AC REVERSING MAGNETIC CONTACTORS

Without Overload Protection

50-60 CYCLES | **CLASS 8702** | **600 VOLTS MAX.**

Number of Poles	NEMA Size	Ratings Volts	Ratings Max. HP	Type of Motor	General Purpose Enclosure NEMA Type 1 Vertical Type	General Purpose Enclosure NEMA Type 1 Horizontal Type	General Purpose Enclosure NEMA Type 1 Price ▲	Water-tight Stainless Steel Enclosure NEMA Type 4● Type	Water-tight Stainless Steel Enclosure NEMA Type 4● Price ▲	For Hazardous Locations Class II Groups E, F & G NEMA Type 9‡ Type	For Hazardous Locations Class II Groups E, F & G NEMA Type 9‡ Price ▲	Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3★) Type	Dust-tight Industrial Use Enclosure NEMA Type 12 (Type 3★) Price ▲	Open Type Vertical Type	Open Type Horizontal Type	Open Type Price ▲
2 Pole Single Phase	00	115 230	1/3 1	Single Phase 3-Wire	....	AG-1	$ 62.	AW-11	$108.	Use NEMA Size 0		Use NEMA Size 0		....	AO-1	$ 58.
	0	115 230	1 2		BG-9	BG-1	74.	BW-11	120.	BE-1	$120.	BA-1	$ 92.	BO-9	BO-1	70.
	1	115 230	2 3		CG-1	CG-2	86.	CW-11	150.	CE-1	150.	CA-1	104.	CO-1	CO-2	80.
3 Pole Single Phase	00	115 230	1/3 1	4-Wire Rep.-Ind.	....	AG-2	64.	AW-12	110.	Use NEMA Size 0		Use NEMA Size 0		....	AO-2	60.
		115 230	1/3 1	4-Wire Split Ph.	....	AG-3	64.	AW-13	110.	Use NEMA Size 0		Use NEMA Size 0		....	AO-3	60.
	0	115 230	1 2	4-Wire Rep.-Ind.	BG-10	BG-2	76.	BW-12	122.	BE-2	122.	BA-2	94.	BO-10	BO-2	72.
		115 230	1 2	4-Wire Split Ph.	BG-11	BG-3	76.	BW-13	122.	BE-3	122.	BA-3	94.	BO-11	BO-3	72.
	1	115 230	2 3	4-Wire Rep.-Ind.	CG-3	CG-4	88.	CW-12	152.	CE-2	152.	CA-2	106.	CO-3	CO-4	82.
		115 230	2 3	4-Wire Split Ph.	CG-5	CG-6	88.	CW-13	152.	CE-3	152.	CA-3	106.	CO-5	CO-6	82.
3 Pole Poly-phase	00	110 208-220 440-550	3/4 1½ 2	3 Phase	....	AG-4	64.	AW-14	110.	Use NEMA Size 0		Use NEMA Size 0		....	AO-4	60.
	0	110 208-220 440-550	2 3 5		BG-12	BG-4	76.	BW-14	122.	BE-4	122.	BA-4	94.	BO-12	BO-4	72.
	1	110 208-220 440-550	3 7½ 10		CG-7	CG-8	88.	CW-14	152.	CE-4	152.	CA-4	106.	CO-7	CO-8	82.
	2	110 208-220 440-550	7½ 15 25		DG-1	DG-2	172.	DW-11	276.	DE-1	314.	DA-1	202.	DO-1	DO-2	156.
	3	110 208-220 440-550	15 30 50		EG-1	EG-2	287.	EW-11	441.	EE-1	485.	ED-1	353.	EO-1	EO-2	259.
	4	208-220 440-550	50 100		FG-1	FG-3	698.	FW-11	970.	FE-1	1044.	FA-1 ●	800.	FO-1	FO-3	646.
	5	208-220 440-550	100 200		GG-1	GG-3	1466.	GW-11	1686.	...	....	GA-1 ●	1686.	GO-1	GO-3	1165.
	6	208-220 440-550	200 400		.....	HG-1 ●	3650.	†HW-1	4150.	.....	....	HA-1	3920.	.....	HO-1 ●	3142.
	7	208-220 440-550	300 600		.....	JG-1 ●	4543.	†JW-1	5043.	.....	....	JA-1	4813.	.....	JO-1 ●	4043.
4 Pole	0	220 440-550	3 5	2 Phase 4-Wire	BG-13	BG-5	96.	BW-15	142.	BE-5	142.	BA-5	114.	BO-13	BO-5	92.
	1	220 440-550	7½ 10		CG-9	CG-10	109.	CW-15	173.	CE-5	173.	CA-5	127.	CO-9	CO-10	105.
	2	220 440-550	15 25		DG-3	DG-4	214.	DW-12	324.	DE-2	352.	DA-2	244.	DO-3	DO-4	198.
	3	220 440-550	30 50		EG-3	EG-4	358.	EW-12	510.	EE-2	554.	ED-2	422.	EO-3	EO-4	328.
	4	220 440-550	50 100		FG-2	FG-4	888.	FW-12	1162.	FE-2	1234.	FA-2 ●	992.	FO-2	FO-4	834.
	5	220 440-550	100 200		GG-2	GG-4	1757.	GW-12	2195.	.....	....	GA-2 ●	2109.	GO-2	GO-4	1455.

▲Prices include one normally open holding circuit contact and one normally closed interlocking contact on each contactor — no deduction for omission.

†NEMA Type 4 enclosures in NEMA Sizes 6 and 7 are constructed of sheet steel.

‡Contactors also available in Class I, Groups C and D enclosures.

★Suitable for NEMA Type 3 applications except where sleet and freezing rain is encountered.

ORDERING INFORMATION REQUIRED

1—Class and type number.

2—Line voltage and frequency.

3—Control voltage and frequency if different from line voltage.

4—Special features or modifications.

FIELD MODIFICATION KITS

Refer to Class 9999 Section.

ADDITIONS AND SPECIAL FEATURES

Refer to tab "Additions and Special Features".

DECEMBER, 1962

AC Reversing Magnetic Contactors

APPLICATION OF REVERSING MAGNETIC CONTACTORS

Class 8702 ac Reversing Magnetic Contactors are electromechanical devices which provide a safe and convenient means for starting, stopping, and reversing ac motors, where other provision is made for overload protection or where overload protection is not required. These reversing contactors are designed for the control of polyphase squirrel cage motors, and single phase motors that may be reversed by a reconnection of windings. Two contactors are employed on each device to perform the reversing operation. One contactor connects motor windings for forward rotation, and the other connects for reverse rotation. The switching schemes are illustrated in the Wiring Diagram Section of this catalog under Class 8736 equipment.

Pilot devices such as push buttons, limit switches, or timing relays are often used to provide the control of these reversing contactors.

RATINGS

Size — Class 8702 reversing magnetic contactors are built in ten sizes from Size 00, 10 amperes through Size 8, 1350 amperes. Each size has also been assigned horsepower ratings which apply when the motor is used for normal starting duty. All ratings correspond with National Electrical Manufacturers Association Standards.

Poles — Sizes 00 through 5 are available in either two, three or four pole construction. Sizes 6, 7 and 8 are available in three pole construction only.

Volts — The Size 00 through 8 contactors are available for operation at any system voltage up to 600 volts, and will operate satisfactorily with a line voltage variation as great as 15% below and 10% above the nominal control circuit rating. Size 00 through 5 contactors have an ac magnet structure and operate directly from the ac power. The Sizes 6, 7 and 8 contactors are operated by a dc magnet assembly consisting of two 45 volt coils connected in series for each contactor. A built-in rectifier and transformer of suitable primary rating are provided to supply the dc power for the coils.

