



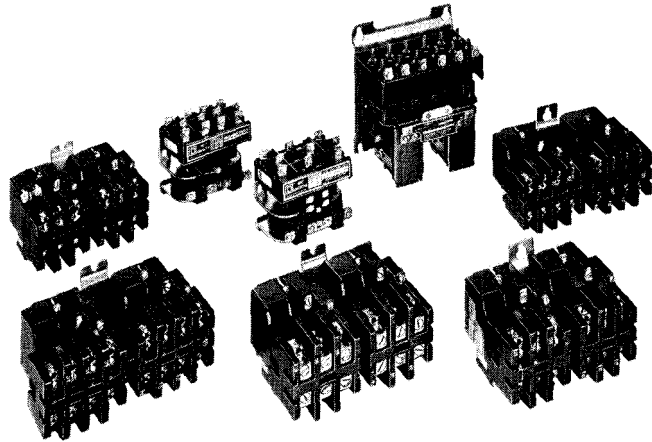
Hoist Contactors

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SQUARE D COMPANY



These compact Class 8965 contactors have been designed to meet the small space requirements found in the application of electrical hoists, light duty cranes, door operators, dumb waiters and related applications. Their design and construction makes them very adaptable to the short periods of jogging experienced in hoist service.

However, during jogging the motor does not come up to speed, and the contactor must repeatedly interrupt motor currents that can approach locked rotor values. Rapid heating of the contactor results. Because of this increased heat, extended periods of jogging will cause a reduction in the useful life of the contactor. Under these conditions a higher rated contactor should be selected.

REVERSING CONTACTORS

Each of the Class 8965 Reversing Contactors consists of two mechanically interlocked units mounted on a common base. The mechanical interlock in all cases is the interference type designed to provide maximum possible contact gap during rapid transfer between units.

Since the mechanical interlock is intended as a safeguard rather than a functional part of the control, the use of electrical interlocks and/or mechanically interlocked push buttons is recommended.

SPEED CONTROL CONTACTORS

The Type A and B, 2 and 3 pole contactors are primarily used for shorting resistance on A.C. wound rotor motors. These devices have a maximum rating of 600 volts.

The Type SPO-44 has its application on 2 speed separate winding motors. The power pole arrangement of 2 N.O. & 2 N.C., energized by a single coil, provides a very economical and compact control. This device has a maximum rating of 300 volts.

APPLICATION DATA

MAGNET COIL — Class 8965 Devices utilize molded case coils. This insures a high resistance to moisture and mechanical damage. Coils are designed to operate properly even when voltage varies from 85% to 110% of rated voltage.

ELECTRICAL INTERLOCKS — Auxiliary interlocks are available on all 8965 contactors, except those with normally closed power poles.

VA REQUIREMENT (60 Hertz)

	Type R	Type J	Type S, T, U & V	Type SPO-44	Type A & B
Inrush	76	200	93	93	93
Sealed	27	43	11	11	11

INTERLOCK PILOT DUTY RATINGS

Voltage	Normal Current	Inrush Current
110-120 V. AC	3.0	30
220-250 V. AC	1.5	15
440-480 V. AC	0.75	7.5
550-600 V. AC	0.6	6

CONTACTS — All hoist contactors utilize double break, silver cadmium oxide contacts to offer high interrupting capacity and long life. Contact life is further extended by the use of a dynamic spring system and a Magnet/Armature design that requires a higher voltage for pick up than sealing.

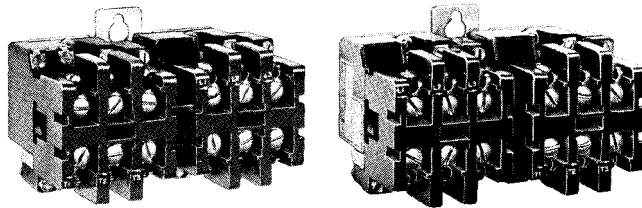
MECHANICAL INTERLOCK — A unique pendulum style mechanical interlock provides an interference action to produce maximum possible contact gap on transfer between units.

MOUNTING — Two-point mounting with a key-hole slot at the top and open at the bottom insures easy mounting. Preferred mounting position is on a vertical panel. The contactors will **not** operate properly when mounted in any other position.

