

catalogue no. 1

The
Union Switch & Signal Co.
Swissvale, Pa.



Volume 2
Electro-Pneumatic
Catalogue

A CATALOGUE AND PRICE LIST

OF

Interlocking and Signaling Devices

MADE BY

THE
UNION SWITCH & SIGNAL Co.
OF PITTSBURGH, PA.



Owners of the Westinghouse System of Electro-Pneumatic Block Signaling and Interlocking.

Also Designers, Manufacturers and Erectors of Pneumatic, Electro-Pneumatic, Electric, Electro-mechanical, and Purely Mechanical Appliances for Railway Protection.

Automatic, Semi-automatic and Manually Operated Block Signals.

Electro-Pneumatic, Electric and Mechanical Interlockings to suit conditions.

Plans and Estimates on Application.

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THE UNION SWITCH & SIGNAL COMPANY'S
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Swissvale, Pa.

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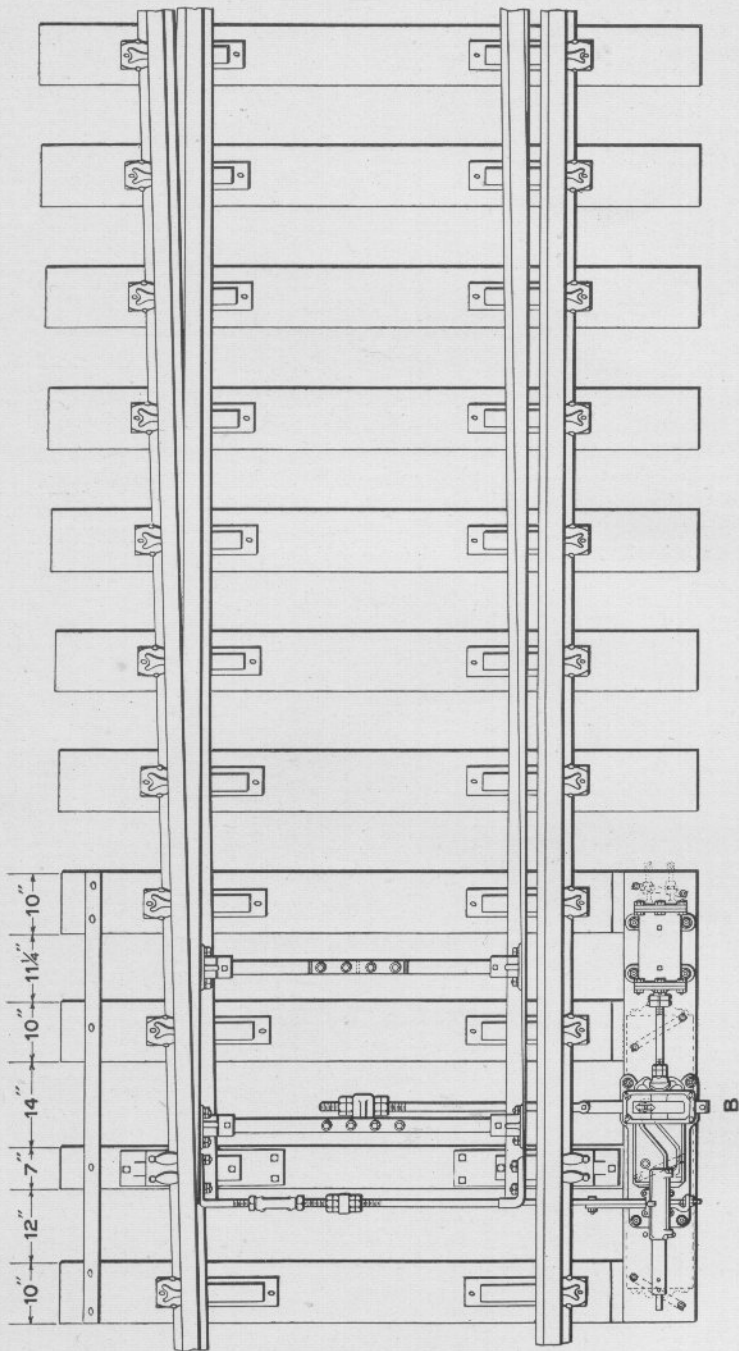
PREFACE

THE Electro-Pneumatic Appliances for interlocking and signaling which are shown in this Catalogue have been designed and developed since our 1907 Catalogue was issued. Switch fittings, such as detector bars, rods, etc., common to all interlocking systems, will be found in our Mechanical Catalogue, while appliances used for Automatic Control of both Electro-Pneumatic and Electric Signals are listed in our Catalogues covering such articles.

ORDERS

When ordering material from this Catalogue, the Plate and Figure Number should be given in all cases. Also **such other information as may be called for in the notes or lists.**

Swissvale, Pa., July, 1909.



A
LAYOUT OF ELECTRO-PNEUMATIC INSULATED SINGLE SWITCH

LAYOUT OF ELECTRO-PNEUMATIC INSULATED SINGLE SWITCH

For movement see Plate 0935; for switch valve, Plate 0957.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

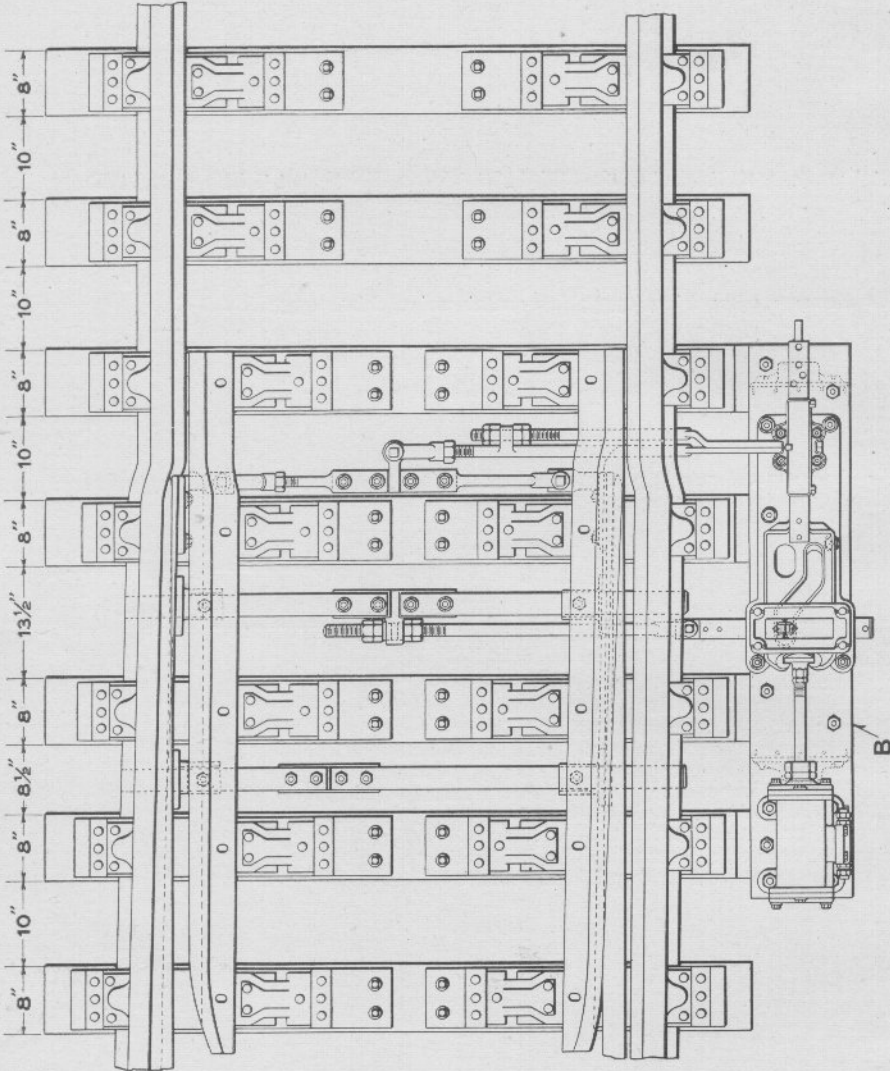
Fig.

- A Layout of Electro-Pneumatic Insulated Single Switch, as shown. Specify whether a right or left hand layout is desired. (Right hand is shown).....

Assemblage:—Iron base plate for supporting cylinder and movement on ties, switch cylinder, switch and lock movement with indication box, cover, switch operating rod, front and lock rods, 2½"x½" strap iron, and all the necessary pins, bolts and nuts. No tie plates, rail braces, head or back rods

- B Electro-Pneumatic Switch and Lock Movement for a single switch. For details see Plate 0935.....

Drawing Reference	List Price
E-3101	142 00
7-C-6932	118 50



A
LAYOUT OF ELECTRO-PNEUMATIC INSULATED SINGLE SWITCH

LAYOUT OF ELECTRO-PNEUMATIC INSULATED SINGLE SWITCH

For movement see Plate 0937; for switch valve, Plate 0959.

Order by Plate and Figure

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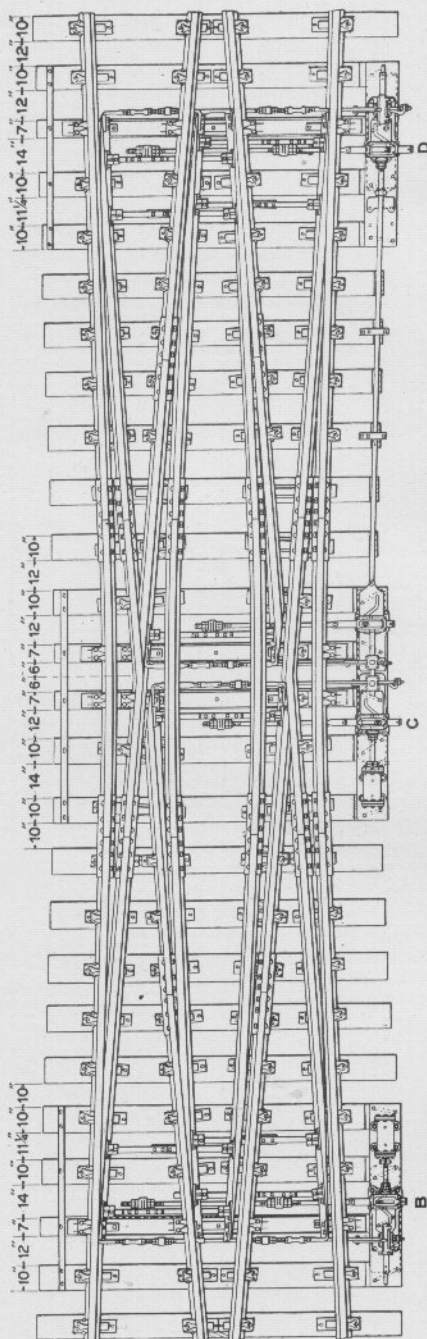
Fig.

A Layout of Electro-Pneumatic Insulated Single Switch, as shown. Specify whether right or left hand layout is desired. (Left hand is shown).....

Assemblage:—Iron base plate for supporting cylinder and movement on ties, switch cylinder, switch and lock movement with indication box, cover, switch operating rod, front and lock rods, and all the necessary pins, bolts, washers and nuts. No tie plates, rail braces, head or back rods.

B Electro-Pneumatic Switch and Lock Movement for a single switch. For details see Plate 0937.....

Drawing Reference	List Price	
1-D-1452	148 80	
"	120 00	



A

LAYOUT OF ELECTRO-PNEUMATIC INSULATED DOUBLE SLIP CROSSING

LAYOUT OF ELECTRO-PNEUMATIC INSULATED DOUBLE SLIP CROSSING

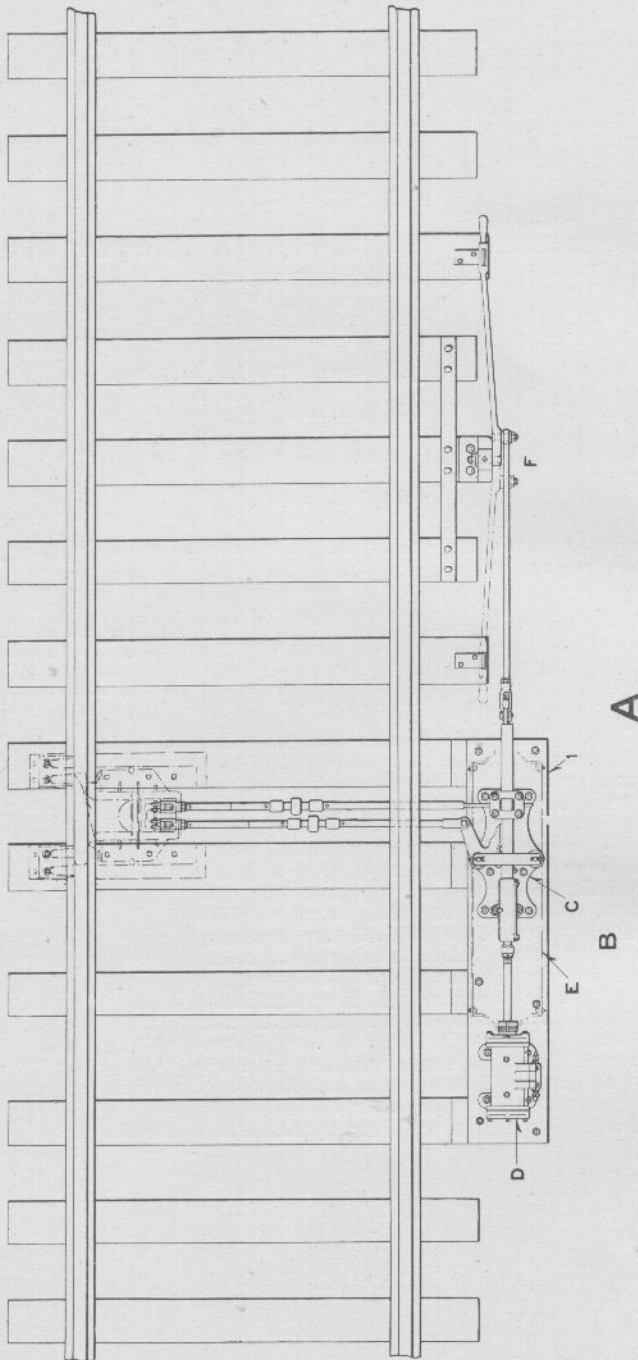
For movements see Plates 0935, 0939 and 0941; for switch valves, Plate 0957.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.

	Drawing Reference	List Price
A Layout of Electro-Pneumatic Insulated Double Slip Crossing, as shown.....		
Assemblage:—Three iron base plates for supporting cylinders and movements on ties, tandem switch and lock movement with cylinder, single switch and lock movement with cylinder, switch and lock movement for one end of double slip crossing, indication boxes, covers, connecting rods and guides, switch operating rods, front and lock rods, 2½"x½" strap iron, and all the necessary pins, bolts and nuts.....	E-2945	555 00
B Electro-Pneumatic Switch and Lock Movement for one end of double slip crossing. For details see Plate 0935.....	7-C-6932	118 50
C Electro-Pneumatic Tandem Switch and Lock Movement for movable point frog of double slip crossing. For details see Plate 0939.....	8-C-6932	154 00
D Switch and Lock Movement for other end of double slip crossing. For details see Plate 0941.....	11-C-6932	79 00



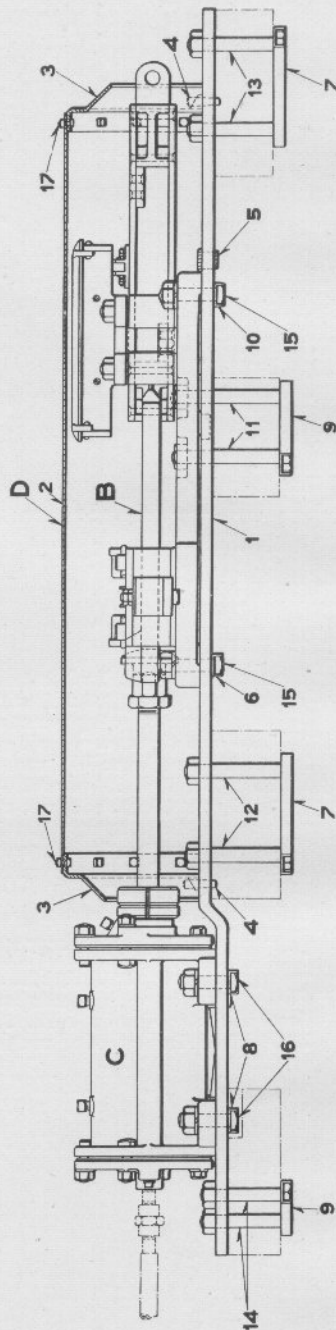
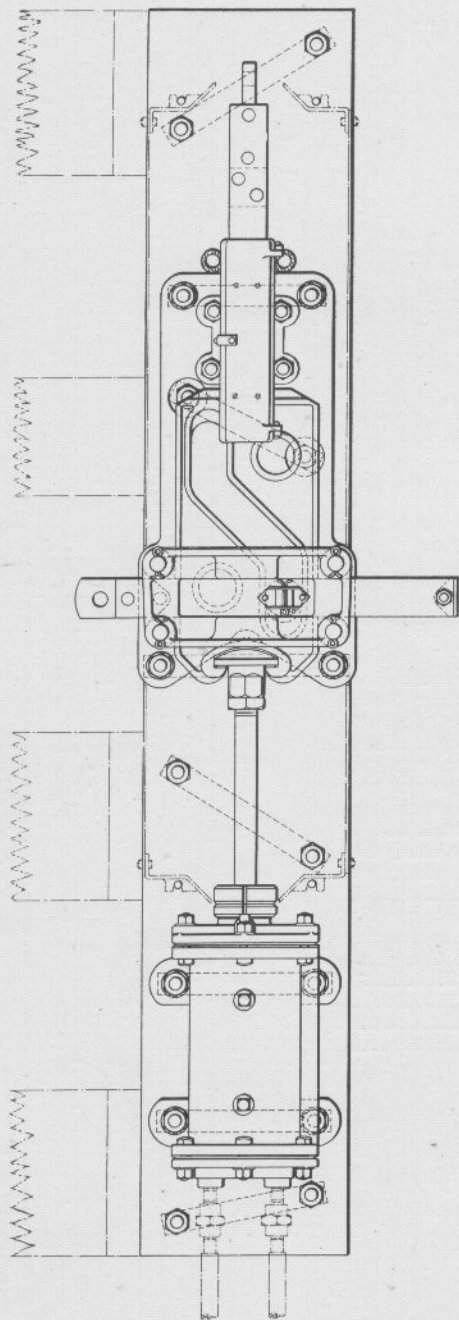
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT LAYOUT
FOR HAYES DERAIL WITH GROUND LEVER STAND

ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT LAY- OUT FOR HAYES DERAIL WITH GROUND LEVER STAND

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

	Drawing Reference	List Price	
Fig.			
A Electro-Pneumatic Switch and Lock Movement Lay- out for Hayes Derail with Ground Lever Stand, as shown. Specify whether a right or left hand layout is desired. (Left hand is shown).....			
Assemblage:—Electro-pneumatic switch and lock movement, ground lever stand, connecting rod, operating rod, lock rod, 2½"x½" strap iron, and all the necessary pins, bolts and nuts.....	3-C-6752	185 00	
B Electro-Pneumatic Switch and Lock Movement, with indication box, base plate, cylinder, cover and bolts, (1-C, 1-D, 1-E, 1-F).....	"	107 50	
C Switch and Lock Movement, with indication box. (See Plate 0963).....	38b-C-6282	39 60	
D 5" Switch Cylinder. For details see Fig. Aa, Plate 0947	17-C-5065	42 00	
E Cover, with handles, heads and bolts.....	108-C-4540	8 20	
F Ground Lever Stand.....	8-C-7262	17 90	
I Base Plate for cylinder and movement.....	182-B-8325	14 40	



A
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT WITH CYLINDER

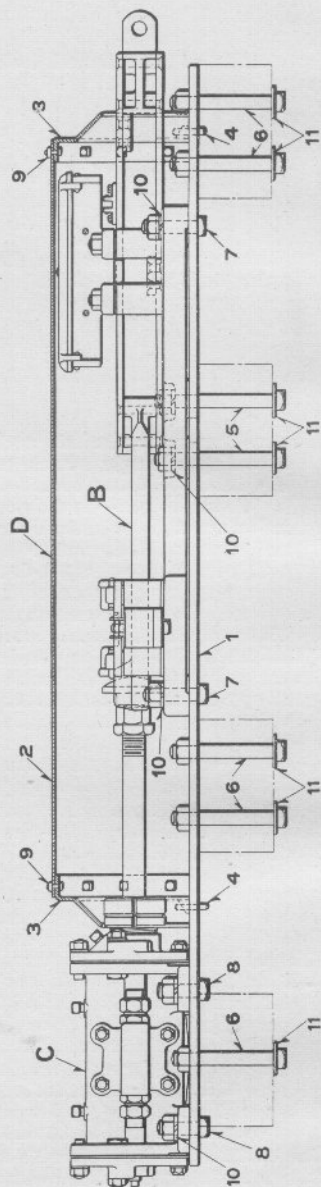
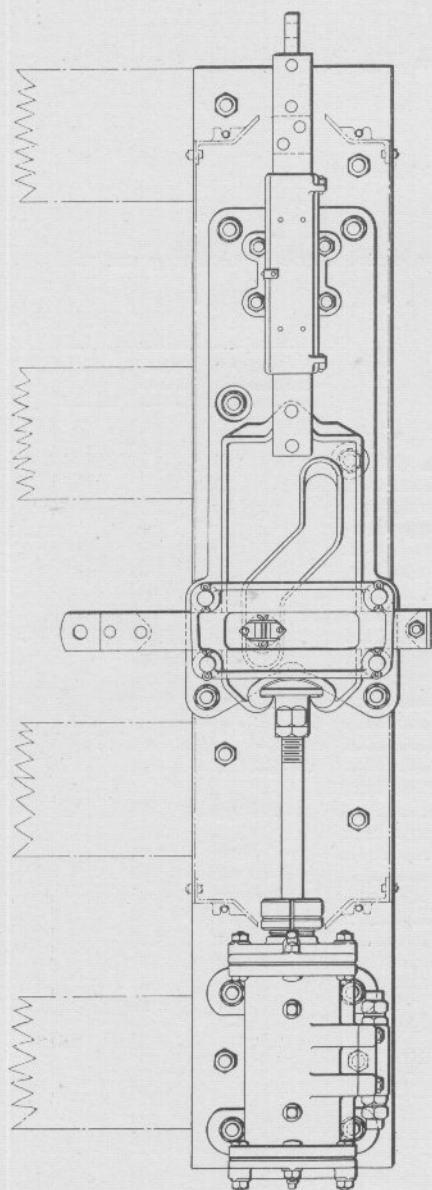
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT WITH CYLINDER

