

TYPE SG AUXILIARY RELAYS

Closed and Open Types for A-C. or D-C. Use;

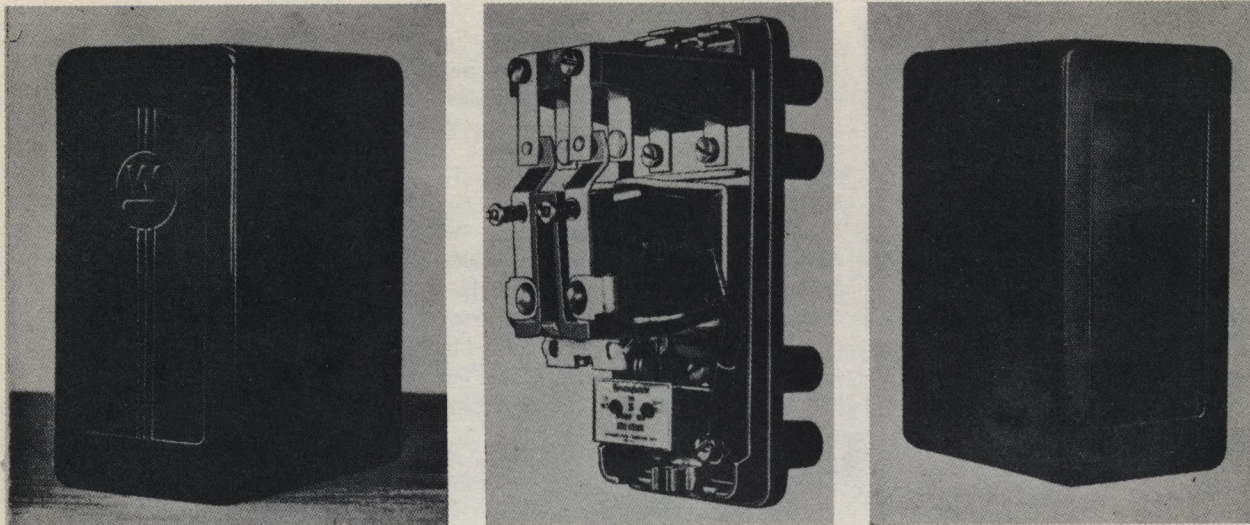


FIG. 1—CLOSED TYPE SG RELAY SHOWING SOLID MOLDED COVER, RELAY WITH COVER OFF, AND MOLDED COVER WITH GLASS WINDOW. THIS RELAY HAS TWO-MAKE AND TWO-BREAK CONTACTS.

Application

The SG relay is made small and sturdy for auxiliary service. It is obtainable in two types; closed type with molded cover or molded cover with glass front, and front connected open type without cover. The open type is used widely for mounting in individual sheet metal cabinets or in larger cabinets with other apparatus.

The standard closed type relay is supplied with two-make and two-break contacts with each moving contact being common to its corresponding front and back stationary contacts. The standard open type relay is supplied with two independent contact circuits, and the contacts can readily be adjusted to provide either two-make, two-break, or one-make and one-break. The open relay also can be supplied with two-make and two-break contacts similar to the standard closed type SG.

Designed for continuous duty at rated voltage, the SG relay is obtainable for circuits up to 575 volts a-c. or 600 d-c. Ranges up to 250 volts can be used for intermittent duty up to approximately three times their continuous value.

Fig. 7 gives the method of connection when the SG relay is used to control circuits where the circuits required cannot be incorporated in the primary relay.

Distinctive Features

1. Design is simple, construction is sturdy, and price is low.
2. The complete relay can be dismantled in a few minutes.
3. The stationary contacts of the open-type relay are reversible to provide for either two-make, one-make and one-break, or two-break contact service.
4. Relay is adapted for any thickness of panel material from $\frac{1}{8}$ " (steel) to 2" (slate). The molded terminals are

$\frac{11}{8}$ " long, being ample for steel-panel mounting. For thicker panels, extension terminal studs are furnished.

5. Molded cover is held securely by a bracket and a spring clip, yet can be easily removed. A glass window is optional.

Construction

The SG relay, closed type, is shown in Fig. 1. The magnetic circuit is fastened to the molded base by two screws, while the coil and core are held securely in place by one screw. The armature is held in the de-energized position by gravity and a spring.

The moving contact fingers have a contact surface on both sides, and is so mounted on the armature block that motion in either direction compresses a spring. This permits sufficient contact follow to be obtained for both the make and the break contacts.

The standard relay is supplied with a molded cover which can be equipped with a glass front if desired.

The SG open type, shown in Fig. 2, has the same operating characteristics as the closed type. The coil, magnetic circuit, contacts and connecting screws are mounted on a molded base. The entire assembly is arranged so it can be mounted on any flat surface by means of 3 screws or bolts.

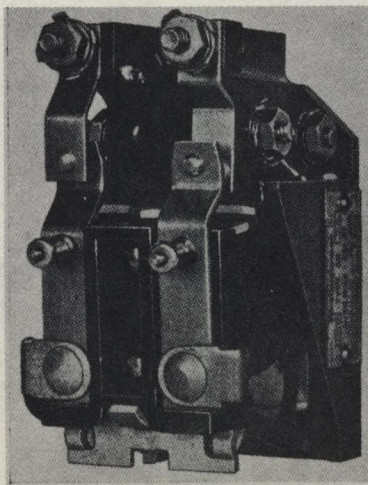


FIG. 2—OPEN TYPE SG AUXILIARY RELAY WITH ONE-MAKE AND ONE-BREAK CONTACT. THIS RELAY CAN BE SUPPLIED WITH TWO-MAKE AND TWO-BREAK CONTACTS.

Contact Rating for Each Contact

Non-Inductive

Each contact will carry 12 amperes continuous and 30 amperes for one minute.

Volts	Interrupting Rating Amperes D-C.		Interrupting Rating Amperes A-C.
	1 Gap	2 Gaps in Series	
24	15	50	60
48	8	35	45
115	2.4	20	30
230	.75	2.5	20
550	.25	.5	10

The SG relay operating time is approximately 1 to 2 cycles (60 cycle basis) and for most applications this

characteristic is required. However, in certain relay applications it is desirable to have a D-C. relay which provides a short time lag between the opening of the circuit to the relay coil and the dropping out of the relay armature. A time delay of approximately 0.1 second can be obtained with the SG relay by providing it with a heavy copper ring on the core. Because of the consequent reduction of coil space, this relay can be used only for intermittent service.

