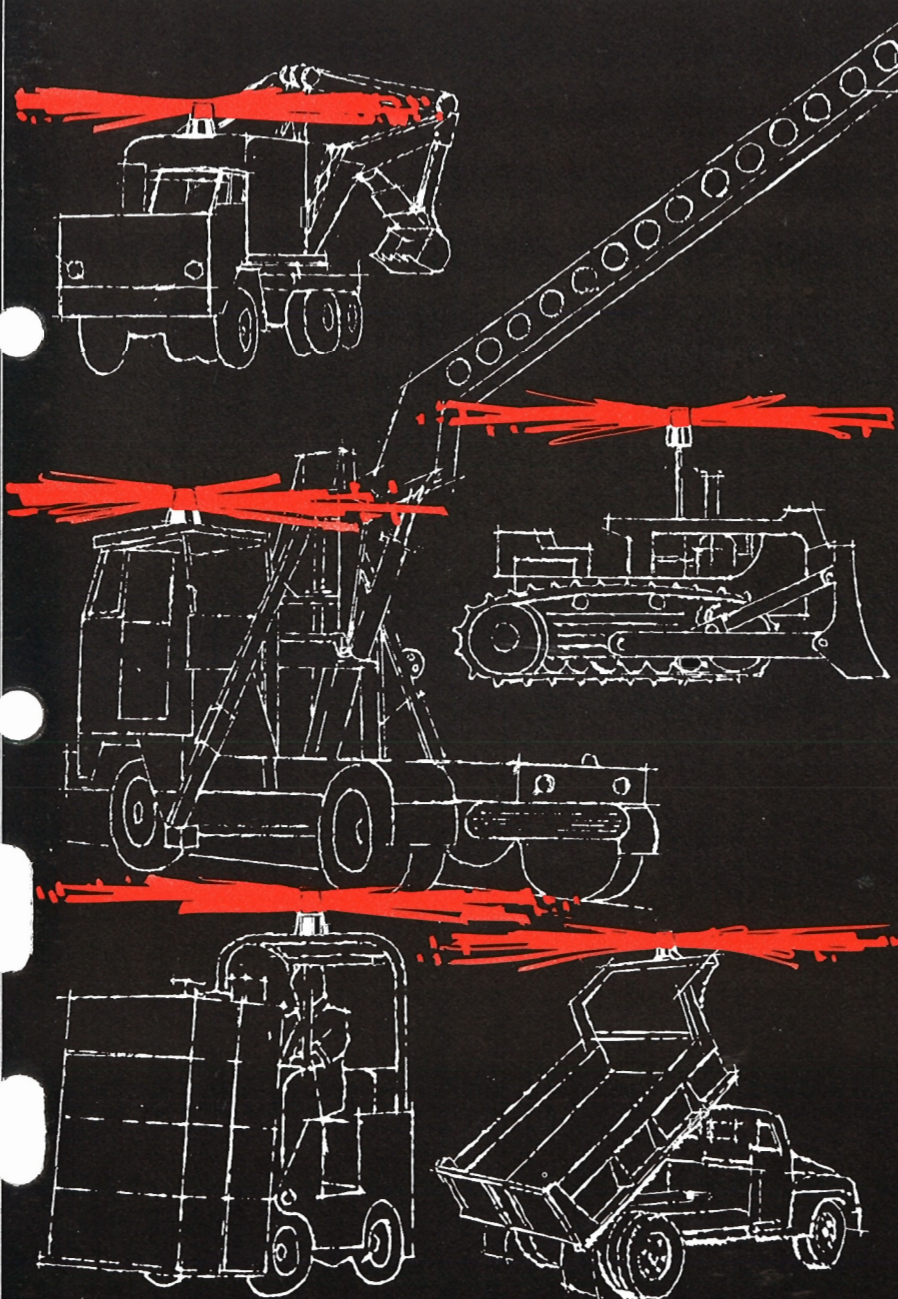
Division of WESTERN INDUSTRIES, INC.

2742 West 36th Place, Chicago, Illinois 60632

CANADA: Lyman Tube & Supply Co., Ltd., 5420 Pare Street, Montreal 9, Quebec

FEDERAL REVOLVING WARNING LIGHTS

ESPECIALLY DESIGNED for ■ **UTILITY EQUIPMENT**—Phone, light, power, gas or transit company emergency cars, service and repair trucks, line trucks and snorkels. ■ **ROAD EQUIPMENT**—Maintenance, service, or repair trucks and such vehicles as snowplows, salters, cinder spreaders, mowers, strippers, rollers, scrapers, sweepers, and refuse handlers. ■ **CONSTRUCTION EQUIPMENT**—Shovels, back-hoes, cranes, ditchers, dozers, pavers, loaders and dump trucks. ■ **IN-PLANT EQUIPMENT**—Including many of the former listings plus transfer tractors, fork-lifts, conveyors, loaders, car movers, and even fire trucks and ambulances. ■ **TOWING AND WRECKER OPERATIONS.**



The duties of "non-emergency" work vehicles often find them standing or moving slowly, for the task at hand, so they are exposed to, or create, traffic hazards. Emergency vehicle operators learned long ago that Beacon Rays were even more valuable protection at destination than they were enroute.

The long range intense flashes of light cast radially thru 360° alert the day dreaming motorist in ample time. In protecting him you protect your men and equipment.

Work is faster and better when you can be protected with confidence. Better safety records spell "job-economy" and its humanitarian aspect can't be dollar evaluated.

The new lights on subsequent pages lack nothing of the performance or quality of their predecessors. They are durable, dependable, and fully effective. They have been designed for general commercial uses, minus many of the frills desired on fire apparatus or ambulance. In these lights you have ample quality and utility with clean compact functional appearance. There is a model for your every need in price as well as performance.



FEDERAL POWER LIGHT

Four powerful sealed beam spot lamps rotate under the broad acrylic dome cover. The "Power" light's low contour matches the monitor styling of modern vehicles. Ample underdome space means cooler, quieter running. Simple mounting, easy relamping, and trouble-free construction are combined in its . . .
UP-TO-DATE APPEARANCE.

MODEL 184 NEW LOW CONTOUR 4 BEAM LIGHT

The Power light is especially satisfactory as a protector and warning for highway emergency, maintenance or construction vehicles. Mount it on your plow, tow-truck, salter, grader, scraper, or repair equipment and you can negotiate or detour heavy fast traffic in safety. It represents equal safety and satisfaction on police cars, fire trucks, or ambulances. Meets S.A.E. requirements.

Every new phase and feature of the Power light was tried and tested before going on the market. Federal, the pioneer designer and producer of revolving warning lights, has combined in the 184, its years of experience and superior facilities. The improved motor provides closer clearances. The precision worm and fiber worm gear are protected by a heavy duty clutch. Lampholders are special non-corrodible castings with instant but positive "Snap-in" lamp retainers. No tools required for relamping.

The spun brass case is richly chrome plated and the stainless steel retaining band, with single clasp, provides quick access for relamping. The skirt or base on the standard model 184 is but 3" high, but the optional model 184H has a 5" skirt for those who prefer it for trimming or for additional height.

The Power light, obviously, is highly resistant to shock and vibration. The regular 184 and 184H are made to mount on a vehicle roof or similar horizontal surface. For those who, from necessity or preference, want pipe post mounting, we offer No. 4184 post mounting kit as an additional feature.

OPTIONS FOR MODELS 184 AND 14

These lights are furnished normally for 12 volt operation and with red dome. The usual options of amber, blue, or clear are also offered. With the clear dome, lamps of varied color may be used. Sealed beam lamps are available in red, amber, blue*, green*, and clear white. No extra charge is made for these options, or for a 6 volt unit. 24 volt lights carry an additional charge. The post mounting kit is an additionally priced accessory for the model 184. If you order the 14A, the pipe post mounting is included.

HOW TO ORDER MODELS 184 AND 14

Specify model number, voltage and dome color desired. If you specify the clear dome, do not fail to indicate what color sealed beams you want with it. If you want post mounting use correct catalog numbers. The same options are offered on the 184H as on the 184.

*Blue and green sealed beam lamps are not available in colored glass. While we use the best transparent lacquer colors, we cannot guarantee green or blue lamps against chipping or peeling.

Full specifications appear on page 4.

MODEL 14

NEW LOW CONTOUR 2 BEAM LIGHT

The "Fourteen" embodies many of the features of the 184. It has the same positive drive, clutch action, cast lamp supports, retainers, and brush action as its four-lamp counterpart. Rugged design is the keynote—just the unit for vehicles listed on page 1. All parts are for extra heavy duty and are stainless or non-ferrous materials. It has no rubber bands, belts or similar friction drive connections to wear or slip.

The two powerful sealed-beam lamps mounted back to back have no reflectors to tarnish or warp out of adjustment. There are no separate lenses to vibrate out of focus or alignment.

Unlike the larger 184, the size and weight of the Fourteen enables us to offer the option of a magnetic-demountable model. The model 14M, equipped with 6 magnets will cling firmly to any ferrous surface. A cord extension with a plug for the cigar-lighter completes the hookup for operation. Protection can be provided for whatever vehicle is in hazardous duty and its portability and flexibility of use increases your safety factor with less investment.

See options and how to order on page 2.
Full specifications appear on page 4.

MODEL 121 VITALITE

Here is protection at a price, and the low price is no compromise with quality. A good parabolic anodized reflector revolves around a powerful bulb to project its intense beam.

For many secondary pieces of equipment this is the economical solution to 360° protection. The model 121 has magnets that cling to ferrous surfaces. It will plug into a cigar lighter socket. It can be transferred instantly from one vehicle to another.

The VITALITE is extremely light weight and compact. A permanent mounted model 121A is also offered and the 121B is furnished with a threaded flange for pipe mounting.

Supplement or replace the ineffective blinkers with a Vitalite. On any size equipment and for any duty, it's a better protector.

OPTIONS

Red is the standard color, but blue, amber, and clear white are available. 12 volt is standard but 6 volt is optional. The above options are available at the regular price.

HOW TO ORDER

Specify model number, voltage and dome color desired.

FEDERAL FOURTEEN LIGHT



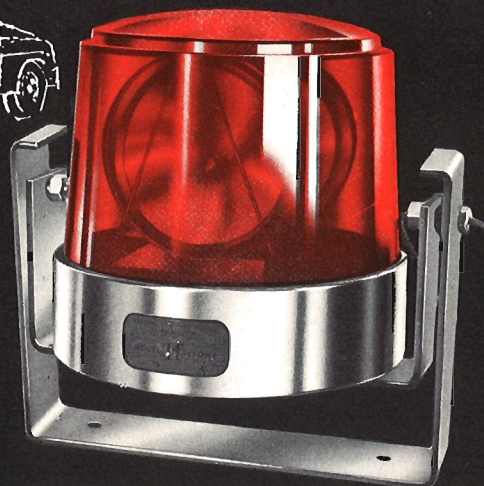
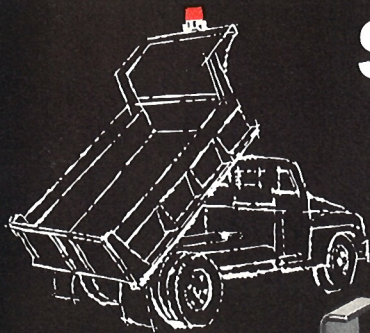
MODEL 14
NEW LOW CONTOUR 2 BEAM LIGHT

FEDERAL VITALITE



MODEL 121 SINGLE BEAM

SELF-LEVELING BRACKETS FOR ALL FEDERAL LIGHTS



Many vehicles, like dump trucks, fork lifts, snorkels, and scrapers, operate on steeply inclined surfaces, or mount the light on a portion of the vehicle that doesn't remain relatively horizontal.

For such use, the swivel self-leveling bracket is a valuable safety factor. Models are all of similar design and construction, but vary in size and weight compatible with that of the lights.

Self-leveling brackets are available for our line of Fire and Police Beacon Rays as well as those listed in this bulletin.

Specifications are on this page.

LIGHT SPECIFICATIONS

MODEL	DESCRIPTION	HEIGHT	DIAMETER	NET WT.	SHIPPING WT.
184	Standard	9¾"	11½"	11½ lbs.	12½ lbs.
184H	High skirt	11¾"	11½"	12 lbs.	13 lbs.
4184	Pipe kit only	7/8"	11¾"	—	—
14	Surface mount	8"	8½"	4½ lbs.	7 lbs.
14-M *	Magnetic plug-in	8"	8½"	5 lbs.	7 lbs.
14A	Pipe mount included	8½"	8½"	6½ lbs.	9 lbs.
14-4P	Pipe kit only for No. 14	—	—	2 lbs.	2½ lbs.
121 *	Magnetic plug-in	6¾"	5½"	1¾ lbs.	2½ lbs.
121-A	Permanent mount	6¾"	5½"	1½ lbs.	2½ lbs.
121-B	Pipe-post mount	6¾"	5½"	1¾ lbs.	2½ lbs.

BRACKET SPECIFICATIONS

MODEL	DESCRIPTION	NET WEIGHT	SHIPPING WEIGHT
417	For No. 184	8 lbs.	8½ lbs.
414	For No. 14	7 lbs.	7½ lbs.
4121	For 121-A	1¾ lbs.	2 lbs.

*Socket for plug-in connection on these lights available at nominal charge.