For details of switch and lock movement see Fig. A, Plate 0943; for cylinder, Plate 0949.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
A	Electro-Pneumatic Switch and Lock Movement for operating a single switch or one end of a double slip	
	Assemblage:—Switch and lock movement, cylinder, cover, base plate, dowel pins, bushings, channel washers, lock washers, bolts and nuts, (1-B, 1-C, 1-D, 1-1, 4-4, 2-5, 1-6, 2-7, 2-8, 2-9, 1-10, 2-11, 2-12, 2-13, 2-14, 4-15, 4-16)	7-C-6932 118 50
B	Switch and Lock Movement. For details see Fig. A, Plate 0943.	82-C-6282 46 00
C	6" Switch Cylinder. For details see Plate 0949.	13a-C-5065 40 00
D	Cover, as shown, with heads and bolts, (1-2, 2-3, 18-17)	109-C-4540 8 70
1	Base Plate only	186-B-8325 15 40
2	Cover, with handles	112-C-4540 4 10
3	Head for cover Fig. 2.	62-C-1060 94
4	Dowel Pin for holding cover Fig. D in place on base plate Fig. 1.	1-B-8059 06
5	Hard Rubber Bushing for passing wires through base plate Fig. 1.	34-B-8100 24
6	Channel Washer, 10-7/16" centres.	5-B-10302 36
7	Channel Washer, 9-1/2" centres.	12-B-10302 36
8	Channel Washer, 8-5/8" centres.	4-B-10302 36
9	Channel Washer, 8-1/8" centres.	3-B-10302 36
10	Channel Washer, 7-5/8" centres.	2-B-10302 36
11	Bolt and Nut, 3/4"x6-1/2", for fastening switch and lock movement Fig. B and base plate Fig. 1 to tie.	16
12	Bolt and Nut, 3/4"x5-3/4", for fastening base plate Fig. 1 to tie.	16
13	Bolt and Nut, 3/4"x5-1/4", for fastening base plate Fig. 1 to tie.	16
14	Bolt and Nut, 3/4"x4-3/4", for fastening base plate Fig. 1 to tie.	16
15	Bolt and Nut, 3/4"x3-1/4", with lock washer, for fastening switch and lock movement Fig. B to base plate Fig. 1	14
16	Bolt and Nut, 3/4"x3", with lock washer, for fastening switch cylinder Fig. C to base plate Fig. 1.	14
17	Bolt and Nut, 1/4"x5/8", for fastening cover Fig. 2 to head Fig. 3.	04



A

ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT WITH CYLINDER

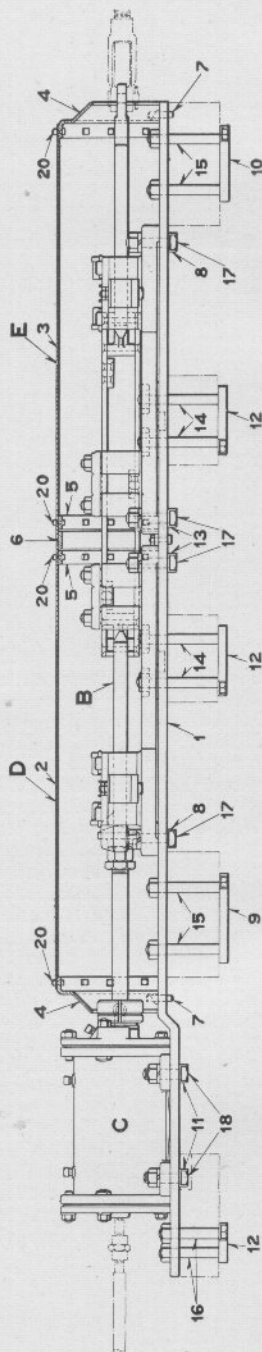
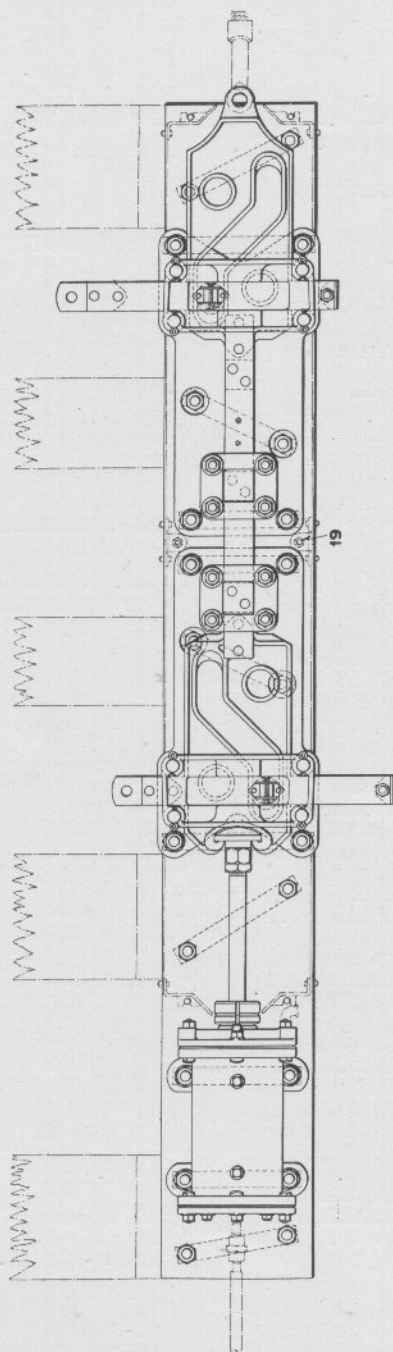
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT WITH CYLINDER

For details of switch and lock movement see Plate 0945; for cylinder, Fig A, Plate 0947.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
A Electro-Pneumatic Switch and Lock Movement for operating a single switch.....		
Assemblage:—Switch and lock movement, cylinder, cover, base plate, dowel pins, bolts, washers and nuts, (1-B, 1-C, 1-D, 1-1, 4-4, 2-5, 6-6, 4-7, 4-8, 10-10, 6-11).....	D-1452	120 00
B Switch and Lock Movement. For details see Plate 0945	80-C-6282	52 00
C 5" Switch Cylinder. For details see Fig. A, Plate 0947	15-C-5065	42 00
D Cover, with handles, heads and bolts, (1-2, 2-3, 18-9) ..	107-C-4540	9 70
1 Base Plate only.....	180-B-8325	11 00
2 Cover, with handles.....	110-C-4540	6 50
3 Head for cover Fig. 2.....	62-C-1060	94
4 Dowel Pin for holding cover Fig. D in place on base plate Fig. 1.....	1-B-8059	06
5 Bolt and Nut, $\frac{3}{4}$ "x $\frac{7}{8}$ ", for fastening base plate Fig. 1 and switch and lock movement Fig. B to ties.....		16
6 Bolt and Nut, $\frac{3}{4}$ "x $\frac{6}{8}$ ", for fastening base plate Fig. 1 to ties.....		16
7 Bolt and Nut, $\frac{3}{4}$ "x $\frac{3}{4}$ ", for fastening switch and lock movement Fig. A to base plate Fig. 1.....		14
8 Bolt and Nut, $\frac{3}{4}$ "x $\frac{1}{2}$ ", for fastening switch cylinder Fig. C to base plate Fig. 1.....		12
9 Bolt and Nut, $\frac{1}{4}$ "x $\frac{5}{8}$ ", for fastening cover Fig. 2 to head Fig. 3.....		04
10 Lock Washer for bolts Figs. 5, 7 and 8.....	6-B-7926	02
11 Plate Washer for bolts Figs. 5 and 6.....	9-B-7824	02



A
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT WITH CYLINDER

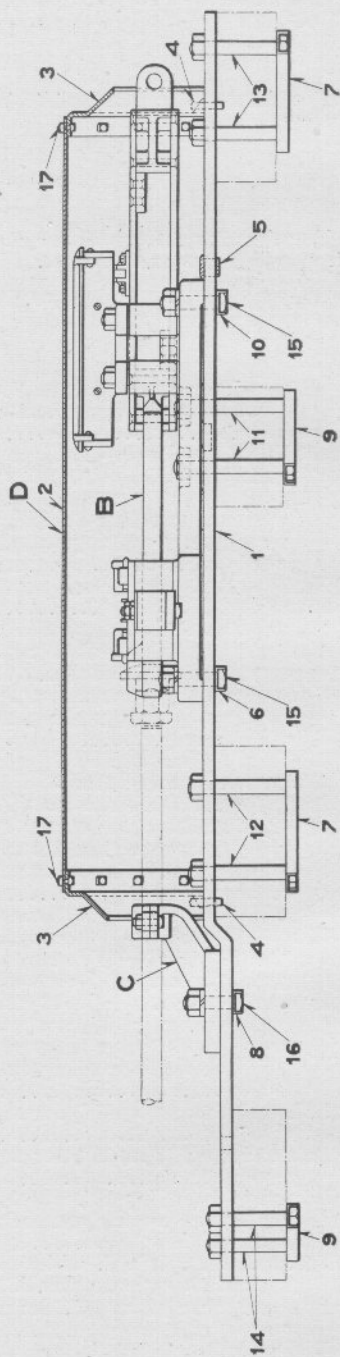
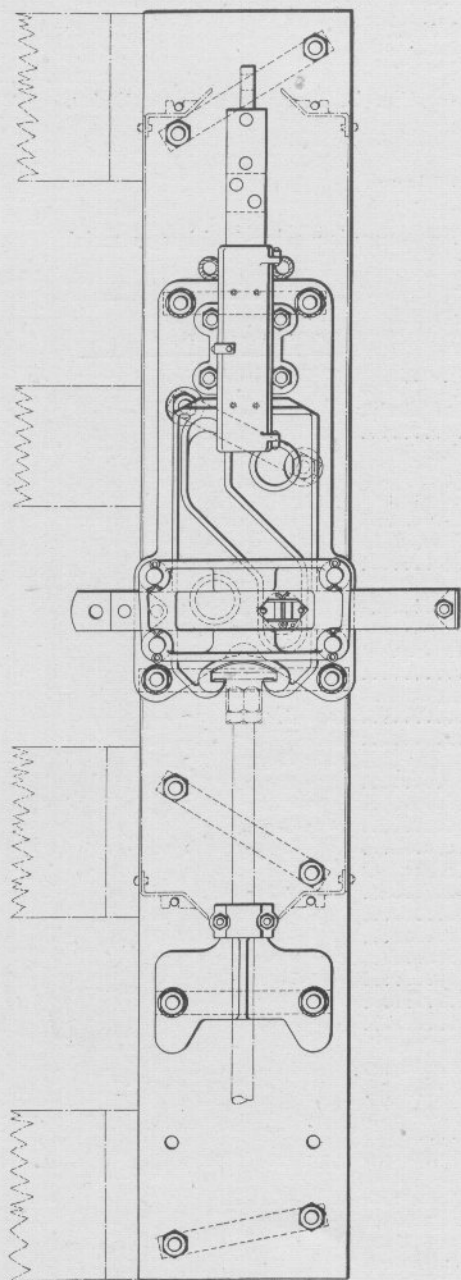
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT WITH CYLINDER

For details of switch and lock movement see Fig. B, Plate 0943; for cylinder, Plate 0951.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

		Drawing Reference	List Price
Fig.			
A	Electro-Pneumatic Tandem Switch and Lock Movement for operating movable point frog of double slip		
	Assemblage:—Tandem switch and lock movement, cylinder, cover, base plate, support, dowel pins, channel washers, lock washers, bolts and nuts, (1-B, 1-C, 1-D, 1-E, 1-I, 1-6, 4-7, 2-8, 1-9, 1-10, 2-11, 3-12, 2-13, 4-14, 4-15, 2-16, 8-17, 4-18, 2-19)	8-C-6932	154 00
B	Tandem Switch and Lock Movement. For details see Fig. B, Plate 0943.....	81-C-6282	65 00
C	6½" Switch Cylinder. For details see Plate 0951....	22-C-5065	42 00
D	Cover for cylinder end of tandem movement Fig. B, (1-2, 1-4, 1-5, 18-20).....	119-C-4540	8 00
E	Cover for tandem movement Fig. B operating end of double slip, (1-3, 1-4, 1-5, 18-20).....	121-C-4540	7 90
1	Base Plate only.....	185-B-8325	19 80
2	Cover, with handles, for Fig. D.....	120-C-4540	3 80
3	Cover, with handles, for Fig. E.....	122-C-4540	3 70
4	Head for covers Figs. 2 and 3.....	62-C-1060	94
5	Reinforcing Strap for covers Figs. 2 and 3.....	124-C-4540	60
6	Support for covers Figs. D and E.....	123-C-4540	1 00
7	Dowel Pin for holding covers Figs. D and E in place on base plate Fig. 1.....	1-B-8059	06
8	Channel Washer, 10-7/16" centres.....	5-B-10302	36
9	Channel Washer, 9-½" centres.....	12-B-10302	36
10	Channel Washer, 9-¾" centres.....	11-B-10302	36
11	Channel Washer, 8-⅝" centres.....	4 B-10302	36
12	Channel Washer, 8-⅞" centres.....	3-B-10302	36
13	Channel Washer, 7-⅝" centres.....	2-B-10302	36
14	Bolt and Nut, ¾"x6-½", for fastening tandem switch and lock movement Fig. B and base plate Fig. 1 to ties		16
15	Bolt and Nut, ¾"x5-¾", for fastening base plate Fig. 1 to ties.....		16
16	Bolt and Nut, ¾"x4-¾", for fastening base plate Fig. 1 to tie.....		16
17	Bolt and Nut, ¾"x3-¼", with lock washer, for fastening tandem switch and lock movement Fig. B to base plate Fig. 1.....		14
18	Bolt and Nut, ¾"x3", with lock washer, for fastening switch cylinder Fig. C to base plate Fig. 1.		14
19	Bolt and Nut, ⅜"x1-¼", for fastening support Fig. 6 to base plate Fig. 1.....		06
20	Bolt and Nut, ¼"x⅝", for fastening covers Figs. 2 and 3 to head Fig. 4 and reinforcing strap Fig. 5..		04



A
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT

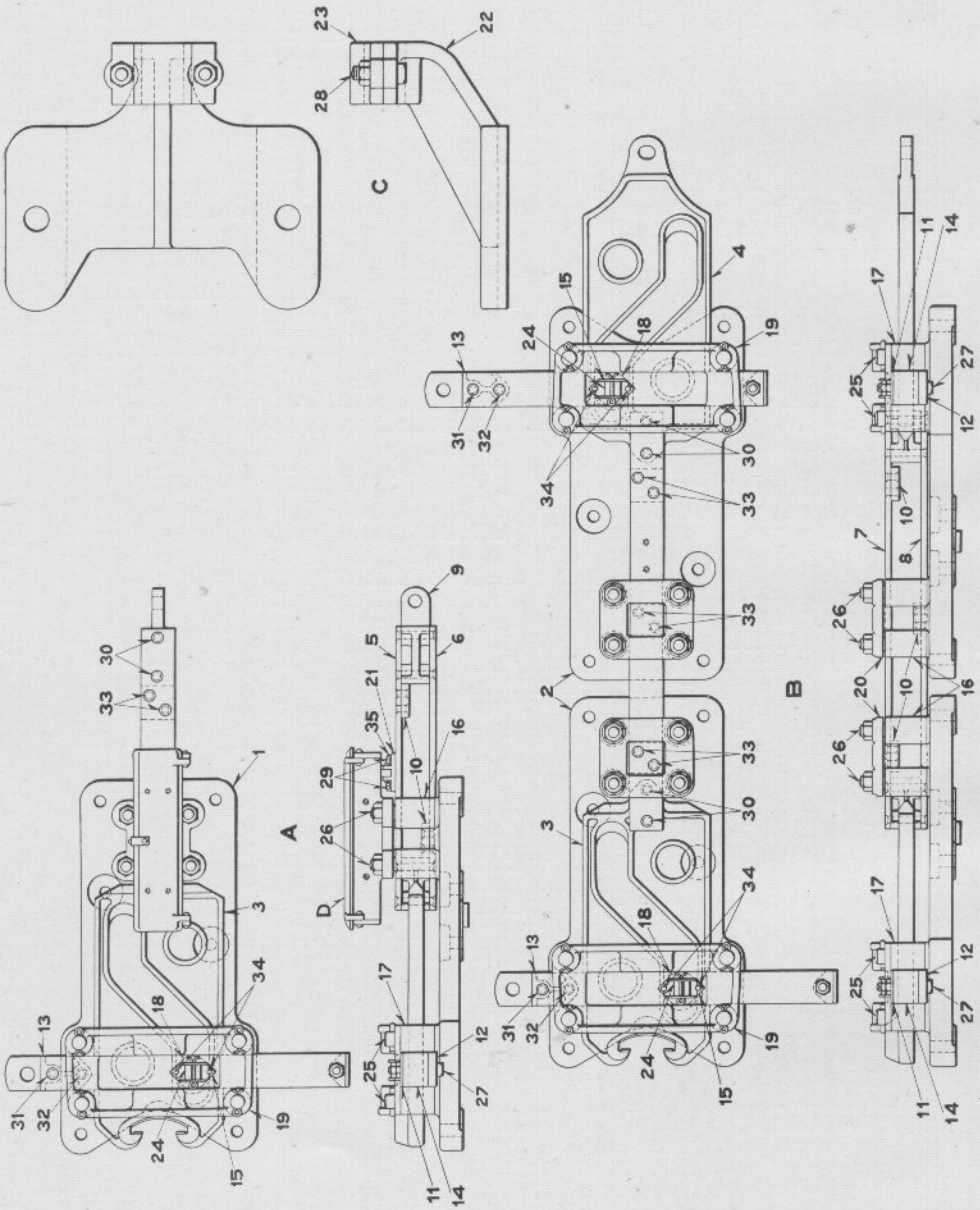
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT

For details of switch and lock movement and guide see Figs. A and C, Plate 0943.

Order by Plate and Figure

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Fig.	Drawing Reference	List Price
A	Electro-Pneumatic Switch and Lock Movement for end of double slip operated by movable point frog movement	
	Assemblage:—Switch and lock movement, guide, cover, base plate, dowel pins, bushings, channel washers, lock washers, bolts and nuts, (1-B, 1-C, 1-D, 1-1, 4-4, 2-5, 1-6, 1-7, 1-8, 2-9, 1-10, 2-11, 2-12, 2-13, 2-14, 4-15, 2-16)	11-C-6932 79 00
B	Switch and Lock Movement. For details see Fig. A, Plate 0943	82-C-6282 46 00
C	Guide. For details see Fig. C, Plate 0943	2-C-7477 1 50
D	Cover, as shown, with heads and bolts, (1-2, 2-3, 18-17)	109-C-4540 8 70
1	Base Plate only	186-B-8325 15 40
2	Cover, with handles	112-C-4540 4 10
3	Head for cover Fig. 2	62-C-1060 94
4	Dowel Pin for holding cover Fig. D in place on base plate Fig. 1	1-B-8059 06
5	Hard Rubber Bushing for passing wires through base plate Fig. 1	34-B-8100 24
6	Channel Washer, 10-7/16" centres	5-B-10302 36
7	Channel Washer, 9-1/2" centres	12-B-10302 36
8	Channel Washer, 8-5/8" centres	4-B-10302 36
9	Channel Washer, 8-1/8" centres	3-B-10302 36
10	Channel Washer, 7-3/8" centres	2-B-10302 36
11	Bolt and Nut, 3/4"x6-1/2", for fastening switch and lock movement Fig. B and base plate Fig. 1 to tie	16
12	Bolt and Nut, 3/4"x5-3/4", for fastening base plate Fig. 1 to tie	16
13	Bolt and Nut, 3/4"x5-1/4", for fastening base plate Fig. 1 to tie	16
14	Bolt and Nut, 3/4"x4-3/4", for fastening base plate Fig. 1 to tie	16
15	Bolt and Nut, 3/4"x3 1/4", with lock washer, for fastening switch and lock movement Fig. B to base plate Fig. 1	14
16	Bolt and Nut, 3/4"x3", with lock washer, for fastening guide Fig. C to base plate Fig. 1	14
17	Bolt and Nut, 1/4"x5/8", for fastening cover Fig. 2 to head Fig. 3	04



ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENTS

ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENTS

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	Switch and Lock Movement, with indication circuit controller, as shown.....	82-C-6282	46 00
B	Tandem Switch and Lock Movement (no indication circuit controller), as shown.....	81-C-6282	65 00
C	Guide for operating rod on double slip crossing layout, as shown.....	2-C-7477	1 50
D	Indication Circuit Controller with contact block. For details see Fig. A, Plate 0961.....	2-B-9940	11 40
1	Base only, for single movement Fig. A.....	48-C-6256	6 00
1a	as above, with guide rollers, top plate and studs, (1-1, 4-16, 4-17, 1-19, 4-25, 4-26).....	"	17 10
2	Base only, for tandem movement Fig. B.....	46-C-6256	6 00
2a	as above, with guide rollers, top plate, cap and studs, (1-2, 4-16, 4-17, 1-19, 1-20, 4-25, 4-26)...	"	17 70
3	Motion Plate only, for single movement Fig. A and cylinder end of tandem movement Fig. B.....	8-C-4329	3 60
3a	as above, with driving bar, contact block and rivets, for single movement Fig. A, (1-3, 1-5a, 1-21)		10 60
3b	Motion Plates, with driving bar and rivets, for tandem movement Fig. B, (1-3, 1-4, 1-7a, 4-30).....		14 00
4	Motion Plate only, for tandem movement Fig B, operating end of double slip.....	5-C-4329	4 50
5	Upper Driving Bar for single movement Fig. A.....	122-B-9246	1 08
5a	Driving Bar, with lug, dogs and rivets, (1-5, 1-6, 1-9, 2-10, 2-30, 4-33)	93-C-6140	5 20
6	Lower Driving Bar for single movement Fig. A.....	123-B-9246	90

ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENTS

Order by Plate and Figure

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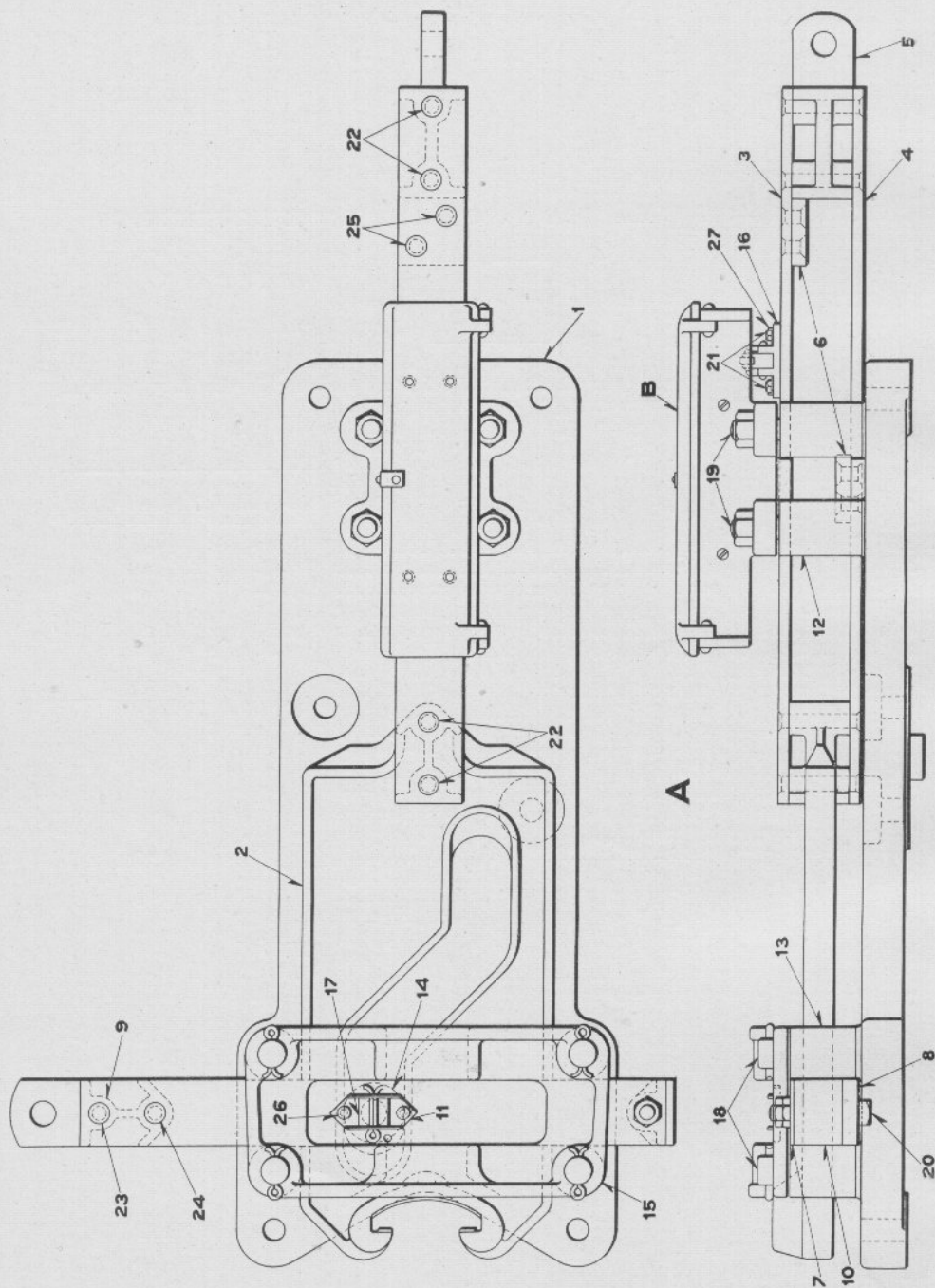
Fig.		Drawing Reference	List Price
7	Upper Driving Bar for tandem movement Fig. B....	87-B-9246	1 40
7a	Driving Bar, with dogs and rivets, (1-7, 1-8, 3-10, 6-33)	92-C-6140	5 40
8	Lower Driving Bar for tandem single movement Fig. B.....	88-B-9246	1 14
9	Driving Bar Lug for single movement Fig. A.....	3-B-8401	78
10	Dog for single and tandem movements Figs. A and B.	24-C-6261	36
11	Upper Slide Bar for single and tandem movements Figs. A and B.....	120-B-9246	94
11a	as above, with lower slide bar, lugs, bolt lock, roller, pin, bolt and rivets, (1-11, 1-12, 1-13, 1-14, 1-15, 1-18, 1-24, 1-27, 1-31, 1-32, 2-34).....	50-C-6140	6 94
12	Lower Slide Bar for single and tandem movements Figs. A and B.....	119-B-9246	3 10
13	Slide Bar Lug for operating end of slide bars Figs. 11 and 12.....	12-B-8401	64
14	Slide Bar Lug for slide bars Figs. 11 and 12.....	13-B-8401	24
15	Bolt Lock, with 1/4"x1-1/2" cotter, for operating slide bar Fig. 11.....	23-B-8486	38
16	Guide roller for driving bars Figs. 5, 6, 7 and 8....	17-B-8065	64
17	Guide Roller for slide bars Figs. 11 and 12.....	18-B-8065	60
18	Roller for slide bars Figs. 11 and 12.....	19-B-8065	20
19	Top Plate for single and tandem movements Figs. A and B.....	1-B-8920	1 20
20	Cap for tandem movement Fig. B.....	24-C-6229	54
21	Contact Block, with insulation block, contact plate, tap bolts, rivets and lock washers.....	23-C-3680	1 54

ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENTS

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
22	Guide only.....	1-C-7477	1 24
23	Cap for guide Fig. 22.....	8-C-5091	12
24	Pin, $\frac{7}{8}$ "x2 $\frac{3}{8}$ ", for slide bars Figs. 11 and 12.....	34-B-8089	18
25	Stud, 1"x4- $\frac{1}{4}$ ", with $\frac{1}{4}$ "x1- $\frac{3}{8}$ " cotter, for guide roller Fig. 17.....	10-B-8090	26
26	Stud, 1"x5- $\frac{3}{8}$ ", with nut, for guide roller Fig. 16....	11-B-8090	28
27	Bolt and Two Nuts, $\frac{1}{2}$ "x3", for fastening slide bars Figs. 11 and 12 and lug Fig. 14 together.....		08
28	Bolt and Nut, $\frac{3}{8}$ "x1- $\frac{1}{2}$ ", for fastening cap Fig. 23 to guide Fig. 22.....		06
29	Tap Bolt, $\frac{1}{4}$ "x $\frac{5}{8}$ ", for fastening contact block Fig. 21 to upper driving bar Fig. 5.....		03
30	Rivet, $\frac{1}{2}$ "x3", for fastening driving bars Figs. 5 and 6, motion plate Fig. 3 and lug Fig. 9, and for fastening driving bars Figs. 7 and 8 to motion plate Figs. 3 and 4.....		03
31	Rivet, $\frac{1}{2}$ "x2-11/16", for fastening slide bars Figs. 11 and 12 and lug Fig. 13 together.....		03
32	Rivet, $\frac{1}{2}$ "x2-5/16", for fastening slide bars Figs. 11 and 12 and lug Fig. 13 together.....		03
33	Rivet, $\frac{1}{2}$ "x1", for fastening dogs Fig. 10 to driving bars Figs. 5, 6, 7 and 8.....		02
34	Rivet, $\frac{1}{4}$ "x7/16", for fastening bolt lock Fig. 15 to slide bar Fig. 11.....		01
35	Lock Washer for tap bolt Fig. 29.....	21-B-8486	02



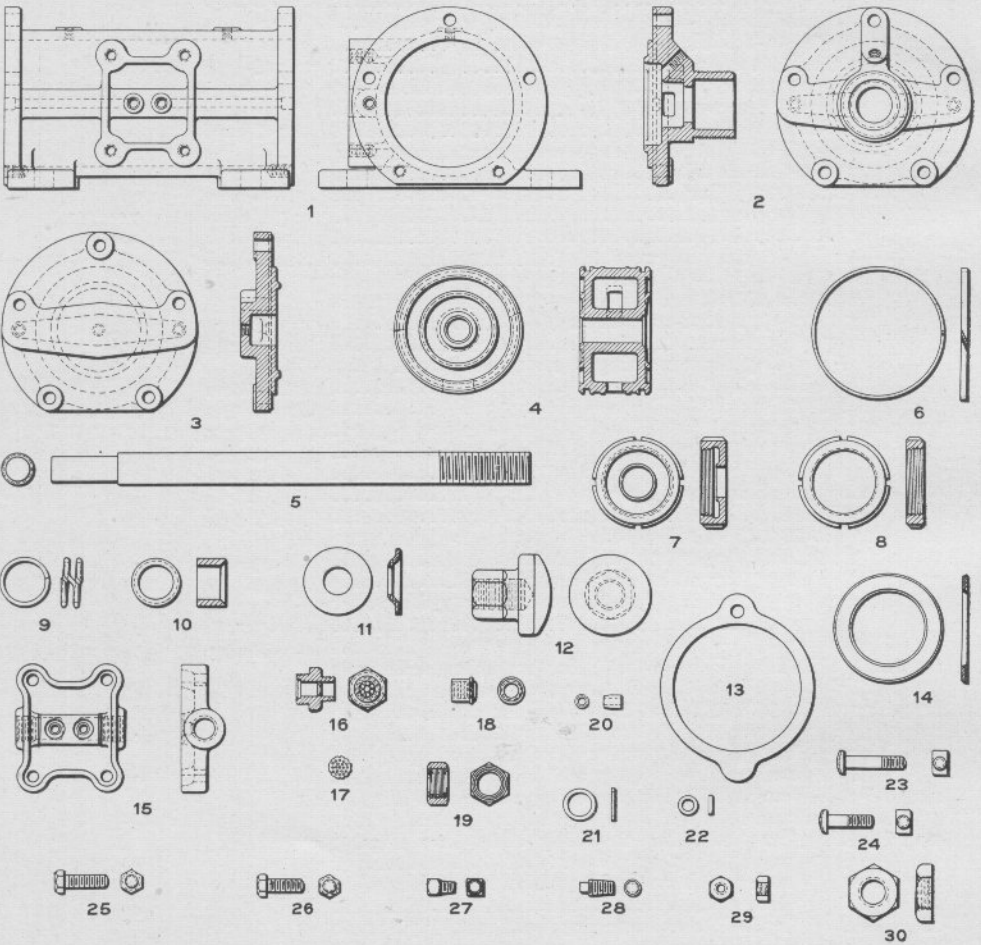
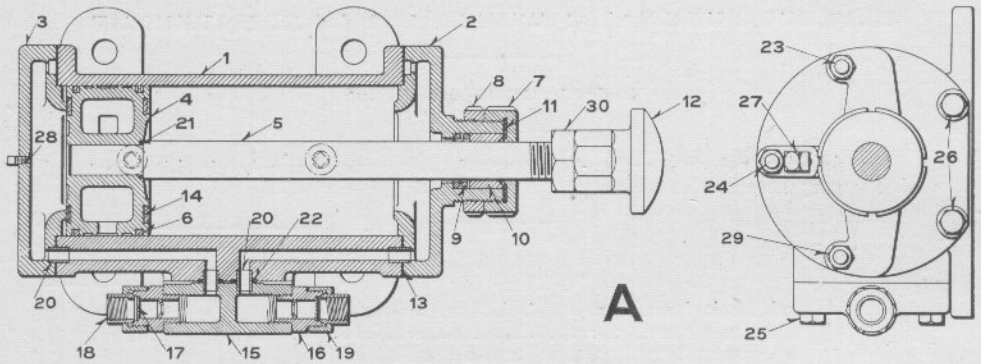
ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT

ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	Switch and Lock Movement, with indication circuit controller, as shown.....	80-C-6282	52 00
B	Indication Circuit Controller. For details see Fig. Aa, Plate 0961.....	3-B-9940	11 40
1	Base only.....	44-C-6256	10 54
1a	as above, with guide rollers, top plate and studs, (1-1, 4-12, 4-13, 1-15, 4-18, 4-19).....	"	21 80
2	Motion Plate only.....	7-C-4329	3 70
2a	as above, with driving bar, contact block and rivets, (1-2, 1-3a, 1-16).....		10 80
3	Upper Driving Bar.....	117-B-9246	1 20
3a	Driving Bar, with lug, dogs and rivets, (1-3, 1-4, 1-5, 2-6, 2-22, 4-25).....	89-C-6140	5 50
4	Lower Driving Bar.....	118-B-9246	1 06
5	Driving Bar Lug.....	3-B-8401	78
6	Dog.....	24-C-6261	36
7	Upper Slide Bar only.....	120-B-9246	94
7a	as above, with lower slide bar, lugs, bolt lock, roller, pin, bolt and rivets, (1-7, 1-8, 1-9, 1-10, 1-11, 1-14, 1-17, 1-20, 1-23, 1-24, 2-25).....	50-C-6140	6 94
8	Lower Slide Bar.....	119-B-9246	3 10
9	Slide Bar Lug for operating end of slide bars Figs. 7 and 8.....	12-B-8401	64
10	Slide Bar Lug for slide bars Figs. 7 and 8.....	13-B-8401	24
11	Bolt Lock, with $\frac{1}{4}$ "x $\frac{1}{2}$ " cotter, for slide bar Fig. 7..	23-B-8486	38
12	Guide Roller for driving bars Figs. 3 and 4.....	17-B-8065	64
13	Guide Roller for slide bars Figs. 7 and 8.....	18-B-8065	60
14	Roller for slide bars Figs. 7 and 8.....	19-B-8065	20
15	Top Plate.....	1-B-8920	1 20
16	Contact Block, with insulating block, contact plate, tap bolts, rivets and lock washers.....	23-C-3680	1 54
17	Pin, $\frac{7}{8}$ "x2- $\frac{3}{8}$ ", for slide bars Figs. 7 and 8.....	34-B-8089	18
18	Stud, 1"x4- $\frac{1}{4}$ ", with $\frac{1}{4}$ "x1- $\frac{3}{8}$ " cotter, for guide roller Fig. 13.....	10-B-8090	26
19	Stud, 1"x5- $\frac{3}{8}$ ", with nut, for guide roller Fig. 12....	11-B-8090	28
20	Bolt and Two Nuts, $\frac{1}{2}$ "x3", for fastening slide bars Figs. 7 and 8 and lug Fig. 10 together.....		08
21	Tap Bolt, $\frac{1}{4}$ "x $\frac{5}{8}$ ", for fastening contact block Fig. 16 to upper driving bar Fig. 3.....		03
22	Rivet, $\frac{1}{2}$ "x2- $\frac{7}{8}$ ", for fastening driving bars Figs. 3 and 4 to motion plate Fig. 2, and lug Fig. 5.....		03
23	Rivet, $\frac{1}{2}$ "x2-11/16", for fastening slide bars Figs. 7 and 8 and lug Fig. 9 together.....		03
24	Rivet, $\frac{1}{2}$ "x2-5/16", for fastening slide bars Figs. 7 and 8 and lug Fig. 9 together.....		03
25	Rivet, $\frac{1}{2}$ "x1", for fastening dogs Fig. 6 to driving bars Fig. 3 and 4.....		02
26	Rivet, $\frac{1}{4}$ "x7/16", for fastening bolt lock Fig. 11 to slide bar Fig. 7.....		01
27	Lock Washer for tap bolt Fig. 21.....	21-B-8486	02



5 INCH SWITCH CYLINDER

5 INCH SWITCH CYLINDER

The cut on the opposite plate shows cylinder with metallic packing.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

		Drawing Reference	List Price
Fig.			
A	5" Switch Cylinder, 8- $\frac{1}{8}$ " stroke, with driving nut Fig. 12. Specify whether cylinder is for right or left hand layout.....	15-C-5065	42 00
Aa	5" Switch Cylinder, 8- $\frac{1}{8}$ " stroke, with screw jaw Fig. 12a. Specify whether cylinder is for right or left hand layout.....	17-C-5065	42 00
I	5" Cylinder only.....	2-C-5065	8 50
1a	as above, with heads, gaskets, bushings, bolts, plugs and nuts, (1-1, 1-2a, 1-3a, 2-13, 2-20, 4-23, 2-24, 4-26, 2-27, 6-28).....	"	22 60
2	Front Head.....	16-B-8422	2 80
2a	as above, with nuts, spring, gland, leather packing and plug, (1-2, 1-7, 1-8, 1-9, 1-10, 1-11, 1-27)	"	5 70
3	Back Head.....	17-B-8422	1 80
3a	as above, with plug, (1-3, 1-28).....	"	1 84
4	Piston only.....	5-B-8328	6 00
4a	as above, with piston rod, piston rings, driving nut, washers and nut, for Fig. A, (1-4, 1-5, 2-6, 1-12, 2-14, 1-21, 1-30).....	"	11 90

5-INCH SWITCH CYLINDER

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

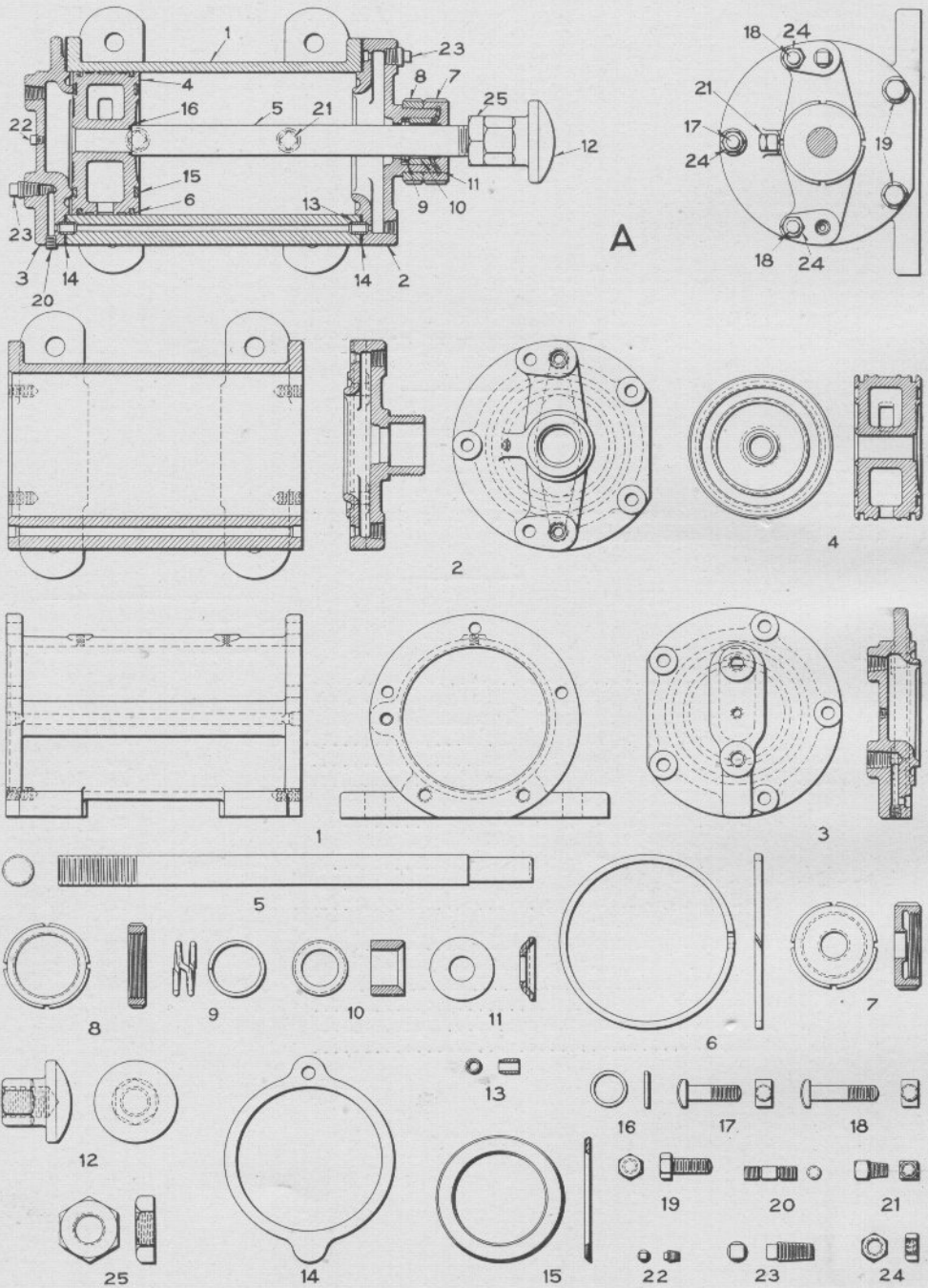
Fig.	Drawing Reference	List Price
4b	Piston, with piston rod, piston rings, screw jaw, washers and nut, for Fig. Aa, (1-4, 1-5, 2-6, 1-12a, 2-14, 1-21, 1-30).....	5-B-8328 11 90
5	Piston Rod.....	5-B-8195 1 50
6	Piston Ring.....	4-B-8197 1 20
7	Nut for stuffing box.....	16-B-8082 80
8	Lock Nut.....	17-B-8082 44
9	Spring for stuffing box.....	6-B-8124 30
10	Gland for stuffing box.....	2-B-8327 08
11	Leather Packing for stuffing box.....	7-B-8078 30
12	Driving Nut for Fig. A.....	6-C-4329 96
12a	Screw Jaw, with pin and cotters, for Fig. Aa.....	49-B-7742 90
13	Fibre Gasket.....	183-B-8078 18
14	Leather Gasket.....	50-B-8078 24
15	Inlet Cap only.....	16-C-5065 2 50
15a	as above, with valve body nuts, screens, swivels and nuts, (1-15, 2-16, 2-17, 2-18, 2-19).....	15a-C-5065 6 70
16	Valve Body Nut.....	5-C-2218 1 10
17	Screen.....	7-C-2218 06
18	Union Swivel.....	1-C-2218 30

5-INCH SWITCH CYLINDER

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
19	Nut	6-B-8082	34
20	Bushing for connecting air passages from heads Figs. 2 and 3 to cylinder Fig. 1 and from inlet cap Fig. 15 to cylinder Fig. 1.....	45-B-8350	06
21	Lead Gasket for piston rod Fig. 5.....	4-B-8274	06
22	Lead Gasket for connecting air passages.....	3-B-8274	06
23	Special Bolt, $\frac{1}{2}$ "x2- $\frac{3}{8}$ ", for fastening front and back heads Figs. 2 and 3 to cylinder Fig. 1.....	7-B-8280	12
24	Special Bolt, $\frac{1}{2}$ "x1- $\frac{7}{8}$ ", for fastening front and back heads Figs. 2 and 3 to cylinder Fig. 1.....	6-B-8280	12
25	Tap Bolt, $\frac{1}{2}$ "x1- $\frac{3}{4}$ ", for fastening inlet cap Fig. 15 to cylinder Fig. 1.....		04
26	Tap Bolt, $\frac{1}{2}$ "x1- $\frac{1}{2}$ ", for fastening front and back heads Figs. 2 and 3 to cylinder Fig. 1.....		04
27	Special $\frac{1}{4}$ " Oil Plug for cylinder Fig. 1 and front head Fig. 2.....	1-B-9511	12
28	$\frac{1}{4}$ " Plug for back head Fig. 3.....		03
29	$\frac{1}{2}$ " Nut for bolts Figs. 23 and 24.....		02
30	1- $\frac{1}{4}$ " Thin Nut.....		18



