



A—For 4 Volt Operation  
 B—For 7.5-8 Volt Operation  
 C—For 10 Volt Operation  
 D—For 12 Volt Operation  
 Type SA Direct-Current Signal Mechanism

## Type SA Direct-Current Signal Mechanism With Stepped Lens, Slide Arrangement and Articulated Contacts

**Note:** Mechanisms shown on this plate may be used in either high or dwarf signals.

If other color combinations than those listed are desired or if signals are to operate on voltages other than those listed, same will be furnished when specified.

This mechanism is equipped with eight independent contacts, that is, duplicate sets of independent front and back articulated contacts for both green and yellow positions.

Lamps Fig. 23 are not included with mechanisms complete and must be ordered separately.

For other direct-current mechanisms see Plate H2649 to H2653.

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
A	Type SA Direct-Current Signal Mechanism Complete, as shown, equipped with cover glass Fig. 32, for use with stepped lens signals. For 4 volt operation, arranged to give three indications, namely: green, red and yellow . . . . .	
A1	as above, except with 1 ohm resistor, Fig. H . . . . .	53052-40 Gr. 43
A2	same as Fig. A, except with 5 ohm resistor, Fig. H1 . . . . .	53052-41 Gr. 43
B	Type SA Direct-Current Signal Mechanism Complete, equipped with cover glass Fig. 32, for use with stepped lens signals. For 7.5-8 volt operation, arranged to give three indications, namely: green, red and yellow . . . . .	
B1	as above, except with 1 ohm resistor, Fig. H . . . . .	53052-40 Gr. 1
B2	same as Fig. B, except with 5 ohm resistor, Fig. H1 . . . . .	53052-41 Gr. 1
C	Type SA Direct-Current Signal Mechanism Complete, equipped with cover glass Fig. 32, for use with stepped lens signals. For 10 volt operation, arranged to give three indications, namely: green, red and yellow . . . . .	
C1	as above, except with 1 ohm resistor, Fig. H . . . . .	53052-40 Gr. 29
C2	same as Fig. C, except with 5 ohm resistor, Fig. H1 . . . . .	53052-41 Gr. 29
D	Type SA Direct-Current Signal Mechanism Complete, equipped with cover glass Fig. 32, for use with stepped lens signals. For 12 volt operation, arranged to give three indications, namely: green, red and yellow . . . . .	

*(Continued on following page)*

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Fig. No.	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
D1	as above, except with 1 ohm resistor, Fig. H.....	53052-40 Gr. 15
D2	same as Fig. D, except with 5 ohm resistor, Fig. H1.....	53052-41 Gr. 15
E	Reflector Unit Complete, comprises parts Figs. 8 to 14, and 24 to 26, inclusive. Does not include lamp Fig. 23 which must be ordered separately.....	53056-1 Gr. 1
F	Case Complete, includes all parts for housing mechanism. Does not include reflector unit, terminal block, glass Fig. 32 or glass case Fig. 41.....	53270-1 Gr. 3
G	Contact Group Complete, as shown.....	56130 Gr. 2
H	Resistance Unit Complete, 1 ohm, 2.5 amps., with mounting screws.....	55945-1 Gr. 3
H1	as above, except 5 ohm, 1 amp.....	55945-1 Gr. 1
1	Screw, No. 14-40 x 5/8" lg., headless, used as stop for counterweight.....	5100-10
2	Screw, No. 14-40 x 7/8" lg., headless, used as stop for armature....	5100-6
3	Pin, .125" dia. x 7/8" lg., for counterweight.....	2644-5
4	Counterweight Complete, for mechanism.....	53703-1 Gr. 1
5	Armature Complete, with miniature roundels, for three indication unit, giving green, red and yellow indications. Includes spectacles, fly wheel, vane and all riveted parts mounted on shaft.....	53055-8 Gr. 1
5a	as above, except for two indication unit giving purple and yellow indications.....	53055-8 Gr. 2
5b	same as Fig. 5, except for two indication unit giving red and yellow indications.....	53055-8 Gr. 3
6	Nut, No. 14-40 x 1/8" th. hex., for screws, Figs. 1 and 2.....	53084-1
7	Nut, No. 8-32 x 1/8" th. hex., for fastening fingers to counterweight.....	3891-1
8	Holder, for reflector unit Fig. E, includes studs for mounting receptacle riveted in place.....	53068-2 441-120
9	Washer, for use between pad and holder, for reflector.....	590-25
10	Spring, for receptacle.....	586-32

