switch
type WL

renewal
parts data
37-151.1

switchgear apparatus

Instructions

To mount switch on panel, remove the indicator screw or machine screw and pull handle from shaft. Remove nameplate. Take out mounting screws and remove dial plate. Place switch on rear of panel with shaft extending through panel. Replace dial plate on shaft on front of panel and fasten securely to switch with mounting screws. Replace nameplate. Fasten handle on shaft with indicator screw or machine screw.

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To replace rectangular nameplate set nameplate in top slot of dial plate, then snap into position by pressing in and down at the bottom.

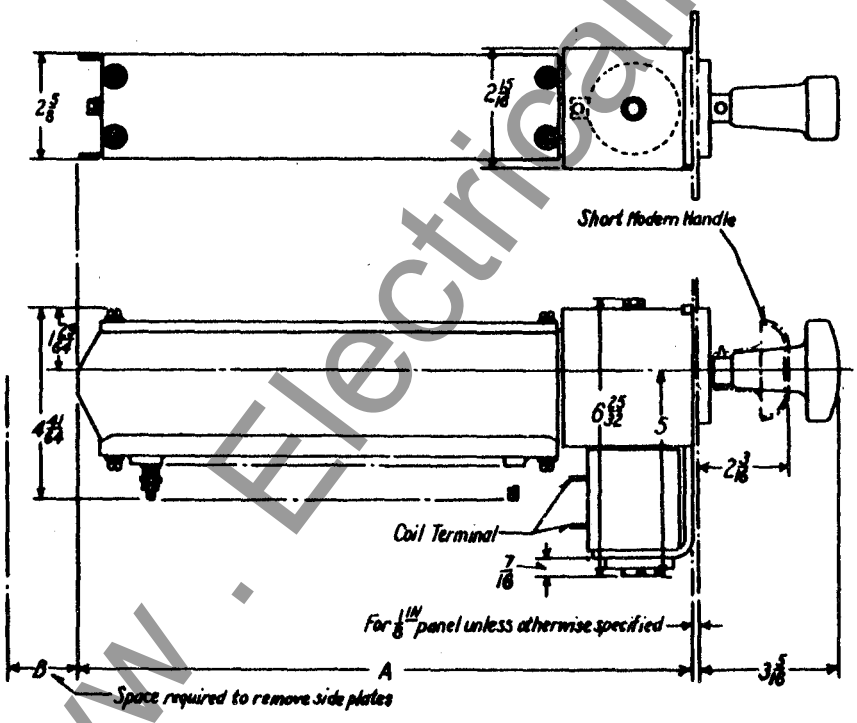
IMPORTANT: Indicator screw or indicator rib on modern handle must point in the same direction as arrow stamped on end of shaft.

To remove drum, take out indicator screw or machine screw and pull handle from shaft. Remove rear end plate and pull drum out from the rear.

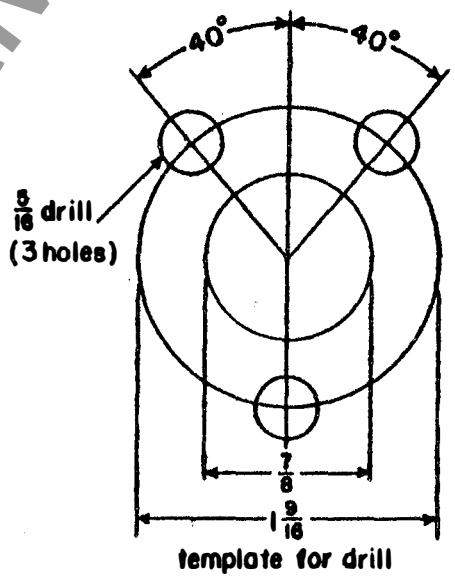
To dismantle drum, remove bolt from end of shaft. When renewing parts on drum, the various segments must be replaced in their original position. The key-way number on each segment indicates the exact position of segment on drum.

table of outline dimensions

no. of contacts	A	B
2	7-7/16	5-1/4
3	8-9/32	6-3/32
4	9-1/8	6-15/16
5	9-31/32	7-25/32
6	10-13/16	8-5/8
8	12-1/2	10-5/16
10	14-3/16	12