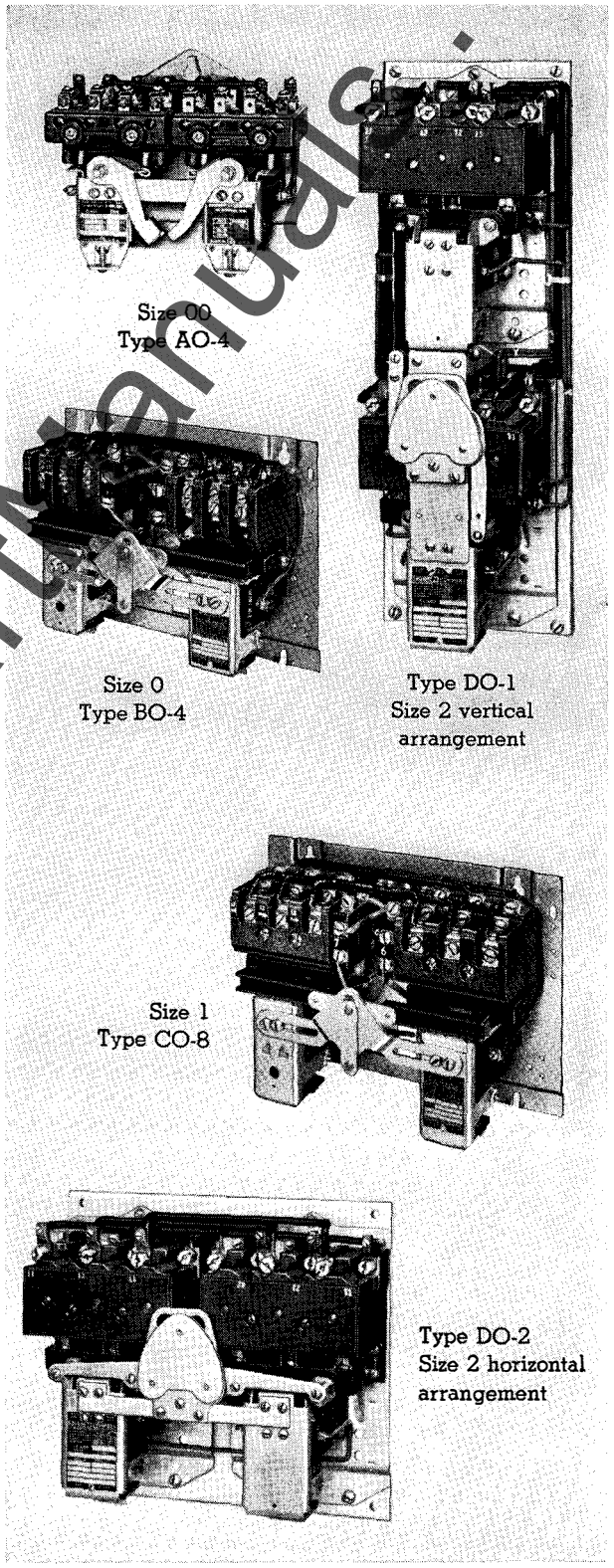
Frequency — Standard magnet coils are available for 60, 50 and 25 cycle operation. If coils for other frequencies, or for use in abnormal ambient temperatures are required, the Factory should be consulted.

CONSTRUCTION OF MAGNETIC CONTACTORS

The Class 8702 reversing contactors Sizes 00 through 5 consist of two vertical action magnetic contactors which are mechanically interlocked and mounted on a common steel base. The contactors feature double break silver alloy contacts that will not corrode and that never require cleaning or dressing. Electrical, as well as mechanical, interlocking is provided on Sizes 0 through 5 to prevent the closing of both contactors simultaneously. The Size 00 devices have mechanical interlocking only.

The Sizes 6, 7 and 8 reversing contactors consist of two mill type devices, mechanically and electrically interlocked and mounted on a common panel. These Sizes 6, 7 and 8 devices employ single break alloy contacts which close with a pronounced wiping action to remove oxide deposits which occur during normal use.

All reversing contactors are provided as standard with the interconnecting power and control wiring; this includes a normally open electrical interlock on each contactor for three wire control.



Size 00
Type AO-4

Size 0
Type BO-4

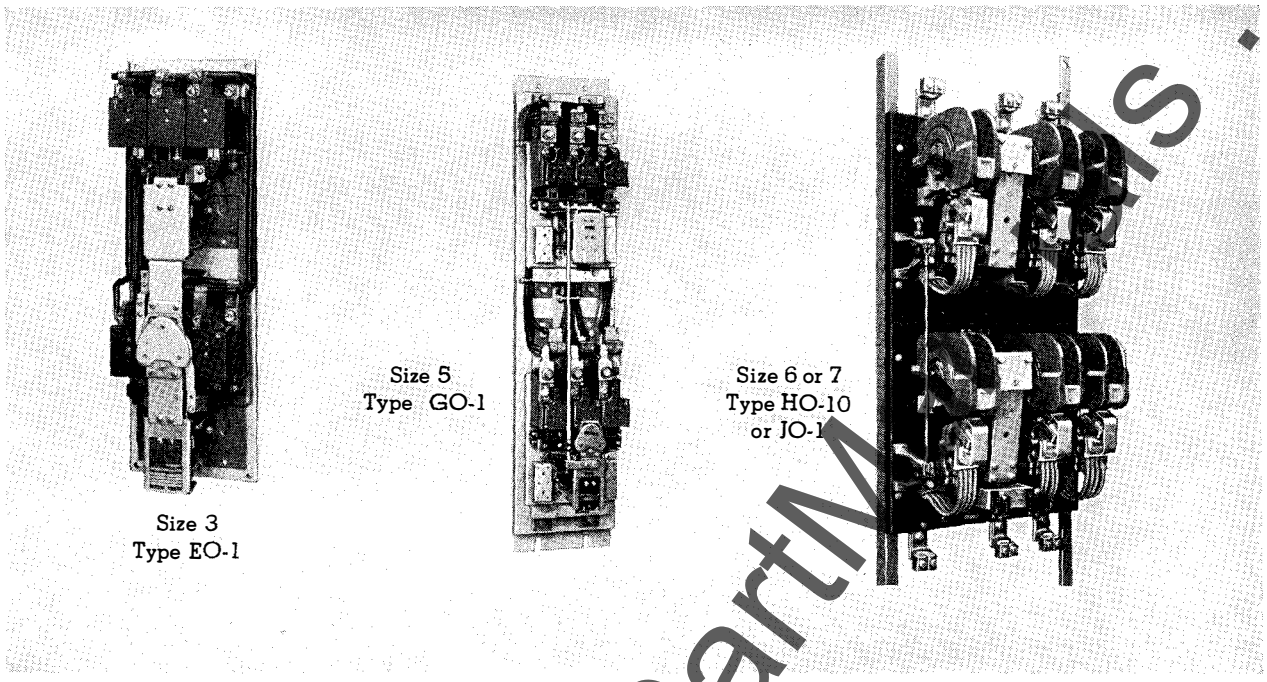
Type DO-1
Size 2 vertical arrangement

Size 1
Type CO-8

Type DO-2
Size 2 horizontal arrangement

AC Reversing Magnetic Contactors

DECEMBER, 1962



Size 3
Type EO-1

Size 5
Type GO-1

Size 6 or 7
Type HO-10
or JO-1

STANDARD FEATURES

Sizes 00 Through 5

Accessibility — One of the foremost features of Square D contactors is accessibility for maintenance or repair. All electrical equipment needs maintenance and replacement attention at regular intervals. Equipment which is easy to inspect and maintain receives more maintenance service and enjoys longer life. All renewable parts of Square D contactors can be inspected with a minimum of time and labor. Thus, double economy is realized. Only a screwdriver and a wrench are needed for maintenance and repair.