(Continued on following page)

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Fig. No.	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
11	Lamp Receptacle Complete, for details and order references see Plate H2669 . . . . .	53058-5 Gr. 2
12	Nut, No. 10-32 hex., for stud on holder . . . . .	46277-1
13	Nut, No. 10-32 cup shape, for spring . . . . .	20673-2
14	Washer, for use behind reflector . . . . .	1533-32
15	Screw, No. 10-32 x $\frac{3}{4}$ " fil. hd., for fastening terminal block to case for use in position shown . . . . .	12563-5
16	Screw, No. 10-32 x $\frac{3}{8}$ " fil. hd., for fastening terminal block to plate Fig. 17 . . . . .	12563-22
17	Plate, for mounting terminal block . . . . .	55378-4
18	Bearing Bracket, as shown, for supporting one end of armature shaft . . . . .	53063-6
19	Name Plate, with screws, for mechanism . . . . .	401-272
20	Name Plate, with screws, for mechanism . . . . .	54392-13
21	Bracket, as shown, for supporting counterweights and contact group . . . . .	401-220
22	Screw, No. 10-32 x $\frac{1}{8}$ " hex. hd., with hex. nut and lock washer, for mounting contact group . . . . .	54392-13
23	Incandescent Lamp, 2 pin, candelabra single contact bayonet base S-8 bulb, single filament, 1000 hour rating, 11.3 volts, 13.3 watts, recommended for operation on 10 volts . . . . .	53063-8
23a	as above, except S-11 bulb, single filament, 1000 hour rating, 8 volts, 10 watts, recommended for operation on 7.2 volts . . . . .	18683-1
23b	same as Fig. 23, except S-11 bulb, major and minor filaments in multiple, 1000 hour rating, 8 volts, 13+3.5 watts, recommended for operation on 7.2 volts . . . . .	577-18
		53029-3
		34866-32
		34866-43
		34866-37

(Continued on following page)

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Fig. No	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
23c	same as Fig. 23, except S-11 bulb, single filament, 1000 hour rating, 9 volts, 15.3 watts, recommended for operation on 8 volts. .	34866-34
23d	same as Fig. 23, except S-11 bulb, major and minor filaments in multiple, 1000 hour rating, 10 volts, 13+3.5 watts, recommended for operation on 9 volts. . . . .	34866-60
23e	same as Fig. 23, except S-11 bulb, single filament, 1000 hour rating, 10 volts, 25 watts, recommended for operation on 9 volts. .	34866-47
23f	same as Fig. 23, except S-11 bulb, single filament, 2000 hour rating, 13.5 volts, 17 watts, recommended for operation on 12 volts	34866-25
23g	same as Fig. 23, except G-16½ bulb, single filament, 1000 hour rating, 115 volts, 25 watts, recommended for operation on 110 volts. . . . .	34866-45
24	Reflector, glass, as shown. . . . .	53122
25	Retaining Ring, for reflector. . . . .	45647-5
26	Screw, No. 4-36 x ¼" fl. hd., for fastening retainer to holder. . . . .	35699-2
27	Spring, with sleeve, for fastening glass, Fig. 29, in case. . . . .	51107-3 15284-17
28	Gasket, rubber, for use between glass and case. . . . .	52983-1
29	Glass, for reflector unit compartment. . . . .	924-11
30	Gasket, rubber, for use with glass, Fig. 32. . . . .	52983-3
31	Spring, with sleeve, for fastening glass in case. . . . .	51107-6 15284-17
32	Outer cover glass, for use in position shown. . . . .	924-17
33	Line Coil, 105 ohm resistance, for 4 volt operation. Includes bakelite shell. . . . .	53121-1 Gr.
33a	as above, except 250 ohms resistance for 7.5 to 8 volt operation. .	53121-1 Gr.
33b	same as Fig. 33, except 380 ohms resistance, for 10 volt operation	53121-1 Gr. 11
33c	same as Fig. 33, except 500 ohms resistance, for 12 volt operation	53121-1 Gr. 2
34	Bearing, upper half, for armature shaft. . . . .	53828

(Continued on following page)