drilling plan—to scale



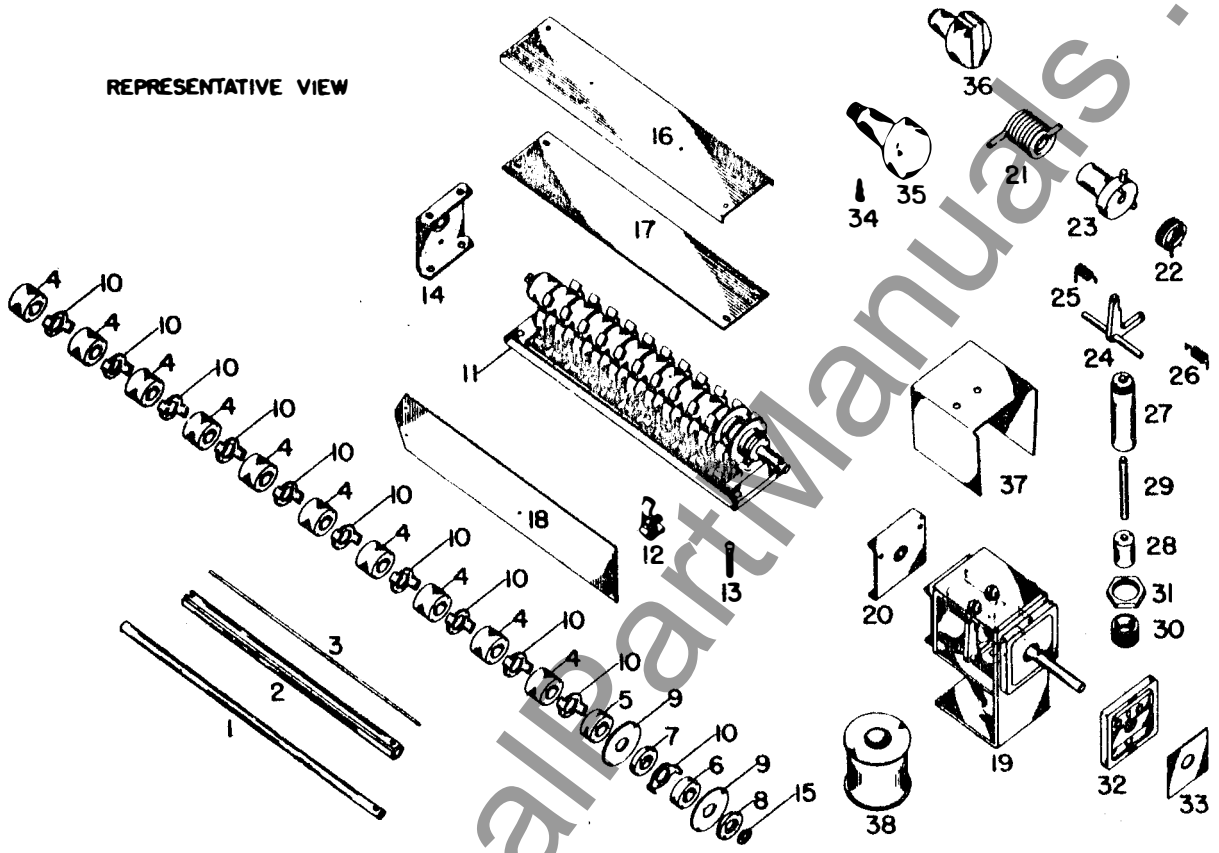
template for drill

renewal
parts data
37-151.1

switch type WL

switchgear apparatus

REPRESENTATIVE VIEW



ref no.	name of part	ref no.	name of part
..	switch without coil	19	trip mechanism without coil
..	drum complete	20	front end plate with bearing
1	shaft	21	centering spring
2	insulating tube	22	operating spring
3	notch key	23	latch cam
4	insulating spacer - 3/4" long	24	latch with pin
5	insulating spacer - 15/32" long	25	latch spring - right hand wound
6	insulating spacer - 11/32" long	26	latch spring - left hand wound
7	insulating spacer - 7/32" long	27	stationary core
8	insulating spacer - 5/32" long	28	moving core
9	insulating barrier	29	plunger rod
10	contact segment	30	thimble
11	base	31	nut
12	stationary contact finger	32	dial plate
13	contact finger terminal screw	33	dial name plate - no. 28095
14	rear end plate with bearing	34	indicator screw
15	drum shaft spacing collar	35	heavy duty oval handle
16	top cover	36	modern oval handle
17	top cover lining	37	cover
18	side plate	38	coil

parts indented are included in the part under which they are indented

ordering information

- Name the part and give its identification number.
- Give the complete nameplate reading.
- State method of shipment desired.
- Send all orders or correspondence to nearest sales office of the company.
- Combine orders to total at least five dollars as this is minimum charge.

supersedes issue dated **January, 1954**

effective **May, 1955**

switch
type WL

renewal
parts data
37-151.1

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To dismantle drum, remove bolt from end of shaft. When renewing parts on drum, the various segments must be replaced in their original position. The key-way number on each segment indicates the exact position of segment on drum.