Distributed by:

WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

Canada: Lyman Tube & Supply Co., Ltd., 5420 Pare St., Montreal 9, Quebec





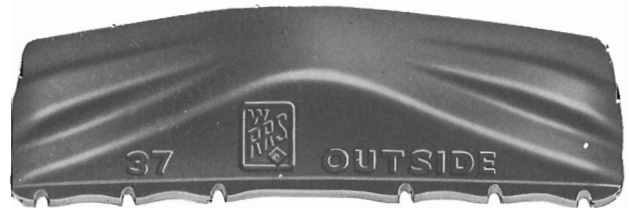
CAR AND LOCOMOTIVE REPLACERS

(WRECKING FROGS)

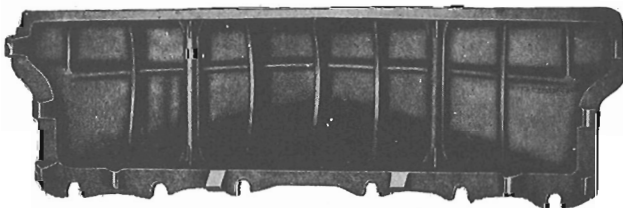
Lowest weight and greatest strength consistent with structural design and proper distribution of metal



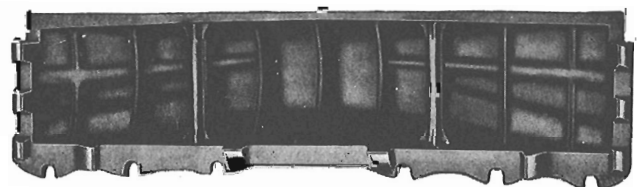
Top View — Inside Replacer



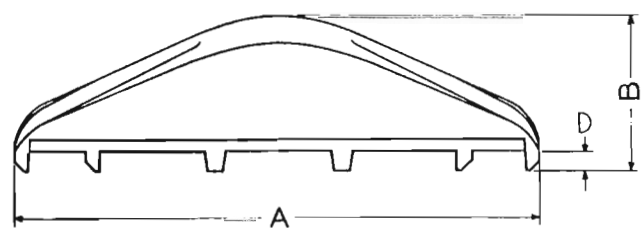
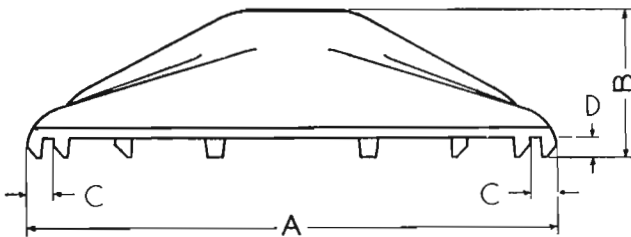
Top View — Outside Replacer



Underside — Inside Replacer



Underside — Outside Replacer



	Inside Replacer Dimensions				Outside Replacer Dimensions		
	A	B	C	D	A	B	D
No. 45—For rail up to 5" high.....	23 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	0"	$\frac{3}{4}$ "	25 $\frac{1}{4}$ "	6 $\frac{3}{4}$ "	$\frac{3}{4}$ "
No. 46—For rail up to 6" high.....	33"	8 $\frac{3}{4}$ "	1 $\frac{3}{4}$ "	1 $\frac{1}{4}$ "	33"	9 $\frac{1}{4}$ "	1 $\frac{1}{4}$ "
No. 37—For rail up to 7" high.....	34 $\frac{1}{2}$ "	9 $\frac{3}{4}$ "	1 $\frac{3}{4}$ "	1 $\frac{1}{4}$ "	34 $\frac{1}{2}$ "	10 $\frac{1}{4}$ "	1 $\frac{1}{4}$ "
No. 28—For rail up to 8" high.....	36"	11 $\frac{1}{4}$ "	0"	1 $\frac{1}{4}$ "	36"	11 $\frac{3}{4}$ "	1 $\frac{1}{4}$ "

NOTE: HEIGHT OF RAIL INCLUDES THICKNESS OF TIE PLATE

Gradual and easy climb by the tread of the wheel.
Do not interfere with under-rigging of cars and locomotives.
Are provided with flanges and ribs to guide the wheels.
May be used on bridges, trestles, curves, planked crossings
and around interlocking plants and frogs.

Light enough to be handled by one man



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago 32, Illinois

Canada: Melville Machinery Co., Ltd., 515 Bissen Street, Montreal 3, Quebec

PRINTED IN U.S.A.



REPLACERS

(WARPCING PROCESS)

Lowest weight and greatest strength consistent with structural design and proper distribution of metal



Top View — Outside Replacer



Top View — Inside Replacer



Underside — Outside Replacer



Underside — Inside Replacer



Outside Replacer Dimensions			
A	B	C	D
11 1/2"	3 1/2"	1 1/2"	1 1/2"
11"	3 1/2"	1 1/2"	1 1/2"
10 1/2"	3 1/2"	1 1/2"	1 1/2"
10 1/4"	3 1/2"	1 1/2"	1 1/2"
10"	3 1/2"	1 1/2"	1 1/2"
9 1/2"	3 1/2"	1 1/2"	1 1/2"
9 1/4"	3 1/2"	1 1/2"	1 1/2"
9"	3 1/2"	1 1/2"	1 1/2"
8 1/2"	3 1/2"	1 1/2"	1 1/2"
8 1/4"	3 1/2"	1 1/2"	1 1/2"
8"	3 1/2"	1 1/2"	1 1/2"
7 1/2"	3 1/2"	1 1/2"	1 1/2"
7 1/4"	3 1/2"	1 1/2"	1 1/2"
7"	3 1/2"	1 1/2"	1 1/2"
6 1/2"	3 1/2"	1 1/2"	1 1/2"
6 1/4"	3 1/2"	1 1/2"	1 1/2"
6"	3 1/2"	1 1/2"	1 1/2"
5 1/2"	3 1/2"	1 1/2"	1 1/2"
5 1/4"	3 1/2"	1 1/2"	1 1/2"
5"	3 1/2"	1 1/2"	1 1/2"
4 1/2"	3 1/2"	1 1/2"	1 1/2"
4 1/4"	3 1/2"	1 1/2"	1 1/2"
4"	3 1/2"	1 1/2"	1 1/2"
3 1/2"	3 1/2"	1 1/2"	1 1/2"
3 1/4"	3 1/2"	1 1/2"	1 1/2"
3"	3 1/2"	1 1/2"	1 1/2"
2 1/2"	3 1/2"	1 1/2"	1 1/2"
2 1/4"	3 1/2"	1 1/2"	1 1/2"
2"	3 1/2"	1 1/2"	1 1/2"

Inside Replacer Dimensions			
A	B	C	D
11 1/2"	3 1/2"	1 1/2"	1 1/2"
11"	3 1/2"	1 1/2"	1 1/2"
10 1/2"	3 1/2"	1 1/2"	1 1/2"
10 1/4"	3 1/2"	1 1/2"	1 1/2"
10"	3 1/2"	1 1/2"	1 1/2"
9 1/2"	3 1/2"	1 1/2"	1 1/2"
9 1/4"	3 1/2"	1 1/2"	1 1/2"
9"	3 1/2"	1 1/2"	1 1/2"
8 1/2"	3 1/2"	1 1/2"	1 1/2"
8 1/4"	3 1/2"	1 1/2"	1 1/2"
8"	3 1/2"	1 1/2"	1 1/2"
7 1/2"	3 1/2"	1 1/2"	1 1/2"
7 1/4"	3 1/2"	1 1/2"	1 1/2"
7"	3 1/2"	1 1/2"	1 1/2"
6 1/2"	3 1/2"	1 1/2"	1 1/2"
6 1/4"	3 1/2"	1 1/2"	1 1/2"
6"	3 1/2"	1 1/2"	1 1/2"
5 1/2"	3 1/2"	1 1/2"	1 1/2"
5 1/4"	3 1/2"	1 1/2"	1 1/2"
5"	3 1/2"	1 1/2"	1 1/2"
4 1/2"	3 1/2"	1 1/2"	1 1/2"
4 1/4"	3 1/2"	1 1/2"	1 1/2"
4"	3 1/2"	1 1/2"	1 1/2"
3 1/2"	3 1/2"	1 1/2"	1 1/2"
3 1/4"	3 1/2"	1 1/2"	1 1/2"
3"	3 1/2"	1 1/2"	1 1/2"
2 1/2"	3 1/2"	1 1/2"	1 1/2"
2 1/4"	3 1/2"	1 1/2"	1 1/2"
2"	3 1/2"	1 1/2"	1 1/2"

No. 28 — For rail up to 8" high
 No. 17 — For rail up to 7" high
 No. 46 — For rail up to 6" high
 No. 45 — For rail up to 5" high

NOTE: HEIGHT OF RAIL INCLUDES THICKNESS OF THE TREAD

light enough to be handled by one man and several erecting plants and frogs. Also be used on bridges, trestles, covered plank crossings. Are provided with flanges and ribs to guide the wheels. Do not interfere with under-rigging of cars and locomotives. Equal and easy climb by the tread of the wheels.

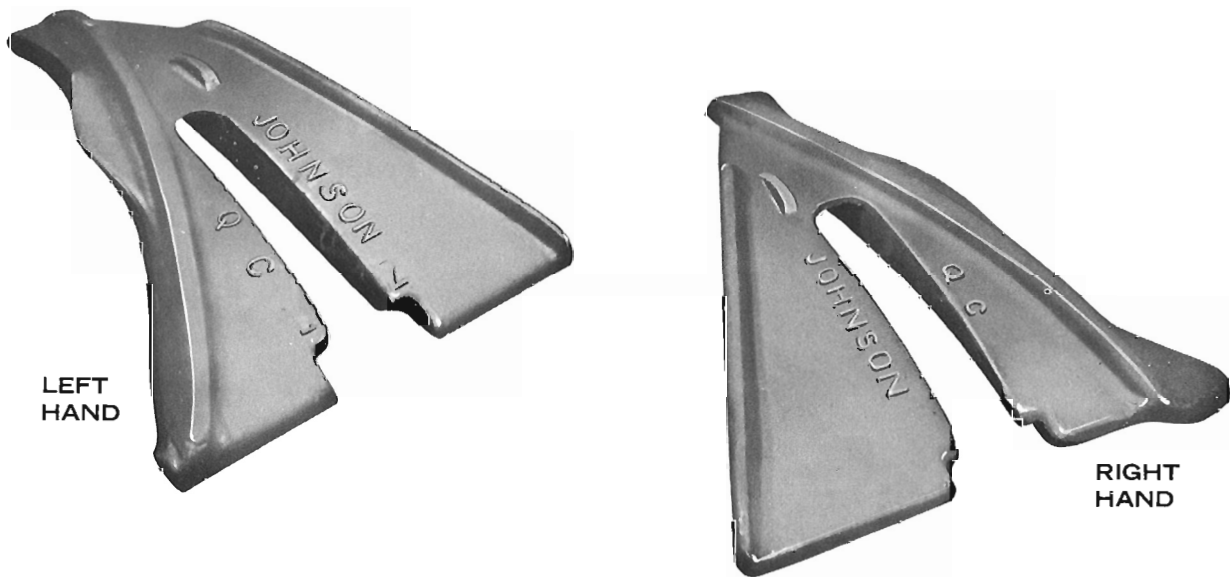
light enough to be handled by one man

WESTERN RAILROAD SUPPLY COMPANY



Division of Western Industries, Inc.
 2112 West 26th Place, Chicago 22, Illinois

The original "butterfly-type" CAR RERAILERS

LEFT
HANDRIGHT
HAND

Made of cast steel (annealed), these original Johnson Car Rerailers are simple to use, just place them straddling the rail. They need no spikes, clamps or fasteners, and are self-adjusting to various heights of rail.

Designed to rest on both front and rear of rail, Johnson "butterfly type" Rerailers form a friction grip when in use.

Important too, they allow the load to be evenly distributed on the rail, not just on one or two ties.

MODELS: C (Left and Right) for 70-lb. to 90-lb. rail

MODELS: CC (Left and Right) for 70-lb. to 90-lb. rail

W-96 (Left and Right) for 96-lb. to 132-lb. rail

Also available: Western's "camelback-type" Rerailers



WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

Canada: Consolidated Equipment Co., Ltd., Dominion Square Bldg., Montreal 2, Quebec

Section 62

TIE DOWN

Photos of Western secured loads	62-4
Photos of Western equipped Tie Downs	62-5
Drawings.	

Western Heavy Duty Tie-Down equipment leads the field in position securement of heavy equipment. The strongest of chain married with ruggedly designed components, produce the ultimate in chain assembly securements available to the railroad industry. The ½ inch Super-Alloy chain has a working load limit of 13,750 lbs. and proof test of 27,500 lbs. All chain components are equal to or exceed the ultimate breaking strength of the component chain assuring the ultimate in assembly strength.

Western pioneered the use of inboard retainer castings as opposed to the channel type which are costly to install and difficult to maintain.

The inboard retainer allows for complete utilization of chain assemblies as they may be quickly and easily relocated between stake pocket and inboard retainers, thus cutting down original equipment costs and subsequent maintenance.

With the versatility of the slide-lock, car utilization increases greatly, as a single car so equipped may be used for heavy road machinery, containers, lumber, logs, pipe, army tanks and heavy rubber tired vehicles.