To facilitate the maintenance of equipment, complete sets of contacts, as well as magnet coils, are available in kit form (see Catalog Section 9998). Contact parts kits contain stationary and movable contacts, movable contact springs, and a service bulletin necessary to service a contactor.

Some of the outstanding features of Class 8702 reversing contactors are:

1. Contacts replaceable without disturbing the line and load wiring.
2. All parts are front mounted. It is unnecessary to remove a contactor from its enclosure for maintenance or replacement of any part.
3. Molded Coils. Coils are less subject to mechanical injury. Coils operate cooler because of better heat transfer, thus last longer.
4. NEMA Standard Mounting. Open type contactors have standard mounting holes and locations.
5. NEMA Standard Wiring. All contactors have a holding circuit interlock on the left, standard terminal markings, and standard wiring.

Sizes 6, 7 and 8 Contactors

Class 8702 Sizes 6, 7 and 8 contactors are of the mill type design and utilize the LINE-ARC principle of circuit interruption. This trade name describes the efficient manner in which these contactors interrupt the circuit . . . the arc is centered between but not touching the arc shield. Rupturing time is consistent and of short duration.

Long contact life is assured by the LINE-ARC principle because the hot arc is transferred from the contact tips in 1/500th of a second. As the contacts start to separate, the arc moves to the arcing plate and circular guard over the blowout coil. This quick transfer keeps contacts cool . . . and cool contacts last longer.

These contactors are equipped with self lubricating bearings. Lubrication maintenance, which may often be overlooked, is eliminated.

A pilot control relay with a 110 volt ac coil is mounted on the front of the contactor panel to do the switching in the dc coil circuit, and provides the holding circuit interlock for three wire control.

•SPECIAL FEATURES

Push Buttons in Cover (Form A1) — Class 8702 reversing contactors Sizes 00 through 8 are available with "Forward-Reverse-Stop" momentary contact push buttons mounted in the cover of the contactor enclosure. Where this arrangement is convenient from the operating standpoint, installation economies are obtained through the elimination of a separate push button station and its wiring. Separately mounted push buttons may also be connected in conjunction with the push buttons in the contactor enclosure cover.

Pilot Lights in Cover of an enclosure are available to give indication of motor operation. Form P (red) specifies a red pilot light and Form P (green) specifies a green pilot light. Orders specifying either of these forms should also indicate how the pilot lights are to be connected.

Additional Electrical Interlocks (FormX—) are available in arrangement and number to satisfy practically every need. These interlocks will be installed at the factory as specified on an order, or can be easily installed in the field. Additional

•Revised since previous issue.

interlocks cannot be added to the Size 00 contactors. Interlocks for installation by users are listed in Catalog Section Class 9999.

Low Voltage Control Circuits may be used to provide additional safety for personnel by allowing operation of control circuits and magnet coils at a low voltage. This feature is available in two ways:

a. **Separate Control (Form S)** — The control circuit may be wired for connection to a separate power source. With this arrangement it is possible to operate the control circuit at a different voltage and/or frequency than that required for motor operation.

b. **Fused Control Circuit Transformer (Form FT)** — A control circuit transformer may be used to provide a 110 volt operating voltage for the control circuit. Usually one side of the transformer has a provision for grounding when conditions permit. Short circuit protection for the transformer and control circuit is provided by a fuse adjacent to the transformer and in the secondary circuit. The fuse is placed on the ungrounded side of the transformer.

GENERAL PURPOSE AND SPECIAL PROTECTIVE ENCLOSURES

The correct selection of an enclosure for a particular application can contribute considerably to the length of life and trouble free operation of a contactor. In order to shield electrically live parts from accidental contact, some form of enclosure is always necessary. This function is usually fulfilled by a general purpose, sheet steel cabinet. Frequently, dust, moisture or explosive gases make it necessary to employ a special enclosure to protect the contactor from corrosion or the surrounding equipment from explosion. In selecting control apparatus, it is always necessary to carefully consider the conditions under which the apparatus must operate, as there are many applications where a general purpose sheet steel enclosure does not afford sufficient protection.

Watertight and dust-tight enclosures are used for the protection of control apparatus. Dirt, oil, or excessive moisture are destructive to insulation, and frequently form current carrying paths which lead to short circuits or grounded circuits. The extra cost of special enclosures is soon repaid by the reduced cost of maintenance and freedom from unnecessary shutdowns.

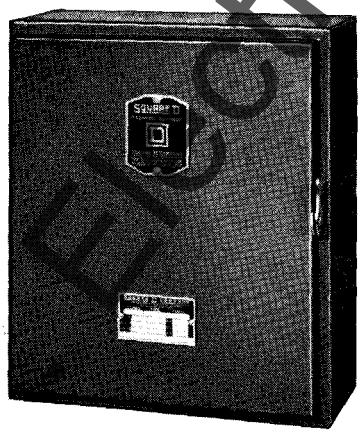
Special enclosures for hazardous locations are for the protection of life and property. Explosive vapors or dusts exist in some locations of many industrial plants, as well as in grain elevators and chemical plants. Article 500 of The National Electrical Code describes hazardous locations, and the Underwriters' Laboratories have defined the requirements for protective enclosures according to the hazardous conditions.

General Purpose Enclosures — NEMA Type 1 — are constructed of sheet steel and finished in a standard gray enamel. The NEMA Type 1 enclosures are designed to prevent accidental contact with live parts. All enclosure covers are hinged and have latches with provision for padlocking.

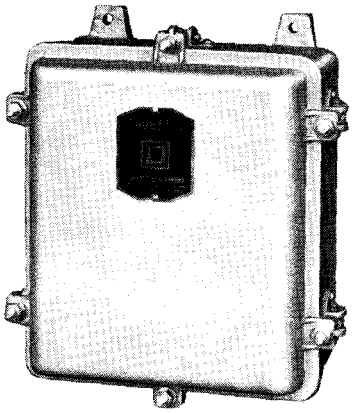
Watertight Enclosures — NEMA Type 4 — are either of a cast or a sheet steel construction finished in a corrosion resistant standard gray enamel and feature neoprene cover gaskets. The NEMA Type 4 enclosures are designed to pass a hose test with no leakage of water, and are suitable for outdoor applications on docks, or indoor application in dairies or breweries where the equipment is subjected to dripping or splashing liquids.

Dust-tight Industrial Use Enclosure — NEMA Type 12 — are of a sheet steel construction designed to prevent the entrance of dust, lint, fibers, oil and coolant. These enclosures meet the requirements for NEMA Type 5 and NEMA Type 12 enclosures as specified in NEMA standards.

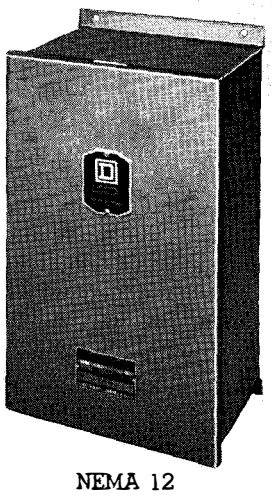
Explosion Proof Enclosure — NEMA Type 9 — Class II, Groups E, F, and G — These enclosures are of cast iron with machined sealing surfaces or of sheet steel with suitable gaskets and are built to the requirements of Underwriters' specifications for Class II, Groups E, F, and G hazardous locations, covered by Article 500 of the National Electrical Code. Typical installations are found in flour and feed mills, grain elevators and sugar mills.