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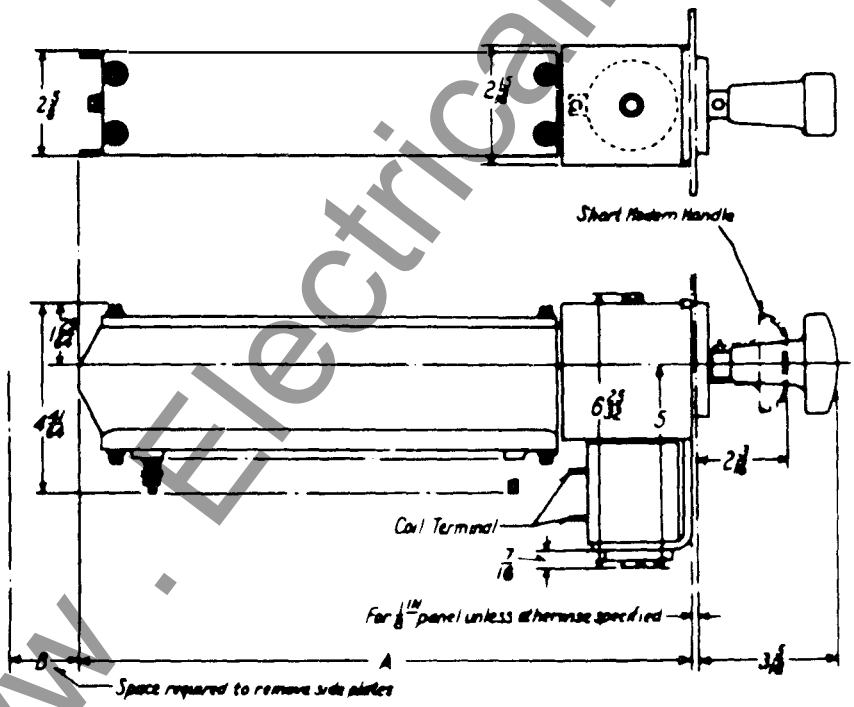
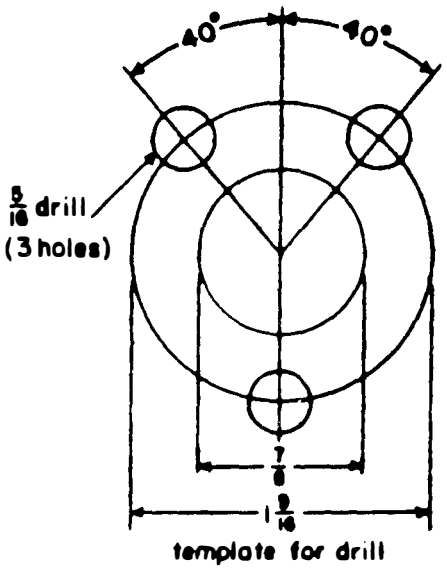