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Fig. No.	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
35	Ball, for use at ends of armature shaft.....	36126-4
36	Gasket, for use between glass case and mechanism case.....	13014-126
37	Shim, .005" th. for use between upper and lower halves of armature shaft bearings.....	53879
37a	as above, except .003" th.....	53879-1
38	Bearing, knife edge, for armature shaft.....	53828-1
39	Bearing Bracket, for supporting one end of armature shaft.....	53064-2
40	Washer, for use between bearing bracket and poles.....	53097
41	Glass Case, for housing lower half of mechanism.....	37380-8
42	Color Disc Complete, red, A.A.R. Standard, assembled in retaining cup.....	53073 Gr. 2
42a	as above, except yellow with one side depolished, A.A.R. Standard.....	53073 Gr. 12
42b	same as Fig. 42, except green, pre-cracked, A.A.R. Standard.....	53073 Gr. 3
42c	same as Fig. 42, except purple, A.A.R. Standard.....	53073 Gr. 7
43	Nut, No. 10-32 x 1/8" th. hex., for stud Fig. 46, also for lamp receptacle.....	40796
44	Screw, 1/4"-20 x 7/8" lg., for fastening brackets Fig. 18 and 39 to case, four required.....	45048-8
45	Screw, No. 8-32 x 1 1/32" collar hd., for fastening bearing to brackets.....	53829-2
46	Stud, as shown, for fastening poles to brackets, four required.....	441-117
47	Stud, 7/16" dia. x 5 3/8" lg., for fastening magnet to poles.....	879-31
48	Nut, 7/16"-14 hex., for stud, Fig. 47.....	54247
49	Leather Washer, for use between glass case and stirrup on mechanism case.....	4553
50	Pole, right hand, used in position shown.....	53087-1
51	Magnet Complete, as shown, includes spacers and holders.....	54419 Gr. 1
52	Pole, left hand, used in position shown.....	53087-2
53	Sleeve, for springs, Figs. 27 and 31.....	15284-17
54	Screw, No. 14-24 x 1 1/2" sq. hd., used as terminal post.....	350-3

(Continued on following page)

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Fig. No.	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
55	Nut, No. 14-24 hex., for terminal posts. . . . .	42843-1
56	Washer, for terminal posts. . . . .	1225-2
57	Nut, No. 14-24 x $\frac{3}{16}$ " th. hex., for terminal posts. . . . .	42839-5
58	Block, only, for terminal block. . . . .	47508-79
59	Screw, No. 8-32 x $\frac{3}{8}$ " rd. hd., used as terminal post for fingers. . . . .	2553-11
60	Contact Complete, as shown, two required. . . . .	56131 Gr. 2
61	Contact Complete, as shown, left hand. . . . .	56132 Gr. 2
62	Contact Complete, as shown, two required. . . . .	56131 Gr. 1
63	Nut, $\frac{1}{8}$ "-56 x $\frac{1}{8}$ " th. hex., for screw Fig. 64. . . . .	12680-5
64	Screw, $\frac{1}{8}$ "-56, special, for contacts. . . . .	53019-6
65	Nut, $\frac{1}{8}$ "-56 x $\frac{1}{8}$ " th. hex., for screw Fig. 64. . . . .	12680-13
66	Retaining Plate Complete, for contacts. . . . .	56134 Gr. 1
67	Mounting Block, for contacts. . . . .	56135
68	Tubing, black, 2mm dia., $2\frac{3}{8}$ " lg., for wires. . . . .	52316-26
69	Tubing, black, 2mm dia., $2\frac{3}{4}$ " lg., for wires. . . . .	52316-27
70	Nut, No. 8-32 x $\frac{1}{8}$ " th. hex., for screw Fig. 72. . . . .	28948-1
71	Lock Washer, for nut Fig. 70. . . . .	53029-4
72	Screw, No. 8-32 x $\frac{5}{8}$ " sq. hd., for mounting contacts. . . . .	23034-2
73	Spring, for centering contacts. . . . .	586-98
74	Contact Complete, as shown, right hand. . . . .	56132 Gr. 1
75	Screw, No. 8-32 x $\frac{5}{16}$ " rd. hd., with lock washer, for fastening resistance unit, Fig. H to holder, Fig. 8. . . . .	( 2553-9 53029-4