A longer time delay can be obtained by using a condenser, with or without a series resistor, connected across the relay coil. In this case the copper ring is omitted and the coil can be energized continuously. A maximum time delay of approximately 0.5 second can be obtained by using a condenser of approximately 30 mfd. capacity. A similar ar-

angement, with the resistor in series with the coil, will delay the pick-up time to approximately .07 second.

Operation

The armature to which the moving contacts are fastened closes the make contacts when the coil is energized at the proper voltage or current which should not be less than 80% of the maximum rating marked on the name-plate. The armature will open at 30% or less (on d-c.) and 60% or less (on a-c.) of the relay rating. The relay can be supplied for voltage circuits up to 575 a-c. or 600 d-c.

Volt-Ampere Burden

The volt-ampere burden at rated voltage (60 cycles) is 10, power factor, 50%. The watt consumption at rated d-c. voltage is 3.5.

Application Table No. 1

Relay Coils

Volts	Amperes	Coil Style No.	D-C. RESISTANCE		EXTERNAL RESISTANCE WHEN USED		
			25°C. Ohms.	Impedance Closed Gap*	Style No.	Resistance Ohms.	
Direct-Current Coil Ratings							
...	1.0	1 059 282	2.5	.....	None	None
...	3.0	1 059 284	0.33	.....	None	None
...	5.0	1 059 286	0.1	.....	None	None
24	0.130	1 008 517	185	.....	None	None
48	0.066	1 008 520	725	.....	None	None
125	0.028	1 008 524	4430	.....	None	None
250	0.028	1 008 524	4430	.....	1 009 014†	5000
50 to 60 Cycle Coil Ratings							
115	0.087	1 008 517	185	1320	None	None	
230	0.044	1 008 520	725	5300	None	None	
460	0.022	1 008 523	2770	21000	None	None	
25 Cycle Coil Ratings							
15	0.057	1 008 519	460	2000	None	None	
30	0.029	1 008 522	1780	8020	None	None	
60	0.019	1 008 524	4430	19800	1 009 014†	5000	

* Impedance open gap approximately 1/2 closed gap value.
 † Impedance given includes external resistor if used.

† External resistor Style No. 1009014 is a 3/8-inch tube type with screw terminals and is supplied with an insulated mounting stud.

Order by Style Number

Application Table No. 2 Operation Indicators

Use this table to determine if an additional resistor is required with an SG relay in order to draw enough current to operate a 0.2 ampere indicator. The resistor is not supplied with the relay and should be ordered separately.

Control Volts D-C.	Indicator Rating Amperes	SG Relay Coil Resistance and Resistor if Required	Rating	Current in Indicator at Normal Voltage
24	0.2	Relay Coil 185 ohms plus 150 ohm resistor (3.8 watts) style #879976 in parallel with relay coil.....	Continuous	0.29
48	0.2	Relay Coil 725 ohms plus 200 ohm resistor (12 watts) style #879977 in parallel with relay coil.....	Continuous	0.31
125	0.2	Relay Coil 4430 ohms plus 400 ohm resistor (39 watts) style #281407 in parallel with relay coil.....	Continuous	0.34
250	0.2	Relay Coil 4430 ohms with 5000 ohm resistor (furnished with relay) in series with relay coil plus 970 ohm resistor (64 watts) style #286266 in parallel with relay coil and series resistor.....	Continuous	0.28

NOTE—The 400 ohm and 970 ohm resistors are 8" tube type with screw terminals and require mounting detail style #454921. The other resistors are 2" tube type with flexible leads and require mounting detail style #877339.

LIST PRICES

Volts	Amperes	Cycles*	Ohms. Resistance Relay Coil	Amperes	Coil Style No.	RELAY	
						Style No.	List Price Discount Symbol FC
CLOSED TYPE							
2 make—2 break contacts, moving contact common							
...	1	D-C.	2.5	.....	1 059 282	1 157 848	\$7 50
...	3	D-C.	0.33	.....	1 059 284	1 157 849	7 50
...	5	D-C.	0.1	.....	1 059 286	1 157 850	7 50
24	...	D-C.	185	0.130	1 008 517	1 155 687	7 50
48	...	D-C.	725	0.066	1 008 520	1 155 688	7 50
125	...	D-C.	4430	0.028	1 008 524	1 155 689	7 50
250	...	D-C.	4430	0.028	1 008 524	1 155 690	7 50
115	...	50 & 60	185	0.087	1 008 517	1 155 693	7 50
230	...	50 & 60	725	0.044	1 008 520	1 155 694	7 50
460	...	50 & 60	2770	0.022	1 008 523	1 155 695	7 50

OPEN TYPE †

2 contact with stationary reversible contacts

...	1	D-C.	2.5	.....	1 059 282	1 157 852	5 00
...	3	D-C.	0.33	.....	1 059 284	1 157 853	5 00
...	5	D-C.	0.1	.....	1 059 286	1 157 854	5 00
24	...	D-C.	185	0.130	1 008 517	1 059 231	5 00
48	...	D-C.	725	0.066	1 008 520	1 008 534	5 00
125	...	D-C.	4430	0.028	1 008 524	1 008 535	5 00
250	...	D-C.	4430	0.028	1 008 524	1 008 536	5 00
115	...	50 & 60	185	0.087	1 008 517	1 008 539	5 00
230	...	50 & 60	725	0.044	1 008 520	1 008 540	5 00
460	...	50 & 60	2770	0.022	1 008 523	1 008 541	5 00

* 25 cycle relays can be supplied. Specify, "similar to style number (give 60 cycle style) except 25 cycle." Add 10% to price of 60 cycle relay SG relays can be supplied for other A-C. voltages up to 575 A-C. or 600 D-C. and with D-C. current coils not over 5 amperes. Refer to nearest Westinghouse Sales Office for prices.

† For SG relays having glass front add \$0.25 to the list price of the standard style. When ordering, give "similar to style number..... except with molded cover having glass front." The nameplate furnished with this relay will have the standard style number.

† Open type relays can be obtained at no additional price with 2 make and 2 break contacts having moving contact common. When ordering, give "similar to style number..... except with 2 make, 2 break contacts."

SG RELAYS CAN BE FURNISHED FOR VOLTAGES OTHER THAN THOSE LISTED ABOVE AT AN ADDITIONAL PRICE.