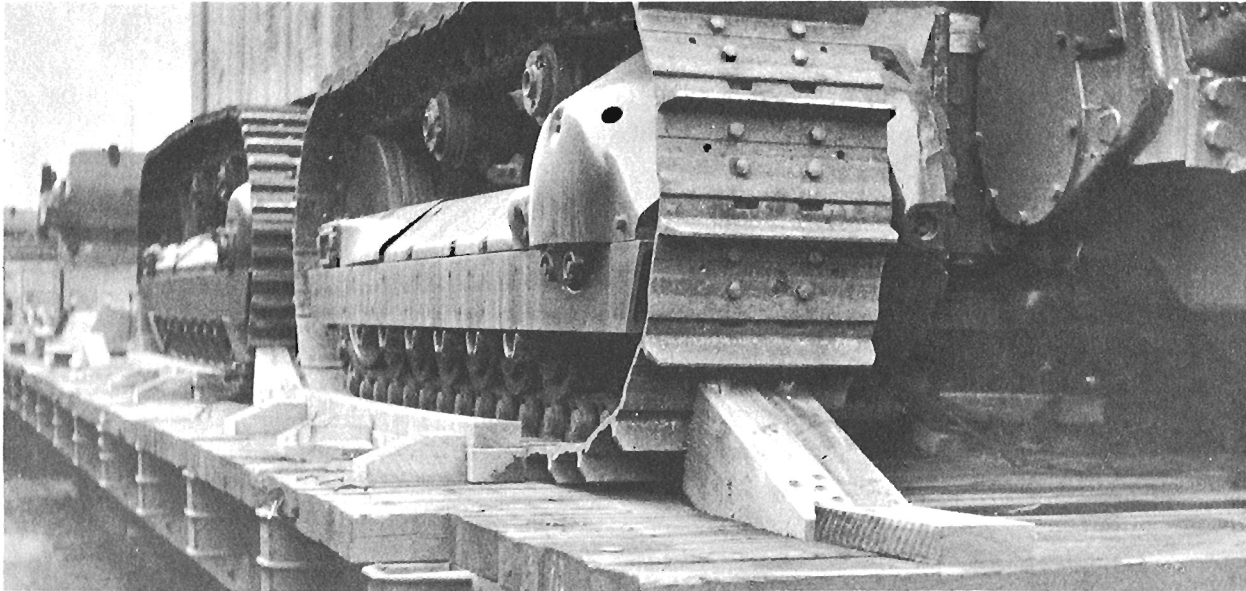
WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.
Chicago, Illinois 60632

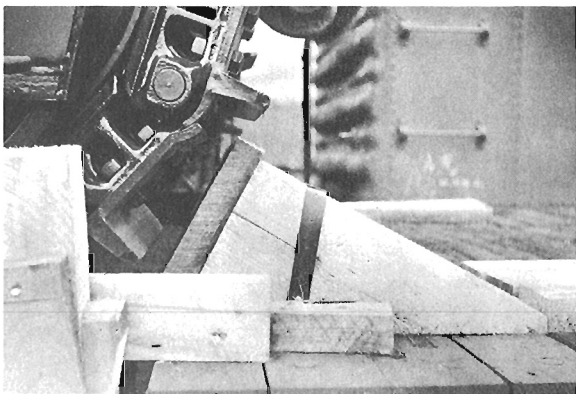


The use of wood blocking is the horse and buggy method of securement..

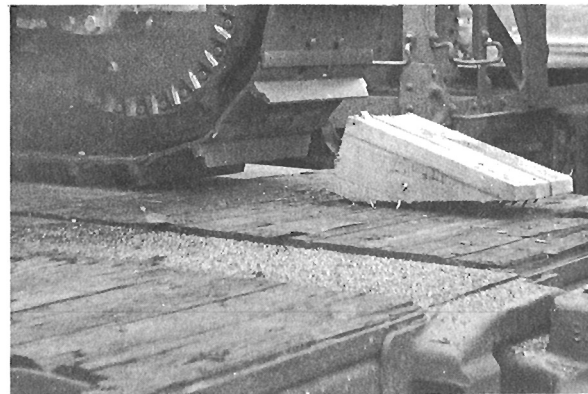
IT IS COSTLY, TIME CONSUMING, and FREQUENTLY INEFFECTIVE



DON'T RUN THE RISK OF HAVING THE LOAD GO FROM THIS



TO THIS



OR EVEN THIS

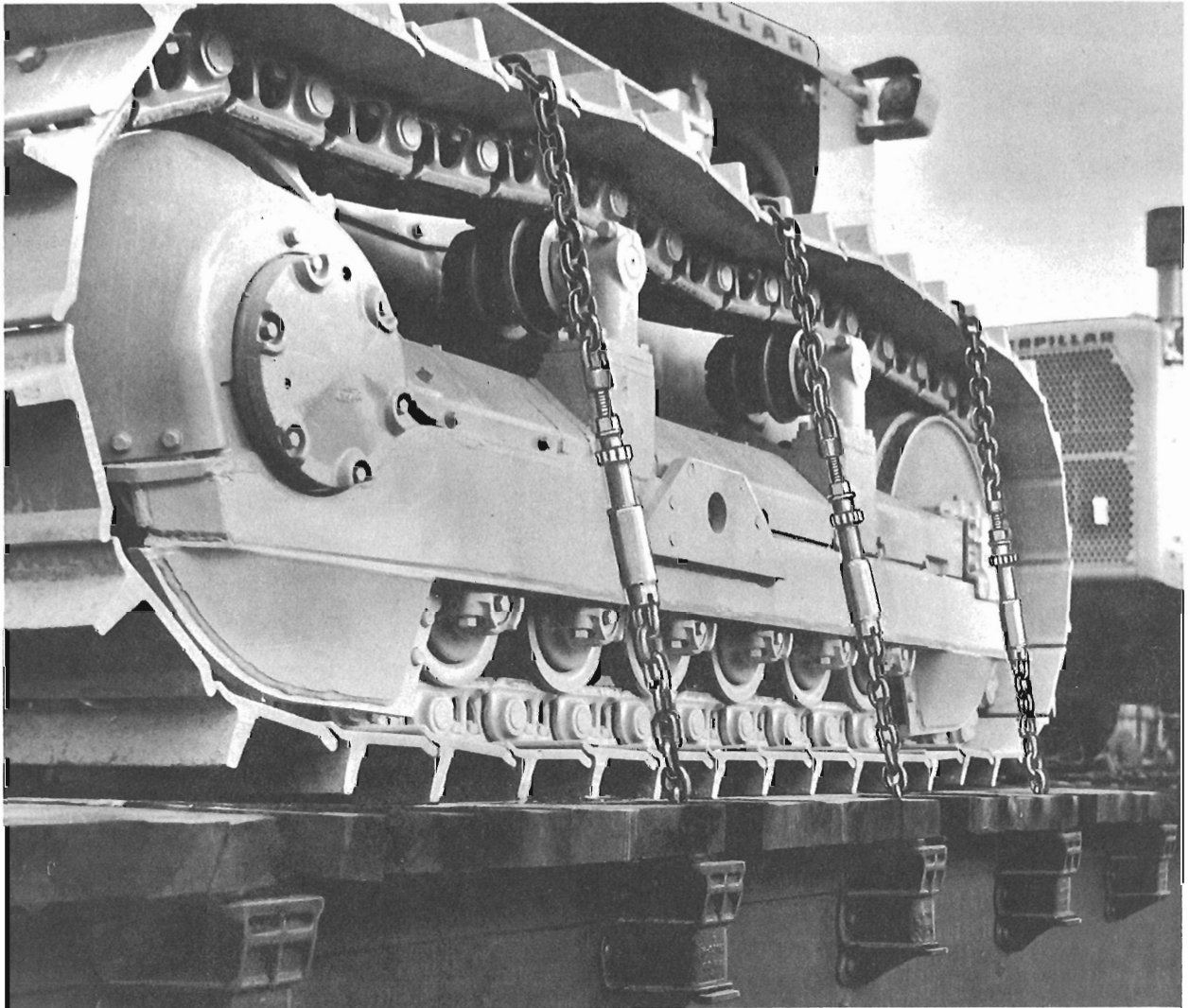
IN A MATTER OF MINUTES!

NOW! if you want positive securement...



TIE DOWN For HEAVY EQUIPMENT

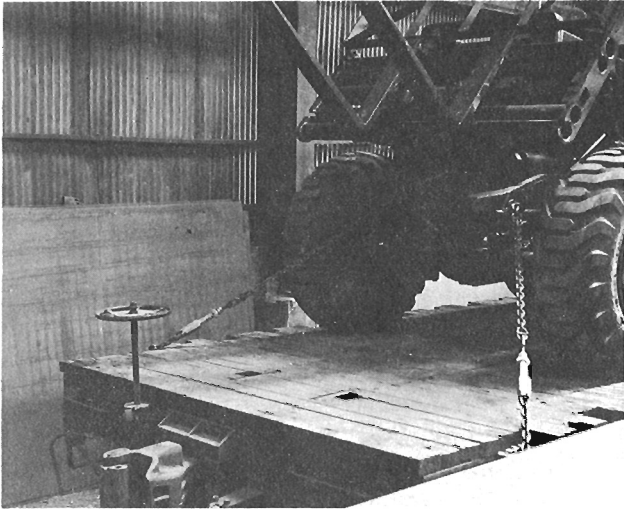
HAS INHERENT HOLDING POWER FOR MAXIMUM SECUREMENT



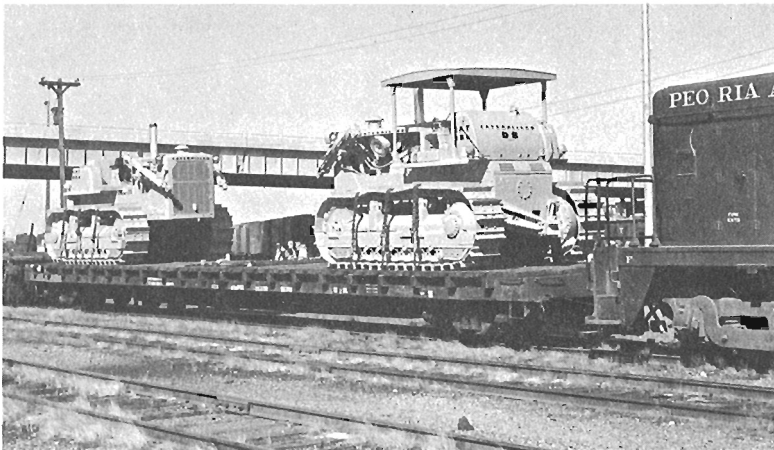
Here are the WESTERN Tie Down points of superior performance:

- **CHAIN IS SUPER ALLOY, 27,500 LBS. PROOF TEST**
- **INSTALLATION IS QUICK AND EASY**
- **POSITIVE LOCKING**
- **THEFT-PROOF**

If you are not already using WESTERN Tie Downs, write today and find out how we can help increase your car revenue.

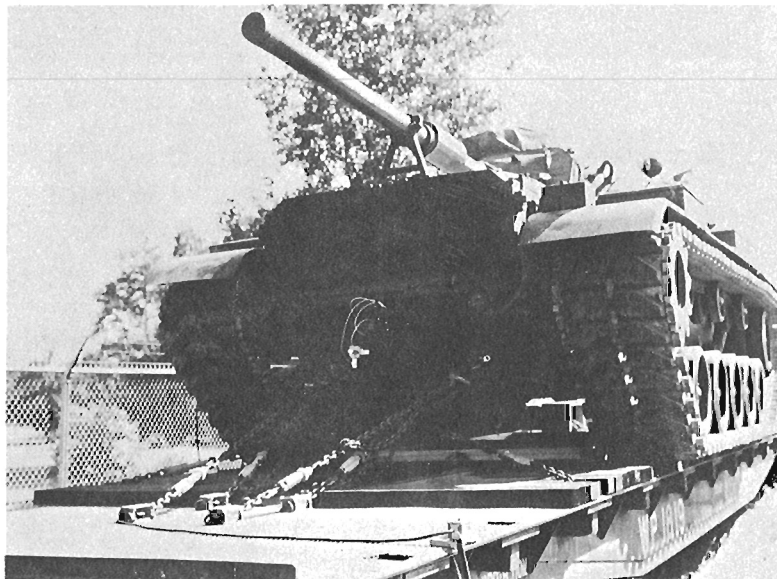


Heavy duty rubber tired equipment as secured using only stakepocket tie downs. (Inboard types also available.)



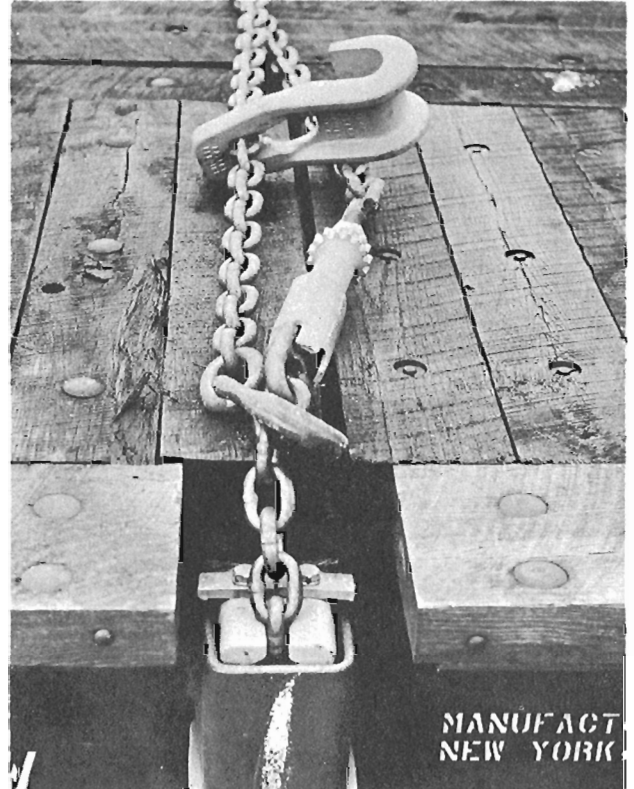
Heavy duty tie-downs used in securing heavy crawler tractors.

