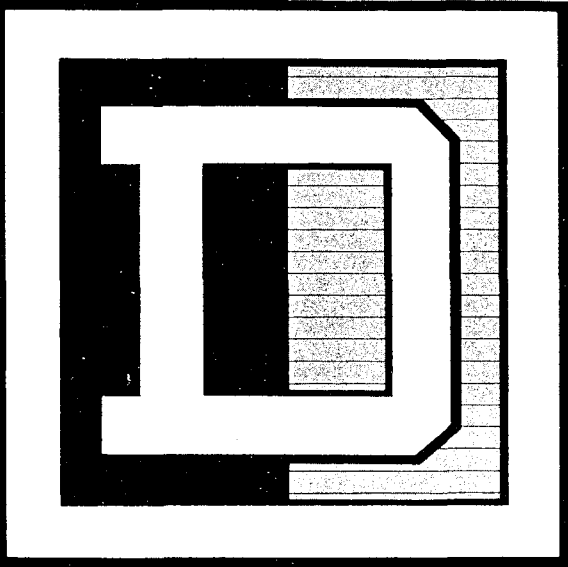


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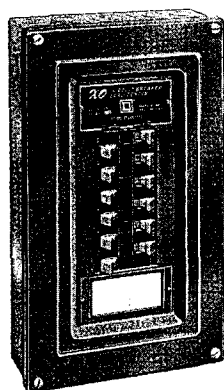


CATALOG

DIGEST

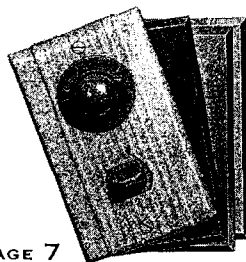
SQUARE  COMPANY

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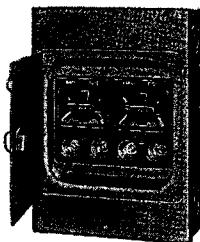
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XO CIRCUIT BREAKER LOAD CENTERS



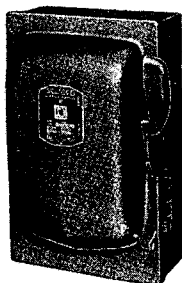
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LOW VOLTAGE CONTROL



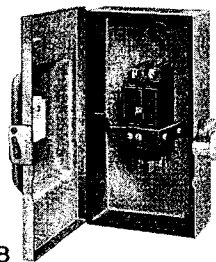
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FUSIBLE SERVICE EQUIPMENT



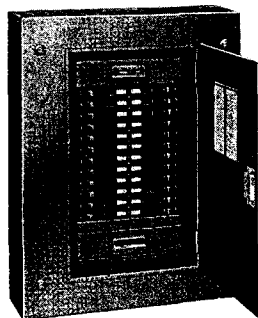
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SAFETY SWITCHES



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INDUSTRIAL CIRCUIT BREAKERS



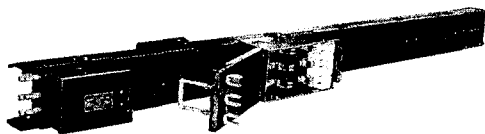
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LIGHTING PANELBOARDS



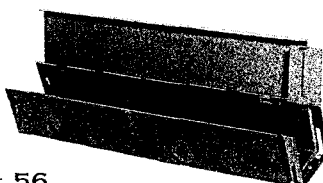
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DISTRIBUTION PANELBOARDS



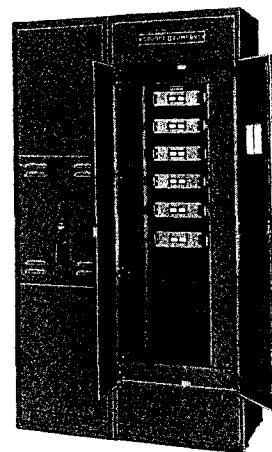
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WIREWAYS AND AUXILIARY GUTTER



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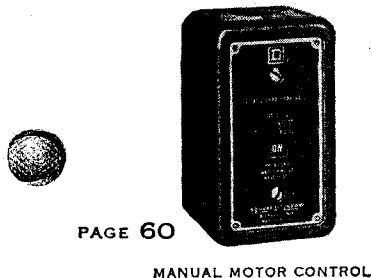
wireways and auxiliary gutter

Lay-in Duct

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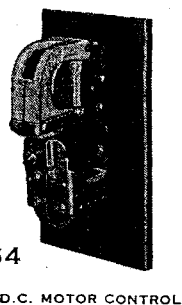
switchgear

Switchboards • Metal Clad • Metal
Enclosed • Unit Substations



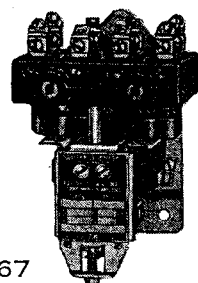
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MANUAL MOTOR CONTROL



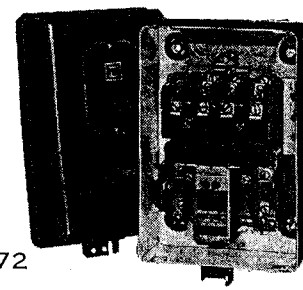
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D.C. MOTOR CONTROL



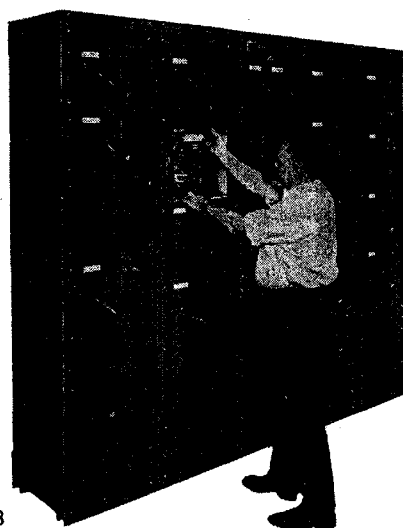
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A.C. RELAYS AND CONTACTORS



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A.C. MAGNETIC STARTERS



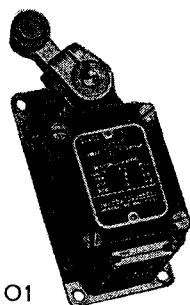
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SPECIAL PURPOSE CONTROL



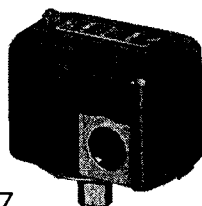
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PUSHBUTTON STATIONS



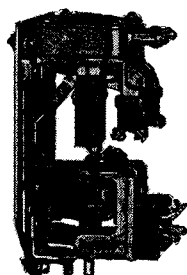
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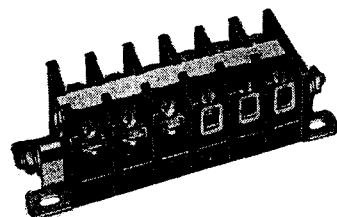
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PUMP CONTROL



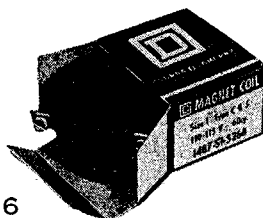
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72	A.C. magnetic starters Line Voltage — Melting Alloy or Bi-Metal Overloads • Combination Starters —switch or circuit breaker • Reduced Voltage, Reversing and Multi-speed
88	special purpose control Automatic Transfer Panels • Machine Tool, Laundry, and Punch Press • Control Centers • Welder Control
94	pushbutton stations Standard Duty • Heavy Duty • Oil-tight
101	accessories Foot Switches • Limit Switches
107	pump control Water Pump and Air Compressor Switches • Industrial Pressure Switches • Float and Vacuum Switches • Valves
111	timing relays Pneumatic • Magnetic — Oil Dashpot
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116	parts and modification kits Replacement Contacts • Magnet Coils • Interlocks • Pushbuttons and Selector Switches
119	tables Full Load Currents • Overload Relay Unit Selection • Circuit Breaker and Switch Selection • NEC Data

XO CIRCUIT BREAKER LOAD CENTERS

XO Load Centers are still the most complete line ever marketed. These economical units have every worthwhile feature found in higher priced circuit breaker equipment. XO circuit breakers make the job easier—

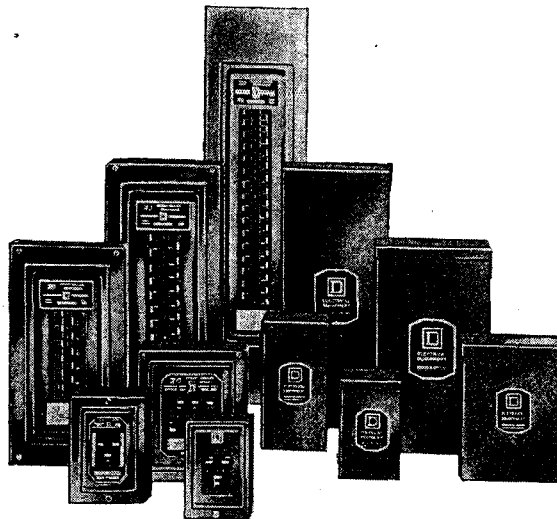
EASIER TO SELECT since the line includes the correct load center for any job. XO's extend from 1 to 32 circuits for the usual 1 PHASE — 3 WIRE or 3 PHASE — 4 WIRE applications as well as for specific jobs such as SPLIT BUS, filling station SWITCHED NEUTRAL, CENTRAL AIR CONDITIONING and WATER HEATERS. Either main LUGS or MAIN BREAKERS are available in GENERAL PURPOSE or RAIN-TIGHT enclosures.

EASIER TO INSTALL as single and double pole breakers can be plugged in anywhere and provide automatic line connections. Wire looping is eliminated by XO's load side terminals. They are front accessible for easier wiring. Enclosures have plenty of wiring space and matched knock-outs. Adjustable interiors and cover twistouts save installation time.

EASIER TO BUY because you get WHAT YOU WANT . . . only three components (box-interior, cover and one type of breaker) — just what is needed, leaving room to grow. WHEN YOU WANT IT . . . immediately from the stock of your local Square D Distributor. Packaged and labeled for reshipment and easy identification on the job. AT LOWEST COST.

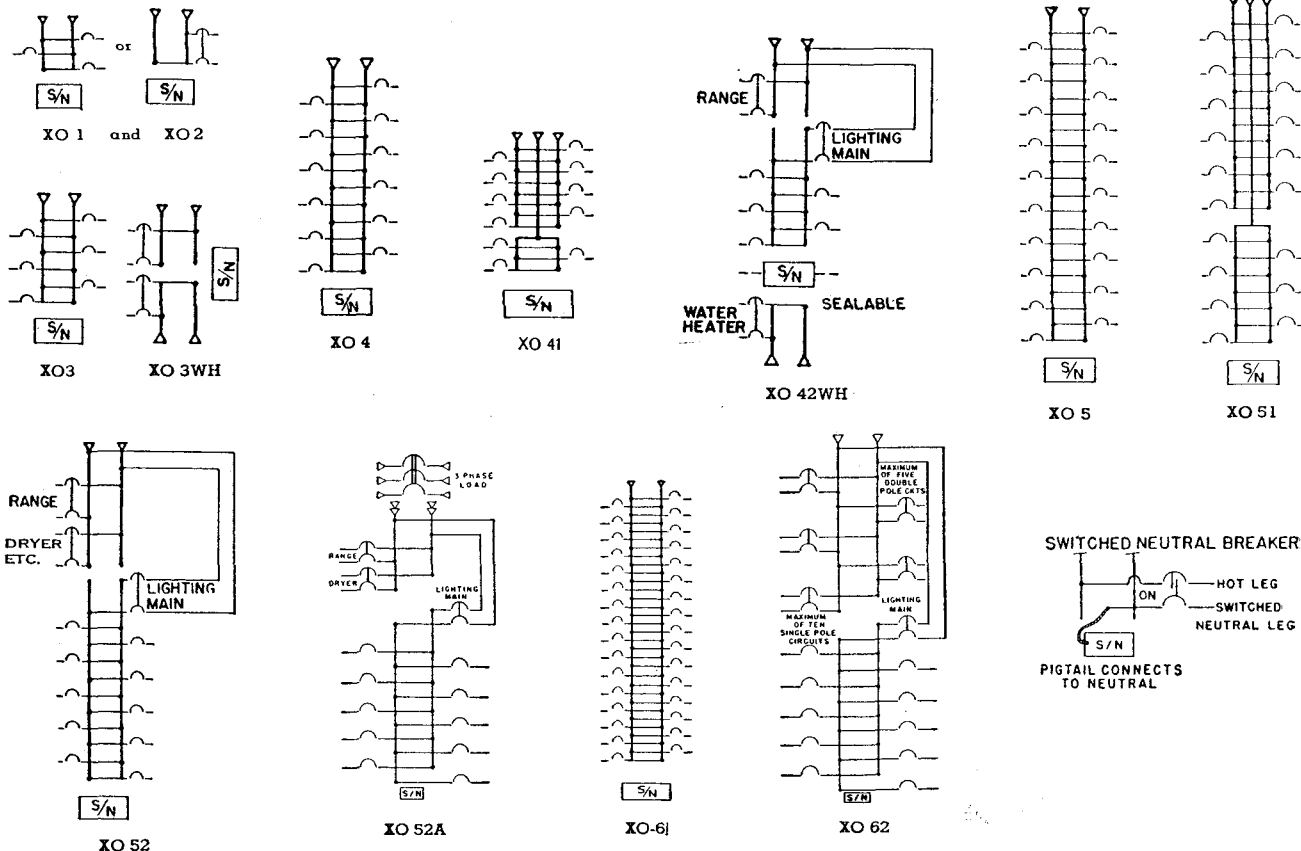
EASIER TO LIVE WITH due to attractive appearance and the complete protection against overloads and shorts, provided by its THERMAL MAGNETIC operating elements. In addition, the breaker has many other important features such as POSITIVE OPERATION as handle acts directly against blade forcing contacts open. QUICK MAKE — QUICK BREAK action eliminates teasing of contacts. AMBIENT COMPENSATION prevents nuisance tripping due to surrounding temperature changes — unaffected by summers' heat or nearby boilers. NON-INTERCHANGEABLE widths of 15 and 20 ampere single pole breakers with higher rated 30, 40 and 50 ampere units minimize dangerous "over-protecting". Future circuits can be added as your customers electrical living continues to grow.

Meets Federal Specification W-P-131A, Amendment 2 as Class A type device. UL approved — File E10027. 5000 ampere, 120 volts circuit interruption capacity.



Complete General Purpose and Rain-tight XO Line.

TYPICAL CIRCUIT DIAGRAMS ARE ILLUSTRATED BELOW. QUICK PRICING TABLES ARE PROVIDED FOR YOUR CONVENIENCE. ORDER COMPONENTS FROM LISTINGS ON PAGES 4 AND 5.



XO CIRCUIT BREAKER LOAD CENTERS

**COMPLETE
DEVICE
PRICE TABLE**

HOW TO PRICE A COMPLETE XO DEVICE

You must know the number of double pole circuits, single pole circuits, and mains rating required. Then proceed as follows:

- (1) Select the vertical column under DOUBLE POLES equal to the required double pole circuits.
- (2) Read down this vertical column until you reach the number of single pole circuits required.
- (3) Check mains rating column for adequacy.

- (4) Move to the right and locate the list price in the column headed by the feature desired. This is the complete device price.

- (5) Using TYPE number as a guide, order individual components (box, cover, and breakers) which make up the complete device from tables on the next page.

EXAMPLE: If you need a general purpose, lugs only device with 2 double poles, 6 single poles and 100 ampere mains, the complete device list price is **\$30.80**.

LIST PRICES INCLUDE BOX, INTERIOR, COVER AND BREAKERS

CIRCUIT COMBINATIONS											Lugs Rating in Amp.	1 PHASE 3-WIRE			3 PHASE 4-WIRE		
(1) Select DOUBLE POLES												Lugs Only		Main Breaker	Lugs Only		Main Breaker
0	1	2	3	4	5	6	7	8	9	10		Gen. Purpose	Raintight	Gen. Purpose	Gen. Purpose	Raintight	Gen. Purpose
(2) Read Down for SINGLE POLES																	
▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼							
TYPE →											XO 1S	XO 1F	XO 1R-RO				
1											\$4.70	\$5.20	\$ 9.20				
2	0									30	6.90	7.40	11.40				
3											9.10	9.60	13.60				
TYPE →											XO 2	XO 2R					
1										50	6.40	10.20					
2	0										8.60	12.40					
3											10.80	14.60					
TYPE →											XO 3	XO 3RO					
1										70	7.20	11.20					
2	0										9.40	13.40					
3											11.60	15.60					
4	2	0									13.80	17.80					
5											16.00	20.00					
6											18.20	22.20					
TYPE →											XO 4	XO 4RO	XO 4M	XO 41	XO 41RO	XO 41M	
5	3	1	0							100	19.80	28.00	\$58.00	\$28.60	\$36.80	\$84.00	
6	4	2									22.00	30.20	60.20	30.80	39.00	86.20	
7	5	3	1								24.20	32.40	62.40	33.00	41.20	88.40	
8	6	4	2	0							26.40	34.60	64.60	35.20	43.40	90.60	
9	7	5	3								28.60	36.80	66.80	37.40	45.60	92.80	
10	8	6									30.80	39.00	69.00	39.60	47.80	95.00	
11	9										33.00	41.20	71.20	41.80	50.00	97.20	
12											35.20	43.40	73.40				
TYPE →											XO 5	XO 5RO	XO 5M	XO 51	XO 51RO	XO 51M	
9	7	5	3	1	0					100	34.80	44.80	76.80	42.80	52.80	126.80	
10	8	6	4	2							37.00	47.00	79.00	45.00	55.00	129.00	
11	9	7	5	3	1						39.20	49.20	81.20	47.20	57.20	131.20	
12	10	8	6	4	2	0					41.40	51.40	83.40	49.40	59.40	133.40	
13	11	9	7	5	3	1					43.60	53.60	85.60	51.60	61.60	135.60	
14	12	10	8	6	4	2					45.80	55.80	87.80	53.80	63.80	137.80	
15	13	11	9	7	5						48.00	58.00	90.00	56.00	66.00	140.00	
16	14	12	10	8							50.20	60.20	92.20	58.20	68.20	142.20	
17	15	13	11								52.40	62.40	94.40	60.40	70.40	144.40	
18	16	14									54.60	64.60	96.60	62.60	72.60	146.60	
19	17										56.80	66.80	98.80	64.80	74.80	148.80	
20											59.00	69.00	101.00				
TYPE →											XO 6			XO 61			
14	12	10	8	6	4	2	0				63.80			70.80			
15	13	11	9	7	5	3	1				66.00			73.00			
16	14	12	10	8	6	4	2	0			68.20			75.20			
17	15	13	11	9	7	5	3	1			70.40			77.40			
18	16	14	12	10	8	6	4	2	0		72.60			79.60			
19	17	15	13	11	9	7	5	3	1		74.80			81.80			
20	18	16	14	12	10	8	6	4	2	0	77.00			84.00			
21	19	17	15	13	11	9	7	5	3	1	79.20			86.20			
22	20	18	16	14	12	10	8	6	4	2	81.40			88.40			
23	21	19	17	15	13	11	9	7	5		83.60			90.60			
24	22	20	18	16	14	12	10	8			85.80			92.80			
25	23	21	19	17	15	13	11				88.00			95.00			
26	24	22	20	18	16	14					90.20			97.20			
27	25	23	21	19	17						92.40			99.40			
28	26	24	22	20							94.60			101.60			
29	27	25									96.80			103.80			
30	28										99.00			106.00			
31	29										101.20			108.20			
32											103.40						



SCHEDULE B DISCOUNT

PAGE 3

XO CIRCUIT BREAKER LOAD CENTERS

**1 to 32
CIRCUITS**

**120/240 VOLTS
A.C. ONLY**

DEVICES CONSISTING OF BOX, INTERIOR AND COVER—ORDER BREAKERS SEPARATELY

Type Number	Max. No. Circuits S.P. or D.P.	Mains	Box		DEVICE Box, Interior and Cover —No Breakers		COVERS For Separate Stocking		
			Type	Mount- ing	Cat. No.	List Price	Device Type	Type	Cat. No.
1 PHASE—2 or 3 WIRE, Insulated Groundable Neutral									
XO 1	3	1	30A. Lugs	Gen. Purpose Raintight▲	Surface Flush	XO 1S	\$ 2.50	Cover is included in Device Price. Sepa- rate XOC 2 and XOC 3 covers \$1.10 list each. Covers packaged 10 to carton.	
					—	* XO 1F	3.00		
					—	XO 1R	7.00		
					—	XO 1RO	7.00		
XO 2	3	1	50A. Lugs	Gen. Purpose Raintight▲	Surface Flush	XO 2S	4.20	XO 2	Surface Flush
					—	XO 2F	4.20		
					—	XO 2R	8.00		
					—	XO 2RO	8.00		
XO 3	6	2	70A. Lugs	Gen. Purpose Raintight▲	Surface Flush	XO 3S	5.00	XO 3	Surface Flush
					—	XO 3F	5.00		
					—	XO 3R	9.00		
					—	XO 3RO	9.00		

*40 Amp. Mains

DEVICES CONSISTING OF BOX, INTERIOR—ORDER COVER AND BREAKERS SEPARATELY

Type Number	Max. No. Circuits S.P. or D.P.	Mains	Box Type	DEVICE Box and Interior —No Breakers or Cover		COVER Not included in Device Price. Order Separately, 10 to carton.			
				Cat. No.	List Price	Surface Cat. No.	Flush Cat. No.	List Price	
1 PHASE—3 WIRE, Insulated Groundable Neutral									
XO 4	12	4	100A. Lug 70A. Breaker 100A. Lug	Gen. Purpose	XO 4	\$ 6.40	XOC 4S	XOC 4F	\$ 2.40
					XO 4M	43.40	XOC 4MS	XOC 4MF	3.60
				Raintight▲	XO 4RO	17.00	—	—	—
XO 5	20	6	100A. Lug 100A. Breaker 100A. Lug	Gen. Purpose	XO 5	11.40	XOC 5S	XOC 5F	3.60
					XO 5M	50.00	XOC 5MS	XOC 5MF	7.00
				Raintight▲	XO 5RO	25.00	—	—	—
XO 6	32	10	200A. Lug	Gen. Purpose	XO 6	26.00	XOC 6S	XOC 6F	7.00

3 PHASE—4 WIRE, Insulated Groundable Neutral

XO 41	11	2	100A. Lug 50A. Breaker	Gen. Purpose	XO 41	\$ 15.20	XOC 4S	XOC 4F
					XO 41M	69.40	XOC 41MS	XOC 41MF
				Raintight	XO 41RO	25.80	—	—
XO 51	19	4	100A. Lug 100A. Breaker	Gen. Purpose	XO 51	19.40	XOC 5S	XOC 5F
					XO 51M	100.00	XOC 51MS	XOC 51MF
				Raintight▲	XO 51RO	33.00	—	—
XO 61	31	6	200A. Lug	Gen. Purpose	XO 61	33.00	XOC 6S	XOC 6F

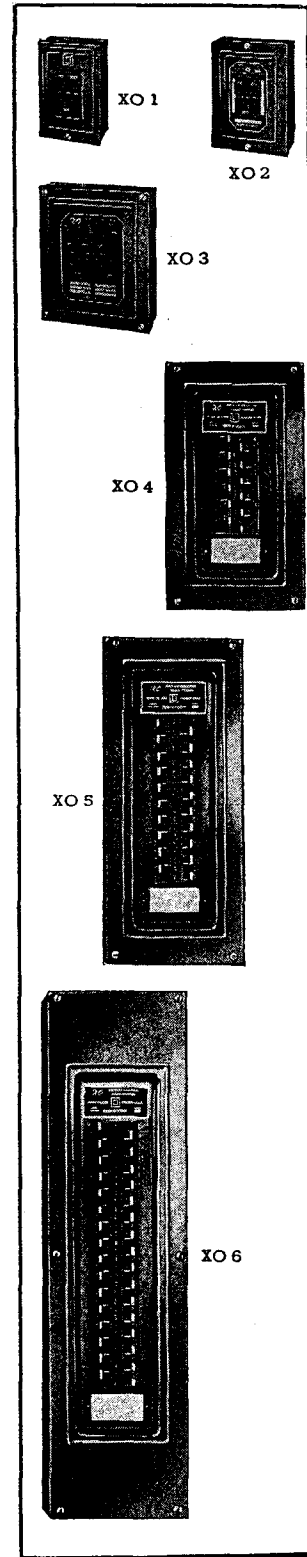
▲Type R raintight device has no hub provisions. Type RO has threaded opening for interchangeable hub or cap.
Order separately from Table on Page 6.

XO PLUG-IN CIRCUIT BREAKERS

Poles	Amp. Rating	Catalog Number	List Price Each	Standard Carton		Standard Package	
				Qty.	List Price	Qty.	List Price
Single	15 20	XO 115 XO 120	\$ 2.20 2.20	15	\$33.00	60	\$132.00
Double	15	XO 215	4.40	5	22.00	20	88.00
	20	XO 220	4.40				
	30	XO 230	4.40				
	40	XO 240	4.40				
	50	XO 250	4.40				
Double (Switched Neutral)	15 20	XO 215SWN XO 220SWN	6.60 6.60	5	33.00	20	132.00

Separately boxed and packed 15 Single Pole or 5 Double Pole units to a carton for installation in XO Circuit Breaker Load Centers. 4 cartons to standard package.

FINISH: Blue-gray enamel. Handle Lock, SK5405... \$0.60 list each. Filler Plate SK5434... \$0.60 list each.



XO CIRCUIT BREAKER LOAD CENTERS

**SPECIFIC
APPLICATION
DEVICES**

HOW TO PRICE A COMPLETE XO SPECIFIC APPLICATION DEVICE

You must know the number of double pole (or switched neutral) circuits as well as single pole circuits. Then proceed as follows:

- (1) Select the vertical column under DOUBLE POLES equal to the required double pole circuits.
- (2) Read down this vertical column until you reach the number of single pole circuits required.

- (3) Move to the right and locate the list price in the column headed by the feature desired. Check the circuit diagram on Page 2 to make sure the circuit requirement is met.

- (4) Using TYPE number as a guide, order the individual components which make up a complete device from the table at the bottom of the page.

LIST PRICES INCLUDE BOX, INTERIOR, COVER AND BREAKERS

120/240 VOLTS A.C. ONLY

CIRCUIT COMBINATIONS						WATER HEATER LOADS	SPLIT BUS LOADS									
(1) Select DOUBLE POLES							Maximum of 2 Double Poles	Max. of 2 Double Poles One Feeds Up To 5 Single Poles	Max. of 3 Double Poles One Feeds Up To 5 Single Poles One is Separate D.P. Water Heater Circuit	Max. of 3 Double Poles One Feeds Up To 10 Single Poles	Max. of 3 Double Poles One Feeds Up To 10 Single Poles Plus Independent 2 or 3 Pole Breaker	Max. of 6 Double Poles One Feeds Up To 10 Single Poles				
1	2	3	4	5	6	Gen. Purpose							Gen. Purpose	Raintight	Gen. Purpose	Raintight
(2) Read Down for SINGLE POLES																
▼	▼	▼	▼	▼	▼	TYPE →	XO 3WH	XO 42	XO 42RO	XO 42WH	XO42WHRO	XO 52	XO 52RO	XO 52A	XO 62	
0							\$ 9.90	\$19.40	\$27.60	\$25.70	\$35.70	\$22.40	\$32.40	\$82.40	\$44.40	
▲ 2	0						14.30	21.60	29.80	27.90	37.90	24.60	34.60	84.60	46.60	
								23.80	32.00	30.10	40.10	26.80	36.80	86.80	48.80	
3	1							26.00	34.20	32.30	42.30	29.00	39.00	89.00	51.00	
4	2	0						28.20	36.40	34.50	44.50	31.20	41.20	91.20	53.20	
5	3	1						30.40	38.60	36.70	46.70	33.40	43.40	93.40	55.40	
	4	2	0					32.60	40.80	38.90	48.90	35.60	45.60	95.60	57.60	
▲ 5	5	3	1					34.80	43.00	41.10	51.10	37.80	47.80	97.80	59.80	
	6	4	2	0						43.30	53.30	40.00	50.00	100.00	62.00	
	7	▲ 5	3	1						45.50	55.50	42.20	52.20	102.20	64.20	
	8	6	4	2	0							44.40	54.40	104.40	66.40	
	9	7	5	3	1							46.60	56.60	106.60	68.60	
	10	8	6	4	2							48.80	58.80	108.80	70.80	
	11	9	7	5	3							51.00	61.00	111.00	73.00	
	12	10	8	6	4							53.20	63.20	113.20	75.20	
▲ 13			9	7	5							55.40	65.40	115.40	77.40	
			10	8	6										79.60	
				9	7										81.80	
				10	8										84.00	
					9										86.20	
					10										88.40	

DEVICES—BOX, INTERIOR AND COVER—ORDER BREAKERS SEPARATELY

Type Number	Description	Box		Box, Interior and Cover—No Breakers	
		Type	Mounting	Cat. No.	List Price

WATER HEATER LOADS: TWO 1 PHASE—3 WIRE, Grounded Neutral

XO 3WH	For water heater loads having separate rates. Space for two double pole breakers — one for each 50 ampere separate bus.	Gen. Purpose	Surface Flush	XO 3WHS XO 3WHF	\$ 5.50 5.50
--------	---	--------------	---------------	--------------------	-----------------

SPLIT-BUS LOADS: 1 PHASE—3 WIRE, Insulated Groundable Neutral

XO 42	Lighting main and range double pole breakers connect in parallel to 100 ampere bus. Lighting main breaker feeds up to 5 single pole branch circuits.	Gen. Purpose Raintight ▲	Surface Flush	XO 42S XO 42F XO 42RO	15.00 15.00 23.20
XO 42WH	Lighting main and range double pole breakers connect in parallel to 100 ampere bus. Lighting main breaker feeds up to 5 single pole branch circuits. Separate double pole water heater circuit can be sealed.	Gen. Purpose Raintight ▲	Surface Flush	XO 42WHS XO 42WHF XO 42WHRO	21.30 21.30 31.30
XO 52	Lighting main range and additional double pole circuit (dryer, etc.) connect in parallel to 100 ampere bus. Lighting main breaker feeds up to 10 single pole branch circuits.	Gen. Purpose Raintight ▲	Surface Flush	XO 52S XO 52F XO 52RO	18.00 18.00 28.00
XO 52A	Lighting main, range and additional double pole circuit (dryer, etc.) connect in parallel to 100 ampere bus. Lighting main breaker feeds up to 10 single pole branch circuits. Space for independent 3 phase breaker for central air conditioner, etc. Indicate breaker as separate item on order.	Gen. Purpose	Surface Flush Indicate Cat. No. of 3 Phase breaker on order	XO52AS XO52AF 2 Pole 40 A. 972540 A 3 Pole 30 A. 972330 40 A. 972550 A 50 A. 972340 70 A. 972570 A 50 A. 972350	78.00 78.00 Price Included
XO 62	Lighting main plus five additional double pole circuits (range, dryer, water heater, heating panels, etc.) connected in parallel to 200 ampere bus. Lighting main feeds up to 10 single pole branch circuits.	Gen. Purpose	Surface Flush	XO62S XO62F	40.00 40.00

FINISH: Blue-gray Enamel.

▲RAINTIGHT HUBS—SEE PAGE 6.



SCHEDULE B DISCOUNT

PAGE 5

SQD SLV_000007

SERVICE ENTRANCE BREAKERS

Gilless
THERMAL- MAGNETIC

**TYPES
M1, M2**

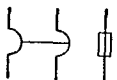
COMMON TRIP

(U/L Approved — File E10027)

120/240 VOLTS A.C.

System	Amp. Rating	General Purpose NEMA TYPE 1			▲ Raintight NEMA TYPE 3		
		Catalog Number	Add Cover Suffix	List Price	Catalog Number	List Price	Max. Hub Size
2 POLE, 2 WIRE (NO NEUTRAL)							
	15	212215	S or F	\$ 24.00	RO212215	\$ 26.50	1¼
	20	212220	S or F	24.00	RO212220	26.50	1¼
	30	212230	S or F	24.00	RO212230	26.50	1¼
	40	212240	S or F	24.00	RO212240	26.50	1¼
	50	212250	S or F	24.00	RO212250	26.50	1¼
	50	313250	S or F	29.00	RO313250	31.50	2
	70	313270	S or F	29.00	RO313270	31.50	2
	100	313216	S or F	29.00	RO313216	31.50	2

2 POLE, 3 WIRE, S/N (INSULATED GROUNDABLE NEUTRAL)

	50	333250	S or F	29.00	RO333250	31.50	2
	70	333270	S or F	29.00	RO333270	31.50	2
	100	333216	S or F	29.00	RO333216	31.50	2

3 POLE, 3 WIRE, S/N (INSULATED GROUNDABLE NEUTRAL)

	15	282315	S or F	44.00	RO282315	46.50	1 1/4
	20	282320	S or F	44.00	RO282320	46.50	1 1/4
	30	282330	S or F	44.00	RO282330	46.50	1 1/4
	40	282340	S or F	44.00	RO282340	46.50	1 1/4
	50	282350	S or F	44.00	RO282350	46.50	1 1/4
	50	333350	S or F	62.00	RO333350	64.50	2
	70	333370	S or F	62.00	RO333370	64.50	2
	100	333316	S or F	62.00	RO333316	64.50	2

INTERCHANGEABLE HUBS for raintight enclosures, Type RO devices have threaded openings for interchangeable hubs or closing caps. Order hub or cap separately from table below, and simply screw into place. For details see Page 10. Where listed, Type R devices have blank top endwall without hub provisions.

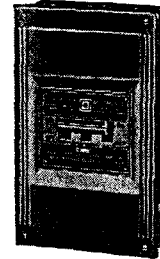
Conduit Size (Inches)	3/4	1	1 1/4	1 1/2	2	2 1/2	Cap	30-60-100A	200 A.
Hub Catalog Number *	HC HC2	HD HD2	HE HE2	HG	HH HH4	HW	Cap Cat. Number *	CE CA2	CH CA4
List Each.....	\$2.00	\$2.00	\$2.00	\$2.00	\$3.40	\$6.00	List Each	.20	.20

*Use only one of catalog numbers shown. Upper preferred.

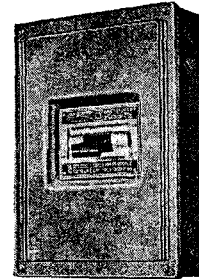
DIMENSIONS AND DATA

XO AND SERVICE BREAKERS

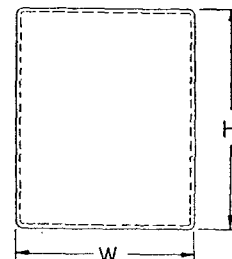
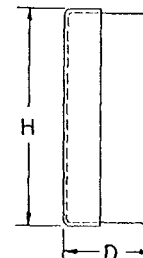
Catalog Number	Wt.	Overall Dimensions				Std. Pkg.	Catalog Number	Wt.	Overall Dimensions				Std. Pkg.
		H	W	W/H	D				H	W	W/H	D	
XO1S	1.2	6 3/32	4	.....	2 3/32	10	XO51	11	20 13/32	8 7/8	.....	3 3/4	1
XO1F	1.2	8 5/32	6 1/32	.....	2 7/8	10	XO51M	.....	32 1/8	12 1/8	.....	3 3/4	1
XO1RO	4	9 1/2	5 9/16	.....	3 1/32	1	XO51RO	12	20	8 13/32	.....	4 3/4	1
XO2S	3	7 3/16	5 1/16	.....	2 7/8	10	XO52S	12	20 3/8	8 7/8	.....	3 11/16	1
XO2F	3	8 5/32	6 1/32	.....	2 7/8	10	XO52F	12	21 13/32	9 29/32	.....	3 11/16	1
XO2RO	4	9 7/16	5 21/32	.....	3 7/8	1	XO52RO	13	20	8 13/32	.....	4 3/4	1
XO3S	6	8 7/8	7 3/8	.....	3 1/8	1	XO52AS	.....	32 1/8	12 1/8	.....	3 3/4	1
XO3F	6	9 27/32	8 11/32	.....	3 1/8	1	XO52AF	.....	33 3/16	13 5/16	.....	3 3/4	1
XO3RO	7	9 1/2	7 29/32	.....	4 1/16	1	XO61	22	32 1/8	12 1/8	.....	3 3/4	1
XO3WHS	6	8 7/8	7 3/8	.....	3 5/8	1	XO62S	22	32 1/8	12 1/8	.....	3 3/4	1
XO3WHF	6	9 27/32	8 11/32	.....	3 5/8	1	XO62F	22	33 3/16	13 5/16	.....	3 3/4	1
XO4	9	15 3/8	8 7/8	.....	3 3/4	1	212215S-250S	.....	9 1/4	5 9/8	.....	3 1/8	1
XO4M	.....	20 13/32	8 7/8	.....	3 3/4	1	212215F-250F	.....	10 3/16	6 1/16	.....	3 1/8	1
XO4RO	10	15	8 13/16	.....	4 3/4	1	RO212215-250	.....	9 1/2	5 9/32	.....	3 7/8	1
XO5	11	20 13/32	8 7/8	.....	3 3/4	1	282315S-350S	8	11 3/8	6 7/8	.....	3 3/8	1
XO5M	.....	32 1/8	12 1/8	.....	3 3/4	1	282315F-250F	8	12 5/16	7 13/16	.....	3 5/8	1
XO5RO	12	20	8 13/32	.....	4 3/4	1	RO282315-350	8	11 1/4	6 11/32	.....	4 11/16	1
XO6	22	32 1/8	12 1/8	.....	3 3/4	1	313216S-250S	13	13 3/8	9 9/8	.....	3 3/8	1
XO41	9	15 3/8	8 7/8	.....	3 3/4	1	313216F-250F	13	14 5/16	10 9/16	.....	3 3/8	1
XO41M	.....	20 13/32	8 7/8	.....	3 3/4	1	RO313216-250	13	13 1/4	9 9/8	.....	4 25/32	1
XO41RO	10	15	8 13/16	.....	4 3/4	1	333216S-250S	14	13 3/8	9 9/8	.....	3 7/8	1
XO42S	10	15 3/8	8 7/8	.....	3 11/16	1	333216F-250F	14	14 5/16	10 9/16	.....	3 7/8	1
XO42F	10	16 13/32	9 29/32	.....	3 11/16	1	RO333216-250	14	13 1/4	9 9/8	.....	4 25/32	1
XO42RO	11	15	8 13/16	.....	4 3/4	1	333316S-350S	15	13 3/8	9 9/8	.....	3 7/8	1
XO42WHS	12	20 13/32	8 29/32	.....	3 3/4	1	333316F-350F	15	14 5/16	10 9/16	.....	3 7/8	1
XO42WHF	12	21 13/32	9 29/32		3 3/4	1	RO333316-350	15	13 1/4	9 9/8		4 25/32	1
XO42WHRO	13	20	8 13/32		4 3/4	1							



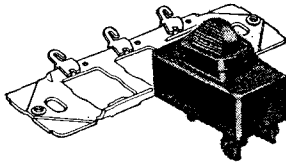
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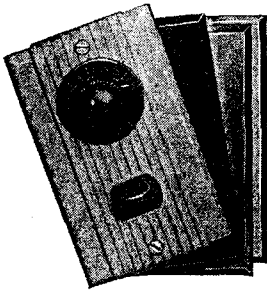
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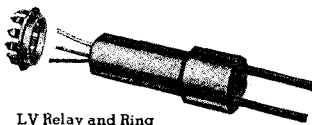
LOW VOLTAGE CONTROL



LV Control Switch
Strap and Plate
Not Included

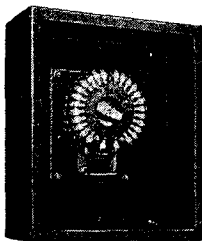
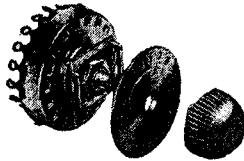


Manual Selector Switch
and Control Switch
Mounted on Standard
Despard Plate and Strap
Neutral Beige
LV Components Blend
with Any Color Scheme.

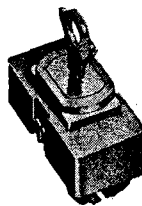


LV Relay and Ring

Manual
Selector
Switch



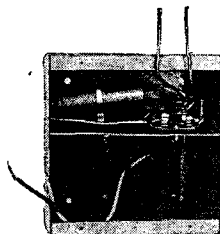
Master Control Contactor
with Enclosure



Key Operated Switch



Relay Ganging Box



D. C. Power Unit

CONTACT:

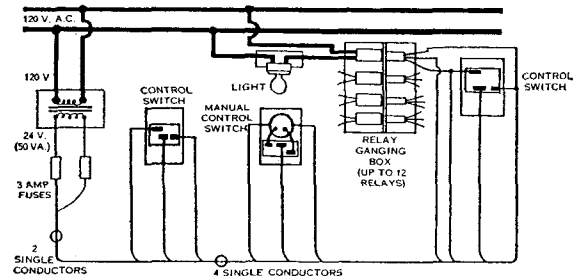
PASS + SEYMOUR / LEGRAND
SYRACUSE, NY 13211
(315) 468-6211

L. V.
CONTROL

The low voltage remote control system provides a convenient means of adequately switching lighting and appliance circuits in homes, office buildings, industrial plants, schools, churches, warehouses and many other applications.

Two-coil magnetically operated relays with adapter rings designed for 1/2" knockout can be mounted in either ganging boxes or 4" square outlet boxes. Control switch and manual selector switch units mount on standard Despard type straps. One, two or three control switches, or one selector switch and one control switch can be mounted on a single strap. All units utilize standard Despard type switch plates. Neutral beige plastic switch handles blend well with any finish.

Low Voltage Control Circuit may be either 24 volts A.C. or D.C.



Description	Electrical Ratings	Catalog Number	List Price Each	Wgt. Lbs.	Std. Pkg.
Low Voltage Relay.....	120 or 277 V. A.C.				
(Control Circuit—24 V. A.C. or D.C.).....	1/2 H.P. 120 V. A.C.	1070-C	\$ 4.80	1/4	10
Control Switch.....	3 Amp. 24 V. AC/DC	1091-C	.50	..	10
Control Switch Key Operated..	3 Amp. 24 V. AC/DC	1091-K	3.00	..	10
Manual Selector Switch.....	3 Amp. 24 V. AC/DC	1109-S	6.00	1	1
With Leads.....	3 Amp. 24 V. AC/DC	1109-SL	8.50	1	1
Master Control Contactor (23 Control Points) (Without Enclosure).....	Control 3 A., 24 V. AC/DC Motor—24 V. AC only	1073-M	66.00	3	1
Surface Enclosure (For Master Contactor) (12"x10"x4 1/4").....		XA1022	7.00	10	1
Flush Enclosure (For Master Contactor) (13 1/2"x11 1/2"x4 1/4").....		XA1021	7.00	10	1
Relay Ganging Box for Mounting Max. of 12 Relays (10" x 12" x 4").....		1069	11.00	11	1
D. C. Power Unit (Surface Mtg.) (7 7/8" x 7 5/8" x 3 3/8").....	120 V. A.C. 24 V. D.C.	1133-S	39.00	9	1
D. C. Power Unit (Flush Mtg.) (8 5/8" x 8 5/8" x 3 3/8").....	120 V. A.C. 24 V. D.C.	1133-F	39.00	9	1
Key for 1091-K Switch.....		1150-K	.30	..	20

Two 1150-K Keys furnished with each 1091-K Control Switch at no extra charge.
Relays are UL approved — "T" rated. Approved for 100% fluorescent lamp loads.



SCHEDULE



DISCOUNT

PAGE 7

SQD SLV_000009

FUSIBLE SERVICE EQUIPMENT

METER SWITCH FUSE SEQUENCE

120 VOLTS A.C.
120/240 VOLTS A.C.

(U/L Approved — File E10582)

INDOOR TYPE

PULLOUT TYPE MAIN SWITCH AND FUSES

GROUNDING NEUTRAL

Rating	MAINS		BRANCH CIRCUITS			CATALOG NUMBERS		List Price
	2 Cartridge Fuses With S/N	System Wires	30 Amp. Plug Fuse	30 Amp. Pull Out 2 Cart.	60 Amp. Pull Out 2 Cart.	Flush	Surface	
60 Ampere (Series) ‡	60	3	0	0	0	*37122	*39112	\$ 10.10
	60	3	4	0	0	*37522	*39512	11.90
	60	3	4	0	1	33582F	33582S	13.80
	60	3	4	1	1	30462F	30462S	24.00
	60	3	4	1	1	▲30492F	▲30492S	24.00
	60	3	6	0	0	*37722	*39712	16.00
	60	3	6	0	1	33782F	33782S	21.00
	60	3	6	1	1	30662F	30662S	33.00
	60	3	6	1	1	▲30692F	▲30692S	33.00
	60	3	8	0	0	*37922	*39912	24.00
	60	3	8	0	1	33982F	33982S	27.00
	60	3	8	1	1	30862F	30862S	36.00
	60	3	8	1	1	▲30892F	▲30892S	36.00
70 Ampere (Parallel) †	60	3	10	0	0	31002F	31002S	33.00
	60	3	12	0	0	31202F	31202S	36.00
	60	3	4	0	1	33582PF	33582PS	13.80
	60	3	6	0	1	33782PF	33782PS	21.00
	60	3	8	0	1	33982PF	33982PS	27.00
	60	3	8	0	1	33982PF	33982PS	27.00
100 Ampere (Parallel) †	60	3	4	0	1	33583PF	33583PS	13.80
	60	3	4	1	1	30463PF	30463PS	24.00
	60	3	4	1	1	▲30493PF	▲30493PS	24.00
	60	3	4	0	2	30433PF	30433PS	24.00
	60	3	4	0	2	▲30483PF	▲30483PS	24.00
	60	3	6	0	1	33783PF	33783PS	21.00
	60	3	6	1	1	30663PF	30663PS	33.00
	60	3	6	1	1	▲30693PF	▲30693PS	33.00
	60	3	6	0	2	30633PF	30633PS	33.00
	60	3	6	0	2	▲30683PF	▲30683PS	33.00
	60	3	8	0	1	33983PF	33983PS	27.00
	60	3	8	1	1	30863PF	30863PS	36.00
100 Ampere Series ‡	100	3	0	0	0	39113F	39113S	26.00
	100	3	8	1	1	30853F	30853S	56.00
	100	3	8	0	2	30823F	30823S	56.00
	100	3	10	1	1	31053F	31053S	58.00
	100	3	10	0	2	31023F	31023S	58.00
	100	3	12	1	1	31253F	31253S	62.00
	100	3	12	0	2	31223F	31223S	62.00
	100	3	16	1	1	31653F	31653S	70.00
	100	3	16	0	2	31623F	31623S	70.00
	100	3	16	2	1	▲31693F	▲31693S	77.00
	100	3	16	0	3	▲31683F	▲31683S	77.00
	100	3	20	1	1	32053F	32053S	82.00
	100	3	20	0	2	32023F	32023S	82.00

*Insulated Groundable Neutral.

‡Main Switch Controls All Circuits.

†Main and Range Pullout Circuit Wired in Parallel. Main Controls Other Circuits.

▲Third Pullout Not Wired Can be sealed by adding barrier.

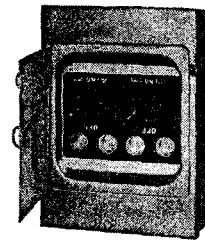
FUSELESS TOGGLE MAIN SWITCH

GROUNDING NEUTRAL

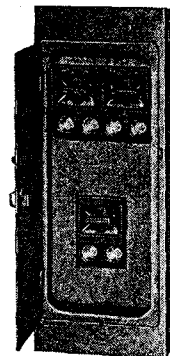
Amps.	Mains		Branch Circuits		Catalog Numbers		List Price
	System Wires	Number Blades	30 Amp. Plug	60 Amp. 2-Cart.	Flush	Surface	
30	3	2	4	0	32471	32481	\$ 11.00
	3	2	6	0	32671	32681	14.00
60	3	2	4	0	32472	32482	11.90
	3	2	6	0	32672	32682	16.00
	3	2	4	1	32572	32582	13.80
100	3	2	4	1	32573	32583	13.80

FINISH: Blue Gray Enamel.

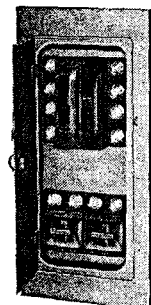
Conduit Endwalls.



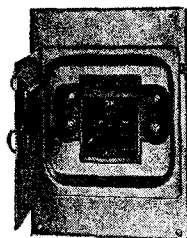
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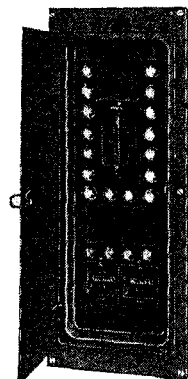
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Cat. No. 31223S



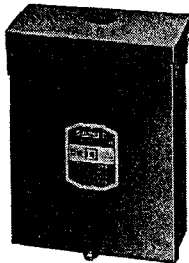
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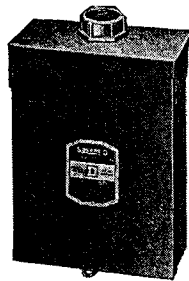
Cat. No. 32053S

FUSIBLE SERVICE EQUIPMENT

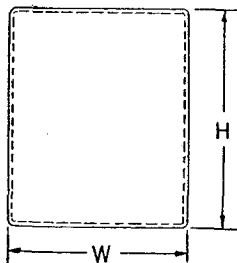
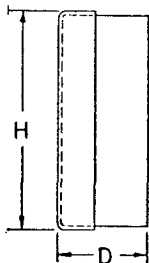
**RAINTIGHT
ENCLOSURES**



Type RO Raintight
Enclosure without
cap or hub



Type RO Raintight
Enclosure with Hub
Installed



OUTDOOR TYPE (U/L approved File E10582)

MAIN SWITCH AND FUSES — SURFACE MOUNTING — GROUNDING NEUTRAL

Rating	MAINS		BRANCH CIRCUITS			TYPE RO—Add Hub or Cap		
	2 Cartridge Fuses With S/N	System Wires	30 Amp. Plug Fuse	30 Amp. Pullout 2 Cart.	60 Amp. Pullout 2-Cart.	Catalog Number	List Price	Max. Hub Size (Inches)
30 Amps.	Fuseless	3	4	0	0	32481 RO	\$13.80	1 1/4
	Fuseless	3	6	0	0	32681 RO	17.00	1 1/4
60 Amps.	60	3	0	0	0	39112 RO	12.40	1 1/4
	60	3	0	0	0	39902 YS	14.40	1 1/4
	Fuseless	3	4	0	0	32482 RO	14.50	1 1/4
	60	3	4	0	0	39512 RO	14.50	1 1/4
	60	3	4	0	1	33582 RO	21.00	1 1/4
	60	3	4	0	1	33582 R	21.00	1 1/4
	Fuseless	3	4	0	1	32582 RO	21.00	1 1/4
	Fuseless	3	6	0	0	32682 RO	21.00	1 1/4
	60	3	6	0	0	39712 RO	21.00	1 1/4
	60	3	6	0	1	33782 RO	31.00	1 1/4
	60	3	8	0	0	39912 RO	31.00	1 1/4
	60	3	8	0	1	33982 RO	40.00	1 1/4
	60	3	10	0	0	31002 RO	35.00	1 1/4
	60	3	12	0	0	31202 RO	44.00	1 1/4
70 Amps.	†60	3	4	0	1	33582 PRO	21.00	1 1/4
	100	3	0	0	0	39113 RO	30.00	2
100 Amps.	†60	3	4	0	1	33583 PRO	21.00	2
	Fuseless	3	4	0	1	32583 RO	21.00	2
	60	3	4	1	1	▲30493 PRO	33.00	2
	†60	3	6	0	1	33783 PRO	31.00	2
	60	3	6	1	1	▲30693 PRO	46.00	2
	†60	3	8	0	1	33983 PRO	40.00	2
	60	3	8	1	1	▲30893 PRO	49.00	2
	100	3	12	1	1	31253 RO	85.00	2
	100	3	16	1	1	31653 RO	90.00	2
	100	3	16	2	1	▲31693 RO	96.00	2
	100	3	20	1	1	32053 RO	94.00	2

▲ Third pullout not wired. Can be sealed by adding barrier.

†60 A. Main and Range Circuits are wired in parallel. 60 A. Main Switch controls other circuits.

FINISH: Blue-gray enamel over galvanealed steel, plus one coat of Glyptal. ● Nipple.

INTERCHANGEABLE HUBS for raintight enclosures, Type RD devices have threaded opening for interchangeable hubs or closing caps. Order hub or cap separately from table on Page 10, and simply screw into place. Where listed, Type R devices have blank top endwall with no hub provisions. For details, see Page 10.

DATA AND DIMENSIONS

Catalog Number	Wt.	Overall Dimensions				Std. Pkg.	Catalog Number	Wt.	Overall Dimensions				Std. Pkg.
		H	W	W/H	D				H	W	W/H	D	
30433-93PS/F	25	18 1/16	8 1/16	.....	3 1/16	1	32573	15	12 3/8	8 1/16	.....	3 3/8	1
30493 PRO	..	20 5/16	9 1/16	.....	4 1/16	1	32582	13	11 1/16	8 1/16	.....	3 1/2	1
30633-63PS/F	25	22 1/16	10 1/16	.....	4	1	32582 RO	18	13 1/4	9 3/4	.....	4 1/16	1
30683PS/F	25	22 1/32	10 1/32	.....	5 25/32	1	32583	11	12 3/8	8 1/16	.....	3 3/8	1
30692S/F	..	22 1/32	10 1/32	.....	4	1	32583 RO	..	13 1/4	9 3/4	.....	4 1/16	1
30693PS/F	25	22 1/32	10 1/32	.....	5 25/32	1	32671-82	13	11 7/8	7 7/8	.....	3 1/4	1
30693 PRO	..	24 5/16	11 25/32	.....	4 1/16	1	32681 RO	14	13 1/4	8 1/16	.....	4 1/16	1
30823S/F	30	22 7/16	11 7/16	.....	4 1/4	1	32682 RO	12	11 7/8	7 7/8	.....	3 1/4	1
30833PS/F	30	22 7/16	10 7/16	.....	4	1	33582S/F	11	11 7/8	8 1/32	.....	3 7/16	1
30853S/F	30	22 7/16	11 7/16	.....	4 1/4	1	33582 RO	15	13 1/4	9 3/4	.....	4 1/16	1
30862S-63PS/F	..	22 1/32	10 1/32	.....	4	1	33582PS/F	11	11 7/8	8 1/32	.....	3 7/16	1
30883PS/F	30	22 1/32	10 1/32	.....	5 25/32	1	33582-83 PRO	15	13 1/4	9 3/4	.....	4 1/16	1
30892S/F	..	22 1/32	10 1/32	.....	4	1	33583PS/F	12	12 1/32	8 1/32	.....	3 7/16	1
30893PS/F	30	22 1/32	10 1/32	.....	5 25/32	1	33782S-983PS/F	16	17 1/4	9	.....	3 1/16	1
30893 PRO	..	22 1/32	10 1/32	.....	4	1	33782-982 RO	20	20 1/4	9 1/16	.....	4 3/4	1
31002S/F	..	20 1/4	10 1/4	.....	3 7/16	1	33783 PRO	20	20 1/8	9 1/32	.....	4 1/16	1
31002 RO	..	20 5/16	9 1/16	.....	4 1/16	1	33983 PRO	20	20 1/8	9 1/32	.....	4 1/16	1
31023S-53S/F	30	22 7/16	11 7/16	.....	4 1/4	1	37122	10	11 7/8	7 7/8	.....	3 3/8	1
31202S/F	..	20 1/4	10 1/4	.....	3 7/16	1	37522	10	13 1/32	7 7/8	.....	3 3/8	1
31202 RO	..	24 5/16	11 25/32	.....	4 1/16	1	37722	13	15 1/16	8 1/16	.....	3 3/8	1
31223S-53S/F	30	22 7/16	11 7/16	.....	4 1/4	1	37922	14	17 1/16	8 1/16	.....	3 3/8	1
31253 RO	..	24 5/16	11 25/32	.....	4 1/16	1	39112	8	11 3/8	7 7/8	.....	3 3/8	1
31623S-53S/F	33	23 7/8	11 3/8	.....	4 1/4	1	39112 RO	8	10 1/4	8 1/32	.....	3 1/32	1
31653 RO	..	30 1/32	12	.....	4 1/16	1	39113S/F	14	15 5/8	7 7/8	.....	4 1/8	1
31683S-93S/F	..	28 1/32	11 1/32	.....	4 7/16	1	39113 RO	16	15 1/4	8 1/32	.....	4 21/32	1
31693 RO	..	30 1/32	12	.....	4 1/16	1	39512	10	13 3/32	7 7/8	.....	3 3/8	1
32023S-53S/F	..	28 1/32	11 1/32	.....	4 7/16	1	39512 RO	..	15 5/16	9 1/32	.....	4 21/32	1
32053 RO	..	30 1/32	12	.....	4 1/16	1	39712	12	15 1/16	8 1/16	.....	3 3/8	1
32471-82	13	11 7/8	7 7/8	.....	3 1/4	1	39712 RO	20	20 3/32	9 1/32	.....	4 1/16	1
32481-82 RO	..	13 1/4	7 25/32	.....	4 5/8	1	39902 YS	10	10 1/16	7 7/8	.....	3 1/32	1
32481-82 RO	17	13 1/4	7 25/32	.....	4 5/8	1	39912	14	17 1/16	8 1/16	.....	3 3/8	1
32572	13	11 1/16	8 7/16	.....	3 1/2	1	39912 RO	16	20 3/32	9 1/32	.....	4 1/16	1



SCHEDULE **C** DISCOUNT

PAGE 9

SQD SLV_000011

FUSIBLE LOAD CENTERS AND CABINETS

INTERCHANGEABLE HUBS

Square D has further improved the popular raintight device line. These include:

1. Expansion of raintight NEMA 3 listings.
2. Improved finish by the addition of an extra coat of clear glyptal.
3. Simplification of interchangeable hub and merchandising program.

The extra coat of clear glyptal over the baked blue-gray enamel on galvanealed steel enclosures triples the life of raintight finishes over previous types.

Interchangeable hubs have been simplified by extending range from $\frac{3}{4}$ to $2\frac{1}{2}$ inch conduit size and reducing the stocking number from 10 to 6. The new style eliminates all duplicate sizes. The full range is manufactured in 3 steps — $\frac{3}{4}$, 1, $1\frac{1}{4}$ having a $1\frac{3}{4}$ inch threaded endwall, $1\frac{1}{2}$ and 2 for a $2\frac{1}{2}$ inch threaded endwall and a $2\frac{1}{2}$ size having a 3 inch threaded endwall. Reducers are

furnished with 100 and 200 ampere type RO devices. Interchangeable hubs can be screwed directly in the threaded endwall in RO devices or smaller size hubs can fit the larger switches by using the reducer furnished at no charge. Caps may be used to close the threaded opening when no hub is used. All raintight devices through 200 ampere capacity are available in the RO type (threaded opening).

Hubs may be added at any spot by cutting a hole and locking the hub in place by light line using the Adapter nut of the size shown.

Type R devices are still available in popular sizes where no hub provisions are necessary.

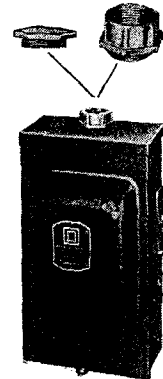
INTERCHANGEABLE HUBS, CAPS, NUTS

Conduit Size (Inches)	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Hub Catalog Number *	HC HC2	HD HD2	HE HE2	HG	HH HH4	HW
List Price.....	\$2.00	\$2.00	\$2.00	\$2.00	\$3.40	\$6.00
Cap Cat. Number *	CE CA2			CH CA4		
List Price.....	\$.20			\$.20		
Adapter Catalog Number *	NE HN2G		NH HN4G		NW	
Hole for Adapter	$1\frac{3}{4}$ "		$2\frac{1}{2}$ "		3"	
List Price.....	\$1.00		\$1.00		\$1.00	

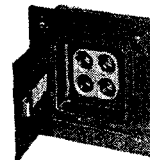
Standard package 10 except HW which is 5.

*Use only one of catalog numbers shown. Upper preferred.

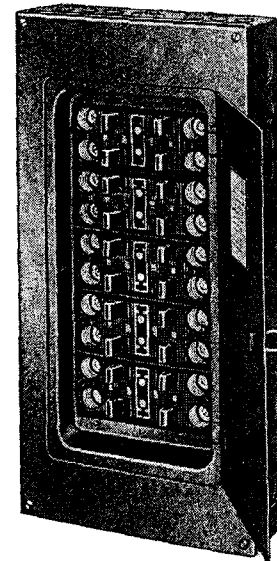
Closing Cap or Various Size Hubs can be Screwed into Type RO Raintight Device



Raintight Device Type RO with Interchangeable Hub in Place.



Cat. No. 37421 Type NSP



Type NTPS-20-3L

TYPE NSP-3

FUSE CABINETS

No. Branches	Lug Mains		Weight	Box Dimensions (Inside)			1 Phase—3 Wire		
	Amp.	Size		●Hgt.	●Width	Depth	Flush	Surface	
							Cat. No.	Cat. No.	List Price
2	30	8-14	6	6 $\frac{5}{8}$	6 $\frac{5}{8}$	2 $\frac{3}{4}$	37221	39211	\$ 4.40
4	30	8-14	6	6 $\frac{5}{8}$	6 $\frac{5}{8}$	2 $\frac{3}{4}$	37421	39411	6.00
6	45	6-10	11	11 $\frac{1}{8}$	7 $\frac{7}{8}$	3 $\frac{1}{8}$	37621	39611	10.00
8	60	4-10	12	12 $\frac{1}{8}$	7 $\frac{7}{8}$	3 $\frac{1}{8}$	37821	39811	13.50
10	60	4-10	15	15 $\frac{1}{8}$	8 $\frac{1}{8}$	3 $\frac{1}{8}$	37021	39011	20.00
12	60	4-10	17	16 $\frac{1}{8}$	8 $\frac{1}{8}$	3 $\frac{1}{8}$	37121	39111	26.00

•For outside dimensions of FLUSH front, add approximately $1\frac{1}{4}$ " to height and width of box.

FRONTS: Spring Door Catch.

MAINS: 120/240 Volts A.C. or D.C.

FINISH: Blue-gray Enamel. Conduit Endwalls.

BRANCHES: Single Pole, No Switch, 30 Amp., 120 V.

TYPE NTPS

FUSIBLE LOAD CENTERS

No. Branches	Lugs Mains		Weight	Box Dimensions			1 Ph. 3 Wire A.C. Only		3 Ph. 4 Wire A.C. Only	
	Amp.	Size		Height	Width	Depth	*Catalog No.	List Price	*Catalog No.	List Price
4	30	1-14	30	10	12	4	NTPS04-3L	\$ 15.		
8	60	1-14	33	12½	12	4	NTPS08-3L	22.	NTPS08-4L	\$ 32.
12	60	1-10	37	16	12	4	NTPS12-3L	43.	NTPS12-4L	47.
16	100	1-10	41	21	12	4	NTPS16-3L	64.	NTPS16-4L	70.
20	100	1-10	44	24	12	4	NTPS20-3L	90.	NTPS20-4L	100.

Wiring Gutters. Side gutters— $1\frac{1}{8}$ ".

FRONTS: Spring Door Catch.

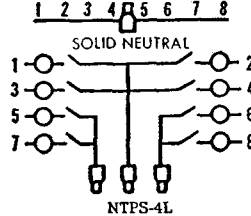
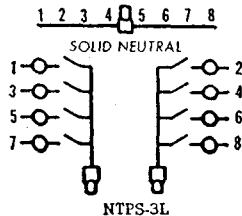
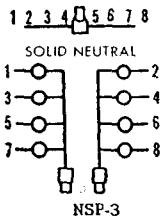
MAINS: 120/240 Volts, A.C. only.

End Gutters—2" on 4, 8 and 12 circuits; 3" on 16 and 20 circuits.

FINISH: Fronts — Blue-gray; Boxes — galvanized steel.

BRANCHES: Single Pole Switch, 30 Amp., 120 V.

*SURFACE OR FLUSH: When ordering add suffix letter "S" or "F" to catalog number to indicate mounting.



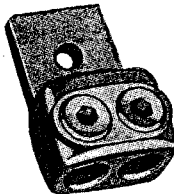
MISCELLANEOUS ACCESSORIES



Cat. No. IF



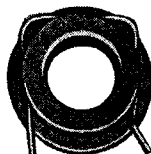
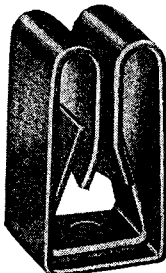
60 Amp. Lugs



600 Amp. Lugs



Positive Pressure Fuse Clips



Porcelain Bushings



STANDARD TELEPHONE CABINETS

Description	Catalog Number		List Price
	Flush	Surface	
12" x 18" x 4"	12184TCFL	12184TCSL	\$29.
18" x 24" x 4"	18244TCFL	18244TCSL	43.
24" x 30" x 4"	24304TCFL	24304TCSL	53.
30" x 36" x 6"	30366TCFL	30366TCSL	77.

List Price Includes Door and Trim with Lock and Keys.
No Wood Backing

ADDITIONS

24304TB Barrier for 24" x 30" Cabinet—List Price \$2.65
Each

30366TB Barrier for 30" x 36" Cabinet—List Price \$4.70
Each.

EXIT BOXES

Description	Cat. No.	List Price
Box Only.....	IE	\$ 9.55
Flush Cover Only.....	IF	6.45
Surface Cover Only.....	IS	6.45
Box with Flush Cover.....	IEF	16.
Box with Surface Cover.....	IES	16.

Letters 5 inches high.

Box Size: 6 x 12 1/4 x 4.

Green glass is standard, but red can be furnished at no additional cost.

TYPE SS SOLDER-SOLDERLESS LUGS

Amp.	Shank	Set Screw		Wire Size	Cat. No.	List Price
		Location	Type			
60	Straight	Top	Screwdriver	No. 4 to No. 10	SK4030	\$0.45
60		Top	Screwdriver	No. 4 to No. 10	SK4031	.45
100	Straight	Top	Screwdriver	No. 0 to No. 10	SK4032	.75
100		Top	Screwdriver	No. 0 to No. 10	SK4033	.75
100	Straight	Side	Screwdriver	No. 1 to No. 10	SK4034	.75
200		Top	3/8" Allen wrench	No. 4/0 to No. 6	SK4035	1.60
200	Angle	Top	3/8" Allen wrench	No. 4/0 to No. 6	SK4036	1.60
200		Side	3/8" Allen wrench	No. 4/0 to No. 6	SK4037	1.60
400	Straight	Top	3/8" Allen wrench	500,000CM to No. 4/0	SK4009	3.20
400		Side	3/8" Allen wrench	500,000CM to No. 4/0	SK4011	3.20
400	Straight	Top	7/8" Allen wrench	2-350,000CM to No. 4	SK4039	3.20
600		Top	1/2" Allen wrench	1,000,000 to 500,000CM	SK4012	5.35
600	Straight	Side	1/2" Allen wrench	1,000,000 to 500,000CM	SK4014	5.35
600		Top	1/2" Allen wrench	Two 500,000 CM to 4/0	SK4018	5.35

OTHER ACCESSORIES

ALLEN WRENCHES FOR SOLDER-SOLDERLESS LUGS

Size of Wrench	Size of Lug	Catalog Number	List Price
3/8"	200 and 400 Amp....	SK4028	\$.65
1/2"	600 Amp.....	SK4029	.95

POSITIVE PRESSURE FUSE CLIPS

Amps.	Type	Cat. No.	List Price Per C
250 Volts			
30	Clip	*SK2370	\$ 25.
30	Clip	SK2371	25.
60	Clip	SK2372	32.
100	Jaw	±SK2363	108.
200	Jaw	±SK2364	218.
400	Jaw	±SK2365	528.
600	Jaw	±SK2366	903.

600 Volts			
30	Clip	SK2361	\$ 29.
60	Clip	SK2362	40.
100	Jaw	±SK2363	108.
200	Jaw	±SK2364	218.
400	Jaw	±SK2365	528.
600	Jaw	±SK2366	903.

*For Lighting Panels only.

±Pressure Springs included but not assembled to clip.

KNOCKOUT CLOSERS

Size Conduit Opening	Cat. No.	List Pr. Per C	Size Conduit Opening	Cat. No.	List Pr. Per C
1/2"	1901	\$ 7.	1 1/2"	1905	\$28.
3/4"	1902	8.	2 1/2"	1906	40.
1"	1903	17.	2 1/2"	1907	47.
1 1/4"	1904	22.	3 1/2"	1908	70.

FINISH: Blue gray enamel

REINFORCING SPRINGS ONLY To Convert Multi-Spring Jaws to Positive Pressure Type

Amps.	Cat. No.	List Price Per C
100	SK2373—Steel.....	\$ 47.
200	SK2374—Steel.....	88.
400	SK2375—Bronze.....	176.
600	SK2376—Bronze.....	264.

TEST BLOCK WRENCH

For 1/2" hexagon head nut Cat. No. 1500 List Price \$1.00

REDUCING WASHERS

For reducing knockout to fit smaller conduit

Size Inches	Cat. No.	List Pr. Per C	Size Inches	Cat. No.	List Pr. Per C
3/4 to 1/2	514	\$ 4.	1 1/2 to 1	522	\$14.
1 to 1/2	515	8.	1 1/2 to 1 1/4	523	14.
1 to 3/4	516	8.	2 to 1/2	524	21.
1 1/4 to 1/2	517	14.	2 to 3/4	525	21.
1 1/4 to 3/4	518	14.	2 to 1	526	21.
1 1/4 to 1	519	14.	2 to 1 1/4	527	21.
1 1/2 to 1/2	520	14.	2 to 1 1/2	528	21.
1 1/2 to 3/4	521	14.			

PORCELAIN BUSHINGS

Used with Solid End Boxes For Open Wiring

Diam. of Hole	Size Conduit	Cat. No.	List Price Per C
5/16"	1/2"	17111	\$ 14.
13/32"	1/2"	17112	14.
5/16"	3/4"	17212	14.
9/16"	3/4"	17213	14.
3/4"	1"	17314	28.
1 1/8"	1 1/4"	17416	28.



SCHEDULE



DISCOUNT

PAGE 11

METER EQUIPMENT AND ACCESSORIES

TYPE
M-2

METER ENTRANCE DEVICES

Mains Type	Amp.	Wt.	Surface Mounting	List Price	Wt.	Semi-Flush Mounting	List Price
3-WIRE S/N 120-240 VOLTS A.C.							
Breaker	70	...	RO383270	\$ 52.	...	RF383270	\$ 54.
Breaker	100	...	RO383216	\$ 52.	...	RF383216	\$ 54.

FINISH: Blue gray enamel — plus one coat of Glyptal.

SCHEDULE B DISCOUNT

Type M-2 combines circuit breaker main together with Type S (Plug-in) meter sockets. NEMA 3 raintight enclosure. Boxes are either surface or semi-flush. The M-2 is furnished with 4 jaw meter sockets and Duncan type sealing ring wired to a 70 or 100 ampere two pole M-2 breaker. Box galvanealed steel 19½" high x 7½" wide x 4½" deep. Dead front interior. Surface device has provisions for interchangeable hubs. Semi-flush device has 1¼" KO clusters.



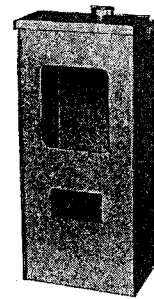
Combination Meter Device
Semi-Flush Mounting
Cat. No. RF383216

METER BOXES

Description					Indoor			Outdoor			Type of Test Block
Amp.	Volts	Wire	Meter Leads	Test Block No. Without Leads	Catalog No.	List Price	Knockouts (Top)	Catalog No.	List Price	Hub Size	
30	125	2	Yes	SK2890	12202	\$11.70	Twistout	12232 D	\$13.20	1"	Back-Off Nut
30	250/600	2-3	No	.....	12461	19.	Open	.....	.....	.....	Removable Link
60	125/250	2-3	Yes	SK2891	12322	12.10	Twistout	12002 D	10.25	1"	Back-Off Nut
60	125/250	2-3	Yes	SK2892	12302	12.10	Twistout	12362 D	17.35	1"	Back-Off Nut
60	125/250	2-3	No	SK2893	12312	12.10	Twistout	12332 D	17.35	1"	Back-Off Nut
60	250/600	2-3	No	SK2349	12462	23.	Nela Shutter	12342 D	17.35	1"	Removable Link
60	250/600	4	No	SK2684	12662	23.	Nela Shutter				Removable Link
100	250/600	2-3	No	SK2305	12463	23.	Nela Shutter				Removable Link
100	250/600	4	No	SK2685	12663	26.60	Nela Shutter				Removable Link
200	250/600	2-3	No	SK2306	12464	40.	Nela Shutter				Removable Link

Ø1" Hub furnished as standard. 1¼" Hub available at no extra cost.

●Outdoor Meter Box Only — No Test Block



Outdoor Meter Box
Cat. No. 12332D

CURRENT TRANSFORMER CABINETS

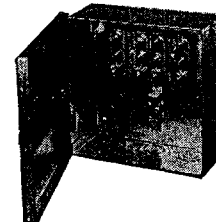
Cat. No. 13992 accommodates one or two transformers and has one-piece removable cover hinged at long side. Drilled for current transformer. Knockouts provided at side and top for line, load and meter wires.

Cat. No. SK2040 Cabinet is similar to 13992, except has sealing stud with wing nut in place of spring latch.

Cat. No. SK2146 has removable cover and accommodates three transformers.

Cat. No. SK2256 accommodates one transformer.

Cat. No.	List Price	Height	Width	Depth	Weight
13992	\$ 31.	24½"	32½"	10½"	72
SK2040	31.	24½"	32½"	10½"	70
SK2146	65.	36½"	32½"	10½"	100
SK2256	37.	18½"	18½"	9½"	31
203611	36.	20"	36"	11"	
243611	43.	24"	36"	11"	
244211	61.	24"	42"	11"	
244811	67.	24"	48"	11"	
364211	105.	36"	42"	11"	



Indoor Meter Box
Cat. No. 12302

METER TEST BLOCK CABINETS

Box is hinged at top and has tapped holes in back to mount "States" and "Eastern Specialty" (Type E-4) Meter Test Blocks. These test blocks are used in combination with current transformers or with current and potential transformers for testing watt-hour meters.

16 Gauge Steel Cabinet has 60 and 100 ampere standardized shutter openings at top. Furnished with blank shutters in place.

Cat. No.	List Price	Height	Width	Depth
13991	\$10.30	11 1/8"	12 7/8"	4 3/8"

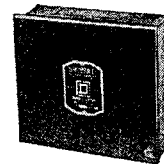
SCREW COVER JUNCTION BOXES

Size in Inches	Weight	Catalog Number	List Price
5 x 5 x 3	3	553S	\$ 2.55
6 x 6 x 3	3	663S	2.75
6 x 6 x 4	4	664S	2.95
6 x 8 x 3	4	683S	3.30
6 x 8 x 4	5	684S	3.60
8 x 8 x 4	6	884S	4.15
8 x 8 x 6	7	886S	5.15
8 x 10 x 4	6	8104S	4.60
10 x 12 x 4	8	*10124S	6.05
12 x 16 x 6	14	*12166S	8.80
16 x 24 x 8	33	*16248S	21.75
18 x 30 x 10	..	*183010S	34.00

*Sealable Screw Cover

TEST BLOCKS

Consult Local Square D Field Office.



Meter Transformer Cabinet

METER SOCKETS AND TROUGHS

TYPE S METERS

**METER
SOCKETS**

SEALING RING NOT INCLUDED — ORDER SEPARATELY

Weatherproof — watertight die cast enclosure made from super dense aluminum alloy. Conforms to EEL-NEMA standards. Terminals — #14 to #1 wire. Neutral — 2 #1 wire. Porcelain base. No special tools required to reverse jaw in the field. Fifth and sixth jaw can be added when required. No disconnects. Finish: Blue Gray Enamel. Standard Package 20.

Add Suffix "A" to Catalog number for meter sockets with Catalog No. 29008D Duncan sealing rings included, and increase price by \$0.50 for sealing ring.

CATALOG NUMBERS		No. of Jaws	No. of Conduit Openings	Size of Conduit Opening	Max. Dia.	List Price
Without Break-Out	With Break-Out					
NON-CIRCUIT CLOSING TYPE						
MSP4D2	MSP4D2-B	4	2	1 " "	6 5/8 " "	\$ 5.50
MSP4D3	MSP4D3-B	4	3	1 " "	6 7/8 " "	7.10
MSP4E2	MSP4E2-B	4	2	1 1/4 " "	6 7/8 " "	5.50
MSP4E3	MSP4E3-B	4	3	1 1/4 " "	6 7/8 " "	7.10
	●MSP4D2-H	4	2	1 " "	6 5/8 " "	5.50
	●MSP4E2-H	4	2	1 1/4 " "	6 7/8 " "	5.50
MSP5D3	MSP5D3-B	5	3	1 " "	6 5/8 " "	7.95
MSP5E3	MSP5E3-B	5	3	1 1/4 " "	6 7/8 " "	7.95
AUTOMATIC CIRCUIT CLOSING TYPE						
MSP40D2	MSP40D2-B	4	2	1 " "	6 5/8 " "	6.90
MSP40E2	MSP40E2-B	4	2	1 1/4 " "	6 7/8 " "	6.90

⓪ Provided with two threaded conduit hubs. One in end and one in back.

SCHEDULE J DISCOUNT

**METER
TROUGHS**

SEALING RING NOT INCLUDED — ORDER SEPARATELY *

No. of Meters	INDOOR						OUTDOOR			
	Surface Mounting			Flush Mounting			Surface Mounting			
	Horizontal or Vertical			Horizontal or Vertical			Horizontal	Vertical		
	Cat. No.	List Price	Wt.	Cat. No.	List Price	Wt.	Cat. No.	Cat. No.	List Price	Wt.
1	IS-1M	\$ 9.75	6	OF-1M	\$ 9.00	8	OS-1M	OS-1M	\$10.25	7
2	IS-2M	18.95	10	OF-2M	20.20	12	OHS-2M	OVS-2M	20.00	12
3	IS-3M	28.00	16	OF-3M	30.95	18	OHS-3M	OVS-3M	29.00	18
4	IS-4M	37.20	21	OF-4M	41.75	24	OHS-4M	OVS-4M	39.00	27

Meter troughs are fabricated from heavy gauge steel and include a 4 clip meter socket for each meter socket opening. Terminals #14 to #2 wire. Porcelain base. Fifth jaw can be added where required. No disconnects. Outdoor troughs provided with one threaded opening in top endwall for interchangeable hub — Order separately (page 10). Additional hubs may be added by cutting opening and using Adapter Nut.

* Troughs are available with sealing ring 29008-D installed by adding suffix "A" and increasing price by number of rings, Example: OF1MA — \$9.50 list each.

SCHEDULE A DISCOUNT

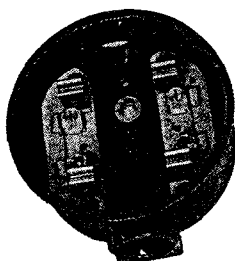
ACCESSORIES

Description	Cat. No.	List Price	Description	Cat. No.	List Price
Sealing Rings			Trough Cover Plate — Steel (Not Usable with Socket).....	1068	\$.60
Duncan Type.....	29008-D	.50	Trough Meter Socket—		
Westinghouse Type.....	29008-W	.75	4 Clips — Without Ring.....	B1064	6.80
General Electric Type.....	29008-G	1.00	4 Clips — With Ring and Circuit Closing Device.....	1066S	15.75
Individual Jaw Assembly to Convert Meter Socket to 5 or 6 Jaw..	MSA1	.70	5 Clips—Without Ring.....	B1065	7.90
Sealing Plug — 1 1/4".....	MS125	.50	5 Clips—With Ring and Circuit Closing Device.....	1067S	19.35
Sealing Plug — 1".....	MS100	.35	5th Jaw for B1064 Trough Type Socket.....	1107	.95
Glass Cover Plate.....	29007	.75			
Fibre Closing Plate.....	29010	.30			

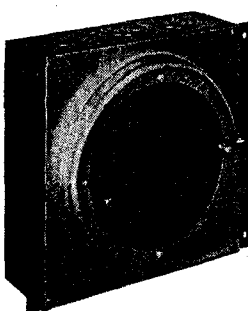
Std. Package — 20

SCHEDULE J DISCOUNT

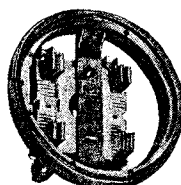
SCHEDULE A DISCOUNT



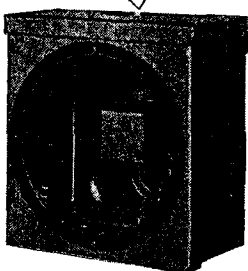
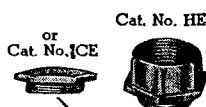
Die Cast Meter Socket



Cat. No. OF-1M
Meter Socket
not Shown



Cat. No. B1064S



Cat. No. OS-1M
Meter Socket not Shown

GENERAL USE SAFETY SWITCHES

SINGLE THROW

**90000
LINE**

TYPE G GENERAL USE SAFETY SWITCHES are designed for residential and commercial applications where price is limiting and the service factor is not great — such as lighting, room conditioning and appliance loads. U/L approved File E2875. Meets Federal Specification W-S-865 for type D switches.

System	FUSIBLE								NOT FUSIBLE		
	INDOOR — NEMA TYPE 1					RAINTIGHT — NEMA TYPE 3			INDOOR — NEMA TYPE 1		
	Rating		Flat Base	Compact Type		Type RO—Add Hub or Cap			Flat Base		
	Amp.	Fuse	Catalog Number	Catalog Number	List Price	Catalog Number	List Price	Max. Hub Size Inches	Amp.	Catalog Number	List Price
2-WIRE S/N (1 BLADE, 1 FUSE) 120 VOLTS A.C. — 125 VOLTS D.C.											
	30	Plug	D97211	90211	\$ 3.80	▲ D97211 RO	\$ 8.50	1 1/4			
	30	Plug		±90211 M	3.80						
	30	Plug		*90211 WH	4.50						
	30	Plug		*97211 WH	5.20						
	30	Cart.	D97251		4.20	▲ D97251 RO	10.00	1 1/4			
2-POLE, 125/250 VOLTS A.C. or D.C. — 240 VOLTS A.C.											
	30	Plug	D99211	93211	\$ 4.70	▲ D99211 RO	\$ 9.70	1 1/4			
	30	Plug		*93211 WH	5.60						
	30	Plug		†93011	10.50						
	30	Plug		†93011 WH	12.20						
	30	Cart.	D98251	93251	5.60	▲ D98251 RO	10.00	1 1/4	30	D91251	\$ 8.50
	60		D96252	34302	12.50	D96252 RO	19.50	1 1/4	60	D91252	12.50
	100		D96253		27.00	D96253 RO	40.00	2	100	D91253	27.00
	200		D96254		50.00	D96254 RO	67.00	2 1/2	200	D91254	50.00
	400		96255		120.00				400	91255	120.00
	600		96256		260.00				600	91256	230.00
3-WIRE S/N (2 BLADE, 2 FUSES) 120/240 VOLTS A.C. or D.C. — 240 VOLTS A.C.											
	30	Plug	D97311	90311	\$ 5.00	▲ D97311 RO	\$10.00	1 1/4			
	30	Plug		*90311 WH	5.90						
	30	Plug		*97311 WH	6.80						
	30	Cart.	○97351 X	97351	6.40	97351 RO	10.50	1 1/4			
	30			90351	6.40						
	60		D97312	34302	12.50	▲ D97312 RO	19.50	1 1/4			
	100		D97313		27.00	▲ D97313 RO	40.00	2			
	200		D97314		50.00	D97314 RO	67.00	2 1/2			
	400		97315		140.00						
	600		97316		280.00						
3-POLE, 120 or 240 VOLTS A.C.											
	30	Plug	D99311	★ 99311	\$ 9.35	99311 RO	\$15.50	1 1/4			
	30	Plug		*99311 WH	8.50						
	30	Plug			13.50						
	30	Cart.	D96351		12.10	▲ 99351 RO	16.00	1 1/4	30	91351	\$ 8.50
	30			99351	11.00				30	D91351	9.35
	60		D96352		17.50	▲ D96352 RO	24.50	1 1/4	60	D91352	12.50
	100		D96353		32.00	▲ D96353 RO	45.00	2	100	D91353	27.00
	200		D96354		68.00	D96354 RO	82.00	2 1/2	200	D91354	50.00
	400		96355		150.00				400	91355	120.00
	600		96356		300.00				600	91356	230.00
4-WIRE S/N (3 BLADES, 3 FUSES) 240 VOLTS A.C.											
	30	Cart.	D97451	97451	\$ 12.10	97451 RO	\$16.00	1 1/4			
	30	Cart.			11.00						
	60		D97412		17.50	D97412 RO	24.50	1 1/4			
	100		D97413		32.00	D97413 RO	45.00	2			
	200		D97414		68.00	D97414 RO	82.00	2 1/2			
	400		97415		170.00						
4-POLE, 240 VOLTS A.C.											
	30	Cart.	D96451		\$16.00				30	D91451	\$13.50
	60		D96452		29.00				60	D91452	27.00
	100		D96453		69.00				100	D91453	65.00
	200		D96454		115.00				200	D91454	107.00
	400		96455		205.00				400	91455	183.00
	600		96456		409.00				600	91456	365.00

Plug fuse switches rated 120/240 volts A.C. — 125/250 volts D.C. only.

All Neutrals — Insulated Groundable.

FINISH: Blue-gray Enamel. **RAINTIGHT**—Extra coat of Glyptal.

○Cat. No. 90000 Series and 93000 Series Switches are Rotor Disc Type—Others are swing out type.

★120 volts A.C. only.

†Dual water heater switch. (Two 93211's in one box).

±Same as 90211 except in larger box.

*Has dead-front shield over interior. 120 or 120/240 V. A.C.

▲Raintight Switches without threaded openings available. Use R suffix instead of RO. Same price level.

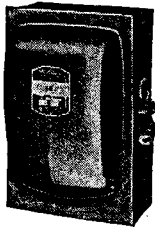
INTERCHANGEABLE HUBS for Raintight Enclosures, Type RO devices have threaded opening for interchangeable hubs or closing caps. Order hub or cap separately from table below, and simply screw into place. For details see Page 10.

Conduit Size Inches	3/4	1	1 1/4	1 1/2	2	2 1/2	Cap.	30-60 100 A.	200 A.
Hub Cat. No. *	HC HC2	HD HD2	HE HE2	HG	HH HH4	HW	Cap Cat. No. *	CE CA2	CH CA4
List Each	\$2.00	\$2.00	\$2.00	\$2.00	\$3.40	\$6.00	List Each	\$.20	\$.20

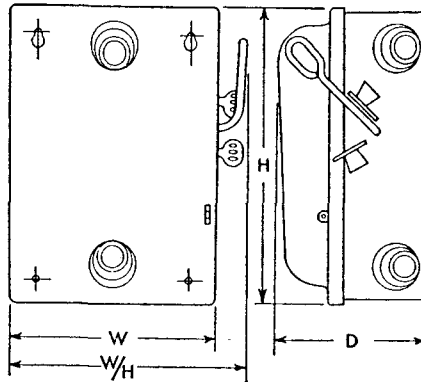
*Use only one of catalog numbers shown. Upper preferred.

GENERAL USE SAFETY SWITCH

DATA AND DIMENSIONS

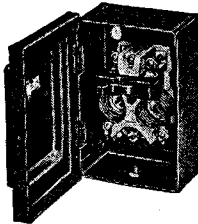


Cat. No. D96352

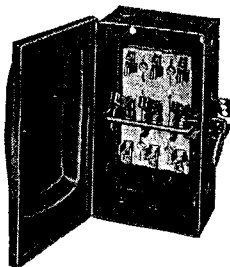


SOLDERLESS LUG SIZES

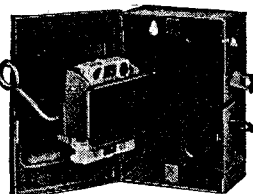
Ampere Rating	Maximum Wire	Minimum Wire
30	8	14
60	1	14
100	0	10
200	250 MCM	6
400	1-500 MCM	1-4/0
600	2-500 MCM	1-3/0



Compact Rotor Disc Switch



Cat. No. D96352



Swing Out Type Switch

Catalog Number	Wt.	Overall Dimensions				Std. Pkg.	Catalog Number	Wt.	Overall Dimensions				Std. Pkg.
		H	W	W/H	D				H	W	W/H	D	
34302	8	10 1/8	6 1/16	.....	3 1/16	1	D96453	38	19 3/8	14 5/8	16	7 1/4	1
90211	2	5 1/16	3 3/32	.....	2 27/32	10	D96454	86	24 1/16	16 3/8	17 1/16	7 3/16	1
90211 M	2	6 1/8	4 1/32	.....	2 27/32	10	96455	116	40 1/2	22 3/8	24 1/16	13 1/8	1
90211 WH	2	6 3/32	4 1/32	.....	2 27/32	10	96456	300	49 1/16	32	35	16 1/4	1
90311	3	6 1/8	4 1/32	.....	2 27/32	10	D97211	4	7 3/4	5 1/8	6	4	10
90311 WH	3	6 3/32	4 1/32	.....	2 27/32	10	D97211 R	5	9	5 5/8	6 7/16	4 3/8	5
90351	3	6 1/8	4 1/32	.....	2 27/32	10	D97211 RO	6	9	5 5/8	6 7/16	4 3/8	5
D91251	4	7 3/4	5 1/8	6	4	1	97211 WH	6	7 3/4	5 1/8	.....	5 1/16	10
D91252	12	13 3/8	8 1/2	9 1/16	6 1/4	1	D97251	4	7 3/4	5 1/8	6	4	10
D91253	21	17 1/8	11 5/8	13	7 1/4	1	D97251 R	5	9	5 5/8	6 7/16	4 3/8	5
D91254	33	21 7/8	13 3/16	15 3/8	7 1/16	1	D97251 RO	9	9	5 5/8	6 7/16	4 3/8	5
91255	64	31 1/32	16 21/32	18 21/32	11 1/32	1	D97311	5	7 3/4	5 1/8	6	4	10
91256	110	38 1/32	18 21/32	21 1/16	14 1/16	1	D97311 R	5	9	5 5/8	6 7/16	4 3/8	5
91351	10	7 1/16	6 7/16	7 1/16	4 1/8	10	D97311 RO	5	9	5 5/8	6 7/16	4 3/8	5
D91351	10	9 7/8	7 7/8	8 7/8	5 1/2	1	97311 WH	5	7 3/16	5 1/8	.....	5 1/16	10
D91352	14	13 3/8	8 1/2	9 1/16	6 1/4	1	D97312	13	13 5/8	7 1/16	9 7/8	6 1/8	1
D91353	19	17 1/8	11 5/8	13	7 1/4	1	D97312 R	18	15	8 3/4	10 7/8	6 1/2	1
D91354	36	21 7/8	13 3/16	15 3/8	7 1/16	1	D97312 RO	18	15	8 3/4	10 7/8	6 1/2	1
91355	86	31	21 13/16	24 1/16	11 1/16	1	D97313	25	17 1/8	11 5/8	13	7 1/4	1
91356	130	38 3/8	24 1/16	27 1/16	14 1/4	1	D97313 R	31	18 3/4	11 27/32	13 1/32	7 7/16	1
D91451	12	9 7/8	9 1/8	10 1/8	5 1/2	1	D97313 RO	31	18 3/4	11 27/32	13 1/32	7 7/16	1
D91452	21	15 7/8	11 3/8	12 1/16	6 1/16	1	D97314	40	21 3/4	13 1/16	15 5/8	7 1/16	1
D91453	32	19 3/8	14 5/8	16	7 1/4	1	D97314 RO	46	23 3/16	13 1/16	15 5/8	8 1/16	1
D91454	82	24 7/16	16 7/8	17 1/16	7 1/16	1	97315	92	40 1/2	16 21/32	18 1/2	12	1
91455	87	31 1/32	21 19/32	23 1/32	18 1/16	1	97316	220	53	25	27 1/4	14 3/8	1
91456	150	49 1/16	32	35	16 1/4	1	97351	5	7 3/16	5 1/8	6 3/32	3 7/8	10
93011	6	6 3/8	7 1/32	.....	3 1/8	1	97351 RO	5	8 1/16	5 1/4	6 1/2	4 1/16	5
93011 WH	6	6 3/8	7 1/32	.....	3 1/8	1	D97351	10	9 7/8	7 3/8	8 7/16	5 1/2	1
93211	3	6 1/8	4 1/32	.....	2 27/32	10	D97412	16	15 3/8	8 1/2	9 1/16	6 1/4	1
93211 WH	3	6 1/8	4 1/32	.....	2 27/32	10	D97412 RO	17	17 1/2	8 27/32	9 3/8	6 1/2	1
93251	3	6 1/8	4 1/32	.....	2 27/32	10	D97413	38	19 3/8	11 5/8	13	7 1/4	1
D96252	13	13 3/8	7 1/16	9 1/8	6 1/8	1	D97413 RO	39	21 1/4	11 1/16	13 3/8	7 7/16	1
D96252 RO	16	15	8 3/4	10 1/8	6 1/2	1	D97414	86	24 3/8	13 3/8	15 1/16	7 1/16	1
D96253	19	17 1/8	11 5/8	13	7 1/4	1	D97414 RO	87	25 7/8	13 3/8	15 1/16	5 25/64	1
D96253 RO	26	18 3/4	11 29/32	13 1/32	7 7/16	1	97415	140	40 3/16	21 7/8	24 1/4	12 3/16	1
D96254	37	21 7/8	13 3/16	15 3/8	7 1/16	1	97416	260	49 1/16	32	35	16 1/4	1
D96254 RO	43	23 3/16	13 3/16	15 3/8	8 1/16	1	97451	10	7 3/16	6 7/16	7 1/16	4 1/8	10
96255	78	40 3/16	16 21/32	18 1/32	12	1	97451 RO	7	8 1/8	6 3/4	7 7/8	4 1/16	5
96256	200	49 1/16	18 1/16	21 5/16	14 1/2	1	D97451	12	9 7/8	9 1/8	10 7/16	5 1/2	1
D96351	10	9 7/8	7 3/8	8 7/8	5 1/2	1	D98251	4	7 25/32	5 1/8	6 7/16	4	10
D96352	15	13 3/8	7 1/16	9 1/8	6 1/8	1	D98251 R	6	9	5 5/8	6 7/16	4 3/8	5
D96352 R	18	15	8 3/4	10 1/8	6 1/2	1	D98251 RO	6	9	5 5/8	6 7/16	4 3/8	5
D96352 RO	18	15	8 3/4	10 1/8	6 1/2	1	D99211	4	7 3/4	5 1/8	6	4	10
D96353	23	17 1/8	11 5/8	13	7 1/4	1	D99211 R	5	9	5 5/8	6 7/16	4 3/8	5
D96353 R	28	18 3/4	11 29/32	13 1/32	7 7/16	1	D99211 RO	5	9	5 5/8	6 7/16	4 3/8	5
D96353 RO	28	18 3/4	11 29/32	13 1/32	7 7/16	1	99311	6	7 3/16	6 7/16	7 1/16	4 1/8	10
D96354	44	21 7/8	13 3/16	15 3/8	7 1/16	1	99311 RO	8	8 1/8	6 3/4	7 7/8	4 1/16	1
D96354 RO	65	23 3/16	13 3/16	15 3/8	8 1/16	1	99311 WH	7	7 3/16	6 7/16	7 1/16	4 1/8	10
96355	125	40 3/16	21 7/8	24 1/4	12 3/16	1	D99311	9	9 7/8	7 3/8	8 7/16	5 1/2	1
96356	230	53	25	27 7/8	14 3/8	1	99351	5	7 3/16	6 7/16	7 1/16	4 3/8	10
D96451	12	9 7/8	9 1/8	10 1/8	5 1/2	1	99351 R	8	8 1/8	6 3/4	7 7/8	4 1/16	1
D96452	20	15 7/8	11 5/8	12 1/16	6 1/16	1	99351 RO	8	8 1/8	6 3/4	7 7/8	4 1/16	1



SCHEDULE C DISCOUNT

PAGE 15

STANDARD DUTY SAFETY SWITCHES

SINGLE THROW

40000
LINE

TYPE S STANDARD DUTY SAFETY SWITCHES are designed for general industrial or institutional and commercial applications where both the service factor and price are important considerations. They meet both NEMA Standards and Federal Specification W-S-865 for Type A Switches (except Raintight and Swing Out $\odot$). U/L Approved File E2875

System	Amp.	H.P. Rating ‡		FUSIBLE					NOT FUSIBLE				
				Indoor NEMA Type1		Raintight NEMA Type 3			Indoor NEMA Type 1		Raintight NEMA Type 3		
		Standard Fuse		Sheet Steel Enclosure		Type RO—Add Hub or Cap No Cover Interlock			Sheet Steel Enclosure		Type RO—Add Hub or Cap No Cover Interlock		
		A.C.	D.C.	Cat. No.	List Price	Cat. No.	List Price	Max. Hub Size (Ins.)	H.P. Rating A.C.	Cat. No.	List Price	Cat. No.	List Price	Max. Hub Size (Ins.)