6 INCH SWITCH CYLINDER

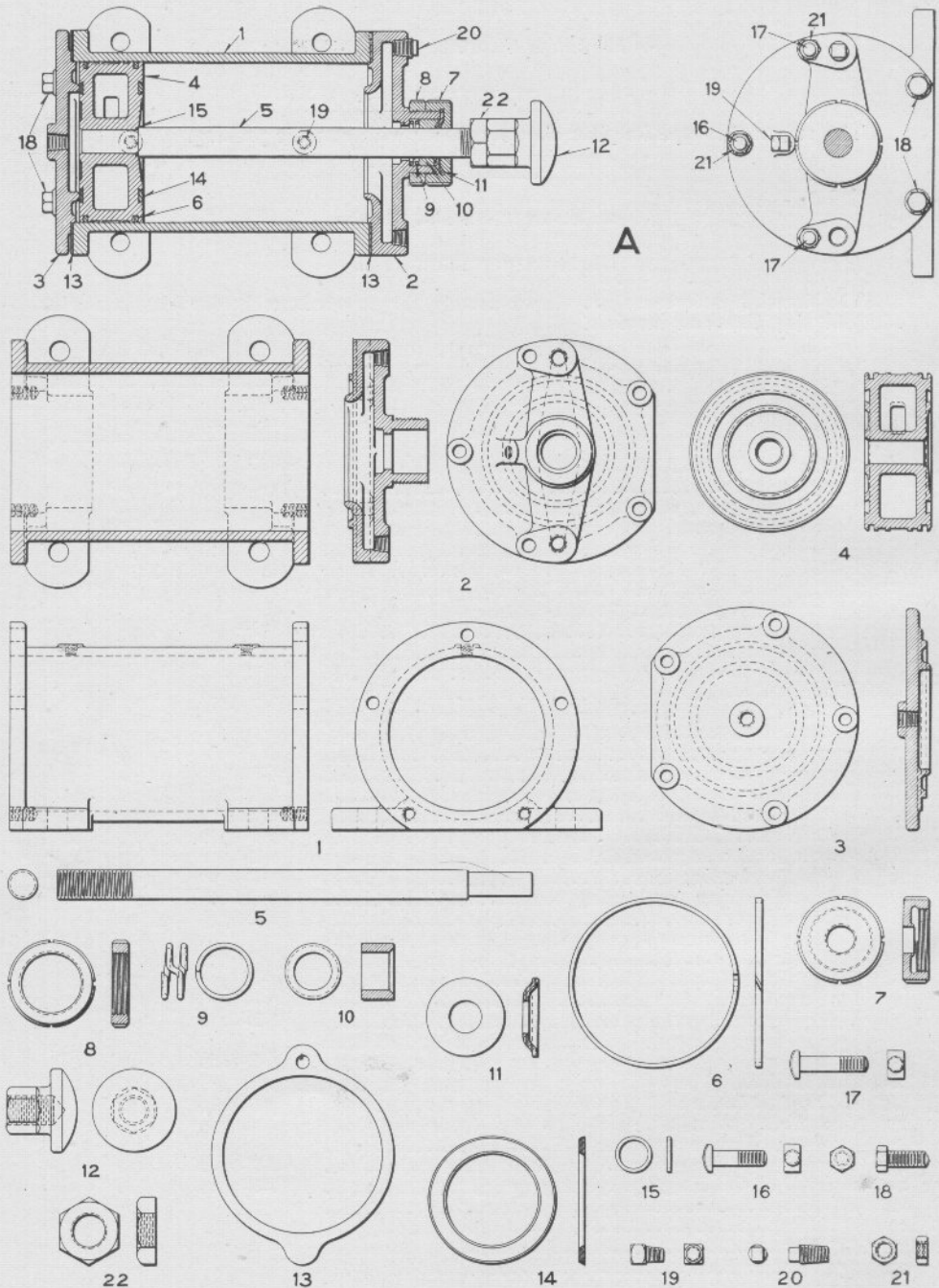
6 INCH SWITCH CYLINDER

The cut on the opposite plate shows cylinder with metallic packing.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
A 6" Switch Cylinder, 9" stroke, as shown.....	13a-C-5065	40 00
1 6" Cylinder only.....	14-C-5065	13 40
1a as above, with heads, bushings, gaskets, bolts, plugs and nuts, (1-1, 1-2a, 1-3a, 2-13, 2-14, 2-17, 4-18, 4-19, 2-21, 6-24).....	"	26 70
2 Front Head.....	45-B-8422	3 70
2a as above, with nuts, spring, gland, leather packing and plugs, (1-2, 1-7, 1-8, 1-9, 1-10, 1-11, 1-21, 1-23).....	"	6 50
3 Back Head.....	38-B-8422	3 00
3a as above, with plugs, (1-3, 1-20, 1-22, 1-23)...	"	3 40
4 Piston only.....	2-B-8328	6 30
4a as above, with piston rod, piston rings, driving nut, washers and nut, (1-4, 1-5, 2-6, 1-12, 2-15, 1-16, 1-25).....	"	12 40
5 Piston Rod.....	36-B-8195	1 50
6 Piston Ring.....	9-B-8197	1 30
7 Nut for stuffing box.....	16-B-8082	80
8 Lock Nut.....	17-B-8082	44
9 Spring for stuffing box.....	6-B-8124	30
10 Gland for stuffing box.....	2-B-8327	08
11 Leather Packing for stuffing box.....	7-B-8078	30
12 Driving Nut.....	6-C-4329	96
13 Bushing for connecting air passage from head to cylinder.....	45-B-8350	06
14 Fibre Gasket.....	107-B-8078	24
15 Leather Gasket.....	106-B-8078	40
16 Lead Gasket.....	4-B-8274	06
17 Special Bolt, $\frac{1}{2}$ "x1- $\frac{7}{8}$ ", for fastening front and back heads Figs. 2 and 3 to cylinder Fig. 1.....	6-B-8280	12
18 Special Bolt, $\frac{1}{2}$ "x2- $\frac{3}{8}$ ", for fastening front and back heads Figs. 2 and 3 to cylinder Fig. 1.....	7-B-8280	12
19 Tap Bolt, $\frac{1}{2}$ "x1- $\frac{1}{2}$ ", for fastening front and back heads Figs. 2 and 3 to cylinder Fig. 1.....		04
20 Special $\frac{7}{16}$ " Plug for holes drilled for air passages.....	2-B-9511	18
21 Special $\frac{1}{4}$ " Oil Plug for cylinder and front head.....	1-B-9511	12
22 $\frac{1}{4}$ " Plug.....		03
23 $\frac{1}{2}$ " Plug.....		03
24 $\frac{1}{2}$ " Nut.....		02
25 1- $\frac{1}{4}$ " Thin Nut.....		18



6 1/2 INCH SWITCH CYLINDER

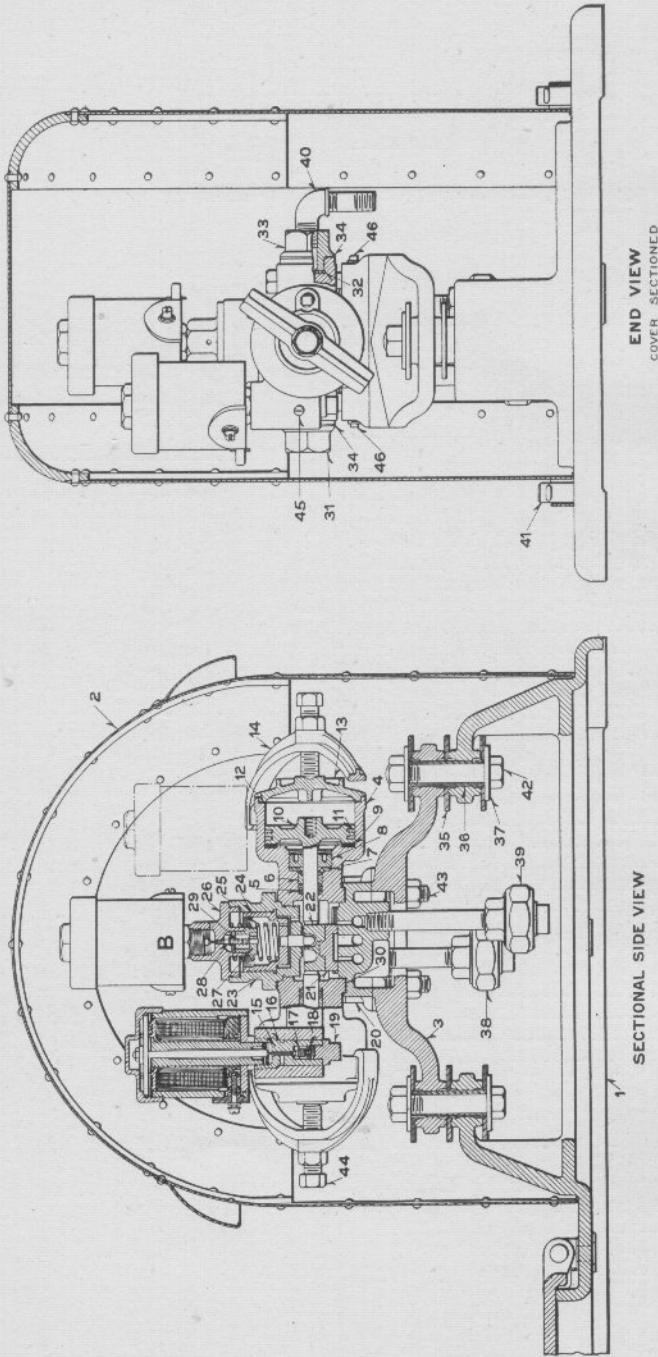
6½ INCH SWITCH CYLINDER

The cut on the opposite plate shows cylinder with metallic packing.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

		Drawing Reference	List Price
Fig.			
A	6½" Switch Cylinder, 9- " stroke, as shown.....	22-C-5065	42 00
1	6-½" Cylinder only.....	23-C-5065	15 10
1a	as above, with heads, gaskets, bolts, plugs and nuts, (1-1, 1-2a, 1-3, 2-13, 2-16, 4-17, 4-18, 2-19, 6-21)	"	27 00
2	Front Head.....	42-B-8422	3 80
2a	as above, with nuts, spring, gland, leather packing and plug, (1-2, 1-7, 1-8, 1-9, 1-10, 1-11, 1-20)	"	6 60
3	Back Head.....	43-B-8422	2 30
4	Piston only.....	3-B-8328	6 80
4a	as above, with piston rod, piston rings, driving nut, washers and nut, (1-4, 1-5, 2-6, 1-12, 2-14, 1-15, 1-22)	"	13 20
5	Piston Rod.....	36-B-8195	1 50
6	Piston Ring.....	8-B-8197	1 40
7	Nut for stuffing box.....	16-B-8082	80
8	Lock Nut.....	17-B-8082	44
9	Spring for stuffing box.....	6-B-8124	37
10	Gland for stuffing box.....	2-B-8327	08
11	Leather Packing for stuffing box.....	7-B-8078	30
12	Driving Nut.....	6-C-4329	96
13	Fibre Gasket.....	108-B-8078	26
14	Leather Gasket.....	106-B-8078	40
15	Lead Gasket.....	4-B-8274	06
16	Special Bolt, ½"x1-⅞", for fastening front and back heads Figs. 2 and 3 to cylinder Fig. 1.....	6-B-8280	12
17	Special Bolt, ½"x2-⅝", for fastening front head Fig. 2 to cylinder Fig. 1.....	12-B-8280	12
18	Tap Bolt, ½"x1-½", for fastening front and back heads Fig. 2 and 3 to cylinder Fig. 1.....		04
19	Special ¼" Oil Plug for cylinder and front head....	1-B-9511	12
20	½" Pipe Plug.....		03
21	½" Nut.....		02
22	1-¼" Thin Nut.....		18



A

ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED INDEPENDENT OF CYLINDER
WITH AUXILIARY RESERVOIR
(WITH D. C. MAGNETS)

**ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED
INDEPENDENT OF CYLINDER WITH
AUXILIARY RESERVOIR
(WITH D. C. MAGNETS)**

Magnets are usually wound to 120 ohms resistance. When ordering specify resistance.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
	5	
A	Switch Valve, with base and cover, as shown.....	167 00
Aa	Switch Valve, without base and door, cover, insulating bushing, insulating washers, unions, street ell, nipples, plate washers and bolts.....	132 00
B	D. C. Magnet only. When ordering specify resistance	18 00
1	Base and Door. For details see Fig. A, Plate 0955...	13 00
2	Cover	14 30
3	Valve Seat Bracket.....	2 00
4	Valve Chamber, with pin valve guides and washers, (1-4, 2-15, 2-16).....	12 00
5	Spring for stuffing box in valve chamber Fig. 4.....	06
6	Gland for stuffing box in valve chamber Fig. 4.....	16
7	Leather Packing for stuffing box in valve chamber Fig. 4.....	16
8	Nut for stuffing box in valve chamber Fig. 4.....	30
9	Gasket for seating piston Fig. 10 in valve chamber Fig. 4.....	18
10	Piston only, for valve chamber Fig. 4.....	2 50
10a	as above, with piston rings, (1-10, 2-11).....	4 60
11	Piston Ring.....	96
12	Gasket for head Fig. 13.....	06
13	Head for valve chamber Fig. 4.....	46
14	Yoke, with bolt and nut, for fastening head Fig. 13 to valve chamber Fig. 4.....	40
15	Pin Valve Guide for normal and reverse magnets....	1 20

**ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED
INDEPENDENT OF CYLINDER WITH
AUXILIARY RESERVOIR
(WITH D. C. MAGNETS)**

Order by Plate, Figure and Instructions given

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
16	Washer for pin valve guide Fig. 15.....	11-B-8274	04
17	Pin Valve for normal and reverse magnets.....	15-B-7625	30
17a	as above, with spring, (1-17, 1-18).....	"	60
18	Spring for pin valve Fig. 17.....	5-B-7625	30
19	Plug for pin valve guide Fig. 15.....	63-B-8082	34
20	Valve Seat.....	13-C-7471	9 50
21	"D" Valve.....	15-C-7471	2 86
22	Saddle for "D" valve Fig. 21.....	8-C-2854	2 58
23	Lock Cylinder.....	10-C-2854	3 50
23a	as above, with piston, spring, cap, pin valve guide and pin valve, (1-23, 1-24, 1-25, 1-26, 1-27, 1-28a)	11-C-2854	11 10
24	Piston, with stud, for lock cylinder Fig. 23.....	30-B-8328	1 54
25	Spring for lock cylinder Fig. 23.....	31-B-8124	58
26	Cap for lock cylinder Fig. 23.....	4-C-2854	1 44
27	Pin Valve Guide for cap Fig. 26.....	62-B-8082	40
28	Pin Valve only, for lock magnet.....	17-B-7625	32
28a	as above, with spring, (1-28, 1-29).....	"	52
29	Spring for pin valve Fig. 28.....	3-B-7625	20
30	Gasket for valve seat Fig. 20.....	60-B-8078	06
31	Cast Nut for valve chamber Fig. 4.....	89-B-8082	68
32	Strainer for valve chamber Fig. 4.....	23-C-2853	06
33	Union for valve chamber Fig. 4.....	28-B-8082	60
34	Washer for nut Fig. 31 and union Fig. 33.....	19-B-8078	06

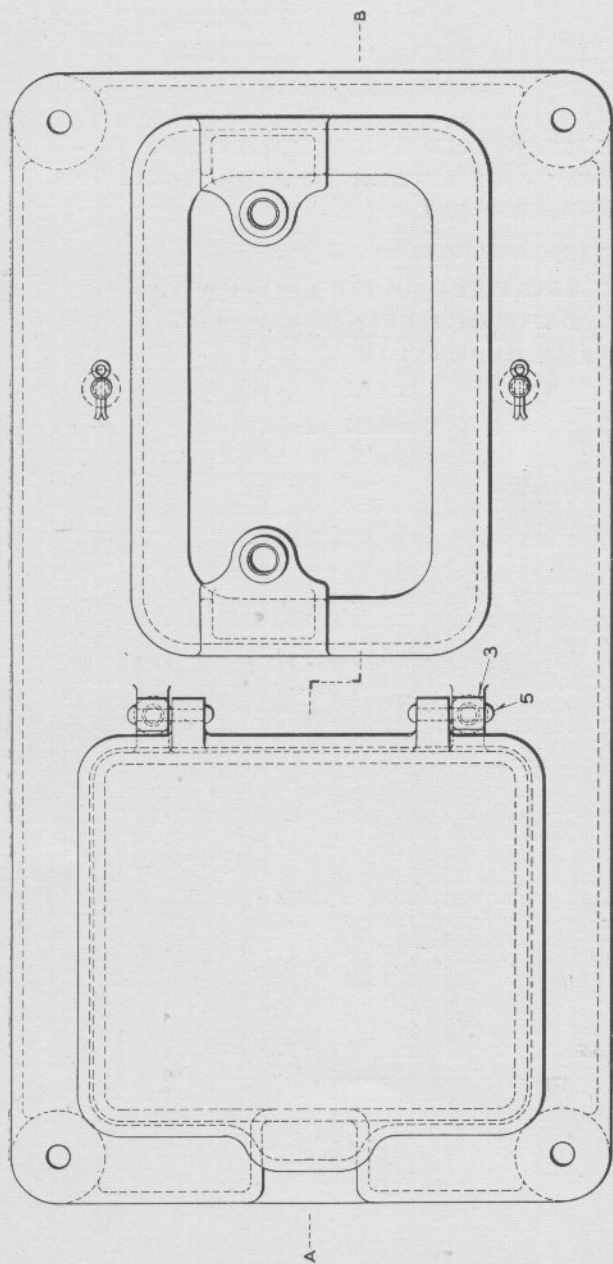
**ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED
INDEPENDENT OF CYLINDER WITH
AUXILIARY RESERVOIR**

(WITH D. C. MAGNETS)

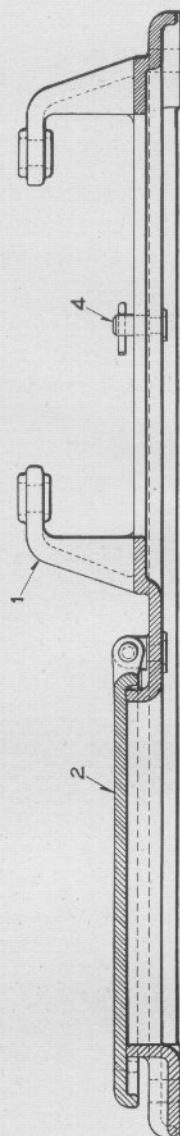
Order by Plate, Figure and Instructions given

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
35	Insulating Washer for insulating valve seat bracket Fig. 3 and bolt Fig. 42 from base Fig. 1.....	382-B-8078	24
36	Insulating Bushing for insulating valve seat bracket Fig. 3 and bolt Fig. 42 from base Fig. 1.....	242-B-8095	08
37	Plate Washer for bolt Fig. 42.....	38-B-7826	02
38	Special Insulated Union, with nipple, (1-38a, 1-38b)..	4-B-9660	2 32
38a	Special $\frac{1}{2}$ " Insulated Union.....	"	2 26
38b	Galv. Nipple, $\frac{1}{2}$ "x2- $\frac{3}{4}$ ".....	"	06
39	Special Insulated Union, with nipple, (1-38a, 1-39a)..	"	2 32
39a	Galv. Nipple, $\frac{1}{2}$ "x4".....	"	08
40	Street Ell and Nipple, (1-40a, 1-40b).....		18
40a	Street Ell only, $\frac{1}{2}$ ".....		12
40b	Galv. Nipple, $\frac{1}{2}$ "x1- $\frac{3}{4}$ ".....		06
41	Stud, with one $\frac{3}{16}$ "x1- $\frac{1}{8}$ " cotter, for fastening cover Fig. 2 to base Fig. 1.....	18-B-8071	10
42	Hex. Hd. Bolt and Nut, $\frac{5}{8}$ "x3- $\frac{1}{4}$ ", for fastening valve seat bracket Fig. 3 to base Fig. 1.....		12
42a	as above, with insulating washers, insulating bushing and plate washers, (1-42, 3-35, 1-36, 2-37) ..		92
43	Special Bolt and Nut, $\frac{1}{2}$ "x5", for fastening valve chamber Fig. 4 and valve seat Fig. 20 to valve seat bracket Fig. 3.....	33-B-8280	12
44	Special Bolt and Nut, $\frac{1}{2}$ "x2- $\frac{3}{8}$ ", for yoke Fig. 14.....	106-B-8280	06
45	Special Plug for valve chamber Fig. 4.....	6-B-9511	06
46	Plug, $\frac{1}{4}$ ", for valve seat Fig. 20.....		03



A



SECTION A-B

BASE AND DOOR FOR ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED
INDEPENDENT OF CYLINDER WITH AUXILIARY RESERVOIR

**BASE AND DOOR FOR ELECTRO-PNEUMATIC SWITCH VALVE
MOUNTED INDEPENDENT OF CYLINDER WITH
AUXILIARY RESERVOIR**

For details of switch valve see Plate 0953.

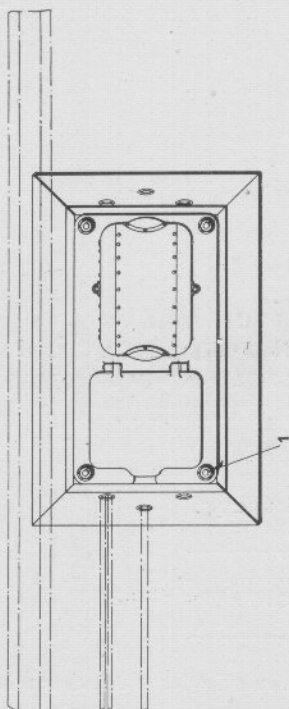
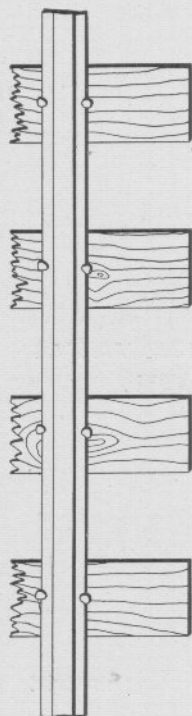
Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

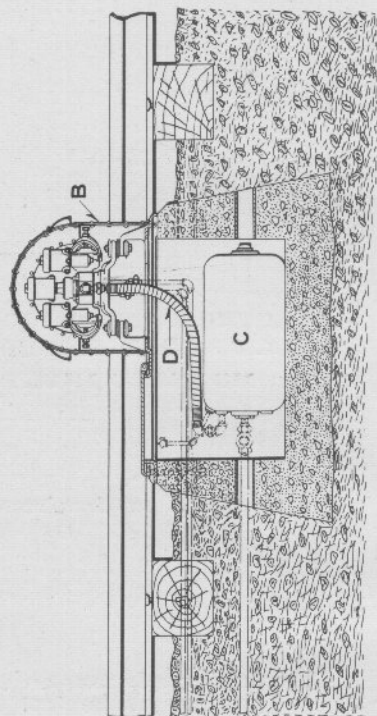
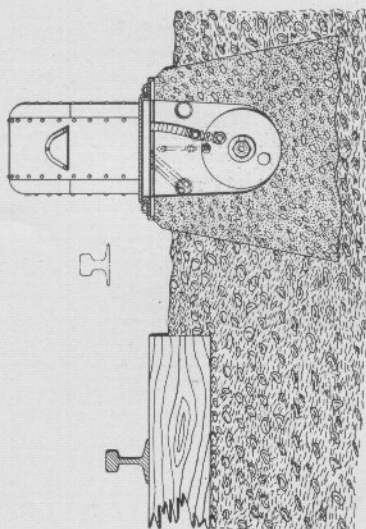
Fig.