REVERSING VALVE CONTACTORS

APPLICATION DATA

**CLASS
8965**



VSO-20

VTO-10

VALVE CONTACTORS

These Class 8965 Valve Contactors have been designed for use on motorized valve actuators. They must not be offered to replace standard reversing contactors on general purpose applications.

MAGNET COIL — Class 8965 Devices utilize molded case coils. This insures a high resistance to moisture and mechanical damage. Coils are designed to operate properly even when voltage varies from 85% to 110% of rated voltage.

93 VA Inrush

11 VA Sealed

ELECTRICAL INTERLOCKS — Auxiliary interlocks are available on all 8965 contactors, except those with normally closed power poles. A Total of 4 single circuit auxiliary contacts can be obtained on the entire contactor (2 contacts for each individual contactor). These can be any combination of NO or NC. The interlocks are mounted such that the contactor size remains the same.

MECHANICAL INTERLOCK — A unique pendulum style mechanical interlock provides an interference action to produce maximum possible contact gap on transfer between units.

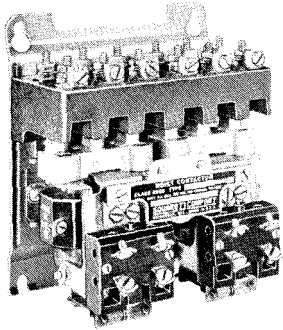
CONTACTS — All hoist contactors utilize double break, silver cadmium oxide contacts to offer high interrupting capacity and long life. Contact life is further extended by the use of a dynamic spring system and a Magnet/Armature design that requires a higher voltage for pick up than sealing.

MOUNTING — Two-point mounting with a key-hole slot at the top and open slot at the bottom insures easy mounting. Although the preferred mounting position is on a vertical panel, the Type VS and VT contactors will operate and function properly when mounted in any position.

**RESTRICTION: THESE CONTACTORS MUST NOT
BE USED FOR JOGGING OR PLUGGING SERVICE.**

OBsolete Device Cross Reference

Obsolete Class 8702 or 8965	Replace With Class 8965	Obsolete Class 8702 or 8965	Replace With Class 8965	Obsolete Class 8702 or 8965	Replace With Class 8965
HO3, HO6	RO4	EQ1376-G8	JO5	EQ1647-G2	JDO-9
HO4, HO7	RO5	EQ1425-G1	JDO-8	EQ1647-G3	JDO-11
HO5, HO8	RO6	EQ1425-G2	JDO-9	EQ1854	RO-4
HDO-3	JDO-3	EQ1467	RO-5	EQ1888	JO-5
HDO-4	JDO-4	EQ1483	JO4	EQ1993-G1	JO-7
HDO-5	JDO-5	EQ1534	TO-1	EQ1993-G2	JO-7
EQ464	RG-4	EQ1635	JO3-S1	EQ1993-G3	JO-6
EQ546	RO-4	EQ1643-G1	JO-3	EQ2038	RO-4
EQ645	JDO-3	EQ1643-G2	JO-3	EQ2073	RG-5
EQ646	JO-4	EQ1643-G3	JO-4	EQ2087	JO-6
EQ814	TO-1	EQ1643-G4	JO-4	EQ2114	RO-4
EQ970	JDO-8	EQ1643-G5	JO-6	EQ2144	RO-5
EQ1206	RO-4	EQ1643-G6	JO-6		
EQ1303	RO-5	EQ1643-G7	JO-5		
EQ1304	RO-4	EQ1643-G8	JO-5	Obsolete Class	Replace With
EQ1329	JO3-S1	EQ1643-G9	JO-7	8702 or 8965	Class 8965
EQ1376-G1	JO3	EQ1644-G1	JDO-3	EQ653	8702 SBG-1 Form FT
EQ1376-G2	JO3	EQ1644-G2	JDO-4	EQ1469-G1	8702 SDO-2
EQ1376-G3	JO4	EQ1645-G1	(Qty 4) BO32	EQ1469-G2	8702 SDO-2
EQ1376-G4	JO4	EQ1645-G2	(Qty 3) BO32	EQ1469-G3	8702 SDO-1 (+ 2-9999 SK-3)
EQ1376-G5	JO6	EQ1645-G3	(Qty 2) BO32	EQ1501	8810 SCO2 Form SY76
EQ1376-G6	JO6	EQ1645-G4	(Qty 1) BO32	EQ1655-G1	8810 SCO2 Form SY76
EQ1376-G7	JO5	EQ1647-G1	JDO-8	EQ1655-G2	8810 SCO2 Form SY76
				EQ2110-G1	8702 SDO2 Form X66
				JO-8	8810 SCO2 Form SY76