2-POLE 240 VOLTS A.C. — 250 VOLTS D.C.

	30	1 1/2	5	$\odot$ 45251	\$13.70	A45251 RO	\$24.50	1 1/4		Use 3 Pole Switches	
	30	1 1/2	5	A45251	13.70						
	30	1 1/2	5	* A46251	21.60	A46251 RO	46.00	1 1/4			
	60	3	10	A46252	25.00	A46252 RO	61.00	2			
	100	7 1/2	20	A46253	40.00	A46253 RO	86.00	2 1/2			
	200	15	40	A46254	72.00	A46254 RO					
	400		50	A46255	148.00						
	600			A46256	295.00						

3-WIRE S/N (2 BLADES — 2 FUSES) 240 VOLTS A.C. — 250 VOLTS D.C.

	30	3		A47311	\$13.70	A47311 RO	\$24.50	1 1/4			
	60	7 1/2		A47312	25.00	A47312 RO	46.00	1 1/4			
	100	15		A47313	40.00	A47313 RO	61.00	2			
	200	25		A47314	72.00	A47314 RO	86.00	2 1/2			
	400	50		A47315	168.00	A47315 R	211.00	★			
	600			A47316	315.00	A47316 R	395.00	★			

3-POLE, 240 VOLTS A.C.

	30	3		$\odot$ 45351	\$16.70	A45351 RO	\$30.00	1 1/4	7 1/2	A41351	\$15.20	A41341 RO	\$28.50	1 1/4
	30	3		A45351	16.70					A41352	28.00	A41342 RO	48.00	1 1/4
	30	3		* A46351	28.00	A46351 RO	71.00	2	30	A41353	43.00	A41343 RO	68.00	2
	60	7 1/2		A46352	29.00	A46352 RO	96.00	1 1/4	15	A41354	66.00	A41344 RO	82.00	2 1/2
	100	15		A46353	46.00	A46353 RO		2	30	A41355	150.00			
	200	25		A46354	80.00	A46354 RO		2 1/2	50	A41356	265.00			
	400	50		A46355	186.00	A46355 R	216.00	★						
	600			A46356	335.00	A46356 R	450.00	★						

4-WIRE S/N (3 BLADES — 3 FUSES) 240 VOLTS A.C.

	30	3		A47411	\$16.70	A47411 RO	\$30.00	1 1/4			
	60	7 1/2		A47412	29.00	A47412 RO	49.00	1 1/4			
	100	15		A47413	46.00	A47413 RO	71.00	2			
	200	25		A47414	80.00	A47414 RO	96.00	2 1/2			
	400	50		A47415	206.00	A47415 R	269.00	★			
	600			A47416	355.00	A47416 R	516.00	★			

4-POLE 240 VOLTS A.C.

	30	3		A45451	\$33.00				20	A41452	\$37.00			
	30	3		* A46451	37.00				20	A41452	137.00			
	60	7 1/2		A46452	45.00				30	A41453	70.00			
	100	15		A46453	72.00				50	A41454	123.00			
	200	30		A46454	130.00					A41455	211.00			
	400	50		A46455	246.00					A41456	400.00			
	600			A46456	444.00									

3-POLE, 600 VOLTS A.C.

	30	7 1/2		A45341	\$29.00	A45341 RO	\$50.00	1 1/4	15	A41341	\$15.20	A41341 RO	\$28.50	1 1/4
	60	15		A46342	35.00	A46342 RO	59.00	1 1/4	30	A41342	28.00	A41342 RO	48.00	1 1/4
	100	30		A46343	64.00	A46343 RO	91.00	2	50	A41343	43.00	A41343 RO	68.00	2
	200	50		A46344	96.00	A46344 RO	125.00	2 1/2		A41344	66.00	A41344 RO	82.00	2 1/2

4-POLE, 600 VOLTS A.C.

	30	10		* A46441	\$47.00				40	A41422	\$47.00			
	60	20		A46442	55.00				40	A41422	47.00			
	100	30		A46443	94.00				50	A41443	87.00			
	200	50		A46444	156.00					A41444	126.00			

ALL NEUTRALS — INSULATED GROUNDABLE

Switching Neutral 3-Wire— Price same as for 3-Pole Switch. Add "SWN" to 3-Pole Catalog Number.

Finish: Blue-gray Enamel. Raintight— Extra coat of Glyptal

‡For maximum conditional H.P. and 600 V. not fusible ratings, see Page 123.

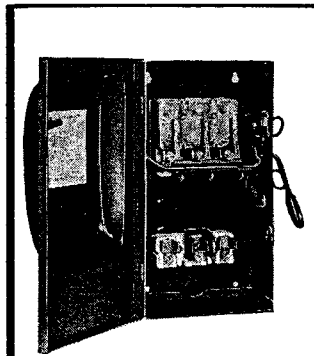
*60 Ampere Switch with 30 Amp. fuse spacings and clips.

★ Any size welded hubs available on order.

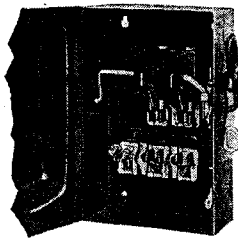
$\odot$ Swing out base — No interlock.

STANDARD DUTY SAFETY SWITCHES

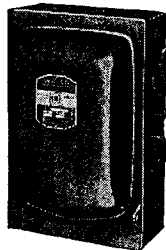
DATA AND DIMENSIONS



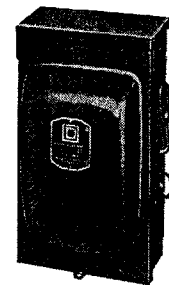
Cat. No. 46342



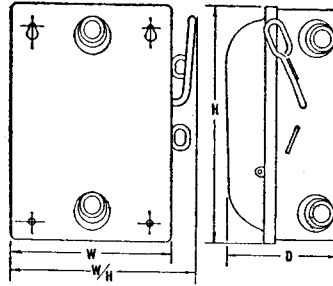
Cat. No. A47312
Cover Open.



Cat. No. A47312
Cover Closed.



Type RO
Raintight Switch
Showing
Threaded Opening for
Interchangeable
Hub or Cap



SOLDERLESS LUG SIZES

Ampere Rating	Maximum Wire	Minimum Wire
30	8	14
60	1	14
100	0	10
200	250 MCM	6
400	2-350 MCM	1-4
600	2-500 MCM	1-3/0

Catalog Number	Wt.	Overall Dimensions				Std. Pkg.	Catalog Number	Wt.	Overall Dimensions				Std. Pkg.
		H	W	W/H	D				H	W	W/H	D	
A41341	10	9 7/8	7 3/8	8 3/8	5 1/2	1	A46351	16	13 3/8	8 1/2	10 1/2	6 1/4	1
A41341 RO	13	11 1/2	7 7/8	9 1/8	5 3/4	1	A46352	16	13 3/8	8 1/2	10 1/2	6 1/4	1
A41342	14	13 3/8	8 1/2	10 1/2	6 1/4	1	A46352 RO	18	15	9 1/8	10 5/8	6 1/2	1
A41342 RO	14	15	8 3/8	10 1/4	6 1/2	1	A46353	26	17 1/8	11 1/8	13 3/8	7 1/4	1
A41343	38	17 1/8	11 1/8	13 3/8	7 1/4	1	A46353 RO	36	18 3/4	11 1/8	13 3/8	7 1/8	1
A41343 RO	25	18 3/4	11 1/2	13 3/8	7 1/8	1	A46354	43	21 7/8	13 3/8	15 1/8	7 1/8	1
A41344	48	21 7/8	13 3/8	15 1/8	7 1/8	1	A46354 RO	49	23 7/8	13 3/8	15 3/8	8 1/8	1
A41344 RO	41	23 1/4	13 1/2	15 3/8	8 1/4	1	A46355	117	49 1/2	21 3/8	24 1/8	14 1/8	1
A41351	11	9 3/8	7 3/8	8 3/8	5 1/2	1	A46355 R	139	49 1/2	21 3/8	23 3/8	13 3/8	1
A41352	16	13 3/8	8 3/8	10 1/2	6 1/4	1	A46356	200	52 1/8	24 3/8	27 3/8	16 3/8	1
A41353	21	17 1/8	11 1/8	13 3/8	7 1/4	1	A46356 R	210	52 1/4	24 3/8	27 3/8	15 3/4	1
A41354	44	21 7/8	13 3/8	15 1/8	7 1/8	1	A46441	22	15 3/8	11 3/8	12 1/8	6 3/8	1
A41355	92	31 1/2	21 1/2	24 3/2	14 3/4	1	A46442	24	15 3/8	11 3/8	12 1/8	6 3/8	1
A41356	165	38 3/8	24 3/8	27 3/8	16 3/8	1	A46443	50	19 3/8	14 3/8	16 3/8	7 1/4	1
A41442	20	15 3/8	11 3/8	12 1/8	5 3/8	1	A46444	90	24 1/8	16 3/8	18 3/8	7 1/8	1
A41443	31	19 3/8	14 3/8	16 3/8	7 1/4	1	A46451	22	15 3/8	11 3/8	12 1/8	6 3/8	1
A41444	82	24 3/8	16 3/8	18 3/8	7 1/8	1	A46452	19	15 3/8	11 3/8	12 1/8	6 3/8	1
A41452	20	15 3/8	11 3/8	12 1/8	5 3/8	1	A46453	40	19 3/8	14 3/8	16 3/8	7 1/4	1
A41453	31	19 3/8	14 3/8	16 3/8	7 1/4	1	A46454	90	24 1/8	17 3/8	18 3/8	7 1/8	1
A41454	82	24 3/8	16 3/8	18 3/8	7 1/8	1	A46455	126	40 1/2	21 1/2	24 3/2	14 1/2	1
A41455	87	31 1/2	21 1/2	24 3/2	14 3/4	1	A46456	400	52 1/8	24 3/8	27 3/8	16 3/8	1
A41456	150	38 3/8	24 3/8	27 3/8	16 3/8	1	A47311	10	9 3/8	7 3/8	8 3/8	5 1/2	1
45251	5	7 3/8	5 3/8	6 1/8	4	1	A47311 RO	12	11 1/2	7 1/8	7 1/8	5 3/8	1
A45251	8	9 3/8	5 3/8	6 1/8	5 1/2	1	A47312	14	17 1/8	11 1/8	16 1/8	7 1/4	1
A45251 RO	10	11 1/8	6 3/8	7 3/8	5 3/4	1	A47312 RO	16	15	9 3/8	10 5/8	6 1/2	1
A45341	10	12 3/8	7 3/8	8 3/8	5 1/2	1	A47313	20	17 1/8	11 1/8	16 1/8	7 1/4	1
A45341 RO	14	14 1/2	7 1/8	9 1/8	5 3/4	1	A47313 RO	28	18 3/4	11 1/8	13 3/8	7 1/8	1
45351	6	7 3/8	6 3/8	7 3/8	4 3/8	1	A47314	37	21 7/8	13 3/8	15 3/8	7 1/8	1
A45351	11	9 3/8	7 3/8	8 3/8	5 1/2	1	A47314 RO	65	23 1/8	13 3/8	15 3/8	8 1/8	1
A45351 RO	12	11 1/2	7 1/8	9 1/8	5 3/4	1	A47315	96	40 1/2	16 3/8	19 3/2	14 1/8	1
A45451	12	9 3/8	9 3/8	10 3/8	5 1/2	1	A47315 R	101	43 3/8	21 1/8	23 3/8	13 3/8	1
A46251	15	13 3/8	8 3/8	10 1/2	6 1/4	1	A47316	156	49 1/2	18 1/8	21 1/8	17	1
A46252	15	13 3/8	8 3/8	10 1/2	6 1/4	1	A47316 R	161	52 1/4	24 3/8	27 3/8	15 3/4	1
A46252 RO	16	15	9 1/8	10 3/8	6 1/2	1	A47411	11	9 3/8	9 3/8	10 3/8	5 1/2	1
A46253	20	17 1/8	11 1/8	13 3/8	7 1/4	1	A47411 RO	8	11 1/2	9 1/8	10 3/8	5 3/4	1
A46253 RO	33	18 3/4	11 1/8	13 3/8	7 1/8	1	A47412	16	15 3/8	8 1/2	9 1/8	6 1/4	1
A46254	35	21 7/8	13 3/8	15 1/8	7 1/8	1	A47412 RO	20	17 1/2	8 3/8	9 1/8	6 1/2	1
A46254 RO	65	23 1/8	13 3/8	15 3/8	8 1/8	1	A47413	27	19 3/8	11 3/8	13 3/8	7 1/4	1
A46255	90	40 1/2	16 3/8	19 3/2	14 3/8	1	A47413 RO	35	21 1/4	11 3/8	13 1/2	7 1/8	1
A46256	192	49 1/2	18 1/8	21 1/8	17	1	A47414	40	24 3/8	13 3/8	15 1/8	7 1/8	1
A46342	16	15 3/8	8 1/2	9 1/8	6 1/4	1	A47414 RO	67	26	13 3/8	16 1/8	7 1/8	1
A46342 RO	19	17 1/2	8 1/2	9 1/8	6 1/2	1	A47415	118	40 1/2	21 3/8	24 1/8	14 1/8	1
A46343	34	19 3/8	11 3/8	13 3/8	7 1/4	1	A47415 R	140	43 3/8	21 1/8	23 3/8	13 3/8	1
A46343 RO	30	21 1/4	11 3/8	13 1/2	7 1/8	1	A47416	210	52 1/8	24 3/8	27 3/8	16 3/8	1
A46344	63	24 3/8	13 3/8	15 1/8	7 1/8	1	A47416 R	220	52 1/4	24 3/8	27 3/8	15 3/4	1
A46344 RO	53	26 1/4	13 1/2	16 3/8	7 1/8	1							

INTERCHANGEABLE HUBS for raintight enclosures, Type RO devices have threaded opening for interchangeable hubs or closing caps. Order hub or cap separately from table below, and simply screw into place. For details, see Page 10. For price of welded hubs for Type R devices, consult SB-137 price list.

Conduit Size (Inches)	3/4	1	1 1/4	1 1/2	2	2 1/2	Cap	30-60-100 A.	200 A.
Hub Catalog Number *	HC HC2	HD HD2	HE HE2	HG	HH HH4	HW	Cap Cat. Number *	CE CA2	CH CA4
List Each	\$2.00	\$2.00	\$2.00	\$2.00	\$3.40	\$6.00	List Each	\$.20	\$.20

*Use only one of catalog numbers shown. Upper preferred.



SCHEDULE A DISCOUNT

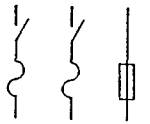
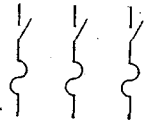
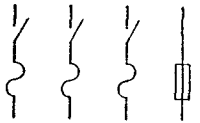
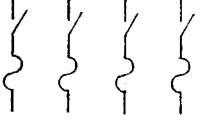
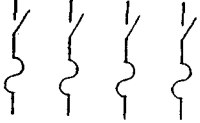
PAGE 17

HEAVY DUTY SAFETY SWITCHES

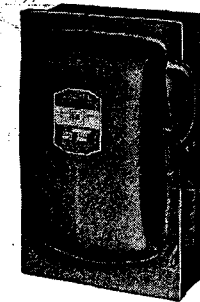
SINGLE THROW

80000 LINE
50000 LINE

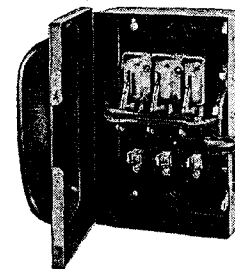
GENERAL PURPOSE ENCLOSURE (NEMA TYPE 1)

System	Amps.	H.P. Ratings Standard Fuse ▲		FUSIBLE			NOT FUSIBLE				
				Visible Blade	Compact Type	List Price	H.P. Rating		Visible Blades	Compact Type	List Price
		A.C.	D.C.	Cat. No.	Cat. No.		A.C.	D.C.	Cat. No.	Cat. No.	
2-POLE, 240 VOLTS A.C. — 250 VOLTS D.C.											
	30	1½	5	A85251	56251	\$24.50	3	5	A81251	51251	\$23.00
	30	1½	5	*A86251		30.00					
	60	3	10	A86252	56252	33.00	10	10	A81252	51252	30.00
	100	7½	20	A86253	56253	50.00	15	20	A81253	51253	49.00
	200	15	40	A86254	56254	83.00		40	A81254	51254	70.00
	400		50	A88255		187.00		50	A84255		160.00
	600			A88256		326.00			A84256		270.00
	800			88257		457.00			84257		404.00
1200			88258		632.00			84258		552.00	
3 WIRE S/N (2 BLADES) — 2 FUSES 240 VOLTS A.C. — 250 VOLTS D.C.											
	30	3		A87311	59311	\$28.00					
	60	7½		A87312	59312	37.00					
	100	15		A87313	59313	59.00					
	200	25		A87314	59314	91.00					
	400	50		A89315		207.00					
	600			A89316		346.00					
	800			89317		499.00					
	1200			89318		706.00					
3-POLE, 240 VOLTS A.C.											
	30	3		A85351	56351	\$30.00	7½		A81351	51351	\$28.00
	30	3		*A86351		37.00					
	60	7½		A86352	56352	43.00	15		A81342	51342	41.00
	100	15		A86353	56353	66.00	30		A81343	51343	61.00
	200	25		A86354	56354	99.00	50		A81344	51344	80.00
	400	50		A88355		220.00			A84345		208.00
	600			A88356		366.00			A84346		334.00
	800			88357		620.00			84347		540.00
1200			88358		794.00			84348		725.00	
4-WIRE, S/N (3 BLADES) — 3 FUSES — 240 VOLTS A.C.											
	30	3		A87411		\$41.00					
	60	7½		A87412		50.00					
	100	15		A87413		79.00					
	200	25		A87414		116.00					
	400	50		A89415		240.00					
	600			A89416		386.00					
	800			89417		895.00					
	1200			89418		1099.00					
4-POLE, 240 VOLTS A.C.											
	30	3		*A86451		\$43.00	10		A81451		\$41.00
	60	7½		A86452		53.00	20		A81442		53.00
	100	15		A86453		87.00	30		A81443		93.00
	200	30		A86454		153.00	50		A81444		148.00
	400	50		A88455		292.00			A84445		270.00
	600			A88456		504.00			A84446		471.00
	800			88457		941.00			84447		697.00
	1200			88458		1151.00			84448		956.00
2-POLE, 600 VOLTS A.C. OR D.C. — WITH ARC SUPPRESSORS											
	30	3	10	A85261	56261	\$41.00	7½	15	A81261	51261	\$28.00
	60	10	25	A86262	56262	43.00	20	25	A81262	51262	36.00
	100	15	40	A86263	56263	66.00	30	40	A81263	51263	59.00
	200	30	50	A86264	56264	99.00	50		A81264	51264	76.00
	400			A88265		229.00			A84265		187.00
	600			A88266		362.00			A84266		270.00
	800			□ 88247		560.00			★ 84247		404.00
	1200			□ 88248		788.00			★ 84248		552.00
3-POLE, 600 VOLTS A.C. — WITH ARC SUPPRESSORS											
	30	7½		A85341	56341	\$47.00	15		A81341	51341	\$33.00
	30	7½		*A86341		49.00					
	60	15		A86342	56342	50.00	30		A81342	51342	41.00
	100	30		A86343	56343	76.00	50		A81343	51343	61.00
	200	50		A86344	56344	123.00			A81344	51344	80.00
	400			A88345		247.00			A84345		208.00
	600			A88346		416.00			A84346		334.00
	800			88347		730.00			84347		540.00
1200			88348		947.00			84348		725.00	
4-POLE, 600 VOLTS A.C. — WITH ARC SUPPRESSORS											
	30	10		*A86441		\$59.00					
	60	20		A86442		64.00	40		A81442		\$53.00
	100	30		A86443		100.00	50		A81443		93.00
	200	50		A86444		169.00			A81444		148.00
	400			A88445		322.00			A84445		270.00
	600			A88446		524.00			A84446		471.00
	800			88447		962.00			84447		697.00
	1200			88448		1349.00			84448		956.00

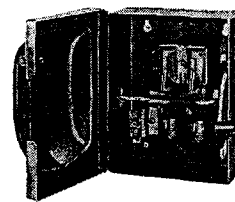
Footnotes—See opposite page.



Cat. No. A86352
Cover Closed



Cat. No. A86352
Cover Open



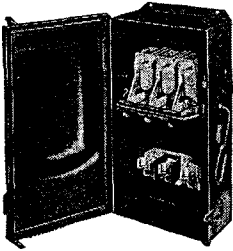
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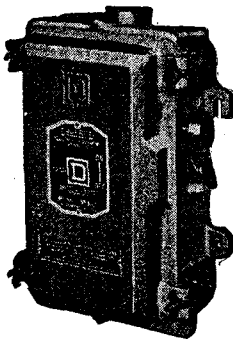
Cat. No. 56352

HEAVY DUTY SAFETY SWITCHES

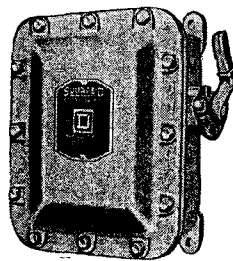
SINGLE THROW



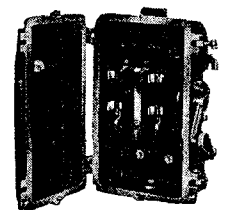
Cat. No. H86342



Cat. No. 53342D



Cat. No. 54341



Cat. No. 50312

TYPE H HEAVY DUTY INDUSTRIAL SAFETY SWITCHES are designed for mass production industries where price is secondary to continued performance under conditions of severe service and maximum safety. They not only meet NEMA standards and Government specifications for Type A switches, but have many additional construction features ♦. U/L Approved File E2875 and E10673.

50000 Compact Line is used where space is limited. Very high rupturing capacity is the result of steel reinforced, double break contacts operating in special arc chambers which cool and rapidly extinguish the arc without appreciable flashing. Current carrying parts are cadmium plated. True quick-make and quick-break mechanism has front operating handle with padlocking provision, and complete cover interlock. The unique box construction permits close mounting in group installations.

80000 Line has silver plated current carrying parts, multi-spring jaws, positive pressure fuse clips, visible blades with spring loaded hinges. Polyester Glass insulated steel cross bar, swing-out arc barrier with magnetic plates in the arc chamber, non-carbonizing and non-tracking insulation, solderless connectors, and a true quick-make and quick-break mechanism having full cover interlock and provision for as many as four padlocks (30-600 Amps.).

80000 LINE
50000 LINE

SPECIAL PURPOSE ENCLOSURES

Amps.	FUSIBLE					NOT FUSIBLE						
	H. P. Rating Stand- ard Fuse A.C. Δ✦	Special Industry NEMA XII		Water-tight Dust-tight ▲ NEMA IV & V		H. P. Rating A.C. ✦	Special Industry NEMA XII		Water-tight and Dust-tight Explosion Resisting NEMA IV, V and IX ▲ Class II, Group G		Explosion Resisting NEMA VII ● Class I, Group D	
		Cat. No.	List Price	Cat. No.	List Price		Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price

2-POLE, 240 VOLTS A.C. — 250 VOLTS D.C. ‡

30	1½			‡ 7251	\$41.00							
30	1½	H85251	\$27.00	55251	\$1.00							
60	3	H86252	\$6.00	55252	\$7.80							
100	7½	H86253	\$5.00	55253	\$21.00							
200	15	H86254	\$1.00	55254	\$39.80							

3-WIRE S/N (2 BLADES — 2 FUSES) 240 VOLTS A.C. — 250 VOLTS D.C.

30	3	H87311	\$31.00	50311	\$11.00							
60	7½	H87312	\$1.00	50312	\$11.00							
100	15	H87313	\$5.00	50313	\$29.00							
200	25	H87314	\$10.00	50314	\$39.00							

3-POLE, 240 VOLTS A.C.

30	3	H85351	\$3.00	55351	\$102.00							
60	7½	H86352	\$7.00	55352	\$112.00							
100	15	H86353	\$73.00	55353	\$276.00							
200	25	H86354	\$109.00	55354	\$396.00							

4-WIRE, S/N (3 BLADES — 3 FUSES) 240 VOLTS A.C.

30	3			50411	\$112.00							
60	7½	H87412	\$5.00	50412	\$124.00							
100	15	H87413	\$7.00	50413	\$290.00							
200	25	H87414	\$128.00	50414	\$405.00							

2-POLE, 600 VOLTS A.C. OR D.C. ‡

30	3	H85261	\$45.00	55261	\$113.00	7½	H81261	\$31.00	53261 D	\$92.00	★ 54261	\$139.00
60	10	H86262	\$7.00	55262	\$122.00	20	H81262	\$40.00	53262 D	\$99.00	★ 54262	\$163.00
100	15	H86263	\$73.00	55263	\$269.00	30	H81263	\$65.00	53263 D	\$254.00		
200	30	□ H86264	\$109.00	55264	\$389.00	50	★ H81264	\$84.00	53264 D	\$351.00		

3-POLE, 600 VOLTS A.C.

30	7½	H85341	\$2.00	55341	\$124.00	15	H81341	\$36.00	53341 D	\$102.00	54341	\$153.00
60	15	H86342	\$5.00	55342	\$134.00	30	H81342	\$45.00	53342 D	\$108.00	54342	\$177.00
100	30	H86343	\$4.00	55343	\$290.00	50	H81343	\$67.00	53343 D	\$270.00		
200	50	H86344	\$135.00	55344	\$405.00		H81344	\$88.00	53344 D	\$369.00		

All Neutrals — Insulated groundable.

FINISH: Blue gray Enamel.

3-Wire Switching Neutral switches are priced the same as 3-pole switches and SWN is added to the 3-pole catalog number. **Cover Control Keys** for 400-600 ampere switches Cat. No. 70010. List price each, \$1.00

FOOTNOTES

♦ 60 amp. switch with 30 amp. fuse spacing and clips.

□ 600 volts A.C. only

‡ D.C. H.P. ratings—same as equivalent switch shown on Page 18.

★ 600 volts A.C. — 250 volts D.C. only.

● Used for both 30 and 60 amp ratings, 575 volts A.C.

△ For maximum conditional H.P. and 600 V. not fusible ratings, see Page 123.

♦ 800-2400 amp. switches differ from Type A specifications by having vault type handle and are quick break only.

▲ Cast aluminum enclosures standard but cast iron supplied on order at no extra cost. Enclosures have threaded conduit holes as follows: 30 amp. one ¾" top and bottom, 60 amp. one 1¼" top and bottom; 100 amp. two 1½" in bottom and 200 amp. two 2½" in bottom. Two additional holes of sizes shown will be furnished at no extra cost. Holes differing from standard can be supplied at extra charge.

● Cast iron enclosures have threaded conduit holes as follows: 30 amp. two ¾" bottom, 60 amp. two 1¼" bottom.

‡ Cast iron enclosure. Gaskets and plates with one ¾" tapped conduit hole top and bottom furnished standard unless otherwise specified.



SCHEDULE

A

DISCOUNT

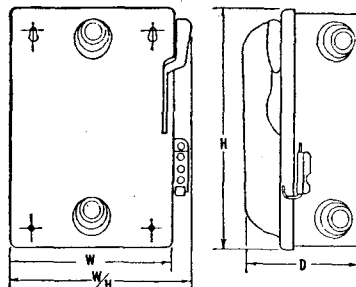
PAGE 19

HEAVY DUTY AND DOUBLE THROW SAFETY SWITCHES

DATA AND DIMENSIONS

SOLDERLESS LUG SIZES

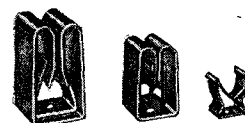
Ampere Rating	LINE AND LOAD		
	50000 Line	80000 Line	Double Throw
30	4-14	1-14	4-14
60	4-14	1-14	4-14
100	0-14	0-14	0-14
200	250 MCM-6	250 MCM-6	250 MCM-6
400	.....	2-350 MCM-3/0	500 MCM-4/0
600	.....	2-500 MCM-3/0	2-500 MCM-3/0
800	.....	4-350 MCM-3/0	.....
1200	.....	4-500 MCM-3/0	.....



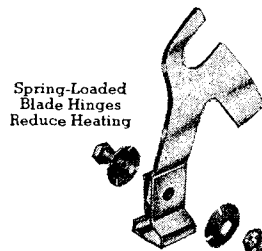
MANY OUTSTANDING FEATURES!



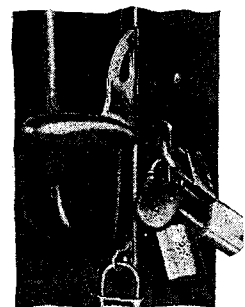
Dead front construction



Positive-Pressure Fuse Clips



Spring-Loaded Blade Hinges Reduce Heating



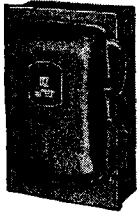
Padlock Attachment locks switch ON or OFF and cover closed

Catalog Number	Wt.	Overall Dimensions				Std. Pkg.	Catalog Number	Wt.	Overall Dimensions				Std. Pkg.
		H	W	W/H	D				H	W	W/H	D	
50311	25	15 1/8	10 1/8	11 23/32	5 27/32	1	56261	15	11 13/16	7 5/8	8 1/4	5 1/8	1
50312	25	15 1/8	10 1/8	11 11/16	5 7/8	1	56262	17	13 3/8	7 5/8	8 1/4	5 1/8	1
50313	60	25 1/2	15	17 11/16	8 3/4	1	56263	41	19 3/4	11 1/8	11 11/16	7 1/2	1
50314	60	25 1/2	15	17 11/16	8 3/4	1	56264	45	22 1/2	12	12 5/8	8 1/4	1
50411	26	15 1/8	10 1/8	11 23/32	5 27/32	1	56341	15	11 13/16	7 5/8	8 1/4	5 1/8	1
50412	26	15 1/8	10 1/8	11 11/16	5 7/8	1	56342	17	13 3/8	7 5/8	8 1/4	5 1/8	1
50413	55	25 1/2	15	17 11/16	8 3/4	1	56343	43	19 3/4	11 1/8	11 11/16	7 1/2	1
50414	60	25 1/2	15	17 11/16	8 3/4	1	56344	52	22 1/2	12	12 5/8	8 1/4	1
51251	10	8 7/16	6 21/32	7 3/32	4 3/8	1	56351	10	8 7/16	6 21/32	7 3/32	4 3/8	1
51252	15	11 13/16	7 5/8	8 1/4	5 1/8	1	56352	15	11 13/16	7 5/8	8 1/4	5 1/8	1
51253	42	19 3/4	11 1/8	11 11/16	7 1/2	1	56353	44	19 3/4	11 1/8	11 11/16	7 1/2	1
51254	46	22 1/2	12	12 5/8	8 1/4	1	56354	53	22 1/2	12	12 5/8	8 1/4	1
51261	10	8 7/16	6 21/32	7 3/32	4 3/8	1	59311	10	8 7/16	6 21/32	7 3/32	4 3/8	1
51262	16	11 13/16	7 5/8	8 1/4	5 1/8	1	59312	15	11 13/16	7 5/8	8 1/4	5 1/8	1
51263	40	19 3/4	11 1/8	11 11/16	7 1/2	1	59313	42	19 3/4	11 1/8	11 11/16	7 1/2	1
51264	46	22 1/2	12	12 5/8	8 1/4	1	59314	49	22 1/2	12	12 5/8	8 1/4	1
51341	10	8 7/16	6 21/32	7 3/32	4 3/8	1	A81251	9	9 7/8	5 3/8	6 3/4	5 1/2	1
51342	16	11 13/16	7 5/8	8 1/4	5 1/8	1	A81252	13	13 3/8	8 1/2	9 3/4	6 1/4	1
51343	43	19 3/4	11 1/8	11 11/16	7 1/2	1	A81253	19	17 1/8	11 5/8	12 1/2	7 1/4	1
51344	52	22 1/2	12	12 5/8	8 1/4	1	A81254	35	21 7/8	13 3/8	14 1/16	7 13/16	1
51351	10	8 7/16	6 21/32	7 3/32	4 3/8	1	A81261	9	9 7/8	5 3/8	6 3/4	5 1/2	1
52262	230	20 1/8	17 1/2	20 1/8	7	1	H81261	9	9 7/8	5 3/8	6 3/4	5 1/2	1
52342	238	20 1/8	17 1/2	20 1/8	7	1	A81262	15	13 3/8	8 1/2	9 3/4	6 1/4	1
53261 D	26	15 1/8	10 1/8	11 23/32	5 27/32	1	H81262	15	15 1/8	8 1/2	9 3/4	6 3/8	1
53262 D	25	15 1/8	10 1/8	11 11/16	5 1/8	1	A81263	19	17 1/8	11 5/8	12 1/2	7 1/4	1
53263 D	50	25 1/2	15	17 11/16	8 3/4	1	H81263	19	19 5/8	11 23/32	13 3/8	7 3/8	1
53264 D	55	25 1/2	15	17 11/16	8 3/4	1	A81264	35	21 7/8	13 3/8	14 1/16	7 13/16	1
53341 D	25	15 1/8	10 1/8	11 23/32	5 27/32	1	H81264	35	24 3/8	13 3/8	15 1/8	7 7/8	1
53342 D	26	15 1/8	10 1/8	11 11/16	5 1/8	1	A81341	11	9 7/8	7 3/8	8 1/2	5 1/2	1
53343 D	50	25 1/2	15	17 11/16	8 3/4	1	H81341	11	12 1/8	7 3/8	8 3/8	5 5/8	1
53344 D	73	25 1/2	15	17 11/16	8 3/4	1	A81342	16	13 3/8	8 1/2	9 3/4	6 1/4	1
54261	60	13	11 1/2	13 1/2	6 3/8	1	H81342	16	15 7/8	8 1/2	9 3/4	6 3/8	1
54262	140	18	14 3/8	16 3/8	7 1/16	1	A81343	26	17 1/8	11 5/8	12 1/2	7 1/4	1
54341	78	13	11 1/2	13 1/2	6 3/8	1	H81343	26	19 3/8	11 23/32	13 3/8	7 3/8	1
54342	145	18	14 3/8	16 3/8	7 1/16	1	A81344	40	21 7/8	13 3/8	14 1/16	7 13/16	1
55251	24	15 1/8	10 1/8	11 23/32	5 27/32	1	H81344	40	24 3/8	13 3/8	15 1/8	7 7/8	1
55252	25	15 1/8	10 1/8	11 11/16	5 7/8	1	A81351	11	9 7/8	7 3/8	8 1/2	5 1/2	1
55253	55	25 1/2	15	17 11/16	8 3/4	1	A81442	19	15 1/8	11 5/8	12 5/8	6 5/8	1
55254	60	25 1/2	15	17 11/16	8 3/4	1	A81443	35	19 3/8	14 3/8	15 1/16	7 1/4	1
55261	25	15 1/8	10 1/8	11 23/32	5 27/32	1	A81444	90	24 1/8	16 7/8	18 3/8	7 13/16	1
55262	26	15 1/8	10 1/8	11 11/16	5 7/8	1	A81451	12	9 7/8	9 1/8	10 1/4	5 1/2	1
55263	50	25 1/2	15	17 11/16	8 3/4	1	82252	16	13 3/8	9 1/8	12 3/4	6 3/8	1
55264	60	25 1/2	15	17 11/16	8 3/4	1	82252F	24	23 3/8	9 3/8	11 11/16	6 5/8	1
55341	26	15 1/8	10 1/8	11 23/32	5 27/32	1	82253	27	16 15/16	11 13/16	14 1/16	8 1/8	1
55342	26	15 1/8	10 1/8	11 11/16	5 7/8	1	82253F	40	30 11/16	11 1/4	14 1/16	7 7/8	1
55343	70	25 1/2	15	17 11/16	8 3/4	1	82254	47	22 13/32	15 3/4	19 15/16	9 11/16	1
55344	76	25 1/2	15	17 11/16	8 3/4	1	82254F	75	38 15/16	15 3/4	19 3/8	9 9/16	1
55351	25	15 1/8	10 1/8	11 23/32	5 27/32	1	82261F	25	23 3/8	9 3/8	11 11/16	6 5/8	1
55352	26	15 1/8	10 1/8	11 11/16	5 7/8	1	82262	16	13 3/8	9 1/8	12 3/4	6 3/8	1
55353	55	25 1/2	15	17 11/16	8 3/4	1	82262F	26	23 3/8	9 3/8	11 11/16	6 5/8	1
55354	78	25 1/2	15	17 11/16	8 3/4	1	82263	26	16 15/16	11 3/8	14 15/16	8 1/8	1
56251	10	8 7/16	6 21/32	7 3/32	4 3/8	1	82263F	35	30 11/16	11 1/4	14 1/16	7 7/8	1
56252	15	11 13/16	7 5/8	8 1/4	5 1/8	1	82264	49	22 13/32	15 3/4	19 15/16	9 11/16	1
56253	41	19 3/4	11 1/8	11 11/16	7 1/2	1	82264F	45	38 15/16	15 3/4	19 3/8	9 9/16	1
56254	46	22	12	12 5/8	8 1/4	1	82341F	34	23 3/8	12 13/16	16 1/2	6 5/8	1
							82342	20	12 7/8	12 13/16	16 7/8	6 9/16	1
							82342F	33	23 3/8	12 13/16	16 1/2	6 5/8	1

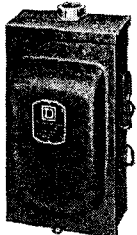
HEAVY DUTY AND DOUBLE THROW SAFETY SWITCHES

DATA AND DIMENSIONS

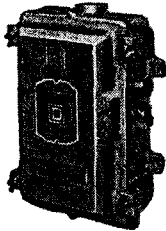
A WIDE VARIETY OF ENCLOSURES (30-200 Amps.)



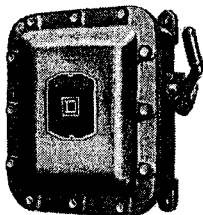
General Purpose
NEMA 1



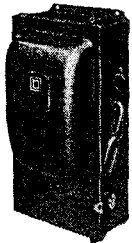
Raintight
NEMA 3



Water-tight; Dust-tight
NEMA 4, 5



Explosion Resisting
NEMA 7, 9



Special Industry
NEMA 12

Catalog Number	Wt.	Overall Dimensions				Std. Pkg.	Catalog Number	Wt.	Overall Dimensions				Std. Pkg.
		H	W	W/H	D				H	W	W/H	D	
82343	33	16 ¹ / ₁₆	15 ¹ / ₁₆	19 ¹ / ₁₆	8 ⁵ / ₈	1	A87412	22	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1
82343F	53	30 ¹ / ₁₆	15 ⁵ / ₁₆	19	8 ¹ / ₁₆	1	H87412	22	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1
82344	63	23 ¹ / ₁₆	20	23 ³ / ₄	11 ¹ / ₁₆	1	A87413	34	19 ⁵ / ₈	11 ⁵ / ₈	12 ¹ / ₁₆	7 ¹ / ₄	1
82344F	93	38 ¹ / ₁₆	19 ¹ / ₂	23 ³ / ₄	13 ¹ / ₄	1	H87413	19	19 ⁵ / ₈	11 ¹ / ₂	13 ⁵ / ₈	7 ³ / ₈	1
82352	19	12 ⁷ / ₈	12 ¹ / ₁₆	16 ⁷ / ₈	6 ³ / ₈	1	A87414	50	24 ³ / ₈	13 ³ / ₈	14 ¹ / ₁₆	7 ¹ / ₁₆	1
82352F	29	23 ¹ / ₈	12 ¹ / ₁₆	16 ¹ / ₂	6 ³ / ₈	1	H87414	24	24 ³ / ₈	13 ⁷ / ₁₆	15 ⁵ / ₁₆	7 ⁷ / ₈	1
82353	32	16 ¹ / ₁₆	15 ⁵ / ₁₆	19 ¹ / ₁₆	8 ⁵ / ₈	1	88247	260	49 ³ / ₄	22 ⁷ / ₈	24 ³ / ₈	15 ⁵ / ₁₆	1
82353F	43	30 ¹ / ₁₆	15 ⁵ / ₁₆	19	8 ¹ / ₁₆	1	88248	400	62 ¹ / ₁₆	25	27 ³ / ₁₆	15 ⁵ / ₄	1
82354	62	23 ¹ / ₁₆	20	23 ³ / ₄	11 ¹ / ₁₆	1	A88255	90	40 ¹ / ₂	16 ¹ / ₂	19 ⁵ / ₈	14 ⁵ / ₈	1
82354F	91	38 ¹ / ₁₆	19 ¹ / ₂	23 ³ / ₄	13 ¹ / ₄	1	A88256	180	49 ¹ / ₂	18 ¹ / ₂	21 ¹ / ₁₆	17	1
82444F	145	38 ¹ / ₁₆	25 ¹ / ₁₆	28 ¹ / ₁₆	12 ³ / ₄	1	88257	160	49 ³ / ₄	22 ⁷ / ₈	24 ³ / ₈	15 ⁵ / ₁₆	1
82454F	140	38 ¹ / ₁₆	25 ¹ / ₁₆	28 ¹ / ₁₆	12 ³ / ₄	1	88258	238	57 ¹ / ₁₆	25	27 ³ / ₁₆	16 ¹ / ₁₆	1
82447	135	40 ³ / ₄	22 ⁷ / ₈	24 ⁷ / ₈	15	1	A88265	113	43 ¹ / ₂	21 ¹ / ₂	23 ⁵ / ₄	14 ¹ / ₁₆	1
82427	200	47 ⁵ / ₁₆	25	27 ¹ / ₁₆	16 ³ / ₈	1	A88266	216	52 ¹ / ₂	24 ¹ / ₂	27 ¹ / ₁₆	17	1
A84255	73	31 ¹ / ₂	16 ¹ / ₂	19 ⁵ / ₈	14 ⁵ / ₈	1	A88345	156	43 ¹ / ₂	21 ³ / ₄	23 ⁵ / ₄	14 ¹ / ₁₆	1
A84256	120	38 ⁵ / ₈	18 ¹ / ₈	21 ³ / ₄	16 ³ / ₄	1	A88346	225	52 ¹ / ₂	24 ¹ / ₁₆	27 ¹ / ₁₆	17	1
84257	135	40 ³ / ₄	22 ⁷ / ₈	24 ⁷ / ₈	15	1	88347	250	52 ¹ / ₁₆	32	34 ³ / ₈	15 ⁷ / ₈	1
84258	200	47 ⁵ / ₁₆	25	27 ¹ / ₁₆	16 ³ / ₈	1	88348	450	62 ¹ / ₁₆	39 ¹ / ₁₆	43 ³ / ₁₆	17 ¹ / ₁₆	1
A84265	72	31 ¹ / ₂	16 ¹ / ₂	19 ⁵ / ₈	14 ⁵ / ₈	1	A88355	156	40 ¹ / ₂	21 ¹ / ₂	24 ⁵ / ₈	14 ¹ / ₁₆	1
A84266	102	38 ⁵ / ₈	18 ¹ / ₈	21 ³ / ₄	16 ³ / ₄	1	A88356	225	52 ¹ / ₂	24 ¹ / ₁₆	27 ¹ / ₁₆	17	1
A84345	90	31 ¹ / ₂	21 ¹ / ₂	24 ⁵ / ₈	14 ³ / ₄	1	88357	280	52 ¹ / ₁₆	32	34 ⁵ / ₈	15 ⁷ / ₈	1
A84346	134	39 ¹ / ₂	24 ¹ / ₁₆	27 ¹ / ₁₆	17	1	88358	492	51 ¹ / ₁₆	39 ¹ / ₁₆	43 ³ / ₁₆	17 ¹ / ₁₆	1
84347	215	40 ³ / ₈	31 ¹ / ₁₆	35 ¹ / ₁₆	16	1	A88445	160	43 ¹ / ₂	21 ¹ / ₁₆	24 ³ / ₄	14 ¹ / ₁₆	1
84348	208	47 ¹ / ₁₆	39 ¹ / ₁₆	43 ¹ / ₁₆	17 ³ / ₈	1	A88446	255	52 ¹ / ₂	24 ¹ / ₁₆	27 ¹ / ₁₆	17	1
A84445	120	31 ¹ / ₂	21 ¹ / ₂	21 ¹ / ₂	14 ³ / ₄	1	88447	280	52 ¹ / ₁₆	41 ¹ / ₁₆	48 ⁵ / ₁₆	17 ³ / ₄	1
A84446	185	38 ¹ / ₂	24 ¹ / ₁₆	27 ¹ / ₁₆	17	1	88448	500	62 ¹ / ₁₆	49 ³ / ₈	56 ¹ / ₈	18 ¹ / ₁₆	1
84447	205	42 ¹ / ₁₆	41 ¹ / ₁₆	48 ⁵ / ₁₆	17 ³ / ₄	1	A88455	132	43 ¹ / ₂	21 ¹ / ₁₆	24 ³ / ₄	14 ¹ / ₁₆	1
84448	255	54 ¹ / ₁₆	48 ¹ / ₁₆	55 ³ / ₁₆	13 ¹ / ₄	1	A88456	275	52 ¹ / ₂	24 ¹ / ₁₆	27 ¹ / ₁₆	17	1
A85251	10	9 ⁷ / ₈	5 ³ / ₈	6 ³ / ₄	5 ¹ / ₂	1	88457	347	52 ¹ / ₁₆	41 ¹ / ₁₆	48 ⁵ / ₁₆	17 ³ / ₄	1
H85251	10	9 ⁷ / ₈	5 ³ / ₈	6 ³ / ₄	5 ¹ / ₁₆	1	88458	590	62 ¹ / ₁₆	49 ³ / ₈	56 ¹ / ₈	18 ¹ / ₁₆	1
A85261	11	12 ⁷ / ₈	7 ³ / ₈	8 ¹ / ₂	5 ¹ / ₂	1	A89315	96	40 ¹ / ₂	16 ¹ / ₂	19 ⁵ / ₈	14 ⁵ / ₈	1
H85261	11	12 ⁷ / ₈	7 ³ / ₈	8 ¹ / ₂	5 ¹ / ₁₆	1	A89316	180	49 ¹ / ₂	18 ¹ / ₂	21 ¹ / ₁₆	17	1
A85341	12	12 ⁷ / ₈	7 ³ / ₈	8 ¹ / ₂	5 ¹ / ₂	1	89317	150	52 ¹ / ₂	31 ¹ / ₂	34	16 ¹ / ₄	1
H85341	13	12 ⁷ / ₈	7 ³ / ₈	8 ¹ / ₂	5 ¹ / ₁₆	1	89318	427	57 ¹ / ₁₆	39 ¹ / ₁₆	43 ³ / ₁₆	17 ¹ / ₁₆	1
A85351	11	9 ⁷ / ₈	7 ³ / ₈	8 ¹ / ₂	5 ¹ / ₂	1	A89415	120	40 ¹ / ₂	21 ¹ / ₂	24 ⁵ / ₈	14 ¹ / ₁₆	1
H85351	11	12 ⁷ / ₈	7 ³ / ₈	8 ¹ / ₂	5 ⁵ / ₈	1	A89416	230	52 ¹ / ₂	24 ¹ / ₂	27 ¹ / ₁₆	17	1
A86251	15	13 ³ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1	89417	190	52 ¹ / ₁₆	41 ¹ / ₁₆	45 ¹ / ₁₆	17 ³ / ₄	1
A86252	17	13 ³ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1	89418	350	62 ¹ / ₁₆	49 ¹ / ₂	56 ¹ / ₈	18 ¹ / ₁₆	1
H86252	17	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ³ / ₈	1	92245	81	31 ¹ / ₈	16 ³ / ₄	20	12 ¹ / ₈	1
A86253	27	17 ¹ / ₈	11 ³ / ₈	12 ¹ / ₁₆	7 ¹ / ₄	1	92245F	111	46 ³ / ₄	25 ³ / ₄	29	12 ³ / ₄	1
H86253	27	19 ³ / ₈	11 ¹ / ₂	13 ³ / ₈	7 ³ / ₈	1	92246	90	52 ¹ / ₁₆	18 ⁷ / ₈	22	16 ³ / ₈	1
A86254	40	21 ⁷ / ₈	13 ⁷ / ₈	14 ¹ / ₁₆	7 ¹ / ₁₆	1	92251	9	10 ³ / ₄	7 ¹ / ₈	10 ³ / ₈	4 ¹ / ₄	1
H86254	40	24 ³ / ₄	13 ⁷ / ₁₆	15 ⁵ / ₁₆	7 ³ / ₈	1	92251F	19	16 ⁷ / ₈	9 ³ / ₈	12 ³ / ₈	6 ³ / ₈	1
A86262	16	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1	92255	81	31 ¹ / ₈	16 ³ / ₄	20	12 ¹ / ₈	1
H86262	16	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ³ / ₈	1	92255F	131	46 ³ / ₄	25 ³ / ₄	29	12 ³ / ₄	1
A86263	34	19 ⁵ / ₈	11 ⁵ / ₈	12 ⁵ / ₁₆	7 ¹ / ₄	1	92256	90	52 ¹ / ₁₆	18 ⁷ / ₈	22	16 ³ / ₈	1
H86263	34	19 ⁵ / ₈	11 ¹ / ₂	13 ³ / ₈	7 ⁵ / ₈	1	92256F	225	51 ³ / ₄	21	23 ⁵ / ₁₆	15 ⁵ / ₄	1
A86264	41	24 ³ / ₈	14 ¹ / ₁₆	15 ¹ / ₁₆	7 ¹ / ₁₆	1	92345	110	31 ¹ / ₈	21 ¹ / ₁₆	25 ¹ / ₁₆	12 ¹ / ₄	1
H86264	41	24 ³ / ₈	13 ⁷ / ₁₆	15 ¹ / ₁₆	7 ³ / ₈	1	92345F	240	46 ³ / ₄	25 ³ / ₄	29	12 ³ / ₄	1
A86341	18	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1	92346	140	52 ³ / ₄	25 ³ / ₈	28 ⁵ / ₈	16 ³ / ₈	1
A86342	18	15 ¹ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1	92351	14	10 ³ / ₄	7 ¹ / ₈	10 ³ / ₈	4 ¹ / ₄	1
H86342	18	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₁₆	1	92351F	25	16 ⁷ / ₈	14 ¹ / ₂	16 ¹ / ₂	6 ¹ / ₂	1
A86343	37	19 ⁵ / ₈	11 ⁵ / ₈	12 ⁵ / ₁₆	7 ¹ / ₄	1	92355	140	31 ¹ / ₈	21 ¹ / ₁₆	24 ¹ / ₁₆	12 ¹ / ₄	1
H86343	37	19 ⁵ / ₈	11 ¹ / ₂	13 ³ / ₈	7 ³ / ₈	1	92355F	200	46 ³ / ₄	25 ³ / ₄	29	12 ³ / ₄	1
A86344	47	24 ³ / ₈	13 ³ / ₈	14 ¹ / ₁₆	7 ¹ / ₁₆	1	92356	140	42 ³ / ₄	25 ³ / ₈	28 ⁵ / ₈	16 ³ / ₈	1
H86344	47	24 ³ / ₈	13 ³ / ₈	14 ¹ / ₁₆	8	1	92356F	230	54 ³ / ₄	33	36 ⁵ / ₁₆	14 ³ / ₈	1
A86351	16	13 ³ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1	92441F	42	12 ⁷ / ₈	17	20 ¹ / ₄	7 ¹ / ₂	1
A86352	17	13 ³ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ¹ / ₄	1	92422	28	12 ⁷ / ₈	17	20 ¹ / ₄	7 ¹ / ₂	1
H86352	17	15 ⁷ / ₈	8 ¹ / ₂	9 ³ / ₄	6 ³ / ₈	1	92442F	42	23	18 ¹ / ₂	20 ³ / ₈	6 ¹ / ₂	1
A86353	29	17 ¹ / ₈	11 ³ / ₈	12 ⁵ / ₁₆	7 ¹ / ₄	1	92443	58	22 ¹ / ₂	20 ¹ / ₄	23 ¹ / ₂	11	



SCHEDULE



DISCOUNT

PAGE 21

DOUBLE THROW SAFETY SWITCHES

**DOUBLE
THROW**

DOUBLE THROW SAFETY SWITCHES are designed to transfer loads from one supply source to another. Horsepower ratings are not necessary, since use as motor circuit switches is not expected.

Amps.	FUSIBLE TOP & BOTTOM				NOT FUSIBLE				Drillings Inches
	Sheet Steel Enclosure NEMA Type 1		Sheet Steel Enclosure NEMA Type 1		Cast Iron—Explosion Resisting NEMA Type 7				
	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price			
2-POLE, 240 VOLTS A.C. — 250 VOLTS D.C.									
30	92251 F	\$ 47.00	◆	92251	\$ 29.00				
60	82252 F	85.00	◆	82252	46.00				
100	82253 F	128.00	◆	82253	67.00				
200	82254 F	179.00	◆	82254	90.00				
400	92255 F	362.00		92255	255.00				
600	92256 F	450.00		92256	361.00				

2-POLE, 240 VOLTS A.C. — 250 VOLTS D.C.

30	92251F	\$ 47.00	◆ 92251	\$ 29.00			
60	82252F	85.00	◆ 82252	46.00			
100	82253F	128.00	◆ 82253	67.00			
200	82254F	179.00	◆ 82254	90.00			
400	92255F	362.00	92255	255.00			
600	92256F	450.00	92256	361.00			

3-POLE, 240 VOLTS A.C.

30	92351F	\$ 51.00	◆ 92351	\$ 34.00			
60	82352F	93.00	◆ 82352	51.00			
100	82353F	155.00	◆ 82353	82.00			
200	82354F	235.00	◆ 82354	129.00			
400	92355F	496.00	92355	341.00			
600	92356F	600.00	92356	474.00			

4-POLE, 240 VOLTS A.C.

30	92451F	\$ 72.00	◆ 92451	\$ 50.00			
60	92452F	114.00	◆ 92452	72.00			
100	92453F	183.00	◆ 92453	146.00			
200	82454F	297.00	◆ 92454	203.00			
400	92455F	552.00	92455	458.00			
600	92456F	710.00	92456	596.00			

2-POLE, 600 VOLTS A.C. — 600 VOLTS D.C.

30	82261F	\$ 95.00	◆ 82262	\$ 47.00	● 52262	\$ 347.00	1½
30-60							
60	82262F	98.00					
100	★82263F	171.00	◆ ★82263	74.00			
200	★82264F	208.00	◆ ★82264	101.00			
400	★92245F	389.00	★92245	286.00			
600			★92246	402.00			

3-POLE, 600 VOLTS A.C.

30	82341F	\$101.00	◆ 82342	\$ 56.00	● 52342	\$ 362.00	1½
30-60							
60	82342F	104.00					
100	82343F	183.00	◆ 82343	90.00			
200	82344F	274.00	◆ 82344	139.00			
400	92345F	509.00	92345	360.00			
600			92346	521.00			

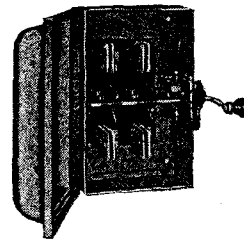
4-POLE, 600 VOLTS A.C.

30	92441F	\$152.00	◆ 92442	\$ 79.00			
30-60							
60	92442F	155.00					
100	92443F	270.00	◆ 92443	167.00			
200	82444F	348.00	◆ 92444	223.00			
400	92445F	598.00	92445	499.00			
600			92446	646.00			

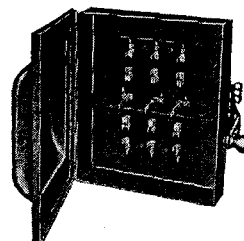
★600 volts A.C. — 250 volts D.C. only. ◆U/L Approved File E2875

400-600 Amp. Switches Have Double Lugs.

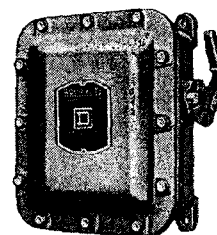
●Explosion resisting boxes are furnished with one threaded conduit hole, top and bottom, of indicated size for Class 1, Group D Hazardous Locations. Holes differing from standard can be supplied at extra charge.



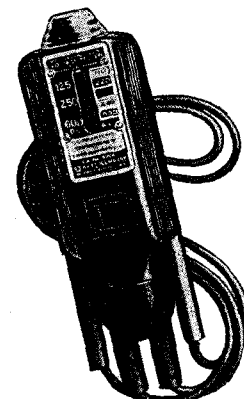
Cat. No. 82263



Cat. No. 92351F



Cat. No. 52342



Test Prods Mounted
in Receptacle

Test Prods Shielded
in Receptacle

**VOLTAGE
TESTERS**

Description	Cat. No.	List Price
TESTER (complete with polarity cap) 110-220-440-550 V. A.C., 60 cycle, 125-250-600 V. D.C.	5008	\$ 22.55
TESTER (complete with polarity cap) 12-24-36-48-60 V. A.C., 60 cycle, 10-20-30-40 V. D.C.	5006	22.55
TESTER (complete with polarity cap) 110-220-440-550 V. A.C., 400 cycle, 30-60-90-120 V. D.C.	5007	22.55
POLARITY INDICATING CAP (for any Square D Voltage Tester—10 in standard pkg.)	SK-3986	3.35
CASE , Imitation Leather	5002	2.65

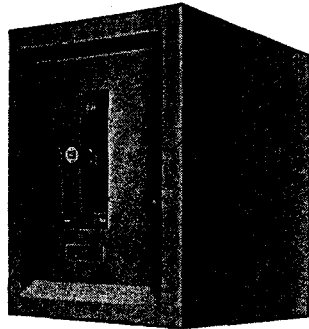
AIR CIRCUIT BREAKERS

ENCLOSED TYPE

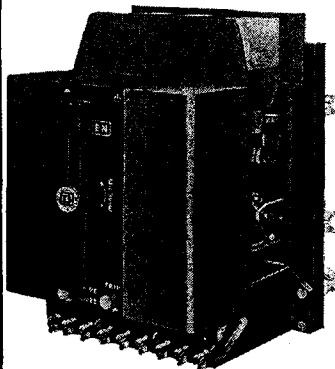
AVAILABLE MAY, 1955

600 V.
A. C.

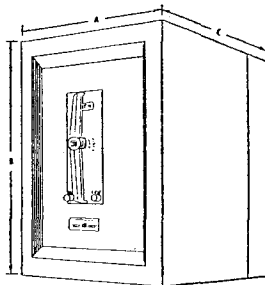
TYPE
LA



Enclosed
Type LA



Breaker Withdrawn
from Enclosure



Overall Dimensions
(Approximate)

Standard Lugs

35-150 A.	1-6 to 1/0
175-225 A.	1-2/0 to 4/0
250-350 A.	1-250 to 600 MCM
400-800 A.	2-250 to 600 MCM
1000-1200 A.	3-250 to 600 MCM
1600 A.	4-250 to 600 MCM

Application: Enclosed Air Circuit Breakers designed for either general purpose, dust-proof or weather-proof installations. 600 volts A.C. or less, 25 to 60 cycles, 2 or 3 poles, 35 through 1600 ampere continuous ampere rating. Interrupting capacity LA-25, 25,000 RMS amperes — LA-50, 50,000 RMS amperes. Manual or electrical operation.

Specification: Breaker mounted on rigid panel made of molded insulated pole sections and steel channels with ELECTROBESTOS ARC CHUTES. Trip-free manually operated closing mechanism. Two hand rotary operating lever. Trip push button, "Blow-On" contact structure for easy closing and low contact erosion. Dual automatic over-current and instantaneous type from 8 to 12 times rating. Fault Target indicates which pole caused tripping. Short-time delay magnetic trip available in combinations on special order. Thermal-magnetic operating mechanism available for motor loads. Breaker can be locked in tripped position. Dead front construction as breaker enclosed with insulating shields. LA-25 is pull-out type. LA-50 is stationary type.

Electrically operated (E.O.) breakers are similar to above plus trip-free electrically operated closing mechanism, control relays, shunt trip and 2 N.O. and 2 N.C. auxiliary switches.

Type	NEMA Continuous Current Rating Amperes	NEMA Range of Trip Adjust- ment Percent	General Purpose		Dust-Proof		Weatherproof	
			Manual- ly Operated	Electric- ally Operated	Manual- ly Operated	Electric- ally Operated	Manual- ly Operated	Electric- ally Operated
			Net Price	Net Price	Net Price	Net Price	Net Price	Net Price
2 POLE — 600 VOLTS A.C. — 2 COIL								
LA-25 	35, 50, 70, 90 100, 125, 150 175, 200, 225 250, 300, 350 400, 500, 600	80—160	\$ 510.	\$690.	\$ 540.	\$ 720.	\$ 640.	\$ 820.
LA-50 	200, 225, 250 300, 350, 400 500, 600, 800 1000, 1200, 1600	80—160	1070.	1460.	1125.	1515.	1345.	1735.
3 POLE — 600 VOLTS A.C. — 3 COIL								
LA-25 	35, 50, 70, 90 100, 125, 150 175, 200, 225 250, 300, 350 400, 500, 600	80—160	570.	750.	600.	780.	700.	880.
LA-50 	200, 225, 250 300, 350, 400 500, 600, 800 1000, 1200, 1600	80—160	1190.	1580.	1245.	1635.	1465.	1855.

ACCESSORIES:

	LA-25	LA-50
Thermal Magnetic Trip (recommended for use on large A.C. motor circuits).....	No Chge.	No Chge.
Auxiliary Switches (4 supplied on E.O. breakers).....	No Chge.	No Chge.
4 circuits, (manually operated breakers), add.....	\$30.00	\$30.00
For additional circuits, 4 or less add.....	30.00	30.00
Alarm Switch (hand reset) Switch closes its contacts when breaker is tripped by overcurrent mechanisms, add.....	55.00	55.00
Under Voltage Trip Instantaneous type, add.....	50.00	60.00
Time Delay type (non-adjustable), add.....	75.00	85.00
Shunt Trip Device (included on E.O. breakers) For manual operated breaker including 1 N.O. and 1 N.C. auxiliary switch, add.....	55.00	65.00
Push Button and Indicating Lights: Closing and tripping push button with 1 red and 1 green indicating lights—for electrically operated breakers.....	No Chge.	No Chge.
Neutral Stud: Either grounded or insulated type add.....	50.00	75.00

ORDERING INSTRUCTIONS

When ordering, specify: Type number, number of poles, frequency, current rating, voltage rating, interrupting capacity, type of enclosure, manual or electrical operation and accessories.

Overcurrent trip mechanism per pole consists of (1) long time delay device adjustable from 80 to 160% and (2) instantaneous trip device as standard unless otherwise specified. For large motors, give Hp. rating. For resistance welding circuits, give weld current and duty cycle, for electrically operated breakers, shunt trip, undervoltage, or indicating lights are specified, give operating voltage.

DIMENSIONS AND WEIGHTS

Type	A	B	C	Wgt.
LA-25	18"	22"	21 1/2"	150 lbs.
LA-50	26"	29 1/2"	27 1/2"	350 lbs.



SCHEDULE



DISCOUNT

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INDUSTRIAL CIRCUIT BREAKERS

THERMAL-^{Patented}MAGNETIC

TYPE
ML

240 V. A.C. — 125/250 V. D.C.

GENERAL AND SPECIAL PURPOSE ENCLOSURES U/L Approved File E10027 and E10944

System	Frame and Size	Amps.	Dust-resisting NEMA Type 1A		Waterproof and Dust-tight NEMA Type 4 & 5			Explosion-resisting Class II Group E,F,G NEMA Type 9			Explosion-resisting Class I Group D NEMA Type 7		
			Cat. No.	List Price	Cat. No.	List Price	Drillings Ins.	Cat. No.	List Price	Drillings Ins.	Cat. No.	List Price	Drillings Ins.

2-POLE, 240 V. A.C. — 125/250 V. D.C.

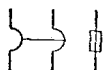


ML 50 A.	15	76215	\$ 38.	76215 D	\$ 67.	¾	Use 3 Pole Device					
	20	76220	38.	76220 D	67.	¾						
	30	76230	38.	76230 D	67.	1						
	40	76240	38.	76240 D	67.	1¼						
	50	76250	38.	76250 D	67.	1¼						
ML1 100 A.	70	75270	\$ 59.	75270 D	\$ 133.	1½	75270 Y	\$ 133.	1½	75270 X	\$ 149.	1½
	100	75216	\$ 59.	75216 D	\$ 133.	1½	75216 Y	\$ 133.	1½	75216 X	\$ 149.	2

225 Amp. — 600 Amp. Frame — Use 2 pole high voltage device.

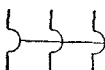
225 Amp. — 600 Amp. Frame — Use 2 pole high voltage device.

3 WIRE — S/N 240 V. A.C. — 125/250 V. D.C. — INSULATED GROUNDABLE NEUTRAL



ML 50 A.	15	76015	\$ 44.	76015 D	\$ 73.	¾	Use 4 Wire Device					
	20	76020	44.	76020 D	73.	¾						
	30	76030	44.	76030 D	73.	1						
	40	76040	44.	76040 D	73.	1¼						
	50	76050	44.	76050 D	73.	1¼						
ML1 100 A.	70	75070	\$ 68.	75070 D	\$ 142.	1½	75070 Y	\$ 142.	1½	75070 X	\$ 158.	1½
	100	75016	68.	75016 D	142.	1½	75016 Y	142.	1½	75016 X	158.	2
ML3 225 A.	125	78017	\$ 202.	78017 D	\$ 359.	2½	78017 Y	\$ 359.	2½	78017 X	\$ 392.	2½
	150	78018	202.	78018 D	359.	2½	78018 Y	359.	2½	78018 X	392.	2½
	175	78019	202.	78019 D	359.	2½	78019 Y	359.	2½	78019 X	392.	2½
	200	78026	202.	78026 D	359.	2½	78026 Y	359.	2½	78026 X	392.	2½
	225	78027	202.	78027 D	359.	2½	78027 Y	359.	2½	78027 X	392.	2½
KL 400 A.	225	65027	\$ 463.									
	250	65028	463.									
	300	65036	463.									
	325	65037	463.									
	350	65038	463.									
400	65046	463.										
* WL 600 A.	450	69048	\$ 579.									
	500	69056	579.									
	550	69058	579.									
	600	69066	579.									

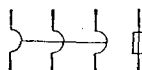
3-POLE, 240 V. A.C.



ML 50 A.	15	76315	\$ 49.	76315 D	\$ 101.	3/4	76315 Y	\$ 101.	3/4	76315 X	\$ 117.	3/4
	20	76320	49.	76320 D	101.	3/4	76320 Y	101.	3/4	76320 X	117.	3/4
	30	76330	49.	76330 D	101.	1	76330 Y	101.	1	76330 X	117.	1
	40	76340	49.	76340 D	101.	1 1/4	76340 Y	101.	1 1/4	76340 X	117.	1 1/4
	50	76350	49.	76350 D	101.	1 1/4	76350 Y	101.	1 1/4	76350 X	117.	1 1/4
ML1 100 A.	70	75370	\$ 70.	75370 D	\$ 145.	1 1/2	75370 Y	\$ 145.	1 1/2	75370 X	\$ 161.	1 1/2
	100	75316	70.	75316 D	145.	1 1/2	75316 Y	145.	1 1/2	75316 X	161.	2

225 Amp. — 600 Amp. Frame — Use 3 pole high voltage device.

4-WIRE — S/N 240 V. A.C. — INSULATED GROUNDABLE NEUTRAL

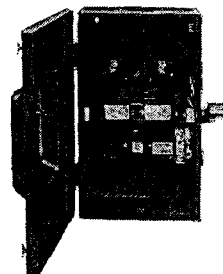


ML 50 A.	15	76915	\$ 55.	76915 D	\$ 107.	3/4	76915 Y	\$ 107.	3/4	76915 X	\$ 123.	3/4
	20	76920	55.	76920 D	107.	3/4	76920 Y	107.	3/4	76920 X	123.	3/4
	30	76930	55.	76930 D	107.	1	76930 Y	107.	1	76930 X	123.	1
	40	76940	55.	76940 D	107.	1 1/4	76940 Y	107.	1 1/4	76940 X	123.	1 1/4
	50	76950	55.	76950 D	107.	1 1/4	76950 Y	107.	1 1/4	76950 X	123.	1 1/4
ML1 100 A.	70	75970	\$ 79.	75970 D	\$ 154.	1 1/2	75970 Y	\$ 154.	1 1/2	75970 X	\$ 170.	1 1/2
	100	75916	79.	75916 D	154.	1 1/2	75916 Y	154.	1 1/2	75916 X	170.	2
ML3 225 A.	125	78917	\$ 240.	78917 D	\$ 397.	2 1/2	78917 Y	\$ 397.	2 1/2	78917 X	\$ 430.	2 1/2
	150	78918	240.	78918 D	397.	2 1/2	78918 Y	397.	2 1/2	78918 X	430.	2 1/2
	175	78919	240.	78919 D	397.	2 1/2	78919 Y	397.	2 1/2	78919 X	430.	2 1/2
	200	78926	240.	78926 D	397.	2 1/2	78926 Y	397.	2 1/2	78926 X	430.	2 1/2
	225	78927	240.	78927 D	397.	2 1/2	78927 Y	397.	2 1/2	78927 X	430.	2 1/2
KL 400 A.	225	65927	\$ 563.									
	250	65928	563.									
	300	65936	563.									
	325	65937	563.									
	350	65938	563.									
* WL 600 A.	450	69948	\$ 704.									
	500	69956	704.									
	550	69958	704.									
	600	69966	704.									

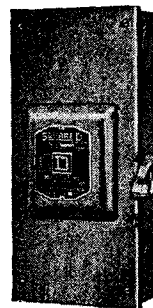
FINISH: Blue-gray Enamel.

*Type WL: 225 A. — 400 A. available upon order.

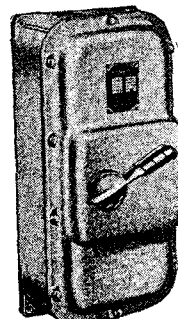
Type KL — Available April, 1955



Cat. No. 75016



Cat. No. 75016



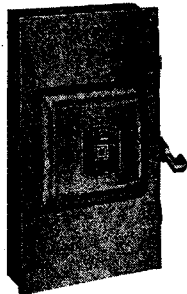
Cat. No. 75016Y



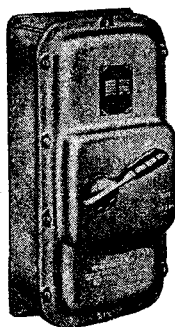
Cat. No. 75016X

INDUSTRIAL CIRCUIT BREAKERS

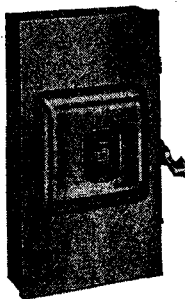
Thermal *Billings* MAGNETIC



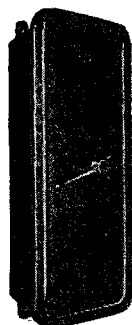
Cat. No. 78617



Cat. No. 78726D



Cat. No. 69766



Cat. No. 69766X

TYPE
ML

600 V. A.C. - 250 V. D.C.

U/L Approved File E10027 and E10944

GENERAL AND SPECIAL PURPOSE ENCLOSURES

System	Frame and Size	Amps.	Dust-resisting NEMA Type 1A		Waterproof and Dust-tight NEMA Type 4 & 5			Explosion-resisting Class II Group E, F, G NEMA Type 9			Explosion-resisting Class I Group D NEMA Type 7		
			Cat. No.	List Price	Cat. No.	List Price	# Drillings Ins.	Cat. No.	List Price	# Drillings Ins.	Cat. No.	List Price	# Drillings Ins.

2-POLE, 600 VOLTS A.C. — 250 VOLTS D.C.

	▲ ML1 100 A.	15	75615	\$ 70.	75615 D	\$ 129.	3/4	75615 Y	\$ 129.	3/4	75615 X	\$ 145.	3/4
		20	75620	70.	75620 D	129.	3/4	75620 Y	129.	3/4	75620 X	145.	3/4
		30	75630	70.	75630 D	129.	1	75630 Y	129.	1	75630 X	145.	1
		40	75640	70.	75640 D	129.	1 1/4	75640 Y	129.	1 1/4	75640 X	145.	1 1/4
		50	75650	70.	75650 D	129.	1 1/4	75650 Y	129.	1 1/4	75650 X	145.	1 1/4
		70	75670	87.	75670 D	181.	1 1/2	75670 Y	181.	1 1/2	75670 X	196.	1 1/2
	ML3 225 A.	100	75616	87.	75616 D	181.	1 1/2	75616 Y	181.	1 1/2	75616 X	196.	2
		125	78617	\$ 189.	78617 D	\$ 345.	2 1/2	78617 Y	\$ 345.	2 1/2	78617 X	\$ 378.	2 1/2
		150	78618	189.	78618 D	345.	2 1/2	78618 Y	345.	2 1/2	78618 X	378.	2 1/2
		175	78619	189.	78619 D	345.	2 1/2	78619 Y	345.	2 1/2	78619 X	378.	2 1/2
		200	78626	189.	78626 D	345.	2 1/2	78626 Y	345.	2 1/2	78626 X	378.	2 1/2
		225	78627	189.	78627 D	345.	2 1/2	78627 Y	345.	2 1/2	78627 X	378.	2 1/2
	KL 400 A.	225	65627	\$ 449.	65627 D	\$ 824.		Use Class I Group D			65627 X	\$ 914.	
		250	65628	449.	65628 D	824.					65628 X	914.	
		300	65636	449.	65636 D	824.					65636 X	914.	
		325	65637	449.	65637 D	824.					65637 X	914.	
		350	65638	449.	65638 D	824.					65638 X	914.	
		400	65646	449.	65646 D	824.					65646 X	914.	
	WL * 600 A.	450	69648	\$ 562.	69648 D	1031.		Use Class I Group D			69648 X	1143.	
		500	69656	562.	69656 D	1031.					69656 X	1143.	
		550	69658	562.	69658 D	1031.					69658 X	1143.	
		600	69666	562.	69666 D	1031.					69666 X	1143.	

3-POLE, 600 VOLTS A.C.

	ML1 100 A.	15	75715	\$ 84.	75715 D	\$ 143.	3/4	75715 Y	\$ 143.	3/4	75715 X	\$ 159.	3/4
		20	75720	84.	75720 D	143.	3/4	75720 Y	143.	3/4	75720 X	159.	3/4
		30	75730	84.	75730 D	143.	1	75730 Y	143.	1	75730 X	159.	1
		40	75740	84.	75740 D	143.	1 1/4	75740 Y	143.	1 1/4	75740 X	159.	1 1/4
		50	75750	84.	75750 D	143.	1 1/4	75750 Y	143.	1 1/4	75750 X	159.	1 1/4
		70	75770	103.	75770 D	196.	1 1/2	75770 Y	196.	1 1/2	75770 X	212.	1 1/2
	ML3 225 A.	100	75716	103.	75716 D	196.	1 1/2	75716 Y	196.	1 1/2	75716 X	212.	2
		125	78717	\$ 227.	78717 D	\$ 383.	2 1/2	78717 Y	\$ 383.	2 1/2	78717 X	\$ 416.	2 1/2
		150	78718	227.	78718 D	383.	2 1/2	78718 Y	383.	2 1/2	78718 X	416.	2 1/2
		175	78719	227.	78719 D	383.	2 1/2	78719 Y	383.	2 1/2	78719 X	416.	2 1/2
		200	78726	227.	78726 D	383.	2 1/2	78726 Y	383.	2 1/2	78726 X	416.	2 1/2
		225	78727	227.	78727 D	383.	2 1/2	78727 Y	383.	2 1/2	78727 X	416.	2 1/2
	KL 400 A.	225	65727	\$ 549.	65727 D	\$ 924.		Use Class I Group D			65727 X	1014.	
		250	65728	549.	65728 D	924.					65728 X	1014.	
		300	65736	549.	65736 D	924.					65736 X	1014.	
		325	65737	549.	65737 D	924.					65737 X	1014.	
		350	65738	549.	65738 D	924.					65738 X	1014.	
		400	65746	549.	65746 D	924.					65746 X	1014.	
	WL * 600 A.	450	69748	\$ 687.	69748 D	1156.		Use Class I Group D			69748 X	1268.	
		500	69756	687.	69756 D	1156.					69756 X	1268.	
		550	69758	687.	69758 D	1156.					69758 X	1268.	
		600	69766	687.	69766 D	1156.					69766 X	1268.	

All industrial circuit breakers are quick make and quick break. Types ML, ML-1 and ML-3 have permanently calibrated integral trip mechanisms. Type KL and WL are equipped with interchangeable trip mechanism.

† These cast enclosures are furnished with standard conduit openings of sizes as shown, one in top, two in bottom, except 3 wire and 4 wire devices which have 2 in top and 1 in bottom. Holes differing from standard can be supplied at extra charge. All cast enclosures for KL and WL breakers furnished without conduit openings unless size and location are specified on order.

▲ For 250 volt D.C. devices add suffix D.C. after catalog number in this group.

● Explosion resisting enclosures for systems above 250 volt D.C. are furnished without Underwriters' label. Enclosures for devices requiring hydrostatic tests — Consult nearest Square D Field Office.

FINISH: Blue-gray enamel. *Type WL: 225 A-400 A. available upon order.

Type KL — Available April, 1955



SCHEDULE



DISCOUNT

PAGE 25

SQD SLV_000027

INDUSTRIAL CIRCUIT BREAKERS

Thermal-Magnetic

AVAILABLE MAY, 1955

TYPE
ML

240 V. A.C.
600 V. A.C.
125/250 V. D.C.
250 V. D.C.

SERVICE ENTRANCE TYPE
COMMON TRIP

System	Ampere Rating	240 Volts A.C.—125/250 Volts D.C.						600 Volts A.C.—250 Volts D.C.		
		GENERAL PURPOSE			RAINTIGHT—Add Hub or Cap▲			GENERAL PURPOSE		
		Flush	Surface	List Price	NEMA III	List Price	Max. Hub	Flush	Surface	List Price
2 Wire S/N	15	ML 115 F	ML 115 S	\$18.20	ML 115 RO	\$18.20	1 1/4"	.....	.....	.....
	20	ML 120 F	ML 120 S	18.20	ML 120 RO	18.20	1 1/4"	.....	.....	.....
	30	ML 130 F	ML 130 S	18.20	ML 130 RO	18.20	1 1/4"	.....	.....	.....
	40	ML 140 F	ML 140 S	18.20	ML 140 RO	18.20	1 1/4"	.....	.....	.....
	50	ML 150 F	ML 150 S	18.20	ML 150 RO	18.20	1 1/4"	.....	.....	.....
2 Pole	15	ML 215 F	ML 215 S	31.00	Use 3 Wire S/N Device			ML1 615 F	ML1 615 S	\$65.00
	20	ML 220 F	ML 220 S	31.00				ML1 620 F	ML1 620 S	65.00
	30	ML 230 F	ML 230 S	31.00				ML1 630 F	ML1 630 S	65.00
	40	ML 240 F	ML 240 S	31.00				ML1 640 F	ML1 640 S	65.00
	50	ML 250 F	ML 250 S	31.00				ML1 650 F	ML1 650 S	65.00
	70	ML1 270 F	ML1 270 S	54.00				ML1 670 F	ML1 670 S	82.00
	100	ML1 216 F	ML1 216 S	54.00				ML1 616 F	ML1 616 S	82.00
	125	ML3 617 F	ML3 617 S	182.00				ML3 617 F	ML3 617 S	182.00
	150	ML3 618 F	ML3 618 S	182.00				ML3 618 F	ML3 618 S	182.00
	175	ML3 619 F	ML3 619 S	182.00				ML3 619 F	ML3 619 S	182.00
3 Wire S/N	15	ML 015 F	ML 015 S	\$37.00	ML 015 RO	44.00	1 1/4"	.....	.....	.....
	20	ML 020 F	ML 020 S	37.00	ML 020 RO	44.00	1 1/4"	.....	.....	.....
	30	ML 030 F	ML 030 S	37.00	ML 030 RO	44.00	1 1/4"	.....	.....	.....
	40	ML 040 F	ML 040 S	37.00	ML 040 RO	44.00	1 1/4"	.....	.....	.....
	50	ML 050 F	ML 050 S	37.00	ML 050 RO	44.00	1 1/4"	.....	.....	.....
	70	ML1 070 F	ML1 070 S	63.00	ML1 070 RO	70.00	2"	.....	.....	.....
	100	ML1 016 F	ML1 016 S	63.00	ML1 016 RO	70.00	2"	.....	.....	.....
	125	ML3 017 F	ML3 017 S	195.00	ML3 017 RO	202.00	2 1/4"	.....	.....	.....
	150	ML3 018 F	ML3 018 S	195.00	ML3 018 RO	202.00	2 1/4"	.....	.....	.....
	175	ML3 019 F	ML3 019 S	195.00	ML3 019 RO	202.00	2 1/4"	.....	.....	.....
3 Pole	15	ML 315 F	ML 315 S	44.00	Use 4 Wire S/N Device			ML1 715 F	ML1 715 S	79.00
	20	ML 320 F	ML 320 S	44.00				ML1 720 F	ML1 720 S	79.00
	30	ML 330 F	ML 330 S	44.00				ML1 730 F	ML1 730 S	79.00
	40	ML 340 F	ML 340 S	44.00				ML1 740 F	ML1 740 S	79.00
	50	ML 350 F	ML 350 S	44.00				ML1 750 F	ML1 750 S	79.00
	70	ML1 370 F	ML1 370 S	65.00				ML1 770 F	ML1 770 S	98.00
	100	ML1 316 F	ML1 316 S	65.00				ML1 716 F	ML1 716 S	98.00
	125	ML3 717 F	ML3 717 S	220.00				ML3 717 F	ML3 717 S	220.00
	150	ML3 718 F	ML3 718 S	220.00				ML3 718 F	ML3 718 S	220.00
	175	ML3 719 F	ML3 719 S	220.00				ML3 719 F	ML3 719 S	220.00
4 Wire S/N	15	ML 915 F	ML 915 S	50.00	ML 915 RO	55.00	1 1/4"	.....	.....	.....
	20	ML 920 F	ML 920 S	50.00	ML 920 RO	55.00	1 1/4"	.....	.....	.....
	30	ML 930 F	ML 930 S	50.00	ML 930 RO	55.00	1 1/4"	.....	.....	.....
	40	ML 940 F	ML 940 S	50.00	ML 940 RO	55.00	1 1/4"	.....	.....	.....
	50	ML 950 F	ML 950 S	50.00	ML 950 RO	55.00	1 1/4"	.....	.....	.....
	70	ML1 970 F	ML1 970 S	74.00	ML1 970 RO	79.00	2"	.....	.....	.....
	100	ML1 916 F	ML1 916 S	74.00	ML1 916 RO	79.00	2"	.....	.....	.....
	125	ML3 917 F	ML3 917 S	233.00	ML3 917 RO	239.00	2 1/4"	.....	.....	.....
	150	ML3 918 F	ML3 918 S	233.00	ML3 918 RO	239.00	2 1/4"	.....	.....	.....
	175	ML3 919 F	ML3 919 S	233.00	ML3 919 RO	239.00	2 1/4"	.....	.....	.....
250 V. D.C.	200	ML3 926 F	ML3 926 S	233.00	ML3 926 R	239.00	2 1/4"	.....	.....	.....
	225	ML3 927 F	ML3 927 S	233.00	ML3 927 R	239.00	2 1/4"	.....	.....	.....

Insulated Groundable Neutral.

FINISH: Blue-gray Enamel—Raintight has extra coat Glyptal.

▲INTERCHANGEABLE HUBS for Raintight Enclosures, Type RO devices have threaded opening for interchangeable hubs or closing caps. Order hub or cap separately and screw into place. For details, see Page 10.

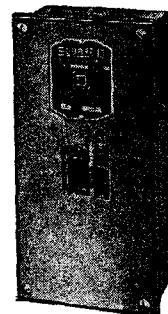
Conduit Size (Inches)	3/4	1	1 1/4	1 1/2	2	2 1/2	Cap	30-60-100 A.	200 A
Hub Catalog Number #	HC HC2	HD HD2	HE HE2	HG	HH HH4	HW	Cap Cat. No. #	CE CA2	CH CA4
List Each	\$2.00	\$2.00	\$2.00	\$2.00	\$3.40	\$6.00	List Each	.20	.20

*Use only one of catalog numbers shown. Upper preferred.

CIRCUIT BREAKER INTERRUPTING CAPACITY

Type	Ampere Ratings	Interrupting Capacity (Based on NEMA Test Procedures)				Breaker Class Fed. Spec. WP-131-A	CONTACTS	
		240 V. A.C.	600 V. A.C.	125/250 V. D.C.	250 V. D.C.		Manual Operation	Automatic Tripping
ML	15 A. to 50 A.	10,000 A.	.....	5,000 A.	.....	C	Quick Make Quick Break	Quick Break
ML1	70 A. & 100 A.	10,000 A.	.....	5,000 A.	.....	C, D, E		
	15 A. to 100 A.	*20,000 A.	15,000 A.	.....	10,000 A.	C, D, E		
ML3	125 A. to 225 A.	25,000 A.	15,000 A.	.....	10,000 A.	D, E		
KL	125 A. to 400 A.	40,000 A.	25,000 A.	.....	20,000 A.	D, E		
WL	125 A. to 600 A.	40,000 A.	25,000 A.	.....	20,000 A.	D, E		

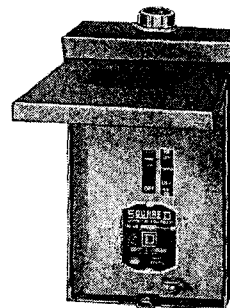
*20,000 A. interrupting capacity of ML1 breaker on 240 V. A.C. service applies only when 600 V. A.C. ML1 breaker is used.



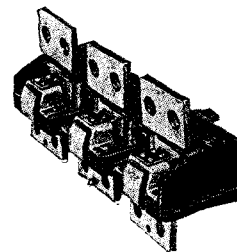
Cat. No. ML 115S



Cat. No. ML 1-916S



Cat. No. ML 115RO
with hub in place.



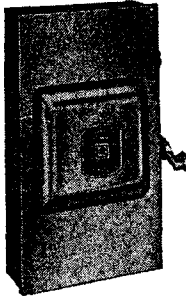
Interchangeable
Trip Units available
for KL and WL Breakers



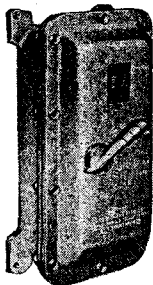
INDUSTRIAL CIRCUIT INTERRUPTERS

NON-AUTOMATIC

TYPE ML ENCLOSURES

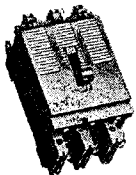


NEMA 1A

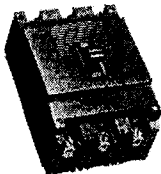


NEMA 4, 5, 7 and 9

TYPE ML UNIT CIRCUIT BREAKERS



Type ML
50 Ampere Frame
Low Voltage



Type ML1
100 Ampere Frame
High and Low Voltage



Type ML3
225 Ampere Frame
High Voltage

240 V. A.C. — 125/250 V. D.C.
600 V. A.C. — 250 V. D.C.

TYPE
ML

U/L Approved File E6294 and E19608

GENERAL AND SPECIAL PURPOSE ENCLOSURES

System	Amps.	Dust-resisting NEMA Type 1A		Weatherproof & Dust-tight NEMA Type 4 & 5			Explosion-resisting Class II - Group E, F, G NEMA Type 9			Explosion-resisting Class I - Group D NEMA Type 7		
		Cat. No.	List Price	Cat. No.	List Price	± Drill-ings Inches	Cat. No.	List Price	± Drill-ings Inches	Cat. No.	List Price	± Drill-ings Inches

2-POLE, 240 V. A.C. — 125/250 V. D.C.

1/1	50	76200	\$ 38.	76200 D	\$ 67.	1 1/4	75200 Y	\$133.	1 1/2	75200 X	\$149.	2
	100	75200	59.	75200 D	133.	1 1/2	78600 Y	314.	2 1/2	78600 X	347.	2 1/2
	225	78600	158.	78600 D	314.	2 1/2						

3-POLE, 240 V. A.C.

1/1/1	50	76300	\$ 49.	76300 D	\$101.	1 1/4	76300 Y	\$101.	1 1/2	76300 X	\$117.	1 1/4
	100	75300	70.	75300 D	145.	1 1/2	75300 Y	145.	1 1/2	75300 X	161.	2
	225	78700	187.	78700 D	343.	2 1/2	78700 Y	343.	2 1/2	78700 X	376.	2 1/2

2-POLE, 600 V. A.C. — 250 V. D.C.

1/1	100	75400	\$ 75.	75400 D	\$168.	1 1/2	75400 Y	\$168.	1 1/2	75400 X	\$184.	2
	225	78600	158.	78600 D	314.	2 1/2	78600 Y	314.	2 1/2	78600 X	347.	2 1/2

3-POLE, 600 V. A.C.

1/1/1	100	75500	\$ 88.	75500 D	\$182.	1 1/2	75500 Y	\$182.	1 1/2	75500 X	\$197.	2
	225	78700	187.	78700 D	343.	2 1/2	78700 Y	343.	2 1/2	78700 X	376.	2 1/2

These non-automatic circuit interrupters are manually operated and are quick make, quick break. Construction is identical with corresponding size circuit breakers except for the omission of the automatic trip feature. Interruption capacity is much higher than comparable safety switches. Circuit interrupter units without enclosures are also available.

± These cast enclosures are furnished with standard conduit openings as shown: one in top, two in bottom, except two pole, 250 V. A.C. which have one in top and one in bottom. Holes differing from standard can be supplied at extra charge.

FINISH: Blue Gray-Enamel.

INDUSTRIAL CIRCUIT BREAKERS AND INTERRUPTERS

DATA AND DIMENSIONS

BOX DIAGRAM		Cat. Nos. From—To	Wt. Approx.	Overall Dimensions				Std. Pkg.
				H	W	W/H	D	
		65027—946	...	29 1/2	15 3/8	17 1/8	8 1/8	1
		65027 D—746 D	...	...	...	...	...	1
		65027 X—746 X	...	...	...	...	...	1
		69048—966	130	38 1/2	17 3/8	19 1/8	10 7/8	1
		69048 D—766 D	375	43 1/2	18 1/4	...	12	1
		69048 X—766 X	375	43 1/2	18 1/4	...	12	1
		75070—916	15	13 1/4	7 1/8	9 1/8	4 1/8	1
		75070 D—916 D	49	17 3/4	8 3/4	...	6 1/8	1
		75070 X—916 X	104	19 1/4	10	...	6 3/4	1
		75070 Y—916 Y	53	17 3/4	8 3/4	...	6 1/8	1
		75615—750	15	13 1/4	7 1/8	9 1/8	4 1/8	1
		75615 D—750 D	49	12 3/4	9 1/4	...	5 1/8	1
		75615 X—750 X	104	12 3/4	9 1/4	...	5 1/8	1
		75615 Y—750 Y	53	12 3/4	9 1/4	...	5 1/8	1
		76015—950	11	12 1/4	6 3/4	8 1/8	4 1/8	1
		76015 D—950 D	40	12 3/4	9 1/4	...	7	1
		76300 X—950 X	40	12 3/4	9 1/4	...	7	1
		76300 Y—950 Y	40	12 3/4	9 1/4	...	7	1
		78017—927	45	22 7/8	12 5/8	14 1/8	6 7/8	1
		78017 D—927 D	240	25 1/8	16 3/8	...	9 3/4	1
		78017 X—927 X	320	25 1/8	16 3/8	...	9 3/4	1
		78017 Y—927 Y	240	25 1/8	16 3/8	...	9 3/4	1
		ML015—050 F/S	6	10 3/8	5 1/8	...	3 1/2	1
		ML015—950 RO	8	11 1/4	7 1/8	...	4 1/8	1
		ML115—250 F/S	6	10 3/8	4 3/8	...	3 1/2	1
		ML315—350 F/S	7	10 3/8	5 1/8	...	4 1/8	1
		ML915—950 F/S	...	15 1/4	8 1/4	...	4	1
		ML1070—916 F/S	...	15 1/4	8 1/4	...	5 1/8	1
		ML1070—916 RO	...	14 1/2	8 1/4	...	4	1
		ML1615—750 F/S	...	15 1/4	8 1/4	...	5 1/8	1
		ML3017—927 F/S	...	20 3/8	10 1/8	...	6 7/8	1
		ML3017—927 R	...	21 3/8	10 1/8	...	6 7/8	1

*Double 500 MCM lugs available on request.

Ⓢ Catalog numbers have been grouped together. The following example shows how to find dimensions on Industrial Breaker Enclosures: EXAMPLE—76340 lies between 76015-950, therefore, use the dimensions on that line. F/S dimensions do not include the covers.



SCHEDULE **A** DISCOUNT

PAGE 27

SQD SLV_000029

CIRCUIT BREAKER LIGHTING PANELBOARDS

FACTORY ASSEMBLED TYPE

SELECTION DATA

Maximum Service Voltage	Breaker Contacts		Box Width	Side Wiring Gutters	Panel Type	Fed. Spec. WP-131a Breaker Class	Page No.
	Manual Operation	Automatic Trip					
120 Volts A. C. to Ground.....	Quick Make Quick Break	Quick Break	14 "	4 "	NQO	A	31
120 Volts A. C. to Ground.....	Quick Make Quick Break	Quick Break	20 "	4½"	NQB	A	33
120 Volts A. C. to Ground.....	Quick Make Quick Break	Quick Break	8⅝"	2½"	NQO-X	A	36
125 Volts A.C./D.C. to Ground.....	Quick Make Quick Break	Quick Break	20 "	4½"	NAB	C	34
125 Volts A.C./D.C. to Ground.....	Quick Make Quick Break	Quick Break	8⅝"	1¾"	NAB-X	C	36

Type NQO circuit breaker lighting panelboards are suitable for 120/240 volt A.C. lighting and appliance branch circuits. Square D's new single pole Type QO Swingrip mounted thermal-magnetic 120 volt A.C. circuit breakers are used in these factory assembled panelboards. Double pole 120/240 volt A.C. individual-trip circuits can be arranged through the use of handle-ties. Double pole 240 volt A.C. common-trip breakers are also available. Boxes are 14" wide by 4" and 5" deep, with ample 4" wiring gutters. Type NQO panelboards are also available in 8⅝" wide column type construction for installation in webs of H or I beams. Refer to Pages 31 and 36 for listings and prices.

☆ ☆ ☆

Type NQB circuit breaker lighting panelboards provide 120/240 volt A.C. lighting and appliance branch circuit requirements. Single pole Type QB thermal-magnetic 120 volt A.C. circuit breakers are incorporated in these factory assembled panelboards. Double pole individual-trip 120/240 volt A.C. circuits can be accommodated through the use of handle-ties. Boxes are 20" wide by 5¾" deep, with ample 4½" wide wiring gutters. Type NQB panelboards are also available in single row 8⅝" wide column type construction for installation in webs of H or I beams. Refer to Page 33 for listings and prices.

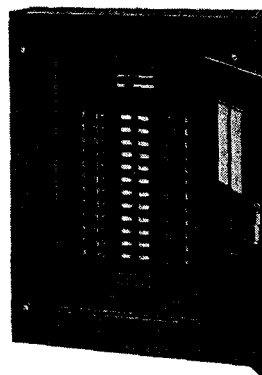
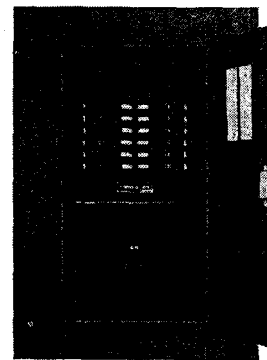
☆ ☆ ☆

Type NAB circuit breaker lighting panelboards are designed for use on 125/250 volt A.C. or D.C. lighting or appliance branch circuits. Type ML single pole thermal-magnetic 125 volt A.C./D.C. circuit breakers are used in these factory assembled panelboards. Two pole and three pole common trip ML circuit breakers may also be incorporated in the NAB type panelboard. Boxes are 20" wide by 5¾" deep, providing large 4½" wide wiring gutters. Type NAB panelboards may also be supplied in single row column type design for installation in webs of H or I beams. Refer to Pages 34 and 36 for listings and prices.



Type NQO Circuit Breaker
Lighting Panelboards
Listed on Pages 31 and 36.

Type NQB Circuit Breaker
Lighting Panelboard.
Listed on Page 33.



Type NAB Circuit Breaker
Lighting Panelboard.
Listed on Pages 34 and 36.

PREVIEW!

NQO CIRCUIT BREAKER LIGHTING PANELBOARDS

QO - - the Finest Breaker Ever Built!

Single Pole breaker units are rated 15, 20, 30, 40 and 50 amperes at 120/240 volts for individual use on two wire circuits or in pairs with handle tie to give **individual trip** protection for 120/240 volt 3-wire applications.