NEMA 1
General purpose enclosure



NEMA 4
Cast iron water-tight
enclosure



NEMA 12
Dust-tight
Industrial use
enclosure

AC MAGNETIC REVERSING CONTACTORS — LINE VOLTAGE TYPE

Approximate Dimensions — Not for Construction

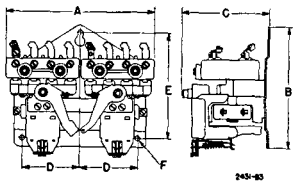


Diagram 1

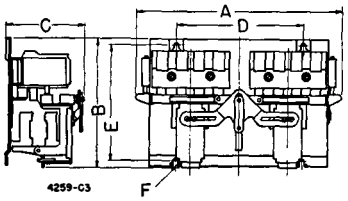


Diagram 2

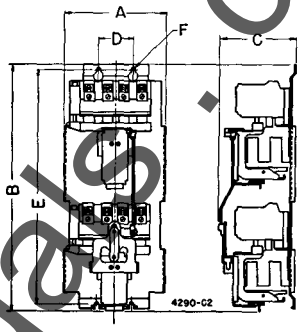


Diagram 3

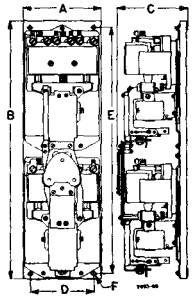


Diagram 4

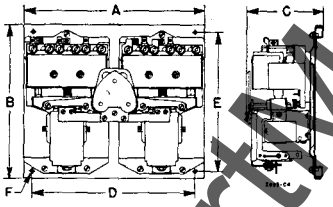


Diagram 5

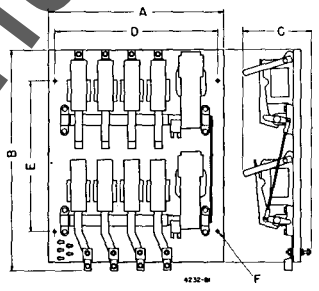


Diagram 6

CLASS 8702 — **OPEN TYPE DEVICES** — **SIZES 00-5**

Dimension Symbol	SIZE 00		SIZE 0		SIZE 1				SIZE 2			
	Horizontal Type		Horizontal Type		Vertical Type		Horizontal Type		Vertical Type		Horizontal Type	
	2 Pole	3 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
	Diagram 1		Diagram 2		Diagram 3		Diagram 2		Diagram 4		Diagram 5	
A	4 7/8	6 3/16	9	9	5 13/16	5 13/16	9 1/2	10 1/8	7 1/16	9 1/16	12 3/4	16 1/2
B	5 3/4	5 3/4	6 11/16	6 11/16	14 3/16	14 3/16	6 3/4	6 3/4	20 3/4	20 3/4	11 3/16	11 3/16
C	3 3/8	3 7/8	3 27/32	3 27/32	4 5/16	4 5/16	4 1/8	4 1/8	5 7/8	5 7/8	5 5/8	5 5/8
D	2 1/16	2 17/32	6 3/4	6 3/4	2	2	6 3/4	6 3/4	6	8	11 1/2	15 1/2
E	4 3/16	4 3/16	6 1/8	6 1/8	13 3/8	13 3/8	6 1/8	6 1/8	20	20	10 1/8	10 1/8
F	7/32	7/32	7/32	7/32	7/32	7/32	7/32	7/32	5/16	5/16	5/16	5/16

Dimension Symbol	SIZE 3				SIZE 4				SIZE 5	
	Vertical Type		Horizontal Type		Vertical Type		Horizontal Type		Vertical Type	
	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
	Diagram 4		Diagram 5		Diagram 4		Diagram 5		Diagram 6	
A	8 1/8	10 17/32	15 1/8	18 3/4	10 7/32	13 7/32	19 3/4	25 3/4	24	28
B	26	26	12 3/4	12 1/16	38 3/4	38 3/4	17 19/32	17 19/32	34	34
C	6 13/16	9 1/16	6 3/16	6 3/16	8 1/8	8 1/8	8 1/8	8 1/8	10 7/8	10 7/8
D	7 1/8	8 3/8	14 1/4	18	7	10	15 1/8	21 1/8	22	26
E	25 1/4	25 1/4	11 11/16	11 11/16	37	37	16	16	24	24
F	11/32	11/32	11/32	11/32	7/16	7/16	7/16	7/16	9/16	9/16

CLASS 8702 — **ENCLOSED DEVICES** — **SIZE 00**

NEMA Size	Dimensions Symbols	NEMA 1	NEMA 4
		3 Pole	3 Pole
		Diagram 7	Diagram 8
00	A	7 11/16	10 3/4
	B	8 3/8	9 7/8
	C	4 9/16	5 3/4
	D	6	6
	E	6 7/8	9
	F	5/32	3/8

All dimensions are in inches.