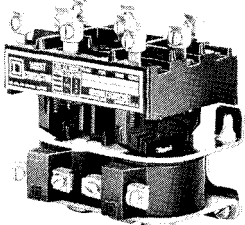
Type JO-6

RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110	1½	3
208/220	3	7½
440-550	—	7½

TYPE J AC REVERSING CONTACTOR

Electrical Interlocks On Each Contactor Unit	3-Pole 600 Volts Max.			
	General Purpose Enclosure NEMA Type 1		Open Type	
	Type	Price	Type	Price
None	JG-3	\$344.00	JO-3	\$320.00
1 N.O.	JG-4	352.00	JO-4	328.00
1 N.C.	JG-5	352.00	JO-5	328.00
1 N.O. & 1 N.C.	JG-6	352.00	JO-6	328.00
Prov. for Int.	JG-7	344.00	JO-7	320.00



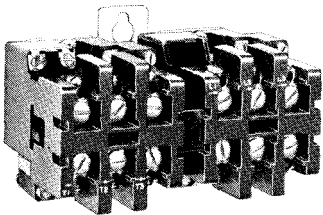
Type RO-4

RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110-115	1	2
220/230	1½	3
460-480	—	3

TYPE R AC REVERSING CONTACTOR

Electrical Interlocks Each Contactor Unit	3-Pole 480 Volts Max.							
	General Purpose Enclosure NEMA Type 1				Open Type			
	"Slip-On" Connectors		Screw Type Terminals		"Slip-On" Connectors		Screw Type Terminals	
	Type	Price	Type	Price	Type	Price	Type	Price
None	RG-1	\$296.00	RG-4	\$296.00	RO-1	\$280.00	RO-4	\$280.00
1 N.O.	RG-2	304.00	RG-5	304.00	RO-2	288.00	RO-5	288.00
1 N.C.	RG-3	304.00	RG-6	304.00	RO-3	288.00	RO-6	288.00



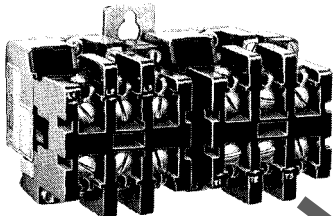
Type SO-4

RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110	1	2
208/220	1½	3
440-550	—	3

TYPE S AC REVERSING CONTACTOR

Electrical Interlocks On Each Contactor Unit	50-60 Hz. 600 Volts Max.			
	3-Pole		4-Pole	
	Type	Price	Type	Price
None	SO-1	\$280.00	SO-21	\$288.00
1 N.O.	SO-2	288.00	SO-22	296.00
1 N.C.	SO-3	288.00	SO-23	296.00
1 N.O. & 1 N.C.	SO-4	296.00	SO-24	304.00
2 N.O.	SO-5	296.00	SO-25	304.00
2 N.C.	SO-6	296.00	SO-26	304.00



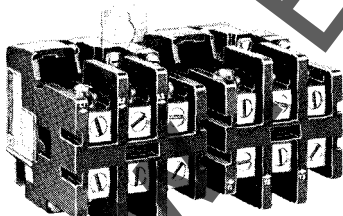
Type TO-1

RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110	1½	3
208/220	3	7½
440-550	—	7½

TYPE T AC REVERSING CONTACTOR

Electrical Interlocks On Each Contactor Unit	50-60 Hz. 600 Volts Max.			
	3-Pole		4-Pole	
	Type	Price	Type	Price
None	TO-1	\$320.00	TO-21	\$328.00
1 N.O.	TO-2	328.00	TO-22	336.00
1 N.C.	TO-3	328.00	TO-23	336.00
1 N.O. & 1 N.C.	TO-4	336.00	TO-24	344.00
2 N.O.	TO-5	336.00	TO-25	344.00
2 N.C.	TO-6	336.00	TO-26	344.00