The lowest cost inboard securement available to the Railroads today.
(See Drawing J-5450 R)

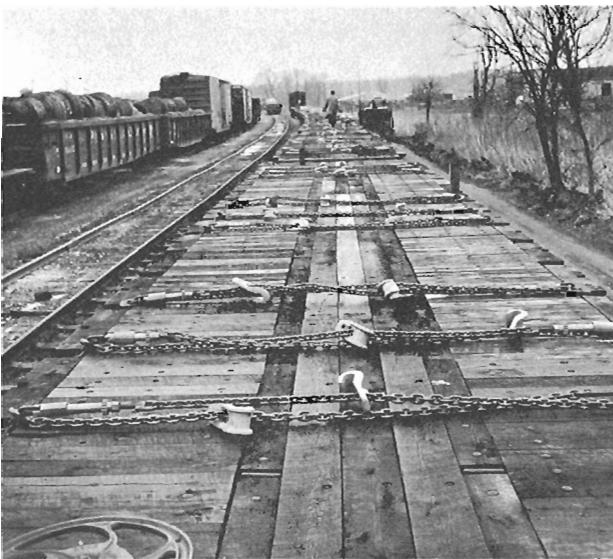




Method of securing tie-downs across deck of car.

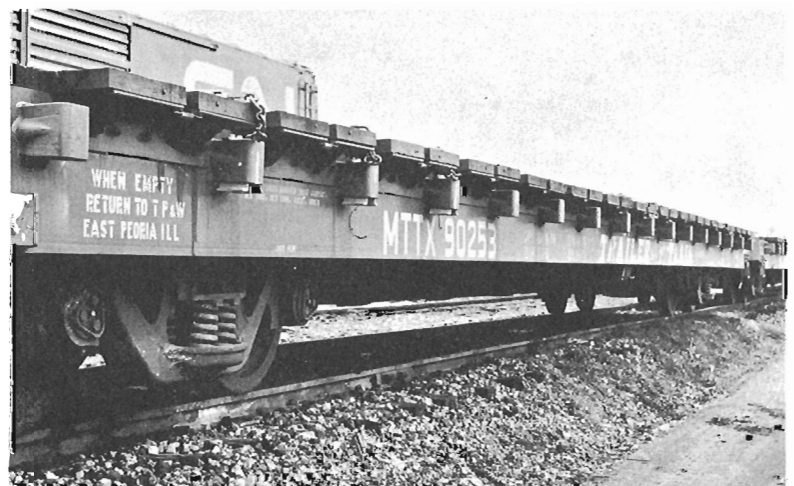


Assembly as secured in stake pocket and across car deck.

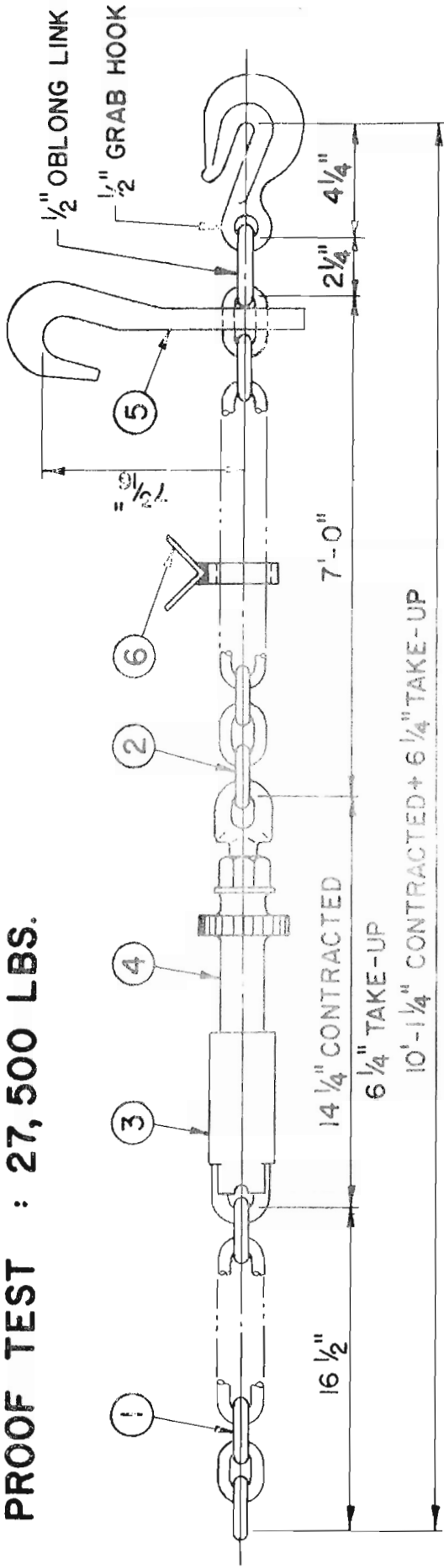


Car equipped to secure three heavy duty tractors.

Side view of car above left showing retainer locations. (Western chain storage boxes may be used for "clear deck" return.)



CHAIN : 1/2" SUPER-ALLOY
WORKING LOAD : 13,750 LBS. MAX.
PROOF TEST : 27,500 LBS.



ITEM	DESCRIPTION	MATERIAL	PART NO.	QTY.
1	BOTTOM CHAIN ASS'Y.	ALLOY STL.	J-5351	1
2	TOP CHAIN ASS'Y.	"	J-5352	1
3	LOCKING SLEEVE	DUCT. IRON	J-5356	1
4	TURNBUCKLE BODY	"	J-5357	1
5	CRAWLER TREAD CLAMP	"	J-5348	1
6	LOAD PROTECTOR	WELDMNT	J-5385	1

WELD BEAD APPLIED ON END OF EACH
 EYE BOLT TO PREVENT REMOVAL OF ITEM 1 & 2
 USE WESTERN PART NO. J-5358 WRENCH FOR ITEM 4
 (FURNISHED WITH EACH CAR SET OF TIE-DOWNS)

WESTERN PART NO. J-5389

PATENT PENDING

WESTERN INDUSTRIES, INC.

CHICAGO 32

COMPLETE CHAIN ASSEMBLY

FOR

WESTERN ALL PURPOSE

CHAIN TIE-DOWN

- SALES DRAWING -

SCALE: NONE

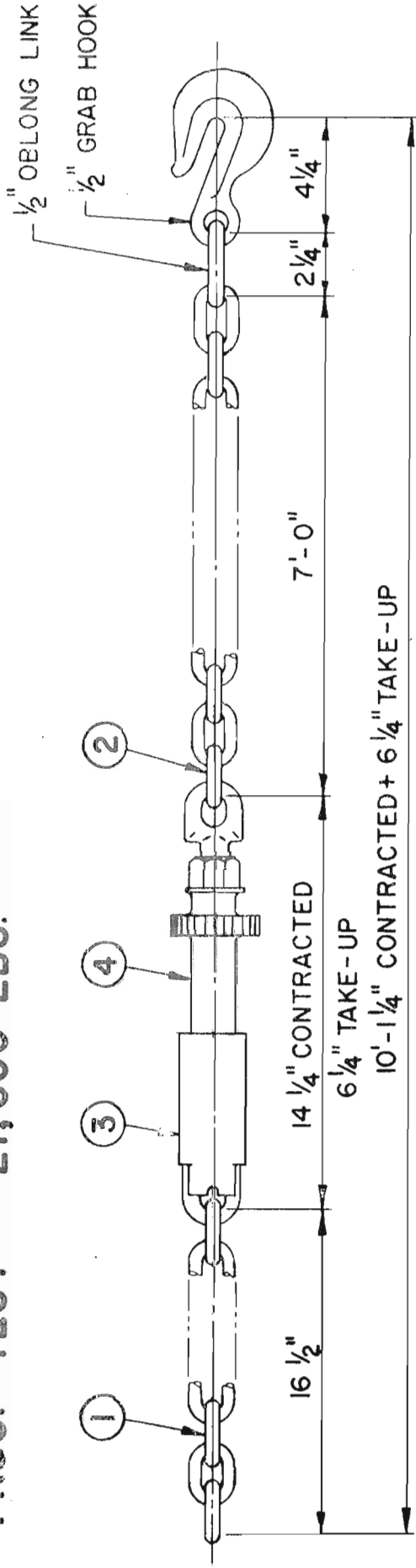
DWG. NO.

DRW. M.H. 10-21-66

WEIGHT : 46.5 LBS.

J-5389-SD

**CH. N: 1/2" SUPER-ALLOY
 WORKING LOAD: 13,750 LBS. MAX.
 PROOF TEST : 27,500 LBS.**



ITEM	DESCRIPTION	MATERIAL	PART NO.	QTY.
1	BOTTOM CHAIN ASS'Y.	ALLOY STL.	J-5351	1
2	TOP CHAIN ASS'Y.	"	J-5352	1
3	LOCKING SLEEVE	DUCT. IRON	J-5356	1
4	TURNBUCKLE BODY	"	J-5357	1

WELD BEAD APPLIED ON END OF EACH
 EYE BOLT TO PREVENT REMOVAL OF ITEM 1 & 2
 USE WESTERN PART NO. J-5358 WRENCH FOR ITEM 4
 (FURNISHED WITH EACH CAR SET OF TIE-DOWNS)

WEIGHT : 35.0 LBS.

WESTERN PART NO. J-5449

PATENT PENDING

WESTERN INDUSTRIES, INC.

CHICAGO 32

COMPLETE CHAIN ASSEMBLY

FOR

WESTERN ALL PURPOSE

CHAIN TIE-DOWN

- SALES DRAWING -

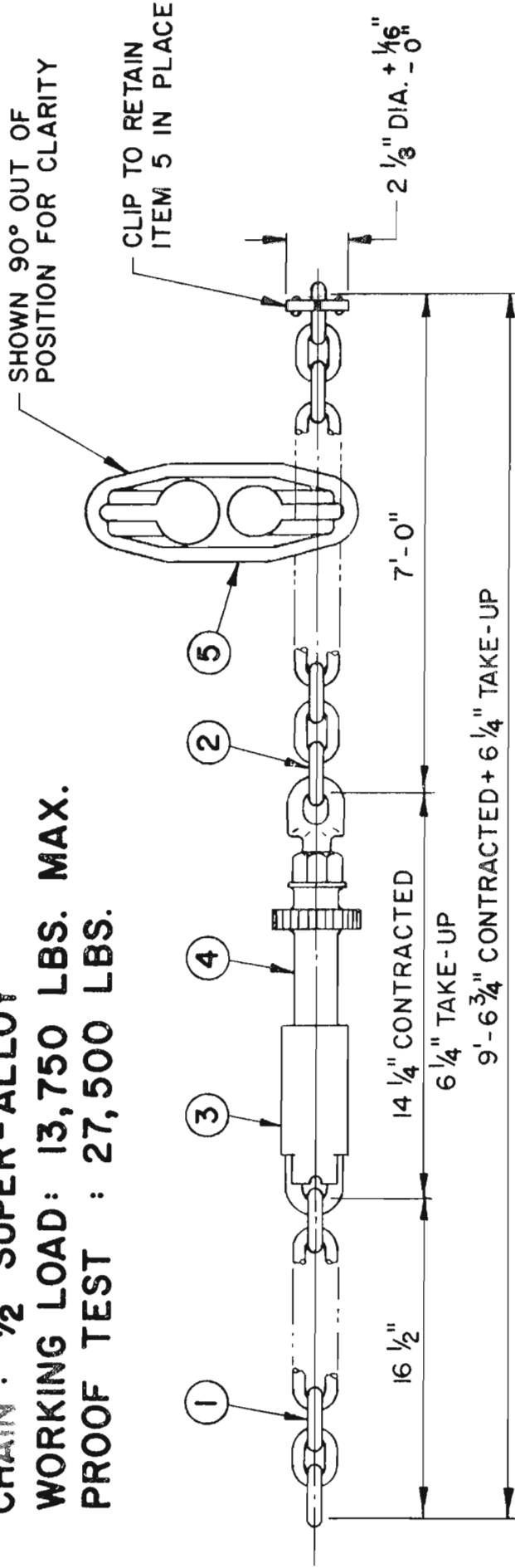
SCALE: NONE

DWG. NO.

DRW. M.H. 10-24-66

J-5449-SD

CHAIN : 1/2" SUPER-ALLOY
WORKING LOAD: 13,750 LBS. MAX.
PROOF TEST : 27,500 LBS.



ITEM	DESCRIPTION	MATERIAL	PART NO.	Q'TY.
1	BOTTOM CHAIN ASS'Y.	ALLOY STL.	J-5351	1
2	TOP CHAIN ASS'Y.	"	J-5419	1
3	LOCKING SLEEVE	DUCT. IRON	J-5356	1
4	TURNBUCKLE BODY	"	J-5357	1
5	SLIDE-LOCK	"	J-5399	1

WELD BEAD APPLIED ON END OF EACH
 EYE BOLT TO PREVENT REMOVAL OF ITEM 1 & 2
 USE WESTERN PART NO. J-5358 WRENCH FOR ITEM 4
 (FURNISHED WITH EACH CAR SET OF TIE-DOWNS)

WEIGHT : 37.0 LBS.

WESTERN PART NO. J-5422
PATENT PENDING

WESTERN INDUSTRIES, INC.
 CHICAGO 32

COMPLETE CHAIN ASSEMBLY
 FOR
 WESTERN ALL PURPOSE
 CHAIN TIE-DOWN
 - SALES DRAWING -

SCALE: NONE
 DWG. NO. **J-5422-SD**
 DRW. M.H. 10-26-66

NOTE:

TO BE USED FOR
AAR SPEC. C-28A - 1951
STAKE POCKETS ONLY

(2) 1/2" - 13 HEX. HD. BOLTS
WITH BOTTOM THREAD PEENED
TO PREVENT REMOVAL &
(2) 1/2" LOCK WASHERS

(2) J-5333
LOCKING JAWS

ALTERNATE POSITION
OF LOCKING JAWS

USE WESTERN PART NO. J-5335
1/2" MECH. COUPLING LINK
FOR CONNECTION WITH ANY 1/2"
WESTERN CHAIN TIE-DOWN ASSY.