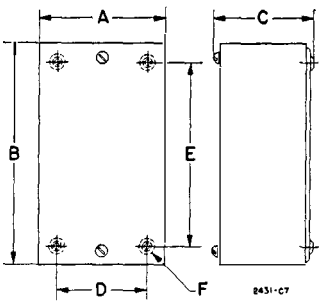


Diagram 7

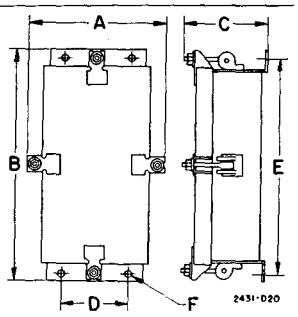


Diagram 8

APRIL, 1956
Supersedes Dimension Sheet 8702, Page 1, dated August, 1950

A C MAGNETIC REVERSING CONTACTORS — LINE VOLTAGE TYPE

Approximate Dimensions — Not for Construction

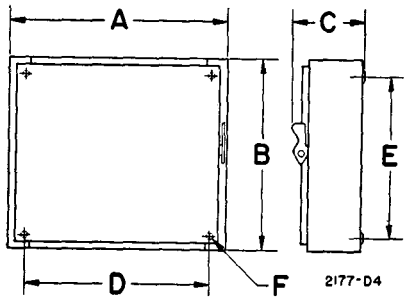


Diagram 9

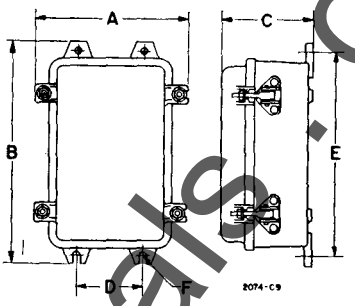


Diagram 10

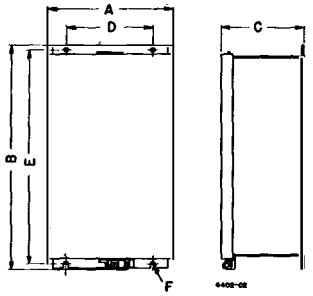


Diagram 11

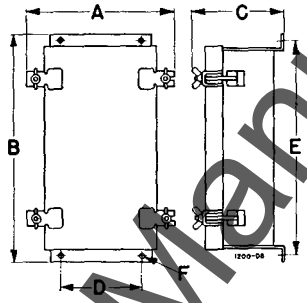


Diagram 12

CLASS 8702 **ENCLOSED DEVICES** **SIZES 0-5**

NEMA Size	Dimensions Symbols	General Purpose Enclosures — Vertical Type		General Purpose Enclosures — Horizontal Type		Water-Tight Enclosures NEMA Type 4		Dust-Tight and Industrial Use Enclosures NEMA Types 5 & 12		Class II Group C Locations NEMA Type 9	
		3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
				Diagram 9		Diagram 10		Diagram 11		Diagram 10	
0	A	....	....	12 3/8	12 3/8	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2
	B	....	....	10 3/8	10 3/8	13 1/4	13 1/4	12	12	13 1/4	13 1/4
	C	....	....	5 1/8	5 1/8	5	5	5 3/32	5 3/32	5	5
	D	....	....	10 1/4	10 1/4	6 1/2	6 1/2	10 1/2	10 1/2	6 1/2	6 1/2
	E	....	....	8 1/4	8 1/4	12	12	11 1/4	11 1/4	12	12
	F	....	....	9/32	9/32	7/16	7/16	9/32	9/32	7/16	7/16
		Diagram 9		Diagram 9		Diagram 10		Diagram 11		Diagram 10	
1	A	7 3/8	8 5/8	12 3/8	13 5/8	14 1/2	14 1/2	12 17/32	15 7/8	14 1/2	14 1/2
	B	17 5/8	17 5/8	10 3/8	10 3/8	17 1/4	17 1/4	12	13 7/8	17 1/4	17 1/4
	C	5 5/8	5 5/8	5 5/8	5 5/8	6 5/16	6 5/16	5 3/32	6 5/8	6 5/16	6 5/16
	D	5 1/4	6 1/2	10 1/4	11 1/2	8 1/2	8 1/2	10 1/2	11 1/2	8 1/2	8 1/2
	E	15 1/2	15 1/2	8 1/4	8 1/4	16	16	11 1/4	13	16	16
	F	9/32	9/32	9/32	9/32	7/16	7/16	9/32	9/32	7/16	7/16
		Diagram 9		Diagram 9		Diagram 10		Diagram 11		Diagram 10	
2	A	9 5/8	11 5/8	16 1/8	20 1/8	13	13	11 3/8	13 3/8	13	13
	B	25 1/8	25 1/8	15 1/8	15 1/8	28 1/2	28 1/2	26 7/8	26 7/8	28 1/2	28 1/2
	C	6 7/8	6 7/8	6 7/8	6 7/8	6 15/16	6 15/16	7 7/8	7 7/8	6 15/16	6 15/16
	D	7 1/2	9 1/2	14	18	6 1/2	6 1/2	6 1/2	8 1/2	6 1/2	6 1/2
	E	23	23	13	13	27	27	26	26	27	27
	F	9/32	9/32	9/32	9/32	9/16	9/16	3/8	3/8	9/16	9/16
		Diagram 9		Diagram 9		Diagram 10		Diagram 12		Diagram 10	
3	A	10 5/8	13 1/8	19 1/8	22 5/8	15 3/8	15 3/8	12 3/8	14 7/8	15 3/8	15 3/8
	B	32 1/8	32 1/8	19 1/8	19 1/8	33 15/16	33 15/16	34 1/4	34 1/4	33 15/16	33 15/16
	C	7 1/8	7 1/8	7 1/8	7 1/8	8 11/16	8 11/16	8 7/8	8 7/8	8 11/16	8 11/16
	D	8	10 1/2	16 1/2	20	13 5/8	13 5/8	7	9 1/2	13 5/8	13 5/8
	E	29 1/2	29 1/2	16 1/2	16 1/2	23	23	33 3/8	33 3/8	23	23
	F	7/16	7/16	7/16	7/16	9/16	9/16	7/16	7/16	9/16	9/16
		Diagram 9		Diagram 9							
4	A	12 1/8	15 1/8	22 1/8	28 1/8	....	....	....	....	....	....
	B	46 5/8	46 5/8	25 1/8	25 1/8	....	....	....	....	....	....
	C	9 7/8	9 3/4	9 7/8	9 7/8	....	....	....	....	....	....
	D	7	10	19 1/2	25 1/2	....	....	....	....	....	....
	E	37	37	22 1/2	22 1/2	....	....	....	....	....	....
	F	7/16	7/16	7/16	7/16	....	....	....	....	....	....
		*Diagram 9									
5	A	28 1/4	32 1/4	....	....	....	....	....	....	....	....
	B	48 1/4	48 1/4	....	....	....	....	....	....	....	....
	C	16 15/16	16 15/16	....	....	....	....	....	....	....	....
	D	20	24	....	....	....	....	....	....	....	....
	E	44	44	....	....	....	....	....	....	....	....
	F	9/16	9/16	....	....	....	....	....	....	....	....

All dimensions are in inches.
General Purpose Floor Mounting Enclosure.

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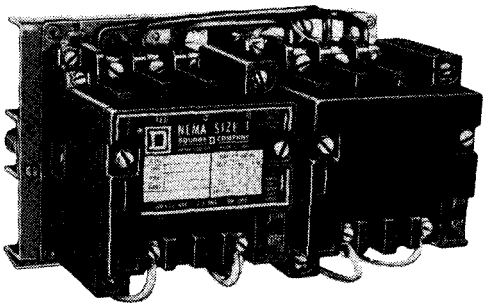
TYPE S AC REVERSING MAGNETIC CONTACTORS

Line Voltage — Without Overload Protection



Class 8702 Type SCO-8
Size 1, 3 pole reversing contactor

Reversing magnetic contactors provide a safe and convenient means for starting, stopping and reversing ac motors, where other provision is made for overload protection or where overload protection is not required. These reversing contactors are designed for the control of polyphase squirrel cage motors, and single phase motors that may be reversed by a reconnection of windings. Two contactors are employed on each device to perform the reversing operation. One contactor connects motor windings for forward rotation, and the other connects for reverse rotation.

50-60 HERTZ **CLASS 8702** **600 VOLTS MAX.**

No. of Poles	NEMA Size	Ratings Volts	Ratings Max. Hp.	Type of Motor	General Purpose Enclosure NEMA Type 1 Type	General Purpose Enclosure NEMA Type 1 Price*	Water-tight Enclosure (AISI #304 Stainless Steel) NEMA Type 4 Type	Water-tight Enclosure (AISI #304 Stainless Steel) NEMA Type 4 Price*	Dust-tight Industrial Use Enclosure NEMA Type 12 Type	Dust-tight Industrial Use Enclosure NEMA Type 12 Price*	For Hazardous Locations Spin Top Class I Groups C & D Class II Groups E, F & G NEMA Types 7 &9 Type	For Hazardous Locations Spin Top Class I Groups C & D Class II Groups E, F & G NEMA Types 7 &9 Price*	Open Type Type	Open Type Price*
2 Pole Single Phase	0	115 230	1 2	Single Phase 3-Wire	SBG-1	$ 74.	SBW-11	$120.	SBA-1	$ 92.	SBR-6	$235.	SBO-1	$ 70.
	1	115 230	2 3		SCG-2	86.	SCW-11	150.	SCA-1	104.	SCR-6	247.	SCO-2	80.
3 Pole Single Phase	0	115 230	1 2	4-Wire Rep.-Ind.	SBG-2	76.	SBW-12	122.	SBA-2	94.	SBR-7	237.	SBO-2	72.
		115 230	1 2	4-Wire Split Ph.	SBG-3	76.	SBW-13	122.	SBA-3	94.	SBR-8	237.	SBO-3	72.
	1	115 230	2 3	4-Wire Rep.-Ind.	SCG-4	88.	SCW-12	152.	SCA-2	106.	SCR-7	249.	SCO-4	82.
		115 230	2 3	4-Wire Split Ph.	SCG-6	88.	SCW-13	152.	SCA-3	106.	SCR-8	249.	SCO-6	82.
3 Pole Poly-phase	0	110 208–220 440–550	2 3 5	3 Phase	SBG-4	76.	SBW-14	122.	SBA-4	94.	SBR-9	237.	SBO-4	72.
	1	110 208–220 440–550	3 7½ 10		SCG-8	88.	SCW-14	152.	SCA-4	106.	SCR-9	249.	SCO-8	82.
	2	110 208–220 440–550	7½ 15 25		SDG-2	172.	SDW-11	276.	SDA-1	202.	SDR-3	415.	SDO-2	156.
	3	110 208–220 440–550	15 30 50		SEG-2	287.	SEW-11	441.	SEA-1	353.	SER-1	666.	SEO-2	259.
4 Pole Poly-phase	0	220 440–550	3 5	2 Phase 4-Wire	SBG-5	96.	SBW-15	142.	SBA-5	114.	SBR-10	257.	SBO-5	92.
	1	220 440–550	7½ 10		SCG-10	109.	SCW-15	173.	SCA-5	127.	SCR-10	270.	SCO-10	105.
	2	220 440–550	15 25		SDG-4	214.	SDW-12	324.	SDA-2	244.	SDR-4	463.	SDO-4	198.