Type UO-1

RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110	3	—
208/220	7½	15
440/550	—	20

TYPE U AC REVERSING CONTACTOR

Electrical Interlocks On Each Contactor Unit	50-60 Hz. 600 Volts Max.			
	3-Pole		4-Pole	
	Type	Price	Type	Price
None	UO-1	\$360.00		
1 N.O.	UO-2	368.00		
1 N.C.	UO-3	368.00		
1 N.O. & 1 N.C.	UO-4	376.00		
2 N.O.	UO-5	376.00		
2 N.C.	UO-6	376.00		
			Not Available	

TYPE V AC REVERSING CONTACTOR

Electrical Interlocks On Each Contactor Unit	50-60 Hz. 600 Volts Max.			
	3-Pole		4-Pole	
	Type	Price	Type	Price
None	VO-1	\$400.00		
1 N.O.	VO-2	408.00		
1 N.C.	VO-3	408.00		
1 N.O. & 1 N.C.	VO-4	416.00		
2 N.O.	VO-5	416.00		
2 N.C.	VO-6	416.00		
			Not Available	

ORDERING INFORMATION REQUIRED

1 — Class and type number. 2 — Voltage and frequency of coil.

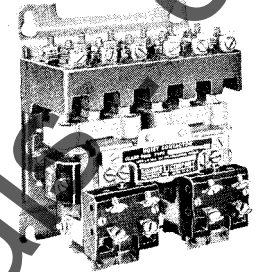


DC REVERSING CONTACTOR

RATINGS

Volts	Maximum Horsepower with 3 poles in series	
	Single Phase	Poly-Phase
115	1 1/2	2
230	3	5

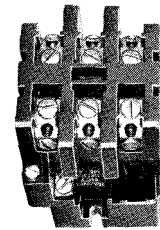
DC		115-230 Volts		
Electrical Interlocks On Each Contactor Unit	General Purpose Enclosure NEMA Type 1		Open Type	
	Type	Price	Type	Price
None	JDG-3	\$424.00	JDO-3	\$400.00
1 N.O.	JDG-4	432.00	JDO-4	408.00
1 N.C.	JDG-5	432.00	JDO-5	408.00
1 N.O. & 1 N.C.	JDG-6	440.00	JDO-6	416.00
Prov. for Int.	JDG-7	424.00	JDO-7	400.00
None	JDG-8	512.00	JDO-8	488.00
1 N.O.	JDG-9	520.00	JDO-9	496.00
1 N.C.	JDG-10	520.00	JDO-10	496.00
1 N.O. & 1 N.C.	JDG-11	528.00	JDO-11	504.00
Prov. for Int.	JDG-12	512.00	JDO-12	488.00



Type JDO-6

TYPE A & B SPEED CONTROL CONTACTOR

50-60 Hz.		300 Volts Max.	
Electrical Ratings	Power Pole Arrangement	Open Type	
		Type	Price
20 amp	2 N.O.	AO-22	\$ 92.00
	3 N.O.	AO-23	104.00
30 amp	2 N.O.	BO-32	112.00
	3 N.O.	BO-33	124.00



Type AO-23

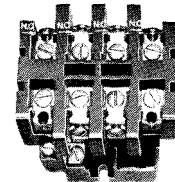
RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110	1	2
208/220	1 1/2	2
440/550	—	3

TYPE SP ★ 2-SPEED CONTACTOR

50-60 Hz.		600 Volts Max.	
Power Pole Arrangement	Type	Open Type	
		Type	Price
2 N.O. & 2 N.C.	SPO-44		\$180.00

★ Not available with auxiliary contacts.