Double Pole breaker units rated 15, 20, 30, 40 and 50 amperes are factory assembled with **common trip** bar for use on 120/240 volt 3-wire applications.

Quick-Make, Quick-Break mechanism provides positive operation, has excellent "feel" and assures long life under all circuit switching conditions.

Compensated Thermal Trip enables breaker to carry full allowable load under varying conditions of ambient temperature.

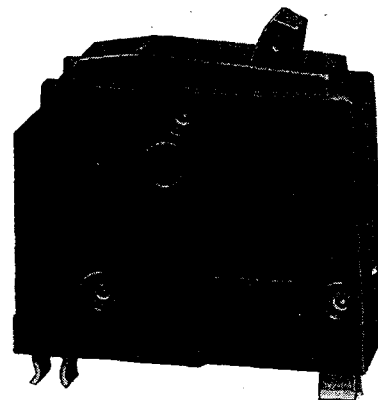
Sensitive Magnetic Trip assures quick and consistent response to harmful overloads or short circuits.

Trip Indication on overload or short — handle moves to middle position.

Positive Action of the handle against contact members guarantees circuit opening.

Compact Design — $\frac{3}{4}$ " width for each pole conserves valuable space.

Modern Styling in keeping with high quality and forward reaching design.



... SWINGRIP MOUNTING

Nothing Like it!

Plug-In for maximum flexibility as well as ease of installation and maintenance.

Right Angle Mounting Grips provide easier installation, automatic alignment and positive contact with bus bars.

Non-interchangeable design discourages the use of 30, 40 and 50 ampere units where 15 or 20 ampere breakers have been installed.

COMPLETE PANELBOARD LINE

All the Quality Features!

Galvanized box with large gutters

Adjustable **indicating** trim clamps.

Flush lock.

Directory frame designed for glass.

Main breakers or main lugs only.

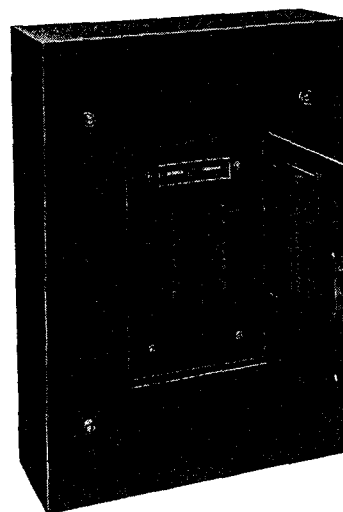
Single or three phase.

Distributed phase bus arrangement with easy identification for simplified balancing of loads.

Bolted bus connectors are readily accessible for quick inspection, but are well protected by barriers between them.

Excellent appearance including the popular Square D blue-gray finish.

"Off-the-Shelf" delivery in merchandised form by all Square D distributors, or completely assembled at the factory for shipment to the job site.

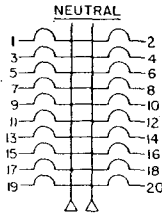


CIRCUIT BREAKER LIGHTING PANELBOARDS

WITH TYPE QO SWINGRIP MOUNTED THERMAL-MAGNETIC BRANCH BREAKERS



1 ϕ , 3 W. S/N
A.C. Only



MAINS: 120/240 Volts A.C. only.

BRANCHES: Single Pole, 120 V., 2-Wire S/N Breakers †

BOXES: 14" Wide, Galvanized Steel. All Boxes 4" deep except 200 A. Main Breaker Boxes are 5" deep.

FRONTS: Trim with Door and Flush Lock. Blue gray finish.

*Max. No. of Single Poles Available	Amp. Cap. of Mains	Type	Complete List Price (Less Breakers)	Basic Device Only (Less Breakers)		Front Only		Box Height Inches	Box Depth Inches
				Cat. No.	List Price	Cat. No.	List Price		

MAINS: LUGS ONLY

14	100	NQO-14	\$ 58.	Q019-143	\$ 38.	Q0-19T For S	\$ 20.	19%	4
20	100	NQO-20	76.	Q021-203	54.	Q0-21T For S	22.	21%	4
30	200	NQO-30	92.	Q025-303	66.	Q0-25T For S	26.	25%	4
42	200	NQO-42	109.	Q031-423	81.	Q0-31T For S	28.	31%	4

MAINS: CIRCUIT BREAKER — 2 POLE

14	70	NQO-14	\$ 91.	Q025-143M	\$ 67.	Q0-25T For S	\$ 24.	25%	4
20	100	NQO-20	113.	Q028-203M	86.	Q0-28T For S	27.	28	4
30	200	NQO-30	267.	Q035-303M	234.	Q0-35T For S	33.	35%	5
42	200	NQO-42	283.	Q041-423M	245.	Q0-41T For S	38.	41	5

Ordering Information — See Example below.

Illustration on Page 28.

Wiring Gutters — Top, bottom and side gutters are 4" minimum.

†**Single Pole Branches:** 15, 20, 30, 40 and 50 ampere single pole branches are available. See breaker listings below.

***Two Pole Branches:** 15, 20, 30, 40 and 50 ampere double pole, individual or common trip* branches occupy the same space as two (2) single poles.

QTYPE QO PLUG-IN CIRCUIT BREAKERS

Ampere Rating	Single Pole 120 Volt A.C.		Double Pole — Common Trip 120/240 Volt A.C.	
	Catalog Number	List Price	Catalog Number	List Price
15	QO-115	\$2.20	QO-215	\$5.00
20	QO-120	2.20	QO-220	5.00
30	QO-130	2.20	QO-230	5.00
40	QO-140	2.20	QO-240	5.00
50	QO-150	2.20	QO-250	5.00

Q Single Pole Breakers packaged 10 per carton; Double Pole, 5 per carton.

▲**Handle Ties** permit conversion of two single pole breakers to double pole 120/208 V. individual trip breaker; Catalog No. QO-HT1, List Price \$0.10 each.

Handle Lock-Off Device: Catalog No. QO-LO1, List Price \$0.20 each.

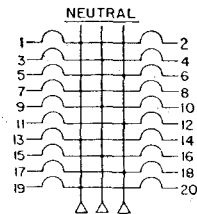
Closure Plate for single pole breaker: Catalog No. QO-CP1, List Price \$0.60 each.

EXAMPLE — ORDERING INFORMATION

PANELBOARD REQUIREMENTS	COMPONENTS REQUIRED
120/208 V. 3 ϕ , 4 W. Service	1—Basic Device, Cat. No. Q028-204M \$114.
100 A. Main Breaker	1—Flush Front, Cat. No. Q0-28TF 27.
8-15 A. Single Poles	8—15 A. 1 Pole Breakers, Cat. No. QO-115 at \$2.20..... 17.60
6-20 A. Single Poles	6—20 A. 1 Pole Breakers, Cat. No. QO-120 at \$2.20..... 13.20
4—Single Pole Space Only	
Flush Mounting	Total List Price..... \$171.80



3 ϕ , 4 W. S/N
A.C. Only



MAINS: 120/208 Volts A.C. only.

BRANCHES: Single Pole, 120 V., 2-Wire S/N Breakers †

BOXES: 14" Wide, Galvanized Steel. All Boxes 4" deep except 200 A. Main Breaker Boxes are 5" deep.

FRONTS: Trim with Door and Flush Lock. Blue-gray finish.

*Max. No. of Single Poles Available	Amp. Cap. of Mains	Type	Complete List Price (Less Breakers)	Basic Device Only (Less Breakers)		Front Only		Box Height Inches	Box Depth Inches
				Cat. No.	List Price	Cat. No.	List Price		

MAINS: LUGS ONLY

14	50	NQO-14	\$ 70.	Q019-144	\$ 50.	Q0-19T For S	\$ 20.	19%	4
20	100	NQO-20	86.	Q021-204	64.	Q0-21T For S	22.	21%	4
30	100	NQO-30	102.	Q025-304	76.	Q0-25T For S	26.	25%	4
42	200	NQO-42	119.	Q031-424	91.	Q0-31T For S	28.	31%	4

MAINS: CIRCUIT BREAKER — 3 POLE

14	50	NQO-14	\$ 88.	Q025-144M	\$ 64.	Q0-25T For S	\$ 24.	25%	4
20	100	NQO-20	141.	Q028-204M	114.	Q0-28T For S	27.	28	4
30	100	NQO-30	157.	Q031-304M	129.	Q0-31T For S	28.	31%	4
42	200	NQO-42	332.	Q041-424M	294.	Q0-41T For S	38.	41	5

COMPLETE DEVICE PRICE TABLE

INCLUDES BASIC DEVICE, FRONT AND PLUG-IN BREAKERS

(Breakers are packaged separate from Basic Device and Front. Single Poles, 10 per carton and double poles, 5 per carton).

▲ No. of 1-Pole Branches	▲ No. of 1-Pole Spaces	Type	*COMPLETE LIST PRICE			
			1 ϕ , 3 W. S/N		3 ϕ , 4 W. S/N	
			Main Lugs	Main Breaker	Main Lugs	Main Breaker
0	14	NQO-14	\$ 58.	\$ 91.	\$ 70.	\$ 88.
2	12		62.40	95.40	74.40	92.40
4	10		66.80	99.80	78.80	96.80
6	8		71.20	104.20	83.20	101.20
8	6		75.60	108.60	87.60	105.60
10	4		80.	113.	92.	110.
12	2		84.40	117.40	96.40	114.40
14	0		88.80	121.80	100.80	118.80
16	4	NQO-20	111.20	148.20	121.20	176.20
18	2		115.60	152.60	125.60	180.60
20	0		120.	157.	130.	185.
22	8	NQO-30	148.40	315.40	150.40	205.40
24	6		144.80	319.80	154.80	209.80
26	4		149.20	324.20	159.20	214.20
28	2		153.60	328.60	163.60	218.60
30	0		158.	333.	168.	223.
32	10	NQO-42	179.40	353.40	189.40	402.40
34	8		183.80	357.80	193.80	406.80
36	6		188.20	362.20	198.20	411.20
38	4		192.60	366.60	202.60	415.60
40	2		197.	371.	207.	420.
42	0		201.40	375.40	211.40	424.40

*For each double pole common-trip breaker substituted for two single pole breakers, add \$0.60 list to above prices.

▲ See explanation of (▲) footnote at left.



CIRCUIT BREAKER LIGHTING PANELBOARDS

WITH TYPE QO SWINGRIP MOUNTED THERMAL-MAGNETIC BRANCH BREAKERS

FACTORY ASSEMBLED TYPE

1 ϕ , 3 W. S/N
A.C. Only
Standard Width

TYPE
NQO-3

MAINS: 120/240 Volts A.C. only.
BRANCHES: Single Pole, 15 Amp., 120 V., 2-Wire S/N Type QO Breakers†
BOXES: 14" Wide, Galvanized Steel. 200 A. Main Breaker Boxes 5" deep. All others 4" deep.
FRONTS: Trim with Door and Flush Lock. Blue-gray finish.

3 ϕ , 4 W. S/N
A.C. Only
Standard Width

TYPE
NQO-4

MAINS: 120/208 Volts, A.C. only.
BRANCHES: Single Pole, 15 Amp., 120 Volts, 2-Wire S/N Type QO Breakers†
BOXES: 14" Wide, Galvanized Steel. 200 A. Main Breaker Boxes 5" deep; All others 4" deep.
FRONTS: Trim with Door and Flush Lock. Blue-gray finish.

No. Br.	Amp. Mains	Catalog Number	List Price	Box Cat. No.	Interior Cat. No.	Front Cat. No.
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MAINS: LUGS ONLY

4	100	NQO 04-3L	\$ 74.	QO 19B	QOL 30419	QO 19T
6	100	NQO 06-3L	82.	QO 19B	QOL 30619	QO 19T
8	100	NQO 08-3L	90.	QO 19B	QOL 30819	QO 19T
10	100	NQO 10-3L	98.	QO 19B	QOL 31019	QO 19T
12	100	NQO 12-3L	106.	QO 19B	QOL 31219	QO 19T
14	100	NQO 14-3L	114.	QO 19B	QOL 31419	QO 19T
16	100	NQO 16-3L	122.	QO 21B	QOL 31621	QO 21T
18	100	NQO 18-3L	130.	QO 21B	QOL 31821	QO 21T
20	100	NQO 20-3L	138.	QO 21B	QOL 32021	QO 21T
22	200	NQO 22-3L	146.	QO 25B	QOL 32225	QO 25T
24	200	NQO 24-3L	154.	QO 25B	QOL 32425	QO 25T
26	200	NQO 26-3L	162.	QO 25B	QOL 32625	QO 25T
28	200	NQO 28-3L	170.	QO 25B	QOL 32825	QO 25T
30	200	NQO 30-3L	178.	QO 25B	QOL 33025	QO 25T
32	200	NQO 32-3L	186.	QO 31B	QOL 33231	QO 31T
34	200	NQO 34-3L	194.	QO 31B	QOL 33431	QO 31T
36	200	NQO 36-3L	202.	QO 31B	QOL 33631	QO 31T
38	200	NQO 38-3L	210.	QO 31B	QOL 33831	QO 31T
40	200	NQO 40-3L	218.	QO 31B	QOL 34031	QO 31T
42	200	NQO 42-3L	226.	QO 31B	QOL 34231	QO 31T

MAINS: CIRCUIT BREAKER — 2 POLE

4	50	NQO 04-3AB	\$101.	QO 25B	QOM 30425	QO 25T
6	50	NQO 06-3AB	109.	QO 25B	QOM 30625	QO 25T
8	50	NQO 08-3AB	117.	QO 25B	QOM 30825	QO 25T
10	50	NQO 10-3AB	125.	QO 25B	QOM 31025	QO 25T
12	70	NQO 12-3AB	151.	QO 25B	QOM 31225	QO 25T
14	70	NQO 14-3AB	159.	QO 25B	QOM 31425	QO 25T
16	100	NQO 16-3AB	167.	QO 28B	QOM 31628	QO 28T
18	100	NQO 18-3AB	175.	QO 28B	QOM 31828	QO 28T
20	100	NQO 20-3AB	183.	QO 28B	QOM 32028	QO 28T
22	200	NQO 22-3AB	320.	QO 35B	QOM 32235	QO 35T
24	200	NQO 24-3AB	328.	QO 35B	QOM 32435	QO 35T
26	200	NQO 26-3AB	336.	QO 35B	QOM 32635	QO 35T
28	200	NQO 28-3AB	344.	QO 35B	QOM 32835	QO 35T
30	200	NQO 30-3AB	352.	QO 35B	QOM 33035	QO 35T
32	200	NQO 32-3AB	360.	QO 41B	QOM 33241	QO 41T
34	200	NQO 34-3AB	368.	QO 41B	QOM 33441	QO 41T
36	200	NQO 36-3AB	376.	QO 41B	QOM 33641	QO 41T
38	200	NQO 38-3AB	384.	QO 41B	QOM 33841	QO 41T
40	200	NQO 40-3AB	392.	QO 41B	QOM 34041	QO 41T
42	225	NQO 42-3AB	400.	QO 41B	QOM 34241	QO 41T

Illustration on Page 31.

Approximate Box Height is indicated by last two figures of box number.

†Ratings. 15 ampere single pole branches will be furnished unless otherwise specified. 20, 30, 40 and 50 ampere single pole breakers can be substituted without price change. Use of branch breakers rated more than 15 amperes may necessitate increased mains. Obtain price additions from latest Green Price List.

Two-Pole (Individual Trip). For each double pole, 15, 20, 30, 40 or 50 ampere (individual trip) 120/240 V. circuit substituted for two single pole circuits add \$0.50 list to panel figured on basis of all single pole circuits.

No. Br.	Amp. Mains	Catalog Number	List Price	Box Cat. No.	Interior Cat. No.	Front Cat. No.
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MAINS: LUGS ONLY

6	50	NQO 06-4L	\$ 92.	QO 19B	QOL 40619	QO 19T
8	50	NQO 08-4L	100.	QO 19B	QOL 40819	QO 19T
10	50	NQO 10-4L	108.	QO 19B	QOL 41019	QO 19T
12	50	NQO 12-4L	116.	QO 19B	QOL 41219	QO 19T
14	50	NQO 14-4L	124.	QO 19B	QOL 41419	QO 19T
16	100	NQO 16-4L	132.	QO 21B	QOL 41621	QO 21T
18	100	NQO 18-4L	140.	QO 21B	QOL 41821	QO 21T
20	100	NQO 20-4L	148.	QO 21B	QOL 42021	QO 21T
22	100	NQO 22-4L	156.	QO 25B	QOL 42225	QO 25T
24	100	NQO 24-4L	164.	QO 25B	QOL 42425	QO 25T
26	100	NQO 26-4L	172.	QO 25B	QOL 42625	QO 25T
28	100	NQO 28-4L	180.	QO 25B	QOL 42825	QO 25T
30	100	NQO 30-4L	188.	QO 25B	QOL 43025	QO 25T
32	200	NQO 32-4L	196.	QO 31B	QOL 43231	QO 31T
34	200	NQO 34-4L	204.	QO 31B	QOL 43431	QO 31T
36	200	NQO 36-4L	212.	QO 31B	QOL 43631	QO 31T
38	200	NQO 38-4L	220.	QO 31B	QOL 43831	QO 31T
40	200	NQO 40-4L	228.	QO 31B	QOL 44031	QO 31T
42	200	NQO 42-4L	236.	QO 31B	QOL 44231	QO 31T

MAINS: CIRCUIT BREAKER — 3 POLE

6	50	NQO 06-4AB	\$131.	QO 25B	QOM 40625	QO 25T
8	50	NQO 08-4AB	139.	QO 25B	QOM 40825	QO 25T
10	50	NQO 10-4AB	147.	QO 25B	QOM 41025	QO 25T
12	50	NQO 12-4AB	155.	QO 25B	QOM 41225	QO 25T
14	50	NQO 14-4AB	163.	QO 25B	QOM 41425	QO 25T
16	100	NQO 16-4AB	190.	QO 28B	QOM 41628	QO 28T
18	100	NQO 18-4AB	198.	QO 28B	QOM 41828	QO 28T
20	100	NQO 20-4AB	206.	QO 28B	QOM 42028	QO 28T
22	100	NQO 22-4AB	214.	QO 31B	QOM 42231	QO 31T
24	100	NQO 24-4AB	222.	QO 31B	QOM 42431	QO 31T
26	100	NQO 26-4AB	230.	QO 31B	QOM 42631	QO 31T
28	100	NQO 28-4AB	238.	QO 31B	QOM 42831	QO 31T
30	100	NQO 30-4AB	246.	QO 31B	QOM 43031	QO 31T
32	200	NQO 32-4AB	409.	QO 41B	QOM 43241	QO 41T
34	200	NQO 34-4AB	417.	QO 41B	QOM 43441	QO 41T
36	200	NQO 36-4AB	425.	QO 41B	QOM 43641	QO 41T
38	200	NQO 38-4AB	433.	QO 41B	QOM 43841	QO 41T
40	200	NQO 40-4AB	441.	QO 41B	QOM 44041	QO 41T
42	200	NQO 42-4AB	449.	QO 41B	QOM 44241	QO 41T

Standard Finish: Fronts — blue-gray; boxes — galvanized steel.

Wiring Gutters. Side and end gutters are 4" in all panels.

Two-Pole (Common Trip). For each double pole 15, 20, 30, 40 or 50 ampere (common trip) 120/240 V. circuit substituted for two single pole circuits, add \$0.60 list to panel figured on basis of all single pole circuits.

Space Only. When space only for future branches is required, figure panel on basis of total number of branches, including the future branches, and deduct \$2.20 list for each breaker pole omitted.

CIRCUIT BREAKER LIGHTING PANELBOARDS

With Plug-In Type MO4 Thermo-Magnetic Multi-Breaker Branches

TYPE NMO 3-WIRE PANELBOARD

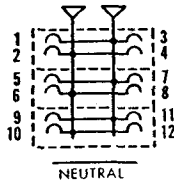
1 ϕ , 3 W. S/N
A.C. Only

MAINS: 120/240 Volts A.C. only.

BRANCHES: Single Pole, 120 Volts, 2-Wire S/N Breakers †.

BOXES: Galvanized Steel. All Boxes are 4½" Deep except 200 A. Main Breaker Boxes are 5" Deep.

FRONTS: Trim with Door and Flush Lock. Blue-gray finish.



NEUTRAL

*Max. No. of 15, 20 or 30 Amp. Single Poles Available	Amp. Cap. of Mains	Type	Complete List Price (Less Breakers)	Basic Device Only (Less Breakers)		Front Only		Box Height Inches	Box Width Inches
				Cat. No.	List Price	Cat. No.	List Price		

MAINS: LUGS ONLY

12	100	NMO-12	\$ 51.	P17-123	\$ 29.	P17F or S	\$ 22.	17	12
20	100	NMO-20	64.	P23-203	40.	P23F or S	24.	23	12
28	200	NMO-28	77.	P29-283	48.	P29F or S	29.	29	12
40	200	NMO-40	101.	P38-403	66.	P38F or S	35.	38	15

MAINS: CIRCUIT BREAKER — 2 POLE

12	100	NMO-12	\$ 86.	P23-123M	\$ 62.	P23MF or S	\$ 24.	23	12
20	100	NMO-20	105.	P29-203M	76.	P29MF or S	29.	29	12
28	200	NMO-28	250.	P44-283M	210.	P44MF or S	40.	44	15
40	200	NMO-40	264.	P48-403M	221.	P48MF or S	43.	48	15

Wiring Gutters — Top, bottom and side gutters are 4" minimum.

† **Single Pole Branches:** 15, 20 and 30 ampere single pole branches are available. For breaker listings, see table at right.

* **Two Pole Branches:** 15, 20, 30, 40 and 50 ampere double pole individual trip branches occupy the same space as two (2) single poles.

3-Wire Panelboards may contain all 2-pole circuits or combinations of 1 and 2-poles.

4-Wire Panelboards may contain combinations of 1 and 2-pole circuits; but 2-pole circuits are limited as follows:

Total Branch Poles	No. of 2-Pole Branches Available	Total Branch Poles	No. of 2-Pole Branches Available
12	4	28	10
20	6	40	12

Handle Ties for 15, 20 and 30 ampere 2-pole circuits are available: Catalog No. 10HT, List Price \$0.10 each.

Handle Lock-Off Device: Catalog No. SK-5400, List Price \$0.60 each.

▲ **Handle Ties** allow adjacent poles in each block to be easily converted to double pole, individual trip circuits. One handle tie is furnished with each pair of single pole circuits in plug-in breakers listed in table at right.

TYPE NMO 4-WIRE PANELBOARD

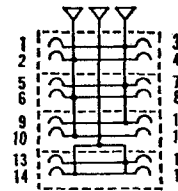
3 ϕ , 4 W. S/N
A.C. Only

MAINS: 120/208 Volts, A.C. only.

BRANCHES: Single Pole, 120 V., 2-Wire S/N Breakers †.

BOXES: Galvanized Steel. All boxes 4½" deep except 200 A. Main Breaker Boxes are 5" deep.

FRONTS: Trim with Door and Flush Lock. Blue-gray finish.



NEUTRAL

*Max. No. of 15, 20 or 30 Amp. Single Poles Available	Amp. Cap. of Mains	Type	Complete List Price (Less Breakers)	Basic Device Only (Less Breakers)		Front Only		Box Height Inches	Box Width Inches
				Cat. No.	List Price	Cat. No.	List Price		

MAINS: LUGS ONLY

12	100	NMO-12	\$ 59.	P17-124	\$ 37.	P17F or S	\$ 22.	17	12
20	100	NMO-20	72.	P23-204	48.	P23F or S	24.	23	12
28	100	NMO-28	85.	P29-284	56.	P29F or S	29.	29	12
40	200	NMO-40	114.	P38-404	79.	P38F or S	35.	38	15

MAINS: CIRCUIT BREAKER — 3 POLE

12	50	NMO-12	\$ 83.	P23-124M	\$ 59.	P23MF or S	\$ 24.	23	12
20	100	NMO-20	132.	P29-204M	103.	P29MF or S	29.	29	12
28	100	NMO-28	145.	P38-284M	110.	P38MF or S	35.	38	15
40	200	NMO-40	311.	P48-404M	268.	P48MF or S	43.	48	15

PLUG-IN BREAKERS

Plug-In Breaker Units are individually packaged and can be added to the basic device carton after selection.

Amp Rating by Cir. Pos.				Catalog Number	List Price	Position Location
1	2	3	4			
15	15	15	15	MO 481111	\$ 9.	4 CIRCUIT UNIT
15	15	15	20	MO 481112	9.	
15	15	15	30	MO 481113	9.	
15	15	20	20	MO 481122	9.	
15	15	20	30	MO 481123	9.	
15	15	30	30	MO 481133	9.	
15	15	40	40	MO 489411	9.	
15	15	50	50	MO 489511	9.	
20	20	15	30	MO 482213	9.	2 CIRCUIT UNIT
20	20	20	15	MO 482221	9.	
20	20	20	20	MO 482222	9.	
20	20	20	30	MO 482223	9.	
20	20	30	30	MO 482233	9.	
20	20	40	40	MO 489422	9.	
20	20	50	50	MO 489522	9.	
30	30	15	20	MO 483312	9.	
30	30	30	15	MO 483331	9.	2 CIRCUIT UNIT
30	30	30	30	MO 483333	9.	
30	30	40	40	MO 489433	9.	
30	30	50	50	MO 489533	9.	
40	40	40	40	MO 489494	9.	
40	40	50	50	MO 489594	9.	
50	50	50	50	MO 489595	9.	
15	15	..	..	MO 481100	5.	
20	20	..	..	MO 482200	5.	
30	30	..	..	MO 483300	5.	2 CIRCUIT UNIT
40	40	..	..	MO 489400	5.	
50	50	..	..	MO 489500	5.	
Dummy Plug-In Unit.....				MO 480000	2.25	

‡ Each pair of 40 and 50 ampere circuits are equipped with handle tie for double pole individual trip operation.

CIRCUIT BREAKER LIGHTING PANELBOARDS

WITH TYPE QB THERMAL-MAGNETIC BRANCH BREAKERS

1 ϕ 3W. S/N
A.C. Only
Standard Width

TYPE
NQB-3

NEUTRAL

MAINS: 125/250 V., A. C. Only.
BRANCHES: Single Pole, 15 Amp., 125 V., 2-Wire S/N Type QB Breakers. ‡
BOXES: 20" Wide, 5 3/4" Deep. Galvanized Steel.
FRONTS: Trim with door and flush lock. Blue-gray finish.

No. Branch Poles	Amp. Mains	Catalog Number	List Price	Box Cat. No.	Interior Cat. No.	Front Cat. No.
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MAINS: LUGS ONLY

4	50	NQB04-3L	\$ 76.	MH 17	CB 8100	MH 2017
6	50	NQB06-3L	85.	MH 17	CB 8101	MH 2017
8	50	NQB08-3L	94.	MH 17	CB 8102	MH 2017
10	50	NQB10-3L	103.	MH 20	CB 8103	MH 2020
12	100	NQB12-3L	112.	MH 20	CB 8104	MH 2020
14	100	NQB14-3L	121.	MH 20	CB 8105	MH 2020
16	100	NQB16-3L	130.	MH 23	CB 8106	MH 2023
18	100	NQB18-3L	139.	MH 23	CB 8107	MH 2023
20	100	NQB20-3L	148.	MH 23	CB 8108	MH 2023
22	200	NQB22-3L	157.	MH 26	CB 8109	MH 2026
24	200	NQB24-3L	166.	MH 26	CB 8110	MH 2026
26	200	NQB26-3L	175.	MH 26	CB 8111	MH 2026
28	200	NQB28-3L	184.	MH 29	CB 8112	MH 2029
30	200	NQB30-3L	193.	MH 29	CB 8113	MH 2029
32	200	NQB32-3L	202.	MH 29	CB 8114	MH 2029
34	200	NQB34-3L	211.	MH 32	CB 8115	MH 2032
36	200	NQB36-3L	220.	MH 32	CB 8116	MH 2032
38	200	NQB38-3L	229.	MH 32	CB 8117	MH 2032
40	200	NQB40-3L	238.	MH 35	CB 8118	MH 2035
42	200	NQB42-3L	247.	MH 35	CB 8119	MH 2035

MAINS: CIRCUIT BREAKER — 2 POLE

4	50	NQB04-3AB	\$103.	MH 23	CB 8120	MH 2023
6	50	NQB06-3AB	112.	MH 23	CB 8121	MH 2023
8	50	NQB08-3AB	121.	MH 23	CB 8122	MH 2023
10	50	NQB10-3AB	130.	MH 26	CB 8123	MH 2026
12	100	NQB12-3AB	157.	MH 26	CB 8124	MH 2026
14	100	NQB14-3AB	166.	MH 26	CB 8125	MH 2026
16	100	NQB16-3AB	175.	MH 29	CB 8126	MH 2029
18	100	NQB18-3AB	184.	MH 29	CB 8127	MH 2029
20	100	NQB20-3AB	193.	MH 29	CB 8128	MH 2029
22	200	NQB22-3AB	331.	MH 38	CB 8129	MH 2038
24	200	NQB24-3AB	340.	MH 38	CB 8130	MH 2038
26	200	NQB26-3AB	349.	MH 38	CB 8131	MH 2038
28	200	NQB28-3AB	358.	MH 41	CB 8132	MH 2041
30	200	NQB30-3AB	367.	MH 41	CB 8133	MH 2041
32	200	NQB32-3AB	376.	MH 41	CB 8134	MH 2041
34	200	NQB34-3AB	385.	MH 44	CB 8135	MH 2044
36	200	NQB36-3AB	394.	MH 44	CB 8136	MH 2044
38	200	NQB38-3AB	403.	MH 44	CB 8137	MH 2044
40	200	NQB40-3AB	412.	MH 47	CB 8138	MH 2047
42	225	NQB42-3AB	421.	MH 47	CB 8139	MH 2047

Box Height is indicated by last two figures of box number.

3 ϕ 4W. S/N
A.C. Only
Standard Width

TYPE
NQB-4

NEUTRAL

MAINS: 120/208 V., A. C. Only.
BRANCHES: Single Pole, 15 Amp., 125 V., 2-Wire S/N Type QB Breakers. ‡
BOXES: 20" Wide, 5 3/4" Deep. Galvanized Steel.
FRONTS: Trim with door and flush lock. Blue-gray finish.

No. Branch Poles	Amp. Mains	Catalog Number	List Price	Box Cat. No.	Interior Cat. No.	Front Cat. No.
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MAINS: LUGS ONLY

6	50	NQB06-4L	\$ 95.	MH 17	CB 8141	MH 2017
8	50	NQB08-4L	104.	MH 17	CB 8142	MH 2017
10	50	NQB10-4L	113.	MH 20	CB 8143	MH 2020
12	50	NQB12-4L	122.	MH 20	CB 8144	MH 2020
14	50	NQB14-4L	131.	MH 20	CB 8145	MH 2020
16	100	NQB16-4L	140.	MH 23	CB 8146	MH 2023
18	100	NQB18-4L	149.	MH 23	CB 8147	MH 2023
20	100	NQB20-4L	158.	MH 23	CB 8148	MH 2023
22	100	NQB22-4L	167.	MH 26	CB 8149	MH 2026
24	100	NQB24-4L	176.	MH 26	CB 8150	MH 2026
26	100	NQB26-4L	185.	MH 26	CB 8151	MH 2026
28	100	NQB28-4L	194.	MH 29	CB 8152	MH 2029
30	100	NQB30-4L	203.	MH 29	CB 8153	MH 2029
32	200	NQB32-4L	212.	MH 29	CB 8154	MH 2029
34	200	NQB34-4L	221.	MH 32	CB 8155	MH 2032
36	200	NQB36-4L	230.	MH 32	CB 8156	MH 2032
38	200	NQB38-4L	239.	MH 32	CB 8157	MH 2032
40	200	NQB40-4L	248.	MH 35	CB 8158	MH 2035
42	200	NQB42-4L	257.	MH 35	CB 8159	MH 2035

MAINS: CIRCUIT BREAKER — 3 POLE

6	50	NQB06-4AB	\$134.	MH 23	CB 8161	MH 2023
8	50	NQB08-4AB	143.	MH 23	CB 8162	MH 2023
10	50	NQB10-4AB	152.	MH 26	CB 8163	MH 2026
12	50	NQB12-4AB	161.	MH 26	CB 8164	MH 2026
14	50	NQB14-4AB	170.	MH 26	CB 8165	MH 2026
16	100	NQB16-4AB	198.	MH 29	CB 8166	MH 2029
18	100	NQB18-4AB	207.	MH 29	CB 8167	MH 2029
20	100	NQB20-4AB	216.	MH 29	CB 8168	MH 2029
22	100	NQB22-4AB	225.	MH 32	CB 8169	MH 2032
24	100	NQB24-4AB	234.	MH 32	CB 8170	MH 2032
26	100	NQB26-4AB	243.	MH 32	CB 8171	MH 2032
28	100	NQB28-4AB	252.	MH 35	CB 8172	MH 2035
30	100	NQB30-4AB	261.	MH 35	CB 8173	MH 2035
32	200	NQB32-4AB	425.	MH 41	CB 8174	MH 2041
34	200	NQB34-4AB	434.	MH 44	CB 8175	MH 2044
36	200	NQB36-4AB	443.	MH 44	CB 8176	MH 2044
38	200	NQB38-4AB	452.	MH 44	CB 8177	MH 2044
40	200	NQB40-4AB	461.	MH 47	CB 8178	MH 2047
42	200	NQB42-4AB	470.	MH 47	CB 8179	MH 2047

Wiring Gutters. Side and end gutters are 4 1/2" in all panels.

‡Ratings. 15 ampere single pole branches will be furnished unless otherwise specified. 20, 30, 40 and 50 ampere single pole breakers can be substituted without price change. Use of branch breakers rated more than 15 amperes may necessitate increased mains. Obtain price additions from latest Green Price List.

Two-Pole (Individual Trip). For each double pole (individual trip) circuit substituted for two single pole circuits, add \$5.50 list to panel figured on basis of all single pole circuits.

Two or Three-Pole (Common Trip). When 2 or 3-pole common trip breakers are required in combination with panels listed above; select the panel having the required number of single pole branches, then add for the 2 or 3-pole breakers from page 41. Add for increased mains, if required, from latest Green Price List.

Space Only. When space only for future branches is required, figure panels on basis of total number of branches, including the future branches, and deduct \$2.00 list for each breaker pole omitted.

Handle Lock-Off Device Cat. No. SK-5400; List Price \$0.60 each.



SCHEDULE



DISCOUNT

PAGE 33

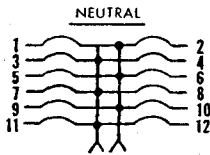
CIRCUIT BREAKER LIGHTING PANELBOARDS

WITH TYPE ML THERMAL-MAGNETIC BRANCH BREAKERS

TYPE NAB-3

1 ϕ , 3W., S/N
A.C. or D.C.
Standard Width

MAINS: 125/250 V., A. C. or D. C.
BRANCHES: Single Pole 15 Amp., 125 V., 2 Wire S/N Type ML Breakers. ‡
BOXES: 20" Wide, 5 1/4" Deep. Galvanized Steel.
FRONTS: Trim with door and flush lock. Blue-gray finish.



No. Branch Poles	Amp. Mains	Catalog Number	List Price	Box Cat. No.	Interior Cat. No.	Front Cat. No.
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MAINS: LUGS ONLY

4	50	NAB04-3L	\$104.	MH 17	CB 7000	MH 2017
6	50	NAB06-3L	127.	MH 17	CB 7001	MH 2017
8	50	NAB08-3L	150.	MH 17	CB 7002	MH 2017
10	50	NAB10-3L	173.	MH 20	CB 7003	MH 2020
12	100	NAB12-3L	196.	MH 20	CB 7004	MH 2020
14	100	NAB14-3L	219.	MH 20	CB 7005	MH 2020
16	100	NAB16-3L	242.	MH 23	CB 7006	MH 2023
18	100	NAB18-3L	265.	MH 23	CB 7007	MH 2023
20	100	NAB20-3L	288.	MH 23	CB 7008	MH 2023
22	200	NAB22-3L	311.	MH 26	CB 7009	MH 2026
24	200	NAB24-3L	334.	MH 26	CB 7010	MH 2026
26	200	NAB26-3L	357.	MH 26	CB 7011	MH 2026
28	200	NAB28-3L	380.	MH 29	CB 7012	MH 2029
30	200	NAB30-3L	403.	MH 29	CB 7013	MH 2029
32	200	NAB32-3L	426.	MH 29	CB 7014	MH 2029
34	200	NAB34-3L	449.	MH 32	CB 7015	MH 2032
36	200	NAB36-3L	472.	MH 32	CB 7016	MH 2032
38	200	NAB38-3L	495.	MH 32	CB 7017	MH 2032
40	200	NAB40-3L	518.	MH 35	CB 7018	MH 2035
42	200	NAB42-3L	541.	MH 35	CB 7019	MH 2035

MAINS: CIRCUIT BREAKER — 2 POLE

4	50	NAB04-3AB	\$131.	MH 23	CB 7020	MH 2023
6	50	NAB06-3AB	154.	MH 23	CB 7021	MH 2023
8	50	NAB08-3AB	177.	MH 23	CB 7022	MH 2023
10	50	NAB10-3AB	200.	MH 26	CB 7023	MH 2026
12	100	NAB12-3AB	241.	MH 26	CB 7094	MH 2026
14	100	NAB14-3AB	264.	MH 26	CB 7095	MH 2026
16	100	NAB16-3AB	287.	MH 29	CB 7096	MH 2029
18	100	NAB18-3AB	310.	MH 29	CB 7097	MH 2029
20	100	NAB20-3AB	333.	MH 29	CB 7098	MH 2029
22	200	NAB22-3AB	485.	MH 38	CB 7029	MH 2038
24	200	NAB24-3AB	508.	MH 38	CB 7030	MH 2038
26	200	NAB26-3AB	531.	MH 38	CB 7031	MH 2038
28	200	NAB28-3AB	554.	MH 41	CB 7032	MH 2041
30	200	NAB30-3AB	577.	MH 41	CB 7033	MH 2041
32	200	NAB32-3AB	600.	MH 41	CB 7034	MH 2041
34	200	NAB34-3AB	623.	MH 44	CB 7035	MH 2044
36	200	NAB36-3AB	646.	MH 44	CB 7036	MH 2044
38	200	NAB38-3AB	669.	MH 44	CB 7037	MH 2044
40	200	NAB40-3AB	692.	MH 47	CB 7038	MH 2047
42	225	NAB42-3AB	715.	MH 47	CB 7039	MH 2047

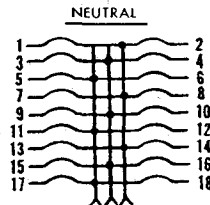
Illustration on page 31.

Box Height is indicated by last two figures of box number.

TYPE NAB-4

3 ϕ , 4W., S/N
A.C. or D.C.
Standard Width

MAINS: 120/208 V., A. C. or D. C.
BRANCHES: Single Pole, 15 Amp., 125 V., 2 Wire S/N Type ML Breakers. ‡
BOXES: 20" Wide, 5 1/4" Deep. Galvanized Steel.
FRONTS: Trim with door and flush lock. Blue-gray finish.



No. Branch Poles	Amp. Mains	Catalog Number	List Price	Box Cat. No.	Interior Cat. No.	Front Cat. No.
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MAINS: LUGS ONLY

6	50	NAB06-4L	\$137.	MH 17	CB 7041	MH 2017
8	50	NAB08-4L	160.	MH 17	CB 7042	MH 2017
10	50	NAB10-4L	183.	MH 20	CB 7043	MH 2020
12	50	NAB12-4L	206.	MH 20	CB 7044	MH 2020
14	50	NAB14-4L	229.	MH 20	CB 7045	MH 2020
16	100	NAB16-4L	252.	MH 23	CB 7046	MH 2023
18	100	NAB18-4L	275.	MH 23	CB 7047	MH 2023
20	100	NAB20-4L	298.	MH 23	CB 7048	MH 2023
22	100	NAB22-4L	321.	MH 26	CB 7049	MH 2026
24	100	NAB24-4L	344.	MH 26	CB 7050	MH 2026
26	100	NAB26-4L	367.	MH 26	CB 7051	MH 2026
28	100	NAB28-4L	390.	MH 29	CB 7052	MH 2029
30	100	NAB30-4L	413.	MH 29	CB 7053	MH 2029
32	200	NAB32-4L	436.	MH 29	CB 7054	MH 2029
34	200	NAB34-4L	459.	MH 32	CB 7055	MH 2032
36	200	NAB36-4L	482.	MH 32	CB 7056	MH 2032
38	200	NAB38-4L	505.	MH 32	CB 7057	MH 2032
40	200	NAB40-4L	528.	MH 35	CB 7058	MH 2035
42	200	NAB42-4L	551.	MH 35	CB 7059	MH 2035

MAINS: CIRCUIT BREAKER — 3 POLE

6	50	NAB06-4AB	\$176.	MH 23	CB 7061	MH 2023
8	50	NAB08-4AB	199.	MH 23	CB 7062	MH 2023
10	50	NAB10-4AB	222.	MH 26	CB 7063	MH 2026
12	50	NAB12-4AB	245.	MH 26	CB 7064	MH 2026
14	50	NAB14-4AB	268.	MH 26	CB 7065	MH 2026
16	100	NAB16-4AB	310.	MH 29	CB 7086	MH 2029
18	100	NAB18-4AB	333.	MH 29	CB 7087	MH 2029
20	100	NAB20-4AB	356.	MH 29	CB 7088	MH 2029
22	100	NAB22-4AB	379.	MH 32	CB 7089	MH 2032
24	100	NAB24-4AB	402.	MH 32	CB 7090	MH 2032
26	100	NAB26-4AB	425.	MH 32	CB 7091	MH 2032
28	100	NAB28-4AB	448.	MH 35	CB 7092	MH 2035
30	100	NAB30-4AB	471.	MH 35	CB 7093	MH 2035
32	200	NAB32-4AB	649.	MH 41	CB 7074	MH 2041
34	200	NAB34-4AB	672.	MH 44	CB 7075	MH 2044
36	200	NAB36-4AB	695.	MH 44	CB 7076	MH 2044
38	200	NAB38-4AB	718.	MH 44	CB 7077	MH 2044
40	200	NAB40-4AB	741.	MH 47	CB 7078	MH 2047
42	200	NAB42-4AB	764.	MH 47	CB 7079	MH 2047

Wiring Gutters. Side and end gutters are 4 1/2" in all panels.

‡Ratings. 15 ampere single pole branches will be furnished unless otherwise specified. 20, 30, 40 and 50 ampere single pole breakers can be substituted without price change. Use of branch breakers rated more than 15 amperes may necessitate increased mains. Obtain price additions from latest Green Price List.

Two or Three Pole. When panel has all 2-pole, all 3-pole, 1 and 2-pole or 1, 2 and 3-pole branches, use pricing on page 41.

Space Only. When space only for future branches is required, figure panels on basis of total number of branches and deduct \$7.50 list for each breaker pole omitted.

Handle Lock-Off Device, Cat. No. SK-2894; List Price \$0.60 each.



COLUMN TYPE PANELBOARD DATA

FOR 8-5/8" WIDE CABINETS

APPLICATION

When cable troughs are used with panelboards, Section 3624 of the National Electrical Code should be observed. Section 3624 reads "Wireways shall not contain more than 30 conductors at any cross-section unless the conductors are for signaling circuits or are control conductors between a motor and its starter and used only for starting duty. The sum of the cross-sectional areas of all contained conductors at any cross-section of a wireway shall not exceed 20% of the interior cross-sectional area of the wireway."

Therefore, if the neutral bar is mounted in the panelboard, 3 feeder wires and 27 branch circuit wires or 4 feeder wires and 26 branch circuit wires are permitted. If a separate neutral wire is run for each circuit, the largest panelboard acceptable would be 12 circuits. However, if common neutral conductors are used, the number of circuits in the panelboard could be increased.

In view of this ruling, it is advantageous and more economical to have the neutral bar mounted in the pullbox. Under the Code ruling, it would then be permissible to run 2 feeder wires and 28

branch circuit wires or 3 feeder wires and 27 branch circuit wires in the cable trough.

PANELBOARDS

Column Type Panelboards are narrow single row construction, designed primarily for H or I-Beam mounting. Standard outside box width is 8 5/8". See page 36 for listings of NQO and NAB types. Inside beam or column dimensions should be checked against box dimensions to determine if standard listed column type panelboards can be installed as desired.

Fronts are of screw-on type and arranged with standard flush lock and directory frame on door. Fronts are made of #12 gauge stretcher level steel and finished in blue-gray.

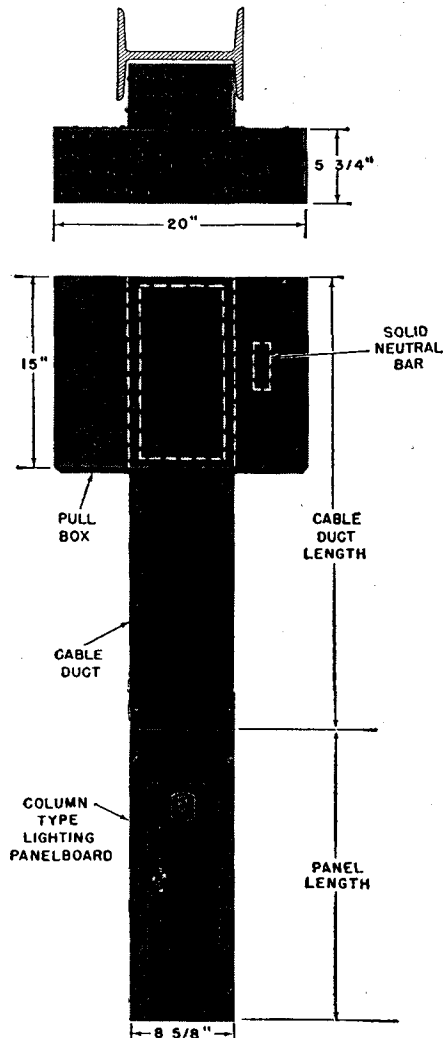
Boxes are of three-piece construction with removable end walls screwed to box backs. When cable duct is used with these boxes, the top end wall is usually removed from the box and re-inserted at the top of the cable duct. Boxes are made of #14 gauge steel and finished in blue-gray. Standard knockouts are provided in top and bottom end walls of boxes.

CABLE DUCT AND PULL BOX

Cable Duct and Pull Boxes are available for use with narrow column type panelboards when mounted in H or I-Beams. The cable duct is used as a wireway extension from the panelboard cabinet to the ceiling or truss, at which point a pullbox is installed on the front of the cable duct for conduit termination (see sketch at left).

The Cable Duct has same steel and finish specifications as the column type panel boxes outlined above. Cross-sectional dimensions are same as panel boxes (8 5/8" wide and 5" deep). Cable duct is available in four standard lengths of 36", 48", 56" and 66" and can be ganged together to meet most common truss or ceiling heights. Bottom of each cable duct is provided with a sleeve so that it may be fastened to the top of the panel box or used to gang duct sections together.

Fronts are of 2-piece screw-on type and furnished in surface type. The upper portion of the 2 piece front is 15" long and is removed when a pullbox is installed on the duct.



Duct Length	Catalog Number	List Price
36"	●MT X-836	\$ 28.
48"	●MT X-848	31.
56"	●MT X-836	32.
66"	●MT X-866	35.

●U/L listed as Wireway under File E6625.

Pull Boxes are 20" wide x 15" high x 5 3/4" deep and have same steel and finish specifications as the cable ducts. Solid neutral bar is included in the pullbox. Top end wall has knockouts same as in 20" wide panel cabinets.

S/N Terminals	Catalog Number	List Price
26	*MP X-815-26	\$ 23.50
42	MP X-815-42	27.

*UL listed as Pullbox under File E25442.



SCHEDULE 62 DISCOUNT

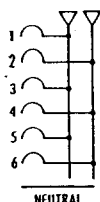
PAGE 35

CIRCUIT BREAKER LIGHTING PANELBOARDS

WITH TYPES QO & ML THERMAL-MAGNETIC BRANCH BREAKERS

TYPE
NQO-3LX

1 ϕ , 3W., S/N
A.C. Only
Narrow Width

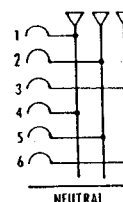


MAINS: 120/240 V., A. C. Only.
BRANCHES: Single Pole, 15 Amp., 120 V., 2-Wire S/N Type QO Breakers. $\pm$
BOXES: 8 $\frac{1}{2}$ " Wide, 5" Deep. Galvanized Steel.
FRONTS: Trim with door and flush lock. Blue-gray finish.

SERVICE

TYPE
NQO-4LX

3 ϕ , 4W., S/N
A.C. Only
Narrow Width



MAINS: 120/208 V., A. C. Only.
BRANCHES: Single Pole, 15 Amp., 120 V., 2-Wire S/N Type QO Breakers. $\pm$
BOXES: 8 $\frac{1}{2}$ " Wide, 5" Deep. Galvanized Steel.
FRONTS: Trim with door and flush lock. Blue-gray finish.

NEUTRAL

A.C. ONLY

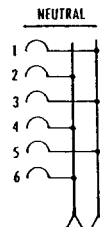
SERVICE

A.C. OR D.C.

No. Branch Poles	Amp. Mains	Catalog Number	List Price	Box Catalog Number	Interior Catalog Number	Front Catalog Number
MAINS: LUGS ONLY AVAILABLE JULY, 1955 *						
4	50	NQO04-3LX	\$ 82.	QO824B	QO X30424	QO824T
6	50	NQO06-3LX	94.	QO824B	QO X30624	QO824T
8	50	NQO08-3LX	106.	QO824B	QO X30824	QO824T
10	50	NQO10-3LX	118.	QO824B	QO X31024	QO824T
12	100	NQO12-3LX	130.	QO824B	QO X31224	QO824T
14	100	NQO14-3LX	142.	QO824B	QO X31424	QO824T
16	100	NQO16-3LX	154.	QO830B	QO X31630	QO830T
18	100	NQO18-3LX	166.	QO830B	QO X31830	QO830T
20	100	NQO20-3LX	178.	QO830B	QO X32030	QO830T
22	200	NQO22-3LX	190.	QO838B	QO X32238	QO838T
24	200	NQO24-3LX	202.	QO838B	QO X32438	QO838T
26	200	NQO26-3LX	214.	QO838B	QO X32638	QO838T
28	200	NQO28-3LX	226.	QO838B	QO X32838	QO838T
30	200	NQO30-3LX	238.	QO838B	QO X33038	QO838T
32	200	NQO32-3LX	250.	QO847B	QO X33247	QO847T
34	200	NQO34-3LX	262.	QO847B	QO X33447	QO847T
36	200	NQO36-3LX	274.	QO847B	QO X33647	QO847T
38	200	NQO38-3LX	286.	QO847B	QO X33847	QO847T
40	200	NQO40-3LX	298.	QO847B	QO X34047	QO847T
42	200	NQO42-3LX	310.	QO847B	QO X34247	QO847T

TYPE
NAB-3LX

1 ϕ , 3W., S/N
A.C. or D.C.
Narrow Width



MAINS: 125/250 V., A. C. or D. C.
BRANCHES: Single Pole, 15 Amp., 125 V., 2-Wire S/N Type ML Breakers. $\pm$
BOXES: 8 $\frac{1}{2}$ " Wide, 5" Deep. Galvanized Steel.
FRONTS: Trim with door and flush lock. Blue-gray finish.

No. Branch Poles	Amp. Mains	Catalog Number	List Price	Box Catalog Number	Interior Catalog Number	Front Catalog Number
MAINS: LUGS ONLY						
4	50	NAB04-3LX	\$ 104.	MO820	CB7400	MO1820
6	50	NAB06-3LX	127.	MO824	CB7401	MO1824
8	50	NAB08-3LX	150.	MO824	CB7402	MO1824
10	50	NAB10-3LX	173.	MO828	CB7403	MO1828
12	100	NAB12-3LX	196.	MO828	CB7404	MO1828
14	100	NAB14-3LX	219.	MO834	CB7445	MO1834
16	100	NAB16-3LX	242.	MO834	CB7406	MO1834
18	100	NAB18-3LX	265.	MO834	CB7407	MO1834
20	100	NAB20-3LX	288.	MO838	CB7408	MO1838
22	200	NAB22-3LX	311.	MO838	CB7409	MO1938
24	200	NAB24-3LX	334.	MO844	CB7410	MO1844
26	200	NAB26-3LX	357.	MO844	CB7411	MO1844
28	200	NAB28-3LX	380.	MO844	CB7412	MO1844
30	200	NAB30-3LX	403.	MO848	CB7413	MO1848
32	200	NAB32-3LX	426.	MO848	CB7414	MO1848
34	200	NAB34-3LX	449.	MO852	CB7415	MO1852
36	200	NAB36-3LX	472.	MO852	CB7416	MO1852
38	200	NAB38-3LX	495.	MO856	CB7417	MO1856
40	200	NAB40-3LX	518.	MO856	CB7418	MO1856
42	200	NAB42-3LX	541.	MO860	CB7419	MO1860

Illustration on page 32.
Box height is indicated by last two figures of box number.

$\pm$ Ratings, 15 ampere single pole branches will be furnished unless otherwise specified 20, 30, 40 and 50 ampere single pole breakers can be substituted without price change. Use of branch breakers rated more than 15 amperes may necessitate increased mains. Obtain price additions from latest Green Price List.

Cable Troughs and Pull Boxes can be furnished with these panels for H-Beam mounting. See page 35 for catalog numbers and prices.

*NQO-LX Panelboards not available until July, 1955.



Wiring Gutters at top, bottom and left side. Top and bottom gutters are 4" high in Type NQO and 5" high in Type NAB; left side gutter is 2 $\frac{1}{2}$ " wide on NQO type and 1 $\frac{3}{4}$ " wide on NAB type.

Space Only. When space only for future branches is required, figure panels on basis of total number of branches including space for futures, and deduct:

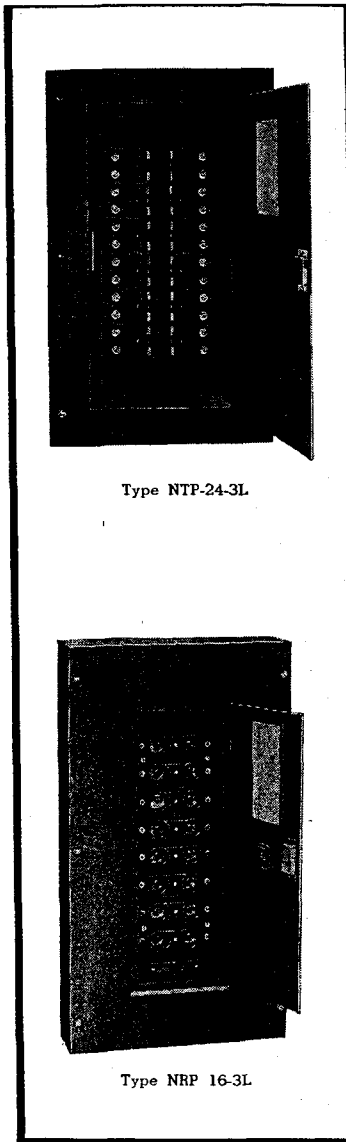
(a) NQO Panels—\$3.00 list for each breaker pole omitted.

(a) NAB Panels—\$7.50 list for each breaker pole omitted.

NQB-LX will be substituted at same price as NQO-LX.

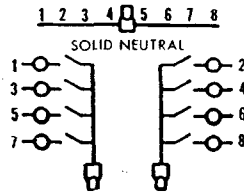
Consult your Square D Field Office for Catalog Numbers and dimensions.

FUSIBLE LIGHTING PANELBOARDS



Type NTP-24-3L

Type NRP 16-3L



1 ϕ . 3W. S/N A.C. or D.C. Plug Fusible 1 Pole Switch

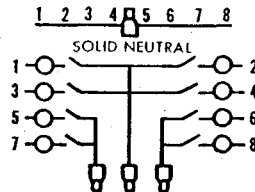
TYPE
NTP-3

MAINS: 125/250 V. A. C. or D. C.
BRANCHES: Single Pole 30 Amp. 125 V. 2-Wire S/N Tumbler Switch, Plug Fusible.
BOXES: Galvanized Steel. 200 A. Main Switch Type — 20" wide; all others 17" wide.
FRONTS: Single Door Type with Flush Lock. Blue-gray Finish.
GUTTERS: 4" Sides and Ends.

No. Branches	Amp. Mains	MAINS: LUGS ONLY			MAINS: FUSIBLE SWITCH — 2 POLE					
		*Catalog Number	Box Hgt.	List Price	Catalog Number	List Price	Box Width (Ins.)	Box Cat. No.	Interior Catalog Number	*Front Catalog Number
4	30	NTPR-04-3L	14	\$ 47.	NTPR-04-3M	\$ 71.	17	MR17	MR304M	MR1717
8	60	NTPR-08-3L	14	55.	NTPR-08-3M	81.	17	MR23	MR308M	MR1723
12	60	NTPR-12-3L	17	68.	NTPR-12-3M	94.	17	MR23	MR312M	MR1723
16	100	NTPR-16-3L	26	101.	NTPR-16-3M	127.	17	MR29	MR316M	MR1729
20	100	NTPR-20-3L	29	115.	NTPR-20-3M	140.	17	MR32	MR320M	MR1732
24	200	NTPR-24-3L	32	139.	NTPR-24-3M	174.	20	MH47	MR324M	MH2447
28	200	NTPR-28-3L	35	152.	NTPR-28-3M	187.	20	MH50	MR328M	MH2450
32	200	NTPR-32-3L	38	167.	NTPR-32-3M	197.	20	MH53	MR332M	MH2453
36	200	NTPR-36-3L	41	192.	NTPR-36-3M	230.	20	MH56	MR336M	MH2456
40	200	NTPR-40-3L	44	207.	NTPR-40-3M	243.	20	MH59	MR340M	MH2459

SCHEDULE **G1** DISCOUNT

SCHEDULE **G2** DISCOUNT



3 ϕ 4W. S/N A.C. or D.C. Plug Fusible 1 Pole Switch

TYPE
NTP-4

MAINS: 120, 208 V. A. C. or D. C.
BRANCHES: Single Pole, 30 Amp., 125 V., 2-Wire S/N Tumbler Switch, Plug Fusible.
BOXES: Galvanized Steel. 200 A. Main Switch Type 20" Wide; all others 17" wide.
FRONTS: Single Door Type with Flush Lock. Blue-gray Finish.
GUTTERS: 4" Sides and Ends.

No. Branches	Amp. Mains	MAINS: LUGS ONLY			MAINS: FUSIBLE SWITCH — 2 POLE					
		*Catalog Number	Box Hgt.	List Price	Catalog Number	List Price	Box Width (Ins.)	Box Cat. No.	Interior Catalog Number	*Front Catalog Number
8	60	NTPR-08-4L	14	\$ 60.	NTPR-08-4M	\$ 89.	17	MR23	MR408M	MR1723M
12	60	NTPR-12-4L	17	77.	NTPR-12-4M	103.	17	MR29	MR412M	MR1729M
16	60	NTPR-16-4L	26	112.	NTPR-16-4M	136.	17	MR32	MR416M	MR1732M
20	100	NTPR-20-4L	29	136.	NTPR-20-4M	161.	17	MR35	MR420M	MR1735M
24	100	NTPR-24-4L	32	152.	NTPR-24-4M	175.	17	MR38	MR424M	MR1738M
28	100	NTPR-28-4L	35	156.	NTPR-28-4M	198.	17	MR41	MR428M	MR1741M
32	200	NTPR-32-4L	38	187.	NTPR-32-4M	221.	20	MH53	MR432M	MH2453
36	200	NTPR-36-4L	41	225.	NTPR-36-4M	257.	20	MH56	MR436M	MH2456
40	200	NTPR-40-4L	44	242.	NTPR-40-4M	273.	20	MH59	MR440M	MH2459

SCHEDULE **G1** DISCOUNT

SCHEDULE **G2** DISCOUNT

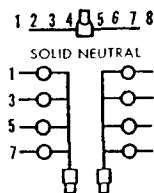
***SURFACE OR FLUSH:** When ordering, add suffix letter "S" or "F" to catalog number to indicate surface or flush mounting.

▲**BOX HEIGHT** is indicated by last two figures of box catalog number.

Handle Lock-Off Device for NTP; Cat. No. SK-5456; List Price \$1.60 each.

Two-Pole. For NTP panels with 1 and 2-pole branches, convert to total number of equivalent 1-pole branches and obtain price of panel; then add \$1.80 list for each 2-pole substituted for two single pole branches. Schedule G2 Discount then applies to complete panelboard.

30, 60 and 100 A. 2 P. main switches are Pull-out type; 60 and 100 A. 3 P. are Saflex type; 200 A. 2 P. and 3 P. are Brush type.



1 ϕ . 3W. S/N A.C. or D.C. Plug Fusible No Switches

TYPE
NRP-3

MAINS: 125/250 V. A. C. or D. C.
BRANCHES: Single Pole, 30 Amp., 125 V. 2-Wire S/N Plug Fusible.
BOXES: 12" Wide, 4" Deep. Blue-gray Finish.
FRONTS: Single Door Type with Flush Lock. Blue-gray Finish.
GUTTERS: 4" Sides, 3 1/2" Minimum Ends.

No. Branches	Amp. Mains	*Catalog No.	Box Height	List Price
MAINS: LUGS ONLY				
4	60	NRP 04-3L	12 1/2	\$ 25.
8	60	NRP 08-3L	16	34.
12	60	NRP 12-3L	21	43.
16	100	NRP 16-3L	24	50.
20	100	NRP 20-3L	25 1/2	58.
24	120	NRP 24-3L	32	67.

SCHEDULE **G1** DISCOUNT



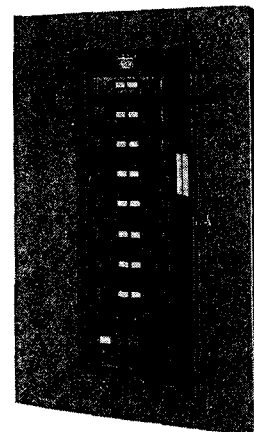
TYPE MLN (narrow width) circuit breaker distribution panelboards meet 250 volt A.C. or D.C. circuit requirements from 15 thru 100 amperes. The Type ML line of thermal-magnetic quick-make and quick-break circuit breakers are used in these factory assembled panelboards. Boxes are only 20" wide and 5 $\frac{3}{4}$ " deep with 4" wide wiring gutters. Fronts, available for surface or flush mounting, have adjustable trim clamps and flush lock. The shallow box depth makes this panelboard desirable for many heavy duty A.C. or D.C. applications. Panelboard listings and prices on page 41.

TYPE ML (standard width) circuit breaker distribution panelboards satisfy 600 volt A.C. or 250 volt D.C. circuit requirements from 15 through 600 amperes. The Type ML line of quick-make, quick-break thermal-magnetic circuit breakers are used in these factory assembled panelboards. Two box widths (30", 40") are available to accommodate 225, 400 or 600 ampere circuit breaker ranges. Box depths are 8⁵/₈" and 10". Fronts, available for flush or surface mounting, have adjustable trim clamps and vault lock. This heavy duty circuit breaker panelboard meets all requirements of industrial and commercial applications. Refer to pages 42 and 43 for listings and prices.



Type MHP Circuit
Breaker Distribution
Panelboard.
See Listings
Pages 39 and 40.

Type MLN Circuit
Breaker Distribution
Panelboard.
See Listing, Page 41.



Type ML Circuit
Breaker Distribution
Panelboard.
See Listings
Pages 42 and 43.

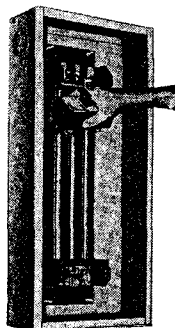
Panelboard Types	CIRCUIT BREAKERS						Fed. Specs. WP. 131a Breaker Class	CIRCUIT BREAKER CONTACTS	
	Type	Ampere Ratings	Interrupting Capacity (Based on NEMA Test Procedures)					Manual Operation	Automatic Tripping
			240 V. A.C.	600 V. A.C.	125/250 V. D.C.	250 V. D.C.			
MHP	MM M1 M2	15 to 50 A. 15 to 50 A. 70 and 100 A.	5,000 A. 5,000 A. 5,000 A.	..... ..... .....	..... ..... .....	..... ..... .....	B A A	Slow Make Slow Break	Quick Break
↕ ML ↕	ML	15 to 50 A.	10,000 A.	.....	5,000 A.	.....	C	Quick Make	
	ML1	70 & 100 A.	10,000 A.	.....	5,000 A.	.....	C	Quick Break	Quick Break
	ML1 ML3 KL WL	15 to 100 A. 125 to 225 A. 125 to 400 A. 125 to 600 A.	*20,000 A. 25,000 A. 40,000 A. 40,000 A.	15,000 A. 15,000 A. 25,000 A. 25,000 A.	10,000 A. 10,000 A. 20,000 A. 20,000 A.	10,000 A. 10,000 A. 20,000 A. 20,000 A.	C, D, E D, E D, E D, E	Quick Make Quick Break	Quick Break

*20,000 A. interrupting capacity of ML1 breaker on 240 V. A.C. service applies only when 600 V. A.C. ML1 breaker is used.

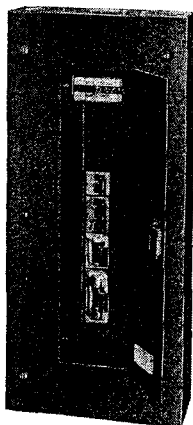


CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

With Plug-In Type MM, M1 and M2 Thermal-Magnetic Circuit Breakers



Circuit Breakers "Plug In"
on Round Bus Bars.



Complete MHP
Panelboard

NOW you can obtain off-the-shelf delivery of your distribution panelboards with the MHP plug-in panelboard. Complete panelboards can be quickly assembled from standard components stocked by Square D Electrical Distributors. Make your own combinations — no waiting for factory assembled tailor-made panelboards.

240 VOLTS A. C.

PLUG-IN

TYPE
MHP
PANELBOARD

PANELBOARD

● **INTERIOR** consists of bus bar assembly with neutral bar and dead front barrier assembly. Four basic sizes are available providing 18, 27, 36, or 54 inch space for installation of circuit breaker units. The barrier assembly includes a sliding closing plate to cover the unused circuit breaker space. The plate is scored so that excess length can be snapped off when breakers are installed.

Circuit identification numbers, in the form of gummed labels, are included with the interior. Sufficient numbers are supplied to meet any circuit combination. Interior assembly is separately packaged.

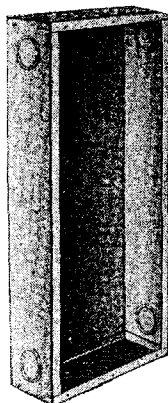
▲ **PLUG-IN BREAKERS** in 2 pole and 3 pole COMMON TRIP 240 volt A.C. rating from 15 through 100 ampere sizes are available for feeder or motor circuits. Single pole 120 volt A.C. breakers from 15 through 50 ampere ratings are also available for lighting circuits. Positive pressure contact jaws on the back of the breaker units tightly grip to cylindrical bus bars.

Plug-in Breakers are individually cartoned.

★ **BOX** is fabricated of code gauge galvanized steel and contains an ample assortment of knockouts in both ends. Four sizes are provided, allowing selection to meet most job requirements. Single row boxes are 14" wide, 5 3/4" deep and 33" or 42" high. Double row boxes are 20" wide, 5 3/4" deep and 41" or 50" high. They are packed for separate shipment.

+ **FRONT** with hinged door, combination flush lock and spring catch, adjustable trim clamp and directory frame, completes the panelboard.

They are available in either flush or surface mounting, and are individually packaged.



★ BOX



● INTERIOR



▲ PLUG-IN BREAKERS



● BARRIER



+ FRONT



SCHEDULE



DISCOUNT

PAGE 39

CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

With Plug-In Type MM, M1 and M2 Thermal-Magnetic Circuit Breakers



3 ϕ . 4W. S/N 120/208 V. A.C.
3 ϕ . 3W. 240 V. A.C.
***1 ϕ . 3W. S/N 120/240 V. A.C.**
***1 ϕ . 2W. 240 V. A.C.**

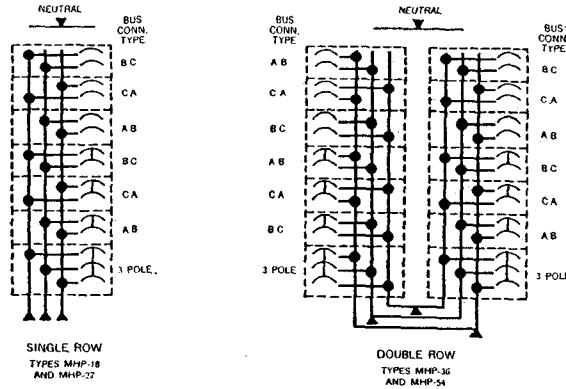
MAINS: LUGS ONLY

BRANCHES: Single Pole 15 to 50 A. 120 V. A.C.
 Two Pole 15 to 100 A. 240 V. A.C.
 Three Pole 15 to 100 A. 240 V. A.C.

BOXES: Galvanized Steel.
 Single Row — 14" Wide, 5 $\frac{3}{4}$ " Deep.
 Double Row — 20" Wide, 5 $\frac{3}{4}$ " Deep.

FRONTS: Trim with Door and Flush Lock. Blue-gray Finish.

WIRING GUTTERS: Single Row — 4" End and Side Gutters.
 Double Row — 6" End Gutters; 4" Side Gutters.



SELECTION OF COMPONENTS

1. List required circuits (ampere rating and poles).
2. Determine TOTAL breaker mounting space required from BREAKER MOUNTING SPACE dimensions under "PLUG-IN BREAKERS" table. Include BREAKER MOUNTING SPACE for planned future circuits.

3. Select interior from "INTERIOR BOX AND FRONT" table on basis of TOTAL "BREAKER MOUNTING SPACE" required. Corresponding box and front are also listed in this table.
4. Select required breakers from "PLUG-IN BREAKERS" table. Refer to footnotes at bottom of page for proper single pole and two pole bus connection types for single phase and three phase mains.

INTERIORS, BOXES AND FRONTS

Total Breaker Mounting Space (Inches)	Amp. Rating of Mains	Type	Complete List Price (Less Breakers)	Breaker Rows	Box Width (Inches)	Box Height (Inches)	COMPONENT ORDERING TABLES					
							Interior Assembly (Less Breakers)		Front		Box	
							Catalog Number	List Price	Catalog Number	List Price	Catalog Number	List Price
18	200	MHP-18	\$ 85.	Single	14	33	MHP-4218	\$ 54.	P-1433F or S	\$ 20.	P-33	\$ 11.
27	400	MHP-27	99.	Single	14	42	MHP-4227	63.	P-1442F or S	23.	P-42	13.
36	400	MHP-36	154.	Double	20	41	MHP-4436	94.	DF-142F or S	36.	MH-41	24.
54	400	MHP-54	173.	Double	20	50	MHP-4454	104.	DF-151F or S	41.	MH-50	28.

PLUG-IN BREAKERS

Amp. Trip Rating	Breaker Mounting Space	*2 SINGLE POLES				2 POLE				3 POLE		
		Bus Connection			List Price	Bus Connection			List Price	Breaker Mounting Space	Catalog Number	List Price
		AB	BC	CA		AB	BC	CA				
		Catalog Number	Catalog Number	Catalog Number		Catalog Number	Catalog Number	Catalog Number				
15	2"	MHAB-115	MHBC-115	MHCA-115	\$10.	MHAB-215	MHBC-215	MHCA-215	\$20.	3"	MH-315	\$28.
20		MHAB-120	MHBC-120	MHCA-120	10.	MHAB-220	MHBC-220	MHCA-220	20.		MH-320	28.
30		MHAB-130	MHBC-130	MHCA-130	10.	MHAB-230	MHBC-230	MHCA-230	20.		MH-330	28.
40		MHAB-140	MHBC-140	MHCA-140	10.	MHAB-240	MHBC-240	MHCA-240	20.		MH-340	28.
50		MHAB-150	MHBC-150	MHCA-150	10.	MHAB-250	MHBC-250	MHCA-250	20.		MH-350	28.
70	3"					MHAB-270	MHBC-270	MHCA-270	30.	4 $\frac{1}{2}$ "	MH-370	\$41.
100						MHAB-216	MHBC-216	MHCA-216	30.		MH-316	41.

*SINGLE PHASE THREE WIRE mains are accommodated by selecting breaker units having Type CA bus connections, wherein connections are made to the two outside bus bars only.

THREE PHASE FOUR WIRE "WYE" mains arrangement is a standard feature. See distributed phase paragraph for sequence phase connections of single-pole and two-pole branches.

THREE PHASE FOUR WIRE "DELTA" mains can be accommodated. The neutral on three phase four wire "Delta" systems is generally derived by center tapping one of the transformer phases. For this application, all single-pole and two-pole branches requiring a neutral are connected to the two outside bus bars through the use of breaker units having Type CA bus connections. The third bus bar (center bus) would be used only for 3-pole breakers in this system.

DISTRIBUTED PHASE bus connections for single pole or two pole branches are available by selecting proper assortment of Type AB, BC, and CA breaker units to provide sequence phase connections (see bus connection diagrams at top of page).

SUBFEED LUGS package assembly kits are available for adding a second set of lugs to the panelboards:
 SK-4052—200 A. lugs for MHP-18 and MHP-27..... \$ 13. list
 SK-4053—400 A. lugs for MHP-36 and MHP-54..... 17. list

*HANDLETIE can be used for converting two single poles to a double pole individual trip breaker. Cat. No. 40HT; List Price..... \$.10 each

HANDLE LOCK-OFF DEVICES:

Single Pole 15 to 50 A.—Cat. No. 40HT; List Price \$0.10 each
 Two Pole 15 to 50 A.—Cat. No. SK-5453; List Price \$1.60 each
 Three Pole 15 to 50 A.—Cat. No. SK-5454; List Price \$1.60 each
 Two Pole 70 and 100 A.—Cat. No. SK-5455; List Price \$3.00 each
 Three Pole 70 and 100 A. Cat. No. SK-5455; List Price \$3.00 each

EXAMPLE ESTIMATE 120/208V. 3 ϕ , 4W. SERVICE 200A. MAIN LUGS — FLUSH MTG.

Breaker Space	Components	Unit List Price	Total List Price
4"	4—20A. 1P. 1—MHAB-120	\$ 10.	\$ 10.
	1—MHBC-120	10.	10.
18"	6—40A. 3P. 6—MH-340	28.	168.
4 $\frac{1}{2}$ "	1—70A. 3P. 1—MH-370	41.	41.
26 $\frac{1}{2}$ "	1—27" Interior 1—Flush Front 1—Box	99.	99.
Total List Price.....			\$328.



CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

TYPES ML AND ML1, THERMAL-MAGNETIC CIRCUIT BREAKERS

250 VOLTS A.C. or 125/250 VOLTS D.C. ★

TYPE
MLN

MAINS: 2-Wire, 3-Wire, or 4-Wire.

BOXES: Galvanized Steel, 20" Wide, 5 3/4" Deep.
FRONTS: Trim with door and lock. Blue-gray Finish.

SOLID NEUTRAL (When Required). Priced According to Capacity of Mains.

100 A. or Less	Additional Hgt. *	225 A.	Additional Hgt. *	400 A.	Additional Hgt. *	600 A.	Additional Hgt. *
\$ 18.	...	\$23.	...	\$ 30.	3"	\$ 43.	6"

CIRCUIT BREAKER UNITS (Branches Only)

1 Pole			2 Pole			3 Pole		
2-Br. Circs.	Space Only	H	2-Br. Circs.	Space Only	H	2-Br. Circs.	Space Only	H
\$23. †	\$ 8.	1	\$53.	\$10.	2	\$78.	\$14.	3
...	...	...	90.	10.	4 1/2	116.	14.	4 1/2

BASE LIST — Includes 2 or 3 Pole Main Ungrounded Bus-Bars with lugs or main breaker when required. Priced according to capacity of mains and number of main ungrounded bus bars.

Poles	50 A.	H	100 A.	H	225 A.	H	400 A.	H	600 A.	H
2 P.	\$ 52.	13	\$ 52.	13	\$ 52.	13	\$ 74.	16	\$ 96.	19
3 P.	62.	13	62.	13	62.	13	84.	16	106.	...
2 P.	79.	19	97.	19	226.	25	499.	34	...	...
3 P.	101.	19	120.	19	275.	25	625.	34	...	...

* Base dimension "H" includes sufficient space for 100 A. and 225 A. neutral bar when required in panel. For 400 A. or 600 A. neutrals, additional height is required as shown in above tabulation.

★ For 250 V. 2 Wire D.C. service with no neutral in the system, obtain prices from right hand side of page 42 (250 V. D.C.).

† \$23. list price covers two (2) single pole A.C./D.C. Type ML breakers. For two (2) single pole A.C. only Type QB breakers, use \$14. list price.

Top Gutter

S/N

Twin Units

15, 20 30, 40 or 50 A.
70 or 100 A.

Base List

■ 2 or ■ 3P ■
▲ ▲ ▲
Main Lugs Only

2 (—) (Pole Main Breaker

3 (—) (Pole Main Breaker

Bottom Gutter

SPECIAL FEATURES

SPLIT MAIN BUS — Lugs only — 2 or 3 Pole

Poles	225 A.	H.	400 A. ▲	H.	600 A. ▲	H.
2 P.	\$24.	6"	\$51.	12"	\$60.	18"
3 P.	34.	9"	60.	12"	67.	18"

▲ For increasing side gutter from 4" to 6" add \$34.

SUB-FEED LUGS — With or Without Neutral Lug *

Poles	50, 100, 200 A.	400 A.	600 A.
2 P.	\$10.	\$34.	\$60.
3 P.	10.	40.	67.

* Sub-feed lugs furnished on same end as main lugs unless otherwise specified.

SUB-FEED CIRCUIT BREAKERS — With or without Neutral Lug. (Limited to one on a panelboard) †

225 A. ML3 FRAME SIZE							
Poles	† Circuit Breaker Sub-Feed	† Space for Future	Panel Height (H)				
			One Sub-Feed		Two Sub-Feeds		
			With S/N	W/o S/N	With S/N	W/o S/N	
2 P.	\$184. ea.	\$ 60. ea.	21"	12"	42"	33"	
3 P.	232. ea.	60. ea.	21"	12"	42"	33"	

† Sub-feed circuit breakers limited one to a panel except when panel has lugs only in mains, in which case two circuit breaker sub-feeds can be furnished. NOTE—When two circuit breaker sub-feeds are used and main lugs are 400 A. or 600 A., add \$34. for increasing width of side gutters to 6".

METHOD OF PRICING

1. Make a sketch, similar to the one shown at right, with main lugs or circuit breaker at top or bottom.
2. Insert ampere capacity of neutral bar when required.
3. Insert ampere capacity of branches required.
4. Insert ampere capacity, voltage and system of mains.
5. Insert height (H) in inches to the left of all items such as: solid neutral; branch units; base (which includes top and bottom gutters).
6. When total height exceeds 77 inches, estimate as two or more panels adding sub-feed lugs to each panel, so purchaser can cable panels together. (When total height is less than 77 inches, enough BLANK SPACE SECTIONS, at corresponding list price, must be added to equal 20 inches).
7. Insert at the right of each item the list price taken from tables at the left, and the sum will be the list price of the panel and cabinet.
8. NOTE: For odd circuits use one-half of twin unit price of corresponding pole and frame size.

EXAMPLE ESTIMATE

GUTTER		120/280 V., 3φ, 4W., S/N
	S/N 100A.	
1"	15A. 1P.	15A. 1P.
1"	15A. 1P.	40A. 1P.
3"	30A. 3P.	Blank
3"	30A. 3P.	50A. 3P.
13"	Main Lugs 200A.	
21"	GUTTER	
Total List Price of Panel including Cabinet.....\$243.		
Nearest box height — 23" — Cat. No. MH23 — 20" wide, 5 3/4" deep		

CABINET DIMENSIONS — For Cat. No. of Box only, prefix letters "MH" to heights below. Example: MH17

Width.....	20"
Depth.....	5 3/4"
Side Gutters.....	4"
Top and Bottom Gutters	
225A. Mains or less.....	4"
400A. Mains.....	6"
600A. Mains.....	8"

Cabinet Heights in Inches					
17	29	41	53	65	77
20	32	44	56	68	
23	35	47	59	71	
26	38	50	62	74	

NOTE: Panels without neutral bar have 4" top gutter regardless of mains size.

Illustration on page 38.

WIRING GUTTERS. Side gutters — 4"; top and bottom gutters for 225A. mains — 4", 400A. mains — 6", 600 A. Mains — 8".



SCHEDULE G2 DISCOUNT

PAGE 41

SQD SLV_000043

CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

TYPES ML AND WL SERIES THERMAL-MAGNETIC CIRCUIT BREAKERS

**TYPE
ML**

**250 VOLTS A.C. or 125/250 D.C. VOLTS and
600 VOLTS A.C. or 250 VOLTS D.C.**

MAINS: 2-Wire, 3-Wire or 4-Wire.

BOXES: 30" Wide, 8½" Deep; 40" Wide, 10" Deep. Blue-gray finish.

FRONTS: Trim with door and lock. Blue-gray finish.

250 V. A.C. OR 125/250 V. D.C. ★

**Prices Include Single and
Twin Circuit Breaker Unit,
as shown below.**

600 V. A.C. OR 250 V. D.C.

SOLID NEUTRAL (When Required). Priced According to Capacity of Mains.

225A	H	400A	H	600A	H	800A	H	1200A	H
\$23.	4½	\$30.	4½	\$43.	6	\$56.	6	\$71.	6

CIRCUIT BREAKER UNITS (Branches)

1 Pole			2 Pole			3 Pole		
2-Br. Circs.	Space Only	H	2-Br. Circs.	Space Only	H	2-Br. Circs.	Space Only	H
\$34. ▲	\$10.	1	\$68.	\$12.	2	\$96.	\$14.	3
			100.	12.	4½	128.	14.	4½
			368.	24.	6	464.	34.	6
			1-Br. Circ.	Space Only	H	1-Br. Circ.	Space Only	H
			422.	34.	9	541.	34.	9
			524.	34.	9	677.	34.	9

BASE LIST — Includes 2 or 3 pole main ungrounded bus bars, with lugs or main breaker when required. Priced according to capacity of mains.

225A	H	400A	H	600A	H	800A	H	1200A	H
\$80.	16½	\$100.	16½	\$130.	22½	\$160.	22½	\$220.	24
		130.	16½	160.	22½	193.	22½	253.	24
				193.	22½	253.	22½	321.	24

100A ML1	H *	225A ML3	H *	400A KL	H *	600A WL	H *
\$130.	16½	\$264.	18	\$52.	21	\$717.	21
144.	16½	312.	18	671.	21	870.	21

▲ \$34.00 list price covers two (2) single pole 125 volt A.C./D.C. Form A breakers. For two (2) single pole 15 or 20 ampere 277 volt A.C. only Form Y breakers, use \$38.00 list price.

Top Gutter

S/N

Breaker Type

**Twin Units
(2 Circs.)**

ML 15, 20 or 40

ML1 30 or 50A.

ML1 70 or 100A.

ML3 125, 150, 200 or 175, 225A.

**Single Units
(1 Circ.)**

KL 250, 300 or 350 or 400A.

WL 450, 500 550, or 600A.

BASE LIST is governed by largest branch or main breaker on panel and ampere capacity of the mains.

**"Lugs Only"
(Largest Brkr.)**

225A. or Less

400A. or Less

600A. or Less

Main Brkr.

2P. Main Brkr.

3P. Main Brkr.

Bottom Gutter

SOLID NEUTRAL (When Required). Priced According to Capacity of Mains.

225A	H	400A	H	600A	H	800A	H	1200A	H
\$23.	4½	\$30.	4½	\$43.	6	\$56.	6	\$71.	6

CIRCUIT BREAKER UNITS (Branches)

2 Pole			3 Pole		
2-Br. Circs.	Space Only	H	2-Br. Circs.	Space Only	H
\$122.	\$12.	4½	\$156.	\$14.	4½
148.	12.	4½	184.	14.	4½
368.	24.	6	464.	34.	6
1-Br. Circ.	Space Only	H	1-Br. Circ.	Space Only	H
422.	34.	9	541.	34.	9
524.	34.	9	677.	34.	9

BASE LIST — Includes 2 or 3 pole main ungrounded bus bars, with lugs or main breaker when required. Priced according to capacity of mains.

225A	H	400A	H	600A	H	800A	H	1200A	H
\$80.	16½	\$100.	16½	\$130.	22½	\$160.	22½	\$220.	24
		130.	16½	160.	22½	193.	22½	253.	24
				193.	22½	253.	22½	321.	24

100A ML1	H *	225A ML3	H *	400A KL	H *	600A WL	H *
\$154.	16½	\$264.	18	\$52.	21	\$717.	21
172.	16½	312.	18	671.	21	870.	21

H—Equals height. See paragraph 5 (Page 43) under Method of Pricing.

†600 and 800A. mains are equipped with 2 500MCM lugs per pole and 1200A. mains are equipped with 4 500MCM lugs per pole.

★For 250 V., 2 wire D.C. service with no neutral in the system, prices must be used from right hand side of page (250 V. D.C.).

*When panel has a main breaker it is mounted horizontally and fed by cables through the side wiring gutter. The base dimension above covers a 6" gutter top and bottom.

Illustration on Page 38.

CIRCUIT BREAKER DISTRIBUTION PANELBOARDS

SPECIAL FEATURES

SPECIAL FEATURES

SUB FEEDS — Lugs Only — (250 to 600 Volts)
When furnished on same end as main lugs, dimension H can be omitted for 800A. or less.

Poles	225A	H	400A	H	600A	H	800A	H	1200A	H
2P.	\$17.	4½	\$34.	4½	\$60.	10½	\$85.	10½	\$102.	12
3P.	22.	4½	40.	4½	67.	10½	94.	10½	111.	12

SPLIT BUS — Lugs — (250 or 600 Volts)

Poles	225A	H	400A	H	600A	H	800A	H	1200A	H
2P.	\$43.	6	\$51.	18	\$60.	18	\$85.	18	\$102.	24
3P.	51.	6	60.	18	67.	18	94.	18	110.	24

SCHEDULE G2 DISCOUNT

STANDARD BOXES

Boxes and fronts are made of code gauge steel, finished blue-gray. Door in front has Yale lock with SR-251 keys.

Box Type....	CB-3000-B	CB-4000-B
Box Width.....	30"	40"
Box Depth.....	8½"	10"
Maximum Circuit Breaker Unit.....	400 A.	600 A.
Side Gutters at 100 A. Breaker (ML1).....	6¾"	11¾"
Side Gutters at 225 A. Breaker (ML3).....	4¾"	9¾"
Side Gutters at 400 A. Breaker (KL).....	7"	12"
Side Gutters at 600 A. Breaker (WL).....	7"	9"
End Gutter at 225 A. Mains.....	7¾"	7¾"
End Gutter at 400 A. Mains.....	6¼"	6¼"
End Gutter at 600 A. Mains.....	12½"	12½"
End Gutter at 800 A. Mains.....	12½"	12½"
End Gutter at 1200 A. Mains.....	12½"	12½"
End Gutter—Opposite End to Main Lugs.....	6"	6"

Box Height	30" Wide Boxes		40" Wide Boxes	
	Box Cat. No.	★Front Cat. No.	Box Cat. No.	★Front Cat. No.
30	CB-3030-B	CB-3030-T	CB-4030-B	CB-4030-T
36	CB-3036-B	CB-3036-T	CB-4036-B	CB-4036-T
42	CB-3042-B	CB-3042-T	CB-4042-B	CB-4042-T
48	CB-3048-B	CB-3048-T	CB-4048-B	CB-4048-T
54	CB-3054-B	CB-3054-T	CB-4054-B	CB-4054-T
60	CB-3060-B	CB-3060-T	CB-4060-B	CB-4060-T
66	CB-3066-B	CB-3066-T	CB-4066-B	CB-4066-T
72	CB-3072-B	CB-3072-T	CB-4072-B	CB-4072-T
78	CB-3078-B	CB-3078-T	CB-4078-B	CB-4078-T
84	CB-3084-B	CB-3084-T	CB-4084-B	CB-4084-T

★Add suffix letters F or S to Front Cat. Nos. for Flush or Surface Mounting.

METHOD OF PRICING

1. Make a sketch, similar to the one shown (at right), with main lugs or main breaker at top or bottom.
2. Insert ampere capacity of neutral bar if required.
3. Insert ampere capacity of branches required (similar to that shown).
4. Insert ampere capacity, voltage and system of mains.
5. Insert height (H) in inches to the left of all items such as: solid neutral; each blank space; branch unit; BASE (which includes top and bottom gutters).
6. When total height exceeds 84 inches, estimate as two or more single panels adding sub-feed lugs to each panel, so purchaser can cable panels together. (When total height is less than 30 inches, enough BLANK SPACE SECTIONS, at corresponding list price, must be added to equal 30 inches.)
7. Insert at the right of each item the list price taken from tables on page 42 and the sum will be the list price of the panel and cabinet.
8. NOTE: For odd circuits use one-half of twin unit price of corresponding pole and frame size.

REPLACEMENT CIRCUIT BREAKERS

TYPE
ML

Prices listed below cover circuit breakers only (no bus connectors or mounting supports included) for replacing existing circuit breakers of same frame size or for mounting in space occupied by a half blank opposite an existing circuit breaker of same frame size as breaker to be installed.

If circuit breakers are required for installing in blank spaces which cover full panel width, order necessary circuit breakers at prices listed below, plus require "Bus Connector and Breaker Mounting Assemblies" as described under "Breaker Mounting Assemblies."

For Circuit Breaker Catalog numbers, refer to Catalog Section 2130.

Frame Size	Ampere Trip Rating	1 Pole	2 Pole		3 Pole	
		125 V. A.C. or D.C.	250 V. A.C. 125/250 V. D.C.	600 V. A.C. 250 V. D.C.	250 V. A.C. 125/250 V. D.C.	600 V. A.C.
		List	List	List	List	List
ML and ML1 *	15	\$9.40	\$23.50	* \$51.	\$34.70	* \$64.30
	20	9.40	23.50	* 51.	34.70	* 64.30
	30	9.40	23.50	* 51.	34.70	* 64.30
	40	9.40	23.50	* 51.	34.70	* 64.30
	50	9.40	23.50	* 51.	34.70	* 64.30
	70	39.30	* 39.30	* 63.20	* 51.	* 78.50
	100	.....	* 39.30	* 63.20	* 51.	* 78.50
ML3	125	.....	.....	160.	.....	197.
	150	.....	.....	160.	.....	197.
	175	.....	.....	160.	.....	197.
	200	.....	.....	160.	.....	197.
	225	.....	.....	160.	.....	197.
KL	250	.....	.....	380.	.....	475.
	300	.....	.....	380.	.....	475.
	350	.....	.....	380.	.....	475.
	400	.....	.....	380.	.....	475.
WL	450	.....	.....	464.	.....	589.
	500	.....	.....	464.	.....	589.
	550	.....	.....	464.	.....	589.
	600	.....	.....	464.	.....	589.

*Prices preceded by asterisk indicate ML1 frame.

SCHEDULE A DISCOUNT

BREAKER MOUNTING ASSEMBLIES

When breakers are to be installed in blank spaces which cover the full panel width, or, existing breakers are to be replaced by breakers of different frame sizes, it is then necessary to order "Bus Connector and Breaker Mounting Assemblies" in addition to the circuit breakers listed above. Refer to Catalog Price Section 2130 for catalog numbers and prices.

EXAMPLE ESTIMATE:

6"	600A. S/N	600A. Solid Neutral.....	\$ 43.
1"	2—50A. 1P. Spaces	2—50A. 1P. Spaces.....	10.
3"	50A. 3P.	1—50A. 3P. 250 V. Brkr.....	48.
4½"	70A. 3P.	1—30A. 3P. 250V. Brkr.....	48.
6"	225A. 3P.	2—70A. 3P. 250V. Brkr.....	128.
		2—225A. 3P. 250V. Brkr.....	464.
9"	500A. 2P.	1—500A. 2P. 250V. Brkr.....	524.
22½"	600A.	BASE—600A. Main Lugs.....	193.
52	120/208V. 3ø 4W	Total List of Panel & Cabinet.	1458.

Nearest cabinet height — 54" — Cat. No. CB-4054-B — 40" wide — 54" high — 10" deep.

SCHEDULE G2 DISCOUNT



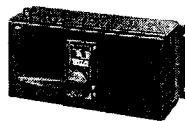
FUSIBLE DISTRIBUTION PANELBOARDS

QMB-SAFLEX (HP RATED) SWITCH UNITS

FUSIBLE DISTRIBUTION PANELBOARDS are now available in two types of heavy duty, horsepower rated switch units. — the QMB-SAFLEX type and the SAFLEX type. The new QMB-SAFLEX quick-make, quick-break units incorporate the same desirable features that have been well known for their record of safety, economy and dependability in the SAFLEX line. Both types of heavy duty, double-break switch units, that can be operated under maximum load conditions, are available in 30 through 600 ampere ratings, 250 and 600 volts, for either A.C. or D.C. applications.



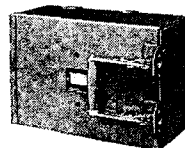
QMB-SAFLEX type panelboards feature Square D's new quick-make, quick break, horsepower rated front operated switch units. The QMB-SAFLEX units incorporate double-break sliding blades, fully interlocked cover, visible blades to facilitate inspection, and padlocking device for either "ON" or "OFF" positions. A voidable interlock mechanism is also provided in the cover for inspection and checking of fuses without turning the switch to the "OFF" position. All units are dual horsepower rated and Underwriters' approved for SERVICE ENTRANCE applications. QMB-SAFLEX switch units of 30 through 200 ampere ratings are equipped with plug-in stabs for plugging on the round bus bars of the panelboard. 400 and 600 ampere units are bolted to the main bus bars. Each circuit is individually enclosed in a steel box and front operable by a sturdy cast aluminum handle. The QMB-SAFLEX quick-make, quick-break panelboards are available as separately merchandised components from Square D Electrical Distributors stocks in 30 through 200 ampere rated units, 250 and 600 volts, and as factory assembled panelboards with units through 600 ampere ratings, 250 or 600 volts. The separately merchandised panelboards are provided without a door in the front, while factory assembled panelboards have a door with vault handle lock. Refer to Pages 45, 46, and 47 for listings and prices.



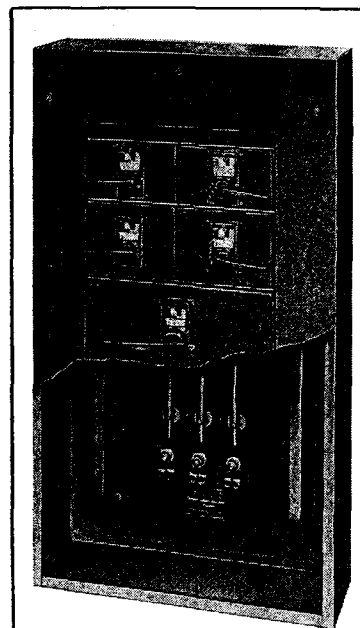
QMB Saflex Switch Unit



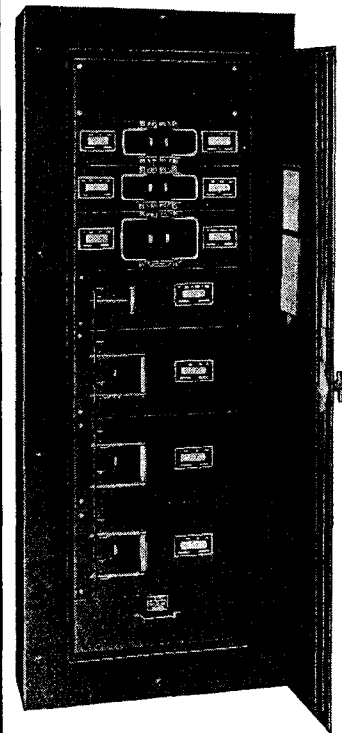
SAFLEX type panelboards incorporate Square D's well known cover operated horsepower rated Saflex switch units in 30 through 600 ampere ratings, for 250 or 575 volt services. Double break switch blades are carried by a rotary type blade holder mounted on the unit door permitting door to be closed with switch mechanism in either the "ON" or "OFF" position. Opening and closing of unit door operates the switch unit, and when the door is open, all accessible current carrying parts are dead. The Saflex unit includes padlocking facilities, positive pressure type fuse clips and switch jaws plus dual horsepower ratings permitting operation of switch unit under maximum load conditions. Refer to Pages 48 and 49 for listings and prices.