SHEET METAL CABINETS

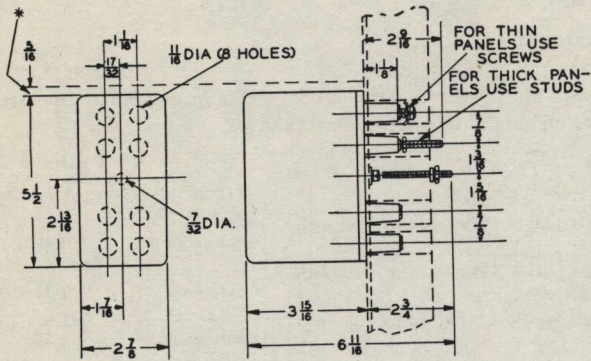
Two sizes of sheet metal cabinets for mounting the open-type SG relays can be supplied for industrial applications, etc. where it is desired to enclose one or two relays for conduit wiring or where it is desired to mount the relays near the machine. Both cabinets have knockouts for conduit connections.

LIST PRICES

No. of Relays to be Mounted in One Cabinet	DIMENSIONS IN INCHES			Style No.	List Price Discount Symbol FC
	Width	Height	Depth		
1	4 1/8	5 3/8	4 1/8	1 095 760	\$0 90
2	8 1/8	5 3/8	4 1/8	1 095 759	1 35

Order by Style Number

OUTLINE DIMENSIONS IN INCHES



* If relay is mounted under another device extending approximately same distance from panel, allow 3/16" minimum spacing to permit removal of cover.

FIG. 3—OUTLINE AND DRILLING PLAN FOR THE CLOSED TYPE SG AUXILIARY RELAY.

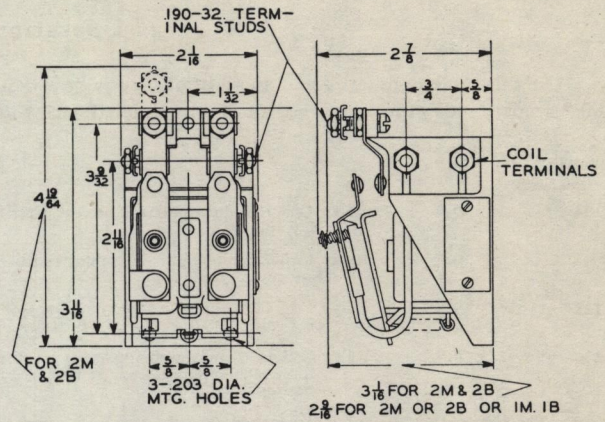


FIG. 4—OUTLINE AND DRILLING PLAN FOR THE OPEN TYPE SG AUXILIARY RELAY

WIRING DIAGRAMS

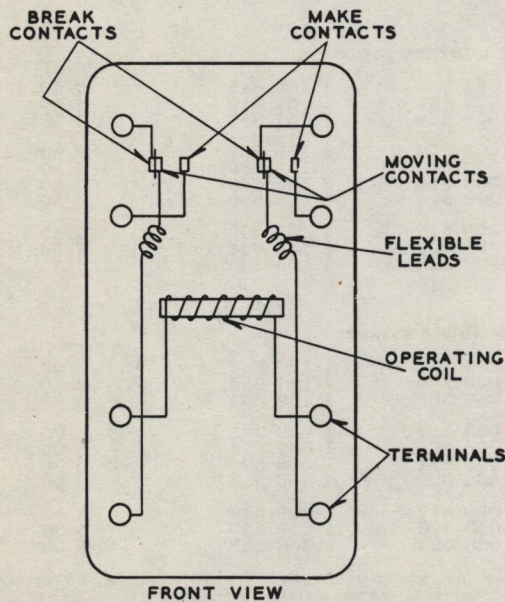


FIG. 5—INTERNAL CONNECTIONS FOR CLOSED TYPE SG RELAY.

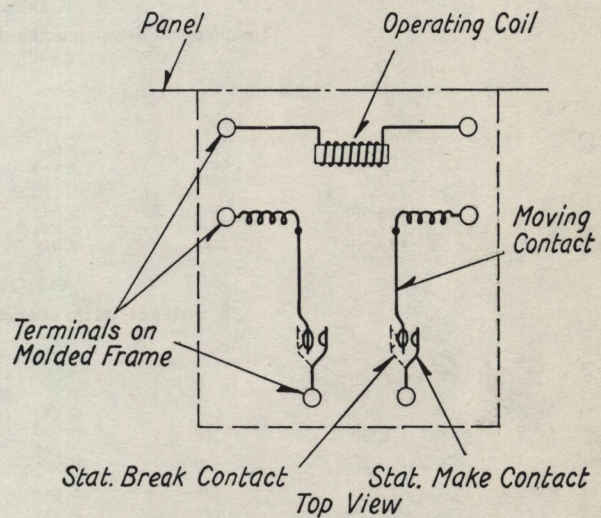


FIG. 6—INTERNAL CONNECTIONS FOR OPEN TYPE SG RELAY

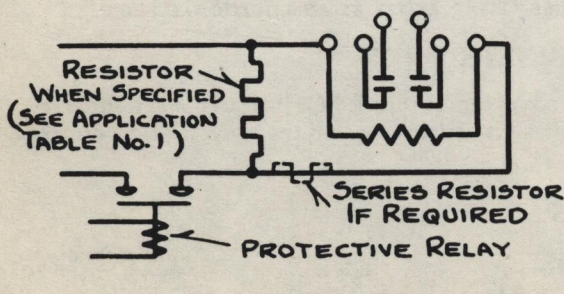


FIG. 7—EXTERNAL CONNECTIONS FOR THE OPEN TYPE SG RELAYS. THE CONNECTIONS WOULD BE SIMILAR FOR THE CLOSED TYPE RELAY EXCEPT THAT FOUR EXTERNAL CIRCUITS CAN BE CONTROLLED.

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TYPE SG AUXILIARY RELAYS

Non-Reversible Contact Relays

Volts	Cycles	Switchboard Mounting			Panel Mounting		
		2 Make Contact Relay	1 Make 1 Break Contact Relay	2 Break Contact Relay	2 Make Contact Relay	1 Make 1 Break Contact Relay	2 Break Contact Relay
		Style Number	Style Number	Style Number	Style Number	Style Number	Style Number
48	DC	837 257	877 717	930 432	837 264	877 724	930 439
125	DC	837 255	877 715	930 430	837 262	877 722	930 437
250	DC	877 034	930 444	930 446	837 035	930 445	930 447
115	25	837 256	877 716	930 431	837 263	877 723	930 438
230	25	837 259	877 719	930 434	837 266	877 726	930 441
115	50 & 60	837 258	877 718	930 433	837 265	877 725	930 440
230	50 & 60	837 261	877 721	930 436	837 268	877 728	930 443
460	50 & 60	837 260	877 720	930 435	837 267	877 727	930 442

NOTE: Switchboard mounting relays may be supplied with or without glass cover. If glass cover is desired it should be clearly specified on the order. Otherwise all new relays will be supplied with solid moulded covers.