drilling plan—to scale



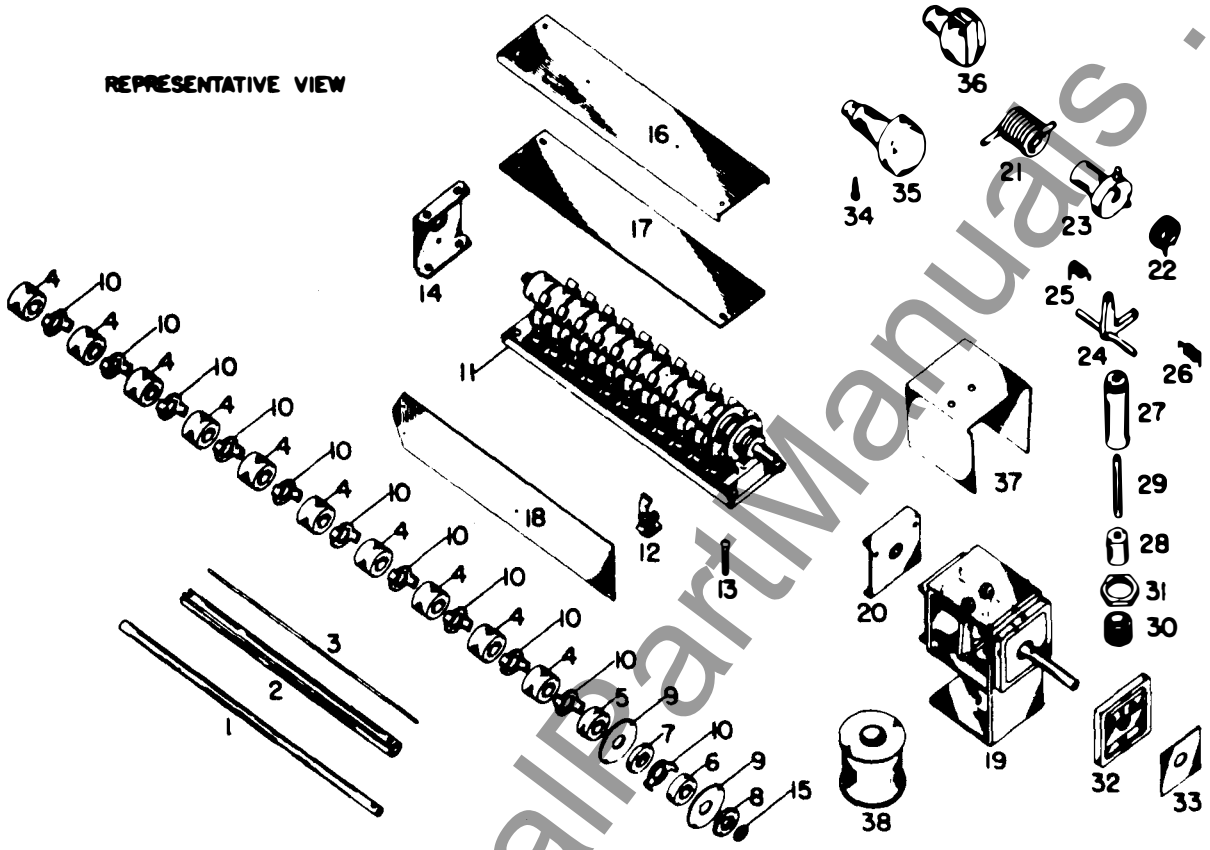
template for drill

renewal parts data
37-151.1

switch type WL

switchgear apparatus

REPRESENTATIVE VIEW



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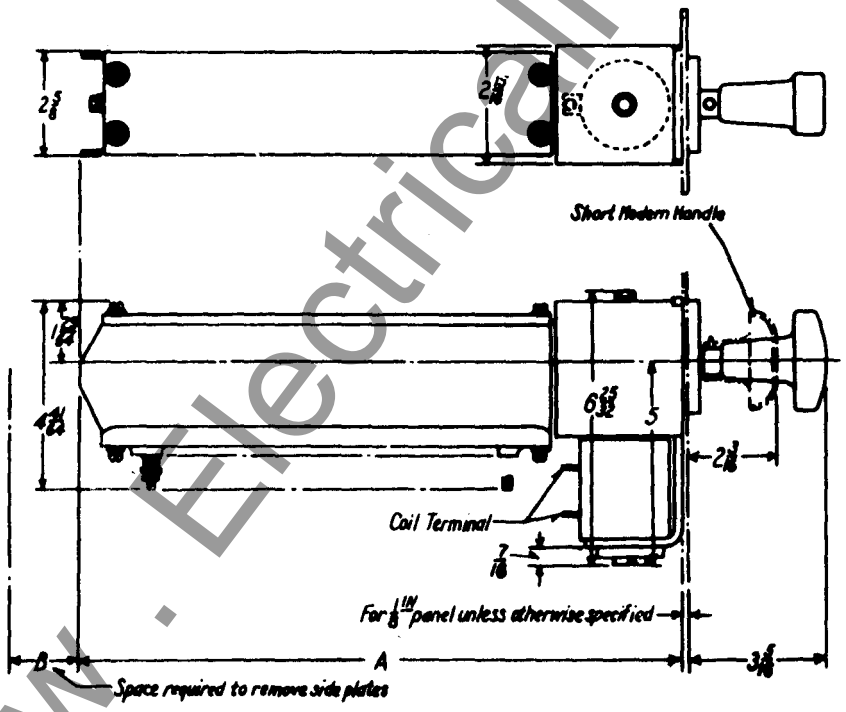
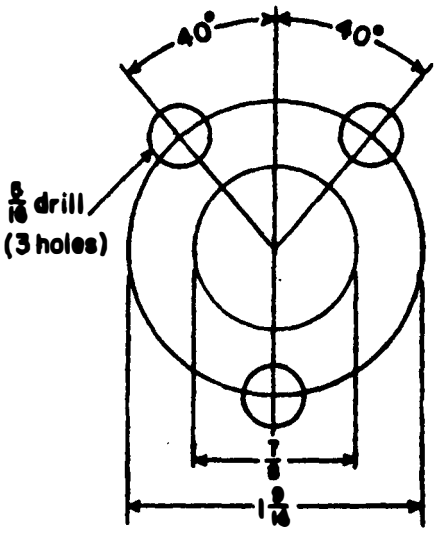