WESTERN PART NO. J-5331

PATENT PENDING

WESTERN INDUSTRIES, INC.

CHICAGO 32

STAKE POCKET

CHAIN RETAINER FOR

WESTERN ALL PURPOSE

CHAIN TIE-DOWN

- SALES DRAWING -

DWG. NO.

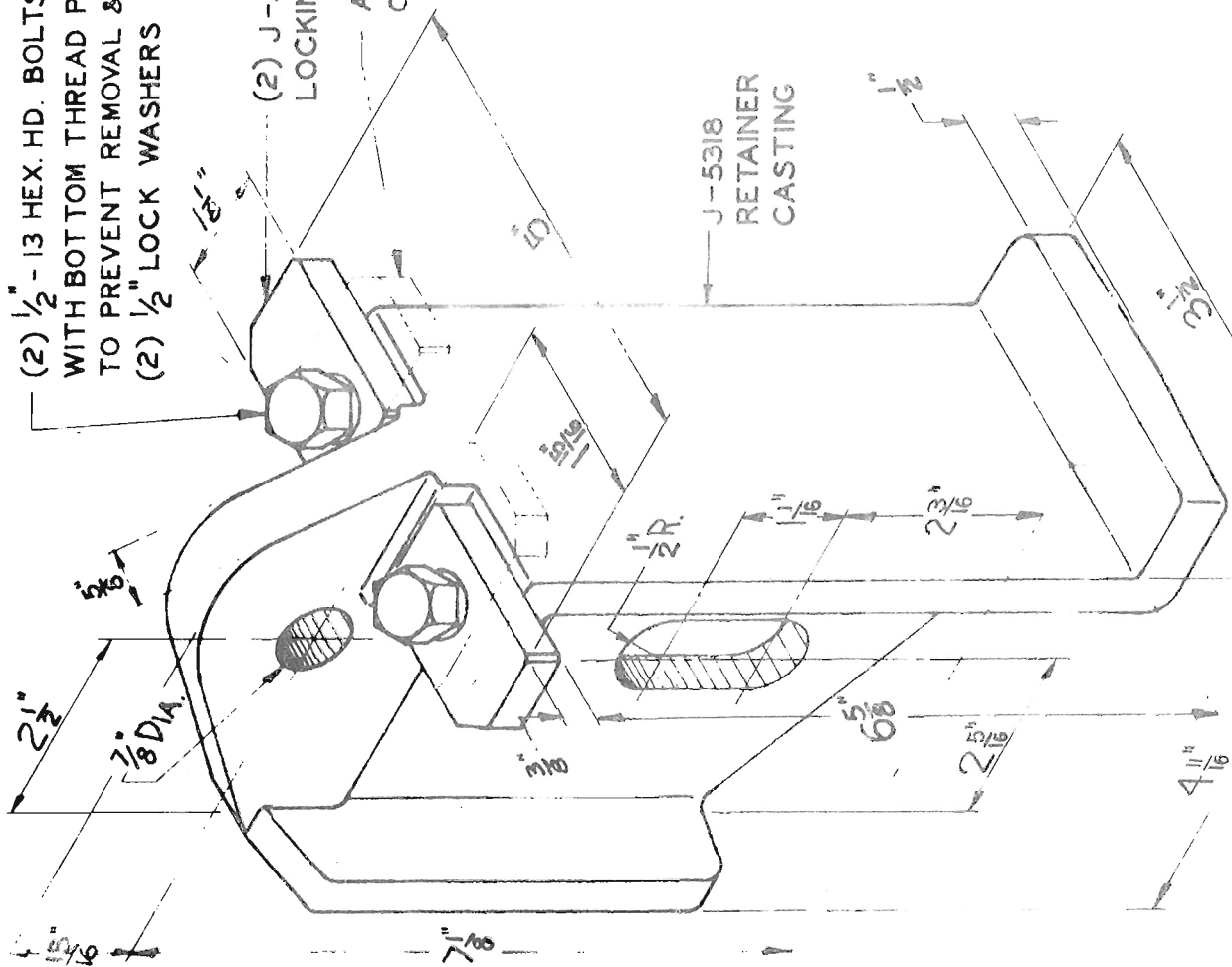
J-5331-SD

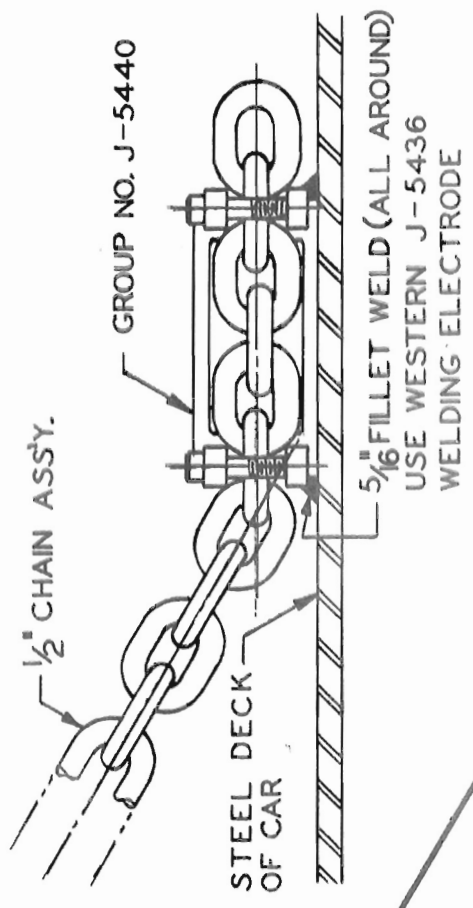
SCALE: NONE

DRW. M.H. 6-9-65

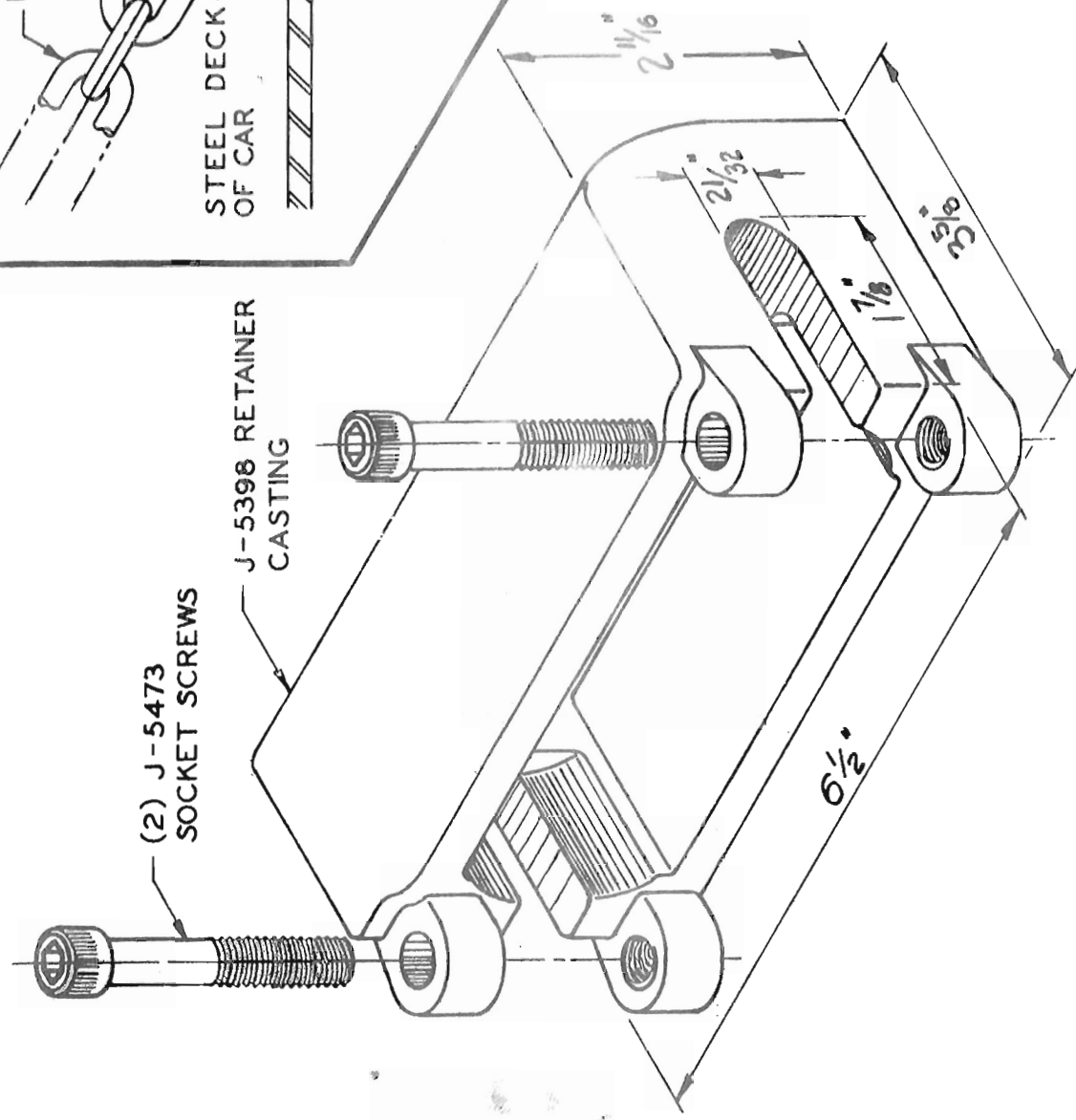
BROUGHT UP TO DATE 10-27-66

WEIGHT: 9.0 LBS.





- INSTALLATION DETAIL -



METHOD OF INSTALLATION: TO BE WELDED TO DECK OF FLAT CAR.

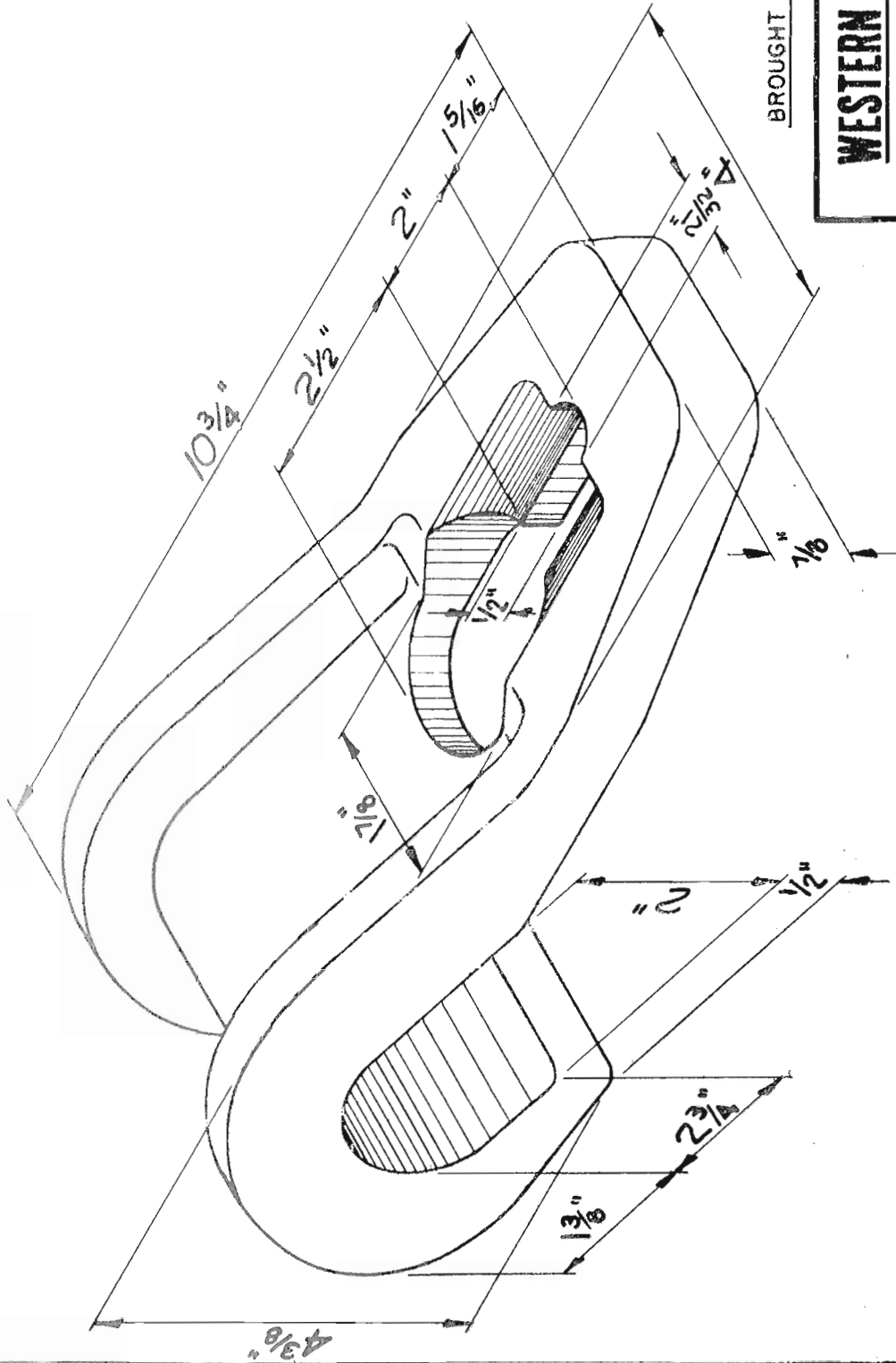
NOTE: THIS INBOARD RETAINER WILL ACCEPT ANY 1/2" WESTERN CHAIN TIE-DOWN ASSEMBLY.