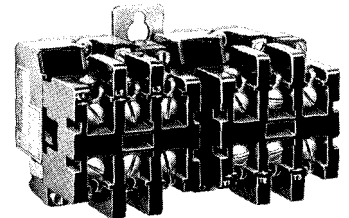
Type SPO-44

RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110	1	2
208/220	1 1/2	3
440/550	—	3

TYPE VS AC REVERSING CONTACTOR

50-60 Hz.		3-Pole		600 Volts Max.	
Electrical Interlocks on Each Contactor Unit	Type	Open Type		Type	Price
		Type	Price		
None	VSO-10		\$280.00		
1 N.O.	VSO-20		288.00		
1 N.C.	VSO-30		288.00		
1 N.O. & 1 N.C.	VSO-40		296.00		
2 N.O.	VSO-50		296.00		



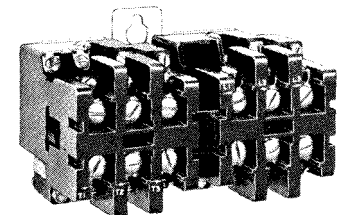
Type VSO-10

RATINGS

Volts	Maximum Horsepower	
	Single Phase	Poly-Phase
110	1 1/2	3
208/220	3	7 1/2
440/550	—	7 1/2

TYPE VT AC REVERSING CONTACTOR

50-60 Hz.		3-Pole		600 Volts Max.	
Electrical Interlocks on Each Contactor Unit	Type	Open Type		Type	Price
		Type	Price		
None	VTO-10		\$320.00		
1 N.O.	VTO-20		328.00		
1 N.C.	VTO-30		328.00		
1 N.O. & 1 N.C.	VTO-40		336.00		
2 N.O.	VTO-50		336.00		



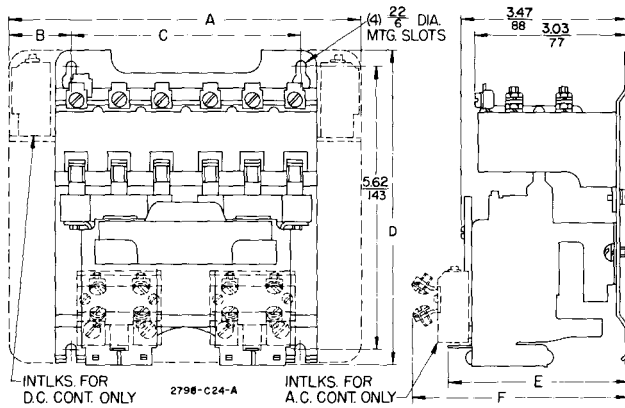
Type VTO-20

ORDERING INFORMATION REQUIRED

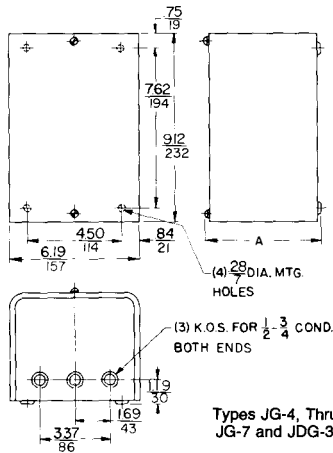
1 — Class and type number. 2 — Voltage and frequency of coil.

HOIST CONTACTORS

TYPES J, JD, JG, JDG, R AND RG



Types JO and JDO



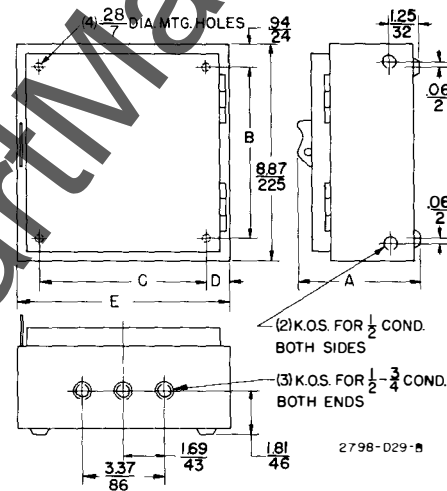
Types JG-4, Thru JG-7 and JDG-3

Class	8965	Dim. A
Type	JG-3	5 ¹⁷ / ₃₂
	JG-4	
	JG-5	
	JG-6	
	JG-7	
JDG-3	4 ¹⁷ / ₃₂	