Saflex Switch Unit



QMB Saflex Fusible
Distribution Panelboard
Listed on Pages 45, 46 and 47

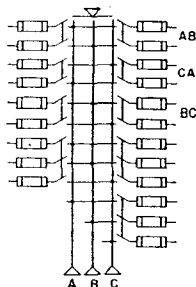


Saflex Fusible
Distribution Panelboard
Listed on Pages 48 and 49



FUSIBLE DISTRIBUTION PANELBOARDS - UNASSEMBLED

WITH QMB SAFLEX HP RATED PLUG-IN SWITCH UNITS



1 ϕ . 2W. 250 V. A.C. or D.C.
1 ϕ . 3W. S/N 125/250 V.
3 ϕ . 3W. 250 V. or 600 V. A.C.
3 ϕ . 4W. S/N 120/208 V. or 277/480 V. A.C.

MAINS: Main Lug Only; 200, 400 or 600 A.
Main Switch; 200 A. only.

BRANCHES: Quick-Make, Quick-Break H.P. Rated Plug-in Switch units
two or three pole, 30 to 200 ampere capacity.

BOXES: Code gauge steel without knockouts, finished blue-gray
30" wide by 10 1/2" deep.

FRONTS: Code gauge steel, without door, finished blue-gray.

WIRING GUTTERS: End gutters 7".
Side gutters 5 1/2".

TYPE
QMB SAFLEX
 PANELBOARD
 250 VOLTS A.C.
 OR D.C.
 600 VOLTS A.C.

SELECTION OF COMPONENTS

1. List required circuits including main switch if desired (ampere rating and poles).
2. Select catalog numbers of switch units and determine total required unit space from TABLE ONE.
3. Select interior, box and front catalog numbers based on required unit space from TABLE TWO or TABLE THREE, (or Mains capacity).
4. Select blanks if required to complete unit space from TABLE FOUR.

NOTE: For 1 ϕ 2W or 1 ϕ 3W applications select switch units having CA bus connections.
 For 3 ϕ 4W "Delta" applications all 2P switch units should have CA bus connections.
 For distributed phasing of 2P switch units select proper assortment of AB, CA and BC bus connections.

EXAMPLE ESTIMATE				
600 V. A.C. 3 ϕ . 3 W. SERVICE				
400 A. MAIN LUGS — SURFACE MOUNTING				
Components		Unit Mounting Space	List Price Each	Total List Price
4 — 30 A. 3 P.	2 — QMB-3603-T	12"	\$ 82.	\$ 164.
2 — 60 A. 3 P.	1 — QMB-3606-T	6"	82.	82.
2 — 100 A. 3 P.	1 — QMB-3610-T	7½"	120.	120.
1 — 200 A. 3 P.	1 — QMB-3620	9½"	150.	150.
1 — 1½" Blank	1 — QMB-1BL	34½"	1.50	1.50
		1½"		
1 — 36 Interior	1 — QMB-36	36"	190.	190.
1 — Front				
1 — Box				
Total List Price.....			\$ 707.50	

TABLE ONE — PLUG-IN SWITCH UNITS

Unit Type	Unit Ampere Rating	Unit Height (Inches)	250 VOLTS A.C. OR D.C.					*600 VOLTS A.C.	
			TWO POLE			THREE POLE		THREE POLE	
			Bus Connections			List Price	Catalog Number	List Price	Catalog Number
			AB	CA	BC				
* Branch Units	30-30 twin	6	QMB-2203-TL	QMB-2203-T	QMB-2203-TR	\$ 69.	QMB-3203-T	\$ 82.	QMB-3603-T
	60-60 twin	6	QMB-2206-TL	QMB-2206-T	QMB-2206-TR	69.	QMB-3206-T	82.	QMB-3606-T
	100-100 twin	7 1/2	QMB-2210-TL	QMB-2210-T	QMB-2210-TR	100.	QMB-3210-T	120.	QMB-3610-T
	200 single	9	QMB-2220-L	QMB-2220	QMB-2220-R	120.	QMB-3220	150.	QMB-3620
Main Switch	200 A.	9	.....	QMB-2220-M	.....	135.	QMB-3220-M	175.	QMB-3620-M

*30-60, 30-100, 60-100 twin units and two pole 600 V. units are available from factory stock. Refer to page 47 or Catalog Section 4620 for listings.

TABLE TWO — 1 ϕ . 2W. and 3 ϕ . 3W. INTERIORS, BOXES and FRONTS

Total Unit Mounting Space	Ampere Rating of Mains	Type	Complete List Price (less units)	Box Height (inches)	COMPONENT ORDERING TABLES					
					INTERIOR ASSEMBLY (less units)		FRONT		BOX	
					Catalog No.	List Price	Catalog No.	List Price	Catalog No.	List Price
24	200	QMB-24-2	\$ 145.	44	QMB-2444-2	\$ 75.	QM-2144-TS or TF	\$ 27.	QM-2144-B	\$ 43.
24	400	QMB-24-4	155.	44	QMB-2444-4	85.	QM-2144-TS or TF	27.	QM-2144-B	43.
36	400	QMB-36	190.	56	QMB-3656-4	105.	QM-2156-TS or TF	32.	QM-2156-B	53.
48	600	QMB-48	255.	68	QMB-4868-6	143.	QM-2168-TS or TF	40.	QM-2168-B	72.

TABLE THREE — 1 ϕ . 3W. and 3 ϕ . 4W. INTERIORS, BOXES and FRONTS

Total Unit Mounting Space	Ampere Rating of Mains	Type	Complete List Price (less units)	Box Height (inches)	COMPONENT ORDERING TABLES					
					INTERIOR ASSEMBLY (neutral included) (less units)		FRONT		BOX	
					Catalog No.	List Price	Catalog No.	List Price	Catalog No.	List Price
18	200	QMB-24-2 SN	\$ 168.	44	QMB-2444-2 SN	\$ 98.	QM-2144-TS or TF	\$ 27.	QM-2144-B	\$ 43.
18	400	QMB-24-4 SN	185.	44	QMB-2444-4 SN	115.	QM-2144-TS or TF	27.	QM-2144-B	43.
30	400	QMB-36-SN	220.	56	QMB-3656-4 SN	135.	QM-2156-TS or TF	32.	QM-2156-B	53.
42	600	QMB-48-SN	298.	68	QMB-4868-6 SN	186.	QM-2168-TS or TF	40.	QM-2168-B	72.

TABLE FOUR — BLANKS, NEUTRALS and ADAPTOR KITS

BLANKS				SOLID NEUTRAL ASSEMBLIES				ADAPTOR KITS— To Convert 60A to 30A Units		
Height	Catalog Number	List Price Each	Standard Pkg. Qty.	Amp. Cap.	Height	Catalog Number	List Price Each	Type Unit	Catalog Number	List Price Each
1 1/2	QMB-1BL	\$ 1.50	8	200 A.	6	QM-2 SN	\$ 23.	2 P. 250 V.	QMB-263-AL	\$ 3.
3	QMB-3BL	1.90	4	400 A.	6	QM-4 SN	30.	3 P. 250 V.	QMB-363-AL	4.
6	QMB-6BL	2.	4	600 A.	6	QM-6 SN	43.	3 P. 600 V.	QMB-363-AH	3.50
12	QMB-12BL	2.30	2							



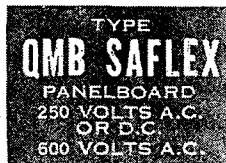
SCHEDULE **G1** DISCOUNT

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FUSIBLE DISTRIBUTION PANELBOARDS-ASSEMBLED

WITH QMB SAFLEX HP RATED SWITCH UNITS

FACTORY ASSEMBLED TYPE



MAINS: 2 Wire, 3 Wire or 4 Wire.

BOXES: 30" Wide, 13 3/4" Deep (200 A. Maximum Unit).
36" Wide, 17 3/4" Deep (600 A. Maximum Unit).

FRONTS: Trim with Door and Lock.

FINISH: Blue-Gray

250 VOLTS A.C. or D.C.
600 VOLTS A.C.

250 VOLTS A.C. OR D.C.; 600 VOLTS A.C.

SOLID NEUTRAL BAR (When required). Priced according to capacity of Mains.

200 A.	H	400 A.	H	600 A.	H	800 A.	H	1200 A.	H
\$ 23.	6	\$ 30.	6	\$ 43.	6	\$ 56.	12	\$ 71.	12

QMB SAFLEX BRANCH SWITCH UNITS

TWO POLE			THREE POLE		
2 Switch Unit	Space Only	Height	2 Switch Unit	Space Only	Height
\$ 82.	\$ 27.	6	\$ 100.	\$ 27.	6
82.	27.	6	100.	27.	6
124.	34.	7 1/2	160.	34.	7 1/2
1 Switch Unit	Space Only	Height	1 Switch Unit	Space Only	Height
\$ 62.	\$ 34.	7 1/2	\$ 80.	\$ 34.	7 1/2
140.	40.	9	186.	40.	9
310.	54.	12	420.	54.	12
405.	67.	15	510.	67.	15

BASE LISTS — Includes 2 or 3 pole ungrounded bus bars with lugs or main switch when required. Priced according to ampere capacity of the mains.

200 A.	H	400 A.	H	600 A.	H	800 A.	H	1200 A.	H
\$ 80.	20	\$ 100.	20	\$ 130.	20	\$ 160.	26	\$ 220.	26
		130.	20	160.	20	193.	26	253.	26
				193.	20	253.	26	321.	26
200 A.	H	400 A.	H	600 A.	H				
220.	29	440.	32	598.	35	....	...	....	...
266.	29	550.	32	703.	35	....	...	....	...

Base dimension H includes lug cover and 7" top and bottom gutters.

NOTE: If 100 ampere main switch is required price and dimension same as for 200 ampere main switch.

STANDARD MAIN LUG ARRANGEMENTS

Type	MAIN LUG ONLY					MAIN SWITCH		
Ampere Capacity.....	200 A.	400 A.	600 A.	800 A.	1200 A.	200 A.	400 A.	600 A.
Lugs per φ.....	1-250 MCM	2-350 MCM	2-500 MCM	3-500 MCM	4-500 MCM	1-250 MCM	2-350 MCM	2-500 MCM

SUB-FEED LUGS

Poles	200 A.	H	400 A.	H	600 A.	H	800 A.	H	1200 A.	H
2P.	\$ 17.	6	\$ 34.	12	\$ 60.	12	\$ 85.	18	\$102.	18
3P.	22.	6	40.	12	67.	12	94.	18	111.	18

When furnished on same end as main lugs, dimension H can be omitted on sub-feeds 600 A. or less.

SPLIT MAIN BUS

Poles	200 A.	H	400 A.	H	600 A.	H	800 A.	H	1200 A.	H
2P.	\$ 43.	6	\$ 51.	12	\$ 60.	12	\$ 85.	18	\$102.	18
3P.	51.	6	60.	12	67.	12	94.	18	110.	18

METHOD OF PRICING

1. Make a sketch with main lugs or main switch at top or bottom.
2. List required branch circuits including ampere capacity and number of poles. Include any spaces for future circuits.

30-60 twin units are available at same price as 60-60 twin.

30-100 or 60-100 twin units are available at same price as 100-100 twin unit.

30 and 60 ampere ratings are not available as single units. Should one 30 or 60 ampere unit be required, price as twin unit.

3. List neutral if required.
4. Insert mains capacity and voltage and type of distribution system.
5. Insert height in inches at the left of all items.
6. If total height exceeds 92 inches estimate as two or more single panelboards (separate base for each), adding sub-feed lugs to each so that contractor can cable panelboards together. If total height is less than 38 inches enough BLANK SPACE SECTIONS at list price must be added to equal 38 inches.
7. Insert at the right of each item the list prices taken from tables at left and the sum will be the list price of complete panelboard including the cabinet.

S/N

Twin Units

30 A	30 A
60 A	60 A
100 A	100 A

Single Units

100 A
200 A
400 A
600 A

BASE LIST is governed by largest branch or main switch unit on panel and by ampere capacity of the mains.

Main Lugs

200 A. Max.
400 A. Max.
600 A. Max.

Main Switch

2 P. Main Sw.
3 P. Main Sw.



FUSIBLE DISTRIBUTION PANELBOARDS-ASSEMBLED

QMB SAFLEX (HP RATED) SWITCH UNITS

STANDARD QMB SAFLEX PANELBOARD CABINETS

Cabinet Type	QM-2200	QW-6200
Width.....	30	36
Depth.....	13 3/4	17 3/4
Side Gutters.....	5 1/2	8 1/2
End gutter opposite mains.....	7	7
Gutter at 200 Amp. mains (one 250 MCM per ϕ).....	10 3/4	9 3/4
Gutter at 400 Amp. mains (two 350 MCM per ϕ).....	8 1/4	8 3/4
Gutter at 600 Amp. mains (two 500 MCM per ϕ).....	8 3/4	8 3/4
Gutter at 800 Amp. mains (three 500 MCM per ϕ).....	12	12
Gutter at 1200 Amp. mains (four 500 MCM per ϕ).....	12	11 3/8
Maximum QMB SAFLEX unit.....	200 ampere	600 ampere
Catalog numbers for boxes and fronts. Use box heights to complete cabinet type number	Standard box heights in inches	Standard box heights in inches
Add suffix letter B to indicate box.....	38	68
Add suffix letters TS to indicate surface front.....	44	74
Add suffix letters TF to indicate flush front.....	50	80
Example: — For flush cabinet 30" wide & 74" high Order QM-2274-B box and QM-2274-TF front.	56	86
	62	92

REPLACEMENT QMB SAFLEX BRANCH UNITS, BLANKS, NEUTRAL ASSEMBLIES, ADAPTOR KITS

WHEN ORDERING SPECIFY:

Catalog Number

Ampere Capacity and Voltage

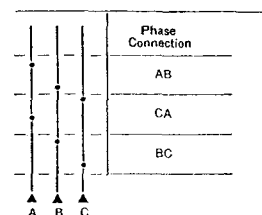
Number of Poles

Panel Serial Number (From Panelboard Nameplate)

All mounting hardware is included with units.

Order blanks, if required to fill out unit space, from listing below.

2 POLE BUS CONNECTIONS



* BRANCH UNITS

Unit Ampere Rating	Unit Height	250 VOLTS A.C. OR D.C.						600 VOLTS A.C.					
		Two Pole			Three Pole			Two Pole			Three Pole		
		Phase Conn.	Catalog Number	List Price	Catalog Number	List Price	Phase Conn.	Catalog Number	List Price	Catalog Number	List Price	Phase Conn.	List Price
30-30	6	CA	QMB-2203-T	\$ 69.	QMB-3203-T	\$ 82.	CA	QMB-2603-T	\$ 69.	QMB-3603-T	\$ 82.	CA	
30-30	6	AB	QMB-2203-TL	69.			AB	QMB-2603-TL	69.			AB	
30-30	6	BC	QMB-2203-TR	69.			BC	QMB-2603-TR	69.			BC	
60-60	6	CA	QMB-2206-T	69.	QMB-3206-T	82.	CA	QMB-2606-T	69.	QMB-3606-T	82.	CA	
60-60	6	AB	QMB-2206-TL	69.			AB	QMB-2606-TL	69.			AB	
60-60	6	BC	QMB-2206-TR	69.			BC	QMB-2606-TR	69.			BC	
100-100	7 1/2	CA	QMB-2210-T	100.	QMB-3210-T	120.	CA	QMB-2610-T	100.	QMB-3610-T	120.	CA	
100-100	7 1/2	AB	QMB-2210-TL	100.			AB	QMB-2610-TL	100.			AB	
100-100	7 1/2	BC	QMB-2210-TR	100.			BC	QMB-2610-TR	100.			BC	
200	9	CA	QMB-2220	120.	QMB-3220	150.	CA	QMB-2620	120.	QMB-3620	150.	CA	
200	9	AB	QMB-2220-L	120.			AB	QMB-2620-L	120.			AB	
200	9	BC	QMB-2220-R	120.			BC	QMB-2620-R	120.			BC	
400	12	CA	QMB-2240	266.	QMB-3240	366.	CA	QMB-2640	266.	QMB-3640	366.	CA	
400	12	AB	QMB-2240-L	266.			AB	QMB-2640-L	266.			AB	
400	12	BC	QMB-2240-R	266.			BC	QMB-2640-R	266.			BC	
600	15	CA	QMB-2260	348.	QMB-3260	453.	CA	QMB-2660	348.	QMB-3660	453.	CA	
600	15	AB	QMB-2260-L	348.			AB	QMB-2660-L	348.			AB	
600	15	BC	QMB-2260-R	348.			BC	QMB-2660-R	348.			BC	

*30-60, 30-100 and 60-100 twin units are available. Refer to catalog section 4620 for listings.

MAIN SWITCH UNITS

200	9"	CA	QMB-2220-M	\$ 135.	QMB-3220-M	\$ 175.	CA	QMB-2620-M	\$135.	QMB-3620-M	\$ 175.
400	12"	CA	QMB-2240-M	306.	QMB-3240-M	420.	CA	QMB-2640-M	306.	QMB-3640-M	420.
600	15"	CA	QMB-2260-M	388.	QMB-3260-M	520.	CA	QMB-2660-M	388.	QMB-3660-M	520.

FILLER BLANKS			SOLID NEUTRAL ASSEMBLIES				FUSE ADAPTOR KITS (to convert 60 A. units to 30 A.)		
Unit Height	Catalog Number	List Price	Ampere Capacity	Unit Height	Catalog Number	List Price	Unit Type	Catalog Number	List Price
1 1/2"	QMB-1BL	\$ 1.50	200 A.	6"	QM-2 SN	\$ 23.	2 P. 250 V.	QMB-263-AL	\$ 3.
3"	QMB-3BL	1.90	400 A.	6"	QM-4 SN	30.	3 P. 250 V.	QMB-363-AL	4.
6"	QMB-6BL	2.	600 A.	6"	QM-6 SN	43.	3 P. 600 V.	QMB-363-AH	3.50
12"	QMB-12 BL	2.30							



SCHEDULE **G1** DISCOUNT

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FUSIBLE DISTRIBUTION PANELBOARDS

SAFLEX (HP RATED) SWITCH UNITS

SAFLEX

250 VOLTS A.C. or D.C.
Narrow Type

For 600 volt applications, use QMB SAFLEX on page 46.

MAINS: 2 Wire, 3 Wire or 4 Wire

BOXES: 20" Wide, 5 3/4" Deep. (100 A. Maximum Unit).

Prices include Single or Twin
Fusible Switches, as shown
below.

SOLID NEUTRAL BAR (When Required). Priced according to Capacity of Mains.

200 A.	Height	400 A.	Height	600 A.	Height
\$23.	3"	\$30.	6"	\$43.	9"

SAFLEX SW. UNITS (Branches)

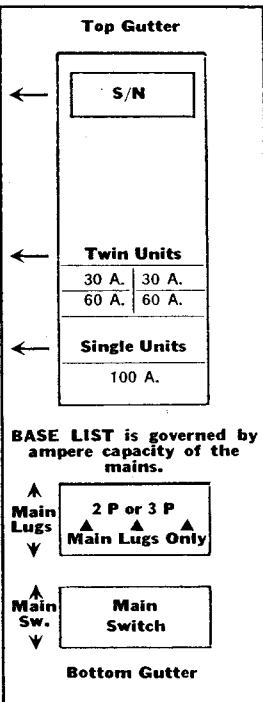
2 Pole			3 Pole		
2 Switch Unit	Space Only	Height	2 Switch Unit	Space Only	Height
\$32.	\$15.	3"	\$45.	\$15.	3"
42.	15.	4 1/2"	61.	29.	6"
1 Switch Unit	Space Only	Height	1 Switch Unit	Space Only	Height
\$35.	\$22.	4 1/2"	\$45.	\$29.	6"

BASE LISTS — Includes 2 or 3 pole main ungrounded bus bars, with lugs or main switch when required. Priced according to capacity of mains.

MAIN LUGS	200 A.	Ht.	400 A.	Ht.	600 A.	Ht.
	\$ 76.	11"	\$ 95.	14"	\$123.	17"

MAIN SWITCH	Poles	60 A.	Ht.	100 A.	Ht.
	2 Pole	\$111.	17"	\$111.	17"
	3 Pole	121.	17"	121.	17"

Height (H). See paragraph 5 under Method of Pricing. Units can be furnished with smaller fuse clips at same list price.



METHOD OF PRICING

1. Make a sketch with main lugs top or bottom.
2. Insert ampere capacity of neutral bar if required.
3. Insert ampere capacity of branches required.
4. Insert ampere capacity and voltage of mains.
5. Insert height (H) in inches at the left of all items such as: solid neutral; each blank space only; branch units; BASE (which includes main lugs when required, with necessary top and bottom gutters); sub-feed lugs; split bus.
6. When total height exceeds 77 inches, estimate as two or more single panels adding sub-feed lugs to each panel so that purchaser can cable panels together. When total height is less than 20 inches, enough BLANK SPACE SECTIONS at list price must be added to equal 20 inches.
7. Insert at the right of each item the list price taken from tables above and the sum will be list price of complete panel and cabinet.
8. When the two branches of a twin unit are required of not same ampere capacity, such as for example — a 30-60 twin unit, price same as 60-60 twin unit. NOTE: Twin units cannot be furnished with a branch on one side and a space for future branch on the other side. Should one 30 A. branch be required, price as twin. Should one 60 A. branch be required, price as twin unit.

SPECIAL FEATURES

SPLIT MAIN BUS — Lugs Only — 2 or 3 Pole

Poles	200 A.	Height	400 A. ▲	Height	600 A. ▲	Height
2 P.	\$24.	9"	\$51.	12"	\$60.	15"
3 P.	34.	9"	60.	12"	67.	15"

▲ For increasing side gutter from 4" to 6" add, \$34.

SUB-FEED LUGS — When furnished on same end as main lugs, height dimension can be omitted.

Poles	200 A.	Height *	400 A.	Height *	600 A.	Height *
2 P.	\$17.	6"	\$34.	6"	\$60.	12"
3 P.	22.	6"	40.	6"	67.	12"

*When panelboard has solid neutral bar and sub-feed lugs are mounted opposite to main lug end, add 3" to height dimensions listed above.

CABINET DIMENSIONS — For Cat. No. of Box only, add prefix letters "MH" to heights below. Example: MH17

Width.....	20"
Depth.....	5 3/4"
Side Gutters.....	4"
Top and Bottom Gutters	
200 A. Mains or less.....	4"
400 A. Mains.....	6"
600 A. Mains.....	8"

Cabinet Heights in Inches					
20	32	44	56	68	
23	35	47	59	71	
26	38	50	62	74	
29	41	53	65	77	

NOTE: Panels without neutral bar have 4" top gutter regardless of mains size.

Illustration on page 44.

STANDARD FINISH. Fronts — blue-gray; Boxes — Galvanized Steel.

WIRING GUTTERS. Side gutters — 4"; top and bottom gutters for 200 A. mains — 4", 400 A. mains — 6", 600 A. mains — 8".



FUSIBLE DISTRIBUTION PANELBOARDS

SAFLEX (HP RATED) SWITCH UNITS

250 VOLTS A.C. or D.C.
Standard Width

SAFLEX

For 600 volt applications, use QMB SAFLEX on page 46.

MAINS: 2 Wire, 3 Wire or 4 Wire.

BOXES: 27" Wide, 10 3/4" Deep (200 A. Maximum Unit).

31" Wide, 13 1/2" Deep (600 A. Maximum Unit).

Prices include Single or Twin fusible switches, as shown below.

SOLID NEUTRAL BAR (When required). Priced according to capacity of Mains.

200A	H	400A	H	600A	H	800A	H	1200A	H
\$23.	6	\$30.	6	\$43.	12	\$56.	6	\$71.	12

SAFLEX SW. UNITS (Branches)

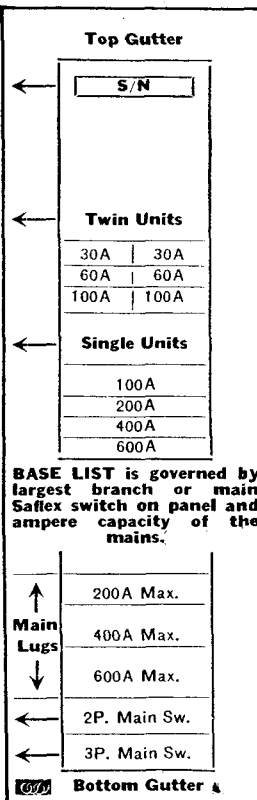
2 Pole			3 Pole		
2-Sw. Unit	Space Only	H	2-Sw. Unit	Space Only	H
\$ 34.	\$ 15.	3	\$ 48.	\$ 15.	3
44.	22.	4 1/2	64.	29.	6
74.	22.	4 1/2	96.	29.	6
1-Sw. Unit	Space Only	H	1-Sw. Unit	Space Only	H
\$ 37.	\$ 22.	4 1/2	\$ 48.	\$ 29.	6
94.	29.	6	132.	43.	9
228.	43.	9	330.	65.	15
355.	65.	15	466.	65.	15

BASE LISTS — Includes 2 or 3 pole main ungrounded bus bars, with lugs or main switch when required. Priced according to capacity of mains.

200A	H	400A	H	600A	H	800A†	H	1200A†	H
\$80.	15	\$100.	15	\$130.	21	\$160.	21	\$220.	27
		130.	21	160.	27	193.	27	253.	27
				193.	27	253.	27	321.	27
174.	21	358.	36	548.	42				
212.	24	460.	36	659.	42				

Illustration on page 44.

FINISH: Blue-Gray



METHOD OF PRICING

Special attention should be given to paragraph 8.

1. Make a sketch with main lugs top or bottom.
2. Insert ampere capacity of neutral bar if required.
3. Insert ampere capacity of branches required.
4. Insert ampere capacity and voltage of mains.
5. Insert height (H) in inches at the left of all items such as: solid neutral; each blank space only; branch units; BASE (which includes main lugs when required, with necessary top and bottom gutters); sub-feed lugs, split bus.
6. When total height exceeds 93 inches, estimate as two or more single panels adding sub-feed lugs to each panel so that purchaser can cable panels together. When total height is less than 27 inches, enough BLANK SPACE SECTIONS at list price must be added to equal 27 inches.
7. Insert at the right of each item the list price taken from tables above and the sum will be list price of complete panel and cabinet.
8. When the two branches of a twin unit are required of not same ampere capacity, such as for example — a 30-60 twin unit, price same as a 60-60 twin unit. NOTE: Twin units cannot be furnished with a branch on one side and space for future branch on the other side. Should one 30 A. branch be required, price as twin. Should one 60 A. branch be required, price as twin unit. When main switch is required, single unit must be used (NOT twin unit).
9. When 100 A. main switch is required, price as branch unit and include main lug base price.

SPECIAL FEATURES

SUB-FEEDS — Lugs Only

When furnished on same end as main lugs, dimension H can be omitted on sub-feeds 600A. or less.

Poles	200A	H	400A	H	600A	H	800A†	H	1200A†	H
2P.	\$17.	6	\$34.	6	\$60.	12	\$85.	12	\$102.	12
3P.	22.	6	40.	6	67.	12	94.	12	111.	12

†600A. and 800A. mains are equipped with 2 500MCM lugs per pole and 1200A. mains with 4 500MCM lugs per pole.

SPLIT BUS — Lugs

Poles	200A	H	400A	H	600A	H	800A	H	1200A	H
2P.	\$43.	6	\$51.	18	\$60.	18	\$85.	18	\$102.	18
3P.	51.	6	60.	18	67.	18	94.	18	110.	18

H—Equals height. See paragraph 5 under Method of Pricing. Units can be furnished with smaller fuse clips at same list price.



SCHEDULE

G2

DISCOUNT

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FUSIBLE DISTRIBUTION PANELBOARDS

SAFLEX (HP RATED) SWITCH UNITS

STANDARD SAFLEX PANEL CABINETS —

Cabinet Type	MH Box (only)	DF-6600	DF-6700
Width.....	20"	27"	31"
Depth.....	5 3/4"	10 3/4"	13 1/2"
End or Side Gutters (Except at Mains).....	4"	5"	7"
Gutter at 200 Amp. Mains (0000 Cable).....	4 1/2"	6"	9 1/2"
Gutter at 400 Amp. Mains (500 MCM Cable).....	6"	10 1/4"	14 1/4"
Gutter at 600 Amp. Mains (1000 MCM Cable).....	9"	10"	14"
Gutter at 800 Amp. Mains (two 500 MCM Cables).....	.....	14 1/4"	12 1/4"
Gutter at 1200 Amp. Mains (two 1000 MCM Cables).....	11" Wide Units	17" Wide Units	All Units
Will Accommodate.....	100A Single or Less	200A or Less	600A or Less
Saflex Units.....	250 Volts Max.	250 or 575 Volts	250 or 575 Volts
	Total Height of Cabinet in Inches	Total Height of Cabinet in Inches	Total Height of Cabinet in Inches
	20 35 50 65	27 51 75	45 69 93
	23 38 53 68	33 57 81	51 75
	26 41 56 71	39 63 87	57 81
	29 44 59 74	45 69 93	63 87
	32 47 62 77		

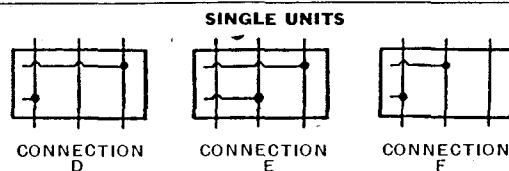
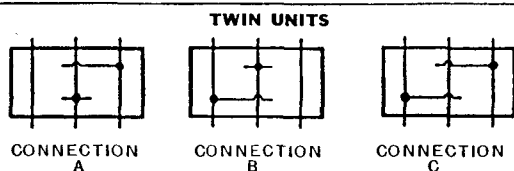
For Catalog Number, Prefix MH, *DF-66, or *DF-67 to Height of Cabinet; i.e., MH 20 for Box 20" W., 20" H., or DF-6639 For Cabinet 27" W., 39" H.

*(Suffix letter B indicates Box; Suffix letter T indicates trim).

SPECIFY FLUSH OR SURFACE MOUNTING.

Finish. Fronts — blue gray; Boxes — 20" wide are unpainted galvanized steel, 27" and 31" wide are blue gray.

REPLACEMENT SAFLEX UNITS AND BLANKS —



11" Wide units have handle on right side. All others have handle on left side.

Connections are shown looking through the unit from face of panel.

Unit Type	250 VOLT UNITS							575 VOLT UNITS			
	Ampere Rating	11" Wide Units			17" Wide Units			Ampere Rating	17" Wide Units		
		Height	Catalog Number	†List Price	Height	Catalog Number	†List Price		Height	Catalog Number	†List Price
2 Pole Twin	30-30	3"	DF-0651-1	\$ 29.	3"	SK-2737-1	\$ 37.	30-30	4 1/2"	DF-2171-1	\$ 63.
	30-30	4 1/2"	DF-0621	34.	4 1/2"	DF-2141-1	45.	60-60	4 1/2"	DF-2172-1	63.
	60-60	4 1/2"	DF-0622	34.	4 1/2"	DF-2142-1	45.				
	100-100	.....	.....	.....	4 1/2"	DF-2133-1	61.				
2 Pole Single	100	4 1/2"	DF-0723	34.	4 1/2"	DF-2723	40.	100	6"	DF-2193-1	57.
	200	.....	.....	.....	6"	DF-2144-1	74.	200	6"	DF-2194-1	110.
	400	.....	.....	.....	9"	DF-2115	204.	400	15"	DF-2175-1	250.
	400	.....	.....	.....	15"	DF-2105-1	210.	600	15"	DF-2196-1	382.
	600	.....	.....	.....	15"	DF-2106-1	333.				
3 Pole Twin	30-30	3"	DF-0661-1	36.	3"	SK-2739-1	44.	30-30	6"	DF-8171-1	87.
	30-30	6"	DF-0631	48.	6"	DF-8141-1	61.	60-60	6"	DF-8172-1	87.
	60-60	6"	DF-0632	48.	6"	DF-8142-1	61.				
	100-100	.....	.....	.....	6"	DF-8133-1	89.				
3 Pole Single	100	6"	DF-0733	48.	6"	DF-8733	53.	100	6"	DF-8193-1	72.
	200	.....	.....	.....	9"	DF-8144-1	109.	200	9"	DF-8194-1	148.
	400	.....	.....	.....	15"	DF-8105-1	264.	400	15"	DF-8175-1	330.
	600	.....	.....	.....	15"	DF-8106-1	413.	600	15"	*DF-8176-1	476.

†Prices include copper bus-bar connectors.

*Units are 18 3/4" wide and can be used only in type DF-6700 series boxes.

BLANKS (For use when Units are removed)

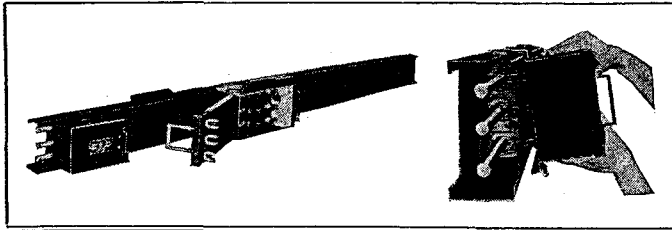
Height Inches	11" Wide Cat. No.	17" Wide Cat. No.	List Price
1 1/2	DF8300	DF8209	\$2.65
3	DF8301	DF8219	3.30
4 1/2	DF8302	DF8229	4.00
6	DF8303	DF8239	4.70
9	.....	DF8249	5.30

WHEN ORDERING SPECIFY:

Catalog Number.
Letter Indicating Connections (A, B, etc.) for 2-pole only.
Ampere Capacity and Voltage.
Number of Poles.
If Twin Units, State Ampere Capacity of Both Sides.
Whether Branch or Main Switch.
Panel Serial Number. (See Name Plate.)



PLUG-IN DUCT



Square D Plug-In Duct is an extremely flexible system of power distribution to branch circuits. Round bus bars provide greater mechanical strength and resistance to short circuit stresses. Steel enclosure and rotating doors over plug-in openings exclude dust and dirt. Plug-in units are easily attached. Powerful contact jaws, affording positive pressure, can be "rocked" into position on bus bars. Five units may be attached to either side of each ten-foot section. Flexible couplings join Plug-in bus bars — absorb expansion or contraction and eliminate section alignment problems.

STRAIGHT LENGTHS AND FITTINGS

No. of Poles and Voltage	Rating Amp.	STRAIGHT LENGTHS		*ELBOW		*TEE		*CROSS	
		Cat. No.	List Price per Ft.	Cat. No.	List Price		Cat. No.	List Price	
					Labor Only	Complete Device		Labor Only	Complete Device
2P. 600 V.	225A	SD-1242	\$ 8.50	SD-1242-L	\$ 92.	\$126.	SD-1242-T	\$110.	\$161.
	400A	SD-1243	13.	SD-1243-L	92.	144.	SD-1243-T	110.	188.
	600A	SD-1245	17.	SD-1245-L	92.	160.	SD-1245-T	110.	212.
	800A	SD-1247	25.	SD-1247-L	92.	192.	SD-1247-T	110.	260.
	1000A	SD-1241	30.	SD-1241-L	92.	212.	SD-1241-T	110.	290.
3P. 600V.	225A	SD-1342	\$ 9.50	SD-1342-L	\$ 92.	\$130.	SD-1342-T	\$110.	\$167.
	400A	SD-1343	14.	SD-1343-L	92.	148.	SD-1343-T	110.	194.
	600A	SD-1345	18.	SD-1345-L	92.	164.	SD-1345-T	110.	218.
	800A	SD-1347	27.	SD-1347-L	92.	200.	SD-1347-T	110.	272.
	1000A	SD-1341	33.	SD-1341-L	92.	224.	SD-1341-T	110.	308.
3φ 4W. 277/480V.	225A	SD-1852	\$ 12.	SD-1852-L	110.	\$158.	SD-1852-T	\$130.	\$202.
	400A	SD-1853	19.	SD-1853-L	110.	186.	SD-1853-T	130.	244.
	600A	SD-1855	23.	SD-1855-L	110.	202.	SD-1855-T	130.	268.
	800A	SD-1457	33.	SD-1457-L	110.	242.	SD-1457-T	130.	328.
	1000A	SD-1451	41.	SD-1451-L	110.	274.	SD-1451-T	130.	376.
	225A	SD-1852-X	\$152.	SD-1852-X	152.	\$248.	SD-1852-X	\$152.	\$248.
	400A	SD-1853-X	152.	SD-1853-X	152.	304.	SD-1853-X	152.	304.
	600A	SD-1855-X	152.	SD-1855-X	152.	336.	SD-1855-X	152.	336.
	800A	SD-1457-X	152.	SD-1457-X	152.	416.	SD-1457-X	152.	416.
	1000A	SD-1451-X	152.	SD-1451-X	152.	480.	SD-1451-X	152.	480.

Straight Lengths — Available in 6, 7, 8, and 10-foot lengths. When ordering by catalog numbers add suffix number to designate other than 10-foot length (i.e., SD-1342-6, SD-1342-7, SD-1341-8). Other lengths can be furnished special and will require longer delivery. Sliding type hanger brackets are included in prices of straight lengths — one bracket for each 5 feet of duct.
Elbow — Labor only prices do not include duct material; complete device prices include labor and 4 feet of duct material.

Tee — Labor only prices do not include duct material; complete device prices include labor and 6 feet of duct material.
Cross — Labor only prices do not include duct material; complete device prices include labor and 8 feet of duct material.

*When ordering elbows, tees, or crosses add suffix letter to catalog number — "E" (edgewise) or "F" (flatwise) (i.e., SD-1342-LE, SD-1343-LF).

No. of Poles and Voltage	Rating Amp.	END CLOSURE		*CABLE TAP BOX		†FLANGED END		▲BUS EXTENSION		REDUCER (UNFUSED)	
		Cat. No.	List Price	Cat. No.	List Price	Without Bus Extension		1 Foot Bus Extension		Cat. No.	Price List Labor Only
						Cat. No.	List Price	Cat. No.	List Price		
2P. 600V.	225A	SD-1005A	\$ 10.	SD-3242	\$ 66.	SD-1345-FE	\$ 38.	SD-1245-F X-1	\$ 12.	SD-1241-R	\$78. 78.
	400A	SD-1005A	10.	SD-3245	66.	SD-1345-FE	38.	SD-1245-F X-1	12.		
	600A	SD-1005A	10.	SD-3245	66.	SD-1345-FE	38.	SD-1245-F X-1	12.		
	800A	SD-1001A	14.	SD-3241	96.	SD-1241-FE	42.	SD-1241-F X-1	22.		
	1000A	SD-1001A	14.	SD-3241	96.	SD-1341-FE	42.	SD-1241-F X-1	22.		
3P. 600V.	225A	SD-1005A	\$ 10.	SD-3342	\$ 80.	SD-1345-FE	\$ 38.	SD-1345-F X-1	\$ 18.	SD-1341-R	\$84. 84.
	400A	SD-1005A	10.	SD-3345	80.	SD-1345-FE	38.	SD-1345-F X-1	18.		
	600A	SD-1005A	10.	SD-3345	80.	SD-1345-FE	38.	SD-1345-F X-1	18.		
	800A	SD-1001A	14.	SD-3341	108.	SD-1341-FE	42.	SD-1341-F X-1	33.		
	1000A	SD-1001A	14.	SD-3341	108.	SD-1341-FE	42.	SD-1341-F X-1	33.		
3φ 4W. 277/480V.	225A	SD-1005A	\$ 10.	SD-3852	\$ 86.	SD-1345-FE	\$ 38.	SD-1855-F X-1	\$ 24.	SD-1451-R	\$108. 108.
	400A	SD-1005A	10.	SD-3855	86.	SD-1345-FE	38.	SD-1855-F X-1	24.		
	600A	SD-1005A	10.	SD-3855	86.	SD-1345-FE	38.	SD-1855-F X-1	24.		
	800A	SD-1001A	14.	SD-3451	116.	SD-1341-FE	42.	SD-1451-F X-1	39.		
	1000A	SD-1001A	14.	SD-3451	116.	SD-1341-FE	42.	SD-1451-F X-1	39.		

★Cable Tap Box price does not include an end closure, therefore, when tap box is used at end of run, be sure to order an end closure.

†Flanged End prices cover flanged collar fittings, without bus extension and do not include any duct footage. For flanged end fitting with bus extensions use price of fitting as listed without bus extension, then add for necessary bus extension from price table above.

▲Bus Extension is used with flanged ends for connecting to switchboards, panelboards, safety switches, etc. Standard extensions are available in 1, 2, and 3 foot lengths. For 2 foot length, change suffix number in catalog number from 1 to 2 and price as 2 feet of bus extension. For 3 foot length, change suffix number in catalog number from 1 to 3 and price as 3 feet of bus extension.

Reducer (Unfused) — Is a joint where copper is reduced to a lower capacity. Above prices include labor and material for reducer only. (Duct footage not included). Estimate duct footage of capacity required, to center of reducer and add price from above.

Plug-in duct reducers from 600 A. or 400 A. to a lower capacity do not require an addition in price or change in length of duct run. When plug-in or feed-in ducts of 800 A. or larger are to be reduced, use the price of the larger duct capacity to be connected to the reducer. Local inspection ruling or National Electrical Code, Article 364, shall govern the use of unfused reducers.

FINISH — Blue-Gray.



SCHEDULE



DISCOUNT

PAGE 51

PLUG-IN DUCT

OFFSETS AND PLUG-IN UNITS

No. of Poles and Voltage	Rating Amp.	AMOUNT OF OFFSET											
		24"			30"			36"			42"		
		*Cat. No.	List Price		*Cat. No.	List Price		*Cat. No.	List Price		*Cat. No.	List Price	
			Labor Only	Complete Device		Labor Only	Complete Device		Labor Only	Complete Device		Labor Only	Complete Device
2P. 600V.	225A	SD-1242-024	\$184.	\$235.	SD-1242-030	\$184.	\$239.25	SD-1242-036	\$184.	\$243.50	SD-1242-042	\$184.	\$247.75
	400A	SD-1243-024	184.	262.	SD-1243-030	184.	268.50	SD-1243-036	184.	275.	SD-1243-042	184.	281.50
	600A	SD-1245-024	184.	286.	SD-1245-030	184.	294.50	SD-1245-036	184.	303.	SD-1245-042	184.	311.50
	800A	SD-1247-024	184.	334.	SD-1247-030	184.	346.50	SD-1247-036	184.	359.	SD-1247-042	184.	371.50
	1000A	SD-1241-024	184.	364.	SD-1241-030	184.	379.	SD-1241-036	184.	394.	SD-1241-042	184.	409.
3P. 600V.	225A	SD-1342-024	\$184.	\$241.	SD-1342-030	\$184.	\$245.75	SD-1342-036	\$184.	\$250.50	SD-1342-042	\$184.	\$255.25
	400A	SD-1343-024	184.	268.	SD-1343-030	184.	275.	SD-1343-036	184.	282.	SD-1343-042	184.	289.
	600A	SD-1345-024	184.	292.	SD-1345-030	184.	301.	SD-1345-036	184.	310.	SD-1345-042	184.	319.
	800A	SD-1347-024	184.	346.	SD-1347-030	184.	359.50	SD-1347-036	184.	373.	SD-1347-042	184.	386.50
	1000A	SD-1341-024	184.	382.	SD-1341-030	184.	398.50	SD-1341-036	184.	415.	SD-1341-042	184.	431.50
3φ 4W. 277/480V.	225A	SD-1852-024	\$220.	\$292.	SD-1852-030	\$220.	\$298.	SD-1852-036	\$220.	\$304.	SD-1852-042	\$220.	\$310.
	400A	SD-1853-024	220.	334.	SD-1853-030	220.	343.50	SD-1853-036	220.	353.	SD-1853-042	220.	362.50
	600A	SD-1855-024	220.	358.	SD-1855-030	220.	369.50	SD-1855-036	220.	381.	SD-1855-042	220.	392.50
	800A	SD-1457-024	220.	418.	SD-1457-030	220.	434.50	SD-1457-036	220.	451.	SD-1457-042	220.	467.50
	1000A	SD-1451-024	220.	466.	SD-1451-030	220.	486.50	SD-1451-036	220.	507.	SD-1451-042	220.	527.50

Labor only prices do not include duct material; complete device prices include labor and duct material equal to 4 feet plus the amount of offset.
*When ordering, add suffix letters EL, ER or F to catalog number.

For offsets greater than 42", use two elbows plus necessary footage between the elbows.

SCHEDULE E2 DISCOUNT

PLUG-IN UNITS — CIRCUIT BREAKER TYPE

Type of Breaker Unit	Amps.	2 POLE UNITS				3 POLE UNITS				3φ, 4W., UNITS			
		250 V. A.C. 125/250 V. D.C.		600 V. A.C. †250 V. D.C.		250 V. A.C. 125/250 V. D.C.		600 V. A.C.		120/208 V. A.C.		277/480 V. A.C.	
		Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price
*ML and ML1 Frames	15	*SD-76215	\$ 54.	†SD-75615	\$ 86.	*SD-76315	\$ 68.	SD-75715	\$100.	*SD-76915	\$ 76.	SD-75415	\$110.
	20	*SD-76220	54.	†SD-75620	86.	*SD-76320	68.	SD-75720	100.	*SD-76920	76.	SD-75420	110.
	30	*SD-76230	54.	†SD-75630	86.	*SD-76330	68.	SD-75730	100.	*SD-76930	76.	SD-75430	110.
	40	*SD-76240	54.	†SD-75640	86.	*SD-76340	68.	SD-75740	100.	*SD-76940	76.	SD-75440	110.
	50	*SD-76250	54.	†SD-75650	86.	*SD-76350	68.	SD-75750	100.	*SD-76950	76.	SD-75450	110.
	70	SD-75270	78.	†SD-75670	100.	SD-75370	90.	SD-75770	116.	SD-75970	98.	SD-75470	124.
	100	SD-75216	78.	†SD-75616	100.	SD-75316	90.	SD-75716	116.	SD-75916	98.	SD-75416	124.
ML3 Frame	125	.....	.....	SD-78617	\$221.	.....	.....	SD-78717	\$262.	.....	.....	SD-78417	\$275.
	150	.....	.....	SD-78618	221.	.....	.....	SD-78718	262.	.....	.....	SD-78418	275.
	175	.....	.....	SD-78619	221.	.....	.....	SD-78719	262.	.....	.....	SD-78419	275.
	200	.....	.....	SD-78626	221.	.....	.....	SD-78726	262.	.....	.....	SD-78426	275.
	225	.....	.....	SD-78627	221.	.....	.....	SD-78727	262.	.....	.....	SD-78427	275.

Circuit Breaker Plug-in Units can be plugged in at any opening of a plug-in duct.
†For 2 Pole 250 V. D.C. in the 100 A. Frame size, add suffix letters D.C. following catalog number in this group.
*Catalog numbers preceded by asterisk indicate ML frame.

PLUG-IN UNITS — FUSIBLE (SAFLEX) TYPE

Rating Amp.	250 V.						575 V.					
	2P 2 FUSE		3P 3 FUSE		4P 3 FUSE		2P 2 FUSE		3P 3 FUSE		4P 3 FUSE	
	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price
30A	SD-9251	\$ 30.	SD-9351	\$ 33.	SD-9451	\$ 41.	SD-9241	\$ 32.	SD-9341	\$ 35.	SD-9441	\$ 43.
60A	SD-9252	32.	SD-9352	36.	SD-9452	44.	SD-9242	34.	SD-9342	38.	SD-9442	46.
100A	SD-9253	44.	SD-9353	48.	SD-9453	56.	SD-9243	46.	SD-9343	52.	SD-9443	60.
200A	SD-9254	111.	SD-9354	122.	SD-9454	138.	SD-9244	118.	SD-9344	134.	SD-9444	166.
400A	SD-9255	260.	SD-9355	286.	SD-9455	312.	SD-9245	274.	SD-9345	300.	SD-9445	326.
600A	SD-9256	338.	SD-9356	372.	SD-9456	398.	SD-9246	358.	SD-9346	391.	SD-9446	417.

Fusible Switch Plug-in Units — 30 to 200 A. can be plugged in at any opening of a plug-in duct. Horsepower ratings are the same as on saflex panel units. 400A. and 600A. can be bolted to the busses of plug-in duct between any two straight sections or at end of a plug-in duct run, however, when unit is placed at end of run, price does not include an end closure for closing end of run. 400 or 600A. units can be supplied as main switches by adding suffix letters "LB"

to catalog number — no change in price. When ordering 400 or 600A. units add suffix letter "E" for end type and "C" for center type, and also indicate ampere rating of duct to which they will be mounted.

Unfused Switch Units — When required, use price of 250V. Fusible switch units for either 250V. or 575V. use.

SCHEDULE E1 DISCOUNT

PLUG-IN DUCT

PLUG-IN AND ADAPTOR UNITS

CLAMP-ON UNITS — CIRCUIT BREAKER TYPE

Type of Breaker Unit	Amps.	2 POLE UNITS		3 POLE UNITS		3 ϕ , 4 W. UNITS	
		600 V. A.C. 250 V. D.C.		600 V. A.C.		277/480 V. A.C.	
		Cat. No.	List Price	Cat. No.	List Price	Cat. No.	List Price
KL Frame	250	SD-65628	\$ 556.	SD-65728	\$ 656.	SD-65428	\$ 682.
	300	SD-65636	556.	SD-65736	656.	SD-65436	682.
	350	SD-65638	556.	SD-65738	656.	SD-65438	682.
	400	SD-65646	556.	SD-65746	656.	SD-65446	682.
WL Frame	450	SD-69648	640.	SD-69748	\$ 770.	SD-69448	\$ 796.
	500	SD-69656	640.	SD-69756	770.	SD-69456	796.
	550	SD-69658	640.	SD-69758	770.	SD-69458	796.
	600	SD-69666	640.	SD-69766	770.	SD-69466	796.

Circuit Breaker Clamp-On Units may be bolted to busses of plug-in duct between any two straight sections or at end of plug-in duct run. When used at end of run, be sure to order an end closure.

When ordering clamp-on units specify end or center type and rating of duct to which units will be connected. Clamp-on units can be supplied as lug to bus main breakers by adding suffix letters "LB" to above catalog numbers.

SCHEDULE E1 DISCOUNT

PLUG-IN UNITS — CAPACITOR TYPE

3 ϕ Capacitor KVA	With 3P. Fusible Switch			With 3P. Circuit Breaker			
	Amps.	*230V. A.C. 60 Cycle	*460V. A.C. 60 Cycle	230V. A.C. 60 Cycle		460 V. A.C. 60 Cycle	
				Amps.	List	Amps.	List
5.0	60A.	\$510.	\$420.	40A.	\$560.	15A.	\$510.
7.5	60A.	610.	....	50A.	650.	....	....
10.0	60A.	....	\$490.	....	....	40A.	\$590.
15.0	60A.	....	590.	....	....	50A.	690.

Capacitor plugs consist of a 3P. fusible switch, or 3P. circuit breaker, connected ahead of a 3 phase capacitor unit having discharge resistors for draining the stored charge in accordance with N. E. C. rulings. Capacitors should not be connected in circuit under light or no-load conditions. *600 Volt Fuses must be furnished by customer for 230 V. and 460 V. Capacitor Plugs. **Note** — prices cannot be used for 575 V. applications.

PLUG-IN UNITS — GROUND INDICATOR

Cat. No. — SD-9371 — 250 V. 3P. Unit — \$64. list each
Cat. No. — SD-9381 — 575 V. 3P. Unit — \$64. list each

PLUG-IN UNITS — MISCELLANEOUS

Various types of plug-in units such as Combination Starters, Contactors, Transformers, and Plug-In Panelboards are also available. For further information contact your nearest Square D Field Office.

ADAPTORs — FUSIBLE SWITCHES

No. of Poles and Fuses	Voltage	200 AMPS.			400 AMPS.			600 AMPS.			800 AMPS.			1000 AMPS.		
		Cat. No.	List Price		Cat. No.	List Price		Cat. No.	List Price		Cat. No.	List Price		Cat. No.	List Price	
			Labor and Switch	Complete with Duct Footage		Labor and Switch	Complete with Duct Footage		Labor and Switch	Complete with Duct Footage		Labor and Switch	Complete with Duct Footage		Labor and Switch	Complete with Duct Footage
2P.-2F.	250V.	SD-9254-BB	\$440.	\$474.	SD-9255-BB	\$490.	\$503.	SD-9256-BB	\$556.	\$573.	SD-0257-BB	\$744.	\$ 844.	SD-0258-BB	\$840.	\$ 960.
3P.-3F.	250V.	SD-9354-BB	460.	498.	SD-9355-BB	536.	550.	SD-9356-BB	626.	644.	SD-0357-BB	860.	968.	SD-0358-BB	1046.	1178.
4P.-3F.	250V.	SD-9454-BB	490.	538.	SD-9455-BB	584.	603.	SD-9456-BB	678.	701.	SD-0457-BB	932.	964.	SD-0458-BB	1162.	1326.
2P.-2F.	575V.	SD-9244-BB	\$470.	\$504.	SD-9245-BB	\$556.	\$569.	SD-9246-BB	\$622.	\$639.	SD-0247-BB	\$810.	\$ 910.	SD-0248-BB	\$978.	\$1098.
3P.-3F.	575V.	SD-9344-BB	490.	528.	SD-9345-BB	590.	604.	SD-9346-BB	692.	710.	SD-0347-BB	912.	1020.	SD-0348-BB	1114.	1246.
4P.-3F.	575V.	SD-9444-BB	520.	568.	SD-9445-BB	644.	663.	SD-9446-BB	756.	779.	SD-0447-BB	992.	1124.	SD-0448-BB	1244.	1408.

Switch Adaptors are used for joining two sections of unlike ratings of plug-in duct in accordance with the National Electrical Code.

Labor only prices include the adaptor switch but no duct material; complete device prices include labor and adaptor switch plus 1 foot of plug-in duct for the

200, 400 and 600 ampere adaptor switches and 4 feet of plug-in duct for all other adaptor switch sizes.

Unfused switch adaptors for 250 V. or 575 V. can be supplied, if specified on order, at the 250 V. fusible unit prices.

ADAPTORs — CIRCUIT BREAKERS

Amps.	LIST PRICES								
	2 POLE			3 POLE			3 ϕ , 4 WIRE		
	600 V. A.C.—250 V. D.C.			600 V. A.C.			277/480 V. A.C.		
	Catalog Number	Labor and Circuit Breaker	Complete With Duct Footage	Catalog Number	Labor and Circuit Breaker	Complete With Duct Footage	Catalog Number	Labor and Circuit Breaker	Complete With Duct Footage
225	SD-78627-BB	\$ 576.	\$ 610.	SD-78727-BB	\$ 636.	\$ 674.	SD-78427-BB	\$ 662.	\$ 710.
400	SD-65646-BB	780.	832.	SD-65746-BB	866.	922.	SD-65446-BB	952.	1028.
600	SD-69666-BB	932.	1000.	SD-69766-BB	1118.	1190.	SD-69466-BB	1148.	1240.

Circuit Breaker Adaptors are used for joining two sections of unlike ratings of plug-in duct in accordance with the National Electrical Code ruling, Article 364.

Labor only prices include the adaptor breaker but no duct material; complete device prices include 4 feet of plug-in duct for all circuit breaker adaptors.



SCHEDULE E2 DISCOUNT

PAGE 53

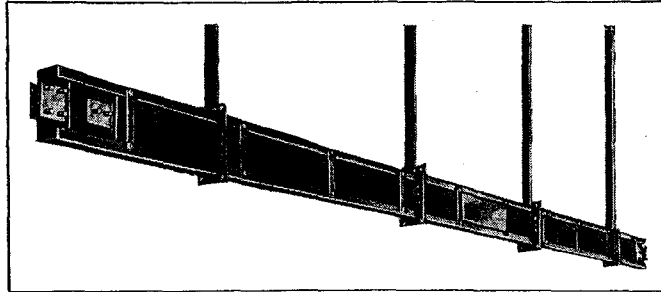
FEED-IN DUCT

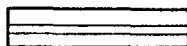
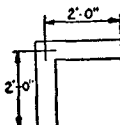
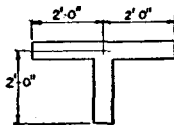
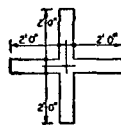
STRAIGHT LENGTHS AND FITTINGS

Square D Feed-In Duct is a very high efficiency, heavy power feeder with **lowest known voltage drop characteristics**. Exclusive design requires no ventilation for limiting temperature rise, permits completely enclosed dust-excluding structure. Rigid construction resists heavy electrical stresses. Absence of all-metal enclosure eliminates "hum" and iron losses.

"One-split" bus with halves positioned on either side of other two buses, permits close spacing and electrical symmetry important to reduction of both energy loss and voltage drop.

Solid ebonized asbestos insulating plates which totally enclose bus, have great mechanical and high dielectric strength, conduct heat readily, are impervious to moisture and resistant to arc. Surge clamps every 24" give structural and mechanical strength necessary to withstand 50,000 ampere "shorts".



												
		6-7-8-10 FT.										
No. of Poles and Voltage	Rating Amp.	STRAIGHT LENGTHS		*ELBOW			*TEE			*CROSS		
		Catalog	List Price per Foot	Catalog Number	List Price		Catalog Number	List Price		Catalog Number	List Price	
					Labor Only	Complete Device		Labor Only	Complete Device		Labor Only	Complete Device
2P. 600 V.	600	FD-2060-S	\$ 16.	FD-2060-L	\$124.	\$188.	FD-2060-T	\$154.	\$250.	FD-2060-X	\$184.	\$312.
	800	FD-2080-S	22.	FD-2080-L	124.	212.	FD-2080-T	154.	286.	FD-2080-X	184.	360.
	1000	FD-2120-S	30.	FD-2120-L	124.	244.	FD-2120-T	154.	334.	FD-2120-X	184.	424.
	1350	FD-2135-S	35.	FD-2135-L	124.	264.	FD-2135-T	154.	364.	FD-2135-X	184.	464.
	1600	FD-2160-S	41.	FD-2160-L	124.	288.	FD-2160-T	154.	400.	FD-2160-X	184.	512.
	2000	FD-2200-S	53.	FD-2200-L	124.	336.	FD-2200-T	154.	472.	FD-2200-X	184.	608.
	2500	FD-2250-S	70.	FD-2250-L	124.	404.	FD-2250-T	154.	574.	FD-2250-X	184.	744.
	3000	FD-2300-S	86.	FD-2300-L	154.	498.	FD-2300-T	184.	700.	FD-2300-X	214.	902.
4000	FD-2400-S	110.	FD-2400-L	154.	594.	FD-2400-T	184.	844.	FD-2400-X	214.	1094.	
3P. 600 V.	600	FD-3060-S	\$ 25.	FD-3060-L	\$124.	\$224.	FD-3060-T	\$154.	\$304.	FD-3060-X	\$184.	\$384.
	800	FD-3080-S	33.	FD-3080-L	124.	256.	FD-3080-T	154.	352.	FD-3080-X	184.	448.
	1000	FD-3120-S	41.	FD-3120-L	124.	288.	FD-3120-T	154.	400.	FD-3120-X	184.	512.
	1350	FD-3135-S	49.	FD-3135-L	124.	320.	FD-3135-T	154.	448.	FD-3135-X	184.	576.
	1600	FD-3160-S	57.	FD-3160-L	124.	352.	FD-3160-T	154.	496.	FD-3160-X	184.	640.
	2000	FD-3200-S	76.	FD-3200-L	124.	428.	FD-3200-T	154.	610.	FD-3200-X	184.	792.
	2500	FD-3250-S	108.	FD-3250-L	124.	556.	FD-3250-T	154.	802.	FD-3250-X	184.	1048.
	3000	FD-3300-S	130.	FD-3300-L	154.	674.	FD-3300-T	184.	964.	FD-3300-X	214.	1254.
4000	FD-3400-S	170.	FD-3400-L	154.	834.	FD-3400-T	184.	1204.	FD-3400-X	214.	1574.	
3φ, 4W. 277/480 V. 50% Neutral	600	FD-4060-S	\$ 32.	FD-5060-L	\$154.	\$282.	FD-5060-T	\$184.	\$376.	FD-5060-X	\$214.	\$470.
	800	FD-4080-S	41.	FD-5080-L	154.	318.	FD-5080-T	184.	430.	FD-5080-X	214.	542.
	1000	FD-4120-S	49.	FD-5120-L	154.	350.	FD-5120-T	184.	478.	FD-5120-X	214.	606.
	1350	FD-4135-S	57.	FD-5135-L	154.	382.	FD-5135-T	184.	526.	FD-5135-X	214.	670.
	1600	FD-4160-S	65.	FD-5160-L	154.	414.	FD-5160-T	184.	574.	FD-5160-X	214.	734.
	2000	FD-4200-S	86.	FD-5200-L	154.	498.	FD-5200-T	184.	700.	FD-5200-X	214.	902.
	2500	FD-4250-S	125.	FD-5250-L	154.	654.	FD-5250-T	184.	934.	FD-5250-X	214.	1214.
	3000	FD-4300-S	155.	FD-5300-L	184.	804.	FD-5300-T	214.	1144.	FD-5300-X	246.	1486.
4000	FD-4400-S	205.	FD-5400-L	184.	1004.	FD-5400-T	214.	1444.	FD-5400-X	246.	1886.	

*When ordering elbows, tees or crosses, add suffix letter to catalog number — "E" (edgewise) or "F" (flatwise)—(i.e. FD-3160-TE, FD-2300-XF).

Straight Lengths—Available in 6, 7, 8 and 10 foot lengths. When ordering by catalog numbers, add suffix number to designate length (i.e. FD-3160-S7, FD-2200-S10). Hanger brackets (one for each 5 feet of duct) and joint connection parts are included in duct prices.

Elbow—Labor only prices do not include duct material; complete device prices include labor and 4 feet of duct material.

Tee and Cross—Labor only prices do not include duct material; complete device prices include labor and 6 feet of duct material for tees and 8 feet of duct material for crosses.

Weatherproof Duct — See Page 55.

FINISH — Blue gray.



FEED-IN DUCT

FITTINGS

No. of Poles and Voltage	Rating Amp.	END CLOSURE		*CABLE TAP BOX		†FLANGED END			BUS EXTEN- SION	REDUCER (UNFUSED)	
		Catalog Number	List Price	Catalog Number	List Price	Catalog Number	List Price		List Price per Foot	Catalog Number	List Price Labor Only
							Labor Only	Complete Device			
2P. 600 V.	600	FD-5135-EC	\$ 24.	FD-2060-TB	\$118.	FD-2060-FE	\$ 50.	\$ 82.	\$ 12.	FD-2060-R	\$ 92.
	800	FD-5135-EC		FD-2080-TB	126.	FD-2080-FE	52.	96.	16.	FD-2080-R	116.
	1000	FD-5135-EC	24.	FD-2120-TB	132.	FD-2120-FE	58.	118.	22.	FD-2120-R	128.
	1350	FD-5135-EC	24.	FD-2135-TB	146.	FD-2135-FE	62.	132.	28.	FD-2135-R	152.
	1600	FD-5200-EC	28.	FD-2160-TB	154.	FD-2160-FE	64.	146.	32.	FD-2160-R	170.
	2000	FD-5200-EC	28.	FD-2200-TB	162.	FD-2200-FE	68.	174.	44.	FD-2200-R	208.
	2500	FD-5300-EC	38.	FD-2250-TB	179.	FD-2250-FE	72.	212.	54.	FD-2250-R	254.
	3000	FD-5300-EC	38.	FD-2300-TB	202.	FD-2300-FE	74.	246.	60.	FD-2300-R	300.
4000	FD-5400-EC	46.	FD-2400-TB	293.	FD-2400-FE	78.	298.	88.	FD-2400-R	370.	
3P. 600 V.	600	FD-5135-EC	\$ 24.	FD-3060-TB	\$148.	FD-3060-FE	\$ 50.	\$100.	\$ 18.	FD-3060-R	\$128.
	800	FD-5135-EC	24.	FD-3080-TB	156.	FD-3080-FE	52.	118.	24.	FD-3080-R	156.
	1000	FD-5135-EC	24.	FD-3120-TB	162.	FD-3120-FE	58.	140.	33.	FD-3120-R	174.
	1350	FD-5135-EC	24.	FD-3135-TB	178.	FD-3135-FE	62.	160.	42.	FD-3135-R	204.
	1600	FD-5200-EC	28.	FD-3160-TB	186.	FD-3160-FE	64.	178.	52.	FD-3160-R	228.
	2000	FD-5200-EC	28.	FD-3200-TB	202.	FD-3200-FE	68.	220.	68.	FD-3200-R	288.
	2500	FD-5300-EC	38.	FD-3250-TB	217.	FD-3250-FE	72.	288.	82.	FD-3250-R	378.
	3000	FD-5300-EC	38.	FD-3300-TB	240.	FD-3300-FE	74.	334.	92.	FD-3300-R	446.
4000	FD-5400-EC	46.	FD-3400-TB	338.	FD-3400-FE	78.	418.	122.	FD-3400-R	562.	
3φ, 4W. 277/480 V. 50% Neutral	600	FD-5135-EC	\$ 24.	FD-4060-TB	162.	FD-5060-FE	\$ 50.	\$114.	\$ 21.	FD-4060-R	\$154.
	800	FD-5135-EC	24.	FD-4080-TB	168.	FD-5080-FE	52.	134.	28.	FD-4080-R	186.
	1000	FD-5135-EC	24.	FD-4120-TB	178.	FD-5120-FE	58.	156.	39.	FD-4120-R	208.
	1350	FD-5135-EC	24.	FD-4135-TB	196.	FD-5135-FE	62.	176.	50.	FD-4135-R	240.
	1600	FD-5200-EC	28.	FD-4160-TB	203.	FD-5160-FE	64.	194.	60.	FD-4160-R	264.
	2000	FD-5200-EC	28.	FD-4200-TB	219.	FD-5200-FE	68.	240.	76.	FD-4200-R	346.
	2500	FD-5300-EC	38.	FD-4250-TB	235.	FD-5250-FE	72.	322.	96.	FD-4250-R	438.
	3000	FD-5300-EC	38.	FD-4300-TB	261.	FD-5300-FE	74.	384.	108.	FD-4300-R	522.
4000	FD-5400-EC	46.	FD-4400-TB	358.	FD-5400-FE	78.	488.	144.	FD-4400-R	670.	

*Cable Tap Box does not require an end closure when used at end of run. When ordering cable tap box, add suffix letter to catalog number — "C" (center type) or "E" (end type). (i.e. FD-3120-CTB, FD-3120-ETB).

†Flanged End — Labor only prices do not include duct material; complete device prices include labor, 2 feet of duct material and 7 inch flared bus extension. For bus extension longer than standard, add extra from price table above.

Bus Extension — Is used in conjunction with flanged ends or transformer tap openings. When connecting a flanged end to a panel or safety switch, a 2-foot

bus extension is usually required. When connecting a flanged end to a switch-board, a 3-foot bus extension is usually required.

Reducer (Unfused) — Is a joint where copper is reduced to a lower capacity. Above prices include labor and material for reducer only. (Duct footage not included). Estimate duct footage of capacity required, to center of reducer and add price from above. Local inspection ruling or National Electrical Code, Article 364, shall govern the use of unfused reducers.

FINISH — Blue-Gray.

UNDERWRITERS' APPROVED WEATHERPROOF FEED-IN DUCT CAN BE SUPPLIED FOR HORIZONTAL OR VERTICAL RISER INSTALLATIONS IN EITHER THE FLATWISE OR EDGEWISE MOUNTINGS.

The Following List Price Additions are to be made to Standard Feed-In Duct Prices Listed on Pages 44 and 45.

**WEATHERPROOF
FEED-IN DUCT**

Amp. Rating	STRAIGHT LENGTHS, AND ELBOWS			TEES		CROSSES		CABLE TAP BOXES AND FLANGED ENDS			END CLOSURE
	List Price Addition per Foot			List Price Addition		List Price Addition		List Price Addition			List Price Addition
	2 P.	3 P.	3φ, 4W.	2 P. & 3 P.	3φ, 4 W.	2 P. & 3 P.	3 φ, 4 W.	2 P.	3 P.	3φ, 4 W.	2 P., 3 P., & 3φ, 4 W.
600	\$ 13.	\$ 13.	\$ 13.	\$ 73.	\$ 88.	\$ 88.	\$103.	\$ 58.	\$ 74.	\$ 81.	\$ 13.
800	13.	13.	13.	73.	88.	88.	103.	63.	77.	85.	13.
1000	13.	13.	13.	73.	88.	88.	103.	67.	81.	88.	13.
1350	15.	15.	15.	73.	88.	88.	103.	76.	93.	97.	15.
1600	19.	22.	24.	73.	88.	88.	103.	80.	97.	108.	22.
2000	24.	29.	34.	73.	88.	88.	103.	89.	109.	120.	29.
2500	26.	34.	40.	73.	88.	88.	103.	98.	122.	132.	34.
3000	34.	40.	47.	88.	103.	103.	118.	109.	133.	146.	40.
4000	40.	53.	61.	88.	103.	103.	118.	161.	189.	204.	53.

WHEN ORDERING weatherproof feed-in duct, it is necessary that a layout sketch accompany the order. Sketch must bear all dimensions and also whether duct is in flatwise or edgewise mounting position. If duct passes through a wall, be sure to indicate wall thickness and dimension from wall surface to tap box, elbow, flanged end or end of run.

Weatherproof Duct Enclosure consists of two-piece galvanealed steel housing with drip-hoods on top of duct, joint connections and cable tap boxes.

FINISH — Blue-gray.



SCHEDULE



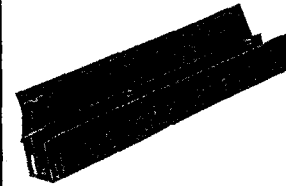
DISCOUNT

PAGE 55

LAY-IN DUCT AND FITTINGS

HINGE COVER

Hinge Cover Lay-in Duct is a UL approved steel enclosed wiring trough wireway and auxiliary gutter. All lengths and connectors are hinged to provide an unobstructed wireway to "lay-in" conductors. Fittings have removable covers held by captive screws to continue the "lay-in" feature through the entire installation. Installation time is reduced as much as 20% over conventional systems since threading or pulling of conductors is no longer necessary. Knockouts match other Square D switches, breakers, service entrance equipment, contactors and starters. Available in $2\frac{1}{2}" \times 2\frac{1}{2}"$, $4" \times 4"$ and $6" \times 6"$ sizes. Finish: Blue-gray enamel. Knockouts: $2\frac{1}{2}" \times 2\frac{1}{2}"$ — $\frac{1}{2}$, $\frac{3}{4}$; $4" \times 4"$ — $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$; $6" \times 6"$ — $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2.



Hinge Cover Length Connector Included



Universal Hanger



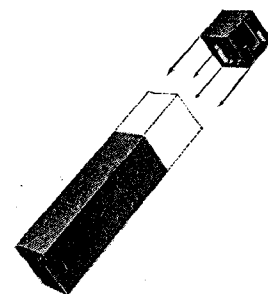
Closing Plate



90° Elbow



Junction Box



To Modify Standard Lengths Cut Off Excess Length and Bolt On Connector

Component	Description	Number Connectors Furnished	$2\frac{1}{2}" \times 2\frac{1}{2}"$		$4" \times 4"$		$6" \times 6"$	
			Cat. No.	List	Cat. No.	List	Cat. No.	List
Length.....	1 Foot.....	1	LD21	\$ 4.25	LD41	\$ 4.95	LD61	\$15.95
	2 Foot.....	1	LD22	5.05	LD42	6.05	LD62	20.00
	5 Foot.....	1	LD25	8.40	LD45	9.90	LD65	32.00
Elbow.....	90 degrees.....	1	LD290L	7.20	LD490L	7.70	LD690L	17.50
	45 degrees.....	1	LD245L	7.20	LD445L	7.70	LD645L	17.50
	22½ degrees.....	1	LD225L	7.20	LD425L	7.70	LD625L	17.50
Tee.....	Branch from runs.....	2	LD2T	7.90	LD4T	8.40	LD6T	29.30
Junction Box.....	For T, L or Cross (4 sides—1 opening each)	2	LD2J	9.50	LD4J	10.20	LD6J	12.00
Pull Box.....	For T, L or Cross (2 sides—1 opening each)	2	.....	.....	LD4PB	26.60	LD6PB	53.00
Telescope.....	(2 sides—2 openings each) Slide adjustment.....	0	LD2TF	7.70	LD4TF	8.00	LD6TF	28.00
Hanger.....	Universal—drop or side.....	0	LD2H	1.00	LD4H	1.00	LD6H	3.35
Closing Plate.....	Seals openings.....	0	LD2CP	.95	LD4CP	1.00	LD6CP	2.70
Adaptor.....	Connects to panel, square duct, etc.....	0	LD22A	3.40	LD44A	3.80	LD66A	13.00
Reducer.....	$4" \times 4"$ to $2\frac{1}{2}" \times 2\frac{1}{2}"$	0	.....	.....	LD42R	5.00	.....	.....
Gusset Bracket.....	$6" \times 6"$ to $4" \times 4"$	0	.....	.....	.....	.....	LD64R	10.00
Hanger Bracket.....	Mount for vertical wall (No hanger required).....	0	LD2GB	1.00	LD4GB	1.20	LD6GB	3.60
Connector (extra).....	Mount for ceiling or wall (Hanger required).....	0	LD2HB	.90	LD4HB	1.00	LD6HB	3.60
Nipple.....	Couples, lengths & Fittings.....	0	LD2C	.90	LD4C	1.10	LD6C	3.30
	3 Inch.....	0	LD23N	3.35	LD43N	3.85	LD63N	12.65
	6 Inch.....	0	LD26N	3.35	LD46N	3.85	LD66N	12.65
	9 Inch.....	0	LD29N	3.35	LD49N	3.85	LD69N	12.65

CONDUCTOR TABLE

Size of Conductor	Area of Conductor Types R RH & RW Sq. Inches	MAXIMUM NUMBER OF CONDUCTORS ALL OF ONE SIZE			
		$2\frac{1}{2}" \times 2\frac{1}{2}"$ Duct	$4" \times 4"$ Duct	$6" \times 6"$ Duct	$8" \times 8"$ Duct
14	.0230 †	*54	*139	*313	*533
12	.0278 †	*44	*115	*115	*440
10	.0460	27	*69	*156	*266
8	.0760	16	*42	*94	*161
6	.1238	10	25	*58	*99
4	.1605	7	19	*44	*76
3	.1817	6	17	*39	*62
2	.2067	6	15	*34	*59
1	.2715	4	11	26	*45
0	.3107	4	10	23	*39
00	.3578	3	8	20	*34
000	.4151	3	7	17	29
0000	.4840	2	6	14	25
250,000	.5917	2	5	12	21
300,000	.6837	1	4	10	18
400,000	.8365	1	3	8	15
500,000	.9834	1	3	7	12

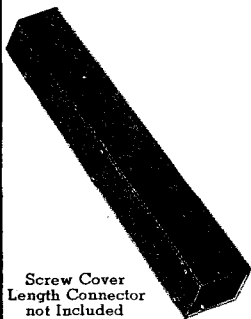
† Areas in square inches for type RW in Nos. 14 and 12 are .0327 and .0384 respectively.

***NOTE:** The 1953 National Electrical Code limits installations to 30 conductors in one wire-way except where special permission has been obtained from the local authority enforcing the Code or where conductors in excess of 30 are for signalling circuits or are control wires between a motor and its starter and used only for starting duty.

LAY-IN DUCT AND FITTINGS

SCREW COVER

Screw Cover Connector Ordered Separately



Screw Cover Length Connector not Included

Screw Cover Lay-in Duct is a UL approved steel enclosed wiring trough wireway and auxiliary gutter. Lengths are used in connecting loadside switches, meters, etc. Keyhole slots eliminate the necessity of entirely removing the screws when removing the cover. **Lay-in Duct fittings listed on opposite page may be used to extend lengths into UL approved wireway and auxiliary gutter installations.** No connectors are furnished with Screw Cover lengths. Finish: Blue-gray enamel. Knockouts: 4" x 4"— $\frac{3}{4}$, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$; 2: 6" x 6"— $\frac{3}{4}$, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$; 2: 8" x 8"—No knockouts.

Component	Description	Number Connectors Furnished	4" x 4"		6" x 6"		8" x 8"	
			Cat. No.	List	Cat. No.	List	Cat. No.	List
Length	1 Foot.....	0	SC41	\$ 2.50	SC61	\$ 5.65	8824 A	\$15.50
	2 Foot.....	0	SC42	4.40	SC62	7.45	8836 A	20.40
	3 Foot.....	0	SC43	6.95	SC63	10.40	8848 A	25.70
	4 Foot.....	0	SC44	8.70	SC64	13.85	8860 A	33.00
	5 Foot.....	0	SC45	10.40	SC65	16.90		
Elbows.....	90 Degrees.....	1	Use Fittings from Opposite Page				88L	11.50
Tee.....	For T, L or Cross.....	2					88T	24.40
Connector.....	Couples Lengths and Fittings						88C	1.30
Closing Plate..	Seals Openings.....						88E	1.80

Standard Package Quantity: Hinge Cover and Screw Cover

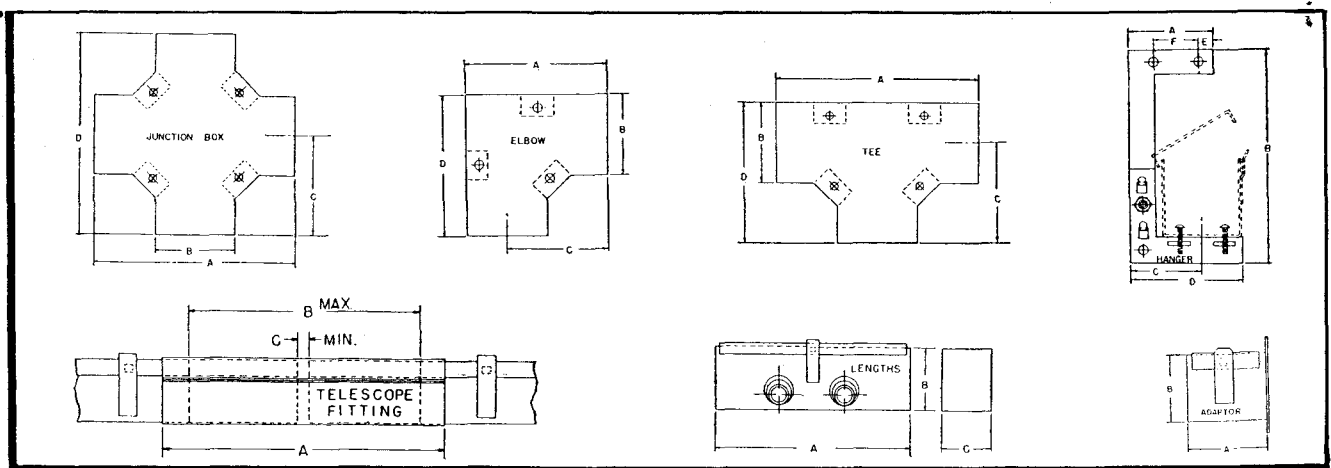
Size	Lengths	Hangers	Closing Plates	Brackets	Connectors	Others
2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ ".....	5	10	10	10	10	1
4" x 4".....	5	10	10	10	10	1
6" x 6".....	3	10	10	10	10	1
8" x 8".....	1	10	10	10	10	1

HINGE COVER—DIMENSIONS

2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ "								4" x 4"								6" x 6"							
Cat. No.	Wt.	A	B	C	D	E	F	Cat. No.	Wt.	A	B	C	D	E	F	Cat. No.	Wt.	A	B	C	D	E	F
LD21	12	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	LD41	4	12	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	LD61	12	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$
LD22	24	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	LD42	7	24	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	LD62	24	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$
LD25	60	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	LD45	17	60	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	LD65	60	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{8}$
LD290L	1	4 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	4 $\frac{3}{8}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	LD490L	...	6 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	3 $\frac{1}{8}$	6 $\frac{1}{8}$	...	LD690L	...	8 $\frac{3}{4}$	6 $\frac{1}{8}$	4 $\frac{3}{8}$	8 $\frac{3}{4}$	6 $\frac{1}{8}$	...
LD245L	1	2 $\frac{1}{8}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	...	...	...	LD445L	...	3 $\frac{1}{2}$	4 $\frac{1}{8}$	...	...	...	...	LD645L	...	5	6 $\frac{1}{8}$	...	...	...	...
LD225L	...	2 $\frac{1}{2}$	2 $\frac{1}{2}$	...	...	...	...	LD425L	...	2 $\frac{1}{2}$	4 $\frac{1}{8}$	...	...	...	...	LD625L	...	3 $\frac{1}{2}$	6 $\frac{1}{8}$	...	...	...	...
LD2T	2	6 $\frac{5}{8}$	2 $\frac{1}{2}$	3 $\frac{1}{8}$	4 $\frac{3}{8}$	...	...	LD4T	4	6 $\frac{1}{8}$	4 $\frac{1}{8}$	3 $\frac{1}{8}$	6 $\frac{1}{8}$	...	...	LD6T	...	11 $\frac{3}{4}$	6 $\frac{1}{8}$	...	8 $\frac{3}{4}$	...	...
LD2J	2	6 $\frac{5}{8}$	2 $\frac{1}{2}$	3 $\frac{1}{8}$	6 $\frac{3}{8}$	...	...	LD4JPB	4	8 $\frac{1}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{8}$	6 $\frac{1}{8}$	...	...	LD6JPB	...	11 $\frac{3}{8}$	6 $\frac{1}{8}$	5 $\frac{1}{16}$	11 $\frac{3}{8}$	...	...
LD2TF	5	15	11 $\frac{1}{2}$	1 $\frac{1}{2}$	...	...	...	LD4TF	...	14 $\frac{1}{8}$	4 $\frac{1}{8}$	1 $\frac{1}{2}$	14 $\frac{1}{8}$	...	...	LD6TF	...	19 $\frac{1}{16}$	6 $\frac{1}{8}$	...	19 $\frac{1}{16}$	...	...
LD2H	1 $\frac{1}{2}$	2 $\frac{13}{16}$	7	2 $\frac{1}{16}$	3 $\frac{1}{16}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	LD4H	...	15	11 $\frac{1}{2}$	3	5 $\frac{1}{4}$	1 $\frac{1}{2}$	2 $\frac{1}{4}$	LD6H	...	15	11 $\frac{1}{2}$	1 $\frac{1}{2}$	8	3	3 $\frac{3}{8}$
LD22A	1	3	2 $\frac{5}{8}$	...	...	...	...	LD44A	...	3	4 $\frac{1}{8}$	...	...	...	...	LD66A	...	4 $\frac{1}{4}$	6 $\frac{1}{8}$	...	...	...	...

SCREW COVER—DIMENSIONS

4" x 4"								6" x 6"								8" x 8"							
SC41	3	12	4 1/8	4 1/8	...	...	...	SC61	4	12	6 1/8	6 1/8	...	...	...	8824 A	...	24	8	8	...	...	...
SC42	6	24	4 1/8	4 1/8	...	...	...	SC62	8	24	6 1/8	6 1/8	...	...	...	8836 A	...	36	8	8	...	...	...
SC43	9	36	4 1/8	4 1/8	...	...	...	SC63	12	36	6 1/8	6 1/8	...	...	...	8848 A	...	48	8	8	...	...	...
SC44	14	48	4 1/8	4 1/8	...	...	...	SC64	15	48	6 1/8	6 1/8	...	...	...	8860 A	...	60	8	8	...	...	...
SC45	17	60	4 1/8	4 1/8	...	...	...	SC65	...	60	6 1/8	6 1/8	...	...	...	88L	...	...	...	...	...	...	
																88T	...	...	...	...	...	...	



SCHEDULE

A

DISCOUNT

PAGE 57

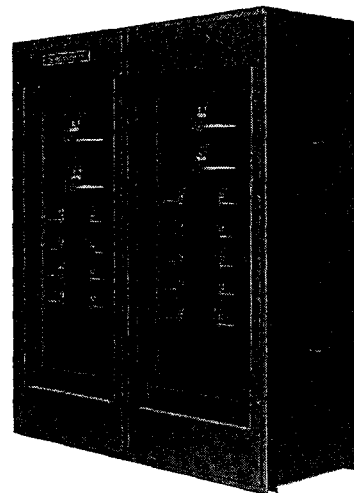
SWITCHBOARDS, SWITCHGEAR

Square D's complete line of Switchboards, Switchgear, and Unit Substations is especially designed to meet the demands of today's modern electrical distribution systems. They provide a convenient grouping of dependable overcurrent and control devices needed in distributing electrical energy, and incorporate sound basic design features required for flexibility and uninterrupted performance.

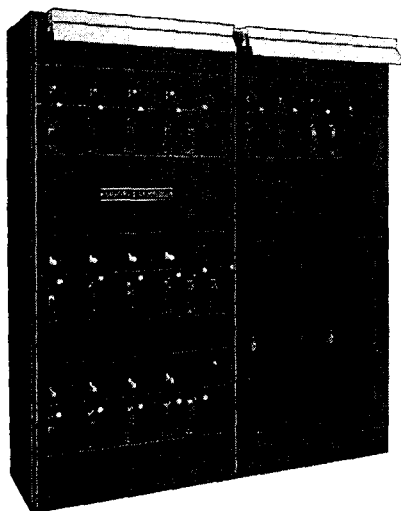
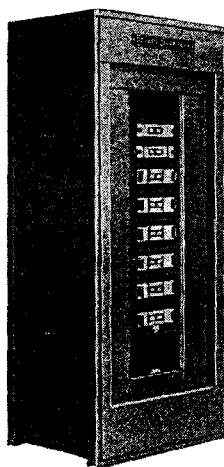
The distinctive styling and pleasing appearance of Power-Style switchboards is also incorporated in Square D's new Plug-in Control Centers (Page 90) to provide a **matched** grouping of distribution and control equipment

Various types and arrangements of Switchboards, Metal Enclosed and Metal Clad Switchgear, Dimmer Boards and Unit Substations are available to provide the needs of most electrical distribution systems. For more specific information or engineering service, contact a Square D Field Engineer located in a principal city near you.

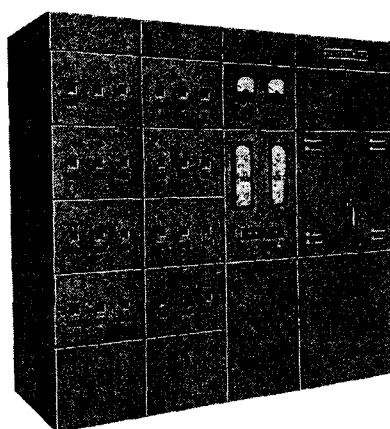
Power-Style QMB Saflex
Fusible Switchboard →



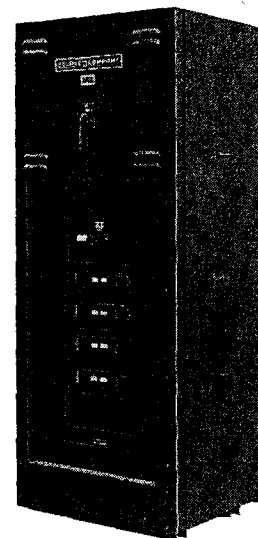
← Power-Style
ML Circuit Breaker
Switchboard.



Stage Dimmer Switchboard
with Dimmer Units and
Magazine Panel.



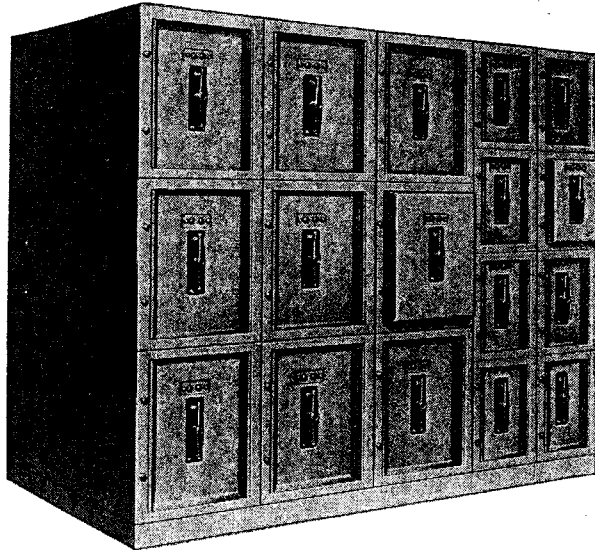
Type CBE Switchboard
with Main Air Circuit Breakers
and ML Branch Breakers



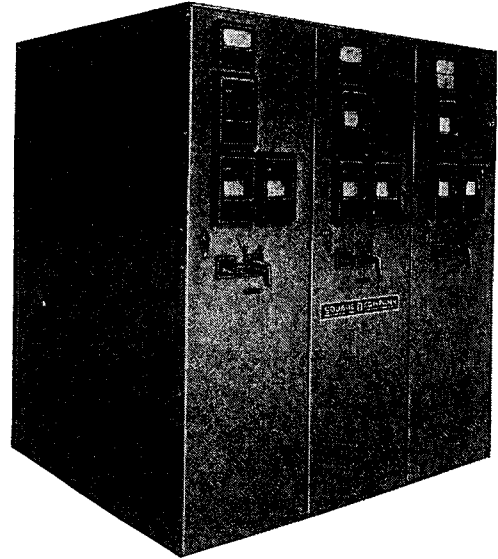
Combination Power-Style
ACB and ML Circuit
Breaker Switchboard.



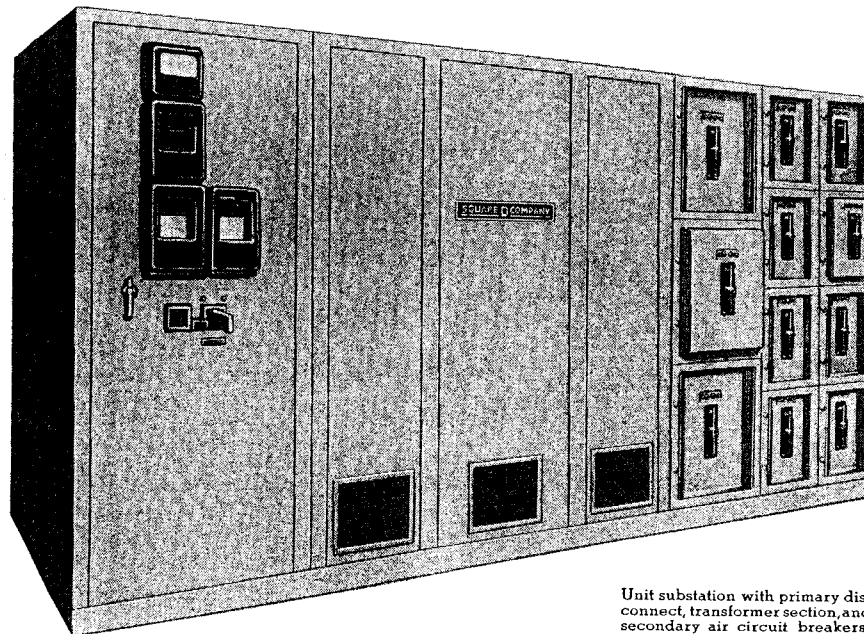
AND UNIT SUBSTATIONS



Metal-enclosed low voltage
switchgear with draw-out type
air circuit breakers.



Metal-clad high voltage
switchgear with
circuit breakers and meters



Unit substation with primary dis-
connect, transformer section, and
secondary air circuit breakers.



A. C. MANUAL STARTERS

REDUCED VOLTAGE TYPE & LINE VOLTAGE TYPE

A. C. MANUAL COMPENSATORS

CLASS
2205

Manual compensators are designed for starting A.C. squirrel cage motors when it is practical to have manually operated control, but where inrush currents must be reduced or starting torque limited. Reduced voltage for starting is obtained through the windings of an auto-transformer.

Auto-Transformer Type Reduced Voltage Starters — Oil-Immersed Contacts Three Wire Control — Magnetic Overload Relays

Max. H. P. Rating		Price	Max. H. P. Rating		Price	Max. H. P. Rating		Price
220 V.	440-550 V.		220 V.	440-550 V.		220 V.	440-550 V.	
15	15	\$ 341.	40	..	\$ 645.	..	50	\$ 390.
25	25	357.	..	40	390.	..	60	695.
30	30	370.	50	..	645.	..	100	695.

Prices are for 3 pole, 50-60 cycle, compensators. Four pole or 25 cycle compensator prices on request.

ORDERING INSTRUCTIONS: Specify Class number, horsepower, voltage, phase and cycles.

A. C. MANUAL STARTERS — LINE VOLTAGE TYPE

CLASS
2510

Line voltage manual starters are used where it is convenient for the operator to start and stop small single phase or polyphase motors by pressing push buttons mounted in the cover of the starter enclosure. Low voltage protection and low voltage release are not available with the manually operated mechanism. If power should fail, the starter contacts will remain closed until the stop button is operated.

Type W starters are operated from push buttons and employ melting alloy overload relay units. A listing on page 62 covers Types R and S starters (loom switches), which have a toggle lever for operation and use protected type melting alloy overload relays.

PUSH TYPE OPERATION

For General Purpose Applications — Melting Alloy Type Thermal Overload Relays

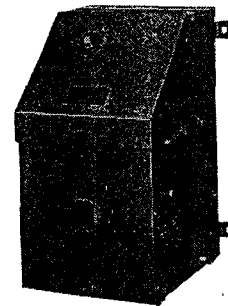
110-600 VOLTS												NON-REVERSING	
No. of Poles	Size	Ratings			General Purpose Enclosure NEMA Type 1		Water and Dust-Tight Enclosure NEMA Type 4, and 5		Class I Group D or Class II Groups E, F & G NEMA Types 7 and 9		Open Type		
		Volts	Max. Horsepower										
			Poly-Phase	Single Phase	Type	Price	Type	Price	Type	Price	Type	Price	
2	0	115 230	....	1 1½	W-7	\$ 20.	W-8	\$ 52.	W-22	\$ 66.	W-54	\$ 18.	
	1	115 230	....	1½ 3	W-14	\$ 25.	W-15	\$ 64.	W-24	\$ 78.	W-55	\$ 23.	
3	0	110 220 440-550	1½ 2 3	1 1½	W-5 *	\$ 25.	W-6	\$ 57.	W-23	\$ 71.	W-56	\$ 23.	
	1	110 220 440-550	3 5 7½	1½ 3	W-10 *	\$ 30.	W-11	\$ 69.	W-25	\$ 83.	W-57	\$ 28.	
110-600 VOLTS												REVERSING	
3	0	208-220 440-550	2 3	....	W-17	\$ 75.	W-32	\$122.	....	....	W-58	\$ 69.	
	1	208-220 440-550	5 7½	....	W-21	\$ 90.	W-33	\$154.	....	....	W-59	\$ 84.	
110-600 VOLTS												TWO SPEED *	
3	0	208-220 440-550	2 3	....	W-16	\$ 75.	W-30	\$122.	....	....	W-60	\$ 69.	
	1	208-220 440-550	5 7½	....	W-20	\$ 90.	W-31	\$154.	....	....	W-61	\$ 84.	

Prices include thermal overload relay units. **Select relay units from Table 3 Page 120.** Deduct \$1.50 each if relay units are omitted. Spare parts may be ordered from Page 116.

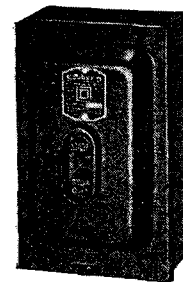
* These Two Speed Starters are suitable for star-connected separate winding motors only.

* Standard packaging quantity — 10.

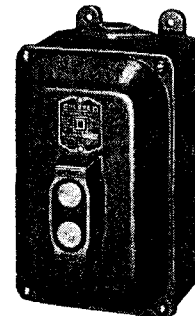
ORDERING INSTRUCTIONS — Specify Class and Type number of starter; give horsepower, voltage, phase, and full load current rating of motor.



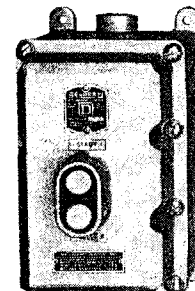
Class 2205
Manual Compensator



Class 2510
General Purpose
Enclosure



Class 2510—Water and
Dust-Tight Enclosure



Class 2510—Class 1,
Group D Enclosure

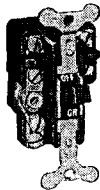


MANUAL STARTERS

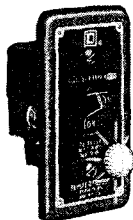
FRACTIONAL HORSEPOWER TYPE



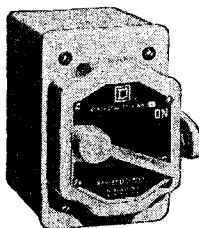
Class 2510—Type AG-7



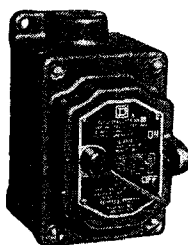
Class 2510—Type AO-2



Class 2510—Type AF-4



Class 2510—Type AW-1



Class 2510—Type AR-1

FRACTIONAL HORSEPOWER MANUAL STARTERS

Fractional horsepower manual starters are used whenever it is desired to have overload protection as well as Off-On control of small A. C. single phase or D. C. motors. The motor is started at line voltage. Low voltage protection and low voltage release are not possible with these manually operated starters.

The compact construction permits mounting in small spaces. The open type starter fits in a standard switch or conduit box, and can be used with a standard flush plate. Instructions for re-setting are given on an attractive nameplate furnished with each open type starter.

CLASS
2510

MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS

115-230 VOLTS A. C. AND D. C.