- A Base and Door, with studs, cotters and nuts, (1-1,
1-2, 2-3, 2-4, 2-5).....
1 Base only.....
2 Door only.....
3 Eye, fastened to base Fig. 1 for hinge for door Fig. 2.
4 Stud, with one $\frac{3}{16}$ "x $\frac{1}{8}$ " cotter, for fastening cover
of switch valve to base Fig. 1.....
5 Rivet, $\frac{3}{8}$ "x $\frac{1}{4}$ ", for fastening door Fig. 2 to base
Fig. 1.....

Drawing Reference	List Price	
23-C-7471	13 00	
"	8 10	
24-C-7471	2 50	
50-B-8191	64	
18-B-8071	12	
	02	



A



ELECTRO-PNEUMATIC SWITCH VALVE AND AUXILIARY RESERVOIR

ELECTRO-PNEUMATIC SWITCH VALVE AND AUXILIARY RESERVOIR

For details of switch valve see Plate 0953.

Magnets are usually wound to 120 ohms resistance. When ordering specify resistance.

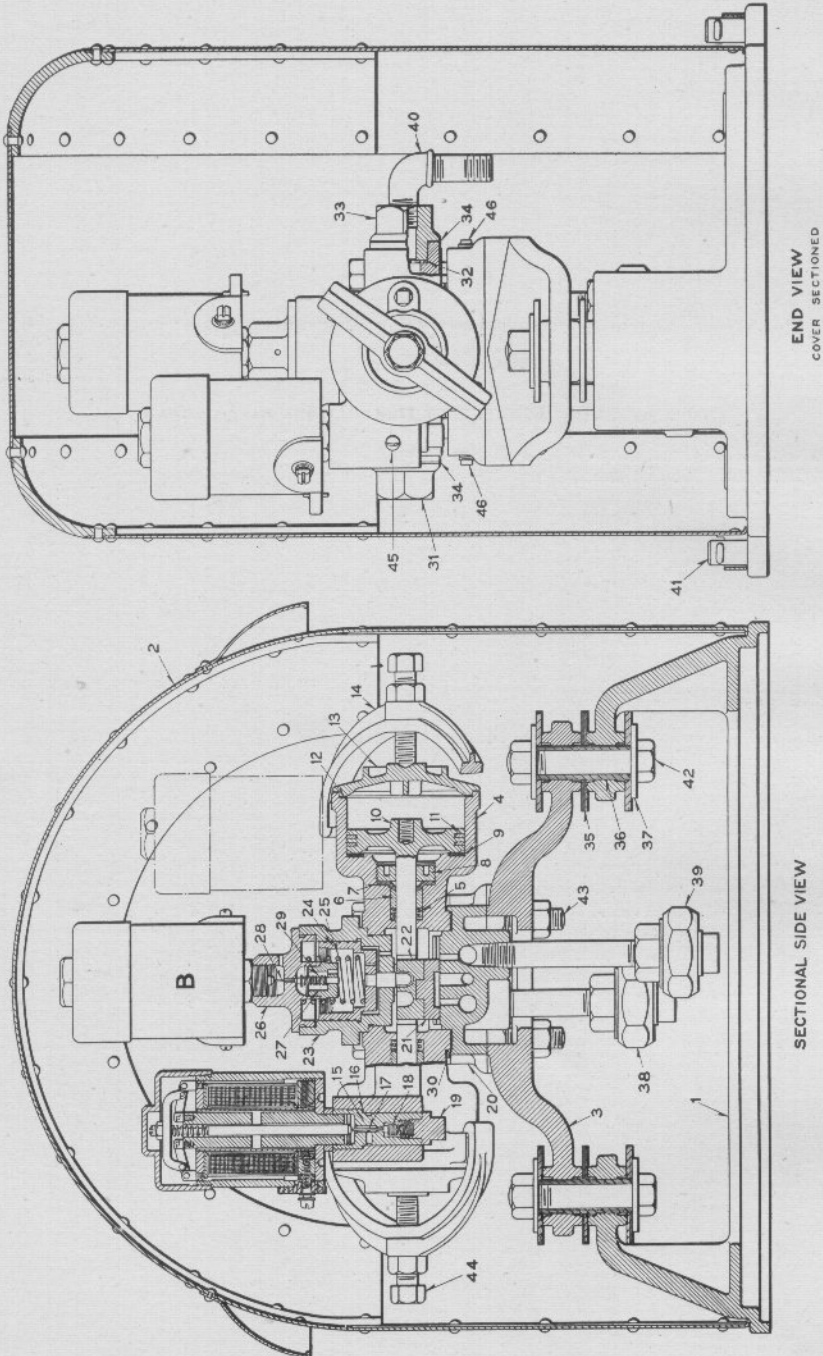
Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.

- A Switch Valve, with auxiliary reservoir, hose connection and foundation bolts, (1-B, 1-C, 1-D, 4-1)....
- B Switch Valve, with base and cover. For details see Plate 0953.....
- C Auxiliary Reservoir, with bushings, plug and internal pipe for blow-out connection.....
- D Hose Connection, with union.....
- Da Hose Connection, without union.....
- 1 Foundation Bolt and Nut, $\frac{3}{4}$ "x15", for fastening base to foundation.....

Drawing Reference	List Price	
5	183 60	
■-C-6957	167 00	
10a-C-4047	13 50	
4-B-9046	2 30	
3-B-9046	1 70	
43-B-7913	20	



A
 SECTIONAL SIDE VIEW
 END VIEW
 COVER SECTIONED
 ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED INDEPENDENT OF CYLINDER
 (WITH A. C. MAGNETS)

**ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED
INDEPENDENT OF CYLINDER
(WITH A. C. MAGNETS)**

When ordering specify frequency and voltage.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

	Drawing Reference	List Price	
Fig.			
A Switch Valve, with base and cover, as shown.....	3-C-6957	157 00	
Aa Switch Valve, without base, cover, insulating bush- ings, insulating washers, unions, street ell, nipples, plate washers and bolts.....	3-C-7465	132 00	
B A. C. Magnets only. When ordering specify fre- quency and voltage.....	32-B-8342	19 40	
1 Base	3-C-7471	3 00	
2 Cover	19-C-7471	14 30	
3 Valve Seat Bracket.....	4 C-7471	2 00	
4 Valve Chamber, with pin valve guides and washers, (1-4, 2-15, 2-16).....	1-C-7471	12 00	
5 Spring for stuffing box in valve chamber Fig. 4.....	20-B-8124	06	
6 Gland for stuffing box in valve chamber Fig. 4.....	32-B-8350	16	
7 Leather Packing for stuffing box in valve chamber Fig. 4.....	18-B-8078	16	
8 Nut for stuffing box in valve chamber Fig. 4.....	86-B-8109	30	
9 Gasket for seating piston Fig. 10 in valve chamber Fig. 4.....	21-B-8078	18	
10 Piston only, for valve chamber Fig. 4.....	20-B-8328	2 50	
10a as above, with piston rings, (1-10, 2-11)....	"	4 60	
11 Piston Ring.....	1-B-8197	96	
12 Gasket for head Fig. 13.....	20-B-8078	06	
13 Head for valve chamber Fig. 4.....	32-B-8422	46	
14 Yoke, with bolt and nut, for fastening head Fig. 13 to valve chamber Fig. 4.....	3-B-8174	40	

ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED INDEPENDENT OF CYLINDER

(WITH A. C. MAGNETS)

Order by Plate, Figure and Instructions given

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

		Drawing Reference	List Price	
Fig.				
15	Pin Valve Guide for normal and reverse magnets....	10-B-2853	1 20	
16	Washer for pin valve guide Fig. 15.....	11-B-8274	04	
17	Pin Valve for normal and reverse magnets.....	15-B-7625	30	
17a	as above, with spring, (1-17, 1-18).....	"	90	
18	Spring for pin valve Fig. 17.....	9-B-7625	30	
19	Plug for pin valve guide Fig. 15.....	63-B-8082	34	
20	Valve Seat.....	12-C-7471	9 50	
21	"D" Valve.....	7-C-2854	2 86	
22	Saddle for "D" Valve Fig. 21.....	8-C-2854	2 58	
23	Lock Cylinder.....	10-C-2854	3 50	
23a	as above, with piston, spring, cap, pin valve guide and pin valve, (1-23, 1-24, 1-25, 1-26, 1-27, 1-28a)	15-C-2854	11 10	
24	Piston, with stud, for lock cylinder Fig. 23.....	30-B-8328	1 54	
25	Spring for lock cylinder Fig. 23.....	31-B-8124	58	
26	Cap for lock cylinder Fig. 23.....	4-C-2854	1 44	
27	Pin Valve Guide for cap Fig. 26.....	62-B-8082	40	
28	Pin Valve only, for lock magnet.....	17-B-7625	32	
28a	as above, with spring, (1-28, 1-29).....	"	52	
29	Spring for pin valve Fig. 28.....	10-B-7625	20	
30	Gasket for valve seat Fig. 20.....	60-B-8078	06	
31	Cast Nut for valve chamber Fig. 4.....	89-B-8082	68	
32	Strainer for valve chamber Fig. 4.....	3-C-2853	06	
33	Union for valve chamber Fig. 4.....	28-B-8082	60	
34	Washer for nut Fig. 31 and union Fig. 33.....	19-B-8078	06	

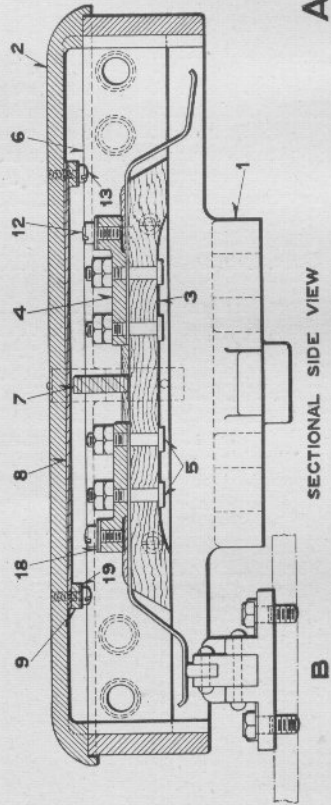
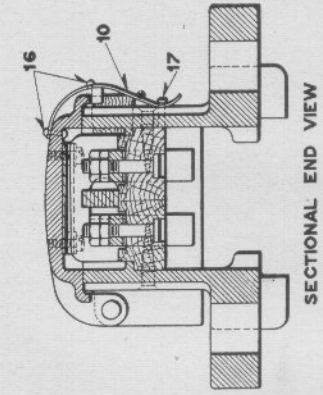
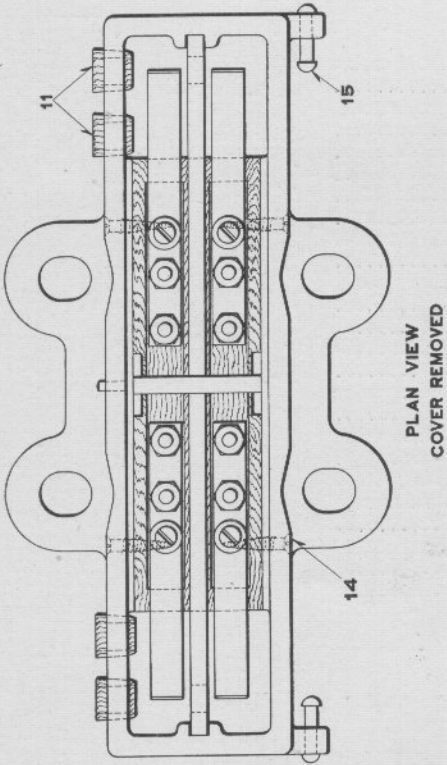
ELECTRO-PNEUMATIC SWITCH VALVE MOUNTED INDEPENDENT OF CYLINDER

(WITH A. C. MAGNETS)

Order by Plate, Figure and Instructions given

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price	
35	Insulating Washer for insulating valve seat bracket Fig. 3 and bolt Fig. 42 from base Fig. 1.....	382-B-8078	24
36	Insulating Bushing for insulating valve seat bracket Fig. 3 and bolt Fig. 42 from base Fig. 1.....	242-B-8095	08
37	Plate Washer for bolt Fig. 42.....	38-B-7826	02
38	Special Union, with nipple, (1-38a, 1-38b).....	4-B-9660	2 32
38a	Special Union only, 1/2".....	"	2 26
38b	Galv. Nipple, 1/2"x2-3/4".....	"	06
39	Special Union, with nipple, (1-38a, 1-39a).....	"	2 32
39a	Galv. Nipple, 1/2"x4".....	"	08
40	Street Ell and Nipple, (1-40a, 1-40b).....		16
40a	Street Ell only, 1/2".....		12
40b	Galv. Nipple, 1/2"x1-3/4".....		06
41	Stud, with one 3/16"x1-1/8" cotter, for fastening cover Fig. 2 to base Fig. 1.....	16-B-8071	10
42	Hex. Hd. Bolt and Nut, 5/8"x3-1/4", for fastening valve seat bracket Fig. 3 to base Fig. 1.....		12
42a	as above, with insulating washers, insulating bushing and plate washers, (1-42, 3-35, 1-36, 2-37).....		92
43	Special Bolt and Nut, 1/2"x5", for fastening valve chamber Fig. 4 and valve seat Fig. 20 to valve seat bracket Fig. 3.....	33-B-8280	12
44	Special Bolt and Nut, 1/2"x2-3/8", for yoke Fig. 14....	10a-B-8280	06
45	Special Plug for valve chamber Fig. 4.....	6-B-9511	06
46	Plug, 1/4", for valve seat Fig. 20.....		03



A

SECTIONAL SIDE VIEW

B

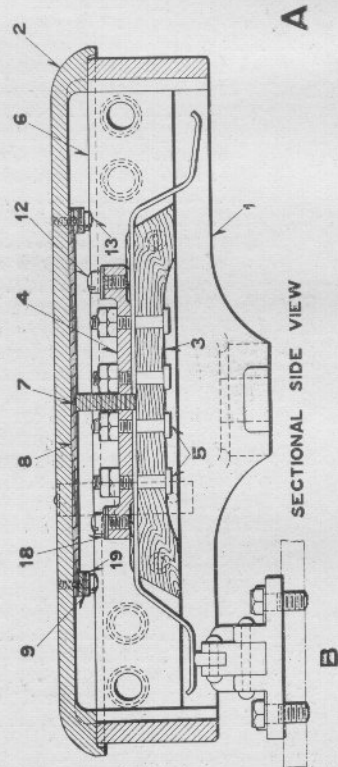
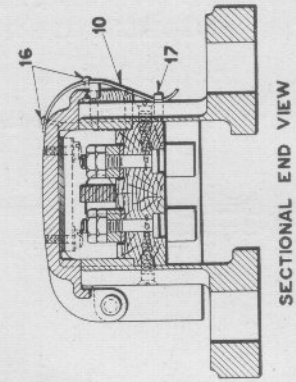
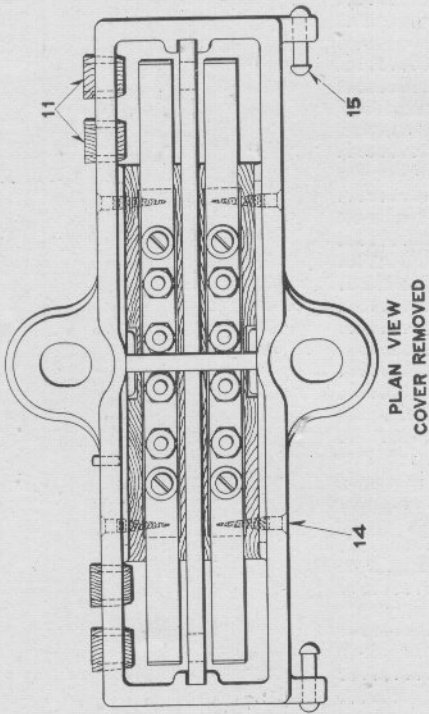
INDICATION CIRCUIT CONTROLLER
FOR ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT

INDICATION CIRCUIT CONTROLLER FOR ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	Indication Circuit Controller, 9" stroke, with contact block Fig. B, as shown.....	2-B-9940	11 40
Aa	as above, 8" stroke.....	3-B-9940	17 40
B	Contact Block, with tap bolts and lock washers.....	23-C-3680	1 54
1	Box only, for Figs. A and Aa.....	4-C-7281	1 64
1a	as above, with cover, bushings, rivets and pin, (1-1, 1-2a, 4-11, 2-15, 1-17).....	"	4 60
2	Cover only, for Figs. A and Aa.....	5-C-7281	1 32
2a	as above, with insulation, insulating strips, clasp, spring, screws, washers and rivets, (1-2, 1-8, 2-9, 1-10, 4-13, 2-16, 4-19).....	"	2 58
3	Contact Spring Board for Fig. A.....	29-B-9968	1 08
3a	as above, with combined contact springs and terminal connectors and terminal posts, (1-3, 4-4a, 8-5).....	"	4 40
3b	Contact Spring Board for Fig. Aa.....	30-B-9968	1 08
3c	as above, with combined contact springs and terminal connectors and terminal posts, (1-3b, 4-4a, 8-5).....	"	4 40
4	Combined Contact Spring and Terminal Connector for Figs. A and Aa.....	{ 72-B-8064	50
4a	as above, with screw and washers, (1-4, 1-12, 2-18).....	{ 550-B-8385	
5	Terminal Post, with two nuts, for Figs. A and Aa....	2-B-8094	54
6	Longitudinal Insulating Strip for Figs. A and Aa....	302-B-8750	12
7	Cross Insulating Strip for Figs. A and Aa.....	284-B-8750	72
8	Insulation for cover Fig. 2.....	284-B-8750	24
9	Insulating Strip for cover Fig. 2.....	305-B-8750	16
10	Clasp Spring for cover Fig. 2.....	285-B-8750	12
11	Maple Bushing for wire opening in box Fig. 1.....	7-B-8735	24
12	Fil. Hd. Brass Mach. Screw, No. 12-24x7/16", for terminal connector.....	197-B-8095	04
13	Fil. Hd. Brass Mach. Screw, No. 6-32x7/16", for fastening insulation Fig. 8 and insulating strip Fig. 9 to cover Fig. 2.....		02
14	Wood Screw, No. 10x1", for fastening contact spring board Fig. 3 to box Fig. 1.....		02
15	Rd. Hd. Rivet, 3/16"x1", for fastening cover Fig. 2 to box Fig. 1.....		01
16	Rivet, 1/8"x3/8", for fastening clasp spring Fig 10 to cover Fig. 2.....		01
17	Pin, No. 30x7/16", fastened in box Fig. 1 for clasp spring Fig. 10.....		01
18	Washer for screw Fig. 12.....	1-B-8097	02
19	Washer for screw Fig. 13.....	4-B-7828	01
		2-B-7828	01