WESTERN GROUP NO. J-5440
 PATENT PENDING

WESTERN INDUSTRIES, INC.
CHICAGO 32
INBOARD CHAIN RETAINER
GROUP FOR
WESTERN ALL PURPOSE
CHAIN TIE-DOWN
- SALES DRAWING -

SCALE: NONE	DWG. NO.
DRW. M.H. 10-3-66	J-5440-SD

WEIGHT: 6.6 LBS.



BROUGHT UP TO DATE 3-22-66

WESTERN INDUSTRIES, INC.

CHICAGO 32

CRAWLER TREAD CLAMP

FOR

WESTERN ALL PURPOSE

CHAIN TIE-DOWN

- SALES DRAWING -

SCALE: NONE

DWG. NO.

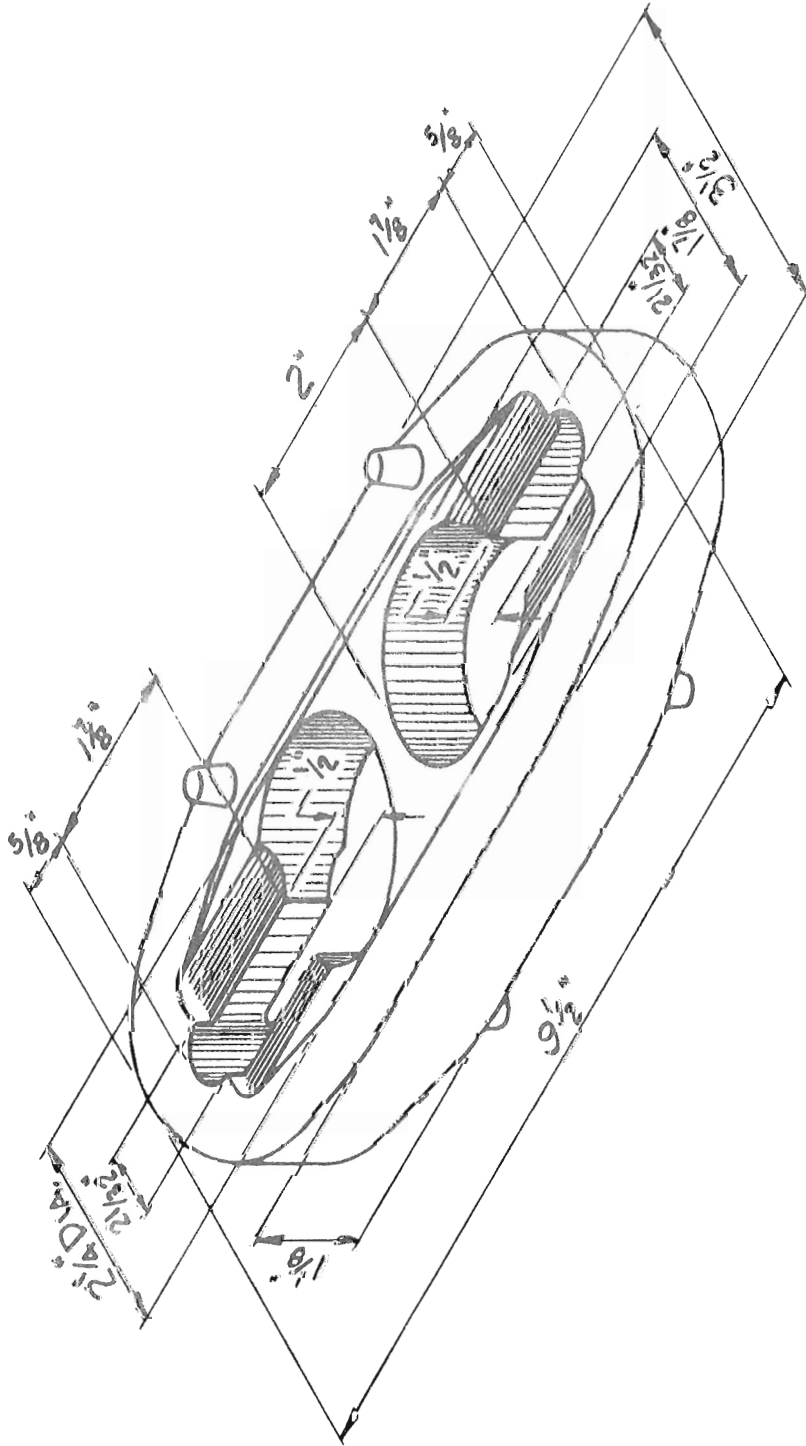
DRAW. M.H. 8-26-65

J-5348-SD

WESTERN PART NO. J-5348

PATENT PENDING

WEIGHT: 9.8 LBS.



WESTERN INDUSTRIES, INC.

CHICAGO 32

SLIDE-- LOCK

FOR

WESTERN ALL PURPOSE

CHAIN TIE-DOWN

-- SALES DRAWING --

SCALE: NONE

DWG. NO.

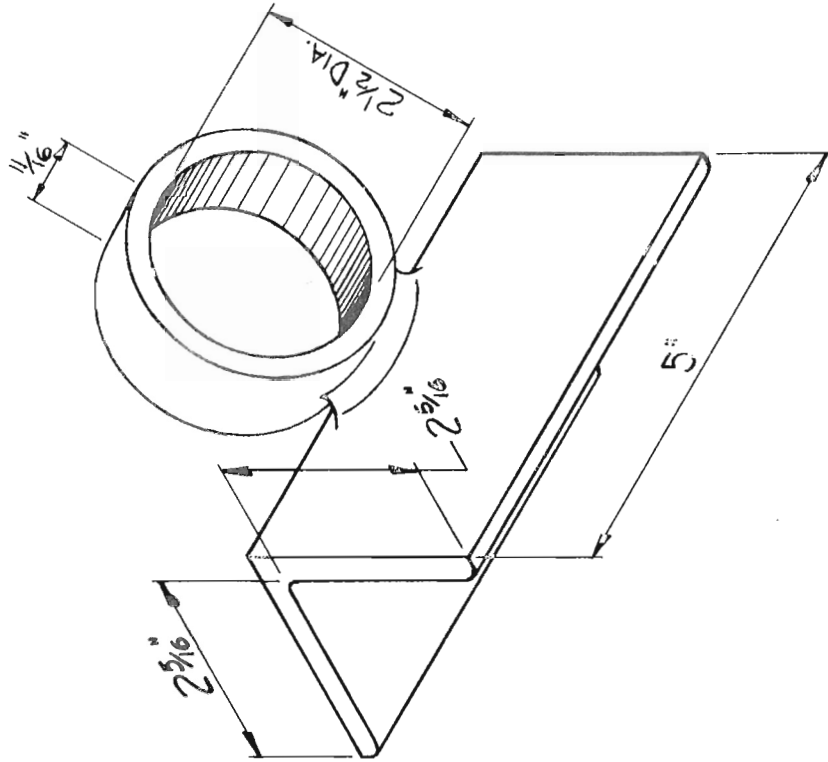
DRW. M.H. 10-10-66

J-5399-SD

WESTERN PART NO. J-5399

PATENT PENDING

WEIGHT : 4.9 LBS.



WESTERN PART NO. J-5385

WESTERN INDUSTRIES, INC.

CHICAGO 32

LOAD PROTECTOR

FOR

WESTERN ALL PURPOSE

CHAIN TIE-DOWN

- SALES DRAWING -

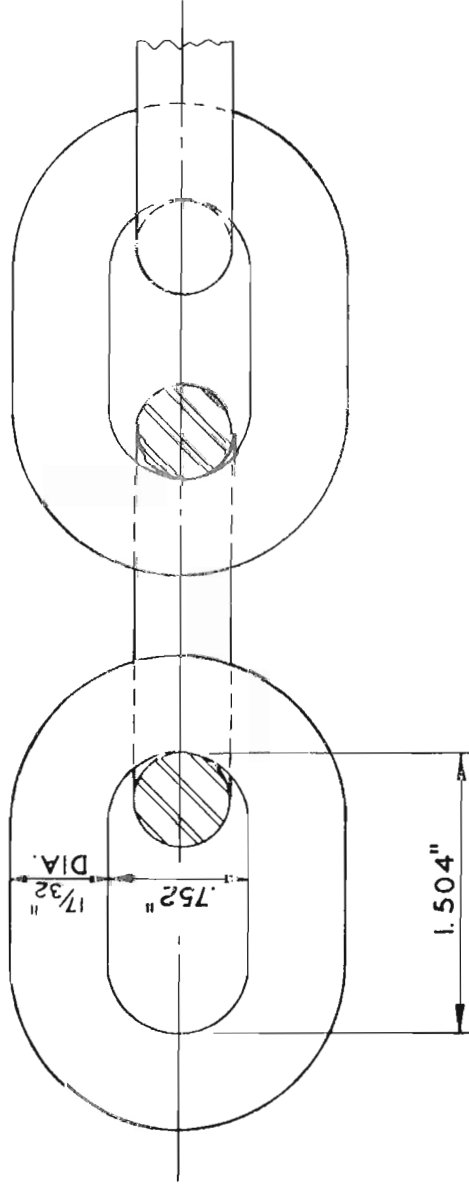
SCALE: NONE

DWG. NO.

DRW. M.H. 10-14-66

WEIGHT: 1.6 LBS.

J-5385-SD



1/2" SUPER-ALLOY CHAIN	
MIN. TENSILE STRENGTH OF MAT'L. PSI	150,000
WORKING LOAD LIMIT LBS.	13,750
MIN. PROOF TEST LBS.	27,500
NOMINAL WEIGHT PER 100-FT. LBS. ± 4%	288
SIZE OF MATERIAL DIA.	17/32"
NOM. INSIDE LENGTH OF LINK ± 4%	1.504"
NOM. INSIDE WIDTH OF LINK ± 4%	.752"

Supersedes J-5334-SD
Dated 6/22/65

WESTERN INDUSTRIES, INC.

CHICAGO 32

CHAIN PROPERTIES

FOR

WESTERN ALL PURPOSE

1/2" SUPER-ALLOY CHAIN TIE-DOWN

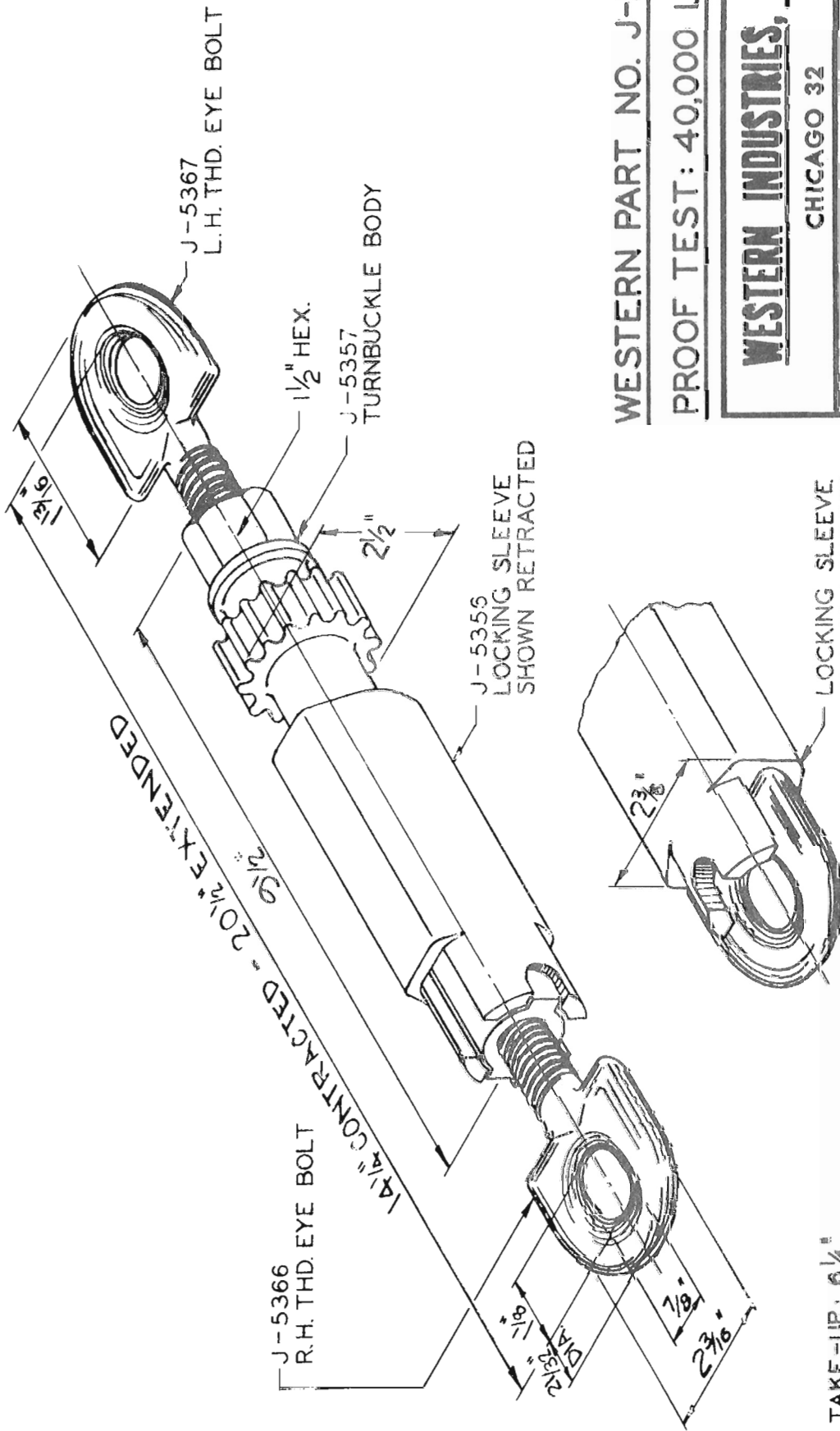
SALES DRAWING -

SCALE: NONE

DWG. NO.