No. of Poles	Features	General Purpose Enclosure Surface Mounting NEMA Type I		General Purpose Enclosure Flush Mounting		Water Tight and Dust Tight Enclosure NEMA Types 4 & 5		For Hazardous Locations — Class I Group D & Class II Group G NEMA Types 7 & 9		Open Type (With Nameplate)	
		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
1	Standard.....	AG-1 *	\$ 7.50	AF-1	\$ 7.	.....	.....	.....	.....	AO-1 *	\$ 6.50
	Pilot Light †.....	AG-3	13.	AF-3	12.50	.....	.....	.....	.....	.....	.....
	Handle guard.....	AG-7	8.50	AF-7	8.	AW-1	\$24.	AR-1	\$24.	.....	.....
	Pilot light & handle guard †.....	AG-5	14.	AF-5	13.50	AW-5	26.	AR-5	26.	.....	.....
	Two conduit hubs.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	Pilot light & 2 conduit hubs †.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Standard.....	AG-2 *	\$ 8.50	AF-2	\$ 8.	.....	.....	.....	.....	AO-2 *	\$ 7.50
	Pilot light †.....	AG-4	14.	AF-4	13.50	.....	.....	.....	.....	.....	.....
	Handle guard.....	AG-8	9.50	AF-8	9.	AW-2	\$25.	AR-2	\$25.	.....	.....
	Pilot light & handle guard †.....	AG-6	15.	AF-6	14.50	AW-4	60.	AR-4	60.	.....	.....
	Two conduit hubs.....	.....	.....	.....	.....	AW-6	27.	AR-6	27.	.....	.....
	Pilot light & 2 conduit hubs †.....	.....	.....	.....	.....	AW-8	62.	.....	.....	.....	.....

Prices include one thermal overload relay unit. Deduct \$1.00 if relay unit is omitted. **Select relay unit from table below.** NEMA Type I enclosures have one 1/2" knockout at each end. NEMA Type 4-5 and 7-9 enclosures have one 3/4" conduit hub at either top or bottom as standard; types with 3/4" hub at both ends are also available.

† Neon pilot light.

* Standard packaging quantity — 10

ELECTRICAL RATINGS

No. of Poles	Volts	MAXIMUM HORSEPOWER	
		A. C. Single Phase	D. C.
1	115	1	1/2
	230	1	1/2
2	115	1	1
	230	1	1

STARTERS WITH DOUBLE BOX

No. of Poles	Features	General Purpose Surface Mounting Enclosure—NEMA 1	
		Type	Price
2	Two pole starter with Auto-Off-Hand Selector Switch.....	AG-10	\$ 18.
	Two—2 Pole Starters.....	AG-12	\$ 20.
	One—2 Pole Starters.....	AG-14	12.50

★ Devices with selector switch are not satisfactory for D. C. operation.

ORDERING INSTRUCTIONS

1. Specify Class and Type number of starters; give horsepower, voltage, and full load current rating of motor.
2. Order thermal overload relay units by relay number from table below.

FRACTIONAL HORSEPOWER MANUAL STARTERS — SELECTION TABLE FOR MELTING ALLOY THERMAL RELAY UNITS FOR 40° C. MOTORS OPERATING UNDER NORMAL CONDITIONS

Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number
0.38 - 0.42	W .47	0.78 - 0.86	W .98	1.70 - 1.84	W 2.12	3.70 - 4.15	W 4.62	7.80 - 8.89	W 9.75
0.43 - 0.46	W .54	0.87 - 0.96	W 1.09	1.85 - 2.05	W 2.32	4.16 - 4.74	W 5.20	8.90 - 9.99	W 11.1
0.47 - 0.50	W .59	0.97 - 1.07	W 1.21	2.06 - 2.27	W 2.58	4.75 - 5.29	W 5.94	9.60 - 10.3	W 12.0
0.51 - 0.56	W .65	1.08 - 1.20	W 1.35	2.28 - 2.56	W 2.85	5.30 - 5.99	W 6.65	10.4 - 11.9	W 13.0
0.57 - 0.63	W .71	1.21 - 1.34	W 1.51	2.57 - 2.91	W 3.21	6.00 - 6.49	W 7.47	12.0 - 13.3	W 15.0
0.64 - 0.69	W .80	1.35 - 1.49	W 1.69	2.92 - 3.30	W 3.65	6.50 - 7.79	W 8.15	13.4 - 15.0	W 16.7
0.70 - 0.77	W .87	1.50 - 1.69	W 1.88	3.31 - 3.69	W 4.13	.....	.....	.....	.....

Additional relay units (order by relay number)..... Price each, \$1.00



SCHEDULE



DISCOUNT

PAGE 61

LOOM SWITCHES AND DRUM SWITCHES

LOOM SWITCHES

CLASS
2510

Manual Starters for Textile Industry Applications

Class 2510 Type R and S manual starters are particularly designed for severe service required of loom motor starters. They have a toggle lever for operation and use protected type melting alloy overload relays. They may be group fused if all motors are rated 2 H.P. or less. Low voltage protection and low voltage release are not provided.

These starters are also suitable for general use, similar to the type W manual starters listed on page 60.

110-600 VOLTS

PROTECTED TYPE MELTING ALLOY THERMAL OVERLOAD RELAYS

No. of Poles	Size	Ratings			General Purpose Enclosure, Line Terminals at Top		General Purpose Enclosure, Line Terminals at Bottom		Lint Tight Enclosure, Line Terminals at Bottom	
		Volts	Maximum H.P.		Type	Price	Type	Price	Type	Price
			Poly-Phase	Single Phase						
2	0	115 230	... ...	1 1½	RG-1	\$ 20.	RG-4	\$ 20.	RA-4	\$ 27.
	1	115 230	... ...	1½ 3	SG-1	\$ 25.	SG-4	\$ 25.	SA-4	\$ 32.
	1½	115 230	... ...	3 5	SG-7	\$ 36.	SG-8	\$ 36.	.....	.....
3	0	110 208-220 440-550	1½ 2 3	1 1½ 2	RG-2	\$ 25.	RG-5	\$ 25.	RA-5	\$ 32.
	1	110 208-220 440-550	3 5 7½	1½ 3 5	SG-2	\$30.	SG-5	\$ 30.	SA-5	\$ 37.
4	0	110 208-220 440-550	1½ 2 3	... ... ...	RG-3	\$ 35.	RG-6	\$ 35.	RA-6	\$ 42.
	1	110 208-220 440-550	3 5 7½	... ... ...	SG-3	\$ 42.	SG-6	\$ 42.	SA-6	\$ 49.

Prices include thermal overload relay units. Select relay units from Table 5 Page 121. Deduct \$1.50 each if relay units are omitted. Mounting pedestals available — for one starter, \$6.00; for two starters, \$12.00.

ORDERING INSTRUCTIONS: Specify Class and Type number of starter; give horsepower, voltage, phase, and full load current rating of motor.

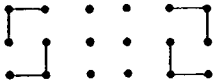
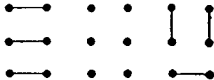
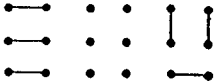
REVERSING DRUM SWITCHES

CLASS
2601

Class 2601 reversing drum switches may be used for across-the-line starting and reversing of A.C. polyphase or single phase motors, or D.C. motors. They are compact and inexpensive, but ruggedly constructed.

The Type AG-3 breaks two lines to the motor; Type AG-2 breaks three lines. These switches do not provide overload protection or low voltage protection.

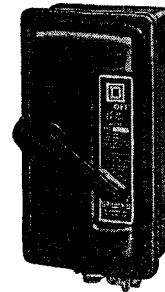
110-600 VOLTS A.C. AND D.C.

Size	Internal Switching	Ratings				General Purpose Enclosure NEMA Type I	
		Volts	Maximum Horsepower				
			A. C. Single Phase	A. C. Poly-Phase	D. C.	Type	Price
...	 (Diagram A) For. Off Rev.	115 230 110 220	1 1	 1 1	... ... ... ...	AG-3	\$ 11.
0	 (Diagram C) Rev. Off For.	115 230 110 220 440-550	1 1½	 1½ 2 2	¼ ¼	AG-2	\$ 11.
1	 (Diagram C) Rev. Off For.	115 230 110 220 440-550	1½ 3 5	 3 5 7½	2 2	BG-1	\$ 30.

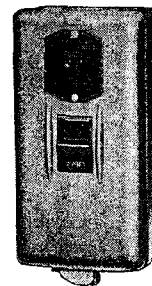
Type BG-1 available March, 1955.

*Standard packaging quantity — 10.

ORDERING INSTRUCTIONS: Specify Class and Type number of drum switch. Give horsepower, voltage and phase of motor.



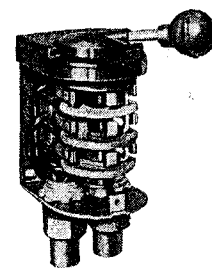
Loom Switch in Lint Tight Enclosure.



Loom Switch in General Purpose Enclosure.



Drum Switch in General Purpose Enclosure.



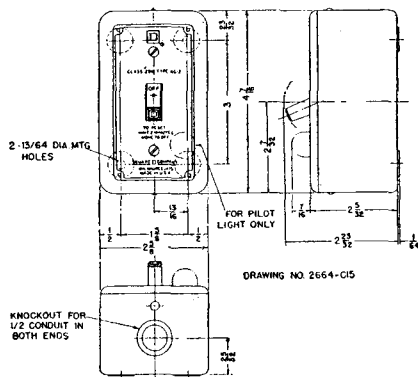
Wired Drum Switch with Cover Removed.



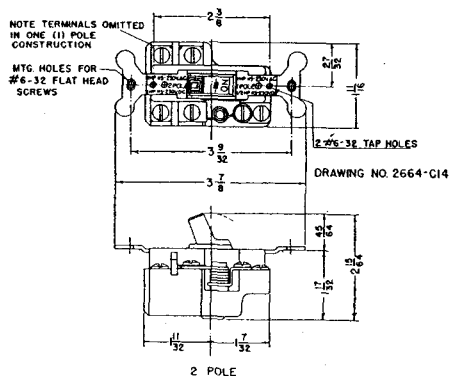
MANUAL MOTOR CONTROL

DIMENSIONS and WIRING DIAGRAMS

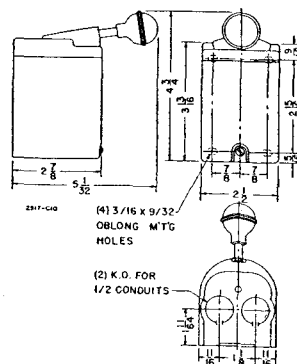
APPROXIMATE DIMENSIONS — NOT FOR CONSTRUCTION



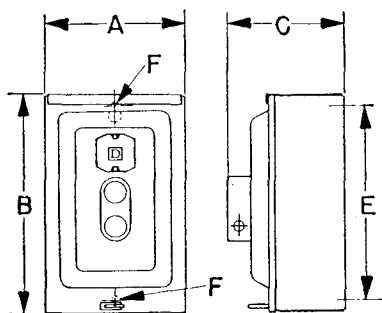
Class 2510 Type AG
Shipping Weight — 1 3/8 Lbs.



Class 2510 Type AO
Shipping Weight — 3/4 Lb.



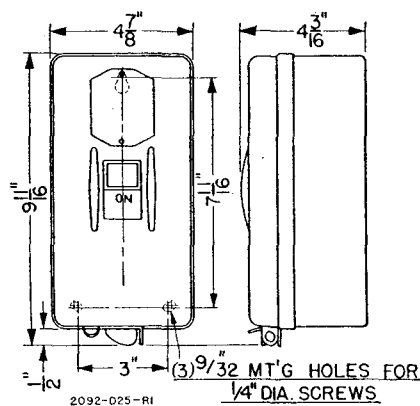
Class 2601 Type AG
Shipping Weight — 1 1/2 Lbs.



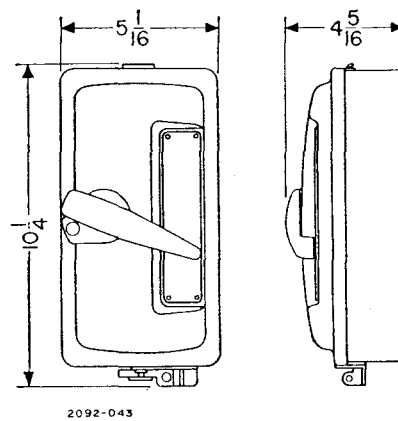
Class 2510 Type W

Dimensions	Type	
	W5, W7	W10, W14
A	4 1/4	5 1/4
B	7 1/4	8 5/16
C	4 1/4	4 7/16
E	6	7 1/16
F	1/4	3/32
Weight (lbs.)	4 1/4 lbs.	5 3/4 lbs.

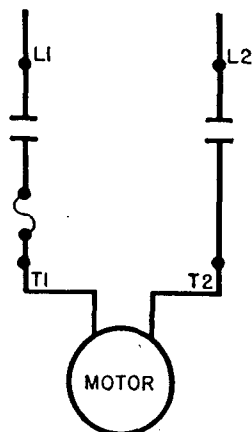
Dimensions are in inches.



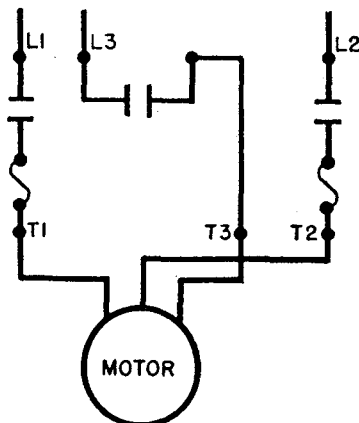
Class 2510 Types RG & SG
Shipping Weight — 6 Lbs.



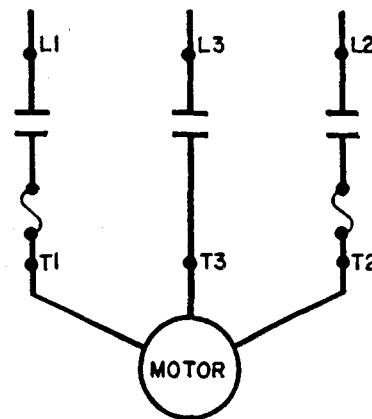
Class 2510 Types RA & SA
Shipping Weight — 6 Lbs.



Class 2510 Types R, S & W
2 Pole, Single Phase Starter



Class 2510 Type W, 3 Pole
Three Phase Starter



Class 2510 Type R & S 3 Pole
Three Phase Starter



D. C. MAGNETIC RELAYS

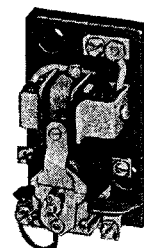
**CLASS
7001**

Class 7001 magnetic relays are used as auxiliary devices for controlling small motors, switching control circuits, or for other light loads. They do not provide motor overload protection and are ordinarily used with a maintained contact pilot device in a two-wire system. However, any available normally open contact may be wired to serve as a holding circuit for a momentary contact pilot device in a three-wire system.

115-230 VOLTS

SINGLE POLE

Description	Number of Poles Normally Open	Volts	D.C. Ampere Ratings		General Purpose Enclosure NEMA Type I		Open Type	
			Inductive Load	Non-Inductive Load	Type	Price	Type	Price
Single Pole, Single Throw	1	115	15	15	JG-30	\$ 16.50	J-30	\$ 14.
		230	5	5	JG-31	18.	J-31	15.50
		230	....	10	JG-32	18.	J-32	15.50



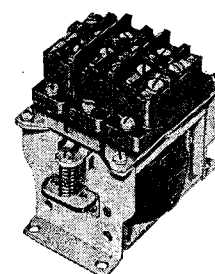
Type J-30

6-230 VOLTS

1-4 POLES

Description	† Number of Contacts		Contact Ratings Up to 600 Volts	General Purpose Enclosure NEMA Type I		Open Type	
	Normally Open	Normally Closed		Type	Price	Type	Price
One Pole	1	1	See Table Below	PG-1	\$ 23.	PO-1	\$ 20.
Two Pole	2	2		PG-2	26.	PO-2	23.
Three Pole	3	3		PG-3	29.	PO-3	26.
Four Pole	4	4		PG-4	31.50	PO-4	28.50

† Each pole of the relay consists of an isolated normally open and normally closed circuit. Due to electrical clearance, the normally open and normally closed circuits of any one pole must be used on circuits of the same polarity.

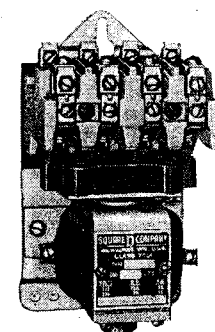


Type PO-3

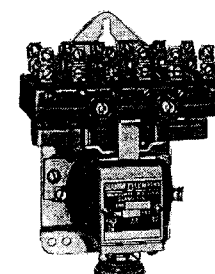
6-230 VOLTS

MULTIPOLE

Number of Poles	Number of Poles Normally Open	Number of Poles Normally Closed	★ Type Q				▲ Type R			
			General Purpose Enclosure NEMA Type I		Open Type		General Purpose Enclosure NEMA Type I		Open Type	
			Type	Price	Type	Price	Type	Price	Type	Price
2	2	0	QG-20	\$23.	QO-20	\$20.	RG-20	\$29.	RO-20	\$26.
	1	1	QG-11	26.	QO-11	23.	RG-11	32.	RO-11	29.
	0	2	QG-02	26.	QO-02	23.	RG-02	32.	RO-02	29.
3	3	0	QG-30	\$26.	QO-30	\$23.	RG-30	\$32.	RO-30	\$29.
	2	1	QG-21	29.	QO-21	26.	RG-21	35.	RO-21	32.
	1	2	QG-12	29.	QO-12	26.	RG-12	35.	RO-12	32.
4	4	0	QG-40	\$28.	QO-40	\$25.	RG-40	\$34.	RO-40	\$31.
	3	1	QG-31	31.	QO-31	28.	RG-31	37.	RO-31	34.
	2	2	QG-22	31.	QO-22	28.	RG-22	37.	RO-22	34.
5	5	0	QG-50	....	QO-50	....	RG-50	\$43.	RO-50	\$40.
	4	1	QG-41	....	QO-41	....	RG-41	46.	RO-41	43.
	3	2	QG-32	....	QO-32	....	RG-32	46.	RO-32	43.
6	6	0	QG-60	\$38.	QO-60	\$35.	RG-60	46.	RO-60	43.
	5	1	QG-51	41.	QO-51	38.	RG-51	48.	RO-51	45.
	4	2	QG-42	41.	QO-42	38.	RG-42	48.	RO-42	45.
7	7	0	QG-70	....	QO-70	....	RG-70	....	RO-70	....
	6	1	QG-61	....	QO-61	....	RG-61	....	RO-61	....
	5	2	QG-52	....	QO-52	....	RG-52	....	RO-52	....
8	8	0	QG-80	....	QO-80	....	RG-80	....	RO-80	....
	7	1	QG-71	....	QO-71	....	RG-71	....	RO-71	....
	6	2	QG-62	....	QO-62	....	RG-62	....	RO-62	....
9	9	0	QG-90	....	QO-90	....	RG-90	....	RO-90	....
	8	1	QG-81	....	QO-81	....	RG-81	....	RO-81	....
	7	2	QG-72	....	QO-72	....	RG-72	....	RO-72	....
10	10	0	QG-100	....	QO-100	....	RG-100	....	RO-100	....
	9	1	QG-91	....	QO-91	....	RG-91	....	RO-91	....
	8	2	QG-82	....	QO-82	....	RG-82	....	RO-82	....



Type RO-40



Type QO-60

TYPE P CONTACT RATINGS

Volts	A. C. Pilot Duty Amperes		D. C. Pilot Duty Amps. Double Throw
	Normal	Inrush	
110	15	40	0.5
220	10	20	0.2
440	6	10	...
600	5	8	0.02

† On the Type P relay, each pole consists of an isolated normally open and normally closed circuit. Due to electrical clearance, the normally open and normally closed circuits of any one pole must be used on circuits of the same polarity.

★ TYPE Q CONTACT RATINGS

Volts	D. C. Amperes		A. C. Amperes	
	Normally Open Contacts	Normally Closed Contacts	Non-Inductive Open	Non-Inductive En-closed
115	6.0	5.	10	9
230	1.0	1.0	10	9
440-550	....	....	10	9

▲ TYPE R CONTACT RATINGS

Volts	D. C. Amperes		A. C. Amperes	
	Normally Open Contacts	Normally Closed Contacts	Non-Inductive Open	Non-Inductive En-closed
115	15.	5.	15	13.5
230	2.	1.0	15	13.5
440-550	..	..	15	13.5

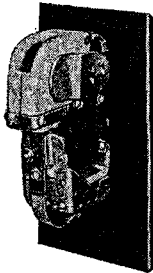
ORDERING INSTRUCTIONS: Specify Class and Type number of relay. Give coil voltage.

D. C. CONTACTORS & STARTERS

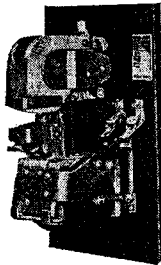
D. C. MAGNETIC CONTACTORS

D.C. magnetic contactors provide safe and convenient means for completing or interrupting electric circuits. They are commonly used for the control of lighting and power circuits, or with suitable drum controllers for the control of D.C. motors.

CLASS
7002
7003



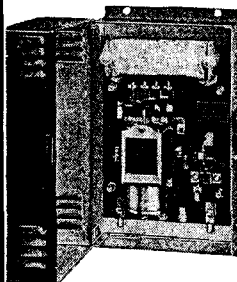
Class 7002
Type TO-1



Class 7003
Type TO-1



Class 7032
Type CG-1



Class 7107
Type B-1

6-600 VOLTS ★

Prices Include Interlock for Three Wire Control

Open 8 Hour Amp. Rating	CLASS 7002 Single Pole, Normally Open				CLASS 7002 Double Pole, Normally Open				CLASS 7003 Single Pole, Normally Closed			
	General Purpose Enclosure		Open Type		General Purpose Enclosure		Open Type		General Purpose Enclosure		Open Type	
	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
15	RG-1	\$ 75.	RO-1	\$ 55.	RG-2	\$ 88.	RO-2	\$ 69.	SG-1	\$128.	SO-1	\$110.
25	SG-1	82.	SO-1	62.	SG-2	95.	SO-2	75.	TG-1	154.	TO-1	119.
50	TG-1	110.	TO-1	71.	TG-2	161.	TO-2	117.	UG-1	196.	UO-1	152.
100	UG-1	150.	UO-1	104.	UG-2	231.	UO-2	176.	VG-1	238.	VO-1	168.
150	VG-1	194.	VO-1	124.	VG-2	290.	VO-2	206.	WG-1	336.	WO-1	238.
300	WG-1	262.	WO-1	162.	WG-2	440.	WO-2	326.				
600	XG-1	454.	XO-1	324.	XG-2	792.	XO-2	646.				

★15 and 25 ampere contactors of standard construction are satisfactory for voltages up to 250 only. Special contactors for higher voltages can be supplied at additional cost.

LINE VOLTAGE TYPE MAGNETIC STARTERS

Line voltage magnetic starters provide the simplest method for starting and stopping small direct current motors. They are used where full voltage starting torque, may be safely applied to the driven machine, and where power disturbances or commutation difficulties are not prohibitive.

CLASS
7032
7732

MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS

32-250 Volts

Prices Include Interlock For Three Wire Control

Volts	Max. H.P.	Class 7032 Non-Reversing Starter				Class 7732 Reversing Starter			
		General Purpose Enclosure		Open Type		General Purpose Enclosure		Open Type	
		Type	Price	Type	Price	Type	Price	Type	Price
32	1/2	CG-1	\$62.	CO-1	\$58.	CG-1	\$124.	CO-1	\$117.
115	1 1/2								
230	2								

Prices include one thermal overload relay unit. Deduct \$1.50 if relay unit is omitted. Indicate motor full load current on order.

STANDARD DUTY REDUCED VOLTAGE STARTERS

Classes 7107 and 7120 are standard duty devices of the time limit acceleration type, designed for reduced voltage starting of constant speed D.C. motors of the smaller horsepower sizes. They do not provide for dynamic braking and are not suitable for reversing or jogging service.

CLASS
7107
7120

MELTING ALLOY TYPE THERMAL OVERLOAD RELAYS

32-230 Volts

Prices Include Interlock For Three Wire Control

32 VOLTS			115 VOLTS			230 VOLTS		
Class and Type No.	Max. H.P. Rating	Price	Class and Type No.	Max. H.P. Rating	Price	Class and Type No.	Max. H.P. Rating	Price
7107-B1	3/4	\$141.	7107-B1	2	\$141.	7107-B1	2	\$141.
7120-EM1	1	159.	7107-B2	3	141.	7107-B2	3	141.
7120-EM2	1 1/2	256.	7120-EM2	5	256.	7120-EM1	5	159.
						7120-EM1	7 1/2	185.
						7120-EM2	10	256.

Prices include one thermal overload relay unit. Deduct \$1.50 if relay unit is omitted. Select relay units from Table 2, Page 120.

ORDERING INSTRUCTIONS:

- Specify Class and Type number of starter or contactor; give horsepower, voltage and full load current rating of motor, or ampere rating of other load.
- If special features are desired, order "Class..... similar to Type" and state clearly the features required.



SCHEDULE



DISCOUNT

PAGE 65

D. C. MAGNETIC STARTERS

HEAVY DUTY REDUCED VOLTAGE TYPE

CLASS
7135

7136
7735
7736

These heavy duty D.C. magnetic starters of time limit acceleration type are used to control constant or adjustable speed motors for general purpose or machine tool applications. They provide definite time starting which is considered the most satisfactory method of automatic acceleration for the majority of applications.

These classes of starters are available with control or brake relay, field economizer relay, field failure relay or jogging relay. For prices for these modifications, refer to your nearest district office.

WITH OVERLOAD PROTECTION

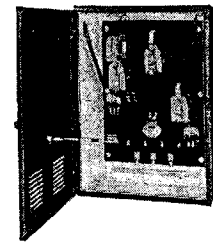
115-230 Volts General Purpose Enclosures Includes Interlock For Three Wire Control

Horse-power	Volts	NON-REVERSING								REVERSING			
		CONSTANT SPEED				ADJUSTABLE SPEED				CONSTANT SPEED		ADJUSTABLE SPEED	
		CLASS 7135				CLASS 7136				CLASS 7735		CLASS 7736	
		Without Dynamic Braking		With Dynamic Braking		Without Dynamic Braking		With Dynamic Braking		With Dynamic Braking			
		Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
2	115	SG-9	\$ 258.	SG-10	\$ 333.	SG-9	\$ 341.	SG-10	\$ 416.	SG-6	\$ 559.	SG-6	\$ 645.
3	115	SG-9	\$ 264.	SG-10	\$ 346.	SG-9	\$ 348.	SG-10	\$ 432.	SG-6	\$ 575.	SG-6	\$ 658.
	230	SG-9	258.	SG-10	333.	SG-9	341.	SG-10	416.	SG-6	559.	SG-6	645.
5	115	TG-9	\$ 341.	TG-10	\$ 425.	TG-9	\$ 493.	TG-10	\$ 577.	TG-6	\$ 652.	TG-6	\$ 803.
	230	SG-9	\$ 264.	SG-10	\$ 346.	SG-9	\$ 348.	SG-10	\$ 432.	SG-6	\$ 575.	SG-6	\$ 658.
7½	115	UG-9	\$ 515.	UG-10	\$ 680.	UG-9	\$ 669.	UG-10	\$ 832.	UG-6	\$ 1136.	UG-6	\$ 1287.
	230	TG-9	\$ 333.	TG-10	\$ 414.	TG-9	\$ 480.	TG-10	\$ 566.	TG-6	\$ 636.	TG-6	\$ 790.
10	115	UG-9	\$ 531.	UG-10	\$ 711.	UG-9	\$ 682.	UG-10	\$ 865.	UG-6	\$ 1166.	UG-6	\$ 1320.
	230	TG-9	\$ 341.	TG-10	\$ 425.	TG-9	\$ 493.	TG-10	\$ 577.	TG-6	\$ 652.	TG-6	\$ 803.
15	115	VG-9	\$ 826.	VG-10	\$ 1100.	VG-9	\$ 964.	VG-10	\$ 1238.	VG-6	\$ 1512.	VG-6	\$ 1650.
	230	UG-9	\$ 500.	UG-10	\$ 652.	UG-9	\$ 652.	UG-10	\$ 803.	UG-6	\$ 1105.	UG-6	\$ 1257.
20	115	VG-9	\$ 854.	VG-10	\$ 1156.	VG-9	\$ 992.	VG-10	\$ 1294.	VG-6	\$ 1567.	VG-6	\$ 1708.
	230	UG-9	\$ 515.	UG-10	\$ 680.	UG-9	\$ 669.	UG-10	\$ 832.	UG-6	\$ 1136.	UG-6	\$ 1287.
25	115	WG-9	\$ 1294.	WG-10	\$ 1708.	WG-9	\$ 1432.	WG-10	\$ 1846.	WG-6	\$ 2310.	WG-6	\$ 2448.
	230	UG-9	\$ 531.	UG-10	\$ 711.	UG-9	\$ 682.	UG-10	\$ 865.	UG-6	\$ 1166.	UG-6	\$ 1320.
30	115	WG-9	\$ 1322.	WG-10	\$ 1762.	WG-9	\$ 1460.	WG-10	\$ 1900.	WG-6	\$ 2366.	WG-6	\$ 2504.
	230	VG-9	\$ 826.	VG-10	\$ 1100.	VG-9	\$ 964.	VG-10	\$ 1238.	VG-6	\$ 1512.	VG-6	\$ 1650.
40	115	WG-9	\$ 1362.	WG-10	\$ 1842.	WG-9	\$ 1500.	WG-10	\$ 1980.	WG-6	\$ 2448.	WG-6	\$ 2588.
	230	VG-9	\$ 854.	VG-10	\$ 1156.	VG-9	\$ 992.	VG-10	\$ 1294.	VG-6	\$ 1567.	VG-6	\$ 1708.
50	115	XG-5	\$ 1926.	XG-6	\$ 2612.	XG-5	\$ 2172.	XG-6	\$ 2858.	XG-6	\$ 3714.	XG-6	\$ 3960.
	230	WG-9	\$ 1294.	WG-10	\$ 1708.	WG-9	\$ 1432.	WG-10	\$ 1846.	WG-6	\$ 2310.	WG-6	\$ 2448.
60	115	XG-5	\$ 1994.	XG-6	\$ 2750.	XG-5	\$ 2240.	XG-6	\$ 2996.	XG-6	\$ 3850.	XG-6	\$ 4096.
	230	WG-9	\$ 1322.	WG-10	\$ 1762.	WG-9	\$ 1460.	WG-10	\$ 1900.	WG-6	\$ 2366.	WG-6	\$ 2504.
75	115	XG-5	\$ 2064.	XG-6	\$ 2888.	XG-5	\$ 2310.	XG-6	\$ 3136.	XG-6	\$ 3988.	XG-6	\$ 4236.
	230	WG-9	\$ 1362.	WG-10	\$ 1842.	WG-9	\$ 1500.	WG-10	\$ 1980.	WG-6	\$ 2448.	WG-6	\$ 2588.
100	230	XG-7	\$ 1926.	XG-8	\$ 2612.	XG-7	\$ 2172.	XG-8	\$ 2858.	XG-8	\$ 3714.	XG-8	\$ 3960.
125	230	XG-7	\$ 1994.	XG-8	\$ 2750.	XG-7	\$ 2240.	XG-8	\$ 2996.	XG-8	\$ 3850.	XG-8	\$ 4096.
150	230	XG-7	\$ 2064.	XG-8	\$ 2888.	XG-7	\$ 2310.	XG-8	\$ 3136.	XG-8	\$ 3988.	XG-8	\$ 4236.

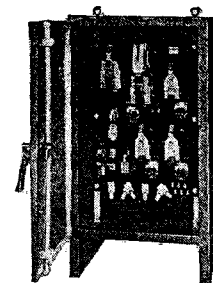
Prices include overload relay units. Types S, T, U, and V are supplied with a melting alloy type thermal overload relay. Types W and X are supplied with a magnetic overload relay. Deduct \$1.50 if thermal unit is omitted. Select relay unit from Table 2 on page 120.

ORDERING INSTRUCTIONS:

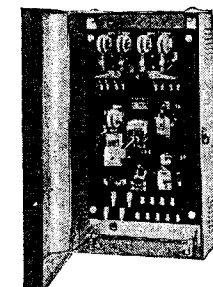
1. Specify Class and Type number of starter, give horsepower voltage and full load motor current.
2. If special features are required, order "Class similar to Type....." and state clearly features desired.
3. If starter is for adjustable speed motor, and a field rheostat is wanted, enter as a separate item of the order, giving speed range, resistance of rheostat in ohms, current on first step and current on last step. Prices above do not include rheostat.



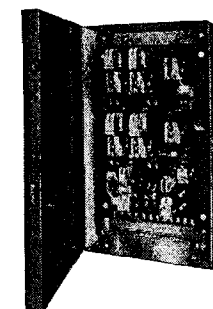
Class 7135



Class 7136



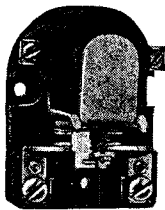
Class 7735



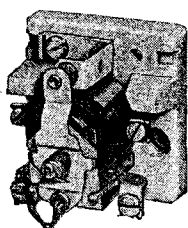
Class 7736



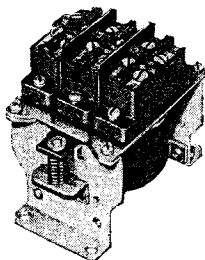
A. C. MAGNETIC RELAYS



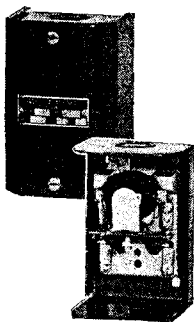
Type CO-1



Type JO-11



Type PO-3



Type JNG-2

Class 8501 magnetic relays are used as auxiliary devices for controlling small single phase motors, or other light loads such as electric heaters, pilot lights, or audible signals.

CLASS
8501

They do not provide motor overload protection, and are ordinarily used in a two-wire control system. However, any available normally open contact can be wired to serve as a holding circuit in a three-wire system when a momentary contact pilot device is used. Pushbuttons, float switches, pressure switches, and thermostats can be used for pilot service.

TWO WIRE SEPARATE CONTROL

25-60 CYCLES

6-230 VOLTS

Description	No. of Poles Normally Open	No. of Poles Normally Closed	Non-Inductive Am- pere Rating	Maximum Single Phase Horsepower		General Purpose Enclosure NEMA Type 1		Open Type	
				115 Volts	230 Volts	Type	Price	Type	Price
Single Pole, Single Throw	1	0	15★	3/4	1	CG-1	\$ 8.	CO-1	\$ 5.50
Double Pole, Single Throw	2	0	10	1/2	1/2	JNG-2	\$11.	JN-2	\$ 8.50
	1	1	10	1/2	1/2	JNG-3	12.50	JN-3	10.
	0	2	10	1/2	1/2	JNG-4	12.50	JN-4	10.

★ Double break contacts.

6-300 VOLTS, 25 CYCLES‡

‡6-480 VOLTS, 60 CYCLES

Description	No. of Contacts Normally Open	No. of Contacts Normally Closed	Non-Inductive Am- pere Rating	Maximum Single Phase Horsepower		General Purpose Enclosure NEMA Type 1		Open Type	
				115 Volts	230 Volts	Type	Price	Type	Price
Single Pole, Single Throw	1	0	15	1/2	3/4	JG-11	\$ 9.50	JO-11	\$ 7.
Single Pole, Double Throw	1	1	10	1/2	3/4	JG-12	\$11.	JO-12	\$ 8.50

‡ Types JO-11, JO-12, JG-11 and JG-12 relays are available with coils rated 300 volts, 25 cycles or 480 volts 60 cycles maximum, although contacts may be used to control A.C. loads as high as 600 volts.

25-60 CYCLES

6-600 VOLTS

Description	*Number of Contacts		† Non-Inductive Rating	General Purpose Enclosure NEMA Type 1		Open Type	
	Normally Open	Normally Closed		Type	Price	Type	Price
One Pole.....	1	1	10 Amperes	PG-1	\$18.	PO-1	\$15.
Two Pole.....	2	2		PG-2	\$21.	PO-2	\$18.
Three Pole.....	3	3		PG-3	\$24.	PO-3	\$21.
Four Pole.....	4	4		PG-4	\$26.50	PO-4	\$23.50

*Each pole of the relay consists of an isolated normally open and normally closed circuit. Due to electrical clearance, the normally open and normally closed circuits of any one pole must be used on circuits of the same polarity.

† Contact mechanism used on Type P relay has the following pilot duty (inductive) ratings:

Volts	A. C. Pilot Duty — Amperes		D. C. Pilot Duty—Amperes
	Normal	Inrush	
110	15	40	0.5
220	10	20	0.2
440	6	10	0.1
600	5	8	0.02

ORDERING INSTRUCTIONS:

1. Specify Class and Type number of relay. Give voltage and frequency of operating coil.
2. Order suitable accessories and pilot control devices from pages 94-113.



SCHEDULE

K

DISCOUNT

PAGE 67

A. C. MAGNETIC RELAYS

MULTIPOLE, 10 AND 15 AMPERE

Class 8502 multi-pole magnetic relays may be used for switching control circuits, or for controlling small single phase or polyphase motors. If motor overload protection is required, it must be provided separately.

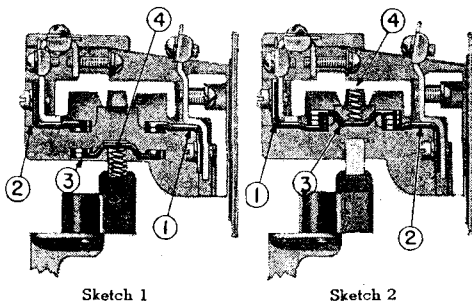
CLASS
8502

All contacts are operated by a single magnet. Pilot devices, interlock contacts or contacts of other devices may be placed in the relay magnet coil circuit to give automatic operation. These multi-pole relays are not wired, and therefore have no holding circuit provisions. However, any normally open pole may be wired for that purpose.

Multipole—Without Overload Protection or Holding Circuit—Unwired

25-60 CYCLES			10 Ampere		24-600 VOLTS	
No. of Poles	No. of Poles Normally Open	No. of Poles Normally Closed	General Purpose Enclosure NEMA Type I		Open Type	
			Type	Price	Type	Price
2 Poles	2	0	AG-20	\$18.	AO-20	\$15.
	1	1	AG-11	21.	AO-11	18.
	0	2	AG-02	21.	AO-02	18.
3 Poles	3	0	AG-30	\$21.	AO-30	\$18.
	2	1	AG-21	24.	AO-21	21.
	1	2	AG-12	24.	AO-12	21.
	0	3	AG-03	24.	AO-03	21.
4 Poles	4	0	AG-40	\$23.	AO-40	\$20.
	3	1	AG-31	26.	AO-31	23.
	2	2	AG-22	26.	AO-22	23.
	1	3	AG-13	26.	AO-13	23.
	0	4	AG-04	26.	AO-04	23.
6 Poles	6	0	AG-60	\$33.	AO-60	\$30.
	5	1	AG-51	36.	AO-51	33.
	4	2	AG-42	36.	AO-42	33.
	3	3	AG-33	36.	AO-33	33.
	2	4	AG-24	36.	AO-24	33.
	1	5	AG-15	38.	AO-15	35.
	0	6	AG-06	38.	AO-06	35.

25-60 CYCLES			15 Ampere		24-600 VOLTS	
No. of Poles	No. of Poles Normally Open	No. of Poles Normally Closed	General Purpose Enclosure NEMA Type I		Open Type	
			Type	Price	Type	Price
2 Poles	2	0	BG-20	\$24.	BO-20	\$21.
	1	1	BG-11	27.	BO-11	24.
	0	2	BG-02	27.	BO-02	24.
3 Poles	3	0	BG-30	\$27.	BO-30	\$24.
	2	1	BG-21	30.	BO-21	27.
	1	2	BG-12	30.	BO-12	27.
	0	3	BG-03	30.	BO-03	27.
4 Poles	4	0	BG-40	\$29.	BO-40	\$26.
	3	1	BG-31	32.	BO-31	29.
	2	2	BG-22	32.	BO-22	29.
	1	3	BG-13	32.	BO-13	29.
	0	4	BG-04	32.	BO-04	29.
5 Poles	5	0	BG-50	\$38.	BO-50	\$35.
	4	1	BG-41	41.	BO-41	38.
	3	2	BG-32	41.	BO-32	38.
	2	3	BG-23	41.	BO-23	38.
	1	4	BG-14	41.	BO-14	38.
6 Poles	0	5	BG-05	43.	BO-05	40.
	6	0	BG-60	\$43.	BO-60	\$40.
	5	1	BG-51	46.	BO-51	43.
	4	2	BG-42	46.	BO-42	43.
	3	3	BG-33	46.	BO-33	43.
8 Poles	2	4	BG-24	46.	BO-24	43.
	1	5	BG-15	48.	BO-15	45.
	0	6	BG-06	48.	BO-06	45.
	8	0	BG-80	\$49.	BO-80	\$46.
8 Poles	7	1	BG-71	52.	BO-71	49.
	6	2	BG-62	52.	BO-62	49.
	5	3	BG-53	52.	BO-53	49.
	4	4	BG-44	52.	BO-44	49.
	3	5	BG-35	54.	BO-35	51.
	2	6	BG-26	54.	BO-26	51.
	1	7	BG-17	54.	BO-17	51.
	0	8	BG-08	54.	BO-08	51.

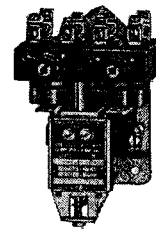


Contacts on multipole relays are easily convertible from normally open to normally closed (or vice versa,) without the addition of extra parts. The two sketches above show how this is accomplished (15 ampere Type B contacts illustrated). When parts numbered 1, 2, 3 and 4 in sketch 1 are removed, and reassembled as shown in sketch 2, the contacts are changed from normally open to normally closed.

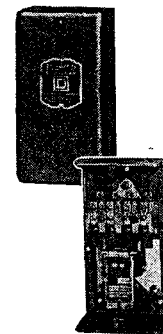
Devices with all normally open contacts are built in quantities for stock. Devices with normally closed contacts are built to order only. It is therefore generally recommended that devices with all normally open contacts be purchased. This will result in a minimum inventory of relays and yet will permit coverage of all contact arrangement requirements by the simple conversion operation.

ORDERING INSTRUCTIONS:

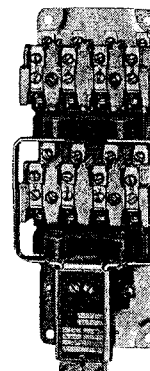
1. Specify Class and Type number of relay; number of poles; and the voltage and frequency of the operating coil.
2. Order suitable accessories and pilot control devices from pages 94-113. Spare parts may be ordered from page 116.
3. Describe clearly any special features or modifications of standard devices that are desired.



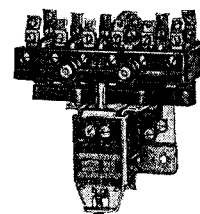
Type AO-40



Type BG-40



Type BO-80

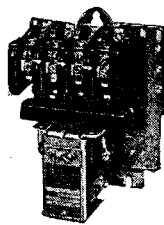


Type AO-60

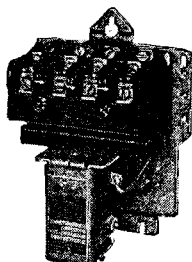


A. C. MAGNETIC CONTACTORS

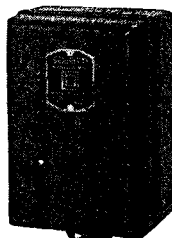
SIZES 00 TO 5, THREE WIRE CONTROL



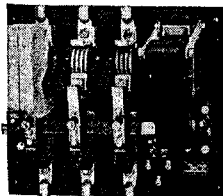
Size 0
Type BO-2



Size 1
Type CO-2



General Purpose
Enclosure



Size 5, Type GO-6
with two Arc
Chutes Removed

WITHOUT OVERLOAD PROTECTION

Magnetic contactors are commonly used for many types of non-inductive loads. They also may be used for electric motor loads within the horsepower rating shown, if overload protection is not required, or if other provision is made for it.

Contactors may be used with push buttons or other pilot control devices, to permit remote control switching of electric circuits. A holding circuit interlock for three wire control is provided on all of these Class 8502 magnetic contactors.

CLASS
8502

25-60 CYCLES 110-600 VOLTS CLASS 8502 Prices include interlock for 3-wire control

No. of Poles	Size	Horsepower Ratings		8 Hour Ampere Ratings		General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-Tight Industrial Use Enclosure ▲ NEMA Type 12		Open Type	
		Volts	Max. H.P.	En-closed	Open	Type	Price	Type	Price	Type	Price	Type	Price
2 Pole Single Phase	00	115-230	$\frac{1}{2}$ $\frac{3}{4}$	9	10	AG-1	\$ 22.	.....	....	.....	....	AO-1	\$ 20.
	0	115-230	1 $\frac{1}{2}$	13.5	15	BG-1	\$ 28.	BW-1	\$ 63.	BA-1	\$ 40.	BO-1	\$ 26.
	1	115-230	1 $\frac{1}{2}$ $\frac{3}{4}$	22.5	25	CG-1	\$ 33.	CW-1	\$ 69.	CA-1	\$ 45.	CO-1	\$ 31.
	2	115-230	3 $\frac{7}{2}$	45	50	DG-1	\$ 68.	DW-1	\$140.	DA-1	\$ 90.	DO-1	\$ 58.
	3	115-230	15 $\frac{7}{2}$	90	100	EG-1	\$112.	EW-1	\$214.	EA-1	\$138.	EO-1	\$ 92.
	4	.....	.....	135	150	FG-1	\$264.	FW-1	\$438.	FD-1	\$350.	FO-1	\$222.
3 Pole Poly-phase	5	.....	.....	270	300	GG-1	\$507.	GW-1	\$707.	GD-1	\$707.	GO-1	\$437.
	00	208-220 440-550	1 $\frac{1}{2}$	9	10	AG-2	\$ 25.	.....	.....	.....	.....	AO-2	\$ 23.
	0	208-220 440-550	2 $\frac{3}{4}$	13.5	15	BG-2	\$ 31.	BW-2	\$ 66.	BA-2	\$ 43.	BO-2	\$ 29.
	1	208-220 440-550	5 $\frac{7}{2}$	22.5	25	CG-2	\$ 36.	CW-2	\$ 72.	CA-2	\$ 48.	CO-2	\$ 34.
	2	208-220 440-550	15 $\frac{25}{2}$	45	50	DG-2	\$ 72.	DW-2	\$144.	DA-2	\$ 94.	DO-2	\$ 62.
	3	208-220 440-550	30 $\frac{50}{2}$	90	100	EG-2	\$120.	EW-2	\$222.	EA-2	\$146.	EO-2	\$100.
4 Pole Poly-phase	4	208-220 440-550	50 $\frac{100}{2}$	135	150	FG-2	\$282.	FW-2	\$456.	FD-2	\$368.	FO-2	\$240.
	5	208-220 440-550	100 $\frac{200}{2}$	270	300	GG-2	\$545.	GW-2	\$745.	GD-2	\$745.	GO-2	\$475.
	00	220 440-550	1 $\frac{1}{2}$	9	10	AG-3	\$ 33.	.....	.....	.....	.....	AO-3	\$ 31.
	0	220 440-550	2 $\frac{3}{4}$	13.5	15	BG-3	\$ 39.	BW-3	\$ 75.	BA-3	\$ 51.	BO-3	\$ 37.
	1	220 440-550	5 $\frac{7}{2}$	22.5	25	CG-3	\$ 44.	CW-3	\$ 80.	CA-3	\$ 56.	CO-3	\$ 42.
	2	220 440-550	15 $\frac{25}{2}$	45	50	DG-3	\$ 90.	DW-3	\$190.	DA-3	\$112.	DO-3	\$ 80.
5 Pole Poly-phase	3	220 440-550	30 $\frac{50}{2}$	90	100	EG-3	\$148.	EW-3	\$278.	EA-3	\$174.	EO-3	\$128.
	4	220 440-550	50 $\frac{100}{2}$	135	150	FG-3	\$376.	FW-3	\$622.	FD-3	\$492.	FO-3	\$334.
	5	220 440-550	100 $\frac{200}{2}$	270	300	GG-3	\$1014.	GW-3	\$1234.	GD-3	\$1144.	GO-3	\$874.

▲ Also functionally equivalent to NEMA Type 5.

Contactors with enclosures for Class II Groups E, F and G and Class I Group D Hazardous Locations are also available.

ORDERING INSTRUCTIONS:

1. Specify Class and Type number of contactor. Give horsepower, voltage, phase, cycles and full load motor current; or give voltage, phase, cycles, and current rating, if other than motor load is used.
2. Order suitable push button stations and accessories from pages 94-115. Spare parts, electrical interlock, and user modification kits may be ordered from pages 116-118.
3. Describe clearly any special features or modifications of standard devices which are desired.



SCHEDULE



DISCOUNT

PAGE 69

A. C. RELAYS AND CONTACTORS

DIMENSIONS and WIRING DIAGRAMS

APPROXIMATE DIMENSIONS — NOT FOR CONSTRUCTION

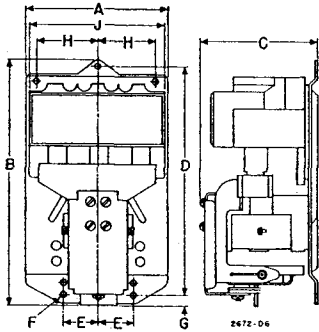


Diagram 1

Class 8502 Open Type Contactors
Sizes 00 to 4

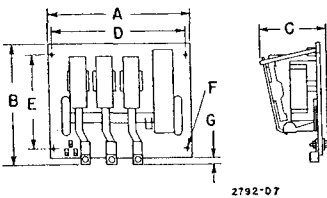


Diagram 2

Class 8502 Open Type Contactor
Size 5

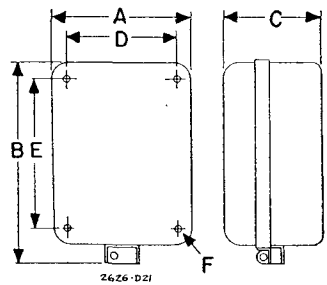


Diagram 3

NEMA 1 Enclosure for
Class 8502 Contactors

DIMENSION TABLE FOR OPEN TYPE CONTACTORS

Dimen- sions	SIZE 00		SIZE 0†		SIZE 0▲		SIZE 1		SIZE 2		SIZE 3		SIZE 4		SIZE 5	
	Diagram 1		Diagram 1		Diagram 1		Diagram 1		Diagram 1		Diagram 1		Diagram 1		Diagram 2	
	2-4 Pole*	5, 6 Pole*	2, 3 Pole	4 Pole	2, 3 Pole	4 Pole	2, 3 Pole	4 Pole	2, 3 Pole	4 Pole	2, 3 Pole	4 Pole	2, 3 Pole	4 Pole	2 Pole	3 Pole
A	2 1/2	2 1/2	3 3/8	3 3/8	4 7/8	4 7/8	5 3/32	5 3/32	5 3/4	7 3/4	6 3/8	9 3/4	9 1/2	11 7/16	13	16
B	5	5	6 1/4	6 1/4	6 1/2	6 1/2	6 1/2	6 1/2	10 1/4	10 1/4	11 7/8	11 7/8	16 5/8	16 5/8	15	15
C	3 3/8	3 3/8	3 1/4	3 1/4	3 3/8	3 3/8	3 1/16	3 1/16	4 3/4	4 3/4	5 5/8	5 5/8	7 3/8	7 3/8	9 1/8	9 1/8
D	3 1/16	3 1/16	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	9 1/2	9 1/2	10 1/4	10 1/4	13 3/4	13 3/4	11 7/8	14 3/8
E	7/8	7/8	1	1	1	1	1	1	1 1/2	1 1/2	2	2	2	2	1 1/2	1 1/2
F	#10-24	#10-24	#10-24	#10-14	#10-24	#10-24	#10-24	#10-24	9/32	9/32	9/32	9/32	27/64	27/64	7/16	7/16
G	7/8	7/8	..	..	7/16	7/16	1 1/32	1 1/32	7/16	7/16	1 1/16	1 1/16	1 7/8	1 7/8	1	1
H	3 1/4	4 5/32	2 1/32	3 3/8	..	..	5 1/8	..	..	..	..	..	..	..	..	..
J	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
K	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wgt. (Lbs.)	2	2 1/4	3	3	3	3	4	4	13	16	23	29	..	..	160	210

All dimensions in inches.

*Dimensions for unwired contactors shown (see page 68). For wired contactors (page 69) add one pole for interlocking use.

†Unwired contactors (page 68).

▲Wired contactors (page 69)

DIMENSION TABLE FOR CONTACTORS IN NEMA 1 ENCLOSURES

Dimen- sions	Size 00		Size 0†		Size 0 & 1▲		Size 2		Size 3		Size 4		Size 5	
	Diagram 3 ‡		Diagram 3 ‡		Diagram 3		Diagram 3		Diagram 3		Diagram 3		Diagram 3	
	2, 3, 4 Poles *	5, 6 Poles *	2, 3, 4 Poles	5 Poles	2, 3, 4 Poles	5 Poles	2, 3 Poles	4 Poles	2, 3 Poles	4 Poles	2, 3 Poles	4 Poles	2, 3 Poles	3 Poles
A	4 1/4	6 3/4	4 7/8	5 7/8	6 5/16	8 5/8	10 5/8	10 7/8	12 3/8	14 1/4	17 1/4	20 1/4	24 1/4	24 1/4
B	7 7/8	7 7/8	8 3/8	8 3/8	9 1/16	14 7/8	14 7/8	19 1/8	19 1/8	25 3/4	25 3/4	32 1/4	32 1/4	32 1/4
C	4	4	4 1/4	4 1/4	4 15/32	6	5 3/4	7	7 7/8	8 1/2	9 1/2	15	15	15
D	2 1/2	5	3 1/4	3 1/4	4 3/8	6 7/8	6 7/8	10	12	14 1/2	14 1/2	28	28	28
E	5 3/4	6 1/4	7 1/8	7 1/8	6 5/8	11 15/16	11 15/16	16 1/4	22 1/16	22 1/2	22 1/2	9 1/16	9 1/16	9 1/16
F	7/32	7/32	7/32	7/32	1/4	1/4	1/4	1/32	9/32	1/32	1/32	..	..	..
Wgt. (Lbs.)	4 3/4	5	6 1/2	6 3/4	..	24	27	38	44	..	..	460	460	460

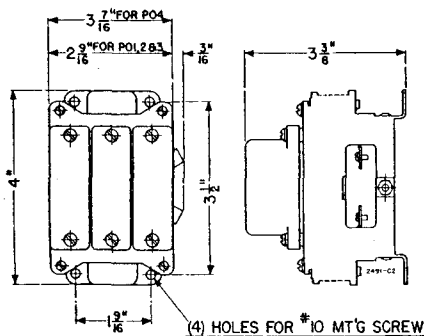
All dimensions in inches.

*Dimensions for unwired contactors shown (see page 68). For wire contactors (page 69) add one pole for interlocking use.

†Unwired contactors (page 68).

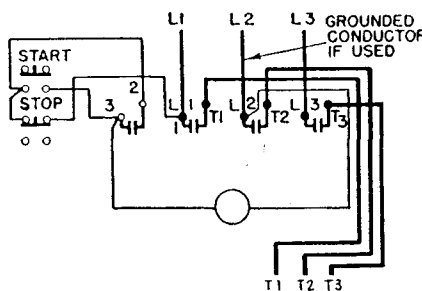
▲Wired contactors (page 69).

‡Enclosure design not as shown on diagram, but dimensions apply.

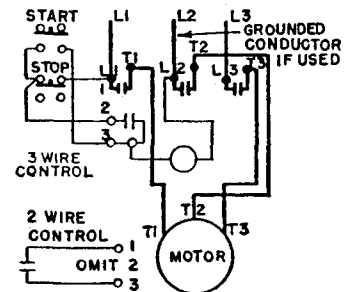


Class 8501 — Type PO Relays
Shipping Weight — 1 3/4 Lbs.

WIRING DIAGRAMS



Class 8502 Sizes 0 and 1
3 Pole Wired Contactor



Class 8502, Size 2, 3 and 4
3 Pole Contactors

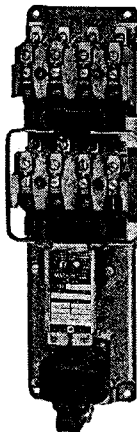
A. C. MECHANICALLY HELD CONTACTORS

SIZES 00 TO 5

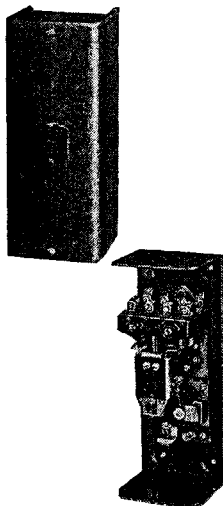
WITHOUT OVERLOAD PROTECTION

Mechanically held contactors are widely used in hospitals, schools and office buildings, where the slight hum of magnetic contactors may be objectionable.

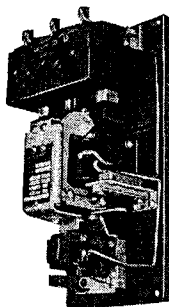
CLASS
8508



Type BO-71



Type AG-40



Type DO-3
with coil clearing
contacts

SIZES 00-0

110-600 VOLTS, 25-60 CYCLES

Number of Poles	Number of Poles Initially Open	Number of Poles Initially Closed	★SIZE 00 TYPE A				★SIZE 0 TYPE B			
			General Purpose Enclosure-NEMA Type 1		Open Type		General Purpose Enclosure-NEMA Type 1		Open Type	
			Type	Price	Type	Price	Type	Price	Type	Price
2	2	0	AG-20	\$ 33.	AO-20	\$ 31.	BG-20	\$ 39.	BO-20	\$ 36.
	1	1	AG-11	38.	AO-11	35.	BG-11	42.	BO-11	39.
	0	2	AG-02	38.	AO-02	35.	BG-02	42.	BO-02	39.
3	3	0	AG-30	\$ 36.	AO-30	\$ 33.	BG-30	\$ 42.	BO-30	\$ 39.
	2	1	AG-21	40.	AO-21	38.	BG-21	45.	BO-21	42.
	1	2	AG-12	40.	AO-12	38.	BG-12	45.	BO-12	42.
	0	3	AG-03	40.	AO-03	38.	BG-03	45.	BO-03	42.
4	4	0	AG-40	\$ 39.	AO-40	\$ 36.	BG-40	\$ 44.	BO-40	\$ 41.
	3	1	AG-31	43.	AO-31	40.	BG-31	47.	BO-31	44.
	2	2	AG-22	43.	AO-22	40.	BG-22	47.	BO-22	44.
	1	3	AG-13	43.	AO-13	40.	BG-13	47.	BO-13	44.
	0	4	AG-04	43.	AO-04	40.	BG-04	47.	BO-04	44.
5	5	0	AG-50	\$ 47.	AO-50	\$ 44.	BG-50	\$ 53.	BO-50	\$ 50.
	4	1	AG-41	51.	AO-41	49.	BG-41	56.	BO-41	53.
	3	2	AG-32	51.	AO-32	49.	BG-32	56.	BO-32	53.
	2	3	AG-23	51.	AO-23	49.	BG-23	56.	BO-23	53.
	1	4	AG-14	51.	AO-14	49.	BG-14	56.	BO-14	53.
	0	5	AG-05	53.	AO-05	51.	BG-05	58.	BO-05	55.
6	6	0	AG-60	\$ 50.	AO-60	\$ 47.	BG-60	\$ 58.	BO-60	\$ 55.
	5	1	AG-51	54.	AO-51	51.	BG-51	61.	BO-51	58.
	4	2	AG-42	54.	AO-42	51.	BG-42	61.	BO-42	58.
	3	3	AG-33	54.	AO-33	51.	BG-33	61.	BO-33	58.
	2	4	AG-24	54.	AO-24	51.	BG-24	61.	BO-24	58.
	1	5	AG-15	56.	AO-15	53.	BG-15	63.	BO-15	60.
	0	6	AG-06	56.	AO-06	53.	BG-06	63.	BO-06	60.

SIZES 1-5

110-600 VOLTS, 25-60 CYCLES

No. of Poles	Size	Max. H. P. Single Phase		Max. H. P. Polyphase		8 Hour Ampere Rating		General Purpose Enclosure NEMA Type 1		Open Type	
		115 V.	230 V.	220 V.	440-550V.	Encl.	Open	Type	Price	Type	Price
2	1	1½	3	....	....	22.5	25	CG-2	\$ 68.	CO-2	\$ 66.
	2	3	7½	....	....	45	50	DG-2	104.	DO-2	96.
	3	7½	15	....	....	90	100	EG-2	146.	EO-2	128.
	4	....	....	....	....	135	150	FG-1	374.	FO-1	316.
	*5	....	....	....	....	270	300	*ZG-2	654.	*ZO-2	530.
	†5	....	....	....	....	270	300	†ZG-6	686.	†ZO-6	564.
3	1	....	....	5	7½	22.5	25	CG-3	\$ 72.	CO-3	\$ 70.
	2	....	....	15	25	45	50	DG-3	108.	DO-3	100.
	3	....	....	30	50	90	100	EG-3	154.	EO-3	136.
	4	....	....	50	100	135	150	FG-2	422.	FO-2	342.
	*5	....	....	....	....	270	300	*ZG-3	718.	*ZO-3	548.
	†5	....	....	100	200	270	300	†ZG-7	756.	†ZO-7	588.
4	1	....	....	5	7½	22.5	25	CG-4	\$ 80.	CO-4	\$ 78.
	2	....	....	15	25	45	50	DG-4	128.	DO-4	120.
	3	....	....	30	50	90	100	EG-4	184.	EO-4	166.

*For non-inductive loads — equipped with carbon tips and without blow-out coils. Ratings also apply for tungsten lamp loads.

†For inductive loads — equipped with magnetic blowouts.

★RATINGS

Device	Max. H. P. Single Phase		Max. H. P. Polyphase			8 Hour Ampere Rating	
	115 Volts	230 Volts	110 Volts	228-220 Volts	440-550 Volts	Encl.	Open
Size 00, Type A	½	¾	¾	1	1	9	10
Size 0, Type B	1	1½	1½	2	3	13.5	15

Addition for Coil Clearing Contacts

Type	Price per Device
A and B	Consult Factory
C	\$ 6.
D	\$ 8.
E	\$10.
F	\$12.
Z	Furnished as Standard

ORDERING INSTRUCTIONS:

- Specify Class and Type Number of contactor; give voltage and frequency of operating coils. Indicate horsepower and full load current rating of motor or current rating only if other than motor load is to be controlled.
- Order suitable push button station from pages 94-100, Class 9001.
- If coil clearing contacts are desired, specify on order as Form Y-14, and add the price addition shown above to price of contactor.



SCHEDULE **K** DISCOUNT

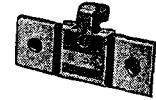
PAGE 71

A. C. MAGNETIC STARTERS LINE VOLTAGE TYPE

MELTING ALLOY OVERLOAD RELAYS

CLASS
8536

Line voltage magnetic starters provide the simplest method for starting and stopping A.C. squirrel cage motors, and have become widely used because of their features of economy and protection. They are used when full starting torque may be safely applied to the driven machine and where the resulting current inrush is not objectionable. Motor overload protection is provided by melting alloy type thermal overload relays connected in series with the motor windings.



110-600 VOLTS

25-60 CYCLES

No. of Poles	NEMA Size	Ratings			General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-Tight Industrial Use Enclosure ▲ NEMA Type 12		For Hazardous Locations				Open Type	
		Volts	Max. H.P.		Type	Price	Type	Price	Type	Price	Class II Groups E, F & G NEMA Type 9		Class I Group D NEMA Type 7		Type	Price
			Poly-phase	Single phase							Type	Price	Type	Price		
2 Pole	0	115 230	.... ....	1 1½	BG-1	\$ 34.	BW-1	\$ 69.	BA-1	\$ 46.	BE-1	\$ 69.	Use Size 1		BO-1	\$ 32.
	1	115 230	.... ....	1½ 3	CG-1	\$ 39.	CW-1	\$ 75.	CA-1	\$ 51.	CE-1	\$ 75.	CR-1	\$141.	CO-1	\$ 37.
	1½	115 230	.... ....	3 5	CG-2	\$ 50.	CW-2	\$ 86.	CA-2	\$ 62.	CE-2	\$ 86.	CR-2	\$152.	CO-2	\$ 48.
3 Pole	0	110 208-220 440-550	1½ 2 3	....	BG-2 *	\$ 39.	BW-2	\$ 74.	BA-2	\$ 51.	BE-2	\$ 74.	Use Size 1		BO-2	\$ 37.
	1	110 208-220 440-550	3 5 7½	....	CG-3 *	\$ 44.	CW-3	\$ 80.	CA-3	\$ 56.	CE-3	\$ 80.	CR-3	\$146.	CO-3	\$ 42.
	2	110 208-220 440-550	7½ 15 25	....	DG-1	\$ 84.	DW-1	\$156.	DA-1	\$106.	DE-1	\$190.	DR-1	\$262.	DO-1	\$ 74.
	3	110 208-220 440-550	15 30 50	....	EG-1	\$138.	EW-1	\$240.	EA-1	\$164.	EE-1	\$284.	ER-1	\$372.	EO-1	\$118.
	4	208-220 440-550	50 100	....	FG-1	\$308.	FW-1	\$482.	FD-1	\$394.	FE-1	\$556.	....	....	FO-1	\$266.
	5	208-220 440-550	100 200	....	GG-1	\$622.	GW-1	\$822.	GD-1	\$822.	GE-1	\$958.	....	....	GO-1	\$552.
	6	208-220 440-550	200 400	....	HG-2	\$1834.	HW-2	\$2640.	HD-2	\$2387.	....	....	....	....	HO-2	\$1488.
4 Pole	0	220 440-550	2 2	....	BG-3	\$ 50.	BW-3	\$ 89.	BA-3	\$ 62.	BE-3	\$ 89.	Use Size 1		BO-3	\$ 47.
	1	220 440-550	5 7½	....	CG-4	\$ 56.	CW-4	\$ 94.	CA-4	\$ 68.	CE-4	\$ 94.	CR-4	\$158.	CO-4	\$ 53.
	2	220 440-550	15 25	....	DG-2	\$103.	DW-2	\$207.	DA-2	\$125.	DE-2	\$241.	DR-2	\$309.	DO-2	\$ 93.
	3	220 440-550	30 50	....	EG-2	\$168.	EW-2	\$298.	EA-2	\$194.	EE-2	\$342.	ER-2	\$446.	EO-2	\$150.
	4	220 440-550	50 100	....	FG-2	\$404.	FW-2	\$650.	FD-2	\$520.	FE-2	\$750.	....	....	FO-2	\$364.
	5	220 440-550	100 200	....	GG-2	\$1091.	GW-2	\$1311.	GD-2	\$1221.	GE-2	\$1491.	....	....	GO-2	\$951.

Prices include thermal overload relay units. Deduct \$1.50 each if relay units are omitted. Select relay units from Table 1, Page 120.

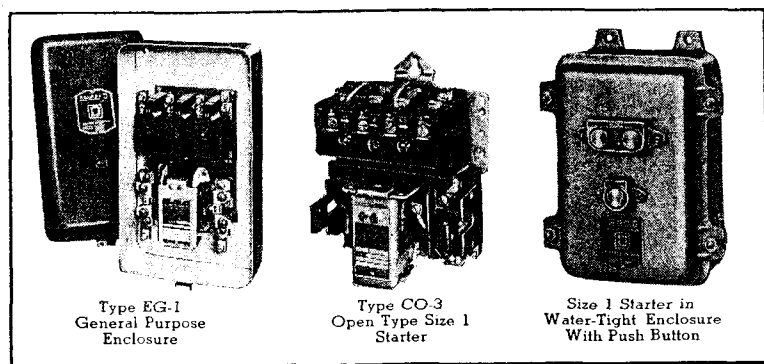
For prices and additions and special features, see page 73.

*Standard packaging quantity for 220 volt, 60 cycle equipment — 10.

▲Also functionally equivalent to NEMA Type 5.

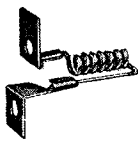
ORDERING INSTRUCTIONS

1. Specify Class and Type number of starter. Give horsepower, voltage, phase, cycles and full load motor current.
2. Select thermal units or heaters from proper tables.
3. Order suitable push button stations and accessories from pages 94-115. Spare parts, electrical interlock and user modification kits may be ordered from pages 116-118.
4. If special features are desired, order Class 8536, Type . . . Form . . ., selecting the correct Form letter from the table on page 73. If more than one Form letter is used arrange the letters in alphabetical order as "Class 8536, Type DG-1, Form AFT". Describe clearly any modification which cannot be covered by Form letters.



A. C. MAGNETIC STARTERS

LINE VOLTAGE TYPE



BIMETAL OVERLOAD RELAYS

These line voltage starters are similar in construction and application to those listed on the opposite page, except that they include bimetallic type thermal overload relays for motor protection. The bimetal relays may be set for either hand or automatic operation, and their trip point is adjustable within a range of 85% to 115% of the nominal trip rating.

CLASS
8536

110-600 VOLTS

25-60 CYCLES

No. of Poles	NEMA Size	Ratings			General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-Tight Industrial Use Enclosure ▲ NEMA Type 12		For Hazardous Locations				Open Type	
		Volts	Max. H.P.		Type	Price	Type	Price	Type	Price	Class II Groups E, F and G NEMA Type 9		Class I Group D NEMA Type 7		Type	Price
			Poly-phase	Single phase							Type	Price	Type	Price		
2 Pole	0	115 230	.....	1 1½	BAG-1	\$ 34.	BAW-1	\$ 69.	BAA-1	\$ 46.	BAE-1	\$ 69.	Use Size 1		BAO-1	\$ 32.
	1	115 230	.....	1½ 3	CAG-1	\$ 39.	CAW-1	\$ 75.	CAA-1	\$ 51.	CAE-1	\$ 75.	CAR-1	\$141.	CAO-1	\$ 37.
	1½	115 230	.....	3 5	CAG-2	\$ 50.	CAW-2	\$ 86.	CAA-2	\$ 62.	CAE-2	\$ 86.	CAR-2	\$152.	CAO-2	\$ 48.
3 Pole	0	110 208-220 440-550	.....	1½ 2 3	BAG-2	\$ 39.	BAW-2	\$ 74.	BAA-2	\$ 51.	BAE-2	\$ 74.	Use Size 1		BAO-2	\$ 37.
	1	110 208-220 440-550	.....	3 5 7½	CAG-3	\$ 44.	CAW-3	\$ 80.	CAA-3	\$ 56.	CAE-3	\$ 80.	CAR-3	\$146.	CAO-3	\$ 42.
	2	110 208-220 440-550	.....	7½ 15 25	DAG-1	\$ 84.	DAW-1	\$156.	DAA-1	\$106.	DAE-1	\$190.	DAR-1	\$262.	DAO-1	\$ 74.
	3	110 208-220 440-550	.....	15 30 50	EAG-1	\$138.	EAW-1	\$240.	EAA-1	\$164.	EAE-1	\$284.	EAR-1	\$372.	EAO-1	\$118.
	4	208-220 440-550	.....	50 100	FAG-1	\$308.	Starters in these sizes and enclosures are not made with bimetal overload relays. Select starters with melting alloy overload relays from page 72.								FAO-1	\$266.
	5	208-220 440-550	.....	100 200	GAG-1	\$622.									GAO-1	\$552.

Prices include thermal overload relay units. Deduct \$1.50 each if relay units are omitted. Select relay units from Table 4, Page 121.

For ordering instructions, refer to page 72.

Four pole starters are also available. Consult factory for information.

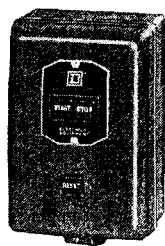
▲ Also functionally equivalent to NEMA Type 5.

PRICES FOR ADDITIONS AND SPECIAL FEATURES

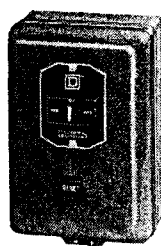
(Prices apply to those starters on Page 72 as well as those above)

	Form Letters	Sizes 0-1-1½	Size 2	Size 3	Size 4	Size 5
Additional thermal units or heaters, each.....		\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50
"Start-Stop" push button in cover of NEMA Type 1 enclosure.....	Form A	8.	8.	8.	8.	33.
"Start-Stop" push button in cover of NEMA Type 12 enclosure.....	Form A	8.	8.	8.	22.	50.
"Start-Stop" push button in cover of NEMA Type 4 or 9 enclosure.....	Form A	22.	22.	22.	22.	50.
"Start-Stop" push button in cover of NEMA Type 7 enclosure.....	Form A	33.	33.	33.	.....	.....
"Hand-Off-Auto" selector switch in cover of NEMA Type 1 enclosure.....	Form C	8.	8.	8.	8.	33.
"Hand-Off-Auto" selector switch in cover of NEMA Type 12 enclosure.....	Form A	8.	8.	8.	22.	50.
"Hand-Off-Auto" selector switch in cover of NEMA Type 4, or 9 enclosure.....	Form C	22.	22.	22.	22.	50.
"Hand-Off-Auto" selector switch in cover of NEMA Type 7 enclosure.....	Form C	33.	33.	33.	.....	.....
Separate control circuit (specify voltage and frequency).....	Form S	N.C.	N.C.	N.C.	N.C.	N.C.
† Additional electrical interlocks, each.....	Form X—	11.	11.	11.	11.	33.
Control circuit transformers (prices apply only to NEMA Types 1, 4, 9 and 12) 60 cycle, with fuse in low voltage side (No deduction for omission of fuse).....	Form FT	27.	38.	56.	68.	77.

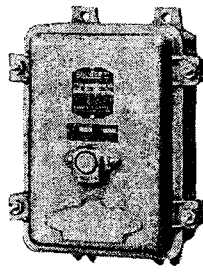
† List number of extra normally open and normally closed interlocks required, not including holding circuit interlock.



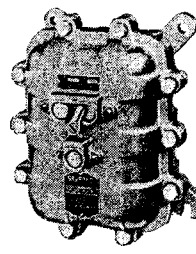
Start-Stop Push button
in Cover of
General Purpose
Enclosure



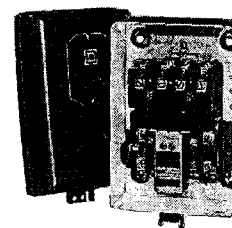
Selector Switch
in Cover of
General Purpose
Enclosure;



Enclosure for Class 2
Groups E, F and G
Hazardous Locations



Enclosure for Class 1
Group D
Hazardous Locations



Type CG-3
General Purpose
Enclosure



SCHEDULE

K

DISCOUNT

PAGE 73

A. C. MAGNETIC STARTER

LINE VOLTAGE TYPE — DIMENSIONS and WIRING DIAGRAMS

APPROXIMATE DIMENSIONS — NOT FOR CONSTRUCTION

DIMENSION TABLE FOR OPEN TYPE STARTERS

Dimension	SIZE 0		SIZE 1		SIZE 2		SIZE 3		SIZE 4		SIZE 5	
	Diagram 1		Diagram 1		Diagram 1		Diagram 1		Diagram 1		Diagram 2	
	2, 3 Pole	4 Pole	2, 3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
A	4 $\frac{7}{8}$	5 $\frac{1}{8}$	5 $\frac{1}{2}$	5 $\frac{3}{4}$	6 $\frac{1}{8}$	7 $\frac{3}{4}$	8 $\frac{1}{8}$	9 $\frac{3}{4}$	9 $\frac{1}{2}$	12 $\frac{1}{8}$	22	27
B	6 $\frac{1}{8}$	6 $\frac{1}{8}$	6 $\frac{1}{2}$	6 $\frac{1}{2}$	10 $\frac{1}{4}$	10 $\frac{1}{4}$	11 $\frac{1}{8}$	11 $\frac{1}{8}$	16 $\frac{5}{8}$	16 $\frac{5}{8}$	23 $\frac{1}{4}$	23 $\frac{1}{4}$
C	3 $\frac{3}{8}$	3 $\frac{3}{8}$	3 $\frac{1}{16}$	3 $\frac{1}{16}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$	5 $\frac{5}{8}$	5 $\frac{5}{8}$	7 $\frac{1}{16}$	7 $\frac{1}{16}$	11	11
D	5 $\frac{1}{2}$	5 $\frac{1}{2}$	6 $\frac{1}{2}$	6 $\frac{1}{2}$	9 $\frac{1}{2}$	9 $\frac{1}{2}$	10 $\frac{1}{4}$	10 $\frac{1}{4}$	13 $\frac{3}{4}$	13 $\frac{3}{4}$	20 $\frac{3}{8}$	25 $\frac{3}{8}$
E	1	1	1	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	2	2	2	18 $\frac{1}{2}$	18 $\frac{1}{2}$
F	#10-24	#10-24	#10-24	#10-24	9 $\frac{3}{32}$	9 $\frac{3}{32}$	9 $\frac{3}{32}$	9 $\frac{3}{32}$	2 $\frac{7}{64}$	2 $\frac{7}{64}$	7 $\frac{1}{16}$	7 $\frac{1}{16}$
G	3 $\frac{1}{16}$	3 $\frac{1}{16}$	1 $\frac{1}{32}$	1 $\frac{1}{32}$	7 $\frac{1}{16}$	7 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$
Weight (Lbs.)	4	5	6	6	14	17	26	32	...	...	210	275

All dimensions in inches.

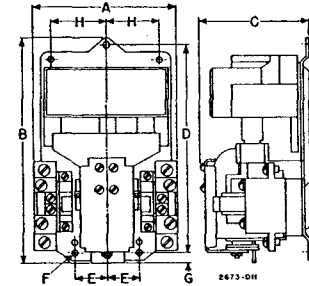


Diagram 1
Class 8536 Open Type Starter
Sizes 0 to 4

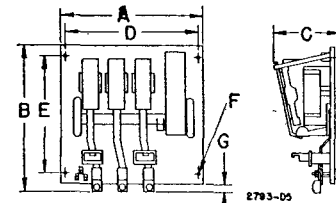


Diagram 2
Class 8536 Open Type Starter
Size 5

DIMENSION TABLE FOR STARTERS IN NEMA 1 ENCLOSURE

Dimensions	SIZE 0, 1 & 1 $\frac{1}{2}$	SIZE 2		SIZE 3		SIZE 4		SIZE 5	
	Diagram 3	Diagram 3		Diagram 3		Diagram 3		Diagram 3 *	
		3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
A	6 $\frac{1}{8}$	8 $\frac{5}{8}$	10 $\frac{3}{4}$	10 $\frac{7}{8}$	12 $\frac{3}{8}$	14 $\frac{1}{4}$	17 $\frac{1}{4}$	24 $\frac{1}{4}$	29 $\frac{1}{4}$
B	9 $\frac{1}{2}$	14 $\frac{7}{8}$	14 $\frac{7}{8}$	19 $\frac{1}{8}$	19 $\frac{1}{8}$	25 $\frac{3}{4}$	25 $\frac{3}{4}$	25 $\frac{3}{4}$	25 $\frac{3}{4}$
C	4 $\frac{1}{2}$	6	5 $\frac{3}{4}$	7	7 $\frac{3}{8}$	8 $\frac{1}{2}$	9 $\frac{1}{2}$	15	15
D	4 $\frac{5}{8}$	6 $\frac{7}{8}$	6 $\frac{7}{8}$	8 $\frac{3}{4}$	10	12	14 $\frac{1}{2}$	18	23
E	6 $\frac{3}{8}$	11 $\frac{1}{16}$	11 $\frac{1}{16}$	16 $\frac{1}{4}$	16	22 $\frac{1}{16}$	22 $\frac{1}{2}$	31	31
F	1 $\frac{1}{4}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$	13 $\frac{1}{32}$	9 $\frac{1}{16}$	17 $\frac{1}{32}$	7 $\frac{1}{16}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$
G	2 $\frac{1}{32}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$	9 $\frac{1}{16}$
Weight (Lbs.)	.....	25	28	41	48	..	..	320	370

All dimensions are in inches.

* Enclosure design is not as shown on diagram, but dimensions apply.

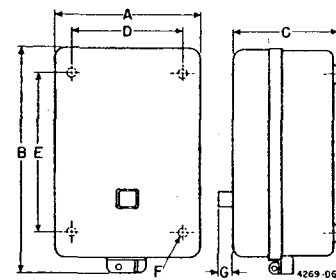
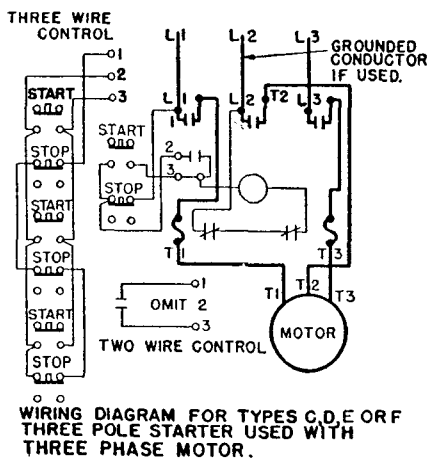
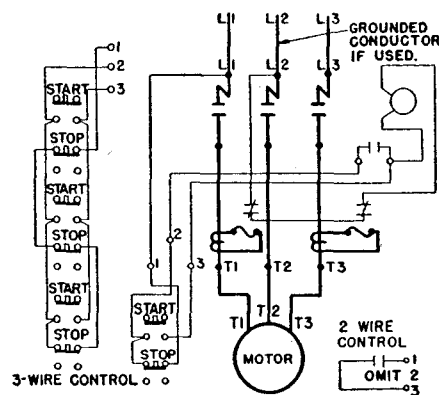


Diagram 3
NEMA 1 General Purpose Enclosure
for Class 8536 Starters

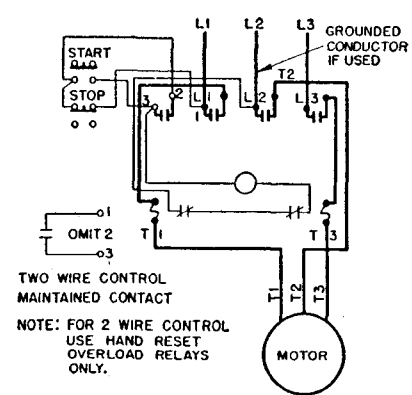
WIRING DIAGRAMS



Class 8536, Sizes 2, 3 and 4
3 Phase Starters



Class 8536 Size 5
3 Phase Starters



Class 8536, Size 0 and 1
3 Phase Starter

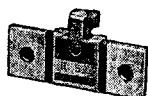


A. C. COMBINATION MAGNETIC STARTERS LINE VOLTAGE TYPE

Combination starters provide all of the control functions of Class 8536 line voltage starters, listed on pages 72 and 73, plus all of the advantages of a disconnect means in the same enclosure. Class 8538 starters (pages 75-76) have a knife switch — either fusible or nonfusible. Class 8539 starters (pages 77-78) have a thermal-magnetic trip circuit breaker.

**CLASS
8538**

The single enclosure used has many advantages over separate starters and disconnects. A single device takes up less mounting space, and makes a neat installation. Installation and wiring costs are less because all wiring between the starter and the disconnect is made at the factory. Greater safety for the operator is provided in a combination starter, as the cover of the enclosing case is interlocked with the disconnect means to prevent opening of the cover with the disconnect closed — a feature not available with separate devices.



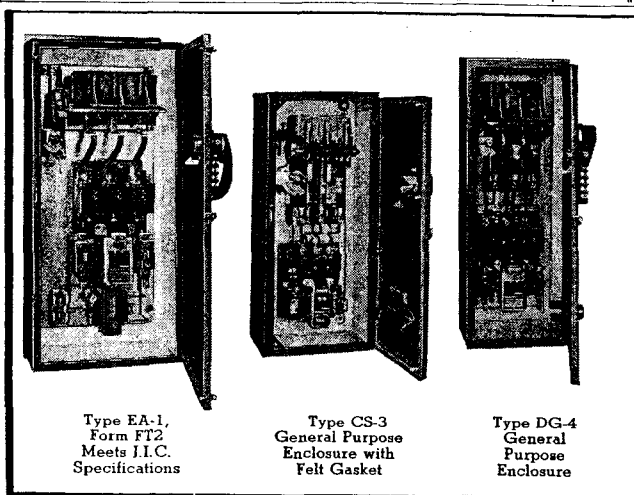
SWITCH TYPE — MELTING ALLOY OVERLOAD RELAYS

25-60 CYCLES

CLASS 8538

208-600 VOLTS

No. of Poles	Size	Maximum Ratings			General Purpose Enclosure NEMA Type 1		General Purpose Enclosure with Felt Gaskets		Dust-Tight Industrial Use Enclosure ▲ NEMA Type 12		Water-tight Enclosure NEMA Type 4		For Hazardous Locations Class II Groups E, F and G NEMA Type 9	
		Volts	H. P. Poly-phase	† Fuse Clip Size Amps.	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
3 Pole	0	208-550 208-220 440-550	2 2 3	None 30 30	BG-1 BG-2 BG-3	\$ 83. 85. 99.	BS-1 BS-2 BS-3	\$ 93. 95. 109.	(Use Size 1)		(Use Size 1)		(Use Size 1)	
	1	208-220 440-550	5 7½	None None	CG-1 CG-1	\$ 88. 88.	CS-1 CS-1	\$ 98. 98.	CA-1 CA-1	\$ 112. 112.	CW-1 CW-1	\$ 184. 184.	CE-1 CE-1	\$ 192. 192.
		208-220 440-550	3 5 7½	30 60 30	CG-2 CG-3 CG-4	\$ 90. 101. 104.	CS-2 CS-3 CS-4	\$ 100. 111. 114.	CA-2 CA-3 CA-4	\$ 114. 125. 128.	CW-2 CW-3 CW-4	\$ 186. 197. 200.	..... ..... .....	..... ..... .....
	2	208-220 440-550	15 25	None None	DG-1 DG-1	\$ 154. 154.	DS-1 DS-1	\$ 170. 170.	DA-1 DA-1	\$ 188. 188.	DW-1 DW-1	\$ 302. 302.	DE-1 DE-1	\$ 338. 338.
		208-220	7½ ★15	60 100	DG-2 DG-3	\$ 156. 175.	DS-2 DS-3	\$ 172. 191.	DA-2 DA-3	\$ 190. 209.	DW-2 DW-3	\$ 304. 323.	..... .....	..... .....
		440-550	15 25	60 100	DG-4 DG-5	\$ 162. 183.	DS-4 DS-5	\$ 178. 199.	DA-4 DA-5	\$ 196. 217.	DW-4 DW-5	\$ 310. 331.	..... .....	..... .....
	3	208-220 440-550	30 50	None None	EG-1 EG-1	\$ 240. 240.	ES-1 ES-1	\$ 262. 262.	EA-1 EA-1	\$ 284. 284.	EW-1 EW-1	\$ 498. 498.	EE-1 EE-1	\$ 542. 542.
		208-220 440-550	★30 30 50	200 100 200	EG-2 EG-3 EG-4	\$ 272. 252. 292.	ES-2 ES-3 ES-4	\$ 294. 274. 314.	EA-2 EA-3 EA-4	\$ 316. 296. 336.	EW-2 EW-3 EW-4	\$ 530. 510. 550.	..... ..... .....	..... ..... .....
	4	208-220 440-550	50 100	None None	FG-1 FG-1	\$ 476. 476.	FS-1 FS-1	\$ 514. 514.	FA-1 FA-1	\$ 598. 598.	FW-1 FW-1	\$ 806. 806.	..... .....	..... .....
		208-220 440-550	50 60 100	400 200 400	FG-2 FG-3 FG-4	\$ 590. 512. 620.	FS-2 FS-3 FS-4	\$ 628. 550. 658.	FA-2 FA-3 FA-4	\$ 712. 634. 742.	FW-2 FW-3 FW-4	\$ 920. 842. 950.	..... ..... .....	..... ..... .....
	5	208-220 440-550	100 200	None None	GG-1 GG-1	\$ 998. 998.	GS-1 GS-1	\$1064. 1064.	GA-1 GA-1	\$1294. 1294.	..... .....	..... .....	..... .....	..... .....
		208-220 440-550	100 125 200	600 400 600	GG-2 GG-3 GG-4	\$1133. 1034. 1175.	GS-2 GS-3 GS-4	\$1199. 1100. 1241.	GA-2 GA-3 GA-4	\$1429. 1330. 1471.	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....



Prices include thermal overload relay units. **Select Relay Units from Table 1, Page 120.** Deduct \$1.50 each if relay units are omitted.

Prices for Additions and Special Features are listed on page 76.

Four pole starters are also available. Consult factory for information.

▲ Prices do not include transformer and control fuse. If these are required, to meet J.I.C. specifications, refer to table on page 76 for appropriate additions prices. Standard devices do not include external reset for overload relays.

★ See footnote on page 76.

† See footnote on page 76.

▲ Also functionally equivalent to NEMA Type 5.

ORDERING INSTRUCTIONS

- Specify Class and Type number of starter; give horsepower, voltage, phase, cycles, and full load current rating of motor.
- Select thermal relays from proper table.
- If special features are desired, order Class 8538, Type Form, selecting the correct Form letter from the table on page 76. If more than one Form letter is used arrange the letters in alphabetical order as "Class 8538, type DG-4, Form AFT." Describe clearly any modification which cannot be covered by Form letters.



SCHEDULE

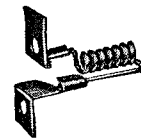


DISCOUNT

PAGE 75

A. C. COMBINATION MAGNETIC STARTERS

LINE VOLTAGE TYPE



CLASS
8538

SWITCH TYPE — BIMETAL OVERLOAD RELAYS

25-60 CYCLES

CLASS 8538

208-600 VOLTS

No. of Poles	Size	Maximum Ratings			General Purpose Enclosure NEMA Type 1		General Purpose Enclosure with Felt Gaskets		Dust-tight and Industrial Use Enclosure NEMA Type 12 ▲		Water- tight Enclosure NEMA Type 4		For Hazardous Locations Class II, Groups E, F and G NEMA Type 9	
		Volts	H. P. Poly- phase	† Fuse Clip Size Amps.	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
3 Pole	0	208-550	2	None	BAG-1	\$ 83.	BAS-1	\$ 93.	Use Size 1		(Use Size 1)		Use Size 1)	
		208-220	2	30	BAG-2	85.	BAS-2	95.						
		440-550	3	30	BAG-3	99.	BAS-3	109.						
	1	208-220	5	None	CAG-1	\$ 88.	CAS-1	\$ 98.	CAA-1	\$ 112.	CAW-1	\$184.	CAE-1	\$192.
		440-550	7½	None	CAG-1	88.	CAS-1	98.	CAA-1	112.	CAW-1	184.	CAE-1	192.
		208-220	3	30	CAG-2	\$ 90.	CAS-2	\$100.	CAA-2	114.	CAW-2	\$ 186.		
		208-220	5	60	CAG-3	101.	CAS-3	111.	CAA-3	125.	CAW-3	197.		
		440-550	7½	30	CAG-4	104.	CAS-4	114.	CAA-4	128.	CAW-4	200.		
		2	208-220	15	None	DAG-1	\$154.	DAS-1	\$170.	DAA-1	188.	DAW-1	\$302.	DAE-1	$338.
	440-550		25	None	DAG-1	154.	DAS-1	170.	DAA-1	188.	DAW-1	302.	DAE-1	338.
	208-220		7½	60	DAG-2	\$156.	DAS-2	\$172.	DAA-2	190.	DAW-2	\$304.		
			★15	100	DAG-3	175.	DAS-3	191.	DAA-3	209.	DAW-3	323.		
		440-550	15	60	DAG-4	\$162.	DAS-4	\$178.	DAA-4	196.	DAW-4	\$310.		
			25	100	DAG-5	183.	DAS-5	199.	DAA-5	217.	DAW-5	331.		
	3	208-220	30	None	EAG-1	\$240.	EAS-1	\$262.	EAA-1	284.	EAW-1	\$498.	EAE-1	\$542.
		440-550	50	None	EAG-1	240.	EAS-1	262.	EAA-1	284.	EAW-1	498.	EAE-1	542.
		208-220	★30	200	EAG-2	\$272.	EAS-2	\$294.	EAA-2	316.	EAW-2	\$530.		
		440-550	30	100	EAG-3	252.	EAS-3	274.	EAA-3	296.	EAW-3	510.		
		440-550	50	200	EAG-4	292.	EAS-4	314.	EAA-4	336.	EAW-4	550.		

Prices include thermal relay units. **Select relay units from table 4, page 121.** Deduct \$1.50 each if thermal units are omitted. Ordering instructions are listed on page 75. Order spare parts, electrical interlock and user modification kits from pages 116-118. Four pole starters are also available. Consult factory for information.

★See footnote on page 75.

▲Also functionally equivalent to NEMA type 5.

PRICES FOR ADDITIONS AND SPECIAL FEATURES

(Prices apply to those starters on page 75 as well as those listed above)

	Letters	Form 0 and 1	Sizes 1	Size 2	Size 3	Size 5
Additional thermal units or heaters, each.....		\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50
"Start-Stop" push button in cover of NEMA Type 1 or 12 enclosure.....	Form A	8.	8.	8.	8.	33.
"Start-Stop" push button in cover of NEMA Type 4, or 9 enclosure.....	Form A	22.	22.	22.	22.	50.
"Hand-Off-Auto" selector switch in cover of NEMA Type 1 or 12 enclosure.....	Form C	8.	8.	8.	8.	33.
"Hand-Off-Auto" selector switch in cover of NEMA Type 4 or 9 enclosure.....	Form C	22.	22.	22.	22.	50.
Separate control circuit (specify voltage and frequency).....	Form S	N.C.	N.C.	N.C.	N.C.	N.C.
† Additional electrical interlocks, each.....	Form X	11.	11.	11.	11.	33.
Control circuit transformer with 550, 440 or 220 volt primary and 110 volt secondary: 60 cycle with fuse in low voltage side. No deduction for omission of fuse).....	Form FT	27.	38.	56.	68.	77.

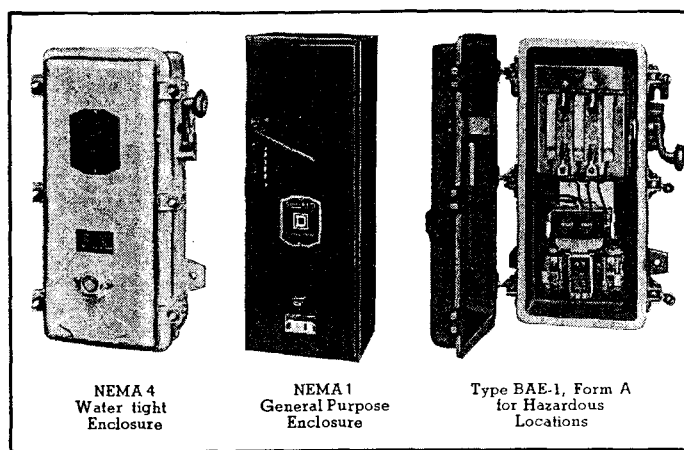
† List number of **extra** normally open and normally closed interlocks required, not including holding circuit interlock.

★ This rating for starting duty only. Fuses not large enough for long time acceleration.

† Prices do not include fuses. Fuse clip sizes shown are adapted from Table 20 of the 1953 edition of the National Electric Code, and are the minimum size recommended when standard fuses are used. Fuse sizes should be selected in accordance with Article 430 of the National Electric Code on the basis of actual current rating of the motor.