drilling plan—to scale



renewal parts data
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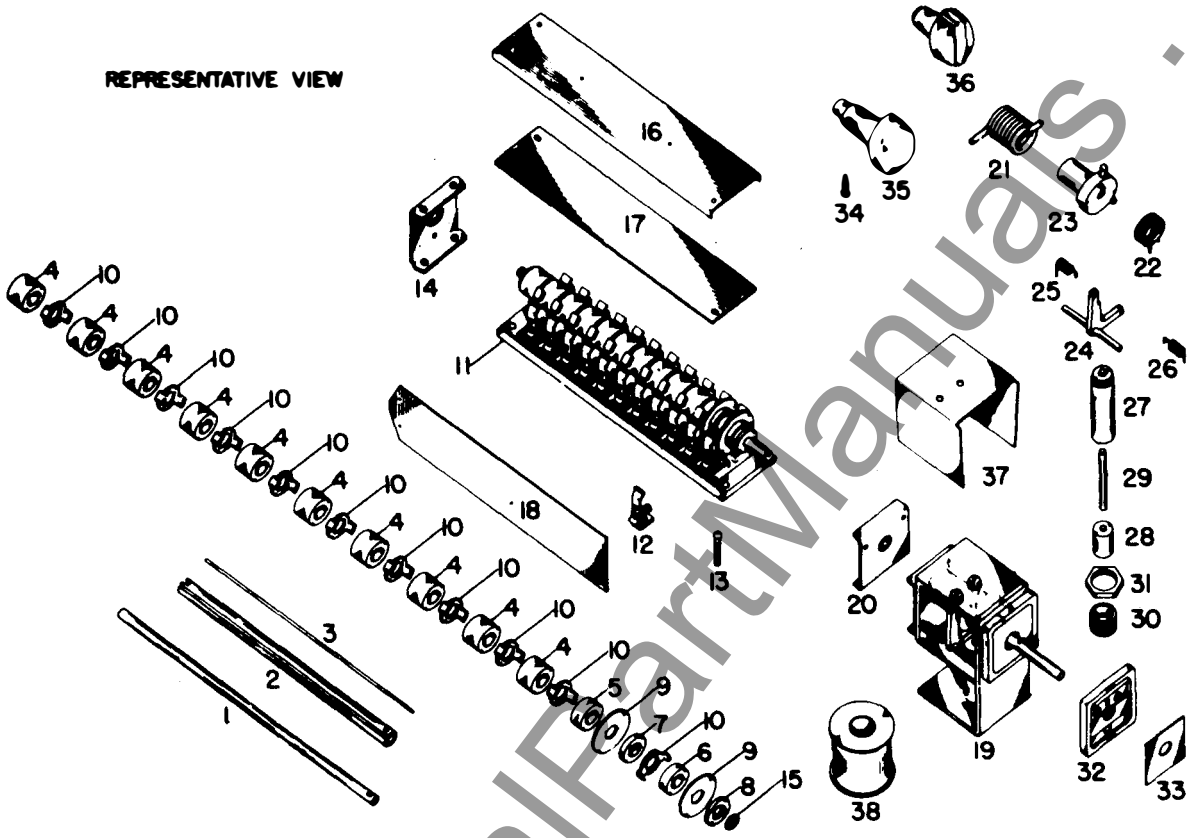
switch type WL

switchgear apparatus

REPRESENTATIVE VIEW



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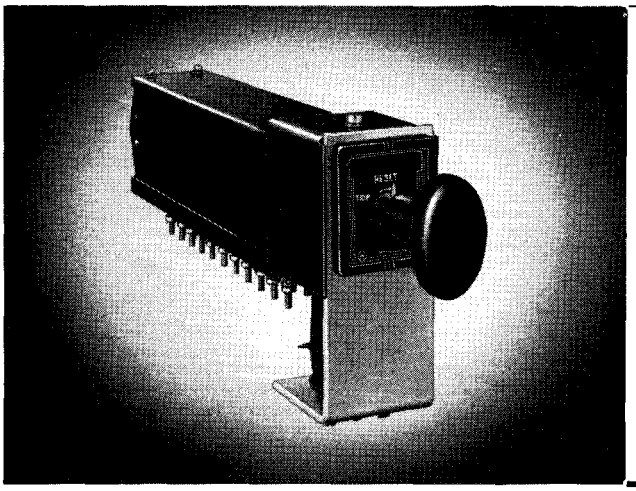


WESTINGHOUSE SPECIAL FEATURES

- **POSITIVE LATCH**—Contacts cannot be jarred or vibrated from normal reset or open position.
- **VISIBLE POSITION INDICATION**—Position of the handle indicates clearly the last switch operation.
- **HIGH SPEED OPERATION**, provided by the strong torsional spring, provides higher interrupting capacity than is usually obtained with standard auxiliary switches.

WESTINGHOUSE RELAY SWITCHES—TYPE WL provide simultaneous tripping of several breakers, required especially in differential bus protection. Type WL switches can also be used for the automatic operation of a single breaker. The WL switch is widely accepted after many years of satisfactory service.

The Type WL switch can be provided with any desired arrangement of make and break contacts up to 10; however, by means of geared switches and parallel or series operation of the trip coils, any desired combination or number of circuits up to 40 can be handled satisfactorily, on special order.

Two operating arrangements are available: (1) the switch can be tripped from the front of the panel by rotating the handle as well as by energizing the shunt trip coil; and (2) tripping can be accomplished only by the operating mechanism in the rear of the panel.

A valuable operating feature of the Type WL switch is a fact that the position of the operating handle provides a visible indication of the last operation of the switch.

CONSTRUCTION—The Type WL switch, incorporating the parts and operating principle of the reliable Type W instrument and control switch, is essentially a spring-operated switch with a shunt trip arrangement. It has proven its reliability and has established its reputation as the standard of the industry.

The contacts are normally held in "Reset" or "Open" position against the force of a torsional spring by a positive latch. A high angle of rake and two independent latch springs are used to insure a positive latch at all times so that the contacts cannot be bumped, jarred, or vibrated to the release position. In fact, if the latch is moved partially towards the unlatched position, it will slide back to the completely latched position upon being released.