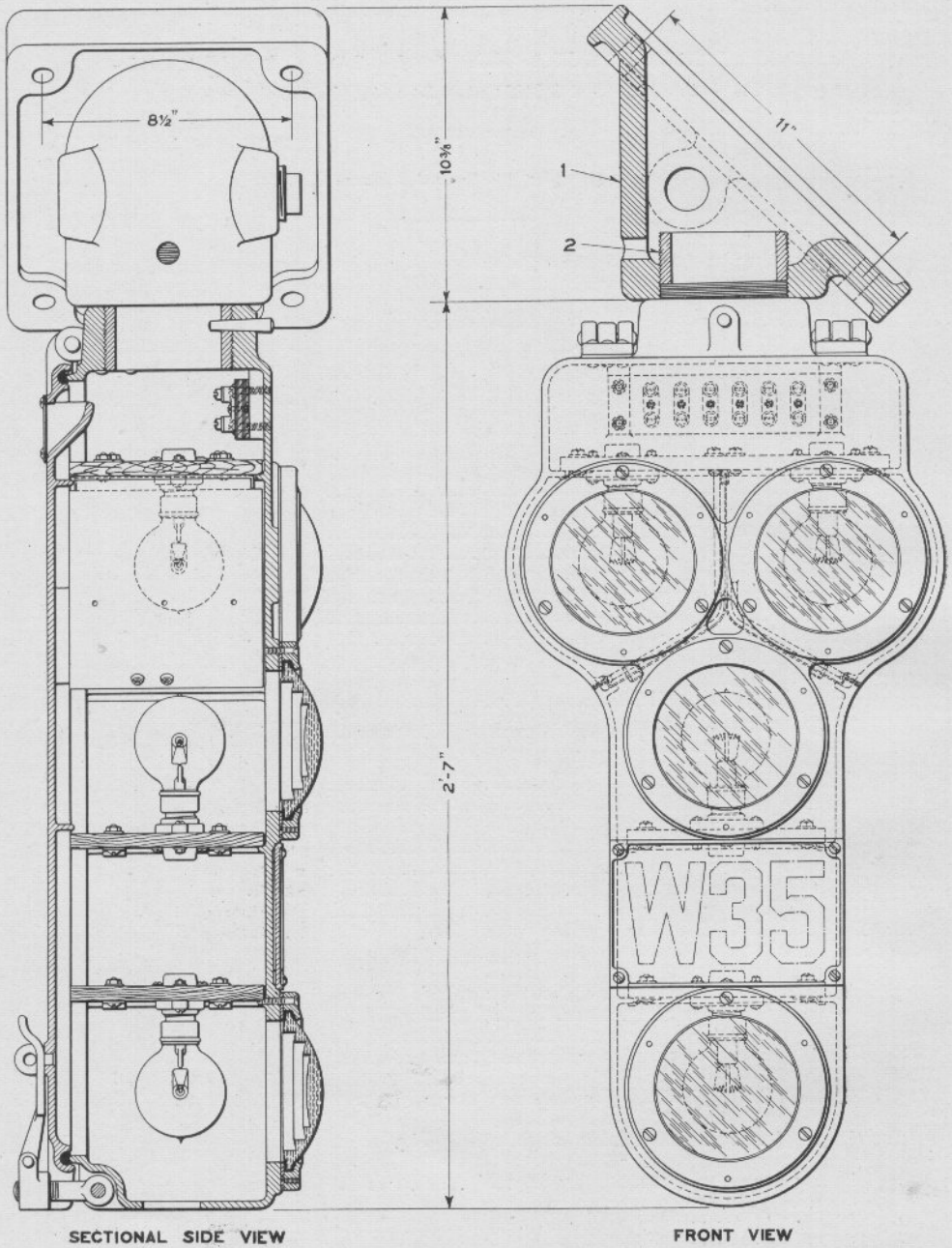
INDICATION CIRCUIT CONTROLLER
FOR ELECTRO-PNEUMATIC SWITCH AND LOCK MOVEMENT

INDICATION CIRCUIT CONTROLLER FOR ELECTRO- PNEUMATIC SWITCH AND LOCK MOVEMENT

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	Indication Circuit Controller, 8" stroke, with contact block Fig. B, as shown.....	1-B-9940	10 70
B	Contact Box, with tap bolts and lock washers.....	23-C-3680	1 54
1	Box	1-C-7281	1 40
1a	as above, with cover, bushings, rivets and pin, (1-1, 1-2a, 4-11, 2-15, 1-17).....	"	4 30
2	Cover	2-C-7281	1 26
2a	as above, with insulation, insulating strips, clasp spring, screws, washers and rivets, (1-2, 1-8, 2-9, 1-10, 4-13, 2-16, 4-19).....	"	2 52
3	Contact Spring Board.....	30-B-9968	1 08
3a	as above, with combined contact springs and terminal connectors and terminal posts, (1-3, 4-4a, 8-5)	"	4 40
4	Combined Contact Spring and Terminal Connector...	(72-B-8064 550-B-8385	50
4a	as above, with screws and washers, (1-4, 1-12, 2-18)	"	54
5	Terminal Post, with two nuts.....	2-B-8094	12
6	Longitudinal Insulating Strip.....	283-B-8750	72
7	Cross Insulating Strip.....	284-B-8750	24
8	Insulation for cover Fig. 2.....	282-B-8750	16
9	Insulating Strip for cover Fig. 2.....	285-B-8750	12
10	Clasp Spring for cover Fig. 2.....	7-B-8735	24
11	Maple Bushing for wire opening in box Fig. 1.....	197-B-8095	04
12	Fil. Hd. Brass Mach. Screw, No. 12-24x7/16", for terminal connector.....		02
13	Fil. Hd. Brass Mach. Screw, No. 6-32x7/16", for fastening insulation Fig. 8 and insulating strip Fig. 9 to cover Fig. 2.....		02
14	Wood Screw, No. 10x1", for fastening contact spring board Fig. 3 to box Fig. 1.....		01
15	Rd. Hd. Rivet, 3/16"x1", for fastening cover Fig. 2 to box Fig. 1.....		01
16	Rivet, 1/8"x3/8", for fastening clasp spring Fig. 10 to cover Fig. 2.....		01
17	Pin, No. 30x7/16", fastened in box Fig. 1, for clasp spring Fig. 10.....	1-B-8097	02
18	Washer for screw Fig. 12.....	4-B-7828	01
19	Washer for screw Fig. 13.....	2-B-7828	01



A

SUSPENDED FOUR-LIGHT ELECTRIC LIGHT AUTOMATIC SIGNAL

SUSPENDED FOUR-LIGHT ELECTRIC LIGHT AUTOMATIC SIGNAL

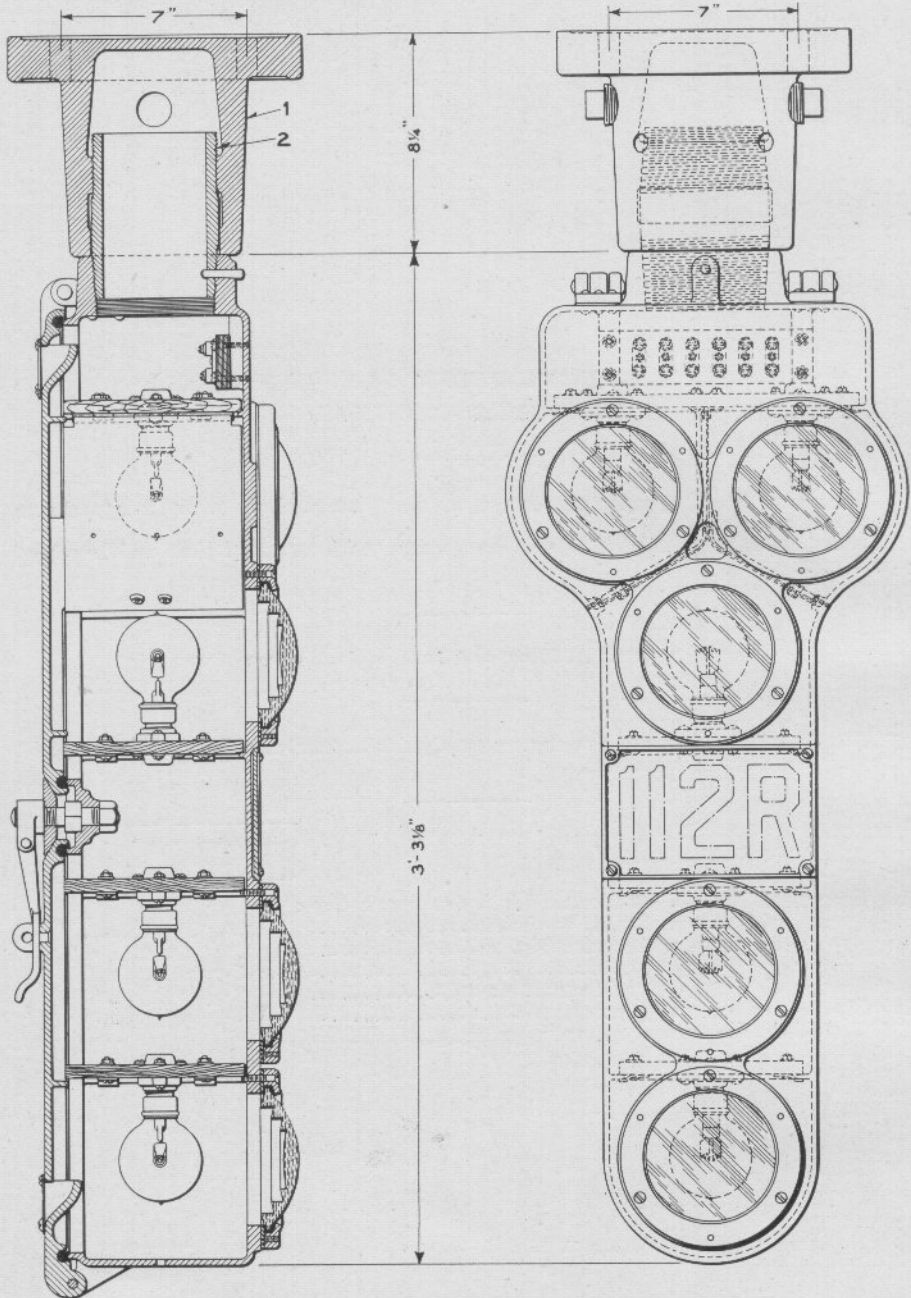
The signal listed below includes lamps, number plate and all other fittings shown on the opposite plate.

When ordering specify voltage of lamps, number for number plate and length of pipe Fig. 2.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price	
A	Suspended Four-Light Electric Light Automatic Signal, with hanger Fig. 1, as shown.....	6-C-6769	60 00	
Aa	as above, with socket Fig. 1a.....	"	64 40	
1	Hanger, with plug.....	20-C-7482	5 00	
1a	Socket, with plugs. See Fig. 1, Plate 0967.....	5-C-7482	9 40	
2	Pipe, 4", extra heavy, length 12".....	6-C-7482	4 40	
	For each additional inch of pipe Fig. 2, add.....		12	



SECTIONAL SIDE VIEW

A

FRONT VIEW

**SUSPENDED FIVE-LIGHT ELECTRIC LIGHT INTERLOCKING
SIGNAL**

SUSPENDED FIVE-LIGHT ELECTRIC LIGHT INTERLOCKING SIGNAL

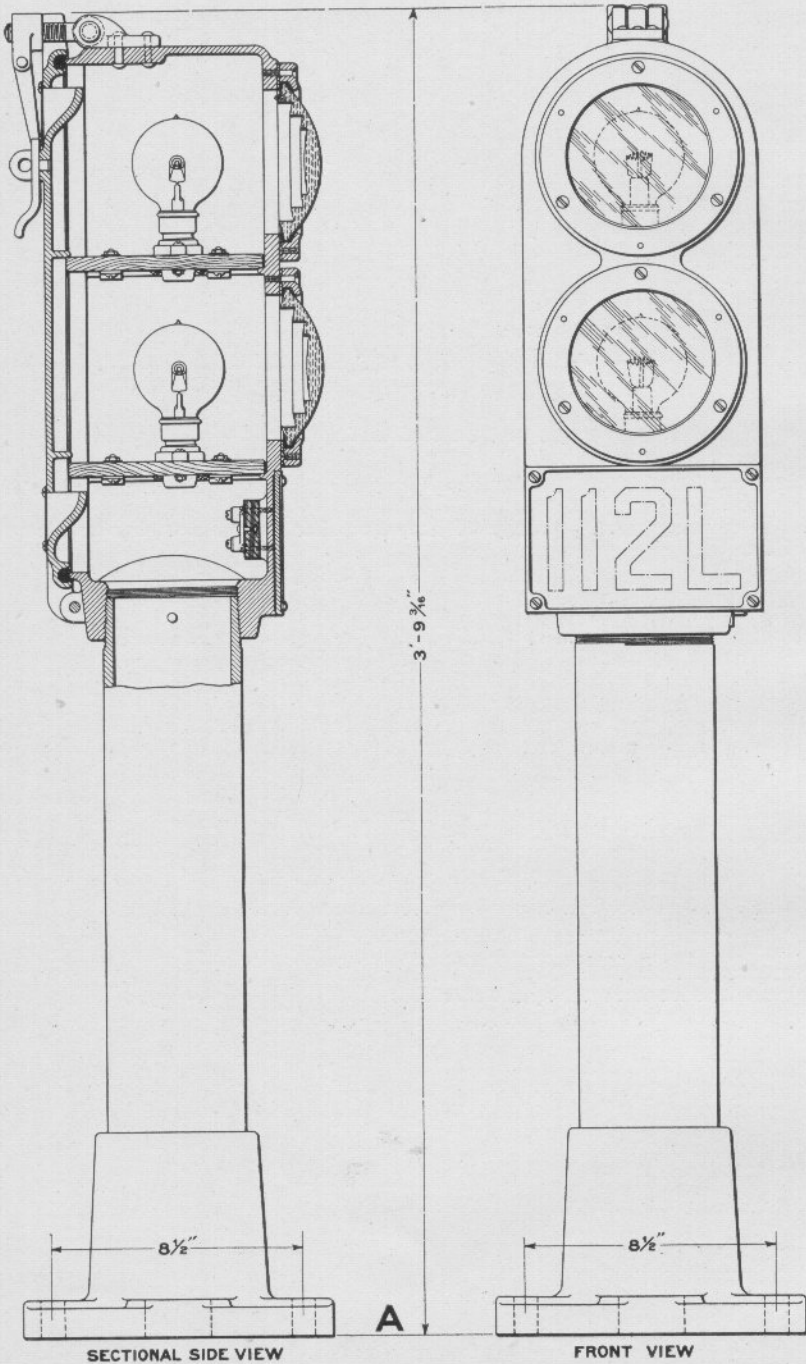
The signal listed below includes lamps, number plate and all other fittings shown on the opposite plate.

When ordering specify voltage of lamps, number for number plate and length of pipe Fig. 2.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	Suspended Five-Light Electric Light Interlocking Signal, with socket Fig. 1, as shown.....	7-C-6769	74 00
Aa	as above, with hanger Fig. 1a.....	"	69 60
I	Socket, with plugs.....	5-C-7482	9 40
1a	Hanger, with plug. See Fig. 1, Plate 0965.....	20-C-7482	5 00
2	Pipe, 4", extra heavy, length 12".....	6-C-7482	4 40
	For each additional inch of pipe Fig. 2 add.....		12



TWO-LIGHT ELECTRIC LIGHT DWARF SIGNAL

TWO-LIGHT ELECTRIC LIGHT DWARF SIGNAL

The signal listed below includes lamps, number plate and all other fittings shown on the opposite plate.

When ordering specify voltage of lamps and number for number plate.

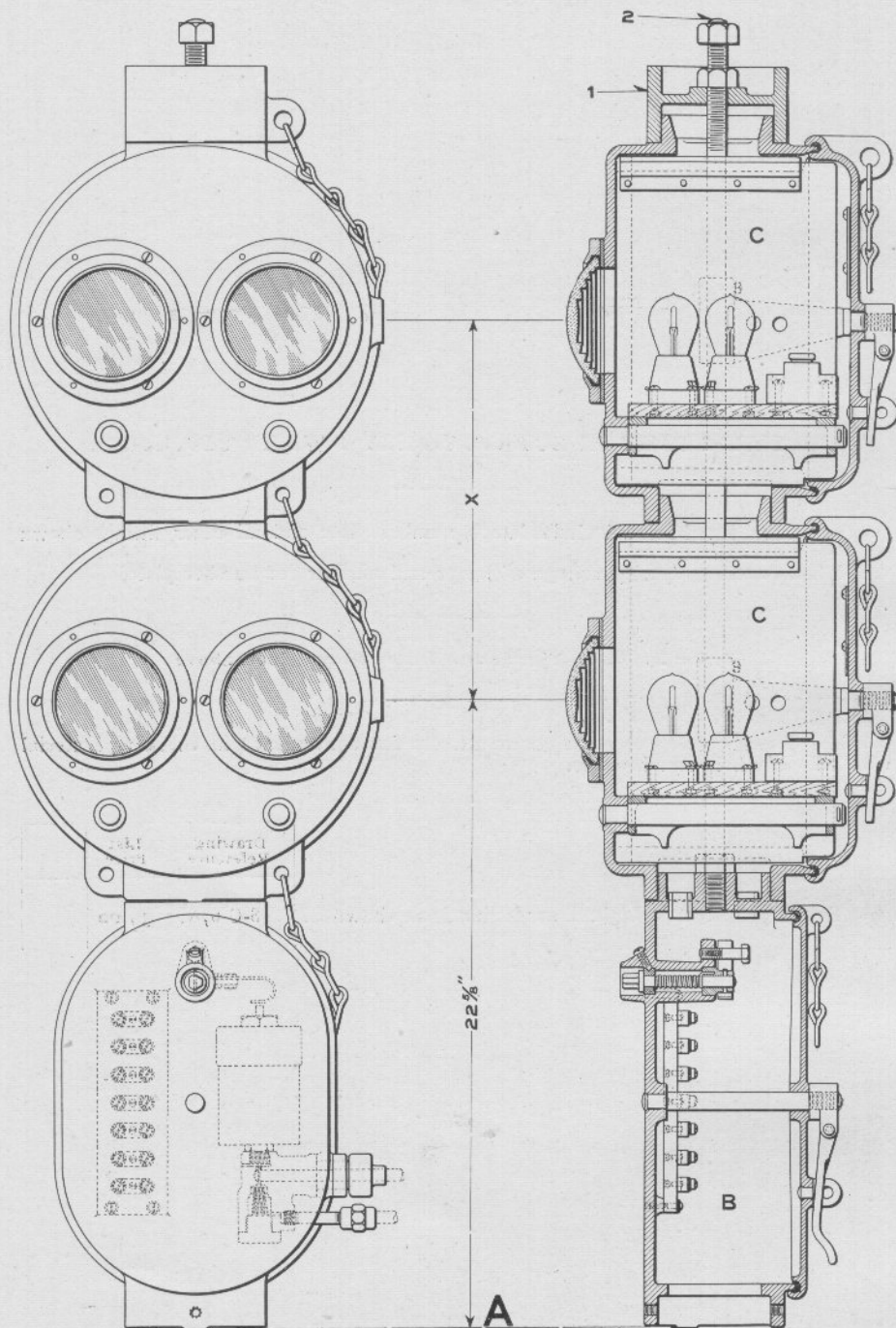
Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.

A Two-Light Electric Light Dwarf Signal, as shown...

Drawing Reference	List Price	
8-C-6769	39 00	



MULTIPLE UNIT ELECTRIC LIGHT SIGNAL WITH AUTOMATIC
STOP VALVE RELEASE (WITH A. C. MAGNETS)

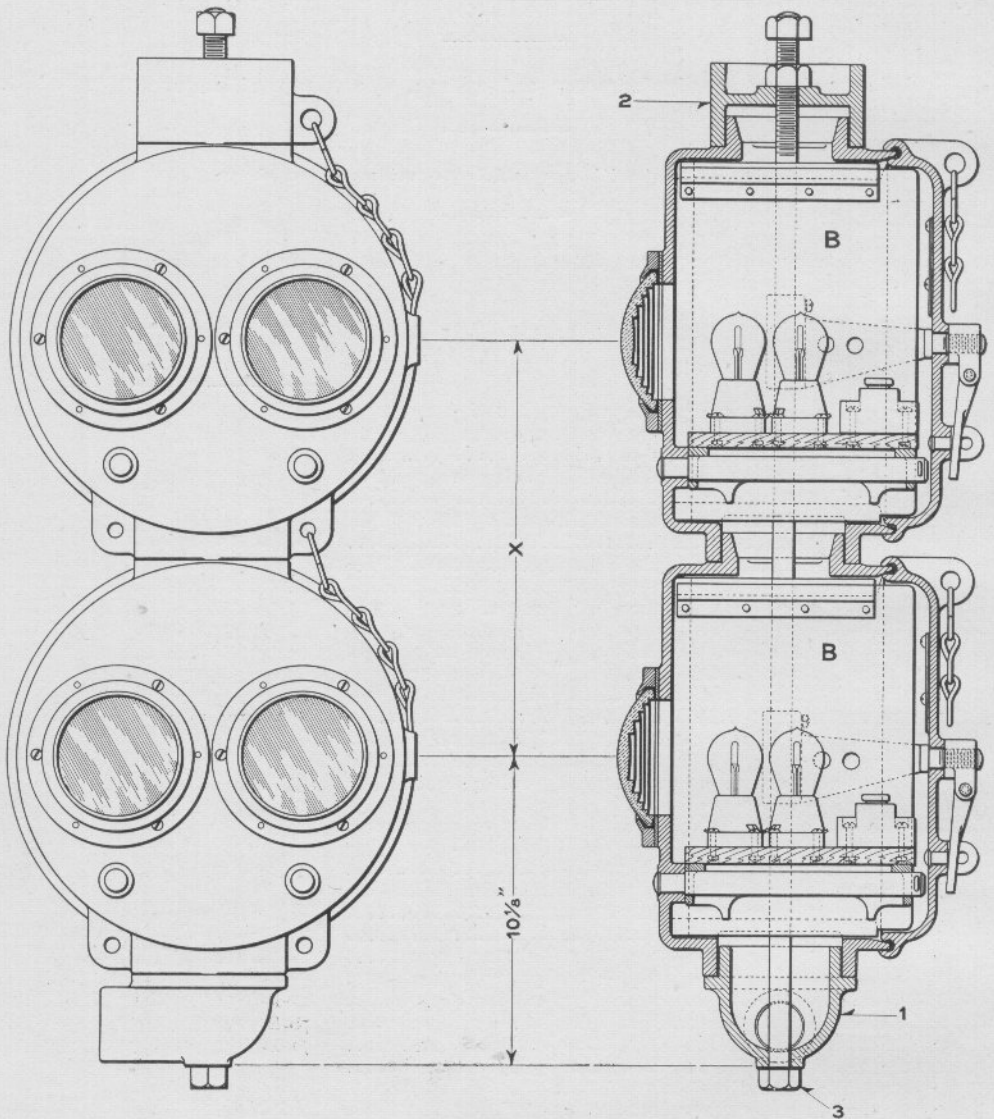
MULTIPLE UNIT ELECTRIC LIGHT SIGNAL WITH AUTOMATIC STOP VALVE RELEASE (WITH A. C. MAGNETS)

When ordering specify frequency and voltage, also voltage of lamps.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
A One Unit Electric Light Signal, (1-B, 1-C, 1-I, 1-2) ..	10-B-10325	82 50
Aa Two Unit Electric Light Signal, dimension "X" being 14"; (1-B, 2-C, 1-1, 1-2a)	1-B-10325	115 60
Ab as above, dimension "X" being 18"; (1-B, 2-C, 1-1, 1-2b, 1-3)	2-B-10325	116 60
Ac as above, dimension "X" being 20"; (1-B, 2-C, 1-2c, 1-4)	3-B-10325	116 90
Ad Three Unit Electric Light Signal, dimension "X" being 14"; (1-B, 3-C, 1-1, 1-2d)	4 B-10325	148 70
Ae as above, dimension "X" being 18"; (1-B, 3-C, 1-1, 1-2e, 2-3)		150 70
Af as above, dimension "X" being 20"; (1-B, 3-C, 1-1, 1-2f, 2-4)		151 30
Ag Four Unit Electric Light Signal, dimension "X" being 14"; (1-B, 4-C, 1-1, 1-2g)	7-B-10325	181 90
Ah as above, dimension "X" being 18"; (1-B, 4-C, 1-1, 1-2h, 3-3)		184 80
Aj as above, dimension "X" being 20"; (1-B, 4-C, 1-1, 1-2j, 3-4)		185 70
B Automatic Stop Valve Release, with valve, magnet and terminal board. When ordering specify frequency and voltage of magnets	1-C-7464	48 50
C Unit of Electric Light Signal, with chain. When ordering specify voltage of lamps	3 C-6769	33 00
1 Cap	2-C-5696	72
2 Special Bolt and Two Nuts, $\frac{3}{4}$ "x1'-8", for Fig. A....	77-B-8132	30
2a Special Bolt and Two Nuts, $\frac{3}{4}$ "x2'-9 $\frac{1}{2}$ ", for Fig. Aa..	68-B-8132	40
2b Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-2", for Fig. Ab....	69-B-8132	44
2c Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-4", for Fig. Ac....	70-B-8132	46
2d Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-11", for Fig. Ad...	71-B-8132	54
2e Special Bolt and Two Nuts, $\frac{3}{4}$ "x4'-3", for Fig. Ae....		58
2f Special Bolt and Two Nuts, $\frac{3}{4}$ "x4'-5", for Fig. Af....		60
2g Special Bolt and Two Nuts, $\frac{3}{4}$ "x5'-0 $\frac{3}{4}$ ", for Fig. Ag....	72-B-8132	68
2h Special Bolt and Two Nuts, $\frac{3}{4}$ "x5'-5", for Fig. Ah....		72
2j Special Bolt and Two Nuts, $\frac{3}{4}$ "x5'-7", for Fig. Aj....		74
3 Collar (not shown) for 18" spacing of lenses for Figs. Ab, Ae and Ah	13-C-5696	94
4 Collar (not shown) for 20" spacing of lenses for Figs. Ac, Af and Aj	14-C-5696	1 24