When desired, the 2-make contact switchboard type can be changed to 1 make-1 break. The set of parts for the 1-break contact, switchboard type only, is covered by S#930448.

When desired, the 2-make contact panel type can be changed to 1 make-1 break. The set of parts for the 1-break contact, panel type only is covered by S#930449.

When desired, the panel type only can be changed to single pole, double throw or double pole, double throw contacts. The set of parts for single pole, double throw combination of contacts, panel type only, is covered by S#930450.

Reversible Contact Relays

Volts	Cycles	Switchboard Mounting	Panel Mounting
		Style Number	Style Number
48	DC	1 008 526	1 008 534
125	DC	1 008 527	1 008 535
250	DC	1 008 528	1 008 536
115	25	1 008 529	1 008 537
230	25	1 008 530	1 008 538
115	50 & 60	1 008 531	1 008 539
230	50 & 60	1 008 532	1 008 540
460	50 & 60	1 008 533	1 008 541

NOTE: Switchboard mounting relays may be supplied with or without glass cover. If glass cover is desired, it should be clearly specified on the order. Otherwise all new relays will be supplied with solid moulded covers.

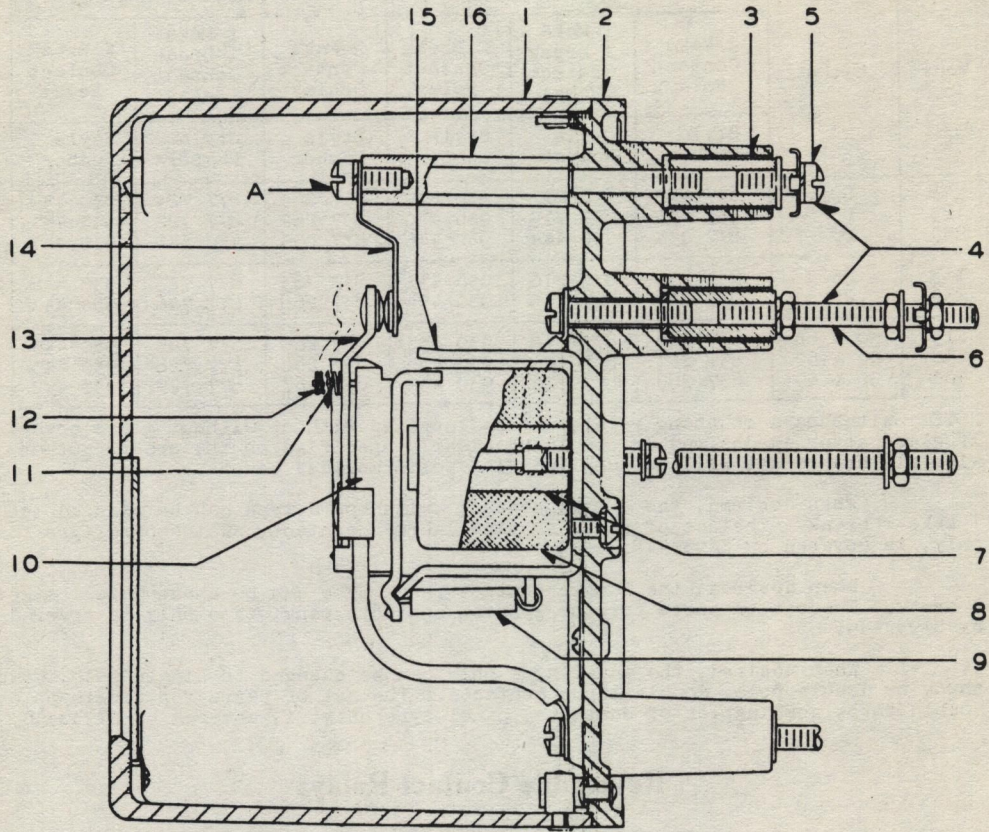
For Prices refer to Price List 120

Westinghouse Electric & Manufacturing Company
Newark Works, Newark, N. J.

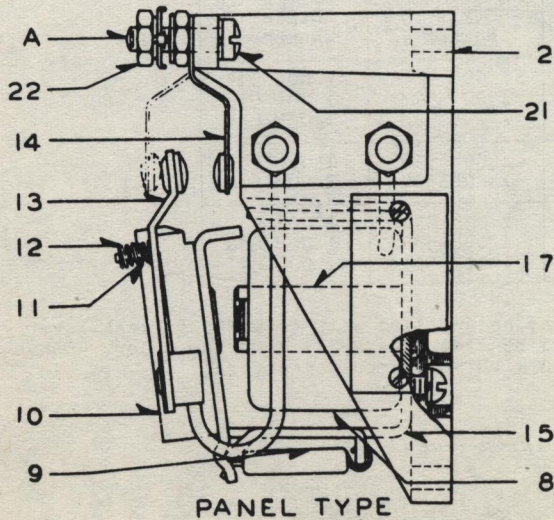
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EVERY HOUSE NEEDS WESTINGHOUSE

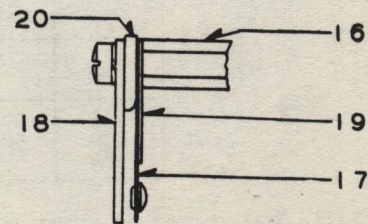
TYPE SG AUXILIARY RELAYS Non-Reversible Contact Relays