DRW M.H. 8/25/65.

J-5355-SD



TAKE-UP: $6\frac{1}{4}$ "
 EYE BOLT THREAD: $\frac{7}{8}$ "-6 STD. ACME
 WELD BEAD APPLIED ON END OF EACH
 EYE BOLT TO PREVENT REMOVAL
 USE WESTERN PART NO. J-5358 WRENCH

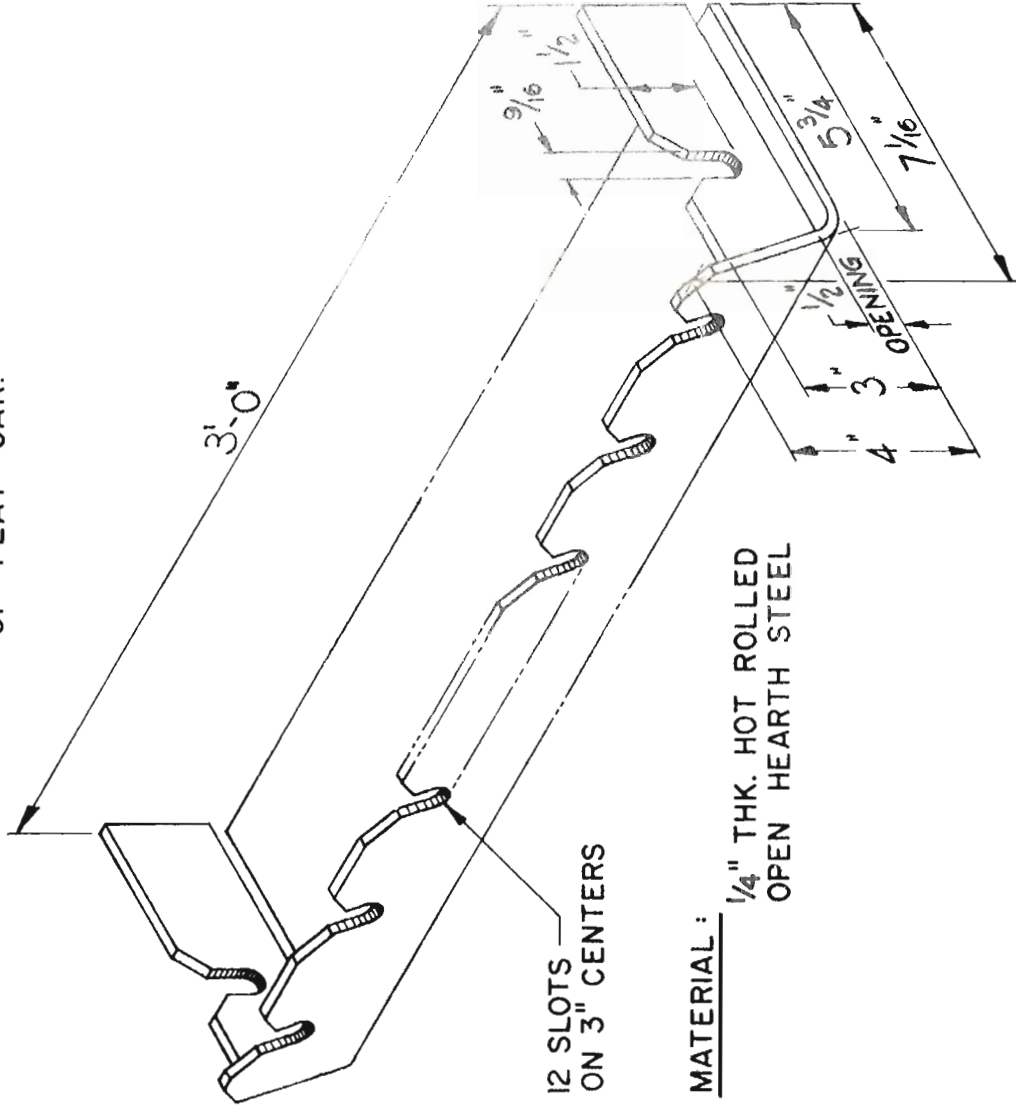
WESTERN PART NO. J-5365
PROOF TEST: 40,000 LBS.

WESTERN INDUSTRIES, INC.	
CHICAGO 32	
TURNBUCKLE WITH LOCKING SLEEVE	FOR
WESTERN ALL PURPOSE	
CHAIN TIE-DOWN	
- SALES DRAWING -	
SCALE: NONE	DWG. NO.
DRW. M.H. 10-9-66	J-5365-SD

WEIGHT: 8.3 LBS.

METHOD OF INSTALLATION:

TO BE WELDED TO SIDE SILL
OF FLAT CAR.

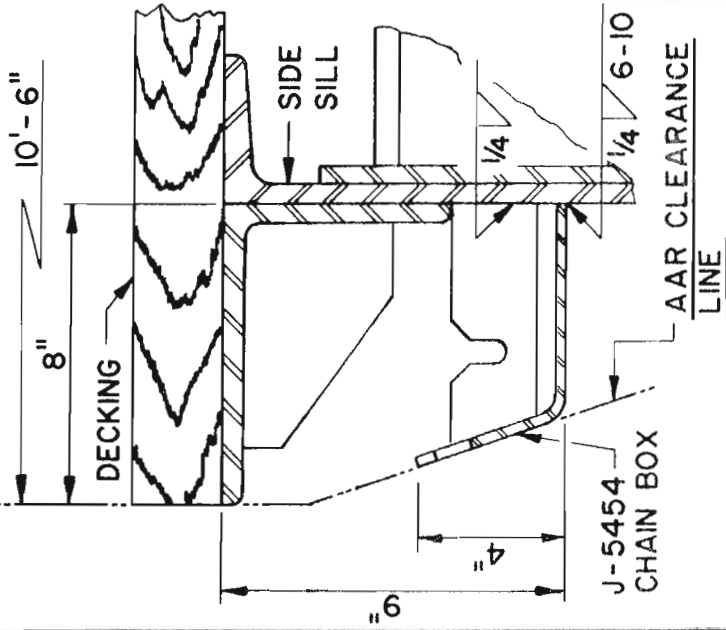


12 SLOTS
ON 3" CENTERS

MATERIAL: 1/4" THK. HOT ROLLED
OPEN HEARTH STEEL

WESTERN PART NO. J-5454

WEIGHT : 26.0 LBS.



--SECTION THRU SIDE SILL--

-INSTALLATION DETAIL-

WESTERN INDUSTRIES, INC.

CHICAGO 32

CHAIN STORAGE BOX

FOR

WESTERN ALL PURPOSE

CHAIN TIE-DOWN

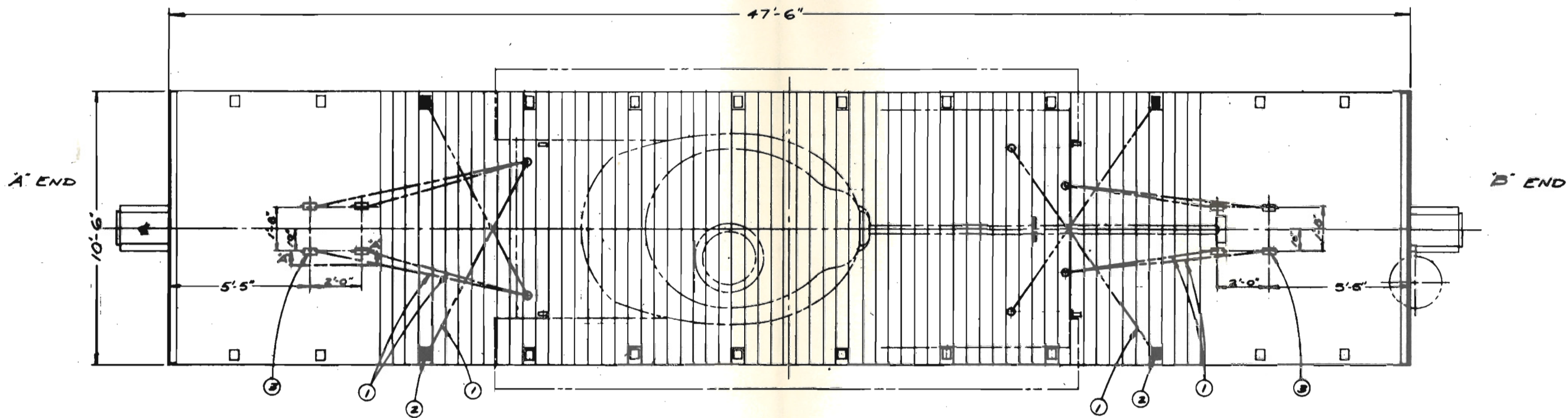
-SALES DRAWING-

SCALE: NONE

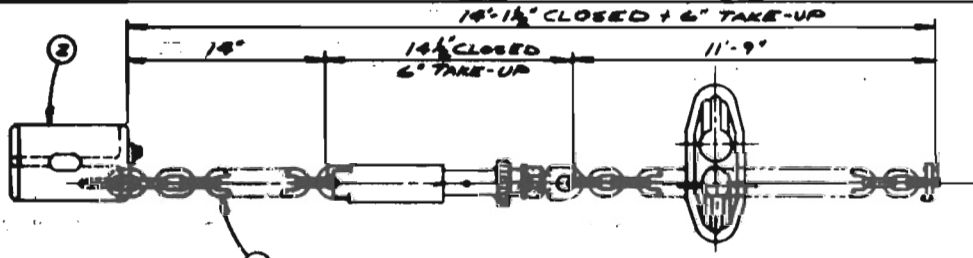
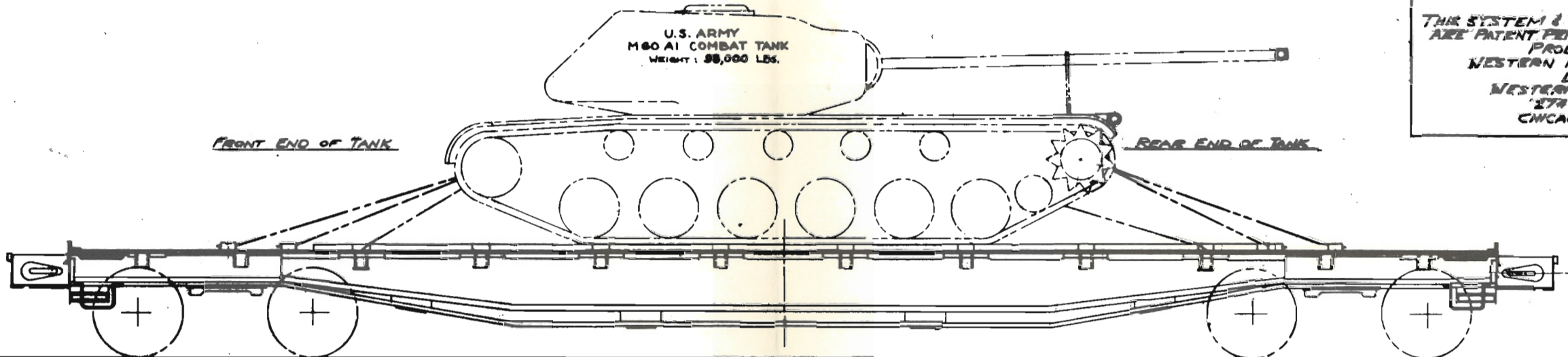
DWG. NO.