The plunger of the solenoid is independent of the latch operating with a hammer-like blow against latch to release rotor mechanism. The latch itself is a single piece, pivoted at one end. All latching surfaces are made of hardened steel, with a durable finish for long life.

A strong coil insures positive tripping. The torsional spring provides the force for the trip action of the switch. Because of its strength, a high speed of operation is obtained, providing a higher interrupting capacity than is usually obtained with standard auxiliary switches.

INTERRUPTING CAPACITY—The following values are for inductive circuits:

VOLTS	INTERRUPTING CAPACITY	
	D-C AMPERES	A-C AMPERES
60	30	40
125	30	40
250	10	20
600	4	10

RECTANGULAR DIAL PLATE with black nameplate and white letters is standard. On special request, a white rectangular nameplate with black letters, or a white round nameplate with black letters, can be supplied to match existing equipment.

TABLE I—SUPERSEDING STYLE NUMBERS*

NO OF STAGES	WITH HEAVY-DUTY OVAL HANDLE				WITH MODERN OVAL HANDLE			
	TRIPPED BY HANDLE		NOT TRIPPED BY HANDLE		TRIPPED BY HANDLE		NOT TRIPPED BY HANDLE	
	OLD STYLE NO.	NEW STYLE NO.	OLD STYLE NO.	NEW STYLE NO.	OLD STYLE NO.	NEW STYLE NO.	OLD STYLE NO.	NEW STYLE NO.
2	1081 227	1581 093	1081 234	1581 008	1291 891	1581 086	1291 898	1581 001
3	1081 228	1581 094	1081 235	1581 009	1291 892	1581 087	1291 899	1581 002
4	1081 229	1581 095	1081 236	1581 010	1291 893	1581 088	1291 900	1581 003
5	1081 230	1581 096	1081 237	1581 011	1291 894	1581 089	1291 901	1581 004
6	1081 231	1581 097	1081 238	1581 012	1291 895	1581 090	1291 902	1581 005
8	1081 232	1581 098	1081 239	1581 013	1291 896	1581 091	1291 903	1581 006
10	1081 233	1581 099	1081 240	1581 014	1291 897	1581 092	1291 904	1581 007

* A more positive latch mechanism has been substituted. The new styles are interchangeable with the old.

Supersedes C.S. 37-151, pages 1 and 2, dated August 16, 1950
E42-1, 2, 3, 5Q; D64-1, 2, 3, 5F; C28-1, 2, 3, 5K
OCTOBER 30, 1951

Refer to Selling Policy 37-000 For Standard Terms and Conditions of Sale
Prices Are Effective October 30, 1951 and Are Subject to Change Without Notice

Ordering Information

To select the proper switch, complete ordering information should be supplied as follows:

1. Switch style numbers, without coils from Table II; with coils from table III.
2. Control circuit voltage and coil style numbers, from Table IV.
3. Operating voltage, to facilitate nameplate marking.

The number of contacts as indicated for a switch are in addition to the contacts for breaking the coil current. Unless otherwise specified, all contacts will be made after the relay has tripped.

The switch characteristics depend to some extent on the coil used. Table IV lists these characteristics for various coils. To provide characteristics desired for a given relay scheme, a wide range of coils is available.

Heavy duty handle switches can be mounted on panels up to 2 inches thick by changing the mounting screw length. Modern handle switches for other than 1/8-inch panels are available on special order.