Where fuses having time delay appropriate for the starting characteristics of the motor are used, the horsepower ratings shown in the table may be applied to the starter and fusible switch combination listed:

Starter Size	Max. Volts	Fuse Clip Amps.	Max. H. P.
1	250	30	5
2	250	60	15
2	600	60	25
3	600	100	50
4	600	200	100
5	600	400	200



A. C. COMBINATION MAGNETIC STARTERS LINE VOLTAGE TYPE



CIRCUIT BREAKER TYPE MELTING ALLOY OVERLOAD RELAYS

CLASS
8539

25-60 CYCLES

3 POLE

208-600 VOLTS

Max. H.P. Poly- phase	Volts	NEMA Size	Break- er Trip Rat- ing	General Purpose Enclosure NEMA Type 1		General Purpose Enclosure with Felt Gaskets		Dust-Tight Industrial Use Enclosure ▲ NEMA Type 12		Water-Tight Enclosure NEMA Type 4		For Hazardous Locations Class I, Group D NEMA Type 7		For Hazardous Locations Class II, Groups E, F and G NEMA Type 9	
				Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
2	208-220	0	15	BG-1	\$ 101.	BS-1	\$ 111.	(Use Size 1)		(Use Size 1)		(Use Size 1)		(Use Size 1)	
	440-550	0	15	BG-2	\$ 130.	BS-2	\$ 140.	(Use Size 1)		(Use Size 1)		(Use Size 1)		(Use Size 1)	
3	208-220	1	20	CG-1	\$ 106.	CS-1	\$ 116.	CA-1	\$ 130.	CW-1	\$ 202.	CR-1	\$ 260.	CE-1	\$ 210.
	440-550	0	15	BG-2	\$ 130.	BS-2	\$ 140.	(Use Size 1)		(Use Size 1)		(Use Size 1)		(Use Size 1)	
5	208-220	1	30	CG-3	\$ 106.	CS-3	\$ 116.	CA-3	\$ 130.	CW-3	\$ 202.	CR-3	\$ 260.	CE-3	\$ 210.
	440-550	1	15	CG-2	\$ 135.	CS-2	\$ 145.	CA-2	\$ 159.	CW-2	\$ 231.	CR-2	\$ 289.	CE-2	\$ 239.
7½	208-220	2	40	DG-1	\$ 161.	DS-1	\$ 177.	DA-1	\$ 195.	DW-1	\$ 309.	DR-1	\$ 356.	DE-1	\$ 345.
	440-550	1	20	CG-4	\$ 135.	CS-4	\$ 147.	CA-4	\$ 159.	CW-4	\$ 231.	CR-4	\$ 289.	CE-4	\$ 239.
10	208-220	2	50	DG-2	\$ 161.	DS-2	\$ 177.	DA-2	\$ 195.	DW-2	\$ 309.	DR-2	\$ 356.	DE-2	\$ 345.
	440	2	30	DG-3	\$ 190.	DS-3	\$ 206.	DA-3	\$ 224.	DW-3	\$ 338.	DR-3	\$ 385.	DE-3	\$ 374.
15	208-220	2	50	DG-2	\$ 161.	DS-2	\$ 177.	DA-2	\$ 195.	DW-2	\$ 309.	DR-2	\$ 356.	DE-2	\$ 345.
	440	2	40	DG-5	\$ 190.	DS-5	\$ 206.	DA-5	\$ 224.	DW-5	\$ 338.	DR-5	\$ 385.	DE-5	\$ 374.
20	208-220	2	50	DG-2	\$ 161.	DS-2	\$ 177.	DA-2	\$ 195.	DW-2	\$ 309.	DR-2	\$ 356.	DE-2	\$ 345.
	440	2	30	DG-6	\$ 190.	DS-6	\$ 206.	DA-6	\$ 224.	DW-6	\$ 338.	DR-6	\$ 385.	DE-6	\$ 374.
25	208-220	3	100	EG-1	\$ 275.	ES-1	\$ 297.	EA-2	\$ 319.	EW-2	\$ 533.	ER-1	\$ 600.	EE-2	\$ 577.
	440	2	50	DG-7	\$ 190.	DS-7	\$ 206.	DA-7	\$ 224.	DW-7	\$ 338.	DR-7	\$ 385.	DE-7	\$ 374.
30	208-220	3	100	EG-2	\$ 275.	ES-2	\$ 297.	EA-2	\$ 319.	EW-2	\$ 533.	ER-2	\$ 600.	EE-2	\$ 577.
	440	2	50	DG-9	\$ 190.	DS-9	\$ 206.	DA-9	\$ 224.	DW-9	\$ 338.	DR-9	\$ 385.	DE-9	\$ 374.
40	208-220	3	100	EG-2	\$ 275.	ES-2	\$ 297.	EA-2	\$ 319.	EW-2	\$ 533.	ER-2	\$ 600.	EE-2	\$ 577.
	440	3	70	EG-3	\$ 275.	ES-3	\$ 297.	EA-3	\$ 319.	EW-3	\$ 533.	ER-3	\$ 600.	EE-3	\$ 577.
50	208-220	4	175	FG-1	\$ 600.	FS-1	\$ 638.	FA-1	\$ 722.	FW-1	\$ 930.	FR-1	\$1050.	FE-1	\$ 984.
	440	3	100	EG-5	\$ 275.	ES-5	\$ 297.	EA-5	\$ 319.	EW-5	\$ 533.	ER-5	\$ 600.	EE-5	\$ 577.
60	208-220	4	200	FG-2	\$ 600.	FS-2	\$ 638.	FA-2	\$ 722.	FW-2	\$ 930.	FR-2	\$1050.	FE-2	\$ 984.
	440	3	100	EG-8	\$ 275.	ES-8	\$ 297.	EA-8	\$ 319.	EW-8	\$ 533.	ER-8	\$ 600.	EE-8	\$ 577.
75	208-220	5	225	GG-1	\$1405.	GS-1	\$1471.	GA-1	\$1701.	GW-1	\$2247.	GR-1	\$2490.	GE-1	\$2411.
	440	4	125	FG-3	\$ 600.	FS-3	\$ 638.	FA-3	\$ 722.	FW-3	\$ 930.	FR-3	\$1050.	FE-3	\$ 984.
100	208-220	5	300	GG-2	\$1405.	GS-2	\$1471.	GA-2	\$1701.	GW-2	\$2247.	GR-2	\$2490.	GE-2	\$2411.
	440	4	150	FG-5	\$ 600.	FS-5	\$ 638.	FA-5	\$ 722.	FW-5	\$ 930.	FR-5	\$1050.	FE-5	\$ 984.
125	208-220	5	400	GG-3	\$1405.	GS-3	\$1471.	GA-3	\$1701.	GW-3	\$2247.	GR-3	\$2490.	GE-3	\$2411.
	440	4	200	FG-7	\$ 600.	FS-7	\$ 638.	FA-7	\$ 722.	FW-7	\$ 930.	FR-7	\$1050.	FE-7	\$ 984.
150	208-220	5	275	GG-4	\$1405.	GS-4	\$1471.	GA-4	\$1701.	GW-4	\$2247.	GR-4	\$2490.	GE-4	\$2411.
	440	5	200	GG-5	\$ 1405.	GS-5	\$ 1471.	GA-5	\$ 1701.	GW-5	\$ 2247.	GR-5	\$ 2490.	GE-5	\$ 2411.
200	208-220	5	400	GG-6	\$1405.	GS-6	\$1471.	GA-6	\$1701.	GW-6	\$2247.	GR-6	\$2490.	GE-6	\$2411.
	440	5	225	GG-7	\$ 1405.	GS-7	\$ 1471.	GA-7	\$ 1701.	GW-7	\$ 2247.	GR-7	\$ 2490.	GE-7	\$ 2411.
	208-220	5	300	GG-8	\$1405.	GS-8	\$1471.	GA-8	\$1701.	GW-8	\$2247.	GR-8	\$2490.	GE-8	\$2411.
	440	5	200	GG-9	\$ 1405.	GS-9	\$ 1471.	GA-9	\$ 1701.	GW-9	\$ 2247.	GR-9	\$ 2490.	GE-9	\$ 2411.

Prices include thermal overload relay units. Select relay units from Table 1, Page 120. Deduct \$1.50 each if relay units are omitted.

See Page 78 for ordering instructions. Order spare parts, electrical interlock and user modification kits from pages 116-118.

† Prices do not include transformer and control fuse. If these are required, in order to meet J.I.C. specifications, refer to table below for appropriate additions prices. Standard devices do not include external reset for overload relays.

▲ Also functionally equivalent to NEMA Type 5.

PRICES FOR ADDITIONS AND SPECIAL FEATURES (Applies to starters on Page 76 as well as those listed above)

	Form Letters	Sizes 0 and 1	Size 2	Size 3	Size 4	Size 5
Additional thermal units or heaters, each.....		\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50	\$ 1.50
"Start-Stop" push button in cover of NEMA Type 1 or 12 enclosure.....	Form A	8.	8.	8.	8.	33.
"Start-Stop" push button in cover of NEMA Type 4 or 9 enclosure.....	Form A	22.	22.	22.	22.	22.
"Start-Stop" push button in cover of NEMA Type 7 enclosure.....	Form A	33.	33.	33.	33.	50.
"Hand-Off-Auto" selector switch in cover of NEMA Type 1 or 12 enclosure.....	Form C	8.	8.	8.	8.	60.
"Hand-Off-Auto" selector switch in cover of NEMA Type 4 or 9 enclosure.....	Form C	22.	22.	22.	22.	50.
"Hand-Off-Auto" selector switch in cover of NEMA Type 7 enclosure.....	Form C	33.	33.	33.	33.	60.
Separate control circuit (specify voltage and frequency).....	Form S	N.C.	N.C.	N.C.	N.C.	N.C.
† Additional electrical interlocks, each.....	Form X	11.	11.	11.	11.	33.
Control circuit transformer with 550, 440 or 220 volt primary and 110 volt secondary (prices apply only to NEMA Types 4, 9 and 12)						
60 cycle with fuse in low voltage side (No deduction for omission of fuse).....	Form FT	27.	38.	56.	68.	77.

† List number of extra normally open and normally closed interlocks required, not including holding circuit interlock.



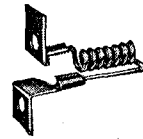
SCHEDULE **K** DISCOUNT

PAGE 77

A. C. COMBINATION MAGNETIC STARTERS LINE VOLTAGE TYPE

CLASS
8539

CIRCUIT BREAKER TYPE BIMETAL OVERLOAD RELAYS



25-60 CYCLES

3 POLE

208-600 VOLTS

Max. H.P. Poly- phase	Volts	NEMA Size	Breaker Trip Rating	General Purpose Enclosure NEMA Type 1		General Purpose Enclosure with Felt Gaskets		Dust-tight Industrial Use Enclosure ▲ NEMA Type 12		Water-tight Enclosure NEMA Type 4		For Hazardous Locations Class I, Group D NEMA Type 7		For Hazardous Locations Class II, Groups E, F and G NEMA Type 9	
				Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
2	208-220	0	15	BAG-1	\$ 101.	BAS-1	\$ 111.	Use Size 1		(Use Size 1)		(See Size 1)		(Use Size 1)	
	440-550	0	15	BAG-2	\$ 130.	BAS-2	\$ 140.								
3	208-220	1	20	CAG-1	\$ 106.	CAS-1	\$ 116.	CAA-1	\$ 130.	CAW-1	\$ 202.	CAR-1	\$ 260.	CAE-1	\$ 210.
	440-550	0	15	BAG-2	\$ 130.	BAS-2	\$ 140.	Use Size 1		(Use Size 1)		(Use Size 1)		(Use Size 1)	
5	208-220	1	30	CAG-3	\$ 106.	CAS-3	\$ 116.	CAA-3	\$ 130.	CAW-3	\$ 202.	CAR-3	\$ 260.	CAE-3	\$ 210.
	440-550	1	15	CAG-2	\$ 135.	CAS-2	\$ 145.	CAA-2	\$ 159.	CAW-2	\$ 231.	CAR-2	\$ 289.	CAE-2	\$ 239.
7½	208-220	2	40	DAG-1	\$ 161.	DAS-1	\$ 177.	DAA-1	\$ 195.	DAW-1	\$ 309.	DAR-1	\$ 356.	DAE-1	\$ 345.
	440-550	1	20	CAG-4	\$ 135.	CAS-4	\$ 145.	CAA-4	\$ 159.	CAW-4	\$ 231.	CAR-4	\$ 289.	CAE-4	\$ 239.
10	208-220	2	50	DAG-2	\$ 161.	DAS-2	\$ 177.	DAA-2	\$ 195.	DAW-2	\$ 309.	DAR-2	\$ 356.	DAE-2	\$ 345.
	440-550	2	30	DAG-3	\$ 190.	DAS-3	\$ 206.	DAA-3	\$ 224.	DAW-3	\$ 338.	DAR-3	\$ 385.	DAE-3	\$ 374.
15	208-220	2	50	DAG-2	\$ 161.	DAS-2	\$ 177.	DAA-2	\$ 195.	DAW-2	\$ 309.	DAR-2	\$ 356.	DAE-2	\$ 345.
	440-550	2	40	DAG-5	\$ 190.	DAS-5	\$ 206.	DAA-5	\$ 224.	DAW-5	\$ 338.	DAR-5	\$ 385.	DAE-5	\$ 374.
20	208-220	3	100	EAG-1	\$ 275.	EAS-1	\$ 297.	EAA-1	\$ 319.	EAW-1	\$ 533.	EAR-1	\$ 600.	EAE-1	\$ 577.
	440-550	2	50	DAG-7	\$ 190.	DAS-7	\$ 206.	DAA-7	\$ 224.	DAW-7	\$ 338.	DAR-7	\$ 385.	DAE-7	\$ 374.
25	208-220	3	100	EAG-2	\$ 275.	EAS-2	\$ 297.	EAA-2	\$ 319.	EAW-2	\$ 533.	EAR-2	\$ 600.	EAE-2	\$ 577.
	440-550	2	50	DAG-9	\$ 190.	DAS-9	\$ 206.	DAA-9	\$ 224.	DAW-9	\$ 338.	DAR-9	\$ 385.	DAE-9	\$ 374.
30	208-220	3	100	EAG-2	\$ 275.	EAS-2	\$ 297.	EAA-2	\$ 319.	EAW-2	\$ 533.	EAR-2	\$ 600.	EAE-2	\$ 577.
	440-550	3	70	EAG-3	\$ 275.	EAS-3	\$ 297.	EAA-3	\$ 319.	EAW-3	\$ 533.	EAR-3	\$ 600.	EAE-3	\$ 577.
40	208-220	3	100	EAG-5	\$ 275.	EAS-5	\$ 297.	EAA-5	\$ 319.	EAW-5	\$ 533.	EAR-5	\$ 600.	EAE-5	\$ 577.
	440-550	3	70	EAG-6	\$ 275.	EAS-6	\$ 297.	EAA-6	\$ 319.	EAW-6	\$ 533.	EAR-6	\$ 600.	EAE-6	\$ 577.
50	208-220	3	100	EAG-7	\$ 275.	EAS-7	\$ 297.	EAA-7	\$ 319.	EAW-7	\$ 533.	EAR-7	\$ 600.	EAE-7	\$ 577.
	440-550	3	100	EAG-8	\$ 275.	EAS-8	\$ 297.	EAA-8	\$ 319.	EAW-8	\$ 533.	EAR-8	\$ 600.	EAE-8	\$ 577.

Size 4 and Size 5 Starters are not made with bimetal relay units. Select starters with melting alloy overload relays from page 77.

Prices include thermal overload relay units. Select relay units from Table 4, Page 121. Deduct \$1.50 each if relay units are omitted.

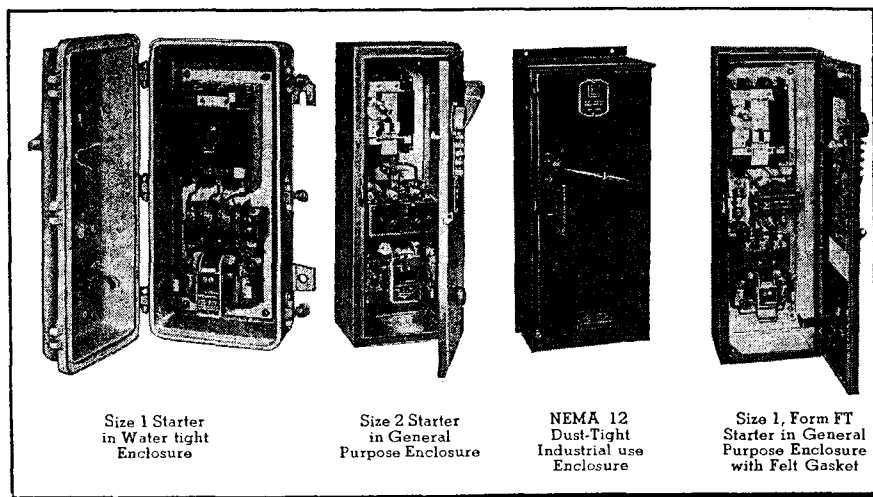
Prices for additions and special features listed on Page 77. Order spare parts, electrical interlock and user modification kits from pages 116-118.

▲ See foot note on page 77.

▲ Also functionally equivalent to NEMA Type 5.

ORDERING INSTRUCTIONS

1. Specify Class and Type number of starter; give horsepower, voltage, phase, cycles, and full load current rating of motor.
2. Select thermal relays from proper table.
3. Specify circuit breaker trip rating if different from table above.
4. If special features are desired, order Class 8539, Type, Form, selecting the correct Form letter from the table on page 77. If more than one Form letter is used arrange the letters in alphabetical order as "Class 8539, Type EG-2, Form AFT." Describe clearly any modification which cannot be covered by Form letters.



A. C. COMBINATION MAGNETIC STARTERS

LINE VOLTAGE TYPE — DIMENSIONS and WIRING DIAGRAMS

APPROXIMATE DIMENSIONS — NOT FOR CONSTRUCTION

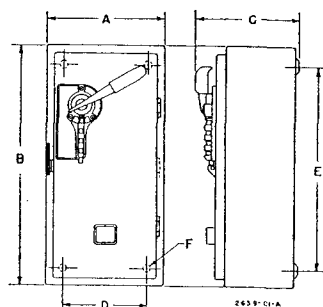


Diagram 1
NEMA 1 General Purpose Enclosure
for A.C. Combination Starters

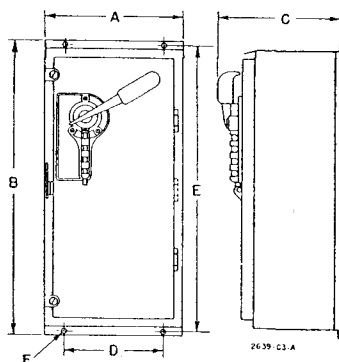
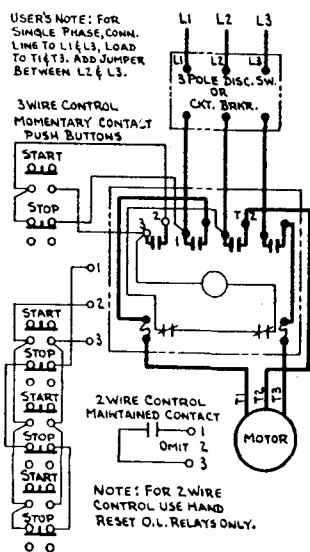


Diagram 2
NEMA 12 Dust Tight
Industrial Use Enclosure for
A.C. Combination Starters

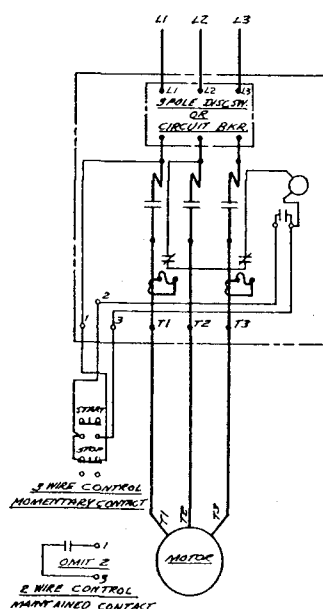
CLASS 8538								CLASS 8539	
Size	Symbol	NEMA 1 Diagram 1			NEMA 12 Diagram 2			NEMA 1 Diagram 1	NEMA 12 Diagram 2
	Types	BG-1 BG-2 CG-1 CG-2	BG-3 CG-4	CG-3	CA-1 CA-2	CA-3	CA-4	BG-1—BG-2 CG-1—CG-4	CA-1—CA-4
0 & 1	A	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	7 3/4	7 3/4
	B	17 3/4	18 3/4	20 3/4	19 1/2	20 1/2	22 1/2	18 3/4	20 1/2
	C	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4	9 1/4
	D	7	7	7	6 1/2	7	7	5 1/2	5 1/2
	E	15 1/2	16 1/2	18 1/2	18 1/2	19 1/2	21 1/2	16 1/2	19 1/2
	F	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32
2	Types	DG-1 DG-2	DG-3 DG-4	DG-5	DA-1 DA-2	DA-3 DA-4	DA-5	DG-1—DG-9	DA-1—DA-9
	A	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	8 3/4	8 3/4
	B	23 1/4	26 1/4	28 1/4	25	28	30	22 3/4	24 1/2
	C	9 3/4	9 3/4	9 3/4	9 3/4	9 3/4	9 3/4	9 1/4	9 1/4
	D	8	8	8	8	8	8	6 1/2	6 1/2
	F	21	24	26	24	27	29	20 1/2	23 1/2
3	Types	EG-1	EG-2 EG-3	EG-4	EA-1	EA-2 EA-3	EA-4	EG-2 EG-1	EA-2 EA-7
	A	14 1/4	14 1/4	14 1/4	14 1/4	14 1/4	14 1/4	10 1/4	10 1/4
	B	26 1/4	32 1/4	34 3/4	28 3/4	34 3/4	37 1/4	29 1/4	31
	C	11 3/4	11 3/4	11 3/4	11 3/4	11 3/4	11 3/4	9 3/4	9 3/4
	D	11 1/2	11 1/2	11 1/2	11	11	11	8	8
	F	23 1/2	29 1/2	32	27 3/8	33 3/8	35 7/8	27	30
4	Types	FG-1	FG-2 FG-3 FG-4		FA-1	FA-2 FA-3 FA-4		FG-1—FG-8	FA-1—FA-8
	A	16 3/4	16 3/4	....	16 3/4	16 3/4	....	13 1/4	13 1/4
	B	33 1/4	46 1/4	....	35 3/4	48 3/4	....	37 1/4	39 3/4
	C	12 1/2	12 1/2	....	12 1/2	12 1/2	....	11 1/2	11 1/2
	D	14	14	....	13 1/2	13 1/2	....	10 1/2	10
	F	30 1/2	43 1/2	....	34 3/8	47 3/8	....	34 1/2	38 7/8

All dimensions are in inches.

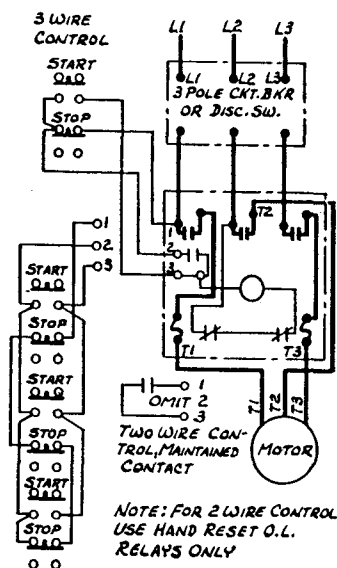
WIRING DIAGRAMS



Class 8538 and 8539
Sizes 0 and 1



Class 8538 and 8539
Size 5



Class 8538 and 8539
Sizes 2, 3 and 4

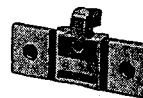
A. C. MAGNETIC STARTERS

REDUCED VOLTAGE, PRIMARY RESISTOR AND PART WINDING TYPES

CLASS
8547

PRIMARY RESISTOR TYPE

Primary resistor starters provide smooth acceleration and reduced starting current by inserting resistors in series with the motor windings.



8747

MELTING ALLOY OVERLOAD RELAYS

25-60 CYCLES

NEMA CLASS 116 RESISTORS

110-550 VOLTS

No. of Poles	Max. H. P. Poly-phase	Volts	Class 8547, Non-Reversing				Class 8747, Reversing			
			General Purpose Enclosure NEMA Type 1		Dust-tight Enclosure NEMA Type 5		General Purpose Enclosure NEMA Type 1		Dust-tight Enclosure NEMA Type 5	
			Type	Price	Type	Price	Type	Price	Type	Price
3 Pole, Three Phase	5	208-220 440-550	CG-3	\$ 286.	CD-3	\$ 506.	CG-1	\$ 430.	CD-1	\$ 740.
	7½	208-220 440-550	DG-2 CG-3	\$ 400. 296.	DD-2 CD-3	\$ 710. 516.	DG-1 CG-1	\$ 794. 445.	DD-1 CD-1	\$1104. 755.
	10	208-220 440-550	DG-2	\$ 420.	DD-2	\$ 730.	DG-1	\$ 814.	DD-1	\$1124.
	15	208-220 440-550	DG-2	\$ 450.	DD-2	\$ 760.	DG-1	\$ 844.	DD-1	\$1154.
	20	208-220 440-550	EG-2 DG-2	\$ 600. 484.	ED-2 DD-2	\$ 910. 794.	EG-1 DG-1	\$1010. 878.	ED-1 DD-1	\$1320. 1188.
	25	208-220 440-550	EG-2 DG-2	\$ 610. 504.	ED-2 DD-2	\$ 920. 814.	EG-1 DG-1	\$1026. 913.	ED-1 DD-1	\$1336. 1223.
	30	208-220 440-550	EG-2	\$ 638.	ED-2	\$ 948.	EG-1	\$1054.	ED-1	\$1364.
	40	208-220 440-550	FG-1 EG-2	\$1296. 662.	FD-1 ED-2	\$1682. 972.	FG-1 EG-1	\$2198. 1078.	FD-1 ED-1	\$2768. 1388.
	50	208-220 440-550	FG-1 EG-2	\$1296. 684.	FD-1 ED-2	\$1682. 994.	FG-1 EG-1	\$2198. 1113.	FD-1 ED-1	\$2768. 1423.
	60	208-220 440-550	GG-1 FG-1	\$2022. 1320.	GD-1 FD-1	\$2484. 1706.	GG-1 FG-1	\$2222. 1706.	GD-1 FD-1	\$2790. 2279.
	75	208-220 440-550	GG-1 FG-1	\$2022. 1320.	GD-1 FD-1	\$2484. 1706.	GG-1 FG-1	\$2222. 1706.	GD-1 FD-1	\$2790. 2279.
	100	208-220 440-550	GG-1 FG-1	\$2178. 1320.	GD-1 FD-1	\$2640. 1706.	GG-1 FG-1	\$2222. 1706.	GD-1 FD-1	\$2790. 2279.
	150	440-550	GG-1	\$2094.	GD-1	\$2556.	GG-1	.....	GD-1	.....
	200	440-550	GG-1	\$2372.	GD-1	\$2834.	GG-1	.....	GD-1	.....

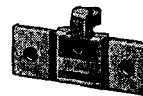
Prices include thermal overload relay units. Deduct \$1.50 each if relay units are omitted. Select relay units from Table 1, Page 120. Spare parts, electrical interlock, and user modification kits may be ordered from pages 116-118.

ORDERING INSTRUCTIONS: Specify Class and Type number of starter; give horsepower, voltage, phase, cycles, full load current and type of motor.

PART WINDING MOTOR STARTERS

CLASS
8640

Class 8640 starters are used with part winding squirrel cage motors to provide reduced starting torque and current.



MELTING ALLOY OVERLOAD RELAYS

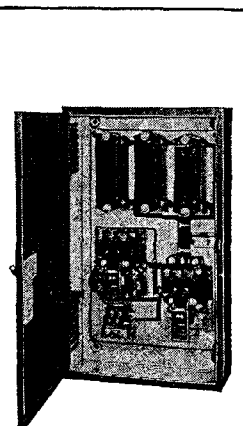
25-60 CYCLES

208-600 VOLTS

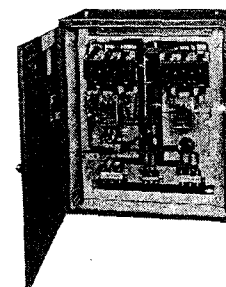
No. of Poles	NEMA Size	Max. H. P. Polyphase		General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-tight Enclosure NEMA Type 5		For Hazardous Locations, Class I Group D NEMA Type 7	
		208-220 Volts	440-550 Volts	Type	Price	Type	Price	Type	Price	Type	Price
3 Pole Three Phase	1	10	15	CG-1	\$ 225.	CW-1	\$ 319.	CD-1	\$ 287.	CR-1	\$ 455.
	2	30	50	DG-1	318.	DW-1	436.	DD-1	390.	DR-1	660.
	3	60	100	EG-1	446.	EW-1	618.	ED-1	546.	ER-1	1008.
	4	100	200	FG-1	947.	FW-1	1218.	FD-1	1145.	.....	.....
	5	200	400	GG-1	1900.	GW-1	2470.	GD-1	2362.	.....	.....

Prices include four thermal overload relay units. Deduct \$1.50 each if relay units are omitted. Select relay units, based on full load current of each motor winding, from Table 1, Page 120.

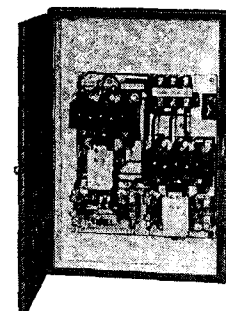
ORDERING INSTRUCTIONS: Specify Class and Type number of starter; give horsepower, voltage, phase and cycles of motor, and full load current of each motor winding.



Class 8547
Type CG-3



Class 8547
Type DG-2

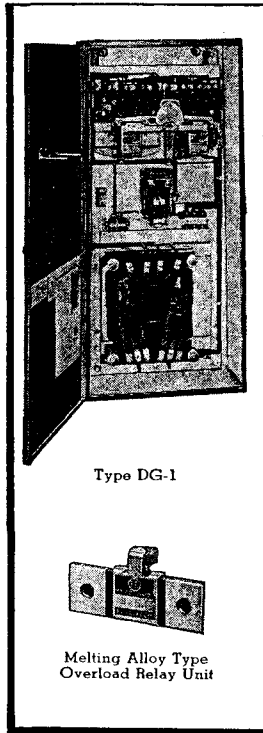


Class 8640
Type DG-1



A. C. MAGNETIC STARTERS

REDUCED VOLTAGE, AUTO-TRANSFORMER TYPE



ORDERING INSTRUCTIONS:

1. Specify Class and Type number; give horsepower, voltage, phase, cycles and full load current rating of motor.
2. Select relay units from Table 1, Page 120.
3. Order suitable push button station from Pages 94-100. Spare parts, electrical interlock, and user modification kits may be ordered from pages 116-118.
4. If special features are required order "Class 8606 similar to Type....." and state clearly features required.

AUTO-TRANSFORMER TYPE — AIR BREAK

Fully automatic in operation, these starters apply a reduced voltage across the motor terminals during the acceleration period by means of an auto-transformer. Greater starting torque per ampere of line current is provided than with any other form of reduced voltage starter.

CLASS
8606

THREE PHASE — MELTING ALLOY OVERLOAD RELAYS

25-60 CYCLES			CLASS 8606						208-550 VOLTS	
H. P. Ratings	Volts	Cycles	General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		Dust-tight Enclosure NEMA Type 5		For Hazardous Locations Class II, Groups E, F and G NEMA Type 9	
			Type	Price	Type	Price	Type	Price	Type	Price
10	208-220 440-550	50-60	DG-1	\$ 570.	DW-1	\$ 880.	DD-1	\$ 880.	DE-1	\$ 880.
	208-220 440-550	25	DG-1	\$ 598.	DW-1	\$ 908.	DD-1	\$ 908.	DE-1	\$ 908.
15	208-220 440-550	50-60	DG-1	\$ 570.	DW-1	\$ 880.	DD-1	\$ 880.	DE-1	\$ 880.
	208-220 440-550	25	DG-1	\$ 598.	DW-1	\$ 908.	DD-1	\$ 908.	DE-1	\$ 908.
20	208-220 440-550	50-60	EG-1 DG-1	\$ 670. 570.	EW-1 DW-1	\$ 980. 880.	ED-1 DD-1	\$ 980. 880.	EE-1 DE-1	\$ 980. 880.
	208-220 440-550	25	EG-1 DG-1	\$ 698. 598.	EW-1 DW-1	\$1008. 908.	ED-1 DD-1	\$1008. 908.	EE-1 DE-1	\$1008. 908.
25	208-220 440-550	50-60	EG-1 DG-1	\$ 670. 570.	EW-1 DW-1	\$ 980. 880.	ED-1 DD-1	\$ 980. 880.	EE-1 DE-1	\$ 980. 880.
	208-220 440-550	25	EG-1 DG-1	\$ 698. 598.	EW-1 DW-1	\$1008. 908.	ED-1 DD-1	\$1008. 908.	EE-1 DE-1	\$1008. 908.
30	208-220 440-550	50-60	EG-1	\$ 698.	EW-1	\$1008.	ED-1	\$1008.	EE-1	\$1008.
	208-220 440-550	25	EG-1	\$ 956.	EW-1	\$1266.	ED-1	\$1266.	EE-1	\$1226.
40	208-220 440-550	50-60	FG-1 EG-1	\$1296. 722.	FW-1 EW-1	\$1866. 1032.	FD-1 ED-1	\$1682. 1032.	FE-1 EE-1	\$1866. 1032.
	208-220 440-550	25	FG-1 EG-1	\$1356. 956.	FW-1 EW-1	\$1926. 1266.	FD-1 ED-1	\$1742. 1266.	FE-1 EE-1	\$1926. 1266.
50	208-220 440-550	50-60	FG-1 EG-1	\$1296. 722.	FW-1 EW-1	\$1866. 1032.	FD-1 ED-1	\$1682. 1032.	FE-1 EE-1	\$1866. 1032.
	208-220 440-550	25	FG-1 EG-1	\$1356. 956.	FW-1 EW-1	\$1926. 1266.	FD-1 ED-1	\$1742. 1266.	FE-1 EE-1	\$1926. 1266.
60	208-220 440-550	50-60	GG-1 FG-1	\$2022. 1320.	GW-1 FW-1	\$2592. 1890.	GD-1 FD-1	\$2484. 1706.	GE-4 FE-1	\$2592. 1890.
	208-220 440-550	25	GG-1 FG-1	\$2076. 1496.	GW-1 FW-1	\$2646. 2066.	GD-1 FD-1	\$2538. 1882.	GE-1 FE-1	\$2646. 2066.
75	208-220 440-550	50-60	GG-1 FG-1	\$2022. 1320.	GW-1 FW-1	\$2592. 1890.	GD-1 FD-1	\$2484. 1706.	GE-1 FE-1	\$2592. 1890.
	208-220 440-550	25	GG-1 FG-1	\$2076. 1496.	GW-1 FW-1	\$2646. 2066.	GD-1 FD-1	\$2538. 1882.	GE-1 FG-1	\$2646. 2066.
100	208-220 440-550	50-60	GG-1 FG-1	\$2178. 1320.	GW-1 FW-1	\$2748. 1890.	GD-1 FD-1	\$2640. 1706.	GE-1 FE-1	\$2748. 1890.
	208-220 440-550	25	GG-1 FG-1	\$2278. 1598.	GW-1 FW-1	\$2848. 2168.	GD-1 FD-1	\$2740. 1984.	GE-1 FE-1	\$2848. 2168.
125	440-550	50-60	GG-1	\$2094.	GW-1	\$2664.	GD-1	\$2556.	GE-1	\$2664.
	440-550	25	GG-1	\$2178.	GW-1	\$2748.	GD-1	\$2640.	GE-1	\$2748.
150	440-550	50-60	GG-1	\$2094.	GW-1	\$2664.	GD-1	\$2556.	GE-1	\$2664.
	440-550	25	GG-1	\$2436.	GW-1	\$3006.	GD-1	\$2898.	GE-1	\$3006.
200	440-550	50-60	GG-1	\$2372.	GW-1	\$2942.	GD-1	\$2834.	GE-1	\$2942.
	440-550	25	GG-1	\$2674.	GW-1	\$3244.	GD-1	\$3136.	GE-1	\$3244.

Prices include thermal overload relay units. Deduct \$1.50 each if relay units are omitted.

A. C. MAGNETIC STARTER

REDUCED VOLTAGE TYPES — DIMENSIONS and WIRING DIAGRAMS

APPROXIMATE DIMENSION — NOT FOR CONSTRUCTION

GENERAL PURPOSE ENCLOSURE			NEMA TYPE 1			
Class of Equipment	Dimension Symbol	Size 1	Size 2	Size 4	Size 4	Size 5
8547		CG-3 Diagram 1	DG-2 Diagram 1	EG-2 Diagram 1	FG-1 Diagram 1	CG-1 Diagram 1
	A	14 1/4	20 1/4	20 1/4	27 1/4	30 1/4
	B	23 1/4	23 1/4	30 1/4	44 1/4	59 1/4
	C	9 3/4	14 1/4	15 3/4	21 1/4	36
	D	11 1/2	14	17 1/2	23	28
	E	20 1/2	19 1/2	27 1/2	40	28 1/2
	F	3/16	7/16	7/16	3/16	3/16
8606	Weight	60	122—130	195—220	.....	.....
			DG-1 Diagram 1	EG-1 Diagram 1	FG-1 Diagram 2	GG-1 Diagram 2
	A	.....	18 1/4	22 1/4	32 1/4	36 1/4
	B	.....	40 1/4	43 1/4	64 3/4	79 1/4
	C	.....	12 3/4	15 1/4	20	24
	D	.....	11 1/2	14 1/2	30	34
	E	.....	37 1/2	39	12 1/2	16 1/2
8640	F	.....	7/16	3/16	3/16	3/16
	Weight	.....	250—300	335—360	.....	.....
		CG-1	DG-1	EG-1	FG-1	GG-1
	A	13 1/4	16 1/4	19 1/4	26 1/4	30 1/4
	B	18 1/4	24 1/4	29 1/4	40 1/4	77 1/4
	C	6 1/4	7 1/4	8 1/4	10	24
	D	11	14	16 1/2	23 1/2	28
	E	16	22	26 1/2	27 1/2	16 1/2
	F	3/32	3/32	7/16	7/16	3/16
	Weight	.....	.....	.....	.....	.....

All dimensions are in inches.

Weights are approximate shipping weights which depend upon horsepower rating of equipment.

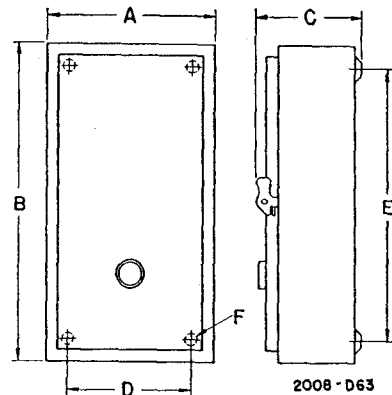


Diagram 1
NEMA 1 General Purpose
Wall Mounting Enclosure

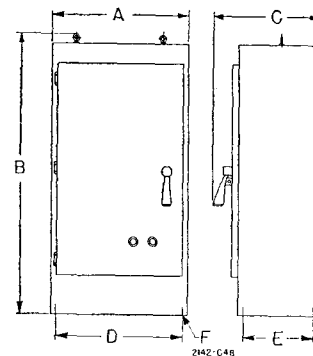
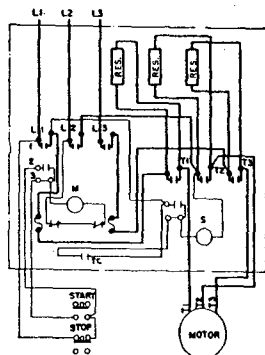
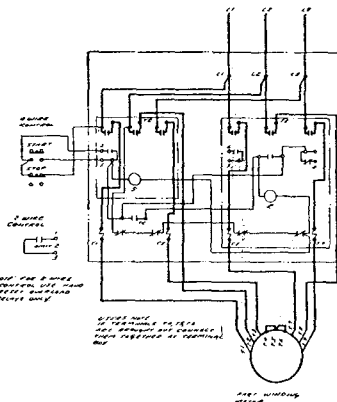


Diagram 2
NEMA 1 General Purpose
Floor Mounting Enclosure

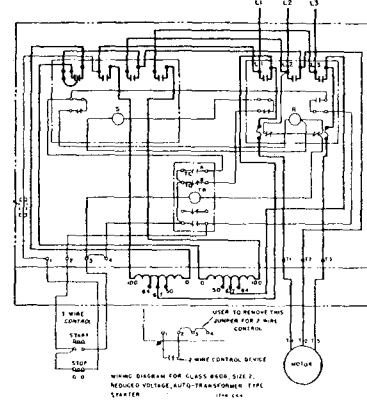
WIRING DIAGRAMS



Typical Wiring Diagram for
Class 8547 Primary Resistor Type
Reduced Voltage Starter



Typical Wiring Diagram for
Class 8640 Part Winding Motor
Starters



Typical Wiring Diagram for
Class 8606 Auto-Transformer Type
Reduced Voltage Starter

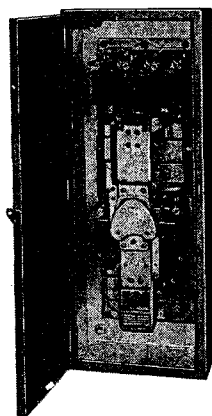


A. C. REVERSING MAGNETIC CONTACTORS

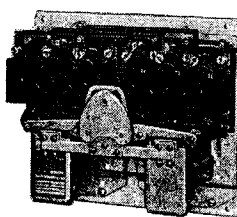
WITHOUT OVERLOAD PROTECTION

Reversing type magnetic contactors are used to start, stop and reverse A. C. squirrel cage motors where overload protection is not needed or is provided separately. Square D offers these sturdy contactors in a large variety of sizes and enclosures.

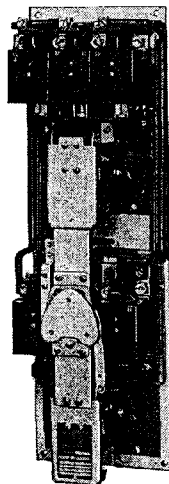
CLASS
8702



Type DG-1



Type DO-2



Type EO-1

110-600 VOLTS

25-60 CYCLES

No. of Poles	NEMA Size	Ratings		Type of Motor	General Purpose Enclosure NEMA Type 1			Water-tight Enclosure NEMA Type 4		Dust-Tight Industrial Use Enclosure ▲ NEMA Type 12		Open Type		
		Volts	Max. H. P.		Vertical Type	Horizontal Type	Price	Type	Price	Type	Price	Vertical Type	Horizontal Type	Price
2 Pole Single Phase	00	115 230	1½ ¾	3-Wire	...	AG-4	\$62.	AW-1	\$108.	Use NEMA Size 0		...	AO-1	\$58.
	0	115 230	1 1½		...	BG-1	\$74.	BW-1	\$120.	BA-1	\$ 92.	...	BO-1	\$70.
	1	115 230	1½ 3		CG-1	CG-2	\$86.	CW-1	\$150.	CA-1	\$104.	CO-1	CO-2	\$80.
3 Pole Single Phase	00	115 230	1½ ¾	4-Wire Rep.-Ind.	...	AG-2	\$64.	AW-2	\$110.	Use NEMA Size 0		...	AO-2	\$60.
		115 230	1½ ¾	4-Wire Split Phase	...	AG-3	\$64.	AW-3	\$110.	Use NEMA Size 0		...	AO-3	\$60.
	0	115 230	1 1½	4-Wire Rep.-Ind.	...	BG-2	\$76.	BW-2	\$122.	BA-2	\$ 94.	...	BO-2	\$72.
		115 230	1 1½	4-Wire Split-Phase	...	BG-3	\$76.	BW-3	\$122.	BA-3	\$ 94.	...	BO-3	\$72.
	1	115 230	1½ 3	4-Wire Rep.-Ind.	CG-3	CG-4	\$88.	CW-2	\$152.	CA-2	\$106.	CO-3	CO-4	\$82.
		115 230	1½ 3	4-Wire Split Phase	CG-5	CG-6	\$88.	CW-3	\$152.	CA-3	\$106.	CO-5	CO-6	\$82.
3 Pole Poly-phase	00	208-220 440-550	1 1	3 Phase	...	AG-4	\$64.	AW-4	\$110.	Use NEMA Size 0		...	AO-4	\$60.
	0	208-220 440-550	2 3		...	BG-4	\$76.	BW-4	\$122.	BA-4	\$ 94.	...	BO-4	\$72.
	1	208-220 440-550	5 7½		CG-7	CG-8	\$88.	CW-4	\$152.	CA-4	\$106.	CO-7	CO-8	\$82.
	2	208-220 440-550	15 25		DG-1	DG-2	\$172.	DW-1	\$276.	DA-1	\$202.	DO-1	DO-2	\$156.
	3	208-220 440-550	30 50		EG-1	EG-2	\$287.	EW-1	\$441.	ED-1	\$353.	EO-1	EO-2	\$259.
	4	208-220 440-550	50 100		FG-1	FG-3	\$698.	FW-1	\$970.	FD-1	\$800.	FO-1	FO-3	\$646.
	5	208-220 440-550	100 200		GG-1	...	\$1333.	GW-1	\$1653.	GD-1	\$1653.	GO-1	...	\$1059.
4 Pole Poly-phase	0	220 440-550	2 3	2 Phase 4-Wire	...	BG-5	\$96.	BW-5	\$142.	BA-5	\$114.	...	BO-5	\$92.
	1	220 440-550	5 7½		CG-9	CG-10	\$109.	CW-5	\$173.	CA-5	\$127.	CO-9	CO-10	\$105.
	2	220 440-550	15 25		DG-3	DG-4	\$214.	DW-2	\$324.	DA-2	\$244.	DO-3	DO-4	\$198.
	3	220 440-550	30 50		EG-3	EG-4	\$358.	EW-2	\$510.	ED-2	\$422.	EO-3	ED-4	\$328.
	4	220 440-550	50 100		FG-2	FG-4	\$888.	FW-2	\$1162.	FD-2	\$992.	FO-2	FO-4	\$834.
	5	220 440-550	100 200		GG-2	...	\$1597.	GW-2	\$2115.	GD-2	\$1917.	GO-2	...	\$1323.

Contactors with enclosures for Class II Groups E, F and G and Class I Group D hazardous locations are also available
▲ Also functionally equivalent to NEMA Type 5.

ORDERING INSTRUCTIONS: Specify Class and Type number of contactor; give horsepower, voltage phase, cycles, and full load current rating of motor. For accessories, see pages 94-115 for spare parts, electrical interlock and user modification kits, see pages 116-118.



SCHEDULE

K

DISCOUNT

PAGE 83

A. C. REVERSING MAGNETIC CONTACTORS

CLASS
8736

MELTING ALLOY OVERLOAD RELAYS

Reversing type line voltage magnetic starters are used to start, stop and reverse A.C. squirrel cage motors where full motor starting torque will not damage the driven machinery and where the starting inrush current is not objectionable. Motor protection is provided by melting alloy type thermal overload relays.

110-600 VOLTS

25-60 CYCLES

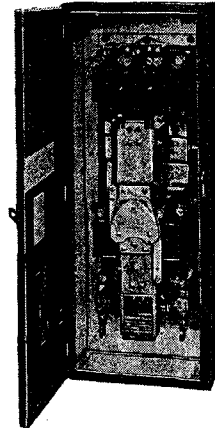
No. of Poles	NEMA Size	Ratings		Type of Motor	General Purpose Enclosure NEMA Type 1			Water-tight Enclosure NEMA Type 4		Dust-Tight Industrial Use Enclosure NEMA Type 12 ▲		Open Type		
		Volts	Max. H. P.		Vertical Type	Horizontal Type	Price	Type	Price	Type	Price	Vertical Type	Horizontal Type	Price
2 Pole Single Phase	00	115-230	1/2-3/4	3-Wire	...	AG-1	\$66.	AW-1	\$112.	Use NEMA Size 0		...	AO-1	\$62.
	0	115-230	1-1 1/2		...	BG-1	\$78.	BW-1	\$124.	BA-1	\$ 96.	...	BO-1	\$74.
	1	115-230	1 1/2-3		CG-1	CG-2	\$90.	CW-1	\$154.	CA-1	\$108.	CO-1	CO-2	\$84.
3 Pole Single Phase	00	115-230	1/2-3/4	4-Wire Rep.-Ind.	...	AG-2	\$68.	AW-2	\$114.	Use NEMA Size 0		...	AO-2	\$64.
		115-230	1/2-3/4	4-Wire Split Phase	...	AG-3	\$68.	AW-3	\$114.	Use NEMA Size 0		...	AO-3	\$64.
	0	115-230	1-1 1/2	4-Wire Rep.-Ind.	...	BG-2	\$80.	BW-2	\$126.	BA-2	\$ 98.	...	BO-2	\$76.
		115-230	1-1 1/2	4-Wire Split Phase	...	BG-3	\$80.	BW-3	\$126.	BA-3	\$ 98.	...	BO-3	\$76.
	1	115-230	1 1/2-3	4-Wire Rep.-Ind.	CG-3	CG-4	\$92.	CW-2	\$156.	CA-2	\$110.	CO-3	CO-4	\$86.
		115-230	1 1/2-3	4-Wire Split Phase	CG-5	CG-6	\$92.	CW-3	\$156.	CA-3	\$110.	CO-5	CO-6	\$86.
	00	208-220-440-550	1-1	3 Phase	...	AG-4	\$72.	AW-4	\$118.	Use NEMA Size 0		...	AO-4	\$68.
		208-220-440-550	2-3		...	BG-4	\$84.	BW-4	\$130.	BA-4	\$102.	...	BO-4	\$80.
3 Pole Poly-phase	1	208-220-440-550	5-7 1/2		CG-7	CG-8	\$96.	CW-4	\$160.	CA-4	\$114.	CO-7	CO-8	\$90.
	2	208-220-440-550	15-25		DG-1	DG-2	\$184.	DW-1	\$288.	DA-1	\$214.	DO-1	DO-2	\$168.
	3	208-220-440-550	30-50		EG-1	EG-2	\$305.	EW-1	\$459.	ED-1	\$371.	EO-1	EO-2	\$277.
	4	208-220-440-550	50-100		FG-1	FG-3	\$724.	FW-1	\$996.	FD-1	\$826.	FO-1	FO-3	\$672.
	5	208-220-440-550	100-200		GG-1	...	\$1410.	GW-1	\$1730.	GD-1	\$1730.	GO-1	...	\$1136.
	0	220-440-550	2-3		...	BG-5	\$104.	BW-5	\$150.	BA-5	\$122.	...	BO-5	\$100.
	1	220-440-550	5-7 1/2		CG-9	CG-10	\$117.	CW-5	\$181.	CA-5	\$135.	CO-9	CO-10	\$113.
4 Pole Poly-phase	2	220-440-550	15-25	2 Phase 4-Wire	DG-3	DG-4	\$226.	DW-2	\$336.	DA-2	\$256.	DO-3	DO-4	\$210.
	3	220-440-550	30-50		EG-3	EG-4	\$376.	EW-2	\$528.	ED-2	\$528.	EO-3	EO-4	\$346.
	4	220-440-550	50-100		FG-2	FG-4	\$914.	FW-2	\$1188.	FD-2	\$1018.	FO-2	FO-4	\$860.
	5	220-440-550	100-200		GG-2	...	\$1674.	GW-2	\$2192.	GD-2	\$1994.	GO-2	...	\$1400.
	0	220-440-550	2-3		...	BG-5	\$104.	BW-5	\$150.	BA-5	\$122.	...	BO-5	\$100.

Prices include thermal overload relay units. Deduct \$1.50 each if relay units are omitted. Select relay units from Table 1, Page 120. For Size 00 devices indicate motor full load current on order.

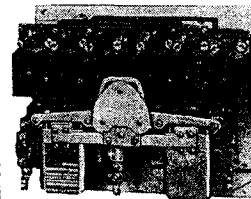
Starters with enclosures for Class II, Groups E, F and G and Class I Group D hazardous locations are also available.

▲ Also functionally equivalent to NEMA Type 5.

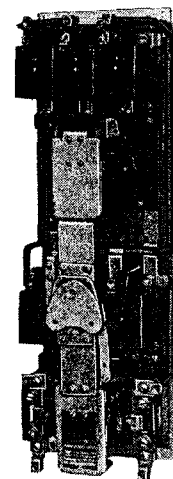
ORDERING INSTRUCTIONS: Specify Class and type number of starter; give horsepower, voltage phase, cycles, and full load current rating of motor. For accessories, see pages 94-115; for spare parts, electrical interlock and user modification kits, see pages 116-118.



Type DG-1

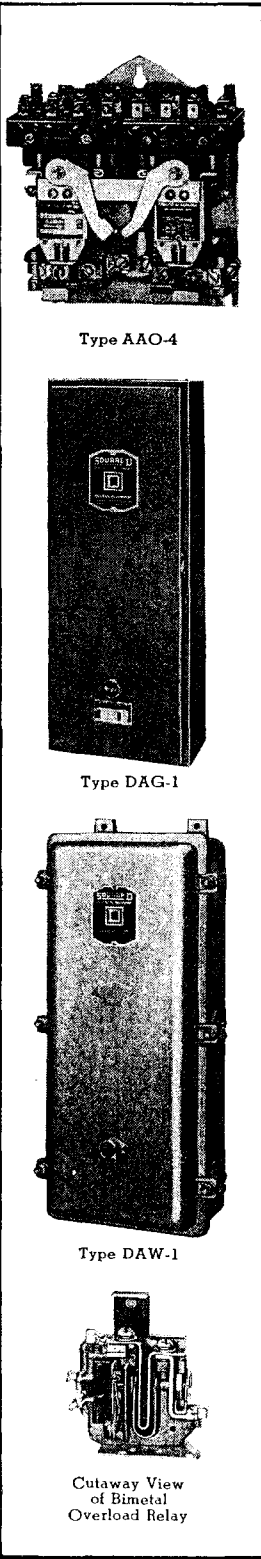


Type DO-2



Type EO-1

A. C. REVERSING MAGNETIC STARTERS



BIMETAL OVERLOAD RELAYS

CLASS
8736

The reversing type line voltage magnetic starters listed below are identical to those on page 84 except that motor protection is provided by automatic/hand reset adjustable bimetal overload relays. These sturdy reversing starters are available in a variety of sizes and enclosures to suit almost any application.

110-600 VOLTS

25-60 CYCLES

No. of Poles	NEMA Size	Ratings		Type of Motor	General Purpose Enclosure NEMA Type 1			Water-tight Enclosure NEMA Type 4		Dust-Tight Industrial Use Enclosure NEMA Type 12 ▲		Open Type		
		Volts	Max. H. P.		Vertical Type	Horizontal Type	Price	Type	Price	Type	Price	Vertical Type	Horizontal Type	Price
2 Pole Single Phase	00	115 230	$\frac{1}{2}$ $\frac{3}{4}$	3-Wire	...	AAG-1	\$66.	AAW-1	\$112.	Use NEMA Size 0		...	AAO-1	\$62.
	0	115 230	1 $1\frac{1}{2}$		...	BAG-1	\$78.	BAW-1	\$124.	BAA-1	\$ 96.	...	BAO-1	\$74.
	1	115 230	$1\frac{1}{2}$ 3		CAG-1	CAG-2	\$90.	CAW-1	\$154.	CAA-1	\$108.	CAO-1	CAO-2	\$84.
3 Pole Single Phase	00	115 230	$\frac{1}{2}$ $\frac{3}{4}$	4-Wire Rep.-Ind.	...	AAG-2	\$68.	AAW-2	\$114.	Use NEMA Size 0		...	AAO-2	\$64.
		115 230	$\frac{1}{2}$ $\frac{3}{4}$	4-Wire Split Phase	...	AAG-3	\$68.	AAW-3	\$114.	Use NEMA Size 0		...	AAO-3	\$64.
	0	115 230	1 $1\frac{1}{2}$	4-Wire Rep.-Ind.	...	BAG-2	\$80.	BAW-2	\$126.	BAA-2	\$ 98.	...	BAO-2	\$76.
		115 230	1 $1\frac{1}{2}$	4-Wire Split Phase	...	BAG-3	\$80.	BAW-3	\$126.	BAA-3	\$ 98.	...	BAO-3	\$76.
	1	115 230	$1\frac{1}{2}$ 3	4-Wire Rep.-Ind.	CAG-3	CAG-4	\$92.	CAW-2	\$156.	CAA-2	\$110.	CAO-3	CAO-4	\$86.
		115 230	$1\frac{1}{2}$ 3	4-Wire Split-Phase	CAG-5	CAG-6	\$92.	CAW-3	\$156.	CAA-3	\$110.	CAO-5	CAO-6	\$86.
3 Pole Poly-phase	00	208-220 440-550	1 1	3 Phase	...	AAG-4	\$72.	AAW-4	\$118.	Use NEMA Size 0		...	AAO-4	\$68.
	0	208-220 440-550	2 3		...	BAG-4	\$84.	BAW-4	\$130.	BAA-4	\$102.	...	BAO-4	\$80.
	1	208-220 440-550	5 $7\frac{1}{2}$		CAG-7	CAG-8	\$96.	CAW-4	\$160.	CAA-4	\$114.	CAO-7	CAO-8	\$90.
	2	208-220 440-550	15 25		DAG-1	DAG-2	\$184.	DAW-1	\$288.	DAA-1	\$214.	DAO-1	DAO-2	\$168.
	3	208-220 440-550	30 50		EAG-1	EAG-2	\$305.	EAW-1	\$459.	EAD-1	\$371.	EAO-1	EAO-2	\$277.
	4	208-220 440-550	50 100		FAG-1	FAG-3	\$724.	Starters in these sizes and enclosures are not made with bimetal overload relays. Select starters with melting alloy overload relays from Page 82.				FAO-1	FAO-3	\$672.
	5	208-220 440-550	100 200		GAG-1	...	\$1410.					GAO-1	...	\$1136.
4 Pole	0	220 440-550	2 3	2 Phase 4-Wire	...	BAG-5	\$104.	BAW-5	\$150.	BAA-5	\$122.	...	BAO-5	\$100.
	1	220 440-550	5 $7\frac{1}{2}$		CAG-9	CAG-10	\$117.	CAW-5	\$181.	CAA-5	\$135.	CAO-9	CAO-10	\$113.
	2	220 440-550	15 25		DAG-3	DAG-4	\$226.	DAW-2	\$336.	DAA-2	\$256.	DAO-3	DAO-4	\$210.
	3	220 440-550	30 50		EAG-3	EAG-4	\$376.	EAW-2	\$528.	EAD-2	\$440.	EAO-3	EAO-4	\$346.
	4	220 440-550	50 100		Starters in these sizes are not made with bimetal overload relays. Select starter with melting alloy overload relays from Page 84.									
	5	220 440-550	100 200											

Prices include thermal overload relay units. Deduct \$1.50 each if relay units are omitted. Select relay units from Table 1, Page 121.

Starters with enclosures for Class II Groups E F and Class I Group D Hazardous locations are also available.

▲ Also functionally equivalent to NEMA Type 5.

ORDERING INSTRUCTIONS: Specify Class and Type number of starter; give horsepower, voltage, phase, cycles and full load current rating of motor. Order spare parts from pages 116-118.



SCHEDULE



DISCOUNT

PAGE 85

A. C. REVERSING CONTACTORS & STARTERS

WIRING DIAGRAMS and DIMENSIONS

APPROXIMATE DIMENSION — NOT FOR CONSTRUCTION

NEMA Size	Dimension	8702				8736			
		Open Device		NEMA 1		Open Device		NEMA 1	
		Vert. Type Diagram 2	Horiz. Type Diagram 3	Vert. Type Diagram 1	Horiz. Type Diagram 1	Vert. Type Diagram 2	Horiz. Type Diagram 3	Vert. Type Diagram 1	Horiz. Type Diagram 1
0	A	...	6 7/8	...	8 3/4	...	8 7/8	...	10 1/4
	B	...	6 1/4	...	9	...	6 1/4	...	9
1	C	...	3 3/8	...	5	...	3 3/8	...	5
	D	...	6 1/4	...	6 3/4	...	6 1/4	...	8
	E	...	5 5/8	...	7	...	5 5/8	...	7
	F	...	3/32	...	3/32	...	3/32	...	3/32
2	Weight	...	8	...	15	...	8	...	15
	Weight	...	8	...	15	...	8	...	15
3	A	5 1/4	9 1/8	6 3/4	10 3/4	5 1/4	9 1/8	6 3/4	10 3/4
	B	15	8 1/8	18 1/4	12 1/4	15	8 1/8	18 1/4	12 1/4
4	C	4 1/2	4 1/2	6	6	4 1/2	4 1/2	6	6
	D	4	7 7/8	4 1/2	8 1/2	4	7 7/8	4 1/2	8 1/2
	E	14 3/8	7 3/8	16	10	14 3/8	7 3/8	16	10
	F	...	3/16	3/32	3/32	...	3/16	3/32	3/32
5	Weight	11	11	22	22	12	12	23	23
	Weight	11	11	22	22	12	12	23	23
6	A	6 7/8	12 3/4	9 3/4	16 1/4	7 7/8	12 3/4	9 3/4	16 1/4
	B	20 3/4	11	25 1/4	15 1/4	20 3/4	11	25 1/4	15 1/4
7	C	5 5/8	5 5/8	7	7	5 5/8	5 5/8	7	7
	D	6	11 1/2	7 1/2	14	6	11 1/2	7 1/2	14
	E	20	10 1/8	23	13	20	10 1/8	23	13
	F	3/16	3/16	3/32	3/32	3/16	3/16	3/32	3/32
8	Weight	34	34	52	52	34	34	52	52
	Weight	34	34	52	52	34	34	52	52
9	A	8 7/8	15 1/8	10 3/4	19 1/4	8 7/8	15 1/8	10 3/4	19 1/4
	B	26	12 5/8	32 1/4	19 1/4	26	12 5/8	32 1/4	19 1/4
10	C	6 7/8	6 5/8	8 1/4	8 1/4	6 7/8	6 5/8	8 1/4	8 1/4
	D	7 1/8	14 1/4	8	16 1/2	7 1/8	14 1/4	8	16 1/2
	E	25 1/4	11 3/4	29 1/2	16 1/2	25 1/4	11 3/4	29 1/2	16 1/2
	F	1 1/32	1 1/32	1/16	1/16	1 1/32	1 1/32	1/16	1/16
11	Weight	55	55	90	90	57	57	90	90
	Weight	55	55	90	90	57	57	90	90
12	A	10	19 3/4	12 1/4	22 1/4	10	19 3/4	12 1/4	22 1/4
	B	38 1/2	17 3/8	46 3/4	25 1/4	38 1/2	17 3/8	46 3/4	25 1/4
13	C	8 3/8	8 1/8	10	10	8 3/8	8 1/8	10	10
	D	37	15 1/8	9 1/2	19 1/2	37	15 1/8	9 1/2	19 1/2
	E	3 7/16	16	44	22 1/2	3 7/16	16	44	22 1/2
	F	...	3/16	3/16	7/16	...	3/16	7/16	7/16
14	Weight	...	...	...	...	...	...	...	...
	Weight	...	...	...	...	...	...	...	...
15	A	24	...	28 1/4	...	24	...	28 1/4	...
	B	35	...	48 1/4	...	35	...	58 1/4	...
16	C	8	...	17 1/4	...	8	...	23 1/2	...
	D	22	...	20	...	22	...	...	...
	E	24	...	44	...	28	...	...	...
	F	3/16	...	3/16	...	3/16	...	...	...
17	Weight	...	...	...	...	310	...	...	...
	Weight	...	...	...	...	310	...	...	...

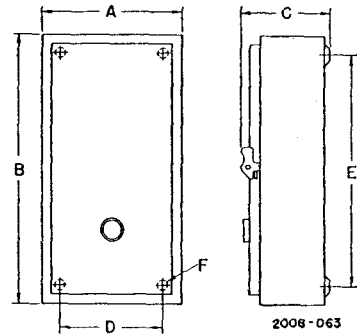


Diagram 1
NEMA 1 General Purpose Enclosure
for Reversing Contactors and
Starters

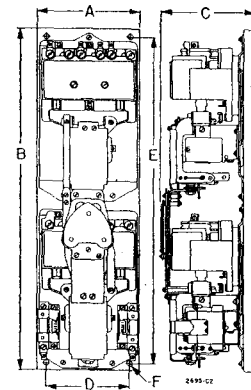


Diagram 2
Open Type Vertically Mounted
Reversing Contactors and Starters

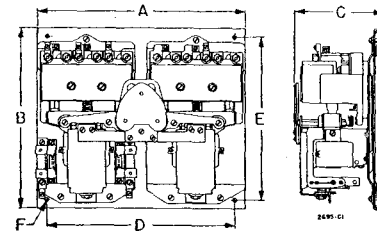
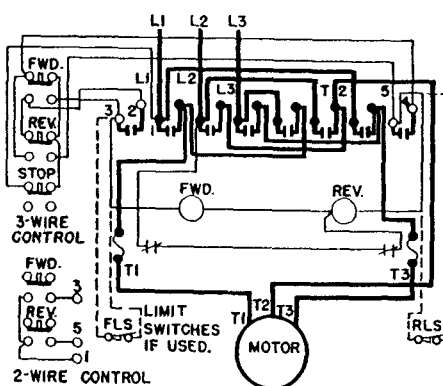
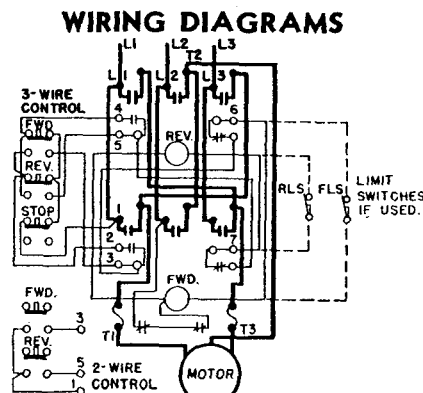


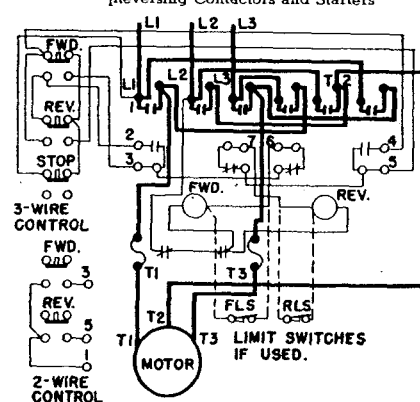
Diagram 3
Open Type Horizontally Mounted
Reversing Contactors and Starters



Class 8736 Size 0 and 1
Horizontally Mounted Starters.



Class 8736 Sizes 2, 3 and 4
Vertically Mounted Starter.



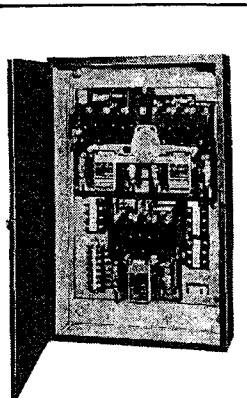
Class 8736 Sizes 2, 3 and 4
Horizontally Mounted Starters.

A. C. MULTI-SPEED MAGNETIC STARTERS

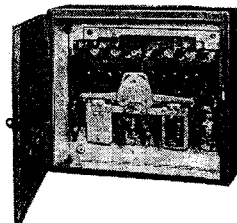
MELTING ALLOY OVERLOAD RELAYS

Line voltage type, A.C. multi-speed starters are designed to control separate winding and consequent pole winding squirrel cage motors which operate at 2, 3 or 4 different speeds. Starters are available for constant torque, variable torque and constant horsepower motor applications. Motor protection is afforded by melting alloy type thermal overload relays.

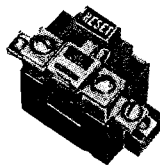
CLASS
8810
8811, 8812



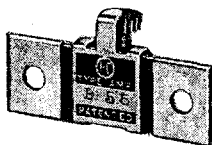
Class 8811
Type DG-3



Class 8810
Type DG-3



Overload Relay Block
and Thermal Unit



Melting Alloy Type
Overload Relay Unit

208-550 VOLTS

25-60 CYCLES

Type of Motor	NEMA Size	Maximum Horsepower		Class 8810 Two Speed				Class 8811 Three Speed		Class 8812 Four Speed	
		208-220 Volts	440-550 Volts	General Purpose Enclosure NEMA Type 1		Open Type		General Purpose Enclosure NEMA Type 1		General Purpose Enclosure NEMA Type 1	
				Type	Price	Type	Price	Type	Price	Type	Price
Three Phase (Consequent Pole) ★	Constant Horsepower	0	1½	3	BG-1 \$ 160.	BO-1 \$ 156.	BG-1 \$ 408.	BG-1 \$ 606.			
		1	3	5	CG-1 172.	CO-1 166.	CG-1 430.	CG-1 644.			
		2	10	20	DG-1 308.	DO-1 290.	DG-1 636.	DG-1 964.			
		3	20	40	EG-1 462.	EO-1 434.	EG-1 914.	EG-1 1420.			
		4	30	60	FG-1 1224.	FO-1 1114.	FG-1 2214.	FG-1 3342.			
	Constant Torque	5	75	150	GG-1 2124.	GO-1 1926.					
		0	2	3	BG-2 \$ 160.	BO-2 \$ 156.	BG-2 \$ 408.	BG-2 \$ 606.			
		1	5	7½	CG-2 172.	CO-2 166.	CG-2 430.	CG-2 644.			
		2	15	25	DG-2 308.	DO-2 290.	DG-2 636.	DG-2 954.			
		3	30	50	EG-2 462.	EO-2 434.	EG-2 914.	EG-2 1420.			
	Variable Torque	4	50	100	FG-2 1224.	FO-2 1114.	FG-2 2214.	FG-2 3342.			
		5	100	200	GG-2 2124.	GO-2 1926.					
	Variable Torque	0	2	3	BG-2 \$ 160.	BO-2 \$ 156.	BG-3 \$ 408.	BG-3 \$ 606.			
		1	5	7½	CG-2 172.	CO-2 166.	CG-3 430.	CG-3 644.			
		2	15	25	DG-2 308.	DO-2 290.	DG-3 636.	DG-3 954.			
		3	30	50	EG-2 462.	EO-2 434.	EG-3 914.	EG-3 1420.			
		4	50	100	FG-2 1224.	FO-2 1114.	FG-3 2214.	FG-3 3342.			
Three Phase, Y-Y Connected (Separate Winding) Only †	Constant Horsepower	5	100	200	GG-2 2124.	GO-2 1926.					
		0	1½	3	BG-3 \$ 116.	BO-3 \$ 112.	BG-4 \$ 290.	BG-4 \$ 416.			
		1	3	5	CG-3 130.	CO-3 124.	CG-4 316.	CG-4 440.			
		2	10	20	DG-3 228.	DO-3 212.	DG-4 462.	DG-4 630.			
		3	20	40	EG-3 354.	EO-3 326.	EG-4 662.	EG-4 892.			
	Constant Torque or Variable Torque	4	30	60	FG-3 860.	FO-3 808.	FG-4 1548.	FG-4 2174.			
		5	75	150	GG-3 1768.	GO-3 1658.					
		0	2	3	BG-4 \$ 116.	BO-4 \$ 112.	BG-5 \$ 290.	BG-5 \$ 416.			
		1	5	7½	CG-4 130.	CO-4 124.	CG-5 316.	CG-5 440.			
		2	15	25	DG-4 228.	DO-4 212.	DG-5 462.	DG-5 630.			
	Variable Torque	3	30	50	EG-4 354.	EO-4 326.	EG-5 662.	EG-5 892.			
		4	50	100	FG-4 860.	FO-4 808.	FG-5 1548.	FG-5 2174.			
		5	100	200	GG-4 1768.	GO-4 1658.					

Prices include thermal overload relay units. Deduct \$1.50 each if relay units are omitted. **Select relay units from Table 1, Page 120.**

†Prices and type numbers shown for three phase separate winding motor starters apply only when motor windings are star connected. When motor windings are connected open delta use the prices shown for three phase consequent pole motor starters.

★Prices and type numbers shown for three speed consequent pole motor starters apply only when the single speed winding is star connected. When the single speed winding is connected open delta, prices must be obtained from the factory.

ORDERING INSTRUCTIONS

1. Specify Class and Type number of starter; horsepower, voltage, phase, cycles, RPM, and full load current of the motor at each speed.
2. Furnish motor connection diagram.
3. Order suitable push button stations from Class 9001 Section. Spare parts and electrical interlock kits may be ordered from pages 116-118.
4. Specify either two or three wire control.
5. If Form 1 compelling relay is required, add the suffix, "F1" to Type number. For example — Class 8810, Type DG-2F1.
6. If Form 2 accelerating relays are required, add suffix "F2" to Type number. For example — Class 8811, Type DG-2F2.
7. If other special features are desired, order "Class similar to Type" and state clearly the features required.



SCHEDULE



DISCOUNT

PAGE 87

AUTOMATIC TRANSFER PANELS

SIZES 0 TO 5

CLASS
8901

Automatic transfer panels are used when it is necessary to maintain continuous power service, such as in a hospital operating room or for emergency lighting in public places. The panels automatically switch the load from the normal source to an emergency source, when the former fails, and automatically restore the load to normal service when it is again available.

A. C. NORMAL SUPPLY — A. C. EMERGENCY SUPPLY

110-600 VOLTS			CLASS 8901					25-60 CYCLES			
Size	Maximum Rating					Number of Poles		General Purpose Enclosure NEMA Type 1		Open Type	
	*Amperes		Horsepower					Type	Price	Type	Price
	Open	En-closed	Volts	Single Phase	Poly-phase	Normal Contactor	Emerg. Contactor				
0	15	13.5	110	1	1½	2	2	BG-A22	\$ 128.	BO-A22	\$ 124.
			208-220	1½	2	3	3	BG-A33	132.	BO-A33	128.
			440-550	2	3	4	4	BG-A44	150.	BO-A44	146.
1	25	22.5	110	1½	3	2	2	CG-A22	138.	CO-A22	132.
			208-220	3	5	3	3	CG-A33	144.	CO-A33	138.
			440-550	5	7½	4	4	CG-A44	162.	CO-A44	156.
2	50	45	110	3	7½	2	2	DG-A22	220.	DO-A22	204.
			208-220	7½	15	3	3	DG-A33	232.	DO-A33	216.
			440-550	10	25	4	4	DG-A44	272.	DO-A44	256.
3	100	90	110	7½	15	2	2	EG-A22	330.	EO-A22	300.
			208-220	15	30	3	3	EG-A33	348.	EO-A33	316.
			440-550	25	50	4	4	EG-A44	410.	EO-A44	380.
4	150	135	110	....	25	2	2	FG-A22	710.	FO-A22	658.
			208-220	....	50	3	3	FG-A33	744.	FO-A33	690.
			440-550	....	100	4	4	FG-A44	932.	FO-A44	880.
5	300	270	110	....	....	2	2	ZG-A22	1196.	ZO-A22	922.
			208-220	....	100	3	3	ZG-A33	1274.	ZO-A33	998.
			440-550	....	200	4	4	ZG-A44	1604.	ZO-A44	1330.

Transfer Panels for AC to DC, DC to DC and DC to AC are also available.

AUTOMATIC TRANSFER PANELS

PRICES FOR ADDITIONS AND SPECIAL FEATURES	Form Letters	Sizes 0 & 1	Size 2	Size 3	Size 4	Size 5
Pneumatic time delay relay, range 0.2 to 180 secs...	Form K	\$ 78.	\$ 78.	\$ 78.	\$ 78.	\$ 78.
Solid Neutral.....	Form N	3.30	3.90	5.	15.50	24.
Electrical interlocks, each (specify on which req'd)		11.	11.	11.	11.	33.
Pilot lamp in cover, each.....	Form Y-28	27.	27.	27.	27.	27.
Phase failure relay						
Three phase, 4 wire.....	Form Y-27	63.	63.	63.	63.	63.
Test switch.....	Form Y-29	16.50	16.50	16.50	16.50	16.50
Voltage sensitive relay *:						
Single phase.....	Form Y-15	80.	80.	80.	80.	80.
Two phase.....	Form Y-15	160.	160.	160.	160.	160.
Three phase.....	Form Y-15	240.	240.	240.	240.	240.
Omit power wiring:						
Two pole — deduct.....	Form Y-16	6.	14.	24.	40.	80.
Three pole — deduct.....	Form Y-16	10.	18.	30.	50.	110.
Four pole — deduct.....	Form Y-16	14.	24.	40.	66.	140.
Provide mechanically held contactors in place of electrically held contactors.....	Form Y-33	72.	76.	85.	150.	225.

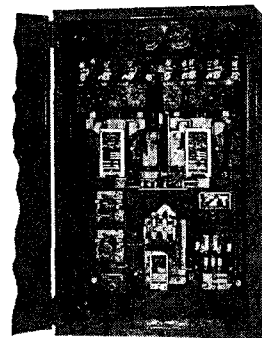
*Single phase includes one relay; two phase includes two relays; three phase includes three relays.

ORDERING INSTRUCTIONS:

- Order by Class and Type number, specify amperes or horsepower of load. Give voltage, frequency and source (i.e.—single phase, 2 wire; three phase, four wire, etc.), of both normal and emergency supplies.
- If special features are desired order "Class 8901 Similar to Type" and state clearly the features required.



Type CO-A33



Type DG-A33 with voltage sensitive relay, phase failure relay and test switch.

Ampere Ratings for Tungsten Lamp Loads—250 Volts or Less.

Size	Amperes
0	8
1	12
2	30
3	60
4	120
5	240

Fluorescent lamp loads 300 volts or less—

The characteristics of fluorescent lamps are such that it is not necessary to derate contactors below their normal 8 hour ampere rating.



SPECIAL PURPOSE CONTROL

Class 8930 A.C. Special Purpose Control

Custom-built control is recommended for efficient operation of machine tools, processing machinery, conveyor systems, and other equipment involving motor drives or electrically controlled hydraulic or pneumatic systems. Such control requires careful engineering to include features which insure maximum safety, uninterrupted production, and long service.

Square D special purpose control panels are grouped assemblies of motor starters, relays, timers, and other devices, complete with user terminals and interwiring for convenience of installation and maintenance. Circuits are usually designed for automatic sequencing of machine functions with minimum attention required of the operator.

Standard lines of devices are physically and electrically proportioned for efficient combination on special panels. A complete variety of enclosure types are available, and open panels can be supplied for mounting within machine cavities.

Other features available include line and reduced voltage starting, main line disconnect means with external operating handles, low voltage control circuits, branch circuit overcurrent protection, and motor running protection. Square D custom-built control can be furnished to conform with the latest NMTBA or IIC standards.

Class 7930 D.C. Special Purpose Control

Features and advantages of custom built control are also available for D.C. or combination A.C. and D.C. applications. Greater flexibility of speed and torque adjustment is inherent in the D.C. motor and accounts for its use on many machines.

As with Class 8930 control, Square D special purpose D.C. control is a unified assembly of standard devices, which are especially designed for heavy duty service. Simple combinations of contactors, relays, pneumatic timers, and resistors give such features as reduced voltage starting, dynamic braking, field acceleration and deceleration, armature shunt jogging, field failure protection, and plugging control. Also available are motor operated field rheostats.

Various types of enclosures can be furnished to best suit the particular application, with resistors mounted in rear of the panel or in a ventilated enclosure on top of the cabinet.

Class 8920 A.C. Laundry Machinery Control

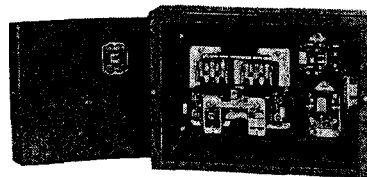
Standardized reversing control panel units are available for laundry or dry cleaning washers and tumblers. Synchronous motor driven timers control run, drift, and reverse cycling. Standard features include overload protection, two or three wire control, brake relay, and enclosure with sponge rubber gaskets.

For extractor service, non-reversing starters with special slow-tripping thermal overload relays are recommended. These starters are selected to accommodate Type JB thermal units which permit unusually long motor acceleration time without tripping.

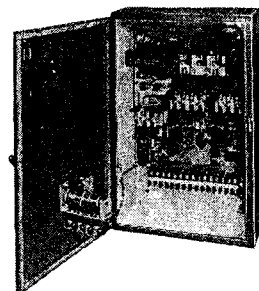
Class 8932 A.C. Punch Press Control

Control for mechanical punch presses is similar to that for other machines except that extra safety features are required. Square D builds both standardized and tailor-made press control panels with anti-repeat clutch control and other necessary features.

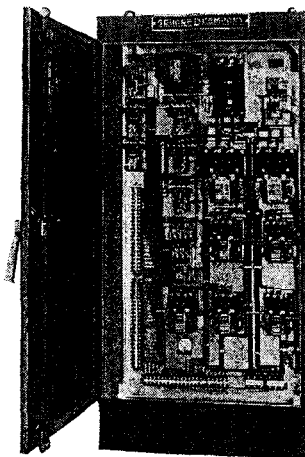
Enclosures are usually NEMA I with cover gaskets or NEMA 12 (automotive) but can be furnished in other types if desired. Either NMTBA or IIC standards can be followed for custom-built controls.



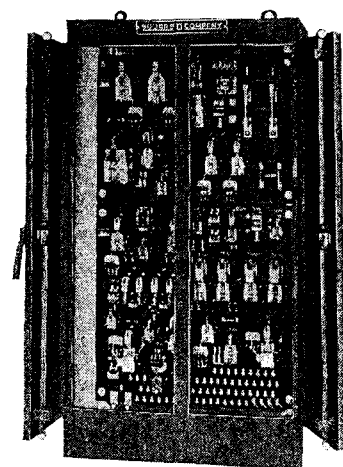
A.C. Reversing
Laundry Control for
Washer or Tumbler



A.C. Clutch Control
for Mechanical Punch
Press



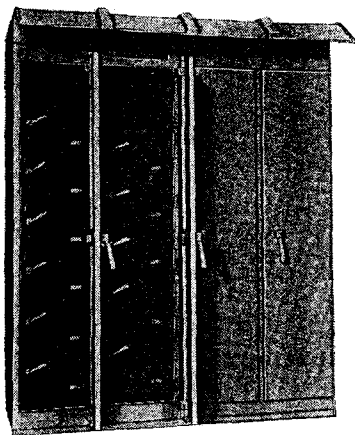
A.C. Special Purpose
Control Panel for Multiple
Spindle Drilling Machine



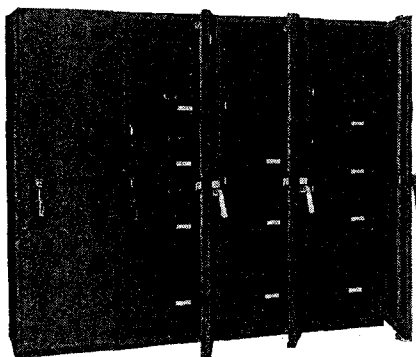
D.C. Special Purpose
Control Panel for
Roll Grinding
Machine



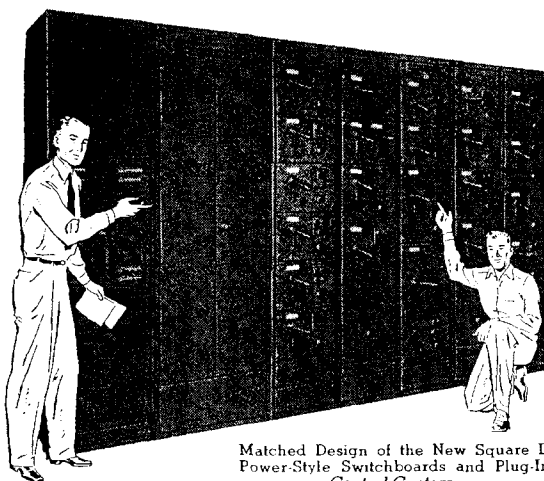
CONTROL CENTERS



Standard NEMA 3
Weather-resistant
Control Center for
Installation Out of
Doors.



NEMA 5 Dust-
Tight Control
Center for
Excessively
Dusty Locations.



Matched Design of the New Square D
Power-Style Switchboards and Plug-In
Control Centers.

APPLICATION

Square D "PLUG-IN" Model 3 control centers offer all the advantages of simplified planning, safety and economy gained by grouping electric motor controls in factory assembled, free standing structures. Control centers basically consist of standardized combination starter units and vertical sections, but are custom-assembled for the job.

Space Economy — Up to six combination starter units fit in 20" x 20" x 90" sections. Sections 20" deep accommodate all starters through Size 5.

Plant Changes — Units or whole sections may be added, removed or exchanged at will. Plug-in design and a wide variety of standard, interchangeable units provide the economical way to keep motor control in step with plant changes. Salvage value is practically 100%.

Safety Features — Disconnect operators are specifically designed with full cover interlocking provisions to encourage modern safety practices. Busses and wiring are fully enclosed and designed for ample full load and short circuit capacity. Unit enclosures isolate the control equipment for each motor.

Front-of-Board mounting is usually recommended because it allows full use of floor area next to walls or locations where the rear of the control center is not accessible. All equipment is mounted on the front face of the structure and wiring gutters are front accessible.

Back-to-Back mounting provides control units mounted on both faces of the structure. Less length is required, but greater depth of floor area is needed for aisle room on each side. Sections for front-of-board and back-to-back type mountings are 20" deep.

Control Units are available in wide variety to handle any A.C. installation. Standard units cover the normal requirements for disconnecting means, magnetic starters, lighting transformers, and lighting panels. Special control units are designed and built to order for the more unusual requirements.

Combination Starter units include both disconnect and starter elements. The disconnect may be either a circuit breaker or a fusible switch. The starters may be reversing or non-reversing, line voltage or reduced voltage, single speed or two speed, and may have such optional features as push buttons, pilot lights, control transformers, and extra electrical interlocks.



Units or Whole Sections
May Be Easily Added or
Exchanged.

Unit Withdrawal Facilitated by Removable Operators Panel—No Push Button Wires to Be Disconnected.



CONTROL CENTERS

CONSTRUCTION

Three Wiring Types are available, with choice depending on relative proportion of factory wiring to installation wiring and terminal facilities desired.

NEMA Type A construction is simplest. Only line side wiring is factory installed. Load and control connections are left for the user to attach to starter terminals within each unit.

NEMA Type B construction adds factory-installed load and control wiring between each unit and adjacent unit terminal blocks mounted on the stationary part of the structure in the vertical wiring trough. Type B centers may be installed and wired with units removed. Afterwards it is always easy to remove or exchange units without disturbing wiring external to the unit.

NEMA Type C construction provides load and control wiring to master terminal blocks, grouped at either top or bottom of each section. All necessary inter-wiring and interlocking of starters is done at the factory for maximum simplicity of installation on the job site.

Standard Enclosures are of 12-gauge steel, suitably formed and assembled for ample rigidity without excessive weight. Back and top plates are removable.

For Wet or Dusty Locations — Control centers are available with NEMA Type 3 weather resistant, NEMA Type 5 dust-tight, and Industrial Equipment enclosures. Standard units are installed in special vertical sections.

Bus Structure — Supported by steel frames with large porcelain insulators, is exceptionally strong and rigid. Main horizontal busses, rated 600 amperes, are mounted edge-to-edge for high short circuit capacity. Larger busses can easily be accommodated when necessary. Tubular copper vertical busses are rated 300 amperes.

Guide Rails at all four corners locate and rigidly support each unit as it slides into place. Mounting screws anchor the unit to these guide rails.

Plug-In Stabs have silver-plated copper fingers which automatically grip the round vertical busses for low resistance, silver-to-silver contact. Accurate positioning of each unit by its guide rails, and the unique floating construction of the stabs insures

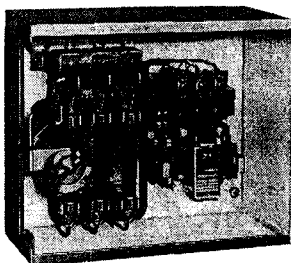
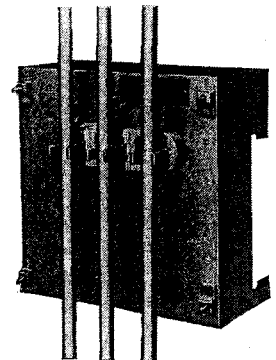
proper alignment of each stab with its bus. The stab fingers are backed by steel springs which carry no current, but apply unusually high pressure at the contacting surfaces to insure low temperature rise.

Operator's Panel in each standard combination unit door accommodates up to four oil-tight control units. This panel, with operators installed and wired, is easily removable from door when unit is being removed. Panel and control unit are removed at the same time for simple and convenient maintenance and bench testing.

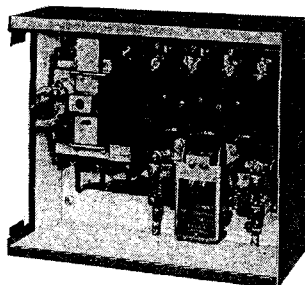


Control Center with Rear, Top and Side Plates Removed to Show Detailed Bus Structure.

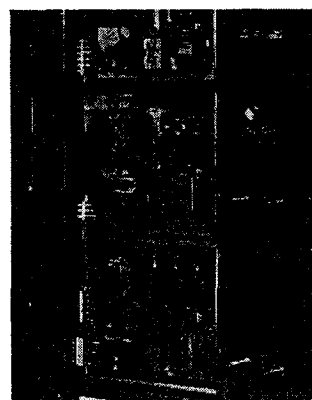
Rear View of Plug-In Unit, Showing Porcelain Insulator Stabs with Floating Mounting, and Flexible Lead-In Wires.



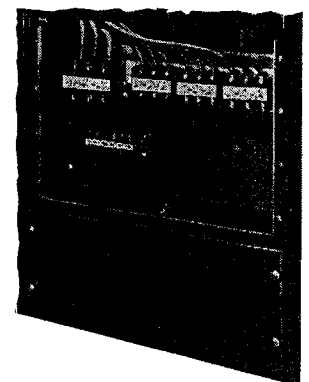
Size 1 Starter with Visible-Blade, Fusible Disconnect Switch.



Size 2 Combination Starter, Circuit Breaker Type.



Load and Control Terminal Blocks Are Mounted on the Stationary Structure for NEMA Type B Wiring.



Master Terminal Block Compartment for NEMA Type C Construction.



RESISTANCE WELDER CONTROL FOR SPOT OR PROJECTION WELDERS

CLASS
8990

Non-synchronous control is used for welding low-carbon steel in ordinary sizes and shapes, while **synchronous-precision** control is recommended for stainless steel, non-ferrous metals, small parts or thin sections.

Each welder requires **both** a **contactor** and **timer**. These are furnished either as separate devices or combined in a single enclosure.

NON-SYNCHRONOUS CONTROL

High Speed Contactors, available single or double pole, are designed specifically for high speed operation and heavy loads. Knife edge bearings, low inertia moving parts, and powerful blowout coils contribute to long life, fast operation, and high current rupturing capacity.

SYNCHRO-BREAK Contactors (single pole only) have the same basic design with a synchronizing circuit added to eliminate objectionable arcing. They are recommended for production jobs involving wide ranges of duty cycles where low cost and economical operation are important.

Electronic Contactors (single pole) employing ignitron power tubes are recommended for jobs involving very short weld times, heavy currents, and exceptionally high speed operation.

Consult a field engineer from the nearest Square D Sales Office for advice concerning selection of proper contactor size and type or for information on **synchronous-precision** control.

MAGNETIC CONTACTORS

25, 50 or 60 CYCLES			CLASS 8990				★220-550 VOLTS			
NEMA Size	Number of Poles	Nominal Ampere Rating	HIGH SPEED				SYNCHRO-BREAK			
			NEMA Type I Enclosure		Open Type		NEMA Type I Enclosure		Open Type	
			Type	Price	Type	Price	Type	Price	Type	Price
0W	1	50	DG-1	\$ 96.	DO-1	\$ 78.	.....	.....	.....	.....
1W	1	100	HBG-1	\$154.	HBO-1	\$132.	SBG-2	\$220.	SBO-2	\$194.
	2	100	HBG-2	\$264.	HBO-2	\$232.	.....	.....	.....	.....
2W	1	150	HCG-3	\$210.	HCO-3	\$188.	SCG-2	\$298.	SCO-2	\$270.
	2	150	HCG-4	\$364.	HCO-4	\$330.	.....	.....	.....	.....
3W	1	300	HDG-1	\$298.	HDO-1	\$262.	SDG-2	\$430.	SDO-2	\$390.
	2	300	HDG-2	\$518.	HDO-2	\$464.	.....	.....	.....	.....

★HIGH SPEED contactors available for 110 volts.

ELECTRONIC CONTACTORS

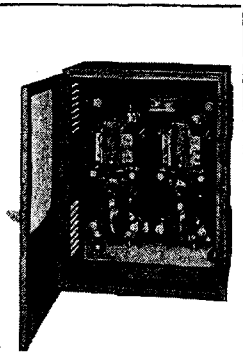
25-60 CYCLES		CLASS 8990		230/460 VOLTS		50-60 CYCLES		CLASS 8990		230/460 VOLTS	
NEMA Frame	NEMA Type 1 Enclosure	Prices include two ignitron power tubes				Description	NEMA Type 1 Enclosure		Price		
							For Use with Class 8990 Electronic Contactors or Class 8992 Electronic Combination Controllers				
					Type						
	Type	Size A	Size B	Size C	Size D						
150	EAG-2	\$380.	....	....	....	Heat Control	EHG-4		\$ 400.		
600	ECG-5	*\$443.	\$496.	\$631.	....	Heat and Up Slope Control	EWG-1		\$ 750.		
1200	EDG-2	....	\$660.	\$795.	\$1276.	Heat, Up and Down Slope Control	EWG-2		\$ 850.		

Prices include discharge resistor.

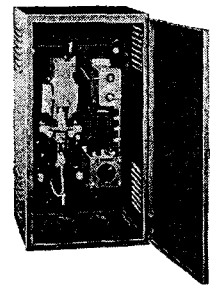
*Adapter kit is required when Size A ignitrons are used, and is included in price.

ORDERING INSTRUCTIONS:

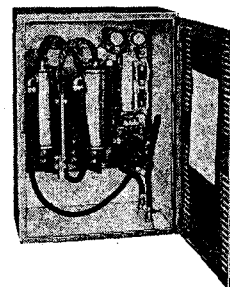
1. Specify Class and Type number of contactor.
2. Give power and control circuit voltage and frequency.
3. Specify tube size for electronic contactors.
4. Electronic contactors require auxiliary load resistor if load current is less than 40 amperes. Contact Square D Sales Office for details.



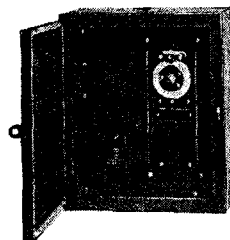
Class 8990
Type HBG-2



Class 8990
Type SCG-2



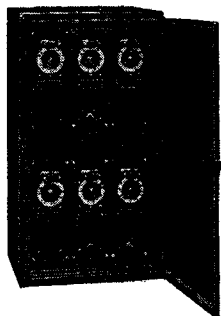
Class 8990
Type ECG-2



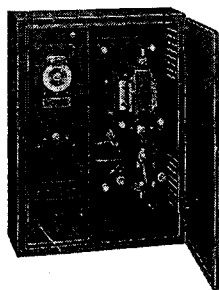
Class 8991
Type TBS-6

RESISTANCE WELDER CONTROL

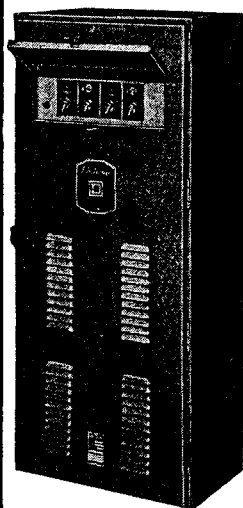
FOR SPOT OR PROJECTION WELDERS



Class 8991
Type TCS-10



Class 8992
Type BBG-1



Class 8992
Type BCG-1

Safrant Weld and Sequence Timers employ simple, magnet-operated pneumatic timing relays for automatic control of individual timing periods. For safety, control circuits are 110 volts. Adjusting dials are on front of swing-out panel, with live parts kept at the rear.

Only screw-driver and pliers are required for maintenance. Control circuits are simple, and operation may be visually checked without meters.

CLASS
8991

Safrant WELD AND SEQUENCE-WELD TIMERS

25-60 CYCLES			CLASS 8991		110-600 VOLTS			
NEMA Type	Application	★Timing Periods	General Purpose Enclosures with Cover Gaskets					
			Standard With 110 Volt Control		Form W1	Form W2	Form W3	
					With 24 Volt Low Voltage Control	With Two Stage Pilot Switch Control	With 24 Volt Two Stage Pilot Sw. Control	
			Type	Price	Price	Price	Price	
1A	For Foot or Motor Operated Welders	1—Weld	TBS-6 *TBS-13	\$132. 100.	\$157. 125.	.....	.....	
3B	For Air or Hydraulic Operated Welders	1—Squeeze 2—Weld 3—Hold 4—Off	TBS-10	\$400.	\$425.	\$425.	\$514.	
5B	For Air or Hydraulic Operated Welders. For Multi-Impulse (Pulsation) Welding.	1—Squeeze 2—Weld Interval 3—Heat 4—Cool 5—Hold 6—Off	TCS-10	\$600.	\$625.	\$625.	\$714.	

★Standard timing periods are 3-120 cycles on 60 cycle basis, except weld interval is 8-360 cycles.

*Suitable for use with electronic contactors or with magnetic contactors having up to 1500 volt-amperes coil inrush.

COMBINED Safrant TIMER AND HIGH SPEED CONTACTOR IN ONE ENCLOSURE

25-60 CYCLES		CLASS 8992		110-550 VOLTS			
Application	Timer		Contactor			General Purpose Enclosure	
	NEMA Type	Timing Periods	NEMA Size	No. of Poles	Nominal Ampere Rating	Standard with 110 Volt Control	
						Type	Price
For Foot or Motor Operated Welders	1A	1—Weld	1W	1	100	BBG-1	\$308.