SWITCHBOARD TYPE



PANEL TYPE



VIEW-A
TWO BREAK CONTACTS

TYPE SG AUXILIARY RELAYS

Non-Reversible Contact Relays

Ref No.	DESCRIPTION OF PART	Style Number	No. Req	Ref No.	DESCRIPTION OF PART	Style Number	No. Req
1	Cover, moulded solid, switchboard	876 718	1	14	Stationary contact support and contact, 1 make, 1 break	836 175	1
1	Cover, moulded with glass front, switchboard.	876 270	1	15	Yoke	668 593	1
2	Base, moulded, switchboard type	878 637	1	*	Washer under yoke, a-c. only	935 765	1
2	Base, moulded, panel type	821 999	1	16	Post, switchboard type, 2 make	836 176	2
3	Terminal nut, switchboard type	821 998	6	16	Post, switchboard type, 1 make, 1 break	836 176	1
4	Mounting details, switchboard type	839 114	1	16	Post, switchboard type, 1 make, 1 break	837 991	1
5	Terminal stud.	797 078	6	16	Post, switchboard type, 2 break	837 991	2
6	Mounting stud.	837 330	2	17	Stationary contact spring and contact, 1 make, 1 break	930 303	1
7	Core complete, a-c. only.	762 981	1	17	Stationary contact spring and contact, 2 break.	930 303	2
7	Core complete, d-c. only.	838 286	1	18	Stop, 1 make 1 break.	837 989	1
8	Coil, 48 volt, d-c., 115 volt, 25 cycle.	837 270	1	18	Stop, 2 break	837 989	2
8	Coil, 125 and 250 volts, d-c., 460 volts, 50 and 60 cycle	837 269	1	19	Stationary contact support, 1 make, 1 break	838 632	1
8	Coil, 230 volts, 25 cycle	837 273	1	19	Stationary contact support, 2 break	838 632	2
8	Coil, 115 volt, 50 and 60 cycle.	837 272	1	20	Back plate, 1 make, 1 break	837 990	1
8	Coil, 230 volt, 50 and 60 cycle.	837 275	1	20	Back plate, 2 break	837 990	2
9	Spring for armature, 2 make.	837 967	1	21†	Fillister head brass machine screw, ".190-32 x 7/8", for mounting stationary contact, panel type only	Std Hdw	2
9	Spring for armature, 1 make, 1 break, 2 break.	876 778	1	22†	Hexagon brass machine screw nut for above screw	Std Hdw	2
10	Armature block complete	837 931	1	*	External resistor, 250 volt, d-c. only	879 978	1
11	Spring for contact finger	837 968	2	*	Resistor mounting details, 250 volt, d-c. only	877 339	1
12	Spring cap	975 418	1				
13	Contact finger and lead, left hand.	838 253	1				
13	Contact finger and lead, right hand	838 255	1				
14	Stationary contact support and contact, 2 make	836 175	2				

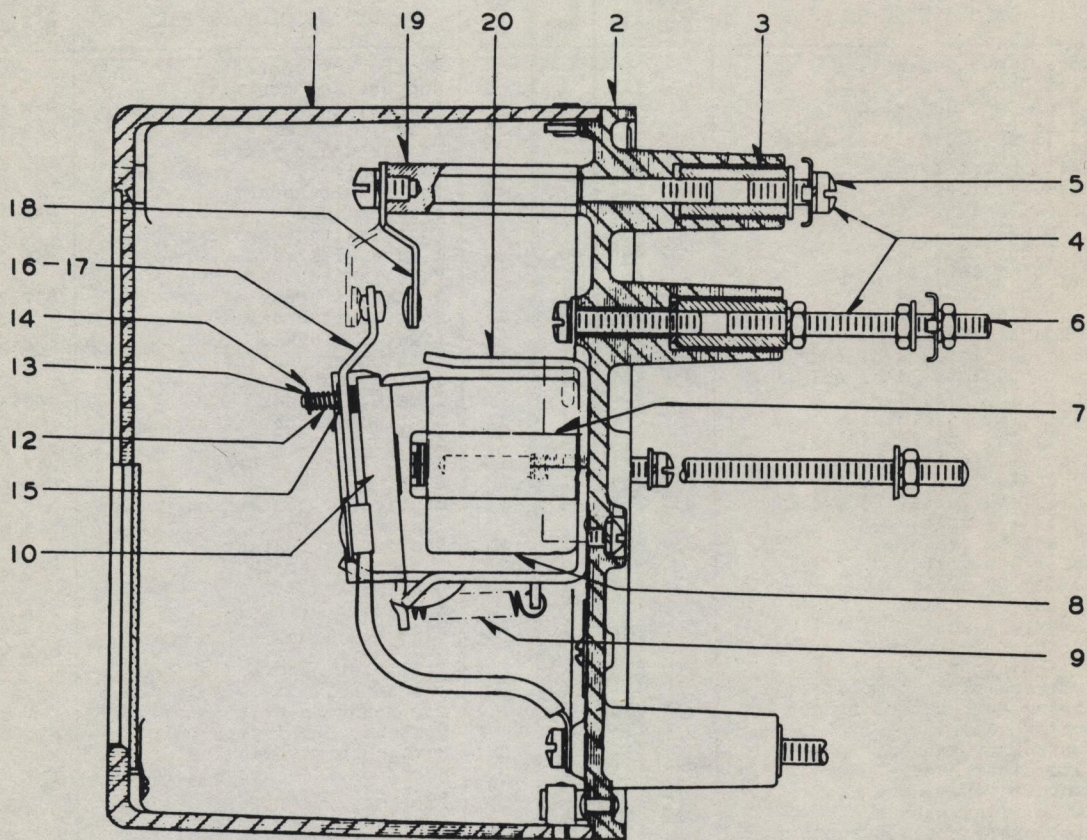
* Not Illustrated

Order Parts by Style Number and Description

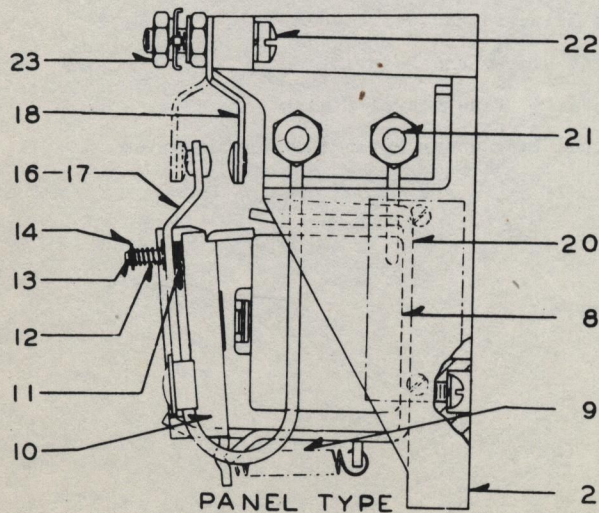
† When ordering, specify "Plus nickel finish"