DRW. M.H. 11-16-66

J-5454-SD

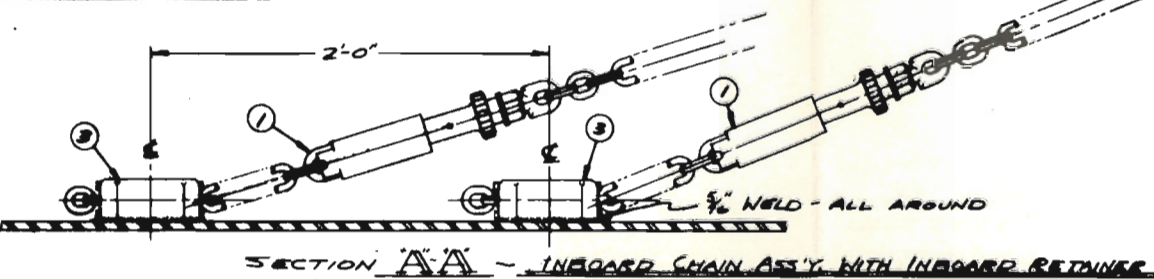


THIS SYSTEM & TIE DOWN ASSEMBLIES ARE PATENT PENDING AND ARE A PRODUCT OF WESTERN RAILROAD SUPPLY CO. DIVISION OF WESTERN INDUSTRIES, INC. 2742 N. 36TH PLACE CHICAGO, ILL. 60632



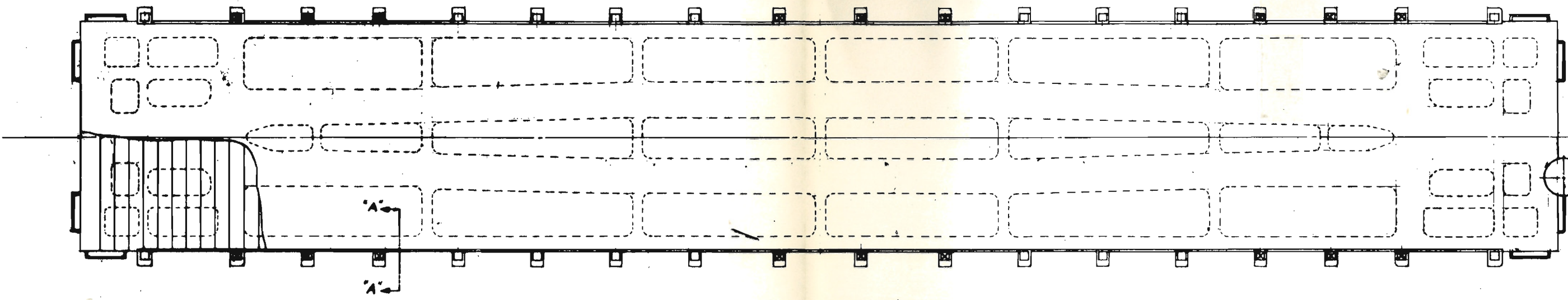
ITEM	DESCRIPTION	MATERIAL	PART NO.	QTY	REMARKS
1	WESTERN PATENT PENDING CHAIN ASSY-COMplete	ALLOY STL.	J55285	78	
2	WESTERN PATENT PENDING STAKE POCKET RETAINER	DUCT IRON	J531006	4	
3	WESTERN PATENT PENDING INBOARD RETAINER	COND. OF ALLOY STL.	J55449	8	

CHAIN, CHAIN HARDWARE & RETAINERS DATA
 MAX. WORKING LOAD OF ENTIRE ASSY. 13,750 LBS.
 TUM. PROSP. TEST. OF ENTIRE ASSY. 132,500 LBS.

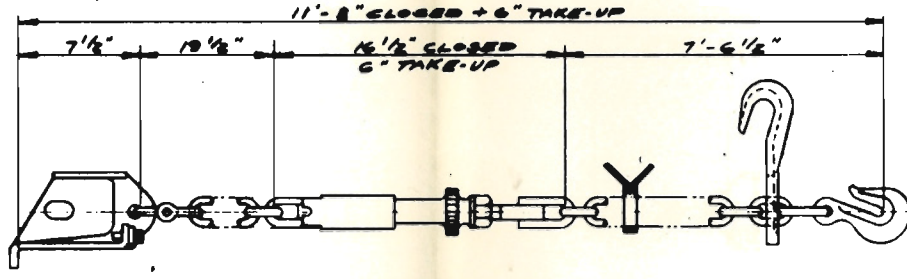
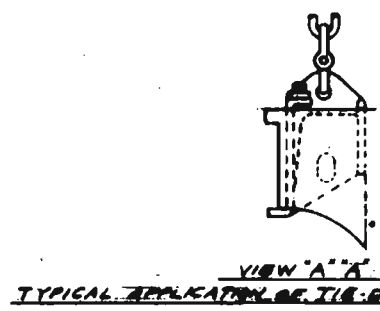


WESTERN INDUSTRIES, INC.
 CHICAGO 32
 HEAVY DUTY
 TIE-DOWN SYSTEM
 FOR U.S. ARMY
 M60A1 COMBAT TANK
 ON 47'-6" FLAT CAR
 DRAWING NO. J-5450-R
 DATE: 1/1/64
 DESIGNED BY: [Signature]
 CHECKED BY: [Signature]

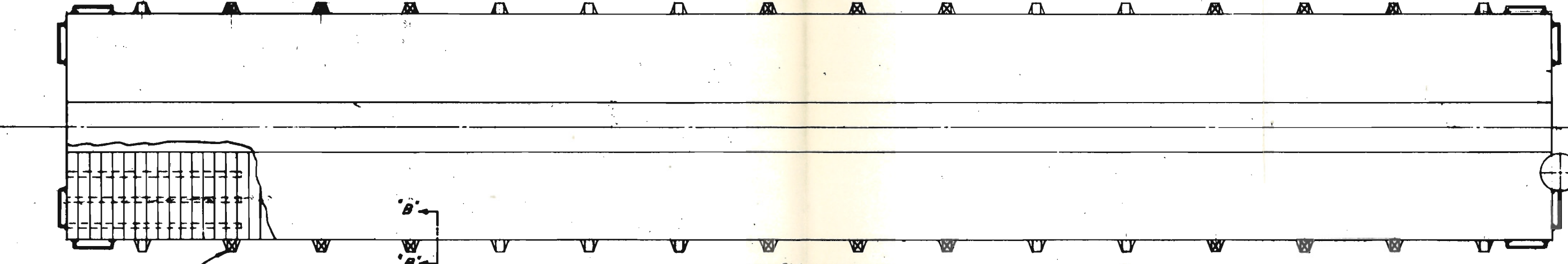
NO.	REVISION	DATE
A	AS SHOWN AS J-5960	11-1-66
B	AS SHOWN AS J-5960	11-1-66
	ALD	



PLAN VIEW OF 60 FT. FLAT CAR
(CAST STEEL UNDERFRAME)

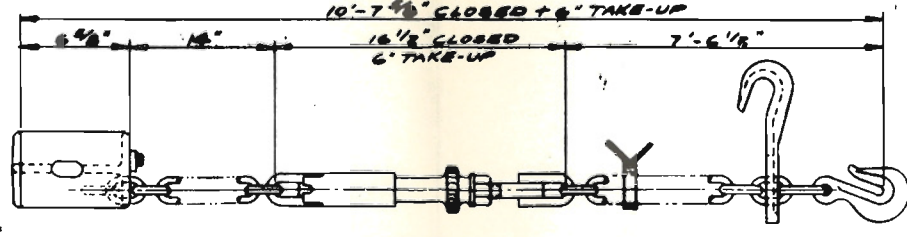
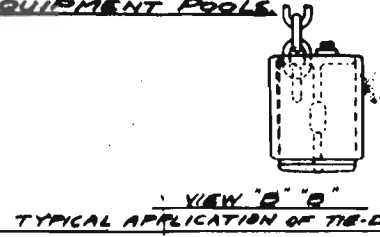


WESTERN ALL PURPOSE 1/2" SUPER-ALLOY CHAIN TIE-DOWN
PROOF TEST: 27,500 LBS.
WESTERN PART NO. J-5960



PLAN VIEW OF 60 FT. FLAT CAR
(WELDED STEEL UNDERFRAME)

RECOMMENDED LOCATIONS FOR STAKE-POCKET RETAINERS MARKED BY 'X' AS USED ON CARS IN HEAVY TRACK TYPE EQUIPMENT POOLS.



WESTERN ALL PURPOSE 1/2" SUPER-ALLOY CHAIN TIE-DOWN
PROOF TEST: 27,500 LBS.
WESTERN PART NO. J-5960

WESTERN INDUSTRIES, INC.
CHICAGO 33
PROPOSED TIE-DOWN LOCATION FOR 60'-0" FLAT CAR.

APPROVED BY: [Signature]
TELEPHONE: [Number]
FEDERAL DIMENSIONS: 2 1/2" x 3 1/2"
SERIAL NUMBER: 2, 267

DATE: 11-1-66
DRAWING NO.: J-5437-R
REV-A

The fast applying, quick drying, smooth surface that TOPS them all!

WESTERN ROC-WOOD

"Diamond-Hard" Flooring Material
Resurfaces and Patches Wood Floors

THE PRACTICAL SOLUTION TO RAILROAD CAR FLOORING PROBLEMS. Ready for the job on short notice, Roc-Wood is especially suited to a program of up-grading railroad cars, and does it at a reasonable cost.

If the sub-flooring is basically sound, the existing floor can be quickly prepared for application. Roc-Wood comes complete, needs no additives, is simple to mix, easy to apply. It smooths easily, fusing to the base and surrounding materials as it hardens by chemical action to a monolithic surface — light-in-weight, seamless and splinter-proof.

TWO SPECIALIZED FORMULAS FOR CAR FLOORING NEEDS:

- Roc-Wood *Available* for box cars

Unit packaging: Dry Mix, 40-lb. bags—Activator, 5-gal. pails
Covers approximately 15 square feet, 3/4 inch thickness, a total of 7/8 inch including metal lath

- Roc-Wood *Regular* for stock cars, cabooses, head-end cars and industrial and warehouse flooring where nailing is not required

Unit packaging: Dry Mix, 50-lb. bags—Gel, 5-gal. pails
Covers approximately 18 square feet, 5/8 inch thickness, a total of 3/4 inch including metal lath



Flooring can be brush finished or given a billiard smoothness.

ROC-WOOD'S FEATURES:

- **Assures a stronger floor.** When applied over a sound floor, Roc-Wood adds 80% greater structural strength.
- **Reduces claims.** Its smooth, splinter-free qualities make it "preferred" for damage-free loading of bagged and packaged merchandise.
- **Finish.** Surface can be brush finished or made billiard smooth.
- **Vermin-free.** The chemical composition Roc-Wood "seals out" infestation in cars carrying grain, flour and other food products.
- **Fire-resistant.** It will not support a flame. High temperature blow torch does no more than scorch it.
- **Seamless, easily cleaned.** Cars can be hosed down, vacuumed or swept more thoroughly and in less time than with other types of flooring.
- **Non-absorbent.** Roc-Wood floors have a low absorption rate for liquids.
- **Floors have long life.** You can figure 10 years of hard service from Roc-Wood floors.
- **Easily repaired.** When fix up is required, just mix a small amount of Roc-Wood and repairs can be completed in minutes, just like applying wood putty.
- **Entire floor is available.** With use of Roc-Wood *Available*, you can brace shipments without fear of damage for its splinter-proof.
- **Impervious to most acids.** Roc-Wood *Regular* is impervious to most acids, including uric and lactic acids, and is not affected by oil, grease or animal fats.
- **Skid-proof.** Roc-Wood *Regular* is skid-proof even under water, providing a "safety-floor."



ROC-WOOD FLOORING PRODUCTS CO.

WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

Big job, little job . . . whenever personnel is available
ROC-WOOD comes complete, READY FOR ACTION

WESTERN **ROC-WOOD** "DIAMOND-HARD" FLOORING MATERIAL

- Minimum down time
- Maximum serviceability
- Real economy
- Easy to mix, easy to apply
- Fuses to the base and surrounding materials
- Provides a smooth floor for years of safe, durable use

Especially suited to a program of up-grading box cars, stock cars and head-end equipment, Roc-Wood provides a smooth, splinter-free, monolithic floor, seamless and joint-free.

FEELS LIKE WOOD . . . WEARS LIKE ROCK. Roc-Wood is a scientifically formulated flooring material—not an asphalt derivative—for permanently resurfacing and patching all types of wooden floors. Composed of the hardest of hardwood fibers, Roc-Wood is chemically treated and bonded with an indestructible plastic binder, assuring an interlocking density of wood fibers for structural strength.

There's no room for error when you're mixing this outstanding flooring material. No guess work: it is scientifically mixed at the factory to assure uniformity in mix. Easy-to-follow directions are contained with each unit.

Roc-Wood is fast, simple to apply, requires no special skill. It can be mixed by your own maintenance man, and a trowel and darby are the most specialized tools required. It is easy to work with, smooths as you lay it and readily fuses to the base and surrounding materials to provide years of safe, durable floor life.



Roc-Wood comes complete, ready for mixing and easy application.

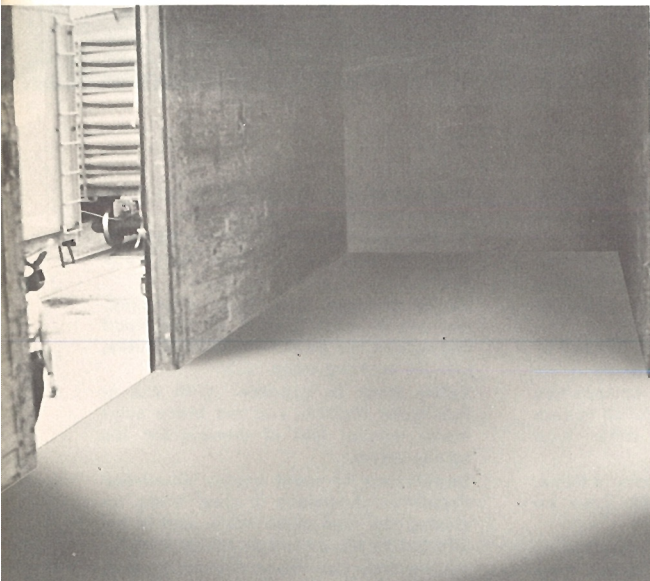


A smooth, diamond-hard surface for industrial and warehouse floors.

Two specialized formulas for railroad car flooring needs:
For box cars use Roc-Wood *Nailable*
For stock cars, head-end cars and others where nailing is not required, use Roc-Wood *Regular*

Advantages:

- Can be applied by your own maintenance men.
- Normal setting time, 4 hours.
- Dries by chemical action, with practically no expansion or contraction.
- Can be walked on within 12 hours.
- Ready for trucking in about 48 hours.
- Instructions for preparing and applying Roc-Wood floors are enclosed in each bag of Roc-Wood Dry Mix.



If the sub-flooring is sound, the existing floor can be quickly prepared for Roc-Wood application.



ROC-WOOD FLOORING PRODUCTS CO.

WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2742 West 36th Place, Chicago, Illinois 60632