CLASS
8992

NON-SYNCHRONOUS ELECTRONIC COMBINATION CONTROLLERS

★ 50-60 CYCLES			CLASS 8992			★ 230/460 VOLTS				
NEMA Type	Application	Timer	Timer Adjustments		Con- factor Frame	Combination Controller in NEMA Type 1 General Purpose Enclosure				
			Timing Periods	Range in Cycles		Type	Price with Ignitron Tubes as Indicated			
							Size A	Size B	Size C	Size D
N2	Complete control for air or hydraulically operated spot or pro- jection welders with electrically operated valves	NEMA 3B	Squeeze Weld Hold Off	3—120 2—120 1—60 2—120	150	BAG-1	\$ 842.			
					600	BCG-1	905. *	\$ 958.	\$1093.	....
					1200	BDG-1	....	\$1222.	\$1357.	\$1838.
N3		NEMA 5B	Squeeze Weld Int. Heat Cool Hold Off	3—120 6—360 2—60 2—60 1—60 2—120	600	BCG-2	\$1105. *	\$1158.	\$1293.	....
					1200	BDG-2	....	\$1422.	\$1557.	\$2038.

★ For 380 or 575 volts add \$60. list. Contact factory for other voltages or frequencies.

* Adapter kit is required when Size A ignitrons are used, and is included in prices.

Note—24 volt initiating system is provided as standard on non-synchronous electronic combination controllers.

ORDERING INSTRUCTIONS

1. Specify Class and Type number.
2. Give power and control circuit voltage and frequency.
3. Specify tube size for electronic control.
4. Specify Form W2 for two stage foot switch control at no increase in price.



SCHEDULE



DISCOUNT

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STANDARD DUTY PUSH BUTTON STATIONS

CLASS
9001

Standard duty control stations are designed for use with magnetic motor starters to govern the starting, stopping, or reversing of all types of electric motors. Push buttons, either momentary contact or maintained contact, are assembled in various combinations to form unified control stations. Enclosures are furnished for surface or flush mounting.

0-600 VOLTS A.C. AND D.C.†

SURFACE MOUNTING

No. of Units	Nameplate Markings	Features	General Purpose Enclosure NEMA Type 1			Water-tight and Dust-tight Enclosure NEMA Types 4 and 5			For Hazardous Locations Class I, Group D or Class II, Groups E, F and G NEMA Types 7 and 9		
			Type	Price	Sym.	Type	Price	Sym.	Type	Price	Sym.
MOMENTARY CONTACT											
1	Start.....		B-32	\$ 6.	1	BW-46	\$19.	1	BR-14	\$23.	2
	Stop.....		B-33	6.	3	BW-47	19.	3	BR-15	23.	4
	Stop.....	Lockout.....	B-38	9.	3	BW-48	22.	3	BR-16	26.	4
2	Start—Stop.....		B-30 *	\$ 6.	5	BW-40	\$19.	5	BR-11	\$23.	6
	Start—Stop.....	Lockout on Stop	B-31	9.	5	BW-41	22.	5	BR-13	26.	6
	Start—Stop.....	Lever Operated				BW-49	19.	5			
	Forward—Reverse		B-34	7.50	7	BW-42	19.	7			
	Up—Down.....		B-35	7.50	7	BW-43	19.	7			
3	Open—Close.....		B-36	7.50	7	BW-44	19.	7			
	On—Off.....		B-37	7.50	7	BW-45	19.	7			
	Start—Stop.....	110 or 220 V. pilot Light..	B-39	\$22.	13						
3	Forward—Reverse										
	—Stop.....		RK-2A	12.	8				RM-1A	\$58.	9
	Up—Down—Stop		RK-2B	12.	8				RM-1B	58.	9
	Open—Close—										
	Stop.....		RK-2C	12.	8				RM-1C	58.	9
3	High—Low—Stop		RK-2D	12.	8				FM-1	58.	9

MAINTAINED CONTACT

2	Start—Stop.....		C-41	\$ 9.	10	CW-5	\$22.	10			
	On—Off.....		C-42	9.	10	CW-6	22.	10			
	Manual—Auto- matic.....		C-43	9.	10	CW-7	22.	10			
	Start—Stop.....	Tumbler Switch	A-4	16.50	11	AW-5	22.	11	★BR-12	\$23.	12
	On—Off.....	Tumbler Switch				CW-8	22.	10			
	On—Off.....	Lever Operated									

†Types BR, RM, and FM stations are limited to 250 volts D. C.

★Suitable for a maximum of only 250 volts A. C. or D. C.

*Standard packaging quantity—20

0-600 VOLTS A.C. OR D.C.

FLUSH MOUNTING

No. of Units	Nameplate Markings	Features	✦ Flush Mounting		
			Type	Price	Symbol
MOMENTARY CONTACT					
1	Start.....		BB-1	\$ 7.50	1
	Stop.....		BB-2	7.50	3
	Stop (Lockout).....		BB-3	10.50	3
2	Start—Stop.....		BB-4	\$ 7.50	5
	Start-Stop (Lockout).....		BB-5	10.50	5
	Forward—Reverse.....		BB-6	9.	7
	Up—Down.....		BB-7	9.	7
	Open—Close.....		BB-8	9.	7
	Start—Stop.....	Brass Flush Plate, Pull Box.....	BF-13	11.	5
3	Start—Stop.....	110 Volt Pilot Light, Brass Flush Plate, Pull Box.....	BF-14	\$22.	13
	Start—Stop.....	220 Volt Pilot Light, Brass Flush Plate, Pull Box.....	BF-15	22.	13
	Forward—Reverse—Stop.....		RK-3A	13.50	8
	Up—Down—Stop.....		RK-3B	13.50	8
	Open—Close—Stop.....		RK-3C	13.50	8
	High—Low—Stop.....		RK-3D	13.50	8
MAINTAINED CONTACT					
1	Hand-Off—Automatic.....	Bakelite Enclosure for Knockout Mounting.....	LB-3	\$ 6.	14
2	Start—Stop.....		CB-1	\$10.50	10
	On—Off.....		CB-2	10.50	10
	Manual—Automatic.....		CB-3	10.50	10
3	Start—Stop.....	110 Volt Pilot Light, Brass Flush Plate, Pull Box.....	BF-17	\$25.	15
	Start—Stop.....	220 Volt Pilot Light, Brass Flush Plate, Pull Box.....	BF-18	25.	15

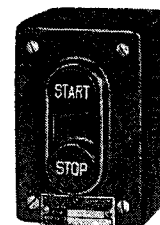
✦Pull box not available unless so stated under "Features."

★Suitable for a maximum of only 250 volts A. C. or D. C.

ORDERING INSTRUCTIONS: Order push button stations by Class and Type number.



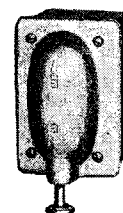
Type B-30



Type BW-40



Type CB-2



Type AW-5



Type RK-2B

HEAVY DUTY PUSH BUTTON STATIONS

Heavy duty stations are intended for use in the control circuits of magnetic starters or control panels and are available in almost any combinations of momentary contact push button units, maintained contact selector switch and push button units, and indicating lights assembled in general purpose, water and dust tight enclosures or in enclosures for use in hazardous locations.

CLASS
9001

PUSH BUTTONS — SELECTOR SWITCHES — PILOT LIGHTS

600 VOLTS A.C. AND D.C.

No. of Units	Nameplate Markings	General Purpose Surface Mounting NEMA Type 1		General Purpose Flush Mounting Without Pull Box		Water-tight and Dust-tight Enclosure NEMA Types 4 & 5		For Hazardous Locations				Symbol
		Type	Price	Type	Price	Type	Price	Class II Groups E, F and G NEMA Type 9		Class I Group D Air-Break NEMA Type 7		
1	Start.....	GA-11	\$11.	GB-11	\$11.	GD-11	\$23.	GE-11	\$27.	GR-11	\$27.	16
	Stop.....	GA-12	11.	GB-12	11.	GD-12	23.	GE-12	27.	GR-12	27.	3
	Stop (Locknut).....	GA-13	14.	GB-13	14.	GD-13	26.	GE-13	30.	GR-13	30.	3
	Jog.....	GA-15	11.	GB-15	11.	GD-15	23.	GE-15	27.	GR-15	27.	16
	Stop (Mushroom).....	GA-17	14.	GB-17	14.	GD-17	26.	GE-17	30.	GR-17	30.	3
	Start (Mushroom).....	GA-18	14.	GB-18	14.	GD-18	26.	GE-18	30.	GR-18	30.	16
	Selector Switch.....											
	Safe-Run.....	HA-11	14.	HB-11	14.	HD-11	26.	HE-11	30.	HR-11	30.	18
	Off-On.....	HA-14	14.	HB-14	14.	HD-14	26.	HE-14	30.	HR-14	30.	18
	Forward-Reverse.....	HA-16	14.	HB-16	14.	HD-16	26.	HE-16	30.	HR-16	30.	19
	Jog-Run.....	HA-17	14.	HB-17	14.	HD-17	26.	HE-17	30.	HR-17	30.	19
	Auto-Off-Hand.....	HA-18	14.	HB-18	14.	HD-18	26.	HE-18	30.	HR-18	30.	17
	Red Pilot Light:											
	110-220 V., 60 Cycles.....	PA-18	18.	PB-11	18.	PD-11	30.	PE-11	34.	.....	.....	22
	440-600 V., 60 Cycles.....	PA-18	19.50	PB-11	19.50	PD-11	31.50	PE-11	35.50	.....	.....	22
	115 V. D.C.....	PA-110	15.50	PB-13	15.50	.....	.....	.....	.....	.....	.....	23
	230 V. D.C.....	PA-112	16.	PB-15	16.	.....	.....	.....	.....	.....	.....	23
	Green Pilot Light:											
	110-220 V., 60 Cycles.....	PA-19	18.	PB-12	18.	PD-12	30.	PE-12	34.	.....	.....	22
	440-600 V., 60 Cycles.....	PA-19	19.50	PB-12	19.50	PD-12	31.50	PE-12	35.50	.....	.....	22
	115 V. D.C.....	PA-111	15.50	PB-14	15.50	.....	.....	.....	.....	.....	.....	23
	230 V. D.C.....	PA-113	16.	PB-16	16.	.....	.....	.....	.....	.....	.....	23
2	Start-Stop.....	GA-21	17.	GB-21	17.	GD-21	26.	GE-21	30.	GR-21	30.	24
	Forward-Reverse.....	GA-22	17.	GB-22	17.	GD-22	26.	GE-22	30.	GR-22	30.	25
	Up-Down.....	GA-23	17.	GB-23	17.	GD-23	26.	GE-23	30.	GR-23	30.	25
	Open-Close.....	GA-24	17.	GB-24	17.	GD-24	26.	GE-24	30.	GR-24	30.	25
	High-Low.....	GA-25	17.	GB-25	17.	GD-25	26.	GE-25	30.	GR-25	30.	25
	Start-Stop (Lockout).....	GA-26	20.	GB-26	20.	GD-29	29.	GE-28	33.	GR-29	33.	24
	Start-Stop (Maint. Cont.).....	GA-224	17.	GB-223	17.	GD214	26.	GE-210	30.	GR-213	30.	92
	Forward-Reverse-Stop.....	GA-31	22.	GB-31	22.	GD-31	44.	GE-31	58.	GR-31	58.	8
3	Up-Down-Stop.....	GA-32	22.	GB-32	22.	GD-32	44.	GE-32	58.	GR-32	58.	8
	Open-Close-Stop.....	GA-33	22.	GB-33	22.	GD-33	44.	GE-33	58.	GR-33	58.	8
	High-Low-Stop.....	GA-34	22.	GB-34	22.	GD-34	44.	GE-34	58.	GR-34	58.	8
	Forward-Reverse-Stop (Lockout).....	GA-35	25.	GB-35	25.	GD-310	47.	GE-310	61.	GR-310	61.	8
	Up-Down-Stop (Lockout).....	GA-36	25.	GB-36	25.	GD-311	47.	GE-311	61.	GR-311	61.	8
	Start-Stop-Jog.....	GA-39	22.	GB-39	22.	GD-39	44.	GE-39	58.	GR-39	58.	8
	Start-Jog-Stop (Jog Attachment).....	GA-314	25.	GB-314	25.	.....	.....	.....	.....	.....	.....	33
	Start-Stop—With Forward-Reverse-Selector Switch.....	GA-315	25.	GB-315	25.	GD-315	47.	GE-315	61.	.....	.....	34—19
	Start-Stop—With Jog-Run Selector Sw.....	GA-318	25.	GB-318	25.	GD-318	47.	GE-318	61.	.....	.....	34—19
	Start-Stop—With Red Pilot Light:											
	110-220 V., 60 Cy.....	GA-326	29.	GB-326	29.	GD-35	51.	GE-35	65.	.....	.....	36
	440-600 V., 60 Cy.....	GA-326	30.50	GB-326	30.50	GD-35	52.50	GE-35	66.50	.....	.....	36
	115 V., D.C.....	GA-328	26.50	GB-328	26.50	.....	.....	.....	.....	.....	.....	37
	230 V., D.C.....	GA-330	27.	GB-330	27.	.....	.....	.....	.....	.....	.....	37
	Start-Stop—With Green Pilot Light:											
	110-220 V., 60 Cy.....	GA-327	29.	GB-327	29.	GD-36	51.	GE-36	65.	.....	.....	36
	440-600 V., 60 Cy.....	GA-327	30.50	GB-327	30.50	GD-36	52.50	GE-36	66.50	.....	.....	36
115 V., D.C.....	GA-329	26.50	GB-329	26.50	.....	.....	.....	.....	.....	.....	37	
230 V., D.C.....	GA-331	27.	GB-331	27.	.....	.....	.....	.....	.....	.....	37	
4	High-Second-Low-Stop.....	GA-41	36.	GB-41	36.	GD-41	53.	GE-41	90.	GR-41	90.	38
	High-Second-Low-Stop (Lockout).....	GA-42	39.	GB-42	39.	GD-42	56.	GE-42	93.	GR-42	93.	38
5	High-Third-Second-Low-Stop.....	GA-51	44.	GB-51	44.	.....	.....	.....	.....	.....	.....	39
	High-Third-Second-Low-Stop (Lockout).....	GA-52	47.	GB-52	47.	.....	.....	.....	.....	.....	.....	39

All push button units are momentary contact; all selector switch units maintained contact. Each A. C. pilot light includes built-in transformer occupying space equal to one unit. Each pilot light for 230 Volts D. C. includes built-in resistor.

ORDERING INSTRUCTIONS: Order control stations by Class and Type number. Give voltage and frequency for pilot lights.



SCHEDULE



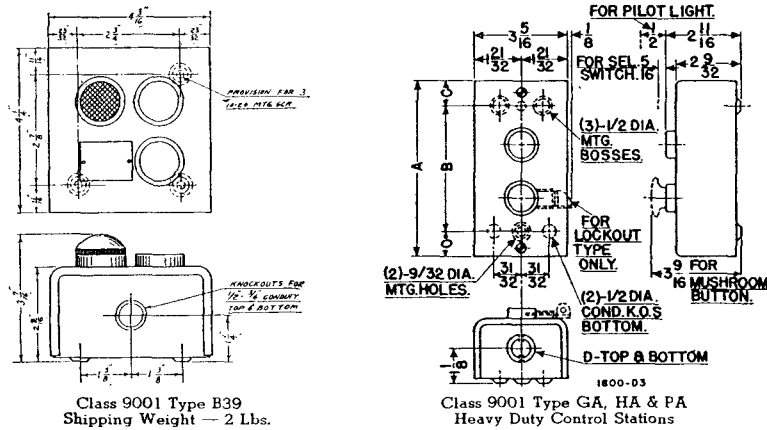
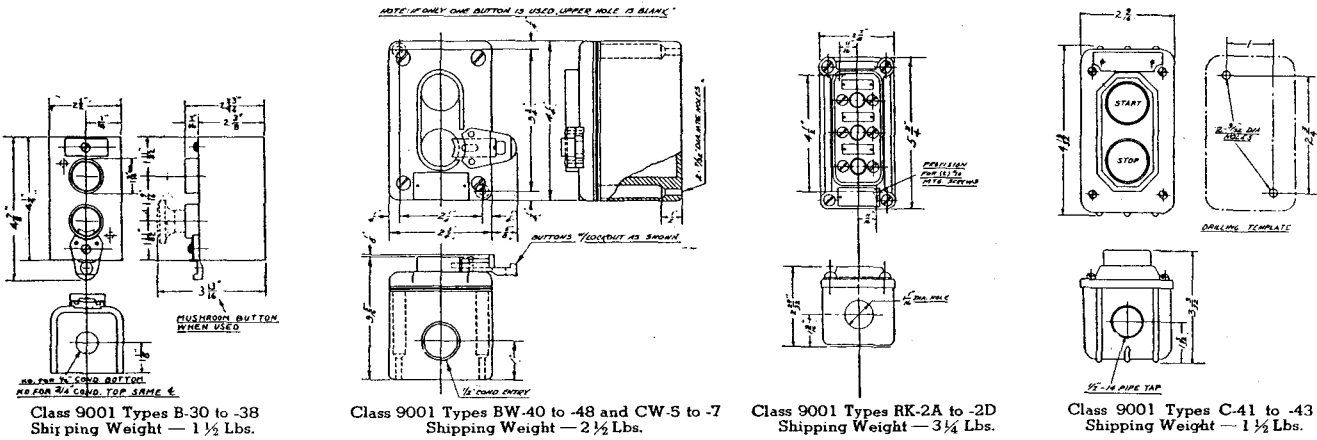
DISCOUNT

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PUSH BUTTONS

STANDARD and HEAVY DUTY — DIMENSIONS and CONTACT SYMBOLS

APPROXIMATE DIMENSIONS — NOT FOR CONSTRUCTION



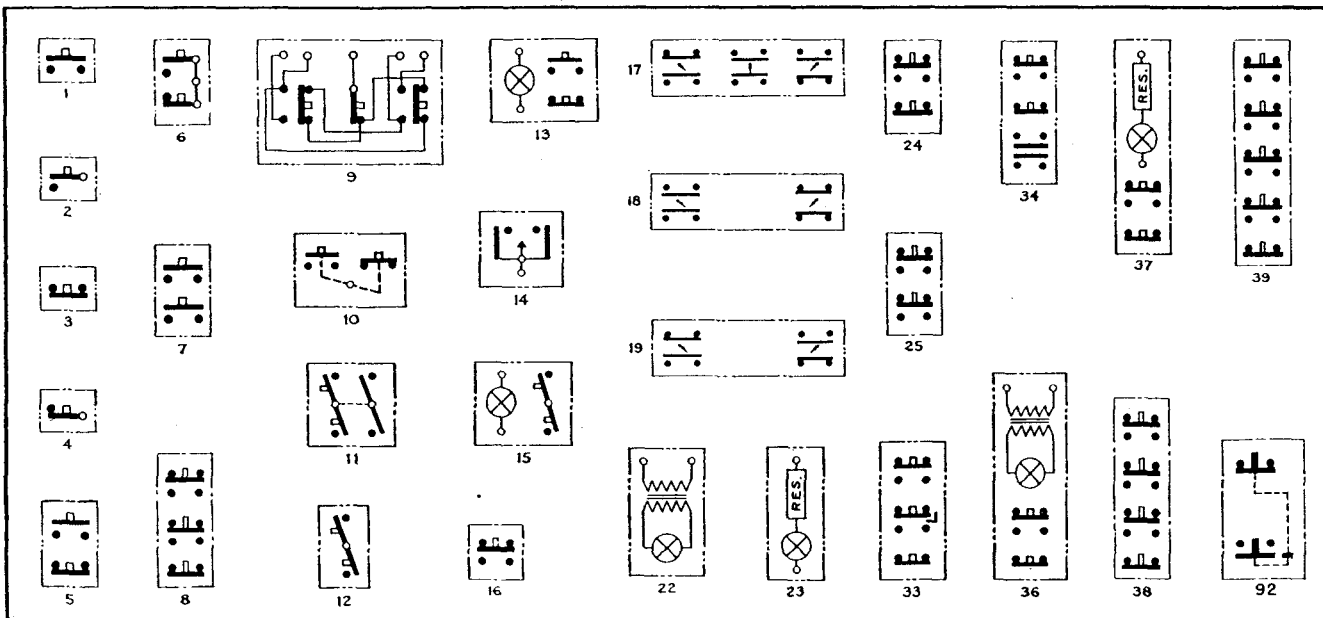
**DIMENSION TABLE FOR CLASS 9001
TYPE GA HEAVY DUTY CONTROL STATIONS**

No. of Units *	A	B	† C	D	Weight Lbs.
1	4 3/8	2 3/8	2 9/32	1/2 — 3/4	1 1/2
2	6 1/4	4 1/2	2 9/32	1/2 — 3/4	2 1/4
3	8 3/8	6 3/8	1 1/2	3/4 — 1	3
4	10 1/4	8 1/4	1 1/2	3/4 — 1	4
5	12 1/8	10 1/8	1 1/2	3/4 — 1	5

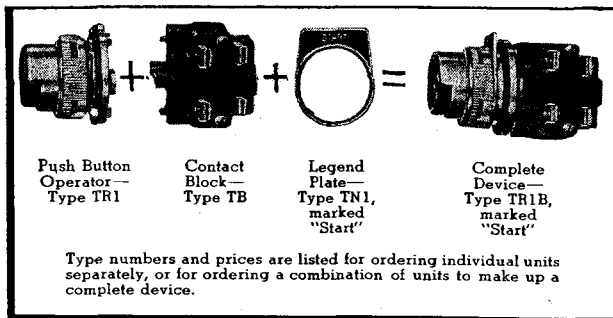
All dimensions are in inches.

† Upper "C" dimension is 1/16" smaller than listed.
* For A.C. stations with pilot lights, each pilot light occupies space equal to that required for two push button or selector switch units. The extra space is occupied by transformer.

CONTACT SYMBOLS



OIL-TIGHT PUSH BUTTON STATIONS



These heavy duty oil-tight push button stations are well suited for machine tool controls or similar industrial applications. They may be purchased in three different ways, to meet a variety of requirements:

CLASS
9001

1. Individual units — operators, contact blocks and legend plates — may be purchased separately, and combined as needed. Since any block fits any operator, a wide variety of combinations can be readily assembled from a small stock of standard parts. Clearly labeled cartons are furnished to simplify stocking the units.
2. Complete devices can be ordered, consisting of an operator, a block and a legend plate, packed together in one carton, which is labeled to fully identify the contents.
3. Assembled control stations are available, with any desired arrangement of units in an oil-tight, cast enclosure.

PUSH BUTTON UNITS

	Type of Operator	Color of Button†	Operator Only		Operator With Type TA Single Pole Double Throw Contact Block		Operator With Type TB Duplex Double Throw Contact Block	
			Type	Price ★	Type	Price ★	Type	Price ★
	Standard Half Guard	Black Red	TR1 TR2	\$ 3. 3.	TR1A TR2A	\$ 6. 6.	TR1B TR2B	\$ 9. 9.
	Full Guard	Black Red	TR6 TR7	\$ 3. 3.	TR6A TR7A	\$ 6. 6.	TR6B TR7B	\$ 9. 9.
	1 1/8" Mushroom Button	Black Red	TR3 TR4	\$ 6. 6.	TR3A TR4A	\$ 9. 9.	TR3B TR4B	\$12. 12.
	2 1/4" Mushroom Button	Black Red	TR10 TR11	\$ 6. 6.	TR10A TR11A	\$ 9. 9.	TR10B TR11B	\$12. 12.
Operator With-out Guard			TR13 TR14	\$ 3. 3.				

★ Includes a Type TN1 or TN2 plate with standard markings. See ordering instructions; page 98. Deduct \$0.30 if legend plate is not required.
† Green, Brown, Yellow, Orange, and Blue buttons also available.

SELECTOR SWITCH UNITS

	Description	Operator		Operator with Type TA Single Pole Double Throw Contact Block			Operator with Type TB Duplex Double Throw Contact Block		
		Type	Price ★	Symbol	Type	Price ★	Symbol	Type	Price ★
	Standard Hand Operated	TS1 TS3	\$ 4. 4.	44 52	TS1A TS3A	\$ 7. 7.	45 53	TS1B TS3B	\$10. 10.
	Coin Operated	TSA1 TSA3	\$ 6.30 6.30	44 52	TSA1A TSA3A	\$ 9.30 9.30	45 53	TS1AB TSA3B	\$12.30 12.30
Operator with Contact Block Type TS3A		TS1 K— TS3 K—	\$10. 10.	44 52	TS1 K—A TS3 K—A	\$13. 13.	45 53	TS1 K—B TS3 K—B	\$16. 16.

Selector switches also available with other contact arrangements. Selector push buttons also available.

★ Price includes a Type TN1 or TN2 plate with standard markings. Deduct \$0.30 if legend plate is not required.

‡ Key operated selector switch type numbers must be completed by selecting appropriate key withdrawal number from table below. Positions marked "X" are those in which key may be withdrawn, thereby locking switch in that position. Select appropriate key withdrawal number corresponding to desired key removal positions and use this number to complete type number in table above.

SELECTOR SWITCH SYMBOLS

With Type TA Sgl. Pole Double Throw Contact Block	Contact Identification	Symbol	
		44	52
A1  A2 	A1	X	X
	A2	X	X
With Type TB Duplex Double Throw Contact Block	Contact Identification	Symbol	
		45	53
A1  A2 	A1	X	X
	A2	X	X

KEY WITHDRAWAL ARRANGEMENT

2 Position Switches			3 Position Switches							
Key With-drawal No.	Position 1	Position 2	Key With-drawal No.	Position 1	Position 2	Position 3	Key With-drawal No.	Position 1	Position 2	Position 3
1	X		4	X			8	X		X
2		X	5		X		9		X	X
3	X	X	6			X	10	X	X	X
			7	X	X					



SCHEDULE



DISCOUNT

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OIL-TIGHT PUSH BUTTON STATIONS

CLASS
9001

ATTACHMENTS FOR PUSH BUTTON UNITS

Description	Type	Price
Padlock Attachment—Latch Type (Holds button depressed).....	TL-1	\$ 3.
Padlock Attachment—Cover Type (Prevents depressing button).....	TL-2	3.
Maintained Contact Attachment (Use with 2 Type TR operators and 1 contact block).....	TM-1	3.
Neoprene Cap for Push Button—Black.....	TU-1	2.
Neoprene Cap for Push Button—Red.....	TU-2	2.
Washer—For Use when Legend Plates are not used.....	144-X5	0.30
Wrench—For mounting Type T units.....		3.

CONTACT BLOCKS ONLY

CONTACT BLOCKS ONLY

Contact Block Type TA

Single Pole Double Throw				Duplex Double Throw				Duplex Double Throw ▲			
Contact Symbol		Type	Price	Contact Symbol		Type	Price	Contact Symbol		Type	Price
A1		TA	\$ 3.	A1		TB	\$ 6.	A1		TE	\$ 7.50
A2				A2				A2			

Duplex Double Throw
Tandem Mounting ★

Contact Symbol	Type	Price
C1	TF	\$ 9.
C2		

★ It is not possible to mount more than one Type TF and one additional contact block on one operator.

▲ Type TE contact block is for use where safety interlocking requires that one pole always close before the other. (A2 closes before B2).

PILOT LIGHTS

Description	Volts	Cycles	† Type	Price Without Legend Plate	* Price With Legend Plate
Pilot Light Unit with Transformer, 6-8 Volt Bulb, and Color Cap †	110	50-60	TP1	\$ 10.70	\$ 11.
	208-220	50-60	TP3	10.70	11.
	380-440	50-60	TP5	12.20	12.50
	550	50-60	TP6	12.20	12.50

† Specify color cap desired. Available in Red, Green, Blue, Amber, White or Clear.

* Price with legend plate includes a Type TN1 or TN2 plate with standard markings. See ordering instructions.

STANDARD MARKINGS FOR LEGEND PLATES

For Push Buttons or Pilot Lights Types TN1, TN3		For Selector Switches Types TN2, TN3	
		2 Position	3 Position
Start	Down	Off-On	Auto-Off-On
Stop	On	Safe-Run	Hand-Off-Auto
Jog	Off	Jog-Run	For-Off-Rev.
Reset	Raise	High-Low	Open-Off-Close
Forward	Lower	Open-Close	Up-Off-Down
Reverse	In	Up-Down	Jog-Safe-Run
Fast	Out	For-Rev.	
Slow	Jog-For.	Man.-Auto	
High	Jog-Rev.	Start-Stop	
Low	Inch	Run-Jog	
Open	Run		
Close	Emerg. Stop		
Up	Start-Jog		

ADDITIONS PRICE FOR LEGEND PLATES WITH SPECIAL MARKINGS

Quantity of Legend Plates With Identical Markings	Price Each	
	TN1 & TN2	TN3
1-3	\$1.10	\$1.60
4-9	.90	1.40
10-24	.80	1.30
25-49	.70	1.20
50-99	.60	1.10
100- More	.40	0.90

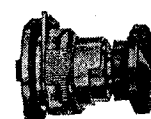
For separate legend plates with special markings, consult field office for prices.

SEPARATE LEGEND PLATES, STANDARD MARKINGS

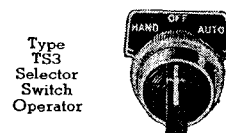
Description	Type	Price
Standard Size for Push Buttons.....	TN1	\$0.30
Standard Size for Selector Switches.....	TN2	0.30
Large Size for Push Button or Selector Switch.....	TN3	0.50

ORDERING INSTRUCTIONS

- Order as Class 9001, Type, and give the following additional information.
- For pilot lights, specify color cap, voltage and frequency.
- For push button units, selector switch units and pilot lights with legend plates, specify legend plate marking.
 - If **standard legend plate marking** is desired, use price for unit with legend plate. (See table above for list of standard markings.)
 - If **special legend plate marking** is desired, add price of specially marked legend plate to price of unit with legend plate. (See table above for price additions.)
 - If unit with **large size legend plate** is desired, order unit **without** legend plate, and order Type TN3 large size legend plate as a separate item on the order, specifying marking. (See tables above for prices of Type TN3 legend plates with standard marking or with special marking.)
- Examples:
 - Order a black "Start" button with a single pole contact block as: "Class 9001 Type TR1A, marked "Start". List price is \$6.
 - Order a green pilot light for 440 volts, 60 cycles to signal "Pump On" as: "Class 9001 Type TP5 Green, 440 volts, 60 cycles, amrked "Pump On". List price is \$13.60 (\$12.50 for the unit plus \$1.10 for the specially marked legend plate).
 - Order a "Forward-Reverse" selector switch (single pole, double throw, two position) as: "Class 9001, Type TS1A, marked "For-Rev." ". List price is \$7.00



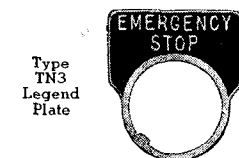
Type TR4
Mushroom
Operator



Type TS3
Selector
Switch
Operator



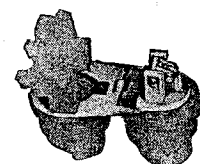
Pilot
Light
Type
TP1



Type TN3
Legend
Plate



Type TL-1
Lockout
Attachment on
Type TR2
Operator



Type TM-1
Maintained Contact
Attachment



Neoprene Cap
for Push button

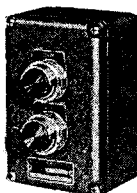


OIL-TIGHT PUSH BUTTON STATIONS

CLASS
9001



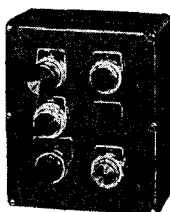
Type TZ-20



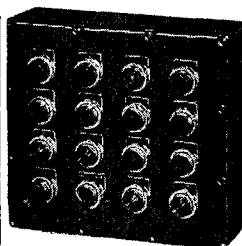
Type TY-20



Type TY-30



Type TY-50



Type TY-80

Heavy duty oil-tight control stations are available for surface or flush mounting. One, two, three, four, six, nine, twelve and sixteen control units can be accommodated in any desired combination. Completely assembled stations can be supplied, or enclosures only and various control units can be purchased for assembly as control stations.

TABLE 1 — STANDARD ASSEMBLED CONTROL STATIONS

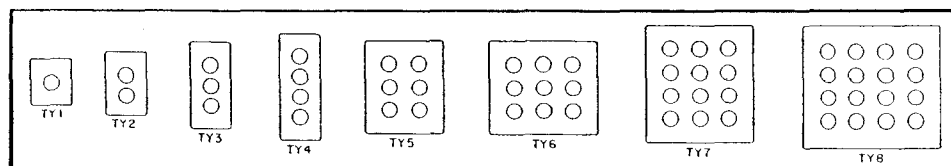
No. of Units	Nameplate Markings	Features	Surface Mounting Enclosure		Flush Mounting Enclosure	
			Type	Price	Type	Price
1	Start.....	Mushroom Button.....	TY-11	\$ 19.	TZ-11	\$ 15.
	Start-Stop.....		TY-12	22.	TZ-12	18.
	Stop.....		TY-13	19.	TZ-13	15.
	Stop.....	Mushroom Button.....	TY-14	22.	TZ-14	18.
	Auto-Off-Hand.....	Selector Switch.....	TY-111	20.	TZ-111	16.
2	Start-Stop.....	Mushroom on Stop.....	TY-21	\$ 26.	TZ-21	\$ 21.
	Start-Stop.....		TY-22	29.	TZ-22	24.
	Start-Stop.....		TY-23	29.	TZ-23	24.
3	Forward-Reverse-Stop.....	Lockout on Stop.....	TY-31	\$ 36.	TZ-31	\$ 31.
	Up-Down-Stop.....		TY-32	36.	TZ-32	31.
	Open-Close-Stop.....		TY-33	36.	TZ-33	31.

TABLE 2 — ENCLOSURES ONLY, AND BASE PRICES FOR NON-STANDARD STATIONS

Number of Units	Enclosure Only		Flush Plate Only		Assembled Stations			
	Type	Price	Type	Price	Surface Mounting		Flush Mounting	
					Type	Base Price ▲	Type	Base Price ▲
1	TY-1	\$ 10.	TZ-1	\$ 6.	TY-10	\$ 13.	TZ-10	\$ 9.
2	TY-2	11.	TZ-2	6.	TY-20	14.	TZ-20	9.
3	TY-3	13.	TZ-3	7.	TY-30	18.	TZ-30	13.
4	TY-4	20.	TZ-4	14.	TY-40	25.	TZ-40	20.
6	TY-5	25.	TZ-5	19.	TY-50	36.	TZ-50	30.
9	TY-6	36.	TZ-6	29.	TY-60	53.	TZ-60	45.
12	TY-7	50.	TZ-7	42.	TY-70	72.	TZ-70	64.
16	TY-8	66.	TZ-8	58.	TY-80	96.	TZ-80	88.

Closing Plate Assembly for covering unused hole in cover — Type TO-1.....\$1.00

▲ Base prices include enclosure only and charge for assembly of units. See ordering instructions for complete pricing of assembled stations.



ORDERING INSTRUCTIONS

- 1—Order standard assembled control stations by Class and Type number from table 1.
- 2—Order enclosure only, flush plate only or closing plate assembly by Class and Type No. from table 2. Order separate oil-tight control units, legend plates or attachments from pages 97 and 98.
- 3—Order assembled stations by Class and Type number. Select control units desired from Pages 97 and 98. Furnish sketch or list control units by Class and Type number, reading from top to bottom of station in successive vertical columns from left to right. Give voltage and frequency for pilot lights. Specify Type number and marking of legend plate desired. (Type TN3 large size legend plates are **not** available with 2, 3 or 4 unit stations). Describe clearly any special features required. See example below.
- 4—Price assembled stations at base price from table above plus total of prices for all control units specified. Use price of control unit **with** legend plate. Add \$0.20 list for Type TN3 legend plates with standard markings selected from table on page 98. For markings other than standard add \$1.10 list for Types TN1 or TN2, \$1.30 for Type TN3.

Base prices **include** necessary closing plate assemblies.

EXAMPLE: Class 9001 Type TY-50 arranged as follows:

9001 TR1A with TN1 legend marked "Forward"	9001 TS1A with TN2 legend marked "High-Low"
9001 TR1A with TN1 legend marked "Reverse"	9001 TP1R 110 V. 60 Cy. with TN1 legend marked "Running"
9001 TR4B with TL-1 lock attachment and TN3 legend marked "Emergency Stop"	Blank

List price should be \$82.30 calculated as \$36. base price, plus \$6. for TR1A with TN1 legend plate marked "Forward", plus \$6. for TR1A marked "Reverse", plus \$12. for TR4B, plus \$3. for TL1 attachment, plus \$0.20 for TN3 legend plate marked "Emergency Stop", plus \$7. for TS1A with TN2 legend plate marked "High-Low", plus \$11. for TP1R plus \$1.10 for TN1 legend plate marked "Running".



SCHEDULE **K** DISCOUNT

PAGE 99

SQD SLV_000101



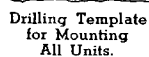
**Type TB Duplex Double
Throw Contact Block**

Dimensions over live terminals.



Type TA Single Pole
Block Mounted on
Operator.

Type TS, TSA and TSK Operators

^oDimensions over live terminals.

2357-D21
Type TP Pilot Lights

1 1/32" diameter hole may be cut with Greenlee knockout punch, 1 1/32" No. 730-S, available through electrical wholesalers.

Locating pin hole (0.136) as shown is for guard location above horizontal (or top of button). Guard may be rotated to other positions by drilling locating pin hole in proper location.

^oDimensions over live terminals.

Type	Dim. A
TP1, TP3	1 $\frac{3}{4}$
TP5, TP6	2 $\frac{5}{16}$ *

*Depth of these pilot lights requires a liner to maintain electrical clearance, when used with one, two, three or four unit Type TY enclosures.

TYLE TN LEGEND PLATES

Type	A	B
TN1	$3\frac{1}{32}$	$1\frac{3}{8}$
TN2	$1\frac{31}{32}$	$1\frac{5}{8}$
TN3	$1\frac{15}{64}$	$1\frac{3}{4}$

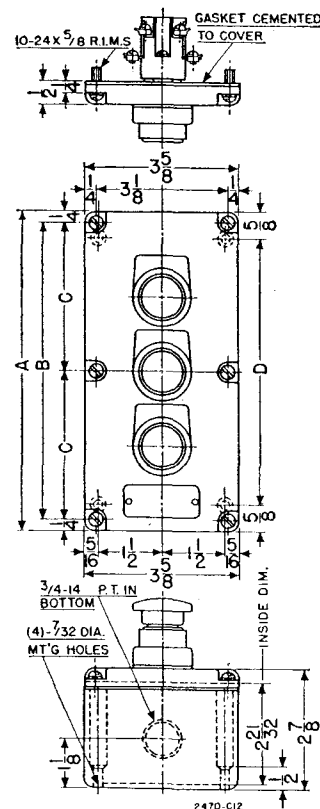
NOTE—Legend plates may be rotated for horizontal reading to 90°-120° or 270° from position shown.



**DIMENSION TABLE FOR CLASS 9001
TYPE TY CONTROL STATION
ENCLOSURES (1-4 UNITS)**

Type	TY1	TY2	TY3	TY4
No. of Units	1	2	3	4
A	4	5¾	7½	9¼
B	3½	5¼	.....	.....
C	.....	.....	3½	4¾
D	2¾	4½	6¼	8

All dimensions in inches.

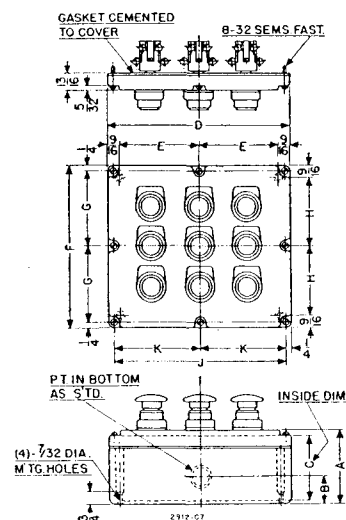


Class 9007 Type T
Enclosures for 1 to 4
Units.

**DIMENSION TABLE FOR CLASS
9007 TYPE TY CONTROL
STATION ENCLOSURES
(6 UNITS OR MORE)**

Type	TY5	TY6	TY7	TY8
No. of Units	6	9	12	16
A	3 1/32	3 1/32	4 3/32	4 3/32
B	1 3/8	1 3/8	1 11/32	1 27/32
C	3	3	3 1/32	3 1/32
D	6 3/4	9 1/4	9 1/4	11 3/4
E	2 13/16	4 1/16	4 1/16	5 5/16
F	8	8	10	10 1/2
G	3 3/4	3 3/4	4 3/4	5
H	3 7/16	3 7/16	4 7/16	4 11/16
J	6 1/4	...	...	...
K	...	4 3/8	4 3/8	3 3/4
Conduit Size	3/4 - 1 1/4 Pt.	1 - 1 1/2 Pt.	1 1/4 - 1 1/2 Pt.	1 1/2 - 1 11/2 Pt.

All dimensions in inches



Class 9007 Type T
Enclosures for 6, 9, 12
and 16 Units.



MISCELLANEOUS CONTROL SWITCHES MANUAL, FOOT AND SHIPPER ROD OPERATED

CLASS
9002

The Type AW foot switches are available in single pole, double throw; double pole, double throw; or two stage arrangements, with or without the foot guard. Each pole of the switch is a self-contained, single pole, double throw unit which may be replaced using only a screwdriver.

Type FB foot switches are furnished with single pole, normally open contacts which may easily be changed to normally closed in the field. Contacts are double break, brass with appreciable "wipe".

HEAVY DUTY OIL-TIGHT FOOT SWITCHES

0-600 VOLTS A. C. & D. C.

† Description	Cast Aluminum, Oil-Tight Enclosure					
	With Pedal Guard		With Pedal Guard and Mech. Latch		Without Pedal Guard	
	Type	Price	Type	Price	Type	Price
Single pole, double throw.....	AW-2	\$ 22.60	AW-7	\$ 29.	AW-1	\$ 21.
Double pole, double throw.....	AW-4	\$ 36.	AW-8	\$ 42.	AW-3	\$ 34.
★ Two stage, each stage single pole, double throw...	AW-6	\$ 36.	.....	.....	AW-5	\$ 34.
With Mech. Latch in 1st stage.....	.....	.....	AW-9	\$ 42.	.....	.....
With Mech. Latch in 2nd stage.....	.....	.....	AW-10	\$ 42.	.....	.....

† Each pole consists of an isolated normally open and normally closed circuit. Due to electrical clearance, the normally open and normally closed circuits of any one pole must be used on circuits of the same polarity.

★ Contact symbol — two stage

Stage	Contacts	Pedal		
		Up	Half Down	Full Down
1	A1		X	X
	B1	X		
2	A2	X	X	
	B2			X

Symbol 80

ELECTRICAL RATINGS

Volts	A. C. Pilot Duty Amperes		D. C. Pilot Duty Amperes	
	Normal	Inrush	Double Throw	Single Throw
110	15	40	0.5	2.0
220	10	20	0.2	0.5
440	6	10	.....	.....
600	5	8	0.02	0.1

HEAVY DUTY FOOT SWITCHES

0-600 VOLTS A. C., 250 VOLTS D. C.

Function	Lever Position (R.H. or L.H. Side)	Special Features	Cast Iron General Purpose Enclosure		Water-tight Enclosure NEMA Type 4		For Hazardous Locations Class I, Group D NEMA Type 7	
			Type	Price	Type	Price	Type	Price
Single Foot Switches	R. H.	.....	FB-5	\$18.	FBW-5	\$28.	FBR-6	\$35.
	L. H.	.....	FB-6	18.	FBW-6	28.	FBR-8	35.
	R. H.	With Mechanical Latch	FB-7	28.	FBW-7	38.	FBR-7	45.
Double Foot Switches	One Lever on Each Side	Marked "Up-Down"	FB-8	\$36.	FBW-8	\$56.	.....	.....
		Marked "Forward-Reverse"	FB-9	36.	FBW-9	56.	.....	.....

Foot switches are supplied with normally open contacts. Arrangement may be changed without use of tools.

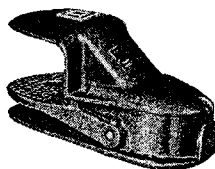
MISCELLANEOUS MASTER SWITCHES

0-600 VOLTS A. C., 250 VOLTS D. C.

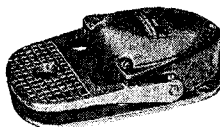
Description	Features	General Purpose Enclosure NEMA Type 1		Water-tight and Dust-tight Enclosures NEMA Types 4 and 5	
		Type	Price	Type	Price
Shipper Rod Operated	Right or left hand operation in either clockwise or counterclockwise direction★.....	KG-1	\$22.	KW-1	\$33.
Reversing	Maintained Contact.....	LR-10	52.	.....	.....
Reversing	Momentary Contact.....	LR-11	52.	.....	.....

★ As furnished, station arranged for right hand, counterclockwise operation. Other operating positions obtained by turning switch and changing jumper.

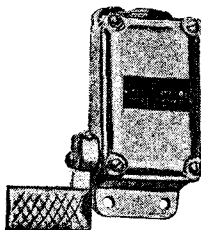
ORDERING INSTRUCTIONS: Order by Class and Type number.



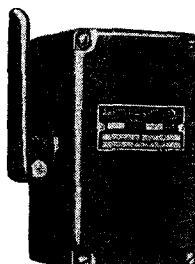
Type AW with Pedal Guard



Type AW Without Pedal Guard



Type FBW-6



Type KG-1 Arranged for Left Hand Clockwise Operation

LIMIT SWITCHES

GENERAL USE TYPES—SLOW MAKE & BREAK

CLASS
9007

Limit switches are generally used as pilot devices in the control circuits of magnetic starters, either for normal operation or as emergency devices, to govern the starting, stopping and reversing of electric motors.

The slow make and break operation typical of the type LG and LB limit switches is suitable for many types of general use. The switches are available in a variety of enclosures and with single or double rollers in various positions.

STANDARD DUTY LIMIT SWITCHES

SLOW MAKE AND BREAK — ROLLER OPERATED

0-600 VOLTS A.C. AND D. C.

Number of Rollers	Position of Rollers		Arrangement of Contacts	General Purpose Enclosure NEMA Type 1	
				Type	Price
Single Roller	Off Center	Right Hand	Normally Closed	LG-5	\$16.
		Right Hand	Normally Open	LG-11	16.
		Left Hand	Normally Closed	LG-6	16.
		Left Hand	Normally Open	LG-12	16.
Single Roller	At Center	Right Hand	* Normally Closed	LG-7	\$16.
		Right Hand	† Normally Closed	LG-13	16.
		Right Hand	Normally Open	LG-9	16.
		Left Hand	* Normally Closed	LG-8	16.
Double Roller	Off Center	.....	Normally Closed	LG-1	\$22.
		.....	Normally Open	LG-4	22.
	At Center	.....	* Normally Closed	LG-2	\$22.
		.....	† Normally Closed	LG-15	22.
Single Roller	See Picture	.....	Normally Closed	LF-20	\$16.
		.....	Normally Open	LF-21	16.

*Contacts are actuated by a downward motion of roller.

†Contacts are actuated by a upward motion of roller.

HEAVY DUTY LIMIT SWITCHES

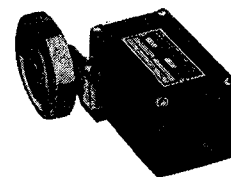
SLOW MAKE AND BREAK — ROLLER OPERATED

0-600 VOLTS, A. C., 250 VOLTS D. C.

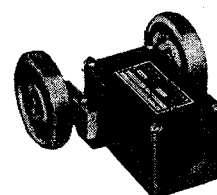
Roller Diameter in Inches	Roller Position (R.H. or L.H. Side)	Special Features	Cast Iron General Purpose Enclosure NEMA Type 1		Water-tight Enclosure NEMA Type 4		For Hazardous Locations Class I, Group D NEMA Type 7	
			Type	Price	Type	Price	Type	Price
1½	L. H.	.....	LB-4	\$16.	LBW-4	\$26.	.....	.....
	R. H.	.....	LB-7	16.	LBW-7	26.	.....	.....
	L. H.	Hand Reset Latch	LB-6	26.	LBW-6	36.	.....	.....
	.....	Three Position Roller	LB-10	20.	LBW-10	30.	.....	.....
2¾	L. H.	.....	LB-8	\$16.	LBW-8	\$26.	.....	.....
	R. H.	.....	LB-9	16.	LBW-9	26.	.....	.....
2½	L. H.	.....	.....	.....	.....	.....	LBR-4	\$35.
	R. H.	.....	.....	.....	.....	.....	LBR-7	35.
	L. H.	Hand Reset Latch	.....	.....	.....	.....	LBR-6	45.

These switches are supplied with normally closed contacts. Contacts can be changed to normally open arrangement without use of tools.

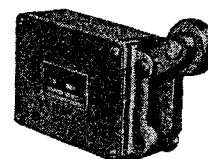
ORDERING INSTRUCTIONS: Order by Class and Type Number.



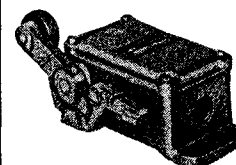
Type LG-6



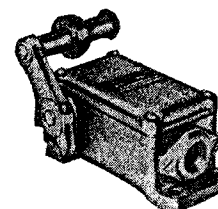
Type LG-1



Type LF-20



Type LB-6



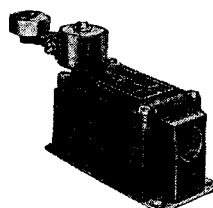
Type LBW-10

LIMIT SWITCHES

MACHINE TOOL TYPES—QUICK MAKE & BREAK

CLASS
9007

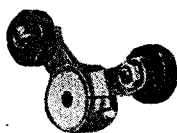
Designed primarily for machine tool applications the Type M and Type LD limit switches provide accurate tripping, quick make and break contact mechanisms and latch type mechanisms. The Type M switches can be furnished with several kinds of roller arms, all adjustable through 360°. Only 8° travel is necessary for operation and 8° overtravel is provided. The Type LD limit switches are rod operated and can be provided with a spring return to either the right or left side. The absence of a "dead center" point makes this switch well suited for machine tool applications.



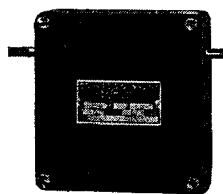
Type M-21B



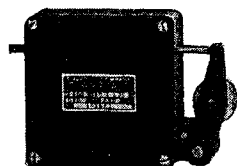
One Way Roller
Plain Hub



Double Roller
Overtravel Hub



Type LD-1



Type LD-5

0-600 VOLTS

QUICK MAKE AND QUICK BREAK

Arrangement of Contacts	Type of Operating Arm	Dust-tight and Oil-tight Enclosure NEMA Type 5			
		With Solid Backplate, Conduit Opening in End		With Hole in Backplate, Plug in Conduit Opening, Gasket for Back	
		Type	Price	Type	Price
Single Pole Double Throw	Without Operating Arm	M11	\$18.	M21	\$19.
	Single Roller, Plain Hub	M11A	22.	M21A	23.
	Single Roller, Overtravel Hub	M11B	24.	M21B	25.
	One Way Roller, Plain Hub	M11C	25.	M21C	26.
	One Way Roller, Overtravel Hub	M11D	27.	M21D	28.
	Double Roller, Overtravel Hub	M11F	29.	M21F	30.
	Double Roller, Overtravel Hub, One Way Roller On One Side	M11G	32.	M21G	33.
	Double Roller, Overtravel Hub, One Way Rollers Both Sides	M11H	34.	M21H	35.
Three Point Double Throw	Without Operating Arm	M12	\$20.	M22	\$21.
	Single Roller, Plain Hub	M12A	24.	M22A	25.
	Single Roller, Overtravel Hub	M12B	26.	M22B	27.
	One Way Roller, Plain Hub	M12C	27.	M22C	28.
	One Way Roller, Overtravel Hub	M12D	29.	M22D	30.
	Double Roller, Overtravel Hub	M12F	31.	M22F	32.
	Double Roller, Overtravel Hub One Way Roller On One Side	M12G	34.	M22G	35.
	Double Roller, Overtravel Hub One Way Rollers Both Sides	M12H	36.	M22H	37.

600 VOLTS A.C., 250 VOLTS D.C.

QUICK MAKE AND QUICK BREAK—SINGLE POLE, DOUBLE THROW

Description		General Purpose Enclosure NEMA Type 1				Water-tight Enclosure NEMA Type 4	
		Without Bushings		With Bronze Bushings		Type	Price
		Type	Price	Type	Price		
Push Rod Operated	No Spring Return.....	LD-1	\$22.	LD-8	\$25.	LD-15	\$35.
	Spring Return to Left Hand Side.....	LD-2A	22.	LD-9A	25.	LD-16A	35.
	Spring Return to Right Hand Side.....	LD-2B	22.	LD-9B	25.	LD-16B	35.
	Adjusting Nut—Spring Return to L. H. Side.....	LD-4A	\$25.	LD-11A	\$28.	LD-17A	\$38.
	Adjusting Nut—Spring Return to R. H. Side.....	LD-4B	25.	LD-11B	28.	LD-17B	38.
	Adjusting Nut Each End—No Spring Return.....	LD-18	27.	LD-19	30.	.....	.....
Roller Operated	Roller on Left Hand Side.....	LD-3	\$30.	LD-10	\$33.	LD-14	\$43.
	Roller on Right Hand Side.....	LD-5	30.	LD-12	33.	LD-20	43.
	One Way Roller on Left Hand Side.....	LD-6	\$33.	LD-13	\$36.	LD-21	\$46.
	One Way Roller on Right Hand Side.....	LD-23	33.	LD-25	36.	LD-24	46.
	Roller on Each Side.....	.....	.....	LD-7	\$39.	LD-22	\$49.
	Roller on Each Side—1-Way Roller on R. H. Side.....	.....	.....	LD-26	42.	LD-27	52.

ORDERING INSTRUCTIONS: Order by Class and Type number.



SCHEDULE



DISCOUNT

PAGE 103

LIMIT SWITCHES

HEAVY DUTY, MACHINE TOOL TYPE — QUICK MAKE & BREAK

**CLASS
9007**

Type T limit switches are heavy duty, quick make and break devices specifically designed for machine tool applications. Switch mechanisms can be adjusted to obtain various contact operating sequences. A wide variety of interchangeable lever arms and base plates are available.

These limit switches are furnished as separate switches and operating lever arms. Although switches are supplied with base plates, separate base plates are also available. This permits coverage of most limit switch requirements with a relatively small inventory of switches, lever arms, and base plates.

TABLE 1 — BASIC SWITCHES (Complete With Base Plate)

DRIP-PROOF, OIL-TIGHT, AND DUST-TIGHT ENCLOSURE — NEMA TYPES 2 AND 5									
Contact Arrangement	Base Plate	Standard Switch †			Universal Switch †				
		Operating Sequence ★	Type	Price	Operating Sequence ★	Type	Operating Sequence ★	Type	Price
Single Pole Double Throw	A		TSA1	\$20.		TUA5		TUA4	\$20.
	B		TSA1	20.		TUB5		TUB4	20.
	C		TSC1	20.		TUC5		TUC4	20.
	D		TSD1	20.		TUD5		TUD4	20.
	E		TSE1	21.		TUE5		TUE4	21.
	F		TSF1	21.		TUF5		TUF4	21.
	G		TSG1	21.		TUG5		TUG4	21.
Three Point Double Throw	A		TXA1	\$22.		TYA5		TYA4	\$22.
	B		TXB1	22.		TYB5		TYB4	22.
	C		TXC1	22.		TYC5		TYC4	22.
	D		TXD1	22.		TYD5		TYD4	22.
	E		TXE1	23.		TYE5		TYE4	23.
	F		TXF1	23.		TYF5		TYF4	23.
	G		TXG1	23.		TYG5		TYG4	23.

† Switch mechanism can be adjusted to obtain other contact operating sequences. Universal switches are shipped from factory with sequence specified, but sequence in adjacent column and others can be obtained by adjustment.

★ OPERATING SEQUENCE LEGEND TABLE

	Maintained (Normal) Position	A—"A" Contact Closed
	Spring Return (Tripped) Position	B—"B" Contact Closed
		O—Both Contacts Open

TABLE 2—OPERATING LEVER ARMS

Length of Arm	Offset	Roller Position	Distance from Cam Track to Switch Base ▲	Type			Price
				3/4" Dia. Roller ▲	1" Dia. Roller ▲	1 3/8" Dia. Roller ▲	
1 1/2"	None	Optional	1 1/16" or 2 1/16"	B1	B2	B3	\$ 2.
2 1/2"	None	Optional	1 1/16" or 2 1/16"	B7	B8	B9	3.
1 1/2"	3/8"	Inside Offset	2 1/16"	C1	C2	C3	3.
		Outside Offset	1 1/16" or 2 1/16"	D1	D2	D3	3.
1 3/8"	27/32"	Outside Offset	2 7/32" or 3 3/32"	E4	E5	E6	2.
		Inside Offset	1 9/32" or 2 1/32"	F4	F5	F6	2.

Double track obtained with single arm by reversing mounting arm. See page 106 for complete dimensional data.
▲ All rollers are 1/4" wide.

SEPARATE BASE PLATES

Type	Mounting Holes	Features	Part Number	Price
A	None †	Without Manifold	2934-D32-G1	\$ 1.
B	End	Without Manifold	2934-D14-G1	1.
C	Side	Without Manifold	2934-D33-G1	1.
D	End *	Without Manifold	2934-D34-G1	1.
E	End	With Manifold	2934-D14-G2	2.
F	Side	With Manifold	2934-D33-G2	2.
G	End *	With Manifold	2934-D34-G2	2.

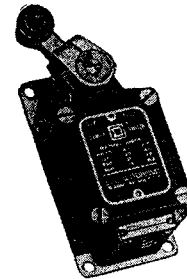
* Mounting hole dimensions correspond to those of Class 9007 Type M limit switches.

† No mounting holes in base plate. Side mounting holes in switch case must be used.

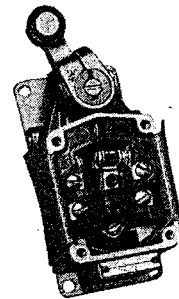
ORDERING INSTRUCTIONS

- 1—Order complete limit switches by combining basic switch type number from Table 1 and operating lever type number from Table 2, (i.e. Class 9007, Type TUB4-B1). List price of the complete switch is the sum of the list prices of the basic switch and operating lever.
- 2—Individual basic switches and lever arms may be ordered separately from the tables by Class and Type number. Separate base plates may be ordered by part number.

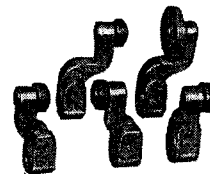
NOTE: Limit switches and roller arms are individually packaged. However, when a complete unit is ordered by Class and Type number (i.e. Class 9007 Type TUB4-B1), the switch and roller arm packages are inserted in a larger box stamped with the required designation. Standard packaging quantity for switches, arms, and switch-arm combinations is 10.



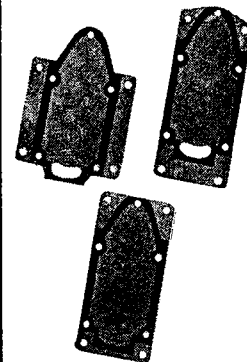
Class 9007 Type T



Cover removed showing contacts and wiring space.



Typical Operating Lever Arms.



A few of the many base-plates—note manifold opening type.



LIMIT SWITCHES

SMALL PRECISION TYPE—QUICK MAKE & BREAK

CLASS
9007

Class 9007, Type A small, precision limit switches are specifically designed for modern machine tools, to govern starting, stopping, or reversing of electric motors and for use as a "built-in" contact mechanism on other types of applications. The Type A switches, available with various lengths of roller arms or for push-rod operation, have a highly accurate, precision snap action, quick make and break mechanism which is capable of withstanding severe service without losing its accuracy or reliability of performance.

The Class 9007 basic contact mechanisms with special operators are designed as compact, inexpensive devices to govern control of electric motors or solenoid loads, where a protective enclosure against dust, oil, or water is unnecessary.

SMALL PRECISION LIMIT SWITCHES

QUICK MAKE AND BREAK

0-600 VOLTS A. C. AND D. C.

OIL-TIGHT ENCLOSURE — SPRING RETURN

Description	Roller	Length of Arm	Surface Mounting		Flush Mounting	
			Type	Price	Type	Price
Roller Arm Operated	Plain 5/8" Dia. 1/4" Wide	7/8"	AW12-A1	\$17.	AF12-A1	\$16.
		1 1/8"	AW12-B1 *	16.	AF12-B1	15.
		2"	AW12-C1	17.	AF12-C1	16.
		2 1/2"	AW12-D1	17.	AF12-D1	16.
		3"	AW12-E1	17.	AF12-E1	16.
	Plain 5/8" Dia. 5/8" Wide	7/8"	AW12-A2	\$17.	AF12-A2	\$16.
		1 1/8"	AW12-B2	17.	AF12-B2	16.
		2"	AW12-C2	17.	AF12-C2	16.
		2 1/2"	AW12-D2	17.	AF12-D2	16.
		3"	AW12-E2	17.	AF12-E2	16.
Push Rod Operated (One Side)	One Way 1 1/4" Dia. 1/4" Wide	1 3/8" Only	AW12-B3	\$19.	AF12-B3	\$18.
		.....	AW-22	\$16.	AF-22	\$15.

*Standard packaging quantity — 5

0-600 VOLTS A. C. AND D. C.

BASIC CONTACT MECHANISMS — SPECIAL OPERATORS

Type of Operator	Contact Arrangement	Contact Symbol	Type	Price
Plunger Type, Panel Mounting.....	1 N. O. 1 N. C.		AP-221	\$ 7.70
Roller Leaf Type.....	1 N. O., 1 N. C.		AB-2	5.00
Cabinet Door Type.....	1 N. O., 1 N. C.		AC-1	5.50

0-600 VOLTS A. C. AND D. C.

BASIC CONTACT MECHANISMS

Contact Arrangement	Contact Symbol	Contact Gap .020"		Contact Gap .040"	
		Type	Price	Type	Price
1. N. O., 1 N. C.		AO-1	\$ 3.30	AO-2	\$ 3.30
1 N. C.		AO-1A	3.10	AO-2A	3.10
1 N. O.		AO-1B	3.10	AO-2B	3.10

ELECTRICAL RATINGS

Volts	A. C. Pilot Duty Amperes		D. C. Pilot Duty Amperes			
	Normal	Inrush	Contact Gap .020"		Contact Gap .040"	
			Double Throw	Single Throw	Double Throw	Single Throw
110	15	40	0.25	0.5	0.5	2.0
220	10	20	0.1	0.25	0.2	0.5
440	6	10	.....	.....	.....	.....
600	5	8	.....	0.05	0.02	0.1

ORDERING INSTRUCTIONS: Order by Class and Type Number.



SCHEDULE



DISCOUNT

PAGE 105

SQD SLV_000107

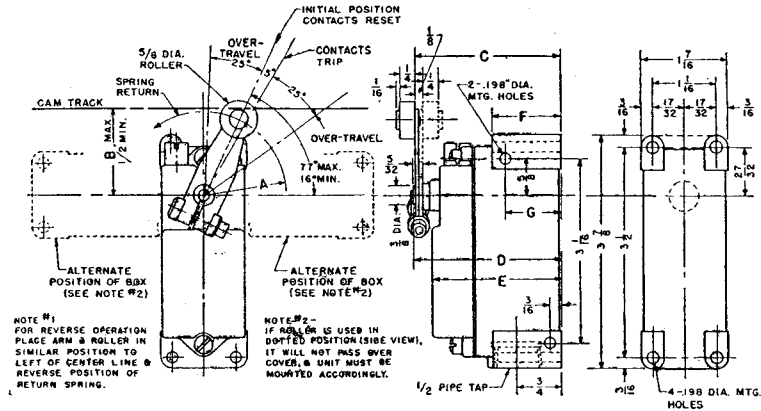
LIMIT SWITCHES

DIMENSIONS

APPROXIMATE DIMENSIONS — NOT FOR CONSTRUCTION

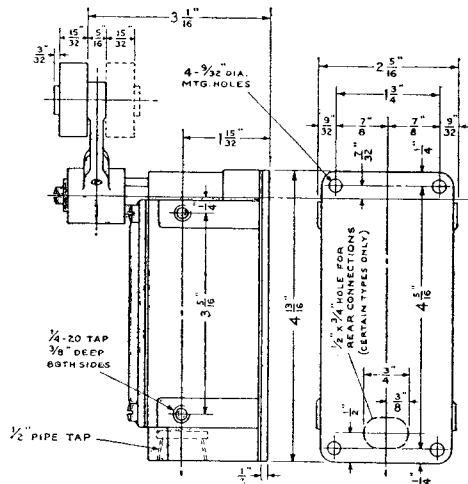
Type	A	B	C	D	E	F	G
AW12-A1	$\frac{7}{8}$	$1\frac{1}{16}$	$2\frac{15}{32}$	$2\frac{1}{2}$	$2\frac{5}{32}$	$1\frac{15}{32}$	$1\frac{5}{16}$
AW12-B1	$1\frac{3}{8}$	$1\frac{1}{16}$	$2\frac{15}{32}$	$2\frac{1}{2}$	$2\frac{5}{32}$	$1\frac{15}{32}$	$1\frac{5}{16}$
AW12-C1	2	$2\frac{1}{8}$	$2\frac{15}{32}$	$2\frac{1}{2}$	$2\frac{5}{32}$	$1\frac{15}{32}$	$1\frac{5}{16}$
AW12-D1	$2\frac{1}{2}$	$2\frac{5}{8}$	$2\frac{15}{32}$	$2\frac{1}{2}$	$2\frac{5}{32}$	$1\frac{15}{32}$	$1\frac{5}{16}$
AW12-E1	3	$3\frac{3}{32}$	$2\frac{15}{32}$	$2\frac{1}{2}$	$2\frac{5}{32}$	$1\frac{15}{32}$	$1\frac{5}{16}$

$1\frac{3}{8}$ " roller arm is standard.

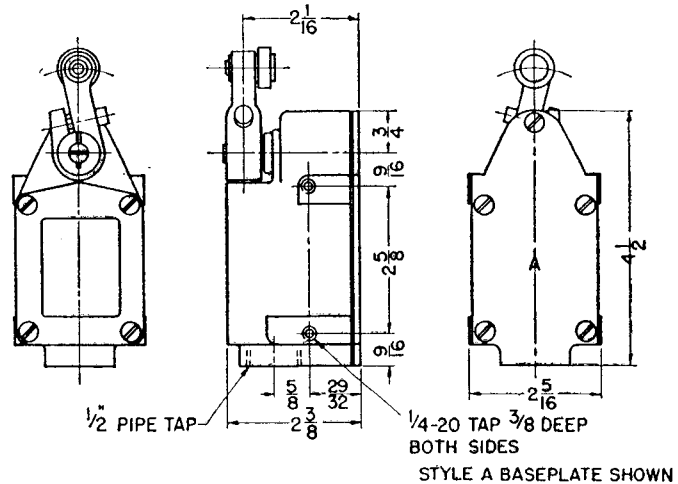


2441-84

Class 9007 AW12 Small,
Precision Limit Switch.

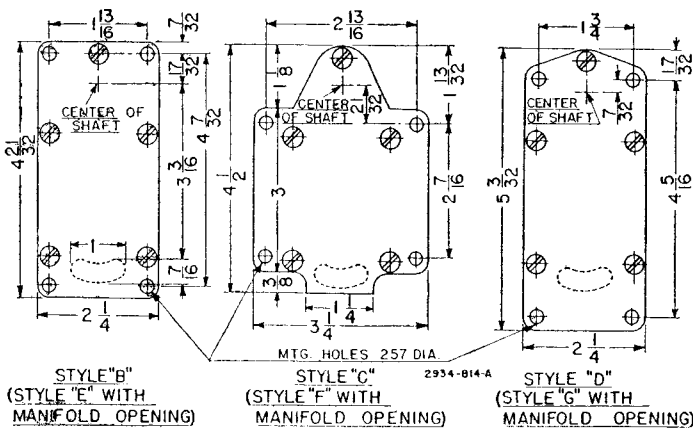


Class 9007 Type M Limit Switch
with Standard Operating Arm.

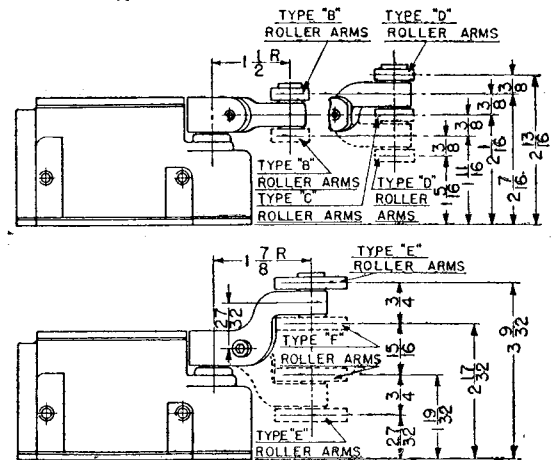


2934-B13-A

Switch Dimensions for
Type T Limit Switch.



Base Plate Dimensions for Type T Limit Switches.



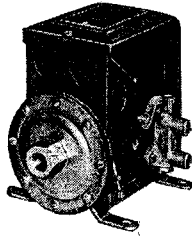
Cam Track Dimensions for Type T Limit Switch.

Note: All Roller Arms Available with $\frac{3}{4}$ ", 1" or $1\frac{1}{8}$ " Dia. Roller.

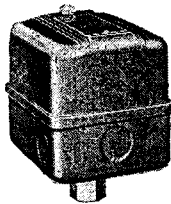
PRESSURE SWITCHES

WATER PUMP & AIR COMPRESSOR TYPES

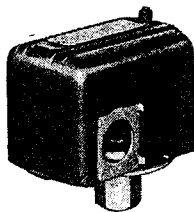
CLASS
9013



Type ASG-11
Form FX



Type GSG-2



Type FSG-2



Display Carton of
Type FSG Switches

Designed for the control of electrically driven water pumps and air compressors, the Class 9013 devices cover the important electrical ratings for the direct control of motors in the usual pump and compressor applications. Switches are of two pole construction to open both lines, considered desirable to avoid grounding difficulties often prevalent due to frequent damp location of equipment.

For air compressor applications, a pressure release valve is usually desired; this feature may be ordered as "Form X" or "Form Y", as indicated in the table of additions and special features.

The standard enclosure finish is of machine gray enamel. The special enclosures of Types ASW and ASR devices are of sheet steel and cast iron respectively to provide drip-proof and explosion resisting features where required. All interior parts are treated to prevent corrosion.

DIAPHRAGM ACTUATED * 2 POLES CONTACTS OPEN ON INCREASED PRESSURE

Application	Pipe Tap	Pressure Range (P.S.I.)	† Differential (P.S.I.)	General Purpose Enclosure		Drip Proof Enclosure		Explosion Resisting Enclosure	
				Type	Price	Type	Price	Type	Price
Heavy Duty	Water	20-180	10-40	ASG-8	\$22.10	ASW-8	\$59.40	ASR-8	\$118.
	Air	25-250	18-45	ASG-11	\$22.10	ASW-11	\$59.40	ASR-11	\$118.
Intermediate Duty	Water	20-80	12-35	GSG-2	\$15.	GSW-2	\$92.35	GSR-2	\$89.
	Air	40-200	18-40	GHG-2	\$15.	GHW-2	\$92.35	GHR-2	\$89.
Domestic Duty	Water	20-80	10-30	FSG-2	\$ 9.75				

*Three poles also available on Type A switches.

‡1/8" or 3/8" taps also available. Type F switches also furnished with 1/8" or 1/4" compression connection.

†Differential increases with range.

PACKAGED PRESSURE SWITCHES

Type F switches can be furnished in an attractive 3 color display box which holds 8 controls individually packed and labeled (see cut). There is no charge for this when 8 controls are ordered. Specify "Pack in display box".

PRICES FOR ADDITIONS AND SPECIAL FEATURES

Feature	Form Letter	With Type ASG	With Type ASW	With Type ASR	With Type GHG	With Types GHW, GHR	With Types GSG, GSW, GSR, FSG
Oil Resisting Diaphragm.....	Form D	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Mounting Feet.....	Form F	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
.060 Pulsation Plug.....	Form P	N.C.	N.C.	N.C.	N.C.	N.C.	N.C.
Reverse Action (Contacts Open on Decreased Pressure).....	Form R	4.90	\$ 4.90	\$ 4.90			
2-Way Release Valve.....	Form X	5.70	12.30	15.70	\$ 5.70	\$ 15.70	
3-Way Release Valve.....	Form Y	8.80	16.10	19.50			

★Furnished as standard on these switches.

ELECTRICAL RATINGS — HORSEPOWER

Type	Single Phase		Polyphase			D. C.	
	115 Volts	230 Volts	220 Volts	440 Volts	550 Volts	115 Volts	230 Volts
A	2	3	5	5	5	1	1 1/4
F	1	1	1	1	1	1/2	1/2
GS	1 1/2	2	3	3	3	1	1
GH	2	3	5	5	5	1	1

SWITCHES CARRIED IN STOCK

Type	Std. Stock Settings (P.S.I., On-Off)
ASG-8 Form F	20-40; 80-100; 120-150; 125-150; 145-175
FSG-2	20-40
GHG-2 Form X	120-150; 125-150
GSG-2	20-40

ORDERING INSTRUCTIONS

1. Specify Class and Type number of switch.
2. Give cut-out and cut-in pressures within the limits specified. Standard stock settings should be selected whenever possible.
3. If special features are desired, order as Class 9013, Type, Form, selecting the correct Form letter from the table above. If more than one Form letter is used, arrange letters in alphabetical order as "Class 9013, Type ASG-8, Form FX".



SCHEDULE



DISCOUNT

PAGE 107

SQD SLV_000109

PRESSURE AND VACUUM SWITCHES

CLASS
9012

INDUSTRIAL PRESSURE SWITCHES

Industrial pressure switches are designed to cover the wide range of requirements encountered in the control of pneumatic or hydraulic machines. These controls are most commonly employed in the control circuits of welding equipment, machine tools and high pressure lubricating systems.

QUICK MAKE AND BREAK

ONE NORMALLY OPEN AND ONE NORMALLY CLOSED CONTACT

Application	Connection I.P.T.	Range Setting (P.S.I.) Limits Within Which Switch Can Be Adjusted to Operate on Falling Pressure	Differential (P.S.I.) Add to Range Setting to Obtain Operating Point on Rising Pressure	Max. Allowable Pressure (P.S.I.)	Cast Aluminum Drip Tight and Oil Resistant Enclosure		Cast Iron Class I Group D Explosion Resisting Enclosure	
					Type	Price	Type	Price
Machine Tool and Welder Switch Bellows Actuated	1/4"	1-10	1/2-5	30	ACW-3	\$30.80	ACR-3	\$70.90
		1-20	1-6	30	ACW-4	30.80	ACR-4	70.90
		1-75	3-15	100	ACW-5	28.60	ACR-5	68.70
		1-115	6-30	255	ACW-1	26.40	ACR-1	66.50
		20-180	10-30	255	ACW-8	26.40	ACR-8	66.50
		10-275	15-25	300	ACW-9	37.40	ACR-9	77.50
		10-300	25-125	600	ACW-2	35.20	ACR-2	75.30
High Pressure Hydraulic Switch Piston Actuated †	3/8"	135-1000	35-135	1500	ADW-3	\$2.80		
		400-3000	100-400		ADW-4	\$2.80		
		135-1000	60-110 •		ADW-5	\$3.80		
		400-3000	150-350 •	4000	ADW-6	\$3.80		

Adjusting knob available (specify Form K)..... \$1.10 list additional

† On ADW switches range setting indicates limits within which switch can be adjusted on rising pressure. Differential subtracts from range setting to determine operating point on falling pressure.

• Differential increases with range on switches with Quad ring seal.

ELECTRICAL RATINGS — AMPERES

A. C. Pilot Duty			D. C. Pilot Duty		
Volts	Normal	Inrush	Volts	Single Throw	Double Throw
110	15	40	115	0.5	0.25
220	10	20	230	0.25	0.1
440	6	10	600	0.05	.....
600	5	8			

SWITCHES CARRIED IN STOCK

Type	Std. Stock Settings (P.S.I. On-Off)
ACW-1	44-50
ACW-2	155-180
ACW-3	5-5 1/2
ACW-4	10-11
ACW-5	40-43
ACW-8	90-100
ACW-9	135-150
ADW-3	535-570
ADW-4	1600-1700
ADW-5	485-570
ADW-6	1440-1700

ORDERING INSTRUCTIONS: Specify Class 9012, Type Switches with standard settings (see table above) will be furnished from stock on orders not exceeding quantity of 25. When non-standard settings are required, specify "Must be set . . ."; and relatively longer delivery time must be expected.

SCHEDULE K DISCOUNT

CLASS
9016

VACUUM PUMP CONTROLS

Designed for the control of electrically driven vacuum pumps, the 9016 controls cover the important electrical ratings for direct control of motors. These switches can be provided with or without a three-way manual lever.

CONTACTS CLOSE ON LOSS OF VACUUM

Application	Range (Inches of Hg.)	Differential (Inches of Hg.)	Poles	Pipe Tap	General Purpose Enclosure		Watertight Enclosure		Explosion Resisting Enclosure	
					Type	Price	Type	Price	Type	Price
Heavy Duty.....	5-25	3 1/2-12 ‡	2 *	1/4"	ASG-3	\$41.	ASW-3	\$78.50	ASR-3	\$156.
Intermediate Duty..	5-25	4-12 ‡	2	1/4"	GVG-1	28.40				

*3 poles also available on Type A switches.

‡ Differential increases with range.

ELECTRICAL RATINGS — HORSEPOWER

Class 9016 Type	Single Phase		Polyphase			D. C.	
	115 Volts	230 Volts	220 Volts	440 Volts	550 Volts	115 Volts	230 Volts
A	2	3	5	5	5	1	1
G	1 1/2	2	3	3	3	1/2	1/2

SWITCHES CARRIED IN STOCK

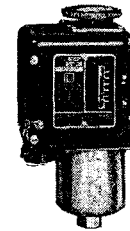
Type	Std. Stock Settings (Inches of Hg.)
ASG-1	3"-8"
GVG-1 Form E †	3"-8"
GVG-1 Form F •	3"-8"

† Form E includes 3-way lever with nameplate marked "Float only—Vacuum and Float—Continuous". Price \$5.90 list additional.

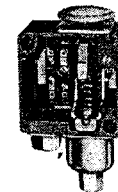
• Form F includes mounting bracket. No Charge

ORDERING INSTRUCTIONS: Specify Class 9016, Type , and give vacuum settings.

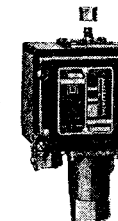
SCHEDULE X DISCOUNT



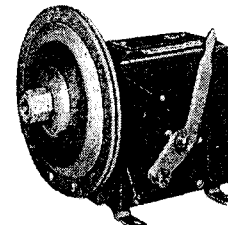
9012 ACW-3
Form K



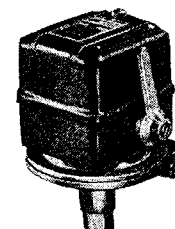
9012 ACW-1
Form K
(cover removed)



9012 ADW-3

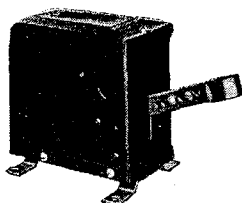


9016 ASG-1
Form E

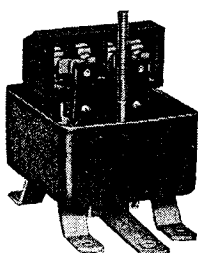


9016 GVG-1
Form E

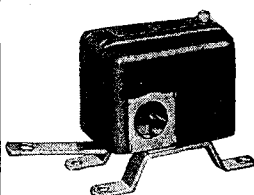
FLOAT SWITCHES



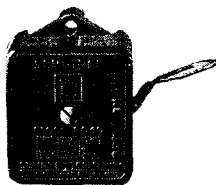
Class 9036, Type AG-5



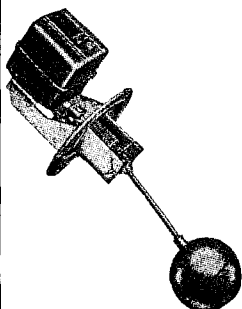
Class 9036, Type GG-2



Class 9036, Type FG-1



Class 9046, Type CG-1



Class 9037, Type GG-4

FOR OPEN TANK OR SUMP APPLICATIONS

Class 9036 float switches lend themselves to a variety of needs for open tank control with sump or standard operation. Enclosures are finished in machine gray enamel. Interior parts are treated to prevent corrosion.

CLASS
9036

Application	Poles	General Purpose Enclosure		Drip Proof Enclosure		Explosion Resisting Enclosure	
		Type	Price	Type	Price	Type	Price
*CONTACTS OPEN ON LIQUID RISE							
Heavy Duty.....	2	†AG-5	\$22.10	†AW-5	\$59.40	†AR-2	\$111.
*CONTACTS CLOSE ON LIQUID RISE							
Intermediate Duty.....	2	†GG-2	\$15.	.....	.....	.....	.....
General Duty.....	2	†FG-1 DG-2	\$ 9.75 15.	†DW-1	\$48.	†DR-1	\$50.

*For reverse action, add "Form R" to Class and Type number, Type A- and Type G- switches can be reversed in the field.
†Three poles are also available on Type A- switches.
†Types AG-5, AG-5 Form R, AW-5, AR-2, GG-2, GG-2 Form R, FG-1, DW-1 and DR-1 are carried in stock.

FOR CONDENSATE PUMPS

Class 9037 Type GG controls are primarily used on condensate pumps. Float movement is through a bellows seal. Switches are flange mounted.

CLASS
9037

CONTACTS CLOSE ON LIQUID RISE

Application	Poles	"E" Distance (Rod Length)	Figure No. (Float Movement)	General Purpose Enclosure	
				Type	Price
Intermediate Duty	2	8"	Fig. 1—(Above and below center line).....	†GG-4	\$52.30
			Fig. 2—(Below center line).....	GG-5	\$52.30
			Fig. 3—(For vertically mounted switch).....	GG-6	\$52.30

*Rod length is measured from fulcrum of rod to center of round float. Lengths of 6, 10, 12, 14 and 16 inches are also available.
†Type GG-4 switch carried in stock.

SUMPTROLS

Class 9046 Sumptrols are designed specifically for sump pumps or cellar drainers of the small domestic type. The mechanism provides a positive wiping contact action to assure operation in damp or dirty locations often characteristic of such installations. Enclosures are molded bakelite, and interior parts are treated to prevent corrosion.

CLASS
9046

CONTACTS CLOSE ON LIQUID RISE

Application	Poles	General Purpose Enclosure	
		Type	Price
Domestic duty.....	1	†CG-1	\$4.20

†Type CG-1 carried in stock.

ACCESSORIES FOR FLOAT SWITCHES

Standard accessories consist of one 7" float (tapped at top or with center hole) and 5 feet of threaded tubing and stops. These accessories are available from stock in brass or stainless steel.

CLASS
9049

Material	Float	Type	Price
Copper coated float with brass tubing.....	Tapped at Top.....	A6	\$22.80
	Center hole.....	A6C	\$25.60
Stainless steel float and tubing.....	Tapped at Top.....	A6S	\$81.40
	Center hole.....	A6CS	\$91.40

ELECTRICAL RATINGS (HORSEPOWER)

Class	Types	Single Phase			Polyphase			D. C.	
		115 Volts	230 Volts		220 Volts	440 Volts	550 Volts	115 Volts	230 Volts
9036	AG-5, AW-5, AR-2.....	2	3		5	5	5	1	1
9036	GG-2.....	2	3		5	5	5	1	1
9036	FG-1.....	1	1		1			¼	¼
9036	DG-2, DW-1, DR-1.....	1	1		1	1	1	¼	¼
9037	GG-4, GG-5, GG-6.....	2	3		5	5	5	1	1
9046	CG-1.....	½	1					¼	¼

ORDERING INSTRUCTIONS: Order by Class and Type number.



SCHEDULE



DISCOUNT

PAGE 109

FLOAT SWITCHES AND VALVES

CLASS
9035

GENERAL DUTY FLOAT SWITCHES

Class 9035 controls are rod or chain operated, for use in controlling liquid levels in open tank applications.

2 POLES

*CONTACTS OPEN ON LIQUID RISE

Description ‡	General Purpose Enclosure		Splash Proof Enclosure		Water Tight Enclosure		Explosion Resisting Enclosure	
	Type	Price	Type	Price	Type	Price	Type	Price
Without Accessories.....	† DG-1	\$22.	BM-1	\$41.30	† BW-1	\$ 49.50	† DR-1	\$ 64.
Rod Operated, Wall Mounting.....	† DG-2	\$44.	† BM-2	\$80.	† BW-2	\$ 88.	† DR-2	\$102.
Rod Operated, Floor Mounting.....	† DG-3	\$58.	BM-3	\$94.	† BW-3	\$102.	† DR-3	\$116.
Chain Operated, Wall Mounting.....	† DG-4	\$44.	† BM-4	\$80.	† BW-4	\$ 88.	DR-4	\$102.
Chain Operated, Floor Mounting.....	† DG-5	\$58.	BM-5	\$94.	BW-5	\$102.	DR-5	\$116.
Chain Operated, Wall Mounting Separate Pulleys.....	DG-6	\$44.	BM-6	\$80.	BW-6	\$ 88.	DR-6	\$102.
Chain Operated, Floor Mounting Separate Pulleys.....	DG-7	\$58.	BM-7	\$94.	BW-7	\$102.	DR-7	\$116.

*For reverse action add Form R to Class and Type number.

‡Switches with accessories include 7 inch float with 5 foot rod or 15 feet of chain.

†Switches carried in stock.

ELECTRICAL RATINGS (HORSEPOWER)

Types	Single Phase		Polyphase			D. C.	
	115 Volts	230 Volts	110 Volts	220 Volts	440-550 Volts	115 Volts	230 Volts
DG, DR BM, BW	1 2	1 3	1 3	1 5	1 5	1/4 1	1/4 1

ORDERING INSTRUCTIONS: Specify Class 9035, Type

VALVES

CLASS
9043

The Class 9043 Type AG valve is a two-way solenoid valve designed for use with freon, methyl chloride and sulphur dioxide in refrigeration and air conditioning systems. It can also be applied for use with water, oil and air. The Class 9043, Type CG valve is a four-way magnet operated valve designed to control a double acting air cylinder such as used on welding machines, presses, or clamping devices.

TWO-WAY SOLENOID VALVE

Application	Inlet & Outlet Connection I.P.T.	Current	Orifice Size	General Purpose Enclosure	
				Type	Price
Freon, Methyl Chloride, Sulphur Dioxide, Air, Oil, or Water	3/8"	A.C.	3/32"	AG-6	\$20.10
			1/16"	AG-7	\$20.10
			1/8"	† AG-8	\$20.10
		D.C.	3/32"	AG-4	\$20.10
			1/16"	AG-5	\$20.10
			1/8"		

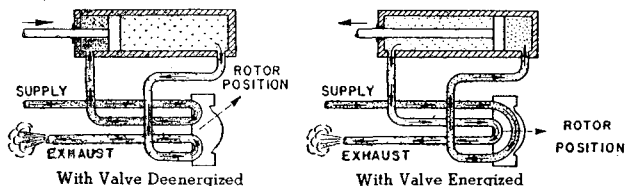
† Valves carried in stock.

MAGNET OPERATED FOUR-WAY VALVE

Application	Current	Size	Number of Ports		General Purpose Enclosure	
			Bottom	Side	Type	Price
Air Only.....	A.C.	3/8"	4	0	† CG-4	\$124.
		3/8"	2	2	CG-2	\$124.
		1/2"	2	2	CG-3	\$124.

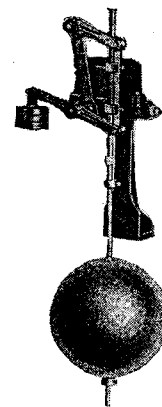
† Valves carried in stock.

OPERATION OF FOUR-WAY VALVE

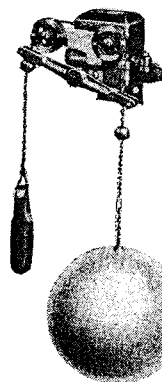


ORDERING INSTRUCTIONS

1. Order by Class and Type Nos.
2. Give voltage and frequency of operating coil.



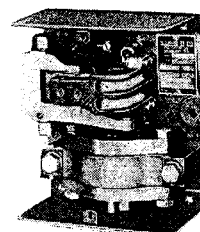
Class 9035, Type BW-3



Class 9035, Type BM-4



Class 9043, Type AG-6



Class 9043, Type CG-4 with cover removed

TIMING RELAYS

CLASS
9050

Class 9050 timing relays are used in many industrial applications where dependable operation and ease of adjustment over suitable ranges of timing are required.

Timers of the pneumatic type may be obtained for delay in making or breaking a circuit either after energization or de-energization of the relay. All A.C. Type R timing relays, except flush mounting types, have an invertible magnet which allows conversion from one type of operation to other in the field.

PNEUMATIC TIMING RELAYS

ADJUSTABLE RANGE—2 SEC. TO 3 MIN.

SINGLE POLE, DOUBLE THROW, SEPARATE CIRCUIT *

FOR A.C. OPERATION

25-60 CYCLES, 110-600 VOLTS

Type of Operation	Features		SURFACE MOUNTING								Flush Mounting Without Pull Box	
			General Purpose Enclosure NEMA Type 1		Water and Dust Tight Enclosure NEMA Types 4 and 5		For Hazardous Locations NEMA Types 7 and 9		Open Type			
	Dial	Number of Interlocks	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
	De-energization of Relay	Without Dial	0	RG-9D	\$ 64.	RW-9D	\$ 94.	RR-9D	\$170.	RO-9D	\$ 56.	RF-5D	$ 62.
1			RG-10D	74.	RW-10D	106.	RR-10D	180.	RO-10D	66.	RF-6D	72.
With Dial		0	RG-11D	\$ 72.	RW-11D	\$104.	RR-11D	\$178.	RO-11D	\$ 64.	RF-7D	\$ 70.
		1	RG-12D	84.	RW-12D	114.	RR-12D	190.	RO-12D	74.	RF-8D	82.
Time Delay after Energization of Relay	Without Dial	0	RG-9E	\$ 64.	RW-9E	\$ 94.	RR-9E	\$170.	RO-9E	\$ 56.	RF-5E	\$ 62.
		1	RG-10E	74.	RW-10E	106.	RR-10E	180.	RO-10E	66.	RF-6E	72.
	With Dial	0	RG-11E	\$ 72.	RW-11E	\$104.	RR-11E	\$178.	RO-11E	\$ 64.	RF-7E	\$ 70.
		1	RG-12E	84.	RW-12E	114.	RR-12E	190.	RO-12E	74.	RF-8E	82.

FOR D.C. OPERATION

250 VOLTS MAX.

Type of Operation			Features		SURFACE MOUNTING							
					General Purpose Enclosure NEMA Type 1		Water and Dust Tight Enclosure NEMA Types 4 and 5		For Hazardous Locations NEMA Types 7 and 9		Open Type	
					Type	Price	Type	Price	Type	Price	Type	Price
Time Delay after De-energization of Relay	Without Dial	Without Interlock With Interlock	QG-1D	\$ 70.	QW-1D	\$102.	QR-1D	\$176.	QO-1D	\$ 62.		
			QG-2D	\$ 80.	QW-2D	\$112.	QR-2D	\$186.	QO-2D	\$ 72.		
	With Dial	Without Interlock With Interlock	QG-3D	\$ 78.	QW-3D	\$110.	QR-3D	\$184.	QO-3D	\$ 70.		
			QG-4D	\$ 88.	QW-4D	\$120.	QR-4D	\$194.	QO-4D	\$ 80.		
Time Delay after Energization of Relay	Without Dial	Without Interlock With Interlock	QG-1E	\$ 70.	QW-1E	\$102.	QR-1E	\$176.	QO-1E	\$ 62.		
			QG-2E	\$ 80.	QW-2E	\$112.	QR-2E	\$186.	QO-2E	\$ 72.		
	With Dial	Without Interlock With Interlock	QG-3E	\$ 78.	QW-3E	\$110.	QR-3E	\$184.	QO-3E	\$ 70.		
			QG-4E	\$ 88.	QW-4E	\$120.	QR-4E	\$194.	QO-4E	\$ 80.		

*Timing contacts consist of an isolated normally open and normally closed circuit. Due to electrical clearance, the normally open and normally closed circuits must be used on circuits of the same polarity.

Hardened Magnet Parts—Form HA.....\$2.50 list additional. (Available on A.C. Timers only, furnished as standard on flush mounting type timers).

Electrical Interlock Kit (contains parts required to add one interlock unit to a timer furnished without interlocks) — Class 9999, Type R-1.....\$8. list each. (Suitable for A.C. surface mounting type timers only).

OIL DASHPOT TYPE MAGNETIC TIMING RELAYS

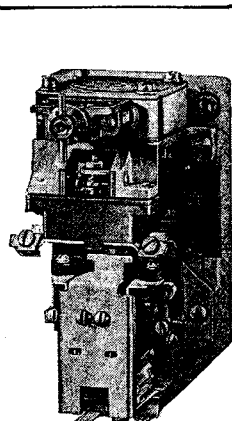
A. C. OR D. C. OPERATION

ADJUSTABLE RANGE — 5 TO 30 SECONDS

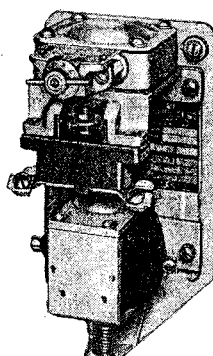
Type of Current	Contact Arrangement (S. P. S. T.)	Frequency Range	Adjustable Timing Range in Seconds		General Purpose Enclosure NEMA Type I		Open Type	
			Min.	Max.	Type	Price	Type	Price
A. C.	Normally Open	25 to 60 Cycles	5	30	FG-2	\$41.	F-2	\$30.
	Normally Closed				FG-4	41.	F-4	30.
D. C.	Normally Open	....	5	30	FG-3	\$43.	F-3	\$32.
	Normally Closed				FG-5	43.	F-5	32.

Relay contacts are intended for switching control circuits only. Available for time delay after energization only.

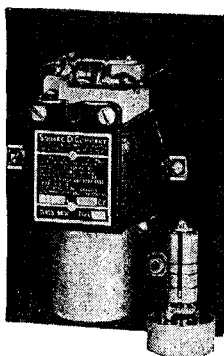
ORDERING INSTRUCTIONS: Order by Class and Type number. Specify voltage and, if A. C., the frequency.



Type RO-11D



Type QO-3E



Type F-4



SCHEDULE

K

DISCOUNT

PAGE 111

OVERLOAD RELAYS

MAGNETIC OVERLOAD RELAYS

CLASS
9055

Magnetic overload relays are used to open or close an electrical contact whenever the actuating current rises to a certain value. Typical applications are for the protection of motor windings against continued overcurrent, for the stopping of a material conveyor when conveyors ahead become overloaded, and as a torque limiter.

.38-320 AMPERES

600 VOLTS MAXIMUM

Application	Maximum Continuous Relay Coil Current	Open Type—Steel Panel Mounting		Open Type—Insulating Panel Mounting		One Relay in General Purpose Enclosure		Two Relays in General Purpose Enclosure	
		Type	Price	Type	Price	Type	Price	Type	Price
Overload Relay—Inverse Time Delay Trip	60	AO-1	\$22.	AO-2	\$22.	AG-1A	\$34.	AG-2A	\$62.
	120	AO-1	25.	AO-2	25.	AG-1A	37.	AG-2A	69.
	210 320	(Use Type AO-2)		AO-2	37. 40.	AG-1B	49. 52.	AG-2B	86. 93.
Overload Relay—Instantaneous Trip	60	NAO-1	\$25.	NAO-2	\$25.	NAG-1A	\$37.	NAG-2A	\$69.
	120	NAO-1	28.	NAO-2	28.	NAG-1A	40.	NAG-2A	73.
	210 320	(Use Type NAO-2)		NAO-2	40. 43.	NAG-1B	55. 58.	NAG-2B	93. 99.

Normally closed contacts are standard. If normally open contacts are desired, specify as "similar to Type except with normally open contact". No charge
Automatic reset is standard. If hand reset relays are desired, specify as "Type Form HR". \$5.00 additional

ORDERING INSTRUCTIONS:

1. Specify Class and Type number of overload relay. Select price corresponding to maximum continuous coil current required.
2. Specify trip setting desired. Relay will be furnished with a suitable coil and plunger setting to give the desired trip current. (Plungers are adjustable, permitting an adjustment of trip setting over a 2 to 1 range with any one coil).

CLASS
9065

THERMAL OVERLOAD RELAYS

Thermal overload relays are used in the coil circuits of magnetic contactors to protect electric motors against drawing excessive line currents. General purpose enclosures are furnished with an external reset.