Parts indented are included in the Part under which they are indented

TYPE SG AUXILIARY RELAYS Reversible Contact Relays



SWITCHBOARD TYPE



PANEL TYPE

TYPE SG AUXILIARY RELAYS

Reversible Contact Relays

Ref No.	DESCRIPTION OF PART	Style Number	No. Req	Ref No.	DESCRIPTION OF PART	Style Number	No. Req
1	Cover, moulded solid, switchboard	876 718	1	10	Armature block complete. . .	1 008 712	1
1	Cover, moulded with glass front, switchboard. . .	876 270	1	11	Lower contact spring.	1 001 025	2
2	Base, moulded, switchboard type	878 637	1	12	Upper contact spring.	1 000 826	2
2	Base, moulded, panel type	821 999	1	13	Washer for upper contact spring.	1 001 009	2
3	Nut, for terminal screw, switchboard type	821 998	6	14	Cup washer for upper contact spring.	1 000 824	2
4	Mounting details, panel type	1 008 226	1	15	Bushing under upper contact spring.	1 008 223	2
4	Mounting details, switchboard type	839 114	1	16	Lead and contact, left hand	1 008 709	1
5	Terminal stud.	797 078	6	17	Lead and contact, right hand	1 008 710	1
6	Mounting stud.	837 330	2	18	Stationary contact complete	1 008 711	2
7	Core, d-c.	1 008 224	1	19	Post for mounting stationary contact, switchboard type	836 176	2
7	Core, a-c.	1 008 225	1	20	Yoke	668 593	1
*	Washer, under core, a-c. only.	935 765	1	21	Terminal screw, panel type.	837 321	4
8	Coil, 48 volts, d-c., 230 volts, 50 and 60 cycles . . .	1 008 520	1	22†	Fillister head brass machine screw, ".190-32 x 7/8" for mounting stationary contact, panel type only .	Std Hdw	2
8	Coil, 125 and 250 volts d-c.	1 008 524	1	23†	Hexagon brass machine screw nut for above screw .	Std Hdw	2
8	Coil, 115 volt, 25 cycle.	1 008 519	1	*	External resistor, 250 volts, d-c. only.	1 008 714	1
8	Coil, 230 volt, 25 cycle.	1 008 522	1	*	Resistor mounting details, 250 volt, d-c. only	877 339	1
8	Coil, 115 volt, 50 and 60 cycle.	1 008 517	1				
8	Coil, 460 volt, 50 and 60 cycle.	1 008 523	1				
9	Spring for armature	1 000 998	1				

* Not Illustrated

Order Parts by Style Number and Description

† When ordering, specify "Plus nickel finish"