TYPE J

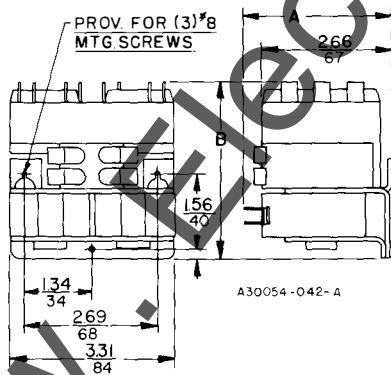
Type	A Dim.	B Dim.	C Dim.	D Dim.	E Dim.	F Dim.
JO-3	5 ³ / ₁₆	5 ¹ / ₁₆	4 ⁹ / ₁₆	6 ⁷ / ₃₂	—	—
JO-4	—	—	—	—	—	—
JO-5	5 ³ / ₁₆	5 ¹ / ₁₆	4 ⁹ / ₁₆	6 ⁷ / ₃₂	—	4 ¹⁷ / ₃₂
JO-6	—	—	—	—	—	—
JO-7	5 ³ / ₁₆	5 ¹ / ₁₆	4 ⁹ / ₁₆	6 ⁷ / ₃₂	8 ¹⁹ / ₃₂	—

Type	A Dim.	B Dim.	C Dim.	D Dim.
JDO-3	5 ¹ / ₄	5 ¹ / ₁₆	4 ⁹ / ₁₆	6 ³ / ₁₆
JDO-8	5 ³ / ₁₆	5 ¹ / ₁₆	4 ⁹ / ₁₆	6 ³ / ₁₆
JDO-4	6 ¹⁵ / ₁₆	1 ³ / ₁₆	4 ⁹ / ₁₆	6 ³ / ₁₆
JDO-5				
JDO-6				
JDO-7				
JDO-9				
JDO-10	—	—	—	—
JDO-11	—	—	—	—
JDO-12	—	—	—	—