0-600 VOLTS

INVERSE TIME DELAY TRIP

No. of Relays	Ampere Rating	Melting Alloy Hand Reset Type				Bimetal Hand/Automatic Reset Type				
		General Purpose Enclosure NEMA Type I		Open Type		General Purpose Enclosure NEMA Type I		Open Type		
		Type	Price	Type	Price	Type	Price	Left Hand Type	Right Hand Type	Price
1 Unit	25	SG-1	\$ 13.	SO-1	\$ 6.	ARG-1	\$ 13.	ARO-1L	ARO-1R	\$ 6.
	50	TG-1	20.	TO-1	8.	ATG-1	20.	ATO-1L	ATO-1R	8.
	100	UG-1	27.	UO-1	10.	AUG-1	27.	AUO-1L	AUO-1R	10.
2 Units	25	SG-2	\$ 20.	SO-2	\$ 15.	ARG-2	\$ 20.	ARO-2		\$ 15.
	50	TG-2	29.	TO-2	19.	ATG-2	29.	ATO-2		19.
	100	UG-2	38.	UO-2	23.	AUG-2	38.	AUO-2		23.
3 Units	25	SG-3	\$ 32.	SO-3	\$ 22.	ARG-3	\$ 32.	ARO-3		\$ 22.
	50	TG-3	43.	TO-3	28.	ATG-3	43.	ATO-3		28.
	100	UG-3	54.	UO-3	34.	AUG-3	54.	AUO-3		34.
4 Units	25	SG-4	\$ 51.	.....	.....	ARG-4	\$ 51.	.....		.....
	50	TG-4	69.	.....	.....	ATG-4	69.	.....		.....
	100	UG-4	87.	.....	.....	AUG-4	87.	.....		.....
6 Units	25	SG-6	\$ 75.	.....	.....	ARG-6	\$ 75.	.....		.....
	50	TG-6	97.	.....	.....	ATG-6	97.	.....		.....
	100	UG-6	119.	.....	.....	AUG-6	119.	.....		.....
8 Units	25	SG-8	\$ 99.	.....	.....	ARG-8	\$ 99.	.....		.....
	50	TG-8	125.	.....	.....	ATG-8	125.	.....		.....
	100	UG-8	151.	.....	.....	AUG-8	151.	.....		.....

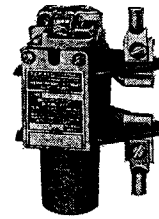
0-600 VOLTS

SINGLE POLE MELTING ALLOY TYPE OVERLOAD BREAKER

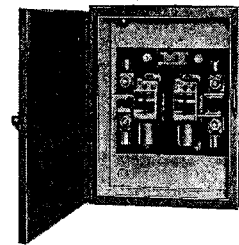
Single Phase A. C. Ratings		D. C. Ratings		General Purpose Enclosure NEMA Type I		Open Type	
Volts	Max. H.P.	Volts	Max. H.P.	Type	Price	Type	Price
115 230	1½ 3	115 230	¼ ¼	B	\$ 13.	C	\$ 8.

Prices include relay units. Select melting alloy relay units from Table 3, Page 120. Select bimetal relay units from Table 4, Page 121. Deduct \$1.50 list each if relay units are omitted.

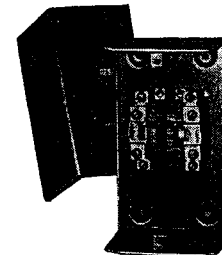
ORDERING INSTRUCTIONS: Order by Class and Type number.



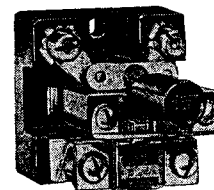
Class 9055
Type NAO-1



Class 9055
Type AG-2B

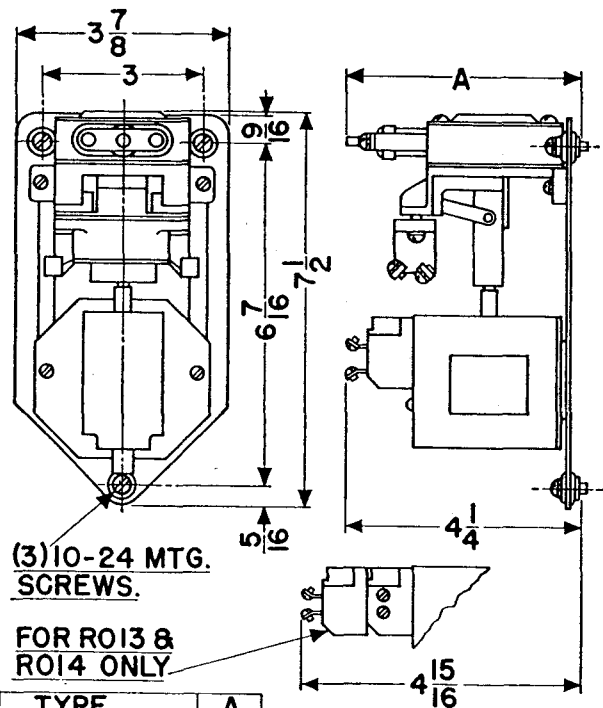


Class 9065
Type SG-2



Class 9065
Type C Overload Breaker

TIMING AND OVERLOAD RELAYS

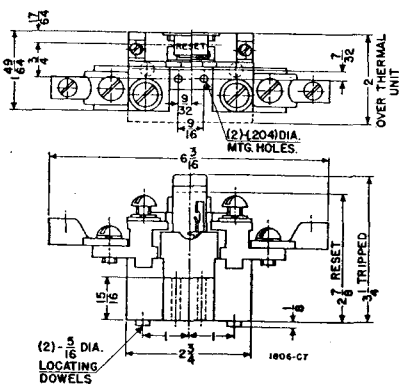


**NOT FOR
CONSTRUCTION**

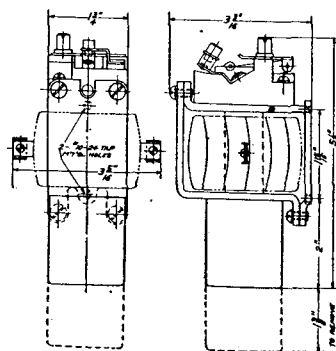
**NEMA 1 General Purpose
Enclosure for Class 9050
A. C. Pneumatic Timers.**

TYPE	A
RO-9,RO-10,RO-13	4 1/4
RO-11,RO-12,RO-14	4 7/8

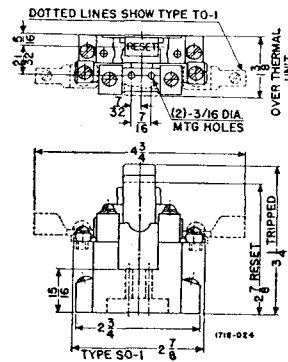
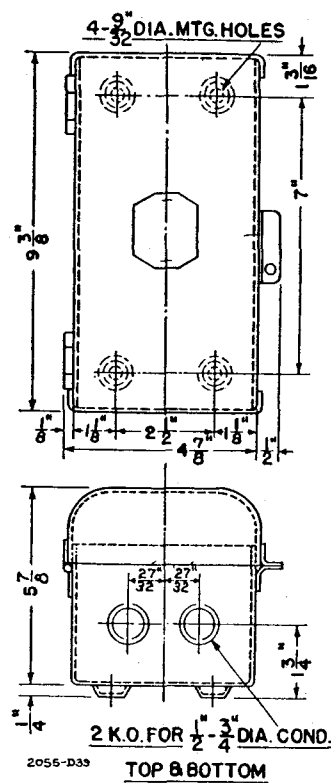
Open Type Class 9050
A. C. Pneumatic Timers.



Open Type Class 9065
Type UO-1 Melting Alloy
Thermal Overload Relay.



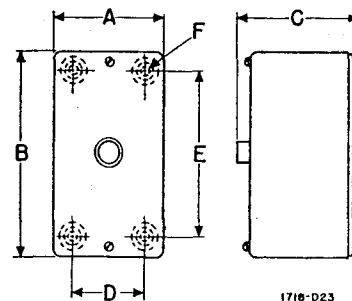
Open Type Class 9050—
Oil Dashpot Type
Magnetic Timing Relay.



Open Type Class 9065
Types SO-1 or TO-1
Melting Alloy
Thermal Overload Relays.

[illegible]

*Dimension C for ARG-4, ARG-2, ATG-1 and ATG-2 is 45%.



TRANSFORMERS AND TERMINAL BLOCKS

CLASS
9070

CONTROL CIRCUIT TRANSFORMERS

These control circuit transformers are specifically designed for industrial control applications, to provide good transformer regulation when high inrush currents are drawn.

50/60 CYCLES *

STANDARD VOLTAGE TRANSFORMERS †

Continuous VA	Nominal Allowable Inrush VA	† Can Be Used with Square D Contactor Size	Open Type		General Purpose Enclosure NEMA Type 1	
			Type	Price	Type	Price
50	165	1	AAO-50	\$15.	AAG-50	\$23.
100	500	2	AAO-100	21.	AAG-100	33.
150	775	3	AAO-150	24.	AAG-150	36.
300	1500	Two Size 3	AAO-300	30.	AAG-300	44.
500	2200	4 (3 Pole)	AAO-500	40.	AAG-500	56.
750	3300	4 (4 Pole)	AAO-750	68.	AAG-750	86.
1000	4400	5	AAO-1000	81.	AAG-1000	101.

† Prices apply to transformers having the following voltage ratings only: 550/110, 220-440/110, or 220-440/24. Consult factory for pricing non-standard voltage transformers.

* 25 cycle transformers also available in 500 VA and smaller ratings.

† Transformers can be used to supply power to the magnet coils of starters and contactors of the NEMA sizes indicated.

SEPARATE FUSE BLOCKS

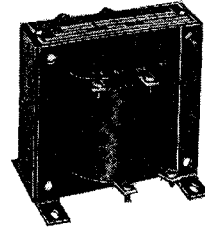
	Type	Price
† Fuse Block and Bracket Assembly (Unmounted).....	AP-1	\$3.

PRICES FOR ADDITIONS AND SPECIAL FEATURES

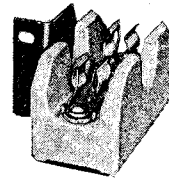
	Form Letters	Price
† Fuse block and bracket assemblies mounted on enclosed type transformer. (For open type transformer, order separate Class 9070 Type AP-1):		
One assembly.....	F2	\$4.
Two assemblies.....	F3	8.

† Fuse blocks cannot be used with 750 VA and 1000 VA 50/60 cycle or 500 VA 25 cycle transformers.

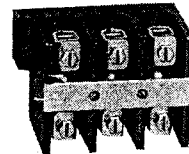
ORDERING INSTRUCTIONS: Specify Class and Type number of transformer; give VA rating, primary and secondary voltages and cycles.



Class 9070
Type AAO-50
Transformer



Class 9070
Type AP-1
Fuse Block



Class 9080
Type U-3
Terminal Block

CLASS
9080

TERMINAL BLOCKS

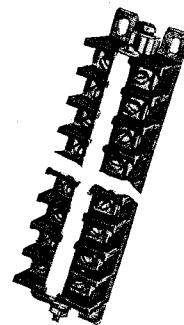
Class 9080 terminal blocks are particularly suited for steel panel or switchboard mounting where it is economical or convenient to group all power and control wiring for external connection. The terminal blocks are provided with white terminal marking strips.

0-600 VOLTS

FOR POWER AND CONTROL WIRING

Nominal Ampere Rating	No. of Circuits	Conductor Sizes Accommodated		Solderless Connectors or Solder-Solderless Lugs	
		Min. Size	Max. Size	Type	Price
25	6	.....	#12 Strd.	R-6	\$3.40
25 Amperes Sectional Assembly	2	.....	#10 Strd.	S-2	\$2.
	3	.....	#10 Strd.	S-3	2.20
	4	.....	#10 Strd.	S-4	2.50
	5	.....	#10 Strd.	S-5	3.10
	6	.....	#10 Strd.	S-6	3.40
	7	.....	#10 Strd.	S-7	3.90
	8	.....	#10 Strd.	S-8	4.20
	9	.....	#10 Strd.	S-9	4.50
	10	.....	#10 Strd.	S-10	5.
	11	.....	#10 Strd.	S-11	5.30
	12	.....	#10 Strd.	S-12	5.50
	13	.....	#10 Strd.	S-13	5.90
	14	.....	#10 Strd.	S-14	6.40
	15	.....	#10 Strd.	S-15	6.70
50 Amperes Sectional Assembly	16	.....	#10 Strd.	S-16	7.20
	17	.....	#10 Strd.	S-17	7.70
	18	.....	#10 Strd.	S-18	8.30
	19	.....	#10 Strd.	S-19	8.70
	20	.....	#10 Strd.	S-20	\$9.10
	21	.....	#10 Strd.	S-21	9.50
	22	.....	#10 Strd.	S-22	9.90
	23	.....	#10 Strd.	S-23	10.50
	24	.....	#10 Strd.	S-24	11.
	2	#10 Solid	#4 Strd.	TB-2	\$ 2.20
50 Amperes Sectional Assembly	3	#10 Solid	#4 Strd.	TB-3	3.20
	4	#10 Solid	#4 Strd.	TB-4	4.
	5	#10 Solid	#4 Strd.	TB-5	4.80
	6	#10 Solid	#4 Strd.	TB-6	5.45
	7	#10 Solid	#4 Strd.	TB-7	6.25
	8	#10 Solid	#4 Strd.	TB-8	7.
	9	#10 Solid	#4 Strd.	TB-9	7.80
	10	#10 Solid	#4 Strd.	TB-10	8.50
	11	#10 Solid	#4 Strd.	TB-11	9.25
	12	#10 Solid	#4 Strd.	TB-12	10.
50	3	#8 Solid	#4 Strd.	T-3	\$ 5.50
100	3	#10 Solid	#0 Strd.	U-3	\$ 8.30
225	3	#6 Str.	250 MCM	V-3	\$13.

ORDERING INSTRUCTIONS: Order terminal blocks by Class and Type number.



Class 9080 Type S
Terminal Block



TRANSFORMERS AND TERMINAL BLOCKS

TERMINAL BLOCK KITS AND STUDS FOR ASSEMBLY INTO 25 AMPERE TYPE S AND 50 AMPERE TYPE TB TERMINAL BLOCKS

CLASS
9080



Class 9080 STB-2



Class 9080 STB-1



Rod



Class 9080 S-6

Class 9080 terminal block kits provide a convenient means of ordering and stocking the parts required to make up complete Type S and Type TB terminal blocks with any number of circuits.

Description	Identification	No. Required per Term. Block	Minimum Order Quantity	List Price Each
Assembly Kit *	Class 9080 Type STB-1	1	1	\$.50
Terminal Kit, 25 Amp.	Class 9080 Type STB-2	★	1	18.00
Terminal Kit, 50 Amp.	Class 9080 Type STB-3	★	1	36.00
Extra Marking Strip, 50" length.	1828-D20-X1	†	1	.50
Full Threaded Stud 24" Length.	121 R9003	†	1	.62
Stud for 3 Circuit Block.	300-D20-X3	1	10	.20
Stud for 4 Circuit Block.	300-D20-X4	1	10	.22
Stud for 6 Circuit Block.	300-D20-X6	1	10	.24
Stud for 8 Circuit Block.	300-D20-X8	1	10	.28
Stud for 10 Circuit Block.	300-D20-X10	1	10	.30
Stud for 12 Circuit Block.	300-D20-X12	1	10	.34
Stud for 18 Circuit Block.	300-D20-X18	1	10	.44
Stud for 24 Circuit Block.	300-D20-X24	1	10	.56

*Includes all miscellaneous parts necessary for one terminal block, including items 2, 4, 5, 6, 7, 9 and 10 on diagram below, plus one 24 circuit marking strip † (item 11) and assembly and mounting instruction sheet 9080-P246.

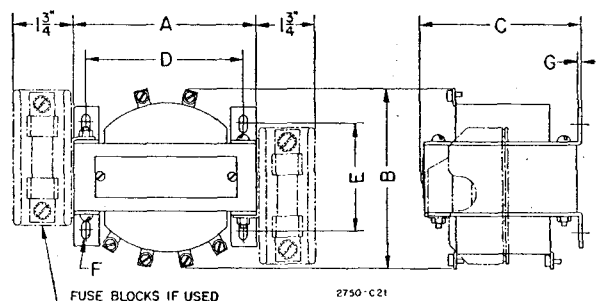
★ Each kit includes 50 molded blocks and 50 terminals packaged in one box. (Items 1 and 3 on diagram at right below).

† Must be cut to proper length required for number of circuits on block.

ORDERING INSTRUCTIONS

- 1—Order by Class and Type number or by Part number as shown above.
- 2—Specify quantity. Prices apply only when minimum quantities shown in table above are equalled or exceeded.

DIMENSIONS FOR CLASS 9070 CONTROL CIRCUIT TRANSFORMERS



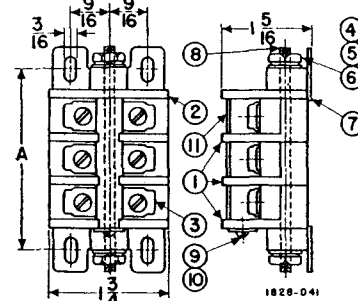
FUSE BLOCKS IF USED

2750-C21

Dim. in Inches	Transformer 50/60 Cy.						
	50 VA	100 VA	150 VA	300 VA	500 VA	750 VA	1000 VA
A	3 3/4"	4 1/2"	4 1/2"	4 1/2"	5 3/4"	7	7
B	3 3/8"	4 1/4"	4 3/8"	6	6 1/2"	7 1/2"	9
C	3 1/16"	4	4	4	4 1/2"	5 1/8"	5 1/8"
D	3 1/8"	3 3/4"	3 3/4"	3 3/4"	4 1/16"	6 1/8"	6 1/8"
E	1 1/16"	2 1/16"	2 1/16"	4 1/4"	4 3/16"	4 1/16"	5 1/16"
F	3/16 x 1 1/32"	7/32 x 1/16"	7/32 x 1/16"	7/32 x 1/16"	7/32 x 1 1/32"	5/16 x 1 1/16"	5/16 x 1 1/16"
G	3/64"	3/64"	3/64"	3/64"	3/64"	3/16"	3/16"

Dimensions in Inches

DIMENSIONS FOR CLASS 9080 TYPE S AND TYPE TB TERMINAL BLOCKS



1828-D41

No. of Terminals	A	No. of Terminals	A	No. of Terminals	A	No. of Terminals	A
2	2 5/8"	8	5 3/4"	14	9 1/2"	20	13 1/4"
3	2 5/8"	9	6 3/8"	15	10 1/8"	21	13 3/8"
4	3 1/4"	10	7	16	10 3/4"	22	14 1/2"
5	3 3/8"	11	7 5/8"	17	11 3/8"	23	15 1/8"
6	4 1/4"	12	8 1/4"	18	12	24	15 3/4"
7	5 1/8"	13	8 3/8"	19	12 5/8"		

Approximate Dimensions — Not for Construction



SCHEDULE



DISCOUNT

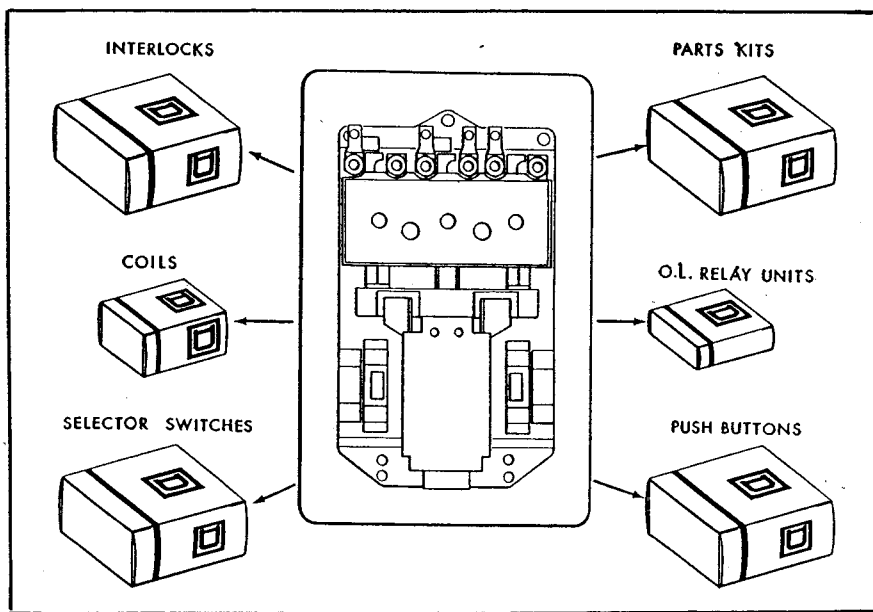
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PARTS KITS

FOR MOTOR CONTROL AND PUMP CONTROL

To simplify stocking, installation and maintenance of a-c motor controls, Square D has available a number of parts and modification kits. These kits are conveniently packaged in attractive merchandising cartons for easy identification and stocking. Complete instructions are included in each kit.

Parts kits include replacement contacts and associated parts for the most commonly used Square D motor control prices. Interlock kits contain the parts required to add additional electrical interlocks to standard a-c contactors and starters. User modification kits are provided to enable installation of push buttons or selector switches in the covers of certain a-c contactors, starters, or combination starters. Packaged replacement overload relay thermal units and magnet coils are also available.



PARTS KITS

CLASS 9998

Class 9998 parts kits are provided to facilitate servicing the more commonly used Square D contactors, starters, manual compensators, and pressure, vacuum, and float switches. Each pump control parts kit contains the necessary contacts and attaching parts for servicing those particular pump control switches listed in the table below. The parts kits for the manual starters and magnetic starters and contactors contain the necessary movable and stationary contacts, finger springs, and servicing instructions for maintenance of a 3-pole switch. The manual compensator parts kit contains contacts to service a fourteen contact compensator. Two are required for a twenty-eight contact compensator.

FOR STARTERS AND CONTACTORS

Equipment to be Maintained			Class 9998 Parts Kit Type No.	List Price Each
Class	Type	NEMA Size		
2205 Manual Compensator	14 Contact Compensator (1 Kit required) 28 Contact Compensator (2 Kits required)	....	PD-1	\$16.40
2510 Manual Starters	W5, W6, W7, W8, W16, W17, W22, W23, W26, W27, W30, W32, W42, W43, W44, W45, W46, W47, and W50	0	RA-21	\$ 3.05
Push button Type	W10, W11, W14, W15, W20, W21, W24, W25, W28, W29, W31, W33, W36, W37, W38, W39, W48, W49 and W51	1	SA-21	\$ 5.75
2510 Manual Starters Toggle Type	R-	0	RA-22	\$ 4.85
	S-	1	SA-22	5.45
*Magnetic Starters and Contactors	A-, Q-	00	QA-81	\$ 5.10
	B-(Old Style), R-	0	RA-81	\$ 4.65
	B-(Series A).....	0	BA-81	4.50
	C-(Old Style), S-	1	SA-81	\$ 5.40
	C-(Series A).....	1	CA-81	8.10
	D-, T-	2	TA-81	\$18.15
	E-, U-	3	UA-81	\$39.
	F-	4	FA-81	\$78.

*These magnetic starter and contactor parts kits contain sufficient parts to service a 3 pole device. For devices with 4 or more poles, use additional kits.

FOR PRESSURE, FLOAT AND VACUUM SWITCHES

Equipment to be Serviced		Class 9998 Parts Kit Type No.	Price
Class	Type		
9013 *	ASG, ALG, AMG, BSG, AHG, ALR, AMR, AHR, ASR, A, AH, AK, AL, AM, AR, V, VR	PC-1	\$ 3.15
9016	ASG, ASR		
9017	ASG, AHG		
9036 *	AG-2, BKG, A, AK		
9013	GSG, GHG	PC-2	\$ 3.
9036	GG		
9037	GG		
9013	FSG	PC-3	\$ 2.75
9036	FG-1		
9037	HG-1 & 2		
9044	ESG, A		
9048	A, AR, AW		
9213	DSG, DHG, A, AH, AH-3, G, GH, GH-3	PC-4	\$ 3.
9017	BSG, BHG		
9237	CG, FA-3		
9238	EG, A3		

*Class 9998 Type PC-1 Parts Kit may be used on all switches except those with dating code letters "A" through "G".

SCHEDULE **X** DISCOUNT

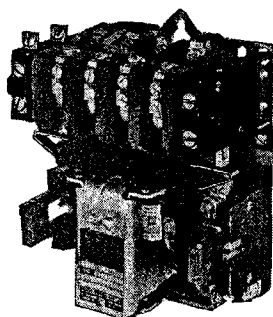
SCHEDULE **R** DISCOUNT

ORDERING INSTRUCTIONS: Order parts kits by Class and Type number.

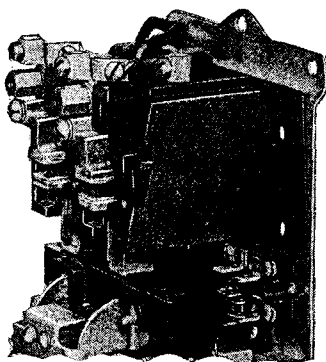


ELECTRICAL INTERLOCKS

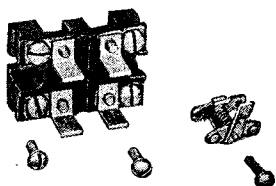
FOR A.C. MAGNETIC CONTROLS



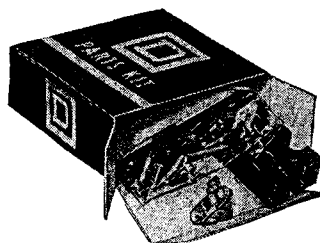
Size 0 Starter with Side Mounted Interlocks Installed



Cutaway View Showing Base Mounted Interlock Installed on Size 2 Starter:



Type DT-12 Electrical Interlock



Packaging of Electrical Interlocks

Class 9999 interlock kits provide all of the necessary parts needed to install an electrical interlock on Size 0 and 1 Series A devices and any Size 2, 3 or 4 vertical action magnetic contactor or starter or on a Class 9050 Type R timer with invertible magnet. Extra electrical interlocks may be required to perform interlocking between starters, for purposes such as: insuring that only one of two motors may be operated at the same time; operating pilot lights to signal operation of a contactor or starter; and other functions of a similar nature.

CLASS
9999

FOR ADDITION TO A.C. MAGNETIC CONTACTORS AND STARTERS

Starter and Contactor Size	Type of Mounting	Contact Arrangement	Location	Type	Price
0 or 1 (For Series A Devices Only)	Side Mounted	1—N. O. 1—N. C.	L. H. or R. H.	BC-1	\$ 6.
		1—N. O., 1—N. C.		BC-2 BC-3	\$ 8.
2	Base Mounted—Long Terminal	1—N. O. 1—N. O. 1—N. C. 1—N. O. 1—N. C.	R. H. L. H. R. H. Center L. H.	DT-1 DT-2 DT-3 DT-4 DT-9	\$ 6.
		1—N. O., 1—N. C.	R. H. or L. H.	DT-12	\$ 8.
	KB Unit—Side Mounted ★	1—N. O. 1—N. O. 1—N. C. 1—N. C.	R. H. L. H. R. H. L. H.	DT-5 DT-6 DT-7 DT-8	\$ 6.
		1—N. O., 1—N. C. 1—N. O., 1—N. C.	R. H. L. H.	DT-10 DT-11	\$ 8.
3	Base Mounted—Long Terminal	1—N. O. 1—N. O. 1—N. C. 1—N. O. 1—N. C.	R. H. L. H. R. H. Center L. H.	EU-1 EU-2 EU-3 EU-4 EU-9	\$ 6.
		1—N. O., 1—N. C.	R. H. or L. H.	EU-12	\$ 8.
	KB Unit—Side Mounted ★	1—N. O. 1—N. O. 1—N. C. 1—N. C.	R. H. L. H. R. H. L. H.	EU-5 EU-6 EU-7 EU-8	\$ 6.
		1—N. O., 1—N. C. 1—N. O., 1—N. C.	R. H. L. H.	EU-10 EU-11	\$ 8.
4	Base Mounted	1—N. O. 1—N. O. 1—N. O. 1—N. C. 1—N. C. 1—N. C.	R. H. L. H. Center R. H. L. H. Center	F-1 F-2 F-3 F-4 F-5 F-6	\$ 6.
		1—N. O., 1—N. C.	Any	F-7	\$ 8.

★ For 2 pole or 3 pole starters only. Consult factory for interlocks for 4 pole starters.

FOR ADDITION TO A.C. PNEUMATIC TIMERS

Class 9050 Type R Timer with Invertible Magnet	Type of Mounting	Contact Arrangement	Type	Price
Parts required to add 1 KB unit to timer without interlock.....	Front	1 N. O.—1 N. C.	R-1	\$ 8.

PACKAGING: Class 9999 electrical interlocks are packaged in a neat two-color box marked with the class and type number. The back of this box includes a listing of all the parts contained in the kit. Small parts and attaching hardware are sealed in a polyethylene envelope which guards against accidental loss. This method of packaging makes the stocking of additional interlocks simple and convenient, and those who install the interlocks can always be assured of having all parts necessary.

ORDERING INSTRUCTIONS: Order by Class and Type number.



SCHEDULE



DISCOUNT

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USER MODIFICATION KITS AND COILS

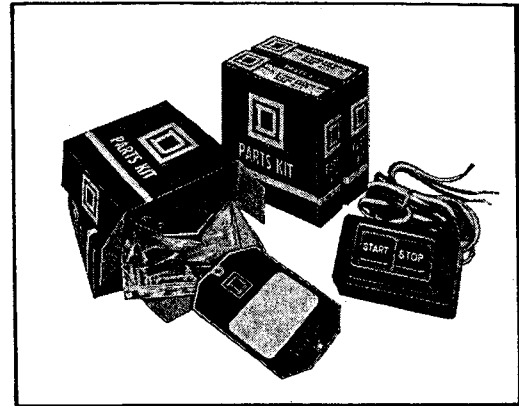
FOR A.C. MAGNETIC CONTROLS

CLASS
9999

USER MODIFICATION KITS

Class 9999 pushbutton and selector switch kits are provided to enable one of those units to be added to the cover of a magnetic starter. Changing requirement may necessitate the addition of a control station in the cover of a device where none was originally required. Or, starters plus separate pushbutton and selector switch kits may be stocked to obtain the maximum of flexibility with a minimum of inventory. The kits are easily and quickly installed with a screw driver and pliers being the only tools required.

These kits may be used on any Series A (or later series letter) under Class 8502, 8536, 8538 or 8539 starter in NEMA I enclosure only. Before attempting to use these kits it is important to ascertain that the starter has a series letter stamped on the starter nameplate; models prior to the advent of a series letter do not have the necessary provisions in the enclosure cover to permit the use of the kit.



FOR A.C. SERIES A CONTACTORS AND STARTERS IN NEMA 1 ENCLOSURES *

NEMA Size	Description	Type	Price
0 or 1	"Start-Stop" momentary contact pushbutton..... "Hand-Off-Auto" Selector switch.....	A-1 C-1	\$8.00 8.00
2 or 3	"Start-Stop" momentary contact pushbutton..... "Hand-Off-Auto" selector switch.....	A-2 C-2	\$8.00 8.00
4	"Start-Stop" momentary contact pushbutton..... "Hand-Off-Auto" selector switch.....	A-3 C-3	\$8.00 8.00

*Usable with Classes 8502, 8536, 8538 and 8539 with series letter designation only. Not suitable for these classes without series letter designation or for other classes of A.C. equipment.

ORDERING INSTRUCTIONS: Order user modification kits by Class and Type number.

SCHEDULE K DISCOUNT

COILS

A. C. MAGNET COILS

These magnet coils are easily installed on any standard A.C. magnetic contactor or starter. The Size 00-3 coils in the 110 volt and 440 volt, 60 cycle ratings are attractively packaged and marked for easy identification and convenience in stocking. Many other coils are available, in addition to those listed here.

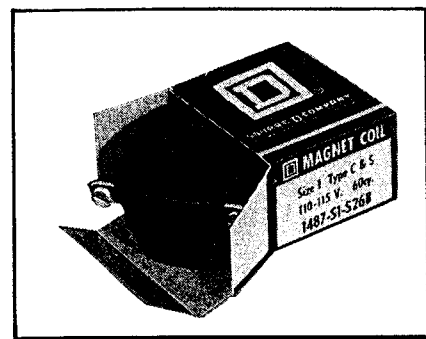
FOR A.C. MAGNETIC CONTACTORS AND STARTERS

*Equipment to be Served		Magnet Coil Part Number				Price
NEMA Size	Type	110-115 Volts 60 Cycles	208-230 Volts 60 Cycles	440 Volts 60 Cycles	550 Volts 60 Cycles	
00	A—	2183-S7-Q30A	2183-S7-Q33A	2183-S7-Q36A	2183-S7-Q37A	\$ 5.
0	B—	1861-S1-R29B	1861-S1-R32B	1861-S1-R35B	1861-S1-R36B	5.
1	C—▲	2936-S1-C26B	2936-S1-C29B	2936-S1-C32B	2936-S1-C33B	6.
2	D—	1707-S1-T20A	1707-S1-T23A	1707-S1-T26A	1707-S1-T27A	8.
3	E—	1775-S1-U17B	1775-S1-U20B	1775-S1-U23B	1775-S1-U24B	10.
4	F—(2-3 pole)	2938-S1-F14B	2938-S1-F17B	2938-S1-F20B	2938-S1-F21B	21.
4	F—(4-5 pole)	2938-S1-F14A	2938-S1-F17A	2938-S1-F20A	2938-S1-F21A	21.
5	G—Old Style					
5	G—(2-4 pole)	1331-S8-W12B	1331-S8-W15B	1331-S8-W18B	1331-S8-W19B	20.
5	G—Series A					
5	G—(2-3 pole)	1331-S10-W14B	1331-S10-W17B	1331-S10-W20B	1331-S10-W21B	25.
5	G—Series A					
5	G—(4-5 pole)	1331-S10-W14A	1331-S10-W17A	1331-S10-W20A	1331-S10-W20C	25.

*These coils may be used with the following A.C. magnetic controls: Classes 8502, 8508 (closing coil), 8536, 8538, 8539, 8547, 8550, 8606 (Run Coil) 8702, 8736, 8738, 8739, 8747, 8810, 8811, 8812, and others.

†115/230 volt, 60 cycle dual voltage coil is 1861-S14-G4.....\$11.00

▲115/230 volt, 60 cycle dual voltage coil is 2936-S21-G4.....\$12.00



ORDERING INSTRUCTIONS: Order magnet coils by Part Number, Voltage, and Frequency.

SCHEDULE R DISCOUNT



FULL LOAD MOTOR CURRENTS

APPROXIMATE VALUES — AMPERES

These tables are based on motor current tables of several leading motor manufacturers. Different types and makes of motors may vary 10% above or below the current values given in these tables. For fractional horsepower motors, this variation may be as large as 50%.

Caution: These tables are not intended for selection of overload relays. Overload relays should be selected in accordance with actual motor current as shown on the motor nameplate or as obtained from the motor manufacturer.

THREE PHASE A. C. MOTORS

60 Cycles, Single Speed, Normal Torque Induction Motors

H.P.	Syn. Speed	Full Load Current				H.P.	Syn. Speed	Full Load Current				H.P.	Syn. Speed	Full Load Current			
		110 V.	220 V.	440 V.	550 V.			110 V.	220 V.	440 V.	550 V.			110 V.	220 V.	440 V.	550 V.
1/6	1800	1.2	0.62	0.31	0.24	3	3600	16.8	8.4	4.2	3.4	30	1800	71.0	35.5	28.4	28.4
	1200	1.6	0.80	0.40	0.32		1800	16.4	8.2	4.1	3.3		1200	75.0	38.0	30.0	30.0
1/4	1800	1.6	0.78	0.39	0.31	5	1200	16.4	8.2	4.1	3.3	40	900	75.0	38.0	30.0	30.0
	1200	2.2	1.10	0.54	0.43		900	19.0	9.5	4.75	3.8		600	89.0	45.0	36.0	36.0
1/3	1800	2.3	1.1	0.57	0.46	7 1/2	3600	26.0	13.0	6.5	5.2	50	1800	96.0	48.0	38.0	38.0
	1200	2.8	1.4	0.70	0.56		1800	26.0	13.0	6.5	5.2		1200	97.5	49.0	39.0	39.0
1/2	3600	3.2	1.6	0.8	0.64	10	1200	28.0	14.0	7.0	5.6	60	900	103	52.0	41.0	41.0
	1800	3.6	1.8	0.9	0.72		900	30.4	15.2	7.6	6.1		600	111	56.0	44.0	44.0
3/4	1800	4.0	2.0	1.0	0.80	15	3600	38.0	19.0	9.5	7.6	75	1800	116	58.0	46.0	46.0
	1200	4.4	2.2	1.1	0.88		1800	38.0	19.0	9.5	7.6		1200	120	60.0	48.0	48.0
1	3600	4.6	2.3	1.1	0.9	20	1200	40.4	20.2	10.1	8.1	100	900	125	63.0	50.0	50.0
	1800	4.8	2.4	1.2	1.0		900	44.0	22.0	11.0	8.8		600	141	71.0	56.0	56.0
1 1/2	3600	5.0	2.5	1.2	1.0	25	1800	50.0	25.0	12.5	10.0	125	1800	144	72.0	58.0	58.0
	1800	5.0	2.5	1.2	1.0		1200	53.0	26.5	13.3	10.6		1200	149	75.0	60.0	60.0
2	3600	6.0	3.0	1.5	1.2	30	900	56.0	28.0	14.0	11.2	150	1800	175	88.0	70.0	70.0
	1800	6.0	3.0	1.5	1.2		600	64.0	32.0	16.0	12.8		1200	180	90.0	72.0	72.0
3	3600	6.8	3.4	1.7	1.36	40	1800	74.0	37.0	18.5	14.8	200	1800	232	116	94.0	94.0
	1800	6.8	3.4	1.7	1.36		1200	77.0	38.0	19.3	15.4		1200	236	118	95.0	95.0
4	3600	6.8	3.4	1.7	1.36	50	900	82.0	41.0	20.5	16.4	250	1800	241	120	96.0	96.0
	1800	6.8	3.4	1.7	1.36		600	92.0	46.0	23.0	18.4		1200	241	120	96.0	96.0
5	3600	8.4	4.2	2.1	1.7	60	1800	49.0	24.5	19.6	15.4	300	1800	145	72.0	58.0	58.0
	1800	9.0	4.5	2.25	1.7		1200	50.0	25.0	20.0	15.4		1200	144	72.0	58.0	58.0
6	3600	9.6	4.8	2.4	1.9	75	900	53.0	26.5	21.2	16.4	350	1800	147	73.0	59.0	59.0
	1200	11.2	5.6	2.8	2.3		600	59.0	29.5	23.5	18.4		1200	170	85.0	67.0	67.0
7	3600	11.6	5.8	2.9	2.4	100	1800	60.0	30.0	24.0	19.6	400	1800	170	85.0	67.0	67.0
	1800	11.4	5.7	2.85	2.3		1200	62.5	31.2	25.0	20.0		1200	177	88.0	70.0	70.0
8	3600	11.4	5.7	2.85	2.3	125	900	65.5	33.0	26.2	20.0	450	1800	229	114	91.0	91.0
	1200	13.6	6.8	3.4	2.7		600	73.5	36.7	29.0	22.0		1200	229	114	91.0	91.0

TWO PHASE A. C. MOTORS

For 2-phase, 4-wire multiply the current values given for 3-phase motors by 0.866. For 2-phase, 3-wire systems, the current in the common wire is 1.41% of the values of the other two lines. The other two lines have the same current values as for 2-phase, 4-wire.

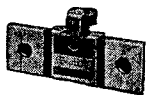
SINGLE PHASE A. C. MOTORS

H.P.	Syn. Speed	Full Load Current		H.P.	Syn. Speed	Full Load Current		H.P.	Syn. Speed	Full Load Current	
		115 V.	230 V.			115 V.	230 V.			115 V.	230 V.
1/8	3600	2.4	1.2	3/4	3600	8.8	4.4	3	3600	32.0	16.0
	1800	2.8	1.4		1800	10.0	5.0		1800	33.6	16.8
1/6	1200	3.4	1.7	1	1200	12.0	6.0	5	1200	36.0	18.0
	3600	2.8	1.4		900	13.6	6.8		900	40.0	20.0
1/4	1800	3.0	1.5	1 1/2	3600	11.6	5.8	7 1/2	3600	50.0	25.0
	1200	3.8	1.9		1800	12.4	6.2		1800	52.0	26.0
1/3	900	4.6	2.3	2	1200	14.0	7.0	10	1200	56.0	28.0
	3600	3.6	1.8		900	14.8	7.4		900	66.0	33.0
1/2	1800	4.2	2.1	3	3600	17.6	8.8	40	3600	74.0	37.0
	1200	5.0	2.5		1800	18.2	9.1		1800	76.0	38.0
2	900	6.4	3.2	50	1200	20.6	10.3	75	1200	80.0	40.0
	3600	4.4	2.2		900	24.6	12.3		900	92.0	46.0
3	1800	5.0	2.5	75	3600	22.4	11.2	100	3600	88.0	44.0
	1200	6.0	3.0		1800	23.4	11.7		1800	90.0	45.0
4	900	7.2	3.6	100	1200	26.0	13.0	150	1200	94.0	47.0
	3600	6.4	3.2		900	30.0	15.0		900	100.0	50.0

DIRECT CURRENT MOTORS

H.P.	Full Load Current			H.P.	Full Load Current			H.P.	Full Load Current		
	115 V.	230 V.	550 V.		115 V.	230 V.	550 V.		115 V.	230 V.	550 V.
1/2	4.6	2.3	.96	7 1/2	56.0	28.0	12.0	40	143	60.0	60.0
3/4	6.6	3.3	1.4	10	76.0	37.7	16.0	50	176	73.0	73.0
1	8.2	4.1	1.7	15	112	56.0	23.5	60	214	90.0	90.0
1 1/2	12.2	6.1	2.5	20	148	74.0	31.0	75	265	115	115
2	16.0	8.0	3.4	25	184	92.0	38.0	100	320	146	146
3	24.0	12.0	5.0	30	216	108	45.0	125	375	184	184
5	39.0	19.5	8.2	35	258	129	54.0	150	450	220	220





Melting Alloy Type
Overload Relay Unit

THERMAL OVERLOAD RELAY UNITS SELECTION TABLE

MELTING ALLOY RELAY UNITS

FOR 40° C. MOTORS OPERATING UNDER NORMAL CONDITIONS

Table	For Use With	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number
1	A. C. Magnetic Starters Types B & C Series A Only Sizes 0, 1, and 1½	0.32-0.34	B .44	0.98-1.12	B 1.3	2.82-3.19	B 3.7	7.65-8.41	B 10.2	16.2-18.6	B 28.
		0.35-0.38	B .51	1.13-1.19	B 1.45	3.20-3.61	B 4.15	8.42-8.77	B 11.5	18.7-20.2	B 32.
		0.39-0.44	B .57	1.20-1.34	B 1.67	3.62-4.14	B 4.85	8.78-9.90	B 12.8	20.3-22.8	B 36.
		0.45-0.53	B .63	1.35-1.54	B 1.88	4.15-4.40	B 5.5	10.0-10.6	B 14.	22.9-23.9	B 40.
		0.54-0.58	B .71	1.55-1.78	B 2.1	4.41-4.78	B 6.25	10.7-11.4	B 15.5	24.0-25.8	B 45.
		0.59-0.66	B .81	1.79-1.96	B 2.4	4.79-5.44	B 6.9	11.5-12.3	B 17.5	25.9-26.8	B 50.
		0.67-0.74	B .92	1.27-2.23	B 2.65	5.45-6.16	B 7.7	12.4-13.6	B 19.5	26.9-28.7	B 56.
		0.75-0.84	B 1.03	2.24-2.50	B 3.0	6.17-6.86	B 8.2	13.7-14.6	B 22.	28.8-30.2	B 62.
		0.85-0.97	B 1.16	2.51-2.81	B 3.3	6.87-7.64	B 9.1	14.7-16.1	B 25.	30.3-33.0	B 70.
2	A. C. Magnetic Starters Types A, B, C, Q, R and S Prior to Series A Design Sizes 00, 0, 1 and 1½	0.32-0.36	B .44	0.84-0.94	B 1.16	2.19-2.40	B 3.0	5.63-5.99	B 7.7	12.7-14.1	B 17.5
		0.37-0.40	B .51	0.95-1.05	B 1.3	2.41-2.69	B 3.3	6.00-6.64	B 8.2	14.2-15.9	B 19.5
		0.41-0.45	B .57	1.06-1.21	B 1.45	2.70-3.02	B 3.7	6.65-7.44	B 9.1	16.0-18.1	B 22.
		0.46-0.51	B .63	1.22-1.36	B 1.67	3.03-3.54	B 4.15	7.45-8.38	B 10.2	18.2-20.3	B 25.
		0.52-0.59	B .71	1.37-1.52	B 1.88	3.55-4.01	B 4.85	8.39-9.34	B 11.5	20.4-23.2	B 28.
		0.60-0.66	B .81	1.53-1.74	B 2.1	4.02-4.52	B 5.5	9.35-10.1	B 12.8	23.3-26.2	B 32.
		0.67-0.74	B .92	1.75-1.92	B 2.4	4.53-5.03	B 6.25	10.2-11.2	B 14.	26.3-29.1	B 36.
		0.75-0.83	B 1.03	1.93-2.18	B 2.65	5.04-5.62	B 6.9	11.3-12.6	B 15.5	29.2-32.7	B 40.
3	Types D and T Size 2	3.24-3.77	B 4.15	6.01-6.39	B 7.7	9.99-10.8	B 12.8	17.2-19.4	B 22.	31.2-35.0	B 40.
		3.78-4.28	B 4.85	6.40-7.09	B 8.2	10.9-12.0	B 14.	19.5-21.7	B 25.	35.1-38.9	B 45.
		4.29-4.83	B 5.5	7.10-7.95	B 9.1	12.1-13.5	B 15.5	21.8-24.9	B 28.	39.0-43.6	B 50.
		4.84-5.37	B 6.25	7.96-8.92	B 10.2	13.6-15.1	B 17.5	25.0-28.0	B 32.	43.7-48.3	B 56.
		5.38-6.00	B 6.9	8.93-9.98	B 11.5	15.2-17.1	B 19.5	28.1-31.1	B 36.	48.4-53.0	B 62.
4	Types E and U Size 3	15.6-17.1	C 20.	23.4-26.4	C 30.	32.8-35.0	C 42.	45.2-51.4	C 58.	64.7-69.9	C 83.
		17.2-20.2	C 22.	26.5-31.1	C 34.	35.1-39.7	C 45.	51.5-58.4	C 66.	70.0-79.9	C 90.
		20.3-23.3	C 26.	31.2-32.7	C 40.	39.8-45.1	C 51.	58.5-64.6	C 75.	80.0-88.9	C 103.
5	Type F Size 4	13.9-15.6	DD 19.	25.2-29.9	DD 34.	47-53	DD 59.	75-80.	DD 105	109-121.	DD 160.
		15.7-18.2	DD 22.	30.0-35.4	DD 39.	54-60	DD 68.	81-86.	DD 112.	122-134.	DD 185.
		18.3-21.2	DD 25.	35.5-40.	DD 45.	61-68	DD 79.	87-97.	DD 121.	135-155.	DD 213.
		21.3-25.1	DD 29.	41-46.	DD 51.	69-74	DD 98.	98-108.	DD 140.	.....	.....
6	Type V Size 4	60-66	D 72.	75-83	D 90.	94-104	D 113.	113-124	D 135.	140-155	D 168.
		67-74	D 80.	84-93	D 100.	105-112	D 126.	125-139	D 150.	156-174	D 188.
7	★Type G Size 5	60.0-63.4	B 6.25	76.9-84.9	B 9.1	113-121	B 14.	163-179	B 22.	230-245	B 36.
		63.5-67.9	B 6.9	85.0-93.7	B 10.2	122-136	B 15.5	180-195	B 25.	246-263	B 40.
		68.0-71.5	B 7.7	93.8-102	B 11.5	137-149	B 17.5	196-212	B 28.	264-280	B 45.
		71.6-76.8	B 8.2	103-112	B 12.8	150-162	B 19.5	213-229	B 32.	281-299	B 50.
8	Classes 7135 and 7136 Types S and T Class 7107 Types B1 & B2 Class 7120 Type EM1	0.85-0.94	B 1.03	1.98-2.19	B 2.4	4.56-5.14	B 5.5	9.54-10.5	B 11.5	20.8-23.1	B 25.
		0.95-1.07	B 1.16	2.20-2.48	B 2.65	5.15-5.72	B 6.25	10.6-11.5	B 12.8	23.2-26.5	B 28.
		1.08-1.19	B 1.3	2.49-2.73	B 3.0	5.73-6.39	B 6.9	11.6-12.8	B 14.	26.6-29.8	B 32.
		1.20-1.38	B 1.45	2.74-3.06	B 3.3	6.40-6.80	B 7.7	12.9-14.4	B 15.5	29.9-33.1	B 36.
		1.39-1.55	B 1.67	3.07-3.43	B 3.7	6.81-7.54	B 8.2	14.5-16.1	B 17.5	33.2-37.3	B 40.
		1.56-1.73	B 1.88	3.44-4.02	B 4.15	7.55-8.46	B 9.1	16.2-18.1	B 19.5	37.4-41.4	B 45.
		1.74-1.97	B 2.1	4.03-4.55	B 4.85	8.47-9.53	B 10.2	18.2-20.7	B 22.	41.5-46.4	B 50.
9	Type U Class 7120 Type EM2	33.2-34.7	C 40.	37.3-42.2	C 45.	48.2-54.6	C 58.	62.2-68.7	C 75.	74.7-85.4	C 90.
		34.8-37.2	C 42.	42.3-48.1	C 51.	54.7-62.1	C 66.	68.8-74.6	C 83.	85.5-94.6	C 103.
10	Class 2510 Type W Class 9065 Types B, C, S and T	0.34-0.38	B .44	1.01-1.12	B 1.3	2.89-3.23	B 3.7	7.96-8.92	B 10.2	21.8-24.9	B 28.
		0.39-0.43	B .51	1.13-1.29	B 1.45	3.24-3.77	B 4.15	8.93-9.98	B 11.5	25.0-28.0	B 32.
		0.44-0.48	B .57	1.30-1.46	B 1.67	3.78-4.28	B 4.85	9.99-10.8	B 12.8	28.1-31.1	B 36.
		0.49-0.54	B .63	1.47-1.63	B 1.88	4.29-4.83	B 5.5	10.9-12.0	B 14.	31.2-35.0	B 40.
		0.55-0.63	B .71	1.64-1.87	B 2.1	4.84-5.37	B 6.25	12.1-13.5	B 15.5	35.1-38.9	B 45.
		0.64-0.71	B .81	1.88-2.06	B 2.4	5.38-6.00	B 6.9	13.6-15.1	B 17.5	39.0-43.6	B 50.
		0.72-0.79	B .92	2.07-2.33	B 2.65	6.01-6.39	B 7.7	15.2-17.1	B 19.5	43.7-48.3	B 56.
		0.80-0.89	B 1.03	2.34-2.57	B 3.0	6.40-7.09	B 8.2	17.2-19.4	B 22.	48.4-53.0	B 62.
		0.90-1.00	B 1.16	2.58-2.88	B 3.3	7.10-7.95	B 9.1	19.5-21.7	B 25.	.....	.....
11	Class 9065 Type U	33.2-34.7	C 40.	37.3-42.2	C 45.	48.2-54.6	C 58.	62.2-68.7	C 75.	74.7-85.4	C 90.
		34.8-37.2	C 42.	42.3-48.1	C 51.	54.7-62.1	C 66.	68.8-74.6	C 83.	85.5-94.6	C 103.

★ Relays operate from secondary of a current transformer.

Order relay units by number Price each \$1.50

MELTING ALLOY RELAY UNITS FOR FRACTIONAL HP. MANUAL STARTERS

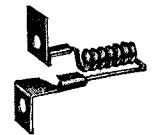
See page 61 for Selection Table for melting alloy relay units for Class 2510, Type A, fractional horsepower manual starters.

Order relay units for fractional horsepower starters by relay number Price each \$1.00

SELECTION OF RELAY UNITS FOR SPECIAL APPLICATIONS

Motor Duty Rating	Ambient Temperature of Motor Same as Controller	Ambient Temperature of Motor 15° C. (270° F.) Higher Than Controller	Ambient Temperature of Motor 15° C. (27° F.) Lower Than Controller
40° C. Continuous.....	Select Relay from Table	Use One Size Smaller Than in Table	May Be One Size Larger Than in Table
50-55° C. Continuous.....	Use One Size Smaller Than in Table	Use Two Sizes Smaller Than in Table	Select Relay from Table
1-Hour Intermittent.....	Use One Size Smaller Than in Table	Use Two Sizes Smaller Than in Table	Select Relay from Table

THERMAL OVERLOAD RELAY UNITS SELECTION TABLE



BIMETAL RELAY UNITS FOR 40° C. MOTORS OPERATING UNDER NORMAL CONDITIONS

Bimetal Type
Overload Relay Unit

Table	For Use With	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number
4	Class 8536 Sizes 0, 1, and 1½	0.33 - 0.35	AR .45	0.81 - 0.88	AR 1.05	1.90 - 2.08	AR 2.46	4.47 - 4.90	AR 5.8	10.2 - 11.3	AR 13.6
		0.36 - 0.39	AR .49	0.89 - 0.96	AR 1.15	2.09 - 2.29	AR 2.71	4.91 - 5.48	AR 6.4	11.4 - 12.8	AR 15.4
		0.40 - 0.43	AR .54	0.97 - 1.06	AR 1.26	2.30 - 2.51	AR 2.98	5.49 - 5.91	AR 7.0	12.9 - 14.5	AR 17.6
		0.44 - 0.47	AR .59	1.07 - 1.17	AR 1.39	2.52 - 2.78	AR 3.28	5.92 - 6.49	AR 7.7	14.6 - 16.0	AR 20.5
		0.48 - 0.52	AR .65	1.18 - 1.28	AR 1.53	2.79 - 3.05	AR 3.62	6.50 - 7.14	AR 8.5	16.1 - 17.9	AR 23.
	Class 8536 Size 2	0.53 - 0.57	AR .71	1.29 - 1.42	AR 1.68	3.06 - 3.36	AR 3.98	7.15 - 7.86	AR 9.3	18.0 - 20.0	AR 27.
		0.58 - 0.63	AR .78	1.43 - 1.56	AR 1.85	3.37 - 3.69	AR 4.37	7.87 - 8.64	AR 10.2	20.1 - 22.0	AR 30.
		0.64 - 0.72	AR .86	1.57 - 1.72	AR 2.04	3.70 - 4.06	AR 4.80	8.65 - 9.52	AR 11.2	22.1 - 24.4	AR 35.
		0.73 - 0.80	AR .95	1.73 - 1.89	AR 2.24	4.07 - 4.46	AR 5.3	9.53 - 10.1	AR 12.4	24.5 - 26.1	AR 40.
		4.50 - 4.95	AR 5.8	7.11 - 7.79	AR 9.3	11.6 - 13.2	AR 15.4	22.2 - 25.7	AR 30.	36.8 - 39.1	AR 51.
	Class 8536 Size 3	4.96 - 5.34	AR 6.4	7.80 - 8.56	AR 10.2	13.3 - 15.4	AR 17.6	25.8 - 29.1	AR 35.	39.2 - 42.1	AR 55.
		5.35 - 5.88	AR 7.0	8.57 - 9.48	AR 11.2	15.3 - 17.1	AR 20.5	29.2 - 32.0	AR 40.	42.2 - 45.1	AR 60.
	All Other Classes Types A, B, C, Q, R and S Sizes 00, 0 and 1	5.89 - 6.49	AR 7.7	9.49 - 10.3	AR 12.4	17.2 - 20.1	AR 23.	32.1 - 33.8	AR 44.	45.2 - 48.5	AR 66.
		6.50 - 7.10	AR 8.5	10.4 - 11.5	AR 13.6	20.2 - 22.1	AR 27.	33.9 - 36.7	AR 47.	48.6 - 52.7	AR 72.
4	All Other Classes Types D and T Size 2	19.0 - 21.1	AU 26.	27.4 - 28.8	AU 38.	35.6 - 39.3	AU 50.	49.4 - 55.4	AU 72.	69.6 - 77.3	AU 99.
		21.2 - 24.0	AU 29.	28.9 - 31.3	AU 40.	39.4 - 44.4	AU 56.	55.5 - 61.8	AU 81.	77.4 - 86.4	AU 110.
	All Other Classes Types E and U Size 3	24.1 - 27.3	AU 33.	31.4 - 35.5	AU 44.	44.5 - 49.3	AU 64.	61.9 - 69.5	AU 88.	86.5 - 94.9	AU 123.
		0.36 - 0.38	AR .45	0.83 - 0.90	AR 1.05	1.94 - 2.13	AR 2.46	4.58 - 5.02	AR 5.8	10.8 - 11.9	AR 13.6
	All Other Classes Types F, Size 4	0.39 - 0.42	AR .49	0.91 - 0.99	AR 1.15	2.14 - 2.35	AR 2.71	5.03 - 5.52	AR 6.4	12.0 - 13.5	AR 15.4
		0.43 - 0.46	AR .54	1.00 - 1.09	AR 1.26	2.36 - 2.58	AR 2.98	5.53 - 6.06	AR 7.0	13.6 - 15.6	AR 17.6
	All Other Classes Types G Size 5	0.47 - 0.50	AR .59	1.10 - 1.20	AR 1.39	2.59 - 2.85	AR 3.28	6.07 - 6.66	AR 7.7	15.7 - 17.2	AR 20.5
		0.51 - 0.55	AR .65	1.21 - 1.32	AR 1.53	2.86 - 3.13	AR 3.62	6.67 - 7.43	AR 8.5	17.3 - 19.5	AR 23.
	All Other Classes Types H Size 6	0.56 - 0.61	AR .71	1.33 - 1.45	AR 1.68	3.14 - 3.45	AR 3.98	7.44 - 8.06	AR 9.3	19.6 - 21.7	AR 27.
		0.62 - 0.67	AR .78	1.46 - 1.60	AR 1.85	3.46 - 3.78	AR 4.37	8.07 - 8.75	AR 10.2	.....	.....
	All Other Classes Types I Size 7	0.68 - 0.74	AR .86	1.61 - 1.76	AR 2.04	3.79 - 4.16	AR 4.80	8.76 - 9.76	AR 11.2	.....	.....
		0.75 - 0.82	AR .95	1.77 - 1.93	AR 2.24	4.17 - 4.57	AR 5.3	9.77 - 10.7	AR 12.4	.....	.....
5	Class 2510 Types R and S	4.63 - 5.11	AR 5.8	7.43 - 8.14	AR 9.3	12.2 - 13.8	AR 15.4	23.4 - 27.3	AR 30.	38.9 - 41.9	AR 51.
		5.12 - 5.58	AR 6.4	8.15 - 8.73	AR 10.2	13.9 - 16.1	AR 17.6	27.4 - 30.8	AR 35.	42.0 - 45.7	AR 55.
	All Other Classes Types J Size 8	5.59 - 6.14	AR 7.0	8.76 - 9.89	AR 11.2	16.2 - 18.1	AR 20.5	30.9 - 33.9	AR 40.	45.8 - 49.0	AR 60.
		6.15 - 6.78	AR 7.7	9.90 - 10.8	AR 12.4	18.2 - 21.0	AR 23.	34.0 - 36.2	AR 44.	49.1 - 52.7	AR 66.
	All Other Classes Types K Size 9	6.79 - 7.42	AR 8.5	10.9 - 12.1	AR 13.6	21.1 - 23.3	AR 27.	36.3 - 38.8	AR 47.	.....	.....
		20.3 - 22.3	AU 26.	29.4 - 30.8	AU 38.	38.2 - 42.2	AU 50.	53.7 - 60.3	AU 72.	74.7 - 82.9	AU 99.
	All Other Classes Types L Size 10	22.4 - 25.4	AU 29.	30.9 - 33.5	AU 40.	42.3 - 48.2	AU 56.	60.4 - 66.3	AU 81.	83.0 - 92.9	AU 110.
		25.5 - 29.3	AU 33.	33.6 - 38.1	AU 44.	48.3 - 53.6	AU 64.	66.4 - 74.6	AU 88.	93.0 - 101.	AU 123.
	All Other Classes Types M Size 11	60 - 66	AF 72.	75 - 82	AF 88.	93 - 101	AF 110.	114 - 124	AF 135.	140 - 155	AF 168.
		67 - 74	AF 81.	83 - 92	AF 99.	102 - 113	AF 123.	125 - 139	AF 150.	156 - 174	AF 188.
	All Other Classes Types N Size 12	50.5 - 53.9	AR 5.3	63.5 - 68.9	AR 7.0	81.5 - 88.9	AR 9.3	107 - 115	AR 12.4	130 - 148	AR 15.4
		54.0 - 57.9	AR 5.8	69.0 - 75.9	AR 7.7	89.0 - 96.9	AR 10.2	116 - 129	AR 13.6	149 - 167	AR 17.6
5	All Other Classes Types O Size 13	58.0 - 63.4	AR 6.4	76.0 - 81.4	AR 8.5	97.0 - 106.	AR 11.2	.....	.....	.....	.....
		53.9 - 59.0	AR 5.3	78.2 - 86.9	AR 7.7	109 - 117	AR 11.2	171 - 189	AR 17.6	258 - 288	AR 30.
	All Other Classes Types P Size 14	59.1 - 65.1	AR 5.8	87.0 - 92.9	AR 8.5	118 - 133	AR 12.4	190 - 211	AR 20.5	.....	.....
		65.2 - 71.2	AR 6.4	93.0 - 100	AR 9.3	134 - 153	AR 13.6	212 - 234	AR 23	.....	.....
	All Other Classes Types Q Size 15	71.3 - 78.1	AR 7.0	101 - 108	AR 10.2	154 - 170	AR 15.4	235 - 257	AR 27	.....	.....
		0.36 - 0.39	GF .44	0.76 - 0.82	GF .94	1.47 - 1.61	GF 1.84	2.64 - 2.74	GF 3.30	5.36 - 5.75	GF 6.7
	All Other Classes Types R Size 16	0.40 - 0.42	GF .49	0.83 - 0.91	GF 1.03	1.62 - 1.77	GF 2.02	2.75 - 2.98	GF 3.44	5.76 - 6.55	GF 7.2
		0.43 - 0.47	GF .53	0.92 - 1.00	GF 1.14	1.78 - 1.98	GF 2.22	2.99 - 3.34	GF 3.74	6.56 - 7.43	GF 8.2
	All Other Classes Types S Size 17	0.48 - 0.51	GF .59	1.01 - 1.10	GF 1.26	1.99 - 2.13	GF 2.48	3.35 - 3.71	GF 4.19	7.44 - 8.23	GF 9.3
		0.52 - 0.56	GF .65	1.11 - 1.21	GF 1.38	2.14 - 2.23	GF 2.67	3.72 - 4.24	GF 4.65	8.24 - 9.19	GF 10.3
	All Other Classes Types T Size 18	0.57 - 0.62	GF .71	1.22 - 1.33	GF 1.52	2.24 - 2.41	GF 2.80	4.25 - 4.71	GF 5.3	9.20 - 9.84	GF 11.5
		0.63 - 0.68	GF .78	1.34 - 1.46	GF 1.67	2.42 - 2.63	GF 3.02	4.72 - 5.35	GF 5.9	9.85 - 10.3	GF 12.3
	All Other Classes Types U Size 19	0.69 - 0.75	GF .86	.....	.....	.....	.....	.....	.....	.....	.....
											

★ Relays operate from secondary of a current transformer.

Order relay units by number Price Each \$1.50

PROTECTED TYPE MELTING ALLOY RELAY UNITS

FOR 40° C. MOTORS OPERATING UNDER NORMAL CONDITIONS

Protected
Melting
Alloy Type
Overload
Relay Unit

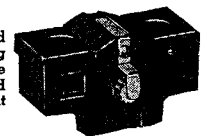


Table	For Use With	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number	Full Load Motor Current	Relay Number
5	Class 2510 Types R and S	0.36 - 0.39	GF .44	0.76 - 0.82	GF .94	1.47 - 1.61	GF 1.84	2.64 - 2.74	GF 3.30	5.36 - 5.75	GF 6.7	10.4 - 11.5	GF 13.0
		0.40 - 0.42	GF .49	0.83 - 0.91	GF 1.03	1.62 - 1.77	GF 2.02	2.75 - 2.98	GF 3.44	5.76 - 6.55	GF 7.2	11.6 - 12.7	GF 14.4
		0.43 - 0.47	GF .53	0.92 - 1.00	GF 1.14	1.78 - 1.98	GF 2.22	2.99 - 3.34	GF 3.74	6.56 - 7.43	GF 8.2	12.8 - 14.3	GF 15.9
		0.48 - 0.51	GF .59	1.01 - 1.10	GF 1.26	1.99 - 2.13	GF 2.48	3.35 - 3.71	GF 4.19	7.44 - 8.23	GF 9.3	14.4 - 15.9	GF 18.0
		0.52 - 0.56	GF .65	1.11 - 1.21	GF 1.38	2.14 - 2.23	GF 2.67	3.72 - 4.24	GF 4.65	8.24 - 9.19	GF 10.3	16.0 - 17.9	GF 20.0
	All Other Classes Types T Size 20	0.57 - 0.62	GF .71	1.22 - 1.33	GF 1.52	2.24 - 2.41	GF 2.80	4.25 - 4.71	GF 5.3	9.20 - 9.84	GF 11.5	18.0 - 19.9	GF 22.5
		0.63 - 0.68	GF .78	1.34 - 1.46	GF 1.67	2.42 - 2.63	GF 3.02	4.72 - 5.35	GF 5.9	9.85 - 10.3	GF 12.3	20.0 - 21.9	GF 25.0
		0.69 - 0.75	GF .86	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
													
													

Fusing: Enclosed starters with protected type GF melting alloy relay units may be group fused if all motors are 2 horsepower or less. For separately fused starters use fuses not larger than 4 times the full load motor current.

Order relay units by number Price each \$1.50

MAXIMUM FUSE SIZES FOR GROUP FUSING
 GF - .44 to GF - 3.74 incl. 250 V. 60 Amp.
 GF - 4.19 to GF - 15.9 incl. 250 V. 100 Amp.
 GF - .44 to GF - 8.2 incl. 600 V. 30 Amp.

CIRCUIT BREAKER, WIRE & FUSE SIZES SELECTION TABLES

For Motor Branch Circuits — Adapted From 1953 N. E. Code

FOR FUSIBLE AND NON-FUSIBLE SWITCH SIZES — SEE PAGE 123.

For exceptions, see note at head of table 20, 1953 N. E. C., also see paragraphs 4312, 4314, 4324, 4342, and 4349 of 1953 N.E.C.

Full load current rating of motor Amps.	† Min. allowable size of copper conductor A.W.G. or Ctr. Mil. in Raceways		† For running protection of motors		‡ Guide for Selecting Fuse Sizes or Circuit Breaker Trip Ratings for Motors Without Code Letters			Squirrel cage and synchronous [auto-transformer starting].			D.C. and Wound Rotor A.C.		
	Type R, RW, RU, RUW	Thermo-Plastic Type T 14-4/0 Type TW 14-4/0	Max. setting non-adjustable protective devices	Max. setting adjustable protective devices	† Max. allowable rating of br. circuit fuses	• Max. allowable circuit breaker rating	★ Recommended minimum circuit breaker rating	† Max. allowable rating of br. circuit fuses	• Max. allowable circuit br. rating squirrel cage and synchronous [auto-transformer starting]	★ Recommended minimum circuit breaker rating	† Max. allowable rating of branch circuit fuses	• Max. allowable circuit breaker rating	★ Recommended minimum circuit breaker rating
	Amps.	Type RH	Amps.	Amps.	Amps.	Amps.	Amps.	Amps.	Amps.	Amps.	Amps.	Amps.	Amps.
1**	14	14	2*	1.25*	15	15	15	15	15	15	15	15	15
2**	14	14	3*	2.50*	15	15	15	15	15	15	15	15	15
3**	14	14	4*	3.75*	15	15	15	15	15	15	15	15	15
4**	14	14	6*	5.00*	15	15	15	15	15	15	15	15	15
5**	14	14	8*	6.25*	15	15	15	15	15	15	15	15	15
6**	14	14	8*	7.50*	20	15	15	15	15	15	15	15	15
7	14	14	10*	8.75*	25	20	15	20	15	15	15	15	15
8	14	14	10*	10.00*	25	20	15	20	15	15	15	15	15
9	14	14	12*	11.25*	30	30	20	25	20	20	15	15	15
10	14	14	15*	12.50*	30	30	20	25	20	20	15	15	15
12	14	14	15	15.00	40	30	20	30	30	20	20	20	20
14	12	12	20	17.50	45	40	30	35	30	30	25	30	20
16	12	12	20	20.00	50	40	30	40	40	30	25	30	30
18	10	10	25	22.50	60	50	40	45	40	40	30	30	30
20	10	10	25	25.00	60	50	40	50	40	40	30	30	30
22	10	10	30	27.50	70	70	40	60	50	40	35	40	40
24	10	10	30	30.00	80	70	50	60	50	50	40	40	40
26	8	8	35	32.50	80	70	50	70	70	50	40	40	40
28	8	8	35	35.00	90	70	50	70	70	50	45	50	50
30	8	8	40	37.50	90	100	50	70	70	50	45	50	50
32	8	8	40	40.00	100	100	70	70	70	50	50	50	50
34	6	6	45	42.50	110	100	70	70	70	70	60	70	70
36	6	6	45	45.00	110	100	70	80	100	70	60	70	70
38	6	6	50	47.50	125	100	70	80	100	70	60	70	70
40	6	6	50	50.00	125	100	70	80	100	70	60	70	70
42	6	6	50	52.50	125	125	70	90	100	70	70	70	70
44	6	6	60	55.00	125	125	70	90	100	70	70	70	70
46	4	4	60	57.50	150	125	100	100	100	100	70	70	70
48	4	4	60	60.00	150	125	100	100	100	100	80	100	100
50	4	4	60	62.50	150	125	100	100	100	100	80	100	100
52	4	4	70	65.00	175	150	100	110	125	100	80	100	100
54	4	4	70	67.50	175	150	100	110	125	100	90	100	100
56	4	4	70	70.00	175	150	100	120	125	100	90	100	100
58	3	3	70	72.50	175	150	100	120	125	100	90	100	100
60	3	3	80	75.00	200	150	100	120	125	100	90	100	100
62	3	3	80	77.50	200	175	100	125	125	100	100	100	100
64	3	3	80	80.00	200	175	125 ♦	150	150	125	100	100	100
66	2	2	80	82.50	200	175	125 ♦	150	150	125	100	100	100
68	2	2	90	85.00	225	175	125 ♦	150	150	125 ♦	110	125	125
70	2	2	90	87.50	225	175	125 ♦	150	150	125 ♦	110	125	125
72	2	2	90	90.00	225	200	125 ♦	150	150	125 ♦	110	125	125
74	2	2	90	92.50	225	200	125 ♦	150	150	125 ♦	110	125	125
76	2	2	100	95.00	250	200	125 ♦	175	175	125 ♦	125	125	125
78	1	1	100	97.50	250	200	125 ♦	175	175	125 ♦	125	125	125
80	1	1	100	100.00	250	200	125	175	175	125	125	125	125
82	1	1	110	102.50	250	225	125	175	175	125	125	125	125
84	1	1	110	105.00	250	225	150	175	175	150	150	150	150
86	1	1	110	107.50	300	225	150	175	175	150	150	150	150
88	1	2	110	110.00	300	225	150	200	200	150	150	150	150
90	0	2	110	112.50	300	225	150	200	200	150	150	150	150
92	0	2	125	115.00	300	250	150	200	200	150	150	150	150
94	0	1	125	117.50	300	250	150	200	200	150	150	150	150
96	0	1	125	120.00	300	250	150	200	200	150	150	150	150
98	0	1	125	122.50	300	250	150	200	200	150	150	150	150
100	0	1	125	125.00	300	250	175	200	200	150	150	150	150
105	00	1	150	131.50	350	300	175	225	225	175	175	175	175
110	00	0	150	137.5	350	300	175	225	225	175	175	175	175
115	00	0	150	144.0	350	300	175	250	250	175	175	175	175
120	000	0	150	150.0	400	300	200	250	250	200	200	200	200
125	000	00	175	156.5	400	350	200	250	250	200	200	200	200
130	000	00	175	162.5	400	350	200	300	300	200	200	200	200
135	0000	00	175	169.0	450	350	225	300	300	225	225	225	225
140	0000	00	175	175.0	450	350	225	300	300	225	225	225	225
145	000	000	200	181.5	450	400	225	300	300	225	225	225	225
150	0000	000	200	187.5	450	400	225	300	300	225	225	225	225

*For the running protection of motors of 1 H.P. and less see Section 4322 N.E. Code.

**For the fusing of small motors under the protection of a single set of fuses see Section 4343 N. E. Code.

†Adapted from Table 20, Chapter 10, 1953 N.E. Code.

• Adapted from Table 27, Chapter 10, 1953 N.E. Code.

‡ The 1953 N. E. C. classifies motors by code letters. Where code-marked motors are employed, refer to 1953 N. E. Code, Tables 20 and 26.

★ For light or medium starting duty.

♦100 Amp. rated type ML3 breaker may be used in combination starters and control centers.



SWITCH SIZES FOR MOTOR BRANCH CIRCUITS SELECTION TABLES

Horsepower	Single Phase				3 Phase						2 Phase, 4 Wire				Direct Current					
	120 Volts		240 Volts		240 Volts		480 Volts		600 Volts		240 Volts		480 Volts		125 Volts		250 Volts		600 Volts	
	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses	NEC Fuses	Dual Element Fuses
	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
1 1/2	60	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
2	...	▲60	60	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
3	...	60	60	30	30	30	30	30	30	30	30	30	30	30	60	30	30	30	30	30
5	...	...	100	60	60	30	30	30	30	30	60	30	30	30	60	60	30	30	30	30
7 1/2	...	...	100	60	60	▲60	60	30	30	30	60	30	30	30	...	...	60	60	30	30
10	...	...	200	60	100	60	60	30	60	30	100	▲60	60	30	...	...	60	60	30	30
15	...	...	200	100	100	60	60	30	60	30	100	60	60	30	...	...	100	100	60	30
20	Selections are based on Underwriters Laboratories Inc. horsepower ratings for enclosed switches. Where switch sizes are not shown, horsepower ratings are not listed by the Underwriters Laboratories, Inc. Dual element fuses may be used as indicated in Section 4346 of the N.E.C.				200	100	100	60	100	▲60	200	▲100	100	▲60	...	...	100	100	60	60
25					200	100	100	60	100	60	200	100	100	60	...	...	200	200	60	60
30					400	▲200	200	60	100	60	200	100	200	60	...	...	200	200	100	100
40					400	200	200	100	200	60	400	200	200	▲100	...	...	200	200	100	100
50					400	200	200	100	200	100	400	200	200	100	...	...	400	400	200	200

The maximum horsepower listing available from Underwriters' Laboratories, Inc. is 50 horsepower

60	Selections for N.E.C. fuses are for standard Squirrel Cage Motors without code letters.	*600	400	*400	200	200	100	400	200	200	100	...	...	400	400	200	200
75		†600	400	†400	200	*400	200	*600	400	*400	200	...	...	600	400	200	200
100		...	400	400	200	†400	200	...	400	400	200	...	...	600	600	400	400
125	Selections for dual element fuses are based on manufacturers' recommendation for motors without code letters and may be used as indicated in Section 4346 of the N.E.C.	...	600	*600	200	400	200	...	400	*600	200	...	...	...	600	400	400
150		...	600	†600	400	*600	400	...	600	*600	400	...	...	...	...	400	400
200		...	600	...	400	†600	400	...	600	...	400	...	...	...	...	600	600

Not Fusible — Select not-fusible switches on the basis of horsepower from the dual element fuse column for 50 horsepower and less. Above 50 horsepower not-fusible switches are rated as disconnects only and should be selected with a rating of at least 115% of the motor full load current.

▲ Next smaller size switch has equivalent horsepower rating, however under many conditions, switch size indicated may be necessary to accommodate fuses large enough to start motor.

Use next size smaller if selecting not-fusible switch.

* Use next size smaller switch for Squirrel Cage Motors coded A to E, or for high reactance Squirrel Cage Motors, or for Auto-transformer starting.

† Use next size smaller switch for motors coded A, or for high reactance Squirrel Cage Motors, or for Auto-transformer starting.



NUMERICAL INDEX

SWITCH AND PANEL PRODUCTS

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ML Panels.....	42	LD2TF.....	56	ML140F.....	26	ML1650S.....	26	ML3919RO.....	26	OHS-3M.....	13	XO3WHS.....	5
MLN Panels.....	41	LD4C.....	56	ML140S.....	26	ML1670F.....	26	ML3926F.....	26	OHS-4M.....	13	XO4.....	4
NAB-3AB.....	34	LD4H.....	56	ML140RO.....	26	ML1670S.....	26	ML3926S.....	26	OS-1M.....	13	XO4M.....	4
NAB-3L.....	34	LD4J.....	56	ML150F.....	26	ML1715F.....	26	ML3926RO.....	26	OVS-2M.....	13	XO4RO.....	4
NAB-3L X.....	36	LD4T.....	56	ML150S.....	26	ML1715S.....	26	ML3927F.....	26	OVS-3M.....	13	XO5.....	4
NAB-4AB.....	34	LD4CP.....	56	ML150RO.....	26	ML1716F.....	26	ML3927S.....	26	OVS-4M.....	13	XO5M.....	4
NAB-4L.....	34	LD4GB.....	56	ML215F.....	26	ML1716S.....	26	ML3927R.....	26	SC41.....	57	XO5RO.....	4
NAB-4L X.....	36	LD4HB.....	56	ML215S.....	26	ML1720F.....	26	MO480000.....	31	SC42.....	57	XO6.....	4
NMO Panels.....	31	LD4PB.....	56	ML220F.....	26	ML1720S.....	26	MO481100.....	31	SC43.....	57	XO41.....	4
NQB-3AB.....	33	LD4TF.....	56	ML220S.....	26	ML1730F.....	26	MO481111.....	31	SC44.....	57	XO41 M.....	4
NQB-3L.....	33	LD6C.....	56	ML230F.....	26	ML1730S.....	26	MO481112.....	31	SC45.....	57	XO41 RO.....	4
NQB-3AB.....	33	LD6H.....	56	ML230S.....	26	ML1740F.....	26	MO481113.....	31	SC61.....	57	XO42F.....	5
NQB-4L.....	33	LD6J.....	56	ML240F.....	26	ML1740S.....	26	MO481122.....	31	SC62.....	57	XO42S.....	5
NQB-3AB.....	29, 30	LD6T.....	56	ML240S.....	26	ML1750F.....	26	MO481123.....	31	SC63.....	57	XO42 RO.....	5
NQO-3L.....	29, 30	LD6CP.....	56	ML250F.....	26	ML1750S.....	26	MO481133.....	31	SC64.....	57	XO42WH.....	5
NQO-3L X.....	36	LD6GB.....	56	ML250S.....	26	ML1770F.....	26	MO482200.....	31	SC65.....	57	XO42F.....	5
NQO-4AB.....	29, 30	LD6HB.....	56	ML315F.....	26	ML1770S.....	26	MO482213.....	31	SK2040.....	12	XO42S.....	5
NQO-4L.....	29, 30	LD6PB.....	56	ML315S.....	26	ML1916F.....	26	MO482221.....	31	SK2146.....	12	XO42WHF.....	5
NQO-4L X.....	36	LD6TF.....	56	ML320F.....	26	ML1916S.....	26	MO482222.....	31	SK2256.....	12	XO42WHS.....	5
NRP-3L.....	37	LD21.....	56	ML320S.....	26	ML1916RO.....	26	MO482223.....	31	SK2361.....	11	XO42 RO.....	5
NSP.....	10	LD22.....	56	ML330F.....	26	ML1970F.....	26	MO482233.....	31	SK2362.....	11	XO51.....	4
NTPR-3L.....	37	LD22 A.....	56	ML330S.....	26	ML1970S.....	26	MO483300.....	31	SK2363.....	11	XO51 M.....	4
NTPR-3M.....	37	LD25.....	56	ML340F.....	26	ML1970RO.....	26	MO483312.....	31	SK2364.....	11	XO51 RO.....	4
NTPR-4L.....	37	LD41.....	56	ML340S.....	26	ML3017F.....	26	MO483331.....	31	SK2365.....	11	XO52F.....	5
NTPR-4M.....	37	LD42.....	56	ML350F.....	26	ML3017S.....	26	MO483332.....	31	SK2366.....	11	XO52S.....	5
NTPS-3L.....	10	LD42R.....	56	ML350S.....	26	ML3017RO.....	26	MO483333.....	31	SK2370.....	11	XO52 RO.....	5
NTPS-4L.....	10	LD44A.....	56	ML915F.....	26	ML3018F.....	26	MO489400.....	31	SK2371.....	11	XO52AF.....	5
Plug-In Duct		LD45.....	56	ML915S.....	26	ML3018S.....	26	MO489411.....	31	SK2372.....	11	XO52AS.....	5
..... 51, 52, 53		LD61.....	56	ML915RO.....	26	ML3018RO.....	26	MO489422.....	31	SK2373.....	11	XO61.....	4
QMB Saflex Panels		LD62.....	56	ML920F.....	26	ML3019F.....	26	MO489433.....	31	SK2374.....	11	XO62F.....	5
..... 45, 46, 47		LD64R.....	56	ML920S.....	26	ML3019S.....	26	MO489494.....	31	SK2375.....	11	XO62S.....	5
Saflex Panels.. 48, 49		LD65.....	56	ML920RO.....	26	ML3019RO.....	26	MO489500.....	31	SK2376.....	11	XO115.....	4
Switchboards.....	58	LD66A.....	56	ML930F.....	26	ML3026F.....	26	MO489511.....	31	SK3986.....	22	XO120.....	4
Switchgear.....	59	LD225L.....	56	ML930S.....	26	ML3026S.....	26	MO489522.....	31	SK4009.....	11	XO215.....	4
Unit Substations..	59	LD245L.....	56	ML930RO.....	26	ML3026RO.....	26	MO489533.....	31	SK4011.....	11	XO220.....	4
B1064.....	13	LD290L.....	56	ML940F.....	26	ML3027F.....	26	MO489594.....	31	SK4012.....	11	XO230.....	4
B1065.....	13	LD425L.....	56	ML940S.....	26	ML3027S.....	26	MO489595.....	31	SK4014.....	11	XO240.....	4
CA2.....	10	LD445L.....	56	ML940RO.....	26	ML3027RO.....	26	MS100.....	13	SK4018.....	11	XO250.....	4
CA4.....	10	LD490L.....	56	ML950F.....	26	ML3617F.....	26	MS125.....	13	SK4028.....	11	XO215SWN.....	4
CE.....	10	LD625L.....	56	ML950S.....	26	ML3617S.....	26	MSA1.....	13	SK4029.....	11	XO220SWN.....	4
CH.....	10	LD645L.....	56	ML950RO.....	26	ML3618F.....	26	MSP4D2.....	13	SK4030.....	11	XO22F.....	4
HC.....	10	LD690L.....	56	ML1016F.....	26	ML3618S.....	26	MSP4D2B.....	13	SK4031.....	11	XO22S.....	4
HC2.....	10	ML1015F.....	26	ML1016S.....	26	ML3619F.....	26	MSP4D2H.....	13	SK4032.....	11	XOC3F.....	4
HD.....	10	ML015S.....	26	ML1016RO.....	26	ML3619S.....	26	MSP4D3.....	13	SK4033.....	11	XOC3S.....	4
HD2.....	10	ML015RO.....	26	ML1070F.....	26	ML3626F.....	26	MSP4D3B.....	13	SK4034.....	11	XOC4F.....	4
HE.....	10	ML020F.....	26	ML1070S.....	26	ML3626S.....	26	MSP4E2.....	13	SK4035.....	11	XOC4S.....	4
HE2.....	10	ML020S.....	26	ML1070RO.....	26	ML3627F.....	26	MSP4E2B.....	13	SK4036.....	11	XOC4MF.....	4
HG.....	10	ML020RO.....	26	ML1216F.....	26	ML3627S.....	26	MSP4E2H.....	13	SK4037.....	11	XOC4MS.....	4
HH.....	10	ML030F.....	26	ML1216S.....	26	ML3717F.....	26	MSP4E3.....	13	SK4039.....	11	XOC5F.....	4
HH4.....	10	ML030S.....	26	ML1270F.....	26	ML3717S.....	26	MSP4E3B.....	13	SK5405.....	4	XOC5S.....	4
HW.....	10	ML030RO.....	26	ML1270S.....	26	ML3718F.....	26	MSP5D3.....	13	SK5434.....	4	XOC5MF.....	4
HN2G.....	10	ML040F.....	26	ML1316F.....	26	ML3718S.....	26	MSP5D3B.....	13	XA1021.....	7	XOC5MS.....	4
HN4G.....	10	ML040S.....	26	ML1316S.....	26	ML3719F.....	26	MSP5E3.....	13	XA1022.....	7	XOC6F.....	4
IS-1M.....	13	ML040RO.....	26	ML1370F.....	26	ML3719S.....	26	MSP5E3B.....	13	XO1F.....	4	XOC6S.....	4
IS-2M.....	13	ML050F.....	26	ML1370S.....	26	ML3726F.....	26	MSP40D2.....	13	XO1S.....	4	XOC41 MF.....	4
IS-3M.....	13	ML050S.....	26	ML1615F.....	26	ML3726S.....	26	MSP40D2B.....	13	XO1R.....	4	XOC41 MS.....	4
IS-4M.....	13	ML050RO.....	26	ML1615S.....	26	ML3727F.....	26	MSP40E2.....	13	XO1RO.....	4	XOC51 MF.....	4
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92245F.....	22	92452F.....	22	96356.....	14	D97413.....	14	212230F.....	6	RO313216.....	6	RO383270.....	12
92246.....	22	92453.....	22	96411.....	14	D97413 RO.....	14	212230S.....	6	313250F.....	6	972330.....	5
92251.....	22	92453 F.....	22	D96451.....	14	D97414.....	14	RO212230.....	6	313250S.....	6	972340.....	5
92251 F.....	22	92454.....	22	D96452.....	14	D97414 RO.....	14	212240F.....	6	RO313250.....	6	972350.....	5
92255.....	22	92455.....	22	D96453.....	14	97415.....	14	212240S.....	6	313270F.....	6	972540 A.....	5
92255F.....	22	92455F.....	22	D96454.....	14	97416.....	14	RO212240.....	6	313270S.....	6	972550 A.....	5
92256.....	22	92456.....	22	96455.....	14	D97451.....	14	212250F.....	6	RO313270.....	6	972570 A.....	5
92256 F.....	22	92456 F.....	22	96456.....	14	97451.....	14	212250S.....	6	333216F.....	6		

FEEDER AND BRANCH CIRCUIT CONDUCTOR PROTECTION

The following table indicates proper circuit breaker sizes for conductors, for the purpose of opening the circuit if the current reaches a value which will cause an excessive or dangerous temperature in the conductor or conductor insulation:—

Maximum Circuit Breaker Rating (Amperes)

Based on not more than 3 conductors in raceway or cable and at 30° C room temperature

AWG Conductor Size	INSULATED CONDUCTORS		AWG Conductor Size	INSULATED CONDUCTORS	
	Type R Type RU Type RW Type T Type TW	Type RH		Type R Type RU Type RW Type T Type TW	Type RH
14	15A.	15A.	6	70A.	70A.
12	20A.	20A.	4	70A.	100A.
10	30A.	30A.	2	100A.	100A.
8	40A.	50A.	1	100A.	100A.

SINGLE MOTOR BRANCH CIRCUIT PROTECTION

The following table lists minimum allowable wire sizes and recommended minimum circuit breaker sizes for full voltage starting of single phase and polyphase squirrel cage motors without code letters, or with code letters F to V indicating locked rotor KVA. For other types of motors or starting methods, see tables 26 and 27 of National Electrical Code.

Motor HP.	110 V. SINGLE PHASE			220 V. SINGLE PHASE			220 V. 3 PHASE		
	Wire Size		Circuit Breaker Trip Amps.	Wire Size		Circuit Breaker Trip Amps.	Wire Size		Circuit Breaker Trip Amps.
	Type R Type RW Type RU Type T Type TW	Type RH		Type R Type RW Type RU Type T Type TW	Type RH		Type R Type RW Type RU Type T Type TW	Type RH	
1/6	14	14	15A.	14	14	15A.	.....	.....	.....
1/4	14	14	15A.	14	14	15A.	.....	.....	.....
1/3	14	14	15A.	14	14	15A.	14	14	15A.
1/2	14	14	15A.	14	14	15A.	14	14	15A.
3/4	14	14	20A.	14	14	15A.	14	14	15A.
1	12	12	30A.	14	14	15A.	14	14	15A.
1 1/2	10	10	40A.	14	14	20A.	14	14	15A.
2	10	10	50A.	14	14	20A.	14	14	15A.
3	6	8	70A.	12	12	30A.	14	14	20A.
5	4	4	100A.	8	8	50A.	12	12	30A.
7 1/2	.....	.....	.....	6	6	70A.	10	10	40A.
10	.....	.....	.....	4	6	100A.	8	8	50A.
15	.....	.....	.....	.....	.....	.....	6	6	70A.
20	.....	.....	.....	.....	.....	.....	4	6	100A.
25	.....	.....	.....	.....	.....	.....	2	4	100A.



NATIONAL ELECTRIC CODE REQUIREMENTS

	Primary Cables	Article 710
	Potheads	Article 710
	Disconnecting Switches	Article 710
	Oil Circuit Breakers	Article 710
	Instrument Transformers, Current and Potential ...	Article 450
	Power Transformers, High Voltage, Oil Filled ...	Article 450
	Power Transformers, High Voltage filled with non-burning liquid	Article 450
	Meter and Instruments	Article 230, 384
	Service Entrance Conductors	Article 100, 230
	Service Entrance Equipment	Article 230
	6 Circuits or Less	Par. 2351A
	Over 6 Circuits	Par. 2351
	Grounding	Article 250
	Furnaces	Article 250, 450
	Air Circuit Breakers	Article 240
	Switchboards	Article 384
	Switches	Article 380
	Fuses	Article 240
	Capacitors (Condensers)	Article 460
	Generators	Article 445
	Batteries	Article 480
	Feeders	Article 220
	Lightning Arresters	Article 280
	Outside Wiring Between Buildings	Article 730
	Transformers, Low Voltage	Article 450
	Grounding	Article 250
	Safety Switches	Article 380
	Panelboards	Article 384
	Lighting Branch Circuits	Article 210
	Lighting Fixtures	Article 410
	Busways	Article 364
	Heavy Duty Receptacles	Article 210, 422
	Flexible Cords	Article 400
	Portable Appliances	Article 422
	Machine Lighting Transformer, Machine Tools	Article 450, 670
	Motor Disconnect	Article 430
	Motor Control	Article 430
	Motors	Article 430
	Cranes	Article 610



WIRE AND CONDUIT TABLES

ALLOWABLE CURRENT-CARRYING CAPACITIES OF INSULATED CONDUCTORS IN AMPERES

Not More Than Three Conductors in Raceway or Cable
(Based on Room Temperature of 30° C., 86° F.)

Chapter 10, Table 1 — 1953 N. E. C. (for copper conductors)

Size AWG MCM	Rubber Type R Type RW Type RU Type RUW (14-2)	Rubber Type RH	Paper Thermo- plastic Asbestos Type TA Var-Cam Type V Asbestos Var-Cam Type AVB	Asbestos Var-Cam Type AVA Type AVL	Impreg- nated Asbestos Type AI (14-8) Type AIA	Asbestos Type A (14-8) Type AA
14	15	15	25	30	30	30
12	20	20	30	35	40	40
10	30	30	40	45	50	55
8	40	45	50	60	65	70
6	55	65	70	80	85	95
4	70	85	90	105	115	120
3	80	100	105	120	130	145
2	95	115	120	135	145	165
1	110	130	140	160	170	190
0	125	150	155	190	200	225
00	145	175	185	215	230	250
000	165	200	210	245	265	285
0000	195	230	235	275	310	340
250	215	255	270	315	335	...
300	240	285	300	345	380	...
350	260	310	325	390	420	...
400	280	335	360	420	450	...
500	320	380	405	470	500	...
600	355	420	455	525	545	...
700	385	460	490	560	600	...
750	400	475	500	580	620	...
800	410	490	515	600	640	...
900	435	520	555	...	...	...
1,000	455	545	585	680	730	...
1,250	495	590	645	...	...	...
1,500	520	625	700	785	...	...
1,750	545	650	735	...	...	...
2,000	560	665	775	840	...	...

CORRECTION FACTOR FOR ROOM TEMPERATURES OVER
30° C., 86° F.

°C. °F.						
40 104	.82	.88	.90	.94	.95	...
45 113	.71	.82	.85	.90	.92	...
50 122	.58	.75	.80	.87	.89	...
55 131	.41	.67	.74	.83	.86	...
60 140	...	.58	.67	.79	.83	.91
70 158	...	.35	.52	.71	.76	.87
75 167	...	...	.43	.66	.72	.86
80 176	...	...	.30	.61	.69	.84
90 194	...	...	...	.50	.61	.80
100 212	...	...	...	...	.51	.77
120 248	...	...	...	...	...	.69
140 284	...	...	...	...	...	.59

NOTES TO TABLES 1 AND 2 — Chapter 10, 1953 N. E. C.

4. **More Than Three Conductors in a Raceway.** Table 1 gives the allowable current-carrying capacity for not more than three conductors in a raceway or cable. If the number of conductors in a raceway or cable is from 4 to 6, the allowable current-carrying capacity of each conductor shall be reduced to 80 per cent of the values in Table 1. If the number of conductors in a raceway or cable is from 7 to 9, the allowable current-carrying capacity of each conductor shall be reduced to 70 per cent of the values in Table 1. (Exceptions to the foregoing are specified in sections 3624, 3745, and 7265.)

NUMBER OF CONDUCTORS IN CONDUIT OR TUBING

Rubber Covered, Types RF-32, RUF, R, RH, RW, RU and RUW
Thermoplastic, Types TF, T and TW

One to Nine Conductors

For more than nine conductors, see Table 9.
(See Sections 3013, 3466 and 3486 — 1953 N. E. C.)

Chapter 10, Table 4 — 1953 N. E. C.

Size AWG MCM	Number of Conductors in One Conduit or Tubing								
	1	2	3	4	5	6	7	8	9
18	1/2	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4
16	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4
14	1/2	1/2	1/2	1/2	3/4	3/4	1	1	1
12	1/2	1/2	1/2	3/4	1	1	1	1	1 1/4
10	1/2	3/4	3/4	1	1	1 1/4	1 1/4	1 1/4	1 1/4
8	1/2	3/4	3/4	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
6	1/2	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
4	1/2	1 1/4	*1 1/4	1 1/2	1 1/2	2	2	2	2 1/2
3	1/2	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2	2 1/2
2	3/4	1 1/4	1 1/4	1 1/2	2	2	2 1/2	2 1/2	2 1/2
1	3/4	1 1/2	1 1/2	1 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3
0	1	1 1/2	2	2	2 1/2	2 1/2	3	3	3
00	1	2	2	2 1/2	2 1/2	3	3	3	3 1/2
000	1	2	2	2 1/2	3	3	3	3 1/2	3 1/2
0000	1 1/4	2	2 1/2	3	3	3	3 1/2	3 1/2	4
250	1 1/4	2 1/2	2 1/2	3	3	3 1/2	4	4	5
300	1 1/4	2 1/2	2 1/2	3	3 1/2	4	4	5	5
350	1 1/4	3	3	3 1/2	3 1/2	4	5	5	5
400	1 1/2	3	3	3 1/2	4	4	5	5	5
500	1 1/2	3	3	3 1/2	4	5	5	5	6
600	2	3 1/2	3 1/2	4	5	5	6	6	6
700	2	3 1/2	3 1/2	5	5	5	6	6	...
750	2	3 1/2	3 1/2	5	5	6	6	6	...
800	2	3 1/2	4	5	5	6	6	...	...
900	2	4	4	5	6	6	6	...	...
1000	2	4	4	5	6	6	...	...	...
1250	2 1/2	5	5	6	6	...	...	...	...
1500	3	5	5	6	...	...	...	...	...
1750	3	5	6	6	...	...	...	...	...
2000	3	6	6	...	...	...	...	...	...

See notes 4 and 5 following tables 1 and 2, Chapter 10, for reduction factor for more than 3 conductors.

*Where a service run of conduit or electrical metallic tubing does not exceed 50 feet in length and does not contain more than the equivalent of two quarter bends from end to end two No. 4 insulated and one No. 4 bare conductors may be installed in 1-inch conduit or tubing.

5. **Neutral Conductor.** A neutral conductor which carries only the unbalanced current from other conductors, as in the case of normally balanced circuits of three or more conductors, shall not be counted in determining current-carrying capacities as provided for in the preceding paragraph.

In a 3-wire circuit consisting of two phase wires and the neutral of a 4-wire, 3-phase system, a common conductor carries approximately the same current as the other conductors and is not therefore considered as a neutral conductor.

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