*Prices include one normally open holding circuit contact and one normally closed interlocking contact on each contactor — no deduction for omission.

ORDERING INFORMATION REQUIRED

1—Class and type number.

2—Line voltage, phase and frequency.

3—Control voltage and frequency if different from line voltage.

4—Any special features required.

FIELD MODIFICATION KITS

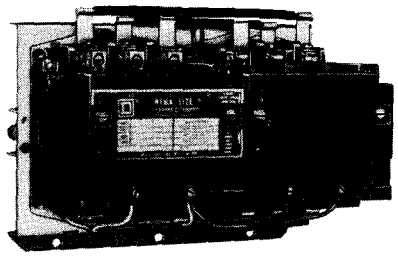
Refer to Class 9999 Section

ADDITIONS AND SPECIAL FEATURES

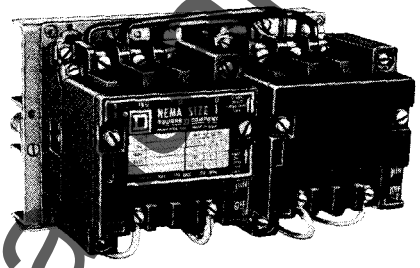
Refer to tab "Additions and Special Features"

TYPE S AC REVERSING MAGNETIC CONTACTORS

APPLICATION DATA



Class 8702 Size 2
3 pole reversing contactor



Class 8702 Size 0 or 1
3 pole reversing contactor

MECHANICAL INTERLOCK

The mechanical interlock used on Class 8702 Type S reversing contactors is an interference, non-jamming type, which locks at the beginning of the stroke of either contactor.

Sizes 0, 1 and 2 — The mechanical interlock is mounted on the underside of the reversing baseplate. Two delrin pins extend from the mechanical interlock, through openings in the baseplate, and engage the contact carrier of each contactor. Two styles of mechanical interlocks are used; one version for three pole contactors, a different version for four pole contactors. When adding a power pole to an existing three pole reversing contactor, a new mechanical interlock must also be installed.

Size 3 — A flat mounting pan and separate mechanical interlock, which fits between the contactors, and engages both contact carriers are utilized on the Size 3 reversing contactors. The mechanical interlock is assembled to both contactors and this assembly can then be attached to the mounting pan or to a predrilled panel.

Complete information on mechanical interlocks is contained on catalog sheets under Class 9999 Type SM.

GENERAL

Class 8702 — Reversing contactors consist of two Class 8502 contactors electrically and mechanically interlocked, and mounted on a common base. FOR APPLICATION INFORMATION NOT SPECIFICALLY COVERED ON SUCCEEDING PAGES OF THIS SECTION, REFER TO THE CLASS 8736 APPLICATION DATA SECTION.

Size — Available in NEMA Sizes 0, 1, 2 and 3.

Poles — Sizes 0 and 1 — 2 and 3-pole single phase, 3 and 4 poles polyphase.
Size 2 — 3 and 4-pole polyphase.
Size 3 — 3-pole polyphase.

Voltage — 600 volts ac maximum.

Frequency — Coils available for application on 50 or 60 cycles. Contacts can be applied at any frequency 25-60 cycles. Consult factory for use at other frequencies.

Coil Data — Magnet coils are designed to operate satisfactorily, on line voltages of 85% to 110% of rated voltage. Single voltage magnet coils are supplied on contactors as standard. For coil selection and coil burden, see the Class 8736 Application Data Section.

Contact Ratings — All contactors are rated in accordance with NEMA Standards. The ratings shown in the price table on page 101 are for normal service. For other service such as plugging or jogging, refer to the Class 8536 Application Data Section for rating information.

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TYPE S AC REVERSING MAGNETIC CONTACTORS

APPLICATION DATA

CONTROL TRANSFORMER SELECTION†

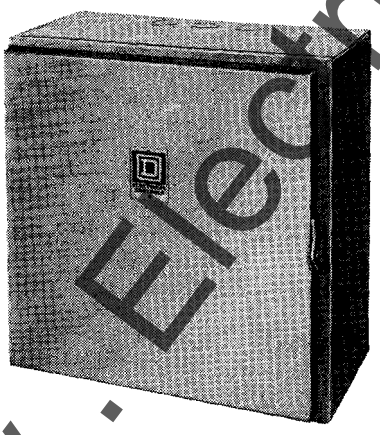
The following table gives the proper size control transformer to be used with Size 0, 1, 2 and 3 reversing contactors with or without additional electrical interlocks or timer.

NEMA Size	No. of Poles	Transformer Size
0, 1 and 2	Any	100 VA
3	Any	150 VA

ENCLOSURES

NEMA Type Enclosure	Enclosure Material	Finish
1	Sheet Steel	USASI #49 Gray Enamel
4	Stainless Steel AISI No. 304	Electro-Polished
7-9	Cast Aluminum	Aluminum Enamel
12	Sheet Steel	USASI #49 Gray Enamel

For a complete description of the various NEMA enclosure classifications, refer to section under tab "General".



NEMA Type 1 General Purpose Enclosure

†Standard NEMA 1, 4 and 12 enclosures will accept any electrical interlock arrangement listed and also a control transformer. Standard Size 3 enclosures also accept the timer attachment; but Sizes 0, 1 & 2 require a wider enclosure.

MODIFICATIONS†

Auxiliary Units — Additional electrical interlocks and a timer attachment can be added by the factory or in the field on all sizes.

Power pole adders can not be mounted on reversing contactors as a different mechanical interlock is used on three and four pole devices. If a three pole device is to be converted to a four pole device, the mechanical interlock assembly must also be changed.

The maximum number of attachments which can be added are given in the following table:

TABLE A

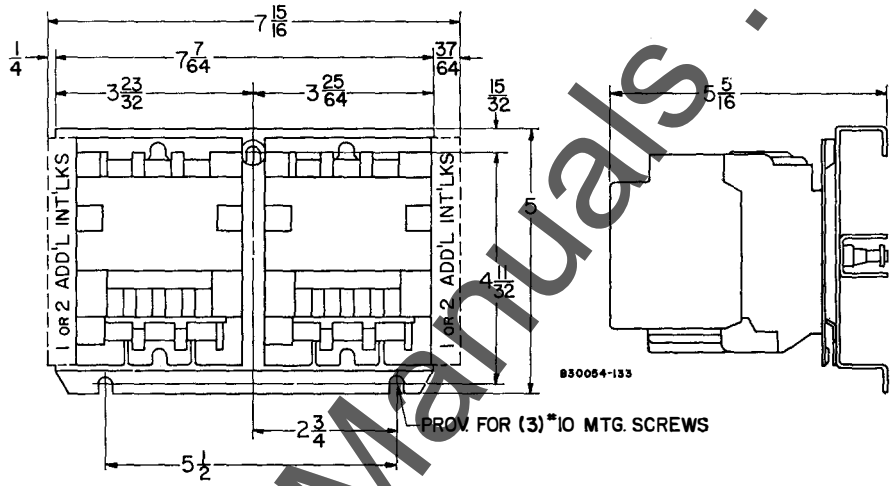
NEMA Size	No. of Poles of Basic Contactor	Maximum number of auxiliary units on each contactor, forward or reverse, (in addition to internal holding circuit and electrical interlocks)†
0, 1, and 2	2 or 3	4 single circuit external interlocks (N.O. or N.C.)
		3 single circuit external interlocks (N.O. or N.C.) plus 1 attached timer (ON or OFF delay).
	4	2 single circuit external interlocks (N.O. or N.C.)
3	2 and 3	2 single circuit external interlocks (N.O. or N.C.)
		1 single circuit external interlock plus 1 attached timer (ON or OFF delay).