A

MULTIPLE UNIT ELECTRIC LIGHT SIGNAL WITH CAP

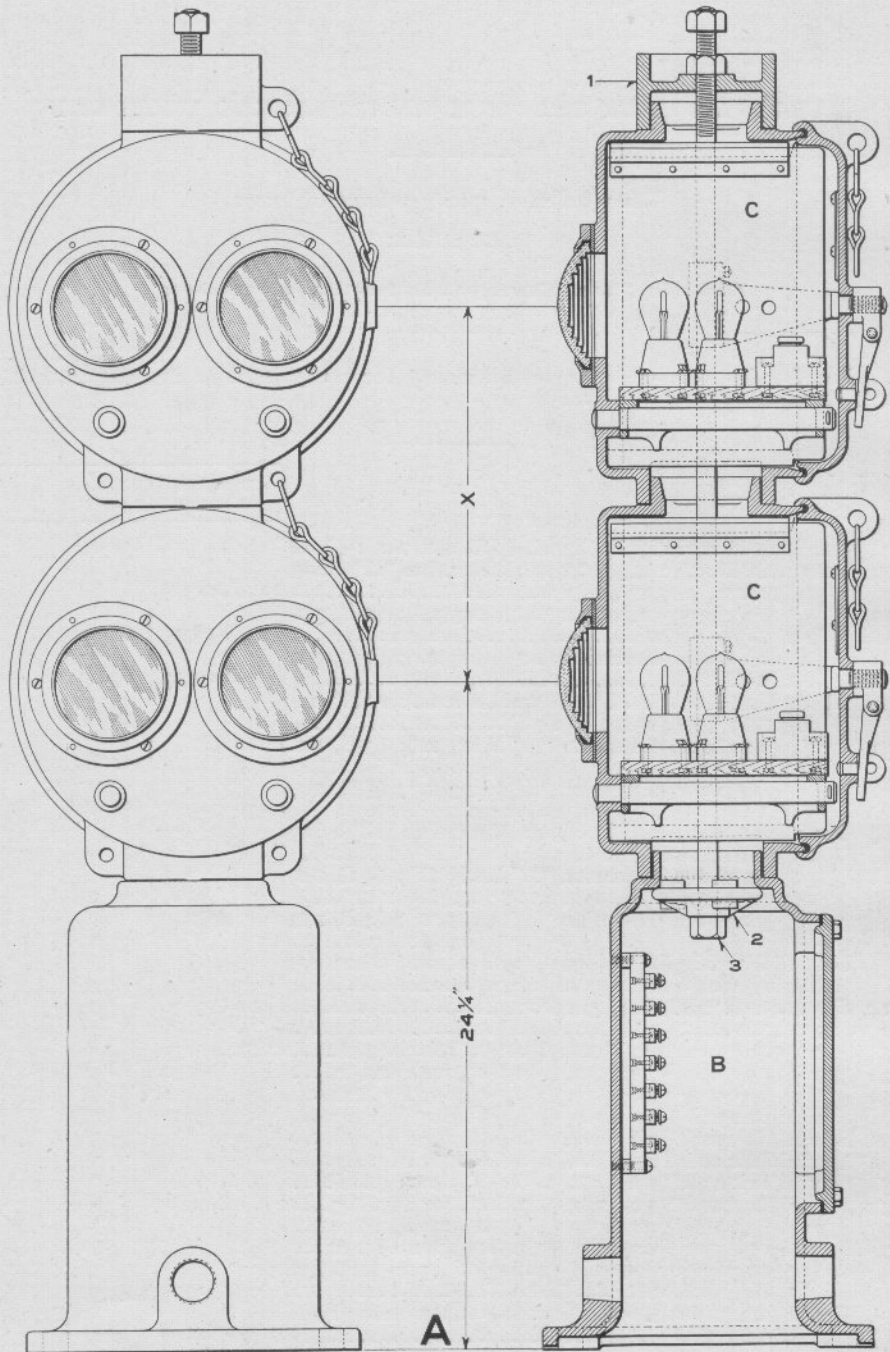
MULTIPLE UNIT ELECTRIC LIGHT SIGNAL WITH CAP

When ordering specify voltage of lamps.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	One Unit Electric Light Signal, (1-B, 1-1, 1-2, 1-3)...	19-B-10325	34 60
Aa	Two Unit Electric Light Signal, dimension "X" being 14"; (2-B, 1-1, 1-2, 1-3a).....	13-B-10325	67 70
Ab	as above, dimension "X" being 18"; (2-B, 1-1, 1-2, 1-3b, 1-4).....	14-B-10325	68 70
Ac	as above, dimension "X" being 20"; (2-B, 1-1, 1-2, 1-3c, 1-5).....	15-B-10325	69 00
Ad	Three Unit Electric Light Signal, dimension "X" being 14"; (3-B, 1-1, 1-2, 1-3d).....		100 80
Ae	as above, dimension "X" being 18"; (3-B, 1-1, 1-2, 1-3e, 2-4).....		102 80
Af	as above, dimension "X" being 20"; (3-B, 1-1, 1-2, 1-3f, 2-5).....		103 40
Ag	Four Unit Electric Light Signal, dimension "X" being 14"; (4-B, 1-1, 1-2, 1-3g).....		134 00
Ah	as above, dimension "X" being 18"; (4-B, 1-1, 1-2, 1-3h, 3-4).....		136 90
Aj	as above, dimension "X" being 20"; (4-B, 1-1, 1-2, 1-3j, 3-5).....		137 80
B	Unit of Electric Light Signal, with chain. When ordering specify voltage of lamps.....	3-C-6769	33 00
1	Cap for unit without stop release.....	21-C-5696	60
2	Cap.....	2-C-5696	72
3	Special Bolt and Two Nuts, $\frac{3}{4}$ "x1'-10", for Fig. A....	75-B-8132	30
3a	Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-0", for Fig. Aa....	74-B-8132	42
3b	Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-4", for Fig. Ab....		46
3c	Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-6", for Fig. Ac....		48
3d	Special Bolt and Two Nuts, $\frac{3}{4}$ "x4'-2", for Fig. Ad....		56
3e	Special Bolt and Two Nuts, $\frac{3}{4}$ "x4'-6", for Fig. Ae....		60
3f	Special Bolt and Two Nuts, $\frac{3}{4}$ "x4'-8", for Fig. Af....		62
3g	Special Bolt and Two Nuts, $\frac{3}{4}$ "x5'-4", for Fig. Ag....		70
3h	Special Bolt and Two Nuts, $\frac{3}{4}$ "x5'-8", for Fig. Ah....		74
3j	Special Bolt and Two Nuts, $\frac{3}{4}$ "x5'-10", for Fig. Aj....		76
4	Collar (not shown) for 18" spacing of lenses for Figs. Ab, Ae and Ah.....	13-C-5696	94
5	Collar (not shown) for 20" spacing of lenses for Figs. Ac, Af and Aj.....	14-C-5696	1 24



MULTIPLE UNIT ELECTRIC LIGHT DWARF SIGNAL
WITH BASE

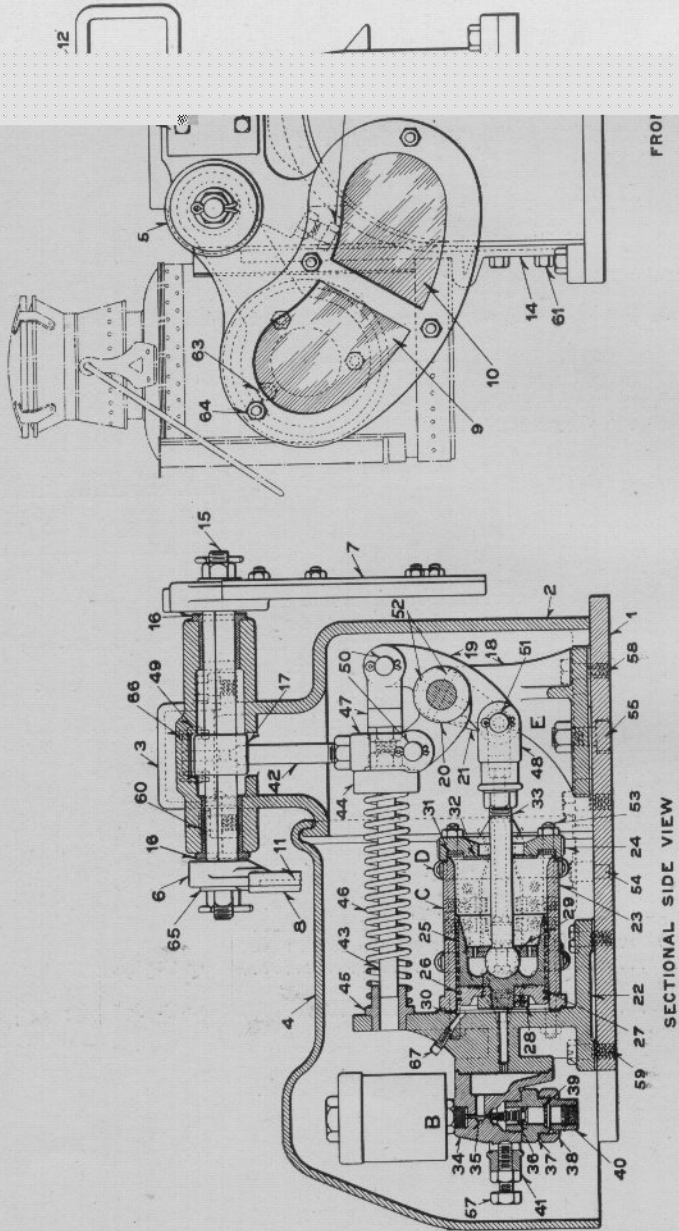
MULTIPLE UNIT ELECTRIC LIGHT DWARF SIGNAL WITH BASE

When ordering specify voltage of lamps.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
A One Unit Electric Light Dwarf Signal, (1-B, 1-C, 1-1, 1-2, 1-3).....	16-B-10325	47 50
Aa Two Unit Electric Light Dwarf Signal, dimension "X" being 14"; (1-B, 2-C, 1-1, 1-2, 1-3a).....	4-C-6769	80 60
Ab as above, dimension "X" being 18"; (1-B, 2-C, 1-1, 1-2, 1-3b, 1-4).....	"	81 60
Ac as above, dimension "X" being 20"; (1-B, 2-C, 1-1, 1-2, 1-3c, 1-5).....	"	81 90
B Base, with terminal board and door.....	"	13 00
C Unit of Electric Light Dwarf Signal, with chain. When ordering specify voltage of lamps.....	3-C-6769	33 00
1 Cap	2-C-5696	72
2 Washer	10-C-5696	50
3 Special Bolt and Two Nuts, $\frac{3}{4}$ "x1'-9", for Fig. A....	73-B-8132	30
3a Special Bolt and Two Nuts, $\frac{3}{4}$ "x2'-10- $\frac{1}{2}$ ", for Fig. Aa....	76-B-8132	42
3b Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-3", for Fig. Ab....		46
3c Special Bolt and Two Nuts, $\frac{3}{4}$ "x3'-5", for Fig. Ac....		48
4 Collar (not shown) for 18" spacing of lenses for Fig. Ab.....	13-C-5696	94
5 Collar (not shown) for 20" spacing of lenses for Fig. Ac.....	14-C-5696	1 24



A ONE-ARM 60 DEGREE ELECTRO-PNEUMATIC DWARF SIGNAL

ONE-ARM 60 DEGREE ELECTRO-PNEUMATIC DWARF SIGNAL

The signal listed below includes front and back spectacles, glass, blades and all other fittings shown on the opposite plate.

It does not include lamp or number plate, which must be ordered separately. When ordering specify resistance.

Order by Plate, Figure and Instructions given above

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
A One Arm 60° Electro-Pneumatic Dwarf Signal, (no lamp), as shown, 13" from base of rail to centre line of blade, (1-B, 1-C, 1-D, 1-E, 1-I, 1-2a, 1-4, 1-5, 1-6, 1-12a, 1-14, 1-15, 1-41a, 1-42a, 1-43a, 1-44, 1-45, 1-46, 2-55, 4-56, 4-59, 2-61).....	1-C-6916	106 00
B Valve and Magnet, (1-Ba, 1-Bb).....	1-A-2583	30 00
Ba Valve, with pin valve, spring, valve body nut, nut, screen and union swivel, (1-34, 1-35a, 1-37, 1-38, 1-39, 1-40).....	"	12 00
Bb Magnet only. When ordering specify resistance.....	1-B-8342	18 00
C Cylinder, with head and base, head, piston, cage, piston rings, nuts, piston rod, washers, studs and plug, (1-22, 1-23, 1-24, 1-25, 1-26, 2-27, 1-28, 1-29, 1-30, 2-31, 1-32, 1-33a, 4-53, 1-67).....	6-A-2585	24 50
Ca as above, with valve and magnet, (1-C, 1-B).....	"	54 80
D Plunger Signal Circuit Controller. For details see Plate 0979.....	9-C-4440	9 40
E Bearing, with crank, shaft, operating arm and pins, (1-18, 1-19, 1-20, 1-21, 2-52).....		5 30
1 Base.....	4-C-6924	4 40
2 Combined Post and Bearing.....	3-C-6924	7 20
2a as above, with cap, screw and bolts, (1-2, 1-3, 1-56, 2-60).....	"	8 00
3 Cap for combined post and bearing Fig. 2.....	5-C-6924	34
4 Cover.....	6-C-6924	3 54
5 Two-Light 60° Front Spectacle, with roundel ring and bolts.....	90-C-7241	1 46
6 Back Spectacle, with ring and bolts.....	38-B-7654	84
7 Roundel Ring for front spectacle Fig. 5.....	86-B-7632	16
8 Roundel Ring for back spectacle Fig. 6.....	6-B-7632	06
9 Red Glass for front spectacle Fig. 5.....	17-B-8468	74
9a Purple Glass for front spectacle Fig. 5.....	"	36
10 Green Glass for front spectacle Fig. 5.....	"	36
11 Blue Glass for back spectacle Fig. 6.....	2-B-8468	24
12 Rubber Blade only (not painted).....	47-B-5672	72
12a as above, with plate and bolts, (1-12, 1-13, 2-62).....	"	88
Note—For painting blade add		40
13 Blade Plate only.....	13-C-1489	08
14 Lamp Bracket.....	134-B-8069	72
15 Semaphore Shaft, with nuts and cotters.....	51-B-8026	1 54

ONE-ARM 60 DEGREE ELECTRO-PNEUMATIC DWARF SIGNAL

Order by Plate, Figure and Instructions given

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

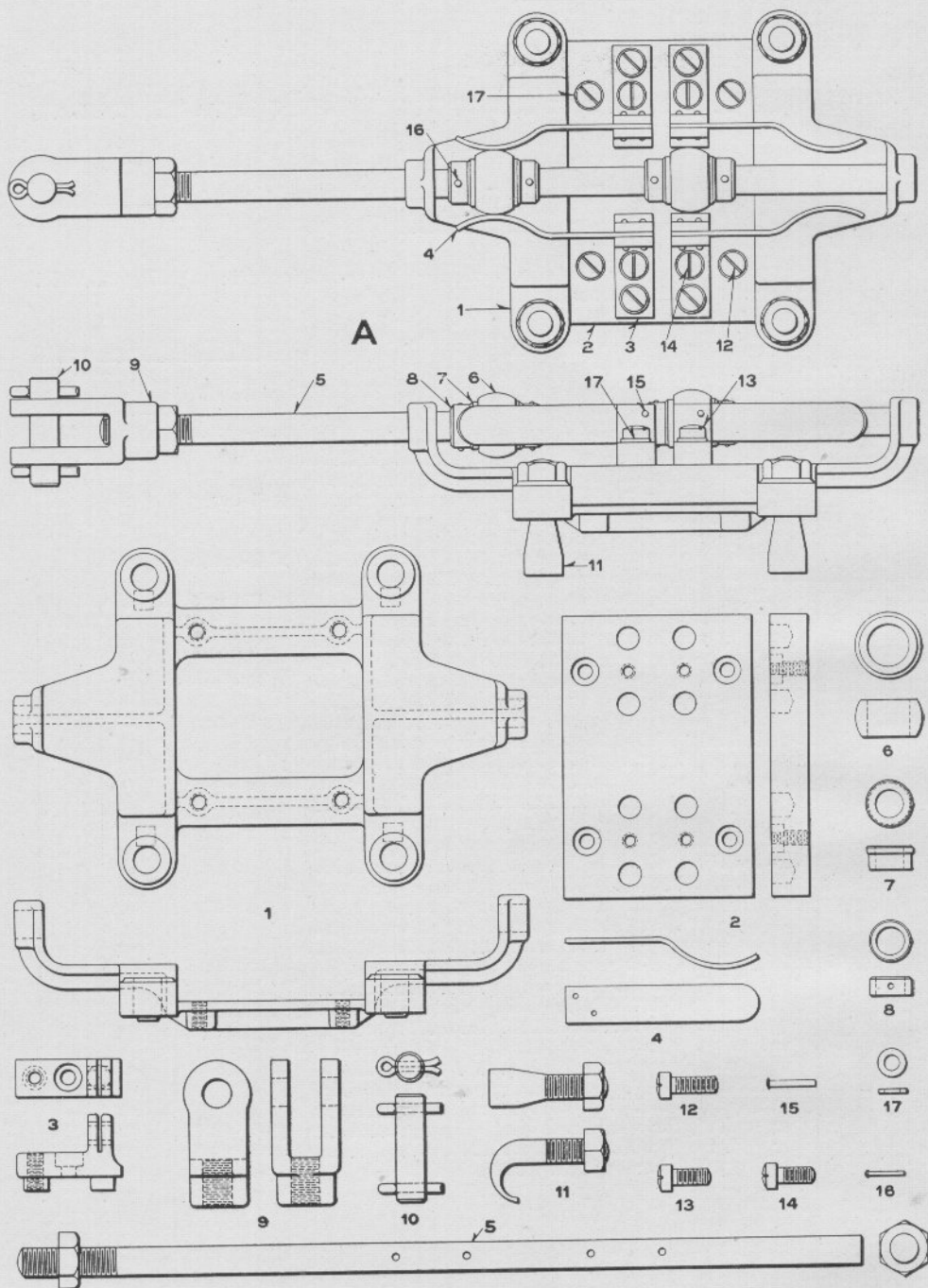
Fig.		Drawing Reference	List Price
16	Journal	5-B-8093	30
17	Semaphore Crank.....	31-B-8102	1 50
17a	as above, with pin and washer, (1-17, 1-49, 2-66).....	"	1 62
18	Bearing	7-C-6924	1 62
19	Crank	1-C-6924	2 06
20	Crank Shaft.....	2-C-6924	18
21	Operating Arm for operating circuit controller Fig. D.	19-B-8192	60
22	Cylinder Head and Base.....	1-C-5033	4 54
23	Cylinder	7-B-8194	5 14
24	Cylinder Head.....	34-B-8422	64
25	Piston only.....	14-B-8328	3 20
26	Cage for piston rings Fig. 27.....	6-C-2218	1 40
27	Piston Ring.....	1-B-8197	96
28	Nut, with machine screw, for fastening cage Fig. 26 to piston Fig. 25.....	104-B-8109	28
29	Ring Nut for fastening piston rod Fig. 33 to piston Fig. 25.....	67-B-8082	54
30	Fibre Gasket.....	4-B-8078	06
31	Leather Gasket.....	8-B-8078	12
32	Washer for opening in cylinder head Fig. 24.....	9-B-7824	02
33	Piston Rod, with 3/4" thin nut.....	9-B-8195	46
33a	as above, with screw jaw, (1-33, 1-48a).....	"	1 02
34	Valve Body.....	9-C-2218	3 12
35	Pin Valve.....	15-B-7625	30
35a	as above, with spring, (1-35, 1-36).....	"	68
36	Spring for pin valve Fig. 35.....	7-B-7625	38
37	Valve Body Nut.....	5-C-2218	1 06
38	Nut for union swivel Fig. 49.....	6-B-8082	36
39	Screen	7-C-2218	06
40	Union Swivel.....	1-C-2218	30
41	Yoke only.....	2-B-8174	24
41a	as above with bolt, (1-41, 1-57).....	24-B-8280	36
42	Up and Down Rod, with nut.....	304-B-8051	1 84
42a	as above, with screw jaw, (1-42, 1-47a).....	"	2 98
43	Spring Rod, with two nuts.....	5-C-5034	16
43a	as above, with screw jaw, (1-43, 1-47a).....	"	1 30
44	Spring Socket.....	3-B-8084	06
45	Spring Socket.....	15-B-8084	06
46	Spring	61-B-7770	58
47	Screw Jaw only, for up and down rod Fig. 42 and spring rod Fig. 43.....	32-B-7742	1 00
47a	as above, with pin, (1-47, 1-50).....	"	1 08