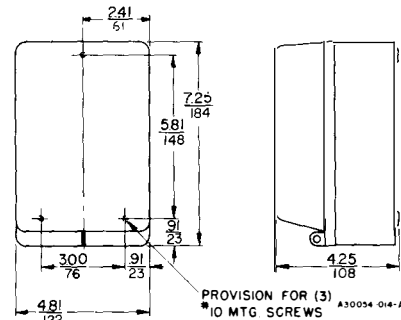
Types JDG-4, 5, 6, 7, 9, 10, 11, 12

Type	A	B	C	D	E
JDG-4,5,6,7,9,10,11,12	2 ²⁷ / ₃₂	7	6 ³ / ₄	1 ⁵ / ₁₆	8 ⁵ / ₁₆



TYPE R

Type	Dim. A	Dim. B
RO-1,2,3	3 ¹ / ₃₂	3 ⁵ / ₁₆
RO-4,5,6	2 ¹ / ₁₆	3 ¹ / ₁₆



Type RG

Dual Dimensions:
INCHES
Millimeters

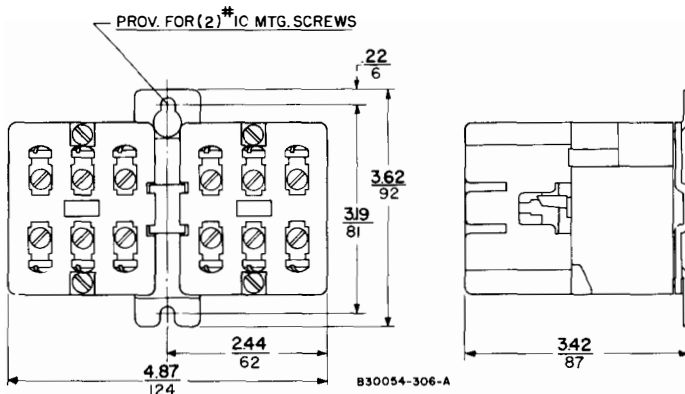


HOIST CONTACTORS

8965 TYPE A, B, S, SP, T, U, V, VS AND VT

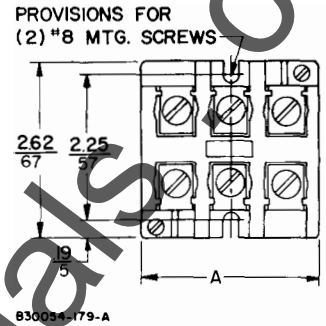
CLASS
8965

8965 3 Pole — 3 Pole Reversing Contactors

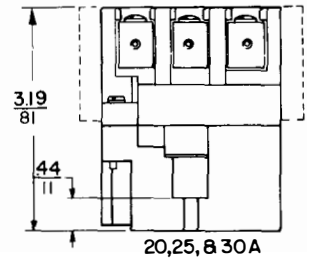


Types SO 1, 2, 3, 4, 5, 6
TO 1, 2, 3, 4, 5, 6
VS and VT

3 Pole Contactors

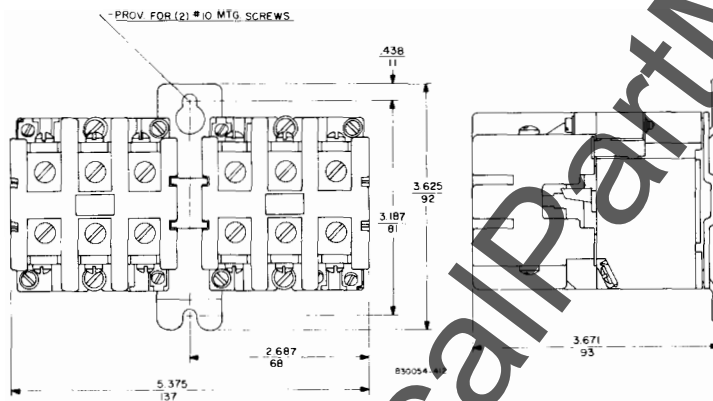


44 ELECTRICAL CLEARANCE



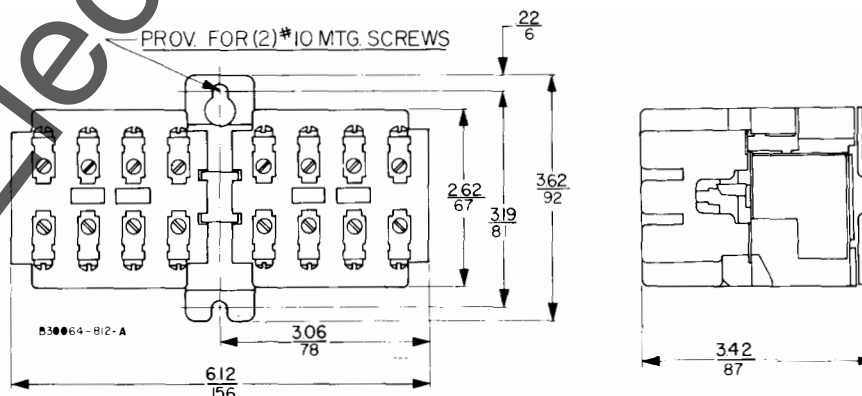
Types A, B and SPO

Type	Dim. A
SPO	2.87 73
A, B	2.25 57



*Types UC-1, 2, 3, 4, 5, 6
VO-1, 2, 3, 4, 5, 6

8965 4 Pole — 4 Pole Reversing Contactor



Types SO-21 Thru SO-26
Types TO-21 Thru TO-26

Dual Dimensions: **INCHES**
Millimeters

ELECTRICAL INTERLOCKS

Device	Interlock Kit				
Class 8965 Type	Contact Arrangement	Type of Connector	Class 9999 Type	Price Each	Disc
RO-2 & RG-2	2 N.O.	Slip-on	R-10	\$14.00	D1B
RO-3 & RG-3	2 N.C.	Slip-on	R-11	14.00	D1B
RO-5 & RG-5	2 N.O.	Screw	R-12	14.00	D1B
RO-6 & RG-6	2 N.C.	Screw	R-13	14.00	D1B

Device	Interlock Kit				
Class 8965 Type	Contact Arrangement	Type of Connector	Class 9999 Type	Price Each	Disc
JO-4 or JO-7	1 N.O.	Screw	R-30	\$26.00	D1B
JO-5 or JO-7	1 N.C.	Screw	R-31	26.00	D1B
JO-6 or JO-7	1 N.O. & 1 N.C.	Screw	R-32	26.00	D1B
SO or TO or UO or VSO or VTO	1 N.O.	Screw	R-20	11.00	D1B
	1 N.C.	Screw	R-21	11.00	D1B
	1 N.O.	Slip-on	R-22	11.00	D1B
	1 N.C.	Slip-on	R-23	11.00	D1B