Parts indented are included in the Part under which they are indented

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

Headquarters—306 4th Ave., Pittsburgh, Pa. P.O. Box 1017

- *AKRON, OHIO, 106 South Main St.
- *ALBANY, N. Y., 456 No. Pearl St.
- *ALLENTOWN, PA., 522 Maple St.
- ① *APPLETON, WISC., 1827 N. Oneida St., P.O. Box 206
- †APPLETON, WISC., 1029 So. Outagamie St.
- †ATLANTA, GA., 426 Marietta St., N. W.
- *ATTICA, N. Y.
- †AUGUSTA, MAINE, 9 Bowman St.
- *BAKERSFIELD, CALIF., 2224 San Emedio St.
- *BALTIMORE, MD., 118 E. Lombard St.
- †BALTIMORE, MD., 501 East Preston St.
- *BALTIMORE, MD., 2519 Wilkens Ave.
- ① *BATON ROUGE, LA., 128-134 So. Sixteenth St.
- *BINGHAMTON, N. Y., Suite 704, Marine Midland Bldg., 86 Court St.
- *BIRMINGHAM, ALA., 1407 Comer Bldg.
- *BLUEFIELD, W. VA., 208 Bluefield Avenue
- *BOSTON, MASS., 10 High St.
- †BOSTON, MASS., 235 Old Colony Ave., So. Boston, Mass.
- ① *BRIDGEPORT, CONN., 540 Grant St.
- ① *BUFFALO, N. Y., 814 Ellicott Square
- †BUFFALO, N. Y., 1132 Seneca St.
- *BURLINGTON, VER., 208 Flynn Ave.
- *BUTTE, MONTANA, 129 West Park St.
- *BUTTE, MONTANA, Iron & Wyoming Sts.
- *CANTON, OHIO, 120 W. Tuscarawas St.
- *CEDAR RAPIDS, IOWA, 361 21st St., S.E., P. O. Box 148
- †CHARLOTTE, N. C., 210 East Sixth St.
- *CHARLESTON, W. VA., 1415 Oakmont Rd., P. O. Box 865
- ① *CHATTANOOGA, TENN., Volunteer State Life Bldg., Georgia Ave. & East Ninth St.
- *CHICAGO, ILL., 20 N. Wacker Drive, P.O. Box B
- †CHICAGO, ILL., 2211 W. Pershing Road, P.O. Box 1103
- †CINCINNATI, OHIO, 207 West Third St.
- *CLEVELAND, OHIO, 1216 W. Fifty-Eighth St.
- *COLUMBUS, OHIO, 85 E. Gay St.
- *DALLAS, TEXAS, 209 Browder St.
- †DALLAS, TEXAS, 1712 Laws St.
- *DAVENPORT, IOWA, 206 E. Second St., P.O. Box 55
- *DAYTON, OHIO, 30 North Main St.
- *DENVER, COLORADO, 910 Fifteenth St.
- †DENVER, COLORADO, 1700 Sixteenth St.
- †DENVER, COLORADO, 988 Cherokee St.
- *DERRY, PA.
- *DES MOINES, IOWA, 1400 Walnut St.
- †DETROIT, MICH., 5757 Trumbull Ave., P.O. Box 828
- *DULUTH, MINN., 10 East Superior St.
- †EAST PEORIA, ILL., 900 W. Washington St.
- *EAST PITTSBURGH, PA.
- *EL PASO, TEXAS, Oregon and Mills Sts.
- †EL PASO, TEXAS, 450 Canal St.
- *EMERYVILLE, CALIF., 5915 Green St.
- †EMERYVILLE, CALIF., 1466 Powell St.
- *EMERYVILLE, CALIF., 6121 Green St.
- *ERIE, PA., 1003 State St.
- *EVANSVILLE, IND., 201 N. W. First St.
- *FAIRMONT, W. VA., 10th and Beltline Sts.
- *FORT WAYNE, IND., 1010 Packard Ave.
- ① *FRESNO, CALIF., 872 Peralta Way, P.O. Box 1249
- *GARY, IND., 846 Broadway
- *GRAND RAPIDS, MICH., 511 Monroe Ave. N. W.
- ① *GREENSBORO, N. C., 409 W. Bessemer St., P.O. Box 1828
- *GREENVILLE, S. C., 110 W. Tallulah Drive, P.O. Box 1591
- *HAMMOND, IND., 235 Locust St.
- *HARTFORD, CONN., 36 Pearl St.
- *HONOLULU, T. H., Hawaiian Elec. Co. Agr.
- *HOUSTON, TEXAS, 1314 Texas Ave.
- †HOUSTON, TEXAS, 2313 Commerce Ave.
- †HOUSTON, TEXAS, 2315 Commerce Ave.
- †HUNTINGTON, W. VA., 1029 Seventh Ave.
- *INDIANAPOLIS, IND., 137 S. Penna. Ave.
- †INDIANAPOLIS, IND., 551 West Merrill St.
- *ISHPEMING, MICH., 433 High St.
- *JACKSON, MICH., 212 West Michigan Ave.
- ① *JACKSONVILLE, FLA., 37 Hogan St., South, P.O. Drawer K
- *JOHNSTOWN, PA., 107 Station St.
- *KANSAS CITY, MO., 101 W. Eleventh St.
- †KANSAS CITY, MO., 2124 W. Wendover St.
- *KNOXVILLE, TENN., Gay & Clinch St.
- *KLIMA, OHIO
- †LOS ANGELES, CALIF., 420 So. San Pedro St.
- *LOUISVILLE, KY., 332 West Broadway
- *MADISON, WISC., 3706 Nakoma Rd., P. O. Box 228
- *MANSFIELD, OHIO, 246 E. Fourth St.
- ① *MEMPHIS, TENN., 130 Madison Ave.
- ① *MIAMI, FLA., 11 N. E. Sixth St., P.O. Box 590
- ① *MILWAUKEE, WISC., 538 N. Broadway
- †MILWAUKEE, WISC., 4560 No. Port Washington Rd.
- †MINNEAPOLIS, MINN., 2303 Kennedy St., N. E.
- *MONROE, LA., 1503 Emerson St., P.O. Box 1851
- *NASHVILLE, TENN., 219 Second Ave., N.
- *NEWARK, N. J., 1180 Raymond Blvd.
- †NEWARK, N. J., Haynes Ave. & Lincoln Highway
- *NEWARK, N. J., Plane & Orange St.
- *NEW HAVEN, CONN., 42 Church St., P. O. Box 1817
- *NEW ORLEANS, LA., 333 St. Charles St.
- †NEW ORLEANS, LA., 527 Poydras St.
- *NEW YORK, N. Y., 150 Broadway
- †NEW YORK, N. Y., 150 Varick St.
- *NIAGARA FALLS, N. Y., 253 Second St.
- *NORFOLK, VA., 320 City Hall Ave.
- *OKLAHOMA CITY, OKLA., 120 N. Robinson St.
- *OKLAHOMA CITY, OKLA., Third & Alie Sts.
- *OMAHA, NEB., 409 South Seventeenth St.
- *PEORIA, ILL., 104 E. State St.
- *PHILADELPHIA, PA., 3001 Walnut St.
- †PHOENIX, ARIZONA, 11 West Jefferson St.
- †PHOENIX, ARIZONA, 425 Jackson St.
- *PITTSBURGH, PA., Nuttall Works, 200 Mc-Canless Ave.
- *PITTSBURGH, PA., 306 4th Ave., Box 1017
- †PITTSBURGH, PA., 543 N. Lang Ave.
- *PORTLAND, OREGON, 309 S. W. Sixth Ave.
- †PORTLAND, OREGON, 2138 N. Interstate Ave.
- †PORTLAND, OREGON, 720 N. Thompson St.
- †PROVIDENCE, R. I., 16 Elbow St.
- *RALEIGH, N. C., 803 North Person St., P.O. Box 2146
- *RICHMOND, VA., 331 S. Fifth St.
- *ROANOKE, VA., 726 First St., S.E.
- *ROCHESTER, N. Y., 1048 University Ave.
- *ROCKFORD, ILL., 130 South Second St.
- *SACRAMENTO, CALIF., Twentieth & "R" Sts.
- *ST. LOUIS, MO., 411 North Seventh St.
- †ST. LOUIS, MO., 717 South Twelfth St.
- †SALT LAKE CITY, UTAH, 10 West First South St.
- †SALT LAKE CITY, UTAH, 346 A Pierpont Ave.
- *SAN ANTONIO, TEXAS, 115 W. Travis St.
- *SAN DIEGO, CALIF., 861 6th Ave.
- †SAN FRANCISCO, CALIF., 1355 Market St.
- *SAN FRANCISCO, CALIF., 1 Montgomery St.
- *SEATTLE, WASH., 603 Stewart St.
- †SEATTLE, WASH., 3451 East Marginal Way
- †SEATTLE, WASH., 1041 First Ave., South
- *SHARON, PA., 469 Sharpville Ave.
- *SIOUX CITY, IOWA, 2311 George St.
- *SOUTH BEND, IND., 216 East Wayne St.
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- *SOUTH PHILA. WKS., P.O. Box 7348, Philadelphia, Pa.
- *SPOKANE, WASH., 158 S. Monroe St.
- *SPRINGFIELD, ILL., 601 E. Adams St., Box 37
- †SPRINGFIELD, MASS., 395 Liberty St.
- *SPRINGFIELD, MASS., 653 Page Boulevard
- *SYRACUSE, N. Y., 420 N. Geddes St.
- *TACOMA, WASH., 1023 "A" St.
- *TAMPA, FLA., 417 Ellamae Ave., Box 230
- *TOLEDO, OHIO, 245 Summit St.
- *TRAFFORD CITY, PA.
- *TULSA, OKLA., 303 East Brady St.
- †UTICA, N. Y., 113 N. Genesee St.
- *WASHINGTON, D. C., 1434 New York Ave., N. W.
- *WATERLOO, IOWA, 328 Jefferson St., P.O. Box 147
- †WILKES-BARRE, PA., 267 N. Pennsylvania Ave.
- ① *WORCESTER, MASS., 507 Main St.
- *YORK, PA., 143 So. George St.
- *YOUNGSTOWN, OHIO, 25 E. Boardman St.

Where address and P. O. box are both given, send mail to P. O. box, telegrams to address indicated.