TABLE II—LIST PRICES—NEW STYLE TYPE WL SWITCHES WITH OVAL HANDLES, FOR 1/8-INCH PANEL MOUNTING

NO. OF STAGES	STYLE NUMBERS WITHOUT COILS*				LIST PRICE*	APPROX. SHIP. WT., LB.	ROTOR CONTACTS A = CONTACT OPEN IN RESET, CLOSED IN TRIP POSITION. B = CONTACT CLOSED IN RESET, OPEN IN TRIP POSITION.									
	MODERN HANDLE		HEAVY-DUTY HANDLE				COIL	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20
	NON-TRIP BY HANDLE	TRIP BY HANDLE	NON-TRIP BY HANDLE	TRIP BY HANDLE												
2	1581 001	1581 086	1581 008	1581 093	$72.00	6½	B	A	A							
3	1581 002	1581 087	1581 009	1581 094	72.00	7	B	A	A	A						
4	1581 003	1581 088	1581 010	1581 095	72.00	7½	B	A	A	A	A					
5	1581 004	1581 089	1581 011	1581 096	72.00	8	B	A	A	A	A	A				
6	1581 005	1581 090	1581 012	1581 097	72.00	9	B	A	A	A	A	A	A			
8	1581 006	1581 091	1581 013	1581 098	84.00	10	B	A	A	A	A	A	A	A	A	
10	1581 007	1581 092	1581 014	1581 099	84.00	11	B	A	A	A	A	A	A	A	A	A
2	1581 015	1581 100	1581 041	1581 125	72.00	6½	B	B	A							
3	1581 016	1581 101	1581 042	1581 126	72.00	7	B	B	A	A						
4	1581 017	1581 102	1581 043	1581 127	72.00	7½	B	B	A	A	A					
5	1581 018	1581 103	1581 044	1581 128	72.00	8	B	B	A	A	A	A				
6	1581 019	1581 104	1581 045	1581 129	72.00	9	B	B	A	A	A	A	A			
8	1581 020	1581 105	1581 046	1581 130	84.00	10	B	B	A	A	A	A	A	A	A	
10	1581 021	1581 106	1581 047	1581 131	84.00	11	B	B	A	A	A	A	A	A	A	A
3	1581 022	1581 107	1581 048	1581 132	72.00	7	B	B	B	A						
4	1581 023	1581 108	1581 049	1581 133	72.00	7½	B	B	B	A	A					
5	1581 024	1581 109	1581 050	1581 249	72.00	8	B	B	B	A	A	A				
6	1581 025	1581 110	1581 051	1581 250	72.00	9	B	B	B	A	A	A	A			
8	1581 026	1581 111	1581 052	1581 251	84.00	10	B	B	B	A	A	A	A	A	A	
10	1581 027	1581 112	1581 053	1581 252	84.00	11	B	B	B	A	A	A	A	A	A	A
4	1581 028	1581 113	1581 054	1581 253	72.00	7½	B	B	B	B	A					
5	1581 029	1581 114	1581 054	1581 254	72.00	8	B	B	B	B	A	A				
6	1581 030	1581 115	1581 056	1581 255	72.00	9	B	B	B	B	A	A	A			
8	1581 031	1581 116	1581 057	1581 256	84.00	10	B	B	B	B	A	A	A	A	A	
10	1581 032	1581 117	1581 058	1581 257	84.00	11	B	B	B	B	A	A	A	A	A	A
5	1581 033	1581 118	1581 059	1581 258	72.00	8	B	B	B	B	B	A				
6	1581 034	1581 119	1581 060	1581 259	72.00	9	B	B	B	B	B	A	A			
8	1581 035	1581 120	1581 061	1581 260	84.00	10	B	B	B	B	B	A	A	A	A	
10	1581 036	1581 121	1581 062	1581 261	84.00	11	B	B	B	B	B	A	A	A	A	A
6	1581 037	1581 122	1581 063	1581 262	72.00	9	B	B	B	B	B	B	A			
8	1581 038	1581 123	1581 064	1581 263	84.00	10	B	B	B	B	B	B	A	A	A	
10	1581 039	1581 124	1581 065	1581 264	84.00	11	B	B	B	B	B	B	A	A	A	A

* Select coil from Table IV. List price includes coil.

*TABLE III—STYLE NUMBERS WITH COILS

ASSEMBLY STYLE NUMBER	NO. OF STAGES	SWITCH STYLE NUMBER	COIL RATING	LIST PRICE	APPROX. SHIP. WT., LB.	ASSEMBLY STYLE NUMBER	NO. OF STAGES	SWITCH STYLE NUMBER	COIL RATING	LIST PRICE	APPROX. SHIP. WT., LB.
1581 072	5	1581 004	125 volts d-c	$72.00	8	1581 080	8	1581 006	125 volts d-c	$84.00	10
1581 073	5	1581 004	250 volts d-c	72.00	8	1581 081	8	1581 006	250 volts d-c	84.00	10
1581 074	6	1581 012	125 volts d-c	72.00	9	1581 082	10	1581 014	125 volts d-c	84.00	11
1581 075	6	1581 012	250 volts d-c	72.00	9	1581 083	10	1581 014	250 volts d-c	84.00	11
1581 076	6	1581 005	125 volts d-c	72.00	9	1581 084	10	1581 007	125 volts d-c	84.00	11
1581 077	6	1581 005	250 volts d-c	72.00	9	1581 085	10	1581 007	250 volts d-c	84.00	11
1581 078	8	1581 006	24 volts d-c or 110 volts a-c	84.00	10	1581 265	6	1581 110	125 volts d-c	72.00	9
1581 079	8	1581 006	48 volts d-c	84.00	10						

* This table constitutes the most frequently used combinations and is given for convenience in ordering by a single Assembly Style.

Prices Are Subject to Change Without Notice

TABLE IV—SWITCH CHARACTERISTICS

Time from Energization of Coil to Positive Contact Closing—Seconds.

The coils marked with the asterisk (*) are considered standard for the operating voltage under which they are starred and will be included with the switch if the style of the coil is not specified when the switch is ordered. In any case, the operating voltage must be given. These coils should not be used for 5 Ampere series trip operation from secondary of current transformers, as the burden is too great.