REPLACEMENT CONTACT KITS

Equipment to be Maintained		Class 9998 Type	Price Each	Disc
Class	Type			
7702 8702 8965	HO-3, 4, 5, 6, 7 & 8 HG-3, 4, 5, 6, 7 & 8	HA-1	\$84.00	D14B
8965	HDO-3, 4, 5, 6, 7 & 8 HDG-3, 4, 5, 6, 7 & 8			
8965	RO-1, 2, 3, 4, 5 & 6 RG-1, 2, 3, 4, 5 & 6	RA-88	48.00	D14B
8702 8965	EQ-1635 EQ1643 EQ1933 JO-3, 4, 5, 6, 7 JG-3, 4, 5, 6, 7	JA-2	112.00	D14B
8965	SO-1, 2, 3, 4, 5, 6	LB-13*	128.00	D14B
8965	SO-21, 22, 23, 24, 25, 26	LB-14*	164.00	D14B
8965	TO-1, 2, 3, 4, 5, 6	LB-33*	156.00	D14B
8965	TO-21, 22, 23, 24, 25, 26	LB-34*	208.00	D14B

Equipment to be Maintained		Class 9998 Type	Price Each	Disc
Class	Type			
8965	SPO-44	LA-17	\$67.00	D14B
8965	SO23-S1	LB-15*	164.00	D14B
8965	SO2-S1	LB-16*	128.00	D14B
8965	UO-1, 2, 3, 4, 5, 6	LB-43*	192.00	D14B
8965	AQ-22	LC-22	34.00	D14B
8965	AO-23	LC-23	39.00	D14B
8965	BO-32	LC-32	42.00	D14B
8965	BO-33	LC-33	48.00	D14B
7702	EQ-1390 EQ-1425	JA-1	132.00	D14B
8702	EQ-1329 EQ1376 JO-1, 2			

* Includes mechanical interlock

COILS

AC magnet coils are designed to operate on line voltages fluctuating as much as 15% below and 10% above nominal rating. DC coils have corresponding limits of 20% below and 10% above nominal rating.

AC MAGNET COILS

Device To Be Serviced		Replacement Coils														Price Each		Disc
Class	Type	Coil Prefix †	Hertz	24 Volts	110-115 Volts	120 Volts	208-220 Volts	240 Volts	277 Volts	380 Volts	440 Volts	480 Volts	550 Volts	600 Volts	Volt Amperes			
															Inrush	Sealed		
8702 8965	J	1861-S1-	60	R22A	R29A	R29B	R32A	R32B	R33B	—	R35B	R35B	R36A	R36B	200	43	\$30.00	D14A
			50	R22B	R30B	R30B	R31C	R32B	—	R34B	R35C	R35B	R35C	R36B	110	23	30.00	D14A
8965	R	31002-400-	60	19	39	40	47	49	—	—	—	58	59	60	76	27	23.00	D14A
			50	20	40	41	49	51	—	57	—	—	60	—	76	27	23.00	D14A
8965	S, T, U, & V	65108-400-	60	19	39	40	48	49	51	—	57	58	60	61	93	11	28.00	D14A
			50	22	42	43	50	52	—	58	60	—	62	63	93	11	28.00	D14A
8965	VSO VTO SPO TPO	65108-403-	60	18	38	39	47	48	—	—	56	57	59	60	95	14	28.00	D14A
			50	21	41	42	49	51	—	56	59	—	61	62	95	14	28.00	D14A

† Complete part number of coil consists of prefix number followed by suffix number:
Example: Order 120 volt/60 hertz coil for 8965 Type R as 31002-400-40.

	Class	Type	Price	Disc
*8965 Type R Replacement Contact Block, Carrier, Armature Kit				
Slip On Connectors	9998	RS88	\$75.00	D14A
Pressure Wire Connectors	9998	RP88	75.00	D14A

* Class 9998 RS 88 and RP88 Kits Do Not Contain Stationary or Movable Contacts, or Springs.

ORDERING INFORMATION REQUIRED — Class and type number of kit or part number.