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- AUGUSTA, MAINE, 90 Water St.
- BALTIMORE, MD., 40 South Calvert St.
- BANGOR, MAINE, 175 Broad St.
- BINGHAMTON, N. Y., 87 Chenango St.
- BOSTON, MASS., 88 Pearl St.
- BURLINGTON, VT., 208 Flynn Ave.
- BUTTE, MONTANA, 50 East Broadway
- CHARLOTTE, N. C., 210 East Sixth St.
- CHICAGO, ILL., 113 North May St.
- CLEVELAND, OHIO, 6545 Carnegie Ave.
- COLUMBIA, S. C., 915 Lady St.
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- DAVENPORT, IOWA, 402 E. Fourth St.
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- EVANSVILLE, IND., 201 N. W. First St.
- FLINT, MICH., 1314 N. Saginaw St.
- FORT WAYNE, IND., 612 S. Harrison St.
- FORT WORTH, TEXAS, 210 Jones St.
- GRAND RAPIDS, MICH., 5111 Monroe Ave. N. W.
- GREENVILLE, S. C., 226 Pendleton St.
- HOUSTON, TEXAS, 1903 Ruiz St.
- INDIANAPOLIS, IND., 137 S. Pennsylvania St.
- JACKSONVILLE, FLA., 37 South Hogan St.
- LOS ANGELES, CALIF., 905 East Second St.
- MADISON, WISC., 1022 E. Washington Ave.
- MEMPHIS, TENN., 366 Madison Ave.
- MIAMI, FLA., 11 N. E. Sixth St.
- MILWAUKEE, WISC., 546 N. Broadway
- MINNEAPOLIS, MINN., 215 South Fourth St.
- NEWARK, N. J., 49 Liberty St.
- NEW HAVEN, CONN., 240 Cedar St.
- NEW YORK, N. Y., 150 Varick St.
- NORFOLK, VA., 320 City Hall Ave.
- OAKLAND, CALIF., Tenth & Alice Sts.
- OKLAHOMA CITY, OKLA., 850 N.W. Second St.
- OMAHA, NEB., 117 North Thirteenth St.
- PEORIA, ILL., 104 East State St.
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- PHOENIX, ARIZONA, 315 West Jackson St.
- PITTSBURGH, PA., 575 Sixth Ave.
- PORTLAND, OREGON, 134 N. W. Eighth Ave.
- PROVIDENCE, R. I., 66 Ship St.
- RALEIGH, N. C., 319 W. Martin St.
- READING, PA., 619 Spruce St.
- REDFORD, VA., 301 South Fifth St.
- ROANOKE, VA., 726 First St., S. E.
- ROCHESTER, N. Y., 1048 University Ave.
- ST. LOUIS, MO., 1011 Spruce St.
- ST. PAUL, MINN., 145 East Fifth St.
- SACRAMENTO, CALIF., 20th and R Sts.
- SALT LAKE CITY, UTAH, 235 West South Temple St.
- SAN ANTONIO, TEXAS, 1211 E. Houston St.
- SAN FRANCISCO, CALIF., 260 Fifth St.
- ① SEATTLE, WASH., 1051 First Ave., So.
- SIOUX CITY, IOWA, 1005 Dace St.
- SPOKANE, WASH., 152 So. Monroe St.
- SPRINGFIELD, MASS., 46 Hampden St.
- SYRACUSE, N. Y., 961 W. Genesee St.
- ① TACOMA, WASH., 1115 "A" St.
- TAMPA, FLA., 417 Ellamae St.
- TERRE HAUTE, IND., 234 So. 3rd St.
- TOLEDO, OHIO, 1920 N. Thirteenth St.
- TRENTON, N. J., 245 N. Broad St.
- ① TULSA, OKLA., 303 East Brady St.
- UTICA, N. Y., 113 N. Genesee St.
- WASHINGTON, D. C., 1216 "K" St., N.W.
- WATERLOO, IOWA, 328 Jefferson St.
- WHEELING, W. VA., 1117 Main St.
- WICHITA, KANSAS, 233 So. St. Francis Ave.
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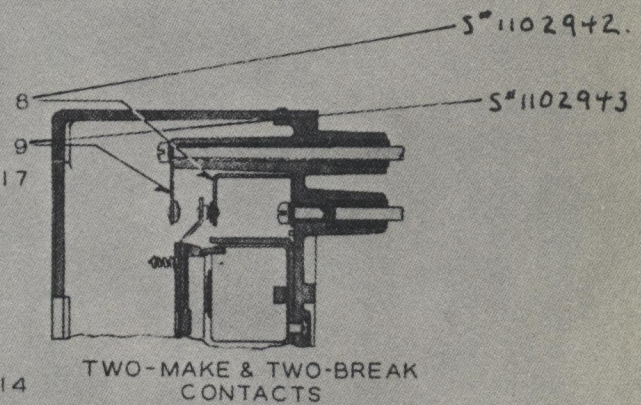
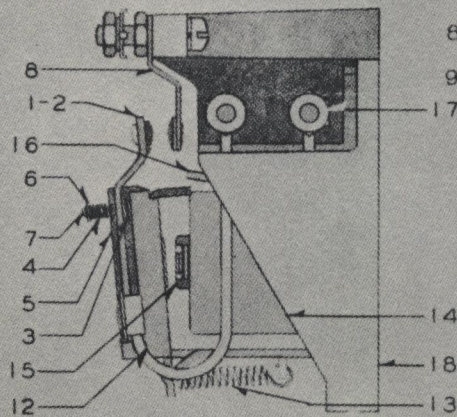
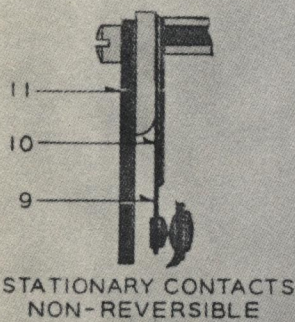
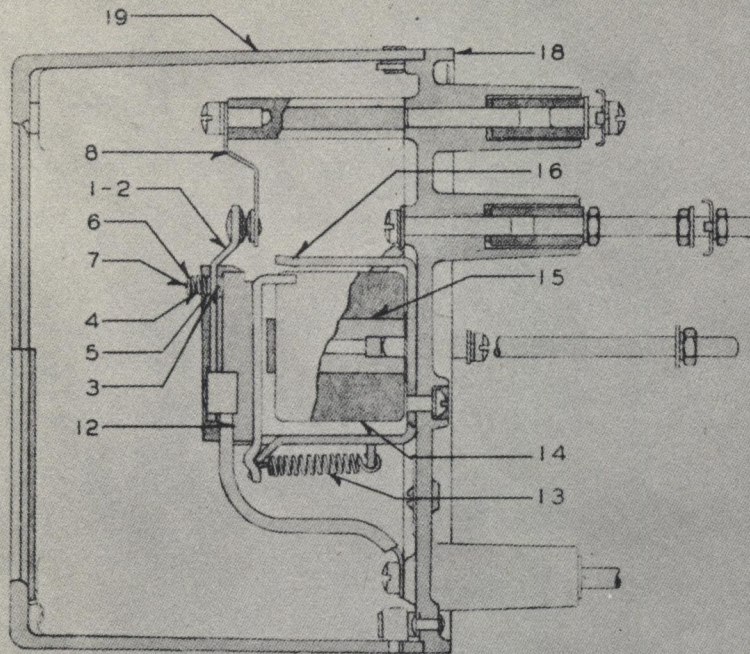
① Changed or added since previous issue.

October, 1940

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TYPE SG AUXILIARY RELAY

Closed or Open



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