For complete ratings and description of auxiliary units and form designations for additional electrical interlocks refer to the Class 8736 Application Data Section.

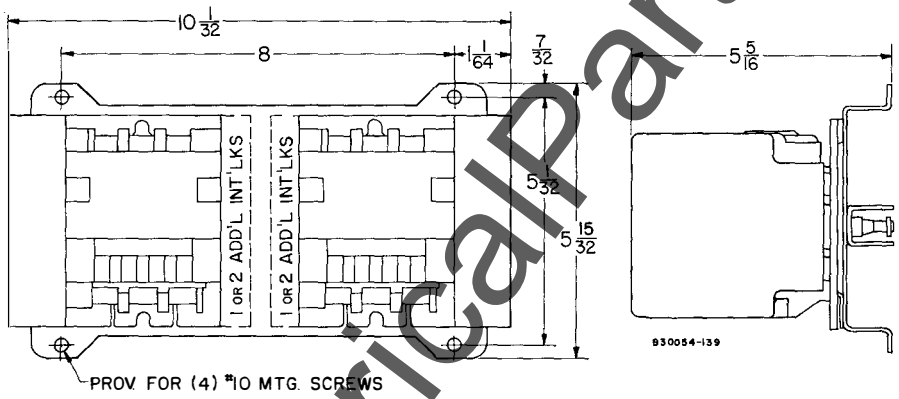
Cover Mounted Control Units — Push buttons, selector switches and pilot lights can be installed by the factory on reversing contactors. Class 9001 Type K oiltight control units are used on NEMA Types 1, 4 and 12 enclosures. Water-tight caps are used to insure a water-tight seal on NEMA Type 4 enclosures.

TYPE S AC REVERSING MAGNETIC CONTACTORS

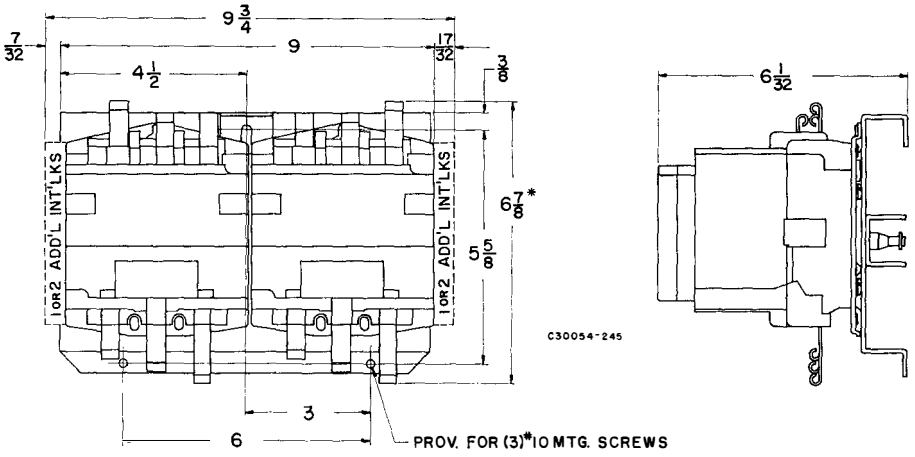
Approximate Dimensions and Shipping Weights



Sizes 0 and 1, 2 and 3 Pole, Open Type
Weight — 11 Lbs.



Sizes 0 and 1, 4 Pole, Open Type
Weight — 12 Lbs.



*Height dimension of 6⅞" is over factory wired power connections.

Size 2, 2 and 3 Pole, Open Type
Weight — 16 Lbs.

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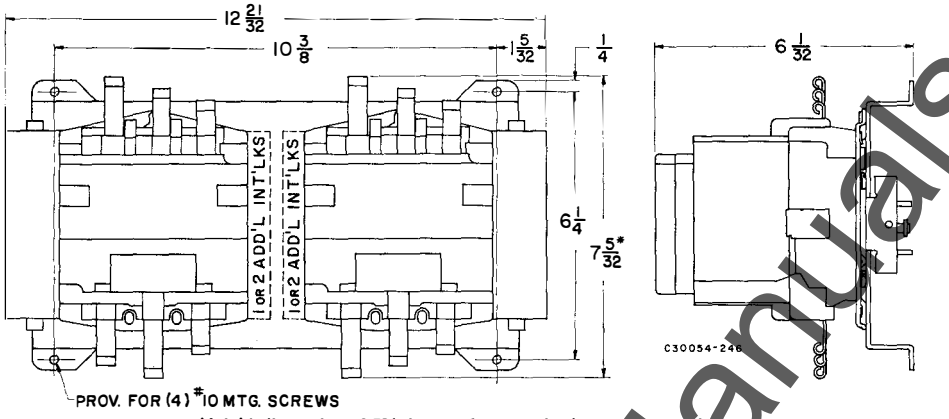
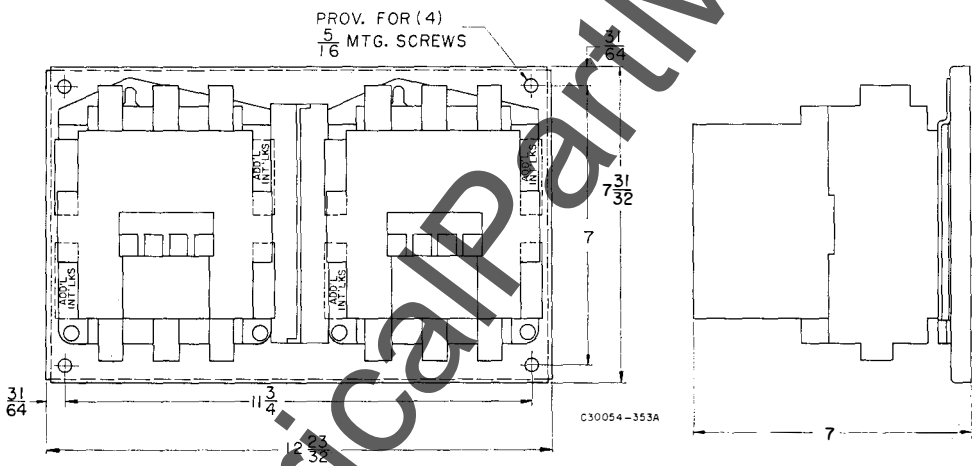
TYPE S AC REVERSING MAGNETIC CONTACTORS

Approximate Dimensions and Shipping Weights



*Height dimension of 7 5/32 is over factory wired power connections.

Size 2, 4 Pole, Open Type
Weight — 17 Lbs.



Size 3, 3 Pole, Open Type
Weight — 35 Lbs.

PRINTED IN U.S.A.

All dimensions are in inches.

TYPE S AC REVERSING MAGNETIC CONTACTORS

Approximate Dimensions and Shipping Weights

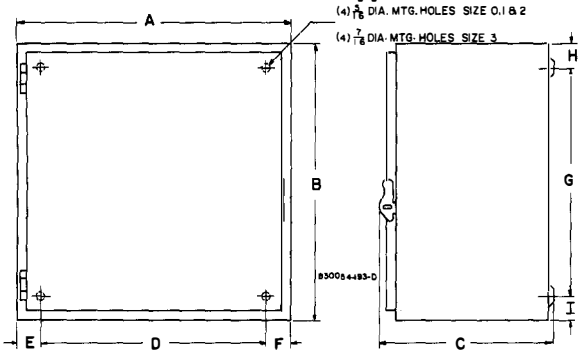


Figure 1
NEMA Type 1, General Purpose Enclosure

NEMA Size	NEMA Type 1 — **Figure 1**									Wt. (Lbs.)
	A	B	C	D	E	F	G	H	I	
0 & 1	11 7/8	11 7/8	7 13/32	9 3/4	1 1/16	1 1/16	9 3/4	1 1/16	1 1/16	16
2	14 7/8	14 1/8	7 9/16	12 3/4	1 1/16	1 1/16	12	1 1/16	1 1/16	24
3	16 1/8	24 1/8	8 1/2	13 1/2	1 5/16	1 5/16	21 1/2	1 5/16	1 5/16	47

●NOTE: Standard enclosure has space for factory or field addition of a fused control transformer, Form FT.