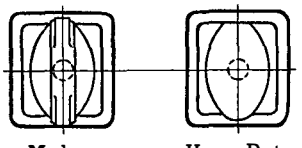
DIRECT CURRENT							ALTERNATING CURRENT—60 CYCLES				
COIL STYLE NUMBER	OHMS RESISTANCE	MINIMUM TRIP—D-C VOLTS	VOLTAGE OF CONTROL CIRCUIT—D-C VOLTS				COIL STYLE NUMBER	OHMS IMPEDANCE (NOT TRIPPED)	MINIMUM TRIP—A-C VOLTS	VOLTAGE OF CONTROL CIRCUIT—A-C VOLTS	
			24	48	125	250				110	120
151 845	.36	6.0	....	....	....	....	767 374	6.2	50	*.016	....
767 374	.73	8.7	*.016	....	....	....	452 325	21	95	.019	.016
452 325	2.68	17.1	....	.016	....	....	760 254	30	115	....	.016
760 254	4.05	21.4	....	*.017	....	....	476 372	43	135	....	*.017
476 372	6.2	27	....	.019	.013	....					
1043 450	8.6	31	....	....	.014	....	1043 450	52	155	....	.018
477 879	12.2	33	....	....	.014	....	477 879	97	200	....	....
1611 357†	6.2	27	....	....	.013	....	807 530	140	243	....	....
1611 358†	8.6	31	....	....	.014	....	807 531	208	297	....	....
1611 359†	12.2	33	....	....	.014	....					
1611 360†	18.5	44	....	....	.016	....					
1611 274†	28	54	....	....	*.017	.014					
1611 361†	45.5	70	....	....	.019	.015					
1611 275†	59	84	....	....	....	*.016					
1611 362†	104	111	....	....	....	.017					

* Time may vary slightly for a-c tripping depending on point of a-c cycle at which coil is energized.

† These styles include condenser S#1611 273.

OUTLINE DIMENSIONS IN INCHES

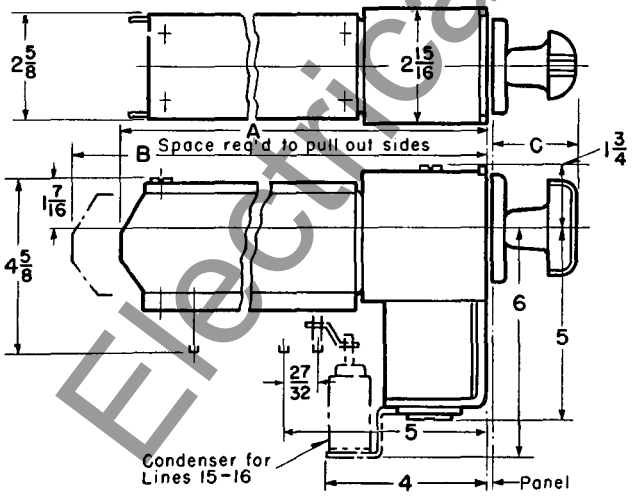
Approximate Only. Do Not Use For Construction Purposes.



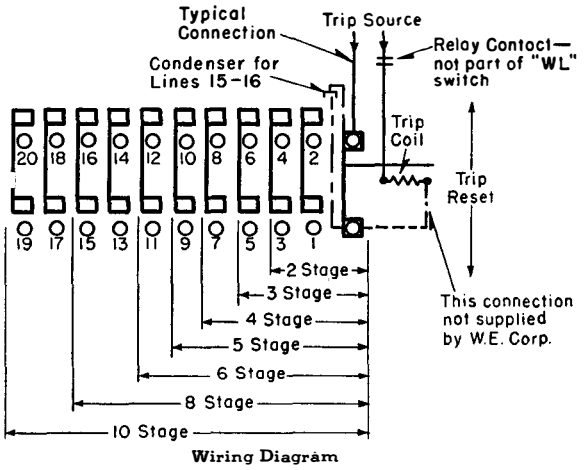
Modern Oval Figure 1

Heavy Duty Oval Figure 2

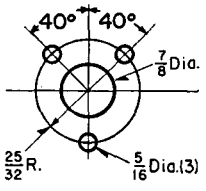
FIG. NO.	DIMENSION C IN INCHES
1	$2\frac{3}{16}$
2	$3\frac{5}{16}$



Outline Dimensions



Wiring Diagram



Drilling Plan

LINE NO.	NO. OF STAGES	DIMENSIONS IN INCHES A	DIMENSIONS IN INCHES B	LINE NO.	COILS
1	2	$7\frac{7}{16}$	$12\frac{11}{16}$	11	110-volt, 60-cycle
2	3	$8\frac{9}{32}$	$14\frac{3}{8}$	12	220-volt, 60-cycle
3	4	$9\frac{1}{8}$	$16\frac{1}{16}$	13	24-volt, D-C
4	5	$9\frac{31}{32}$	$17\frac{3}{4}$	14	48-volt, D-C
5	6	$10\frac{13}{16}$	$19\frac{7}{16}$	△15	125-volt, D-C
6	8	$12\frac{1}{2}$	$22\frac{13}{16}$	△16	250-volt, D-C
7	10	$14\frac{3}{16}$	$26\frac{3}{16}$		

△ Condenser Furnished.

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