ONE-ARM 60 DEGREE ELECTRO-PNEUMATIC DWARF SIGNAL

Order by Plate, Figure and Instructions given

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

	Drawing Reference	List Price
Fig. 48 Screw Jaw only, for piston rod Fig. 33.....	11-B-7742	46
48a as above, with pin, (1-48, 1-51).....	"	54
49 Pin, $\frac{1}{2}$ "x1-15/16", with two $\frac{1}{8}$ "x1" cotters, for fasten- ing up and down rod Fig. 42 to crank Fig. 17.....	35-B-10215	08
50 Pin, $\frac{3}{8}$ "x2-3/16", with two $\frac{3}{16}$ "x1- $\frac{1}{8}$ " cotters, for fastening up and down rod Fig. 42 to crank Fig. 19, and spring rod Fig. 43 to crank Fig. 19.....	26-B-10216	08
51 Pin, $\frac{5}{8}$ "x2-5/16", with two $\frac{3}{16}$ "x1- $\frac{1}{8}$ " cotters, for fastening piston rod Fig. 33 to crank Fig. 19.....	40-B-10216	08
52 Steel Pin, 5/16"x1- $\frac{3}{4}$ ", for fastening crank Fig. 19 and operating arm Fig. 21 to shaft Fig. 20.....		02
53 Stud, $\frac{3}{8}$ "x7", with three nuts, for fastening cylinder heads Figs. 22 and 24 to cylinder Fig. 23.....	58-B-8114	10
54 Stud, $\frac{5}{8}$ "x1-23/32", with one $\frac{3}{16}$ "x1- $\frac{1}{8}$ " cotter, for fastening cover Fig. 4 to base Fig. 1.....	2-B-8071	06
55 Bolt and Nut, $\frac{5}{8}$ "x1- $\frac{1}{2}$ ", for fastening bearing Fig. 18 to base Fig. 1.....		10
56 Cap Screw, $\frac{1}{2}$ "x2- $\frac{3}{4}$ ", with nut, for adjusting sema- phore crank Fig. 17.....		10
57 Special Bolt and Nut, $\frac{1}{2}$ "x1- $\frac{3}{4}$ ", for yoke Fig. 41.....	18-B-8280	06
58 Tap Bolt, $\frac{1}{2}$ "x1- $\frac{1}{4}$ ", for fastening combined post and bearing Fig 2 to base Fig. 1.....		04
59 Special Tap Bolt, $\frac{1}{2}$ "x1- $\frac{1}{8}$ ", for fastening cylinder head and base Fig. 22 to base Fig. 1.....	5-B-8280	04
60 Tap Bolt, $\frac{3}{8}$ "x1", for fastening cap Fig. 3 to combined post and bearing Fig.2.....		04
61 Tap Bolt, $\frac{3}{8}$ "x $\frac{7}{8}$ ", for fastening lamp bracket Fig. 14 to combined post and bearing Fig. 2.....		04
62 Bolt and Nut, $\frac{1}{4}$ "x1", for fastening blade Fig. 12 to spectacle Fig. 5.....		04
63 Bolt and Nut, $\frac{1}{4}$ "x $\frac{3}{4}$ ", for fastening roundel ring Fig. 8 to back spectacle Fig. 6.....		04
64 Bolt and Nut, $\frac{1}{4}$ "x $\frac{3}{8}$ ", for fastening roundel ring Fig. 7 to front spectacle Fig. 5.....		04
65 Washer, 11/16", for semaphore shaft Fig. 15.....	35-B-7826	01
66 Washer, $\frac{1}{2}$ ", for pin Fig. 49.....	18 B-7826	02
67 Special Plug, $\frac{3}{8}$ ", for cylinder head and base Fig. 22.....	5-B-9511	06



PLUNGER CIRCUIT CONTROLLER FOR ELECTRO-PNEUMATIC
DWARF SIGNAL

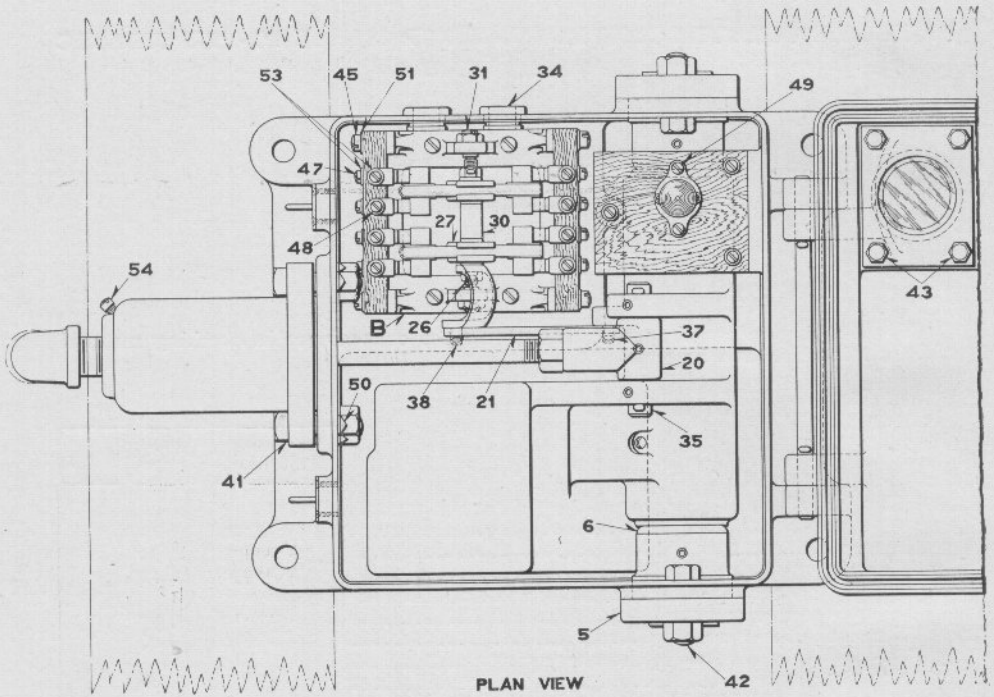
PLUNGER CIRCUIT CONTROLLER FOR ELECTRO-PNEUMATIC DWARF SIGNAL

For signal see Plate 0977.

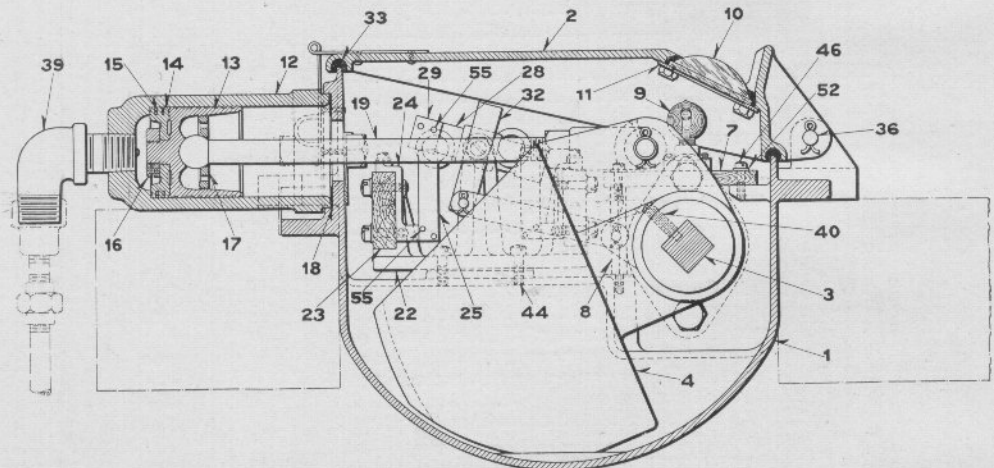
Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	Plunger Circuit Controller for electro-pneumatic dwarf signal, as shown.....	9-C-4440	9 40
1	Frame	2-C-4440	1 30
2	Terminal Base.....	2-C-1970	1 20
2a	as above, with terminal connectors, contact springs and screws, (1-2, 4-3b, 4-14).....	"	5 40
3	Terminal Connector only.....	41-B-8064	26
3a	as above, with contact spring and rivets, (1-3, 1-4, 2-15).....	"	94
3b	as above, with screws and washers, (1-3a, 1-13, 1-14, 1-17).....	"	98
4	Contact Spring only.....	107-B-8385	36
5	Contact Rod, with nut.....	7-C-5034	12
5a	as above, with contact rings, hard rubber bushings, collars, screw jaw and rivets, (1-5, 2-6, 4-7, 4-8, 1-9a, 4-16).....	"	2 40
6	Contact Ring.....	116-B-8350	14
7	Hard Rubber Bushing.....	3-B-8100	04
8	Collar	106-B-8350	12
9	Screw Jaw only.....	30-B-7742	42
9a	as above, with pin, (1-9, 1-10).....	"	48
10	Pin, $\frac{3}{8}$ "x1-7/16", with two cotters, for jaw Fig. 9....	5-B-10209	06
11	Hook Bolt and Nut, 5/16"x1-3/8", for fastening circuit controller Fig. A to studs on cylinder of dwarf signal	6-B-7913	10
12	Fil. Hd. B. Mach. Screw, No. 12-32x $\frac{5}{8}$ ", for fastening terminal base Fig. 2 to frame Fig. 1.		02
13	Fil. Hd. B. Mach. Screw, No. 12-32x $\frac{1}{2}$ ", for terminal connector Fig. 3.....		02
14	Fil. Hd. B. Mach. Screw, No. 12-24x $\frac{1}{2}$ ", for fastening terminal connector Fig. 3 to terminal base Fig. 2.		02
15	Brass Rivet, No. 14x $\frac{1}{2}$ ", for fastening contact springs Fig. 4 to terminal connector Fig.3.....		01
16	Steel Rivet, No. 45x $\frac{5}{8}$ ", for fastening collars Fig. 8 to contact rod Fig. 5.....		01
17	Washer for screws Figs. 12 and 13.....	4-B-7828	01



A



AUTOMATIC TRAIN STOP

AUTOMATIC TRAIN STOP

For application see Plate 0983.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price
A Automatic Train Stop, with electric light indication, as shown, (1-B, 1-1a, 1-2a, 1-3, 1-4a, 2-6, 1-7, 1-8, 1-9, 1-12a, 1-18, 1-21, 1-36, 2-41, 4-44, 3-46, 2-49, 1-50, 3-52).....	1-C-5692	102 00
Aa Automatic Train Stop, without electric light indication, (1-B, 1-1c, 1-2c, 1-3, 1-4a, 2-6, 1-12a, 1-18, 1-21, 1-36, 2-41, 4-44, 1-50).....	2-C-5692	95 00
B Circuit Controller only, (1-22a, 2-23a, 1-26a, 8-45, 8-51)	1-C-7801	23 50
1 Box, with staples, for Fig. A.....	1-C-7804	19 90
1a as above, with glands, bushings and bolts, (1-1, 2-5, 2-34, 4-42).....	"	24 40
1b Box, with staples, for Fig. Aa.....	4-C-7804	19 50
1c as above, with glands, bushings and bolts, (1-1b, 2-5, 2-34, 4-42).....	"	24 00
2 Cover, with hasp, for Fig. A.....	2-C-7804	6 80
2a as above, with lens, lens ring, packing and tap bolts, (1-2, 1-10, 1-11, 1-33, 4-43).....	"	8 80
2b Cover, with hasp, for Fig. Aa.....	16-C-7804	6 30
2c as above, with packing, (1-2b, 1-33).....	"	7 00
3 Shaft	13-C-7804	1 36
4 Counterweight	10-C-7804	13 56
4a as above, with pin, stud and set screw, (1-4, 1-35, 1-37, 1-40).....	"	14 16
5 Gland	3-C-7804	1 50
6 Journal	34-B-8093	3 54
7 Lamp Support for Fig. A.....	11-C-7804	12
8 Stud for supporting lamp support Fig. 7.....	40-B-8115	18
9 Lamp and Socket. Specify voltage.....		1 00
10 Lens for cover Fig. 2.....	22a-B-8276	52
11 Lens Ring for lens Fig. 10.....	45-B-7436	32
12 Cylinder only.....	16-B-8194	4 70
12a as above, with piston, cage, piston rings, nuts, gasket, piston rod and street ell and nipple, (1-12, 1-13, 1-14, 2-15, 1-16, 1-17, 1-18, 1-19a, 1-39).....	"	14 40
13 Piston	14-B-8328	3 20
14 Cage for piston rings Fig. 15.....	6-C-2218	1 40
15 Piston Ring	1-B-8197	96

AUTOMATIC TRAIN STOP

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

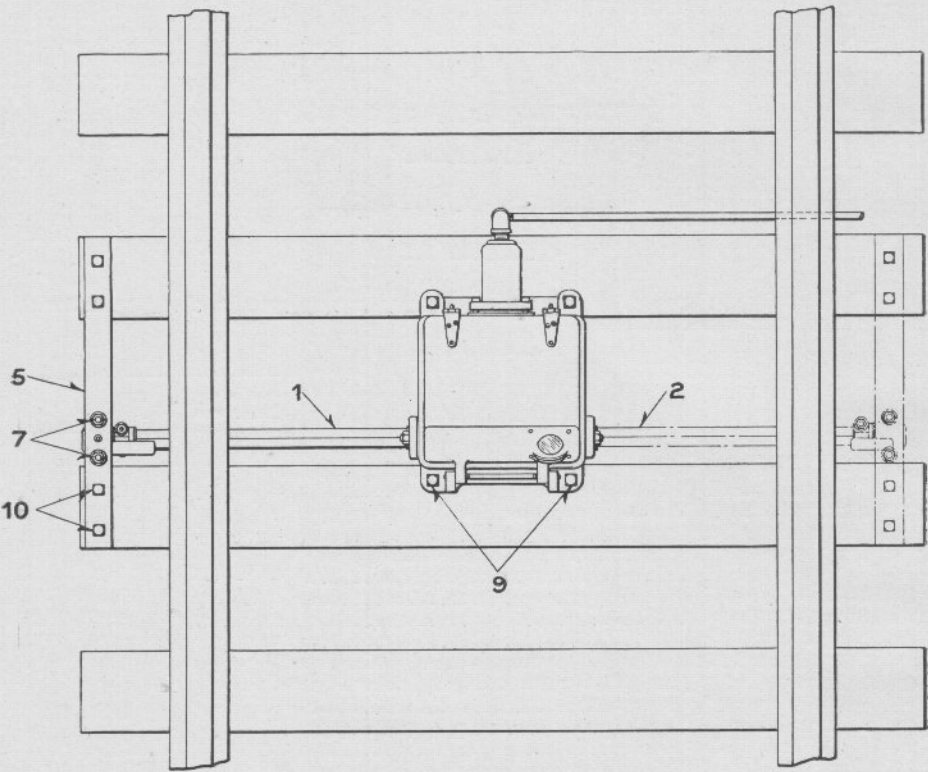
	Drawing Reference	List Price	
Fig.			
16 Nut, with machine screw, for fastening cage Fig. 14 to piston Fig. 13.....	104-B-8109	30	
17 Ring Nut for fastening piston rod Fig. 19 to piston Fig. 13.....	67-B-8082	60	
18 Leather Gasket for cylinder Fig. 12.....	394-B-8078	20	
19 Piston Rod, with nut.....	45-B-8195	56	
19a as above, with screw eye, (1-19, 1-20).....	"	1 16	
20 Screw Eye for piston rod Fig. 19.....	28-B-8150	60	
21 Operating Link for operating circuit controller Fig. B.	5-C-7801	24	
22 Base for circuit controller Fig. B.....	4-C-7801	3 20	
22a as above, with trunnions, (1-22, 2-31).....	"	3 40	
23 Contact Spring Board only.....	56-B-9968	64	
23a as above, with terminal connectors, contact springs, screws and washers, (1-23, 2-24a, 2-24b, 8-47, 4-48, 12-53).....	"	5 10	
24 Terminal Connector only.....	136-B-8064	48	
24a as above, with right hand contact spring and rivets, (1-24, 1-25, 2-55).....	"	96	
24b as above, with left hand contact spring and rivets, (1-24, 1-25a, 2-55).....	"	96	
25 R. H. Contact Spring.....	691-B-8385	30	
25a L. H. Contact Spring.....	692-B-8385	30	
26 Shaft, with nuts.....	6-C-7801	48	
26a as above, with cast washers, contact arms, separator and operating arm, (1-26, 4-27, 2-28a, 1-30, 1-32a).....	"	5 44	
27 Cast Washer for contact arm Fig. 28.....	30-B-8047	46	
28 Contact Arm only.....	452-B-8750	74	
28a as above, with contact bands and rivets, (1-28, 2-29, 4-55).....	"	1 68	
29 Contact Band.....	693-B-8385	24	
30 Separator.....	206-B-8072	10	
31 Trunnion, with nut.....	123-B-8378	12	
32 Operating Arm only.....	7-C-7801	1 10	
32a as above, with stud, (1-32, 1-37).....	"	1 24	
33 Flax Packing, $\frac{3}{8}$ "x $\frac{3}{8}$ "x5'-0", for covers Figs. 2 and 2b.		48	
34 Hard Rubber Bushing for wire opening in boxes Figs. 1 and 1b.....	81-B-8100	24	
35 Pin, $\frac{3}{4}$ "x4- $\frac{3}{8}$ ", with two cotters, for fastening piston rod Fig. 19a to counterweight Fig. 4.....	30-B-10221	10	

AUTOMATIC TRAIN STOP

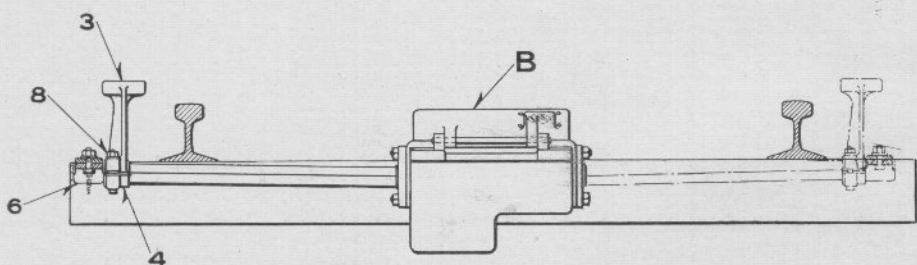
Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
36	Pin, $\frac{1}{2}$ "x11- $\frac{1}{4}$ ", with two cotters, for fastening covers Figs. 2 and 2b to boxes Figs. 1 and 1b.....	117-B-8058	22
37	Stud, $\frac{5}{16}$ "x1- $\frac{1}{4}$ ", with one cotter, for fastening operating link Fig. 21 to counterweight Fig. 4.....	128-B-8114	10
38	Stud, $\frac{5}{16}$ "x $\frac{7}{8}$ ", with one cotter, for fastening operating link Fig. 21 to operating arm Fig. 32.....	126-B-8114	10 28
39	Street Ell and Nipple, (1-39a, 1-39b).....		18
39a	Street Ell only, 1".....		10
39b	Nipple only, 1"x2- $\frac{1}{4}$ ".....		10
40	Special Set Screw, $\frac{3}{8}$ "x1- $\frac{1}{2}$ ", for counterweight Fig. 4.....	302-B-8098	12
41	Bolt and Nut, $\frac{5}{8}$ "x2- $\frac{1}{4}$ ", for fastening cylinder Fig. 12 to box Fig. 1 or 1b.....		10
42	Bolt and Nut, $\frac{5}{8}$ "x2- $\frac{1}{8}$ ", for fastening gland Fig. 5 to box Fig. 1 or 1b.....		10
43	Tap Bolt, $\frac{3}{8}$ "x $\frac{1}{2}$ ", for fastening lens ring Fig. 11 to cover Fig. 2.....		03
44	Fil. Hd. B. Mach. Screw, $\frac{5}{16}$ "-18x1", for fastening circuit controller Fig. B to box Fig. 1 or 1b.....		06
45	Fil. Hd. B. Mach. Screw, $\frac{1}{4}$ "x1- $\frac{1}{8}$ ", for fastening contact spring board Fig. 23 to base Fig. 22.....		04
46	Fil. Hd. B. Mach. Screw, $\frac{1}{4}$ "x1", for fastening lamp support Fig. 7 to box Fig. 1.....		04
47	Fil. Hd. B. Mach. Screw, No. 10-32x1- $\frac{1}{8}$ ", for fastening terminal connector Fig. 24 to contact spring board Fig. 23.....		04
48	Fil. Hd. B. Mach. Screw, No. 10-32x $\frac{3}{8}$ ", for terminal connectors Fig. 24.....		02
49	Rd. Hd. B. Wood Screw, No. 4x $\frac{3}{4}$ ", for fastening lamp and socket Fig. 9 to lamp support Fig. 7.....		01
50	Nut Lock for bolt Fig. 41.....	82-B-8486	24
51	Washer, $\frac{1}{4}$ ", for screw Fig. 45.....	6-B-7828	02
52	Washer, $\frac{1}{4}$ ", for screw Fig. 46.....	1-B-7824	01
53	Washer for screws Figs. 47 and 48.....	5-B-7828	01
54	Special Plug, $\frac{1}{4}$ ", for cylinder Fig. 12.....	6-B-9511	04
55	Rd. Hd. Rivet, No. 14x $\frac{3}{4}$ ", for fastening contact springs Figs. 25 and 25a to terminal connector Fig. 24, and contact band Fig. 29 to contact arm Fig. 28.....	23-B-10301	01



PLAN VIEW



SECTIONAL END VIEW

A

LAYOUT OF AUTOMATIC TRAIN STOP

LAYOUT OF AUTOMATIC TRAIN STOP

For Automatic Train Stop see Plate 0981.

Order by Plate and Figure

The drawing references are shown merely for convenience in checking material with shipping lists and invoices.

Fig.	Drawing Reference	List Price	
A	Layout of Automatic Train Stop, with electric light indication and one trip, as shown in full lines.....	1-C-7454	110 00
Aa	as above, without electric light indication.....	"	103 00
Ab	Layout of Automatic Train Stop, with electric light indication and two trips, as shown in full and dot and dash lines.....	2-C-7454	120 00
Ac	as above, without electric light indication.....	"	113 00
B	Automatic Train Stop, with electric light indication, for Figs. A and Ab. For details see Fig. A, Plate 0981	1-C-5692	102 00
Ba	as above, without electric light indication, for Figs. Aa and Ac. For details see Fig. Aa, Plate 0981	2-C-5692	95 00
1	Shaft for layout Figs. A and Ab.....	8-C-7804	3 12
1a	as above, for layout Fig. Aa.....	17-C-7804	4 20
2	Shaft for layout Fig. Ab.....	12-C-7804	3 76
2a	as above, for layout Fig. Ac.....	18-C-7804	4 14
3	Stop Arm only.....	7-C-7804	2 76
3a	as above, with cap and bolts, (1-3, 1-4, 2-8) ..	"	4 40
4	Stop Arm Cap.....	6-C-7804	1 36
5	Strap for supporting bearing Fig. 6.....	9-C-78c4	94
5a	as above, with bearing, bolts and lag screws, (1-5, 1-6, 2-7, 4-10).....	"	2 16
6	Bearing	5-C-7804	76
7	Bolt and Nut, $\frac{5}{8}$ "x2", with lock washer, for fastening bearing Fig. 6 to strap Fig. 5.....		10
8	Bolt and Nut, $\frac{1}{2}$ "x3- $\frac{3}{4}$ ", with lock washer, for fastening cap Fig. 4 to stop arm Fig. 3.....		10
9	Lag Screw, $\frac{3}{4}$ "x4- $\frac{1}{2}$ ", for fastening automatic train stops Figs. B and Ba to ties.....		08
10	Lag Screw, $\frac{5}{8}$ "x3- $\frac{1}{2}$ ", for fastening strap Fig. 5 to ties.....		06

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