NEMA Size	NEMA Type 12 — **Figure 3**									Wt. (Lbs.)
	A	B	C	D	E	F	G	H	I	
0 & 1	11 7/8	7 21/32	13 1/2	3 13/16	4 1/4	12 3/4	3/8	4 3/4	18 1/8	23
2	14 7/8	7 23/32	15 3/4	5 5/16	4 1/4	15	3/8	6 1/4	21 1/4	31
3	16 1/8	8 1/32	26 1/2	3 9/16	9	25 1/2	1/2	3 31/32	23 13/32	56

●NOTE: Standard enclosure has space for factory or field addition of a fused control transformer, Form FT.

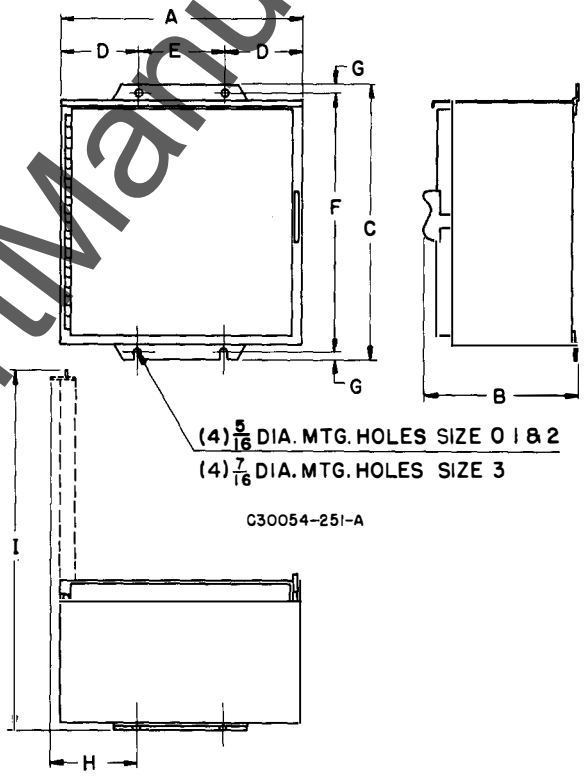
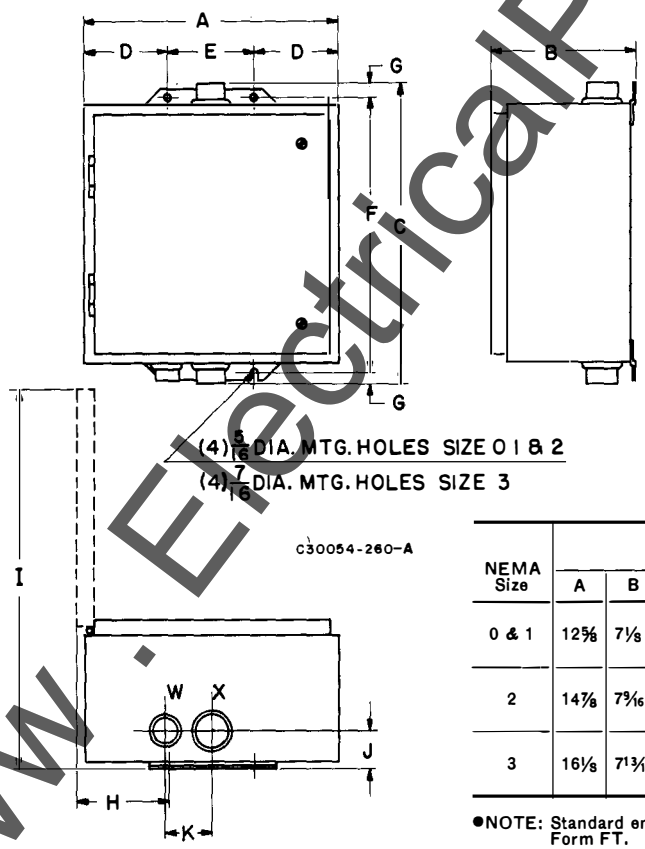


Figure 3
NEMA Type 12, Industrial Use Enclosure



NEMA Size	NEMA Type 4 — **Figure 2**											W Bot. Only	X Top & Bot.	Wt. (Lbs.)
	A	B	C	D	E	F	G	H	I	J	K			
0 & 1	12 5/8	7 1/8	14 11/16	4 3/16	4 1/4	13 1/2	1 9/32	4 13/16	18 13/32	1 21/32	2 9/16	3/4" Dia. Hub	1" Dia. Hub	25
2	14 7/8	7 9/16	15 3/4	5 5/16	4 1/4	15	1 9/32	5 15/16	20 7/8	2 1/32	2 5/8	3/4" Dia. Hub	1 1/2" Dia. Hub	33
3	16 1/8	7 13/16	26 1/2	3 9/16	9	25 1/2	1 9/32	3 31/32	23	2 9/16	3 5/16	3/4" Dia. Hub	2 1/2" Dia. Hub	60

●NOTE: Standard enclosure has space for factory or field addition of a fused control transformer, Form FT.

Figure 2
NEMA Type 4, Water-Tight Enclosure

All dimensions are in inches.

TYPE S AC REVERSING MAGNETIC CONTACTORS IN SPIN TOP EXPLOSION-PROOF ENCLOSURES

CLASS I GROUPS C & D & CLASS II GROUPS E, F & G HAZARDOUS LOCATIONS, WEATHER-PROOF & WATER-TIGHT

Approximate Dimensions and Shipping Weights

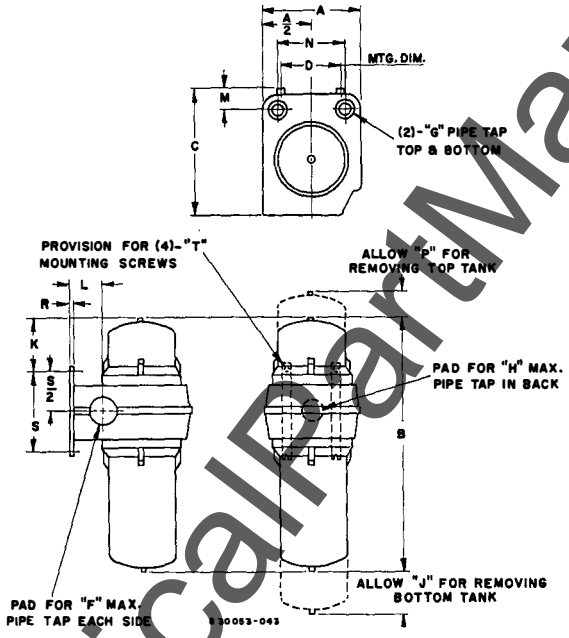


Figure 4
NEMA 7-9, Spin-Top® Enclosures

NEMA Size	No. of Poles	NEMA 7-9 — Figure 4																Wt. (Lbs.)
		A	B	C	D	F	G	H	J	K	L	M	N	P	R	S	T	
0 & 1	All	10¾	33 1/16	13 5/16	5¼	2	1¼	1½	17	4 1/16	3¼	2⅛	7½	2	5/16	9⅜	⅜	60
2	All	12¼	41 5/16	14 13/16	5¼	2	1½	1½	19	5 15/32	3 3/16	2⅛	8¾	2½	5/16	9⅜	⅜	100
3	3	Consult Square D Field Office																

All dimensions are in inches.