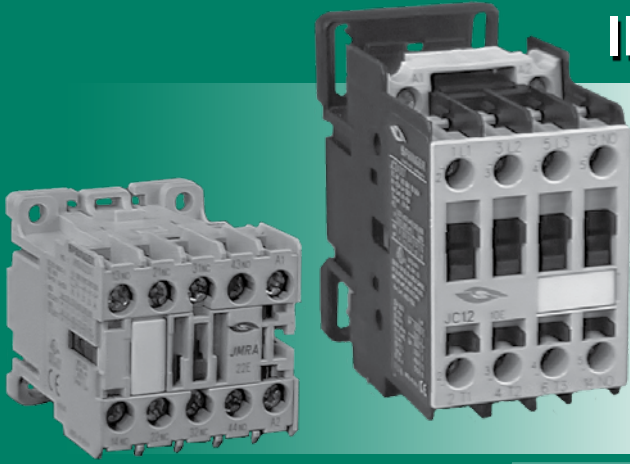


IEC CONTACTORS / RELAYS



Springer Controls carries a complete line of IEC contactors and relays up through 800 amp and 500 HP. All products are available as open devices or as an enclosed AC starter package. See sections B and F for enclosed starters.

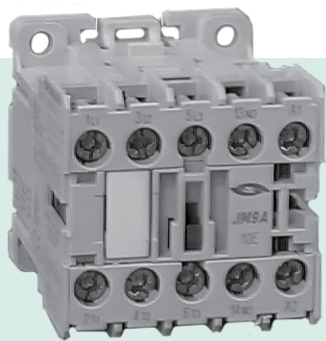
MINI-CONTACTORS; 6 & 9 amp

Description / Features.....	A2
Non-reversing AC, DC, 3 pole, 6 & 9 amp	A3
Reversing AC, DC, 3 pole, 6 & 9 amp	A4
Overload Relays & Control Relays.....	A5
Starters / Accessories.....	A6
Engineering Data	A7
Dimensions.....	A8
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STANDARD CONTACTORS; 9 amp through 700 amp

Description / Features.....	A9
Non-reversing AC, DC, 3 & 4 pole, 9 - 34 amp	A10
Overload Relays, Open Starters; 9 - 32 amp.....	A11
Non-reversing AC, DC, 3 & 4 pole, 50 - 105 amp.....	A12
Overload Relays, Open Starters; 50 - 105 amp.....	A13
Non-reversing AC, DC, 3 pole; 150 - 700 amp.....	A14
Overload Relay, Open Starters; 150 - 700 amp.....	A15
Reversing AC, DC, 3 pole; 9 - 32 amp	A16
Reversing AC, DC, 3 pole; 50 - 700 amp.....	A17
Control Relays	A18
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Horsepower Motor Ratings	A22
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Engineering Data	A24 - A27
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Wiring Diagrams.....	A34

MINI-CONTACTORS - DESCRIPTION & FEATURES



Low coil power consumption greatly expands application flexibility. Standard AC coils require only 1.4 watts and standard DC coils require 3 watts; this translates into low control power supply requirements and low heat losses inside the enclosure. Two special 24 volt PLC interface coil versions are also available to allow coils to be directly operated by PLC outputs.

Description

Mini Contactors — The JM family of mini-contactors and the JM family of control relays offer the user and equipment designer a compact, reliable and versatile solution to today's demanding requirement of high performance in a confined space. In such applications, PLC compatibility is playing an ever-increasing role.

Contactors and control relays are available in either AC- or DC-controlled forms, and offer application flexibility through a wide variety of modular accessories. These devices are CE marked and dual-rated for worldwide acceptance by complying with UL, cUL and IEC 947 standards. Contactors and control relays may be conveniently mounted using a 35mm DIN rail or by affixing with screws to a base plate.

Featuring a conveniently compact size, a mechanical life rated at 10 million operations, and an electrical life (AC-3) rated in excess of 1 million operations at rated current. The JM mini-contactor family is suitable for a wide variety of applications—including pumps, fans, door operators, hoists, conveyers, commercial laundry equipment, machine tools, food-mixing equipment, irrigation systems and other utilizations.

Overload Relays — The Class 10 overload relay features include loss of phase sensitivity, ambient temperature compensation, choice of automatic or manual reset, trip indication (tripped "0", operational "1"), trip test, separate stop (red), and reset (blue) buttons.

Installation and wiring is simplified; the contactor holding interlock terminal (14) is fed through the overload relay for additional wiring convenience and simplification.

Optional overload relay accessories include an addable snap-on normally open signaling contact and a separate mount base/terminal assembly for applications where in-line installation is not convenient. The separate mounting base is suitable for either screw or DIN rail mounting.

Features

Modular design — One of the most attractive features of this product family is its modularity. Various configurations can be created by combining the JM contactors and JM control relays with the wide selection of accessories.

Compact size — The contactor/relay mounting profile is approximately 1 3/4" X 1 7/8"

Long Life — The JM family of contactors and relays offers superior performance. Mechanical life is rated at 10,000,000 operations. Contactor motor ratings (AC-3) are in excess of 1,000,000 electrical operations.

Reliable Operation — These products are manufactured with the latest advancements in materials technology and designed to ensure long, dependable operation. (Coils are designed for protection against burnout during demanding brownout conditions.)

Flexible mounting — Mounting is not restricted for contactor and relay applications; contactors may be horizontal-, tabletop-, or ceiling-mounted. Mounting flexibility is provided by a dual mounting system using either 35mm DIN rail or two #8 screws in opposite diagonal corners. The DIN rail release is located at the top, providing easy access when configured as a starter. Accessories are easily assembled to the JM contactors and relays, saving time while affording maximum versatility.

Easy Installation — Captive universal slot screws are standard on all contactors, relays, overloads, and accessories allowing installation with flat, star and phillips screwdrivers. All terminals are in the open position for production line and installation efficiency. Accessories are designed for fast installation on either contactors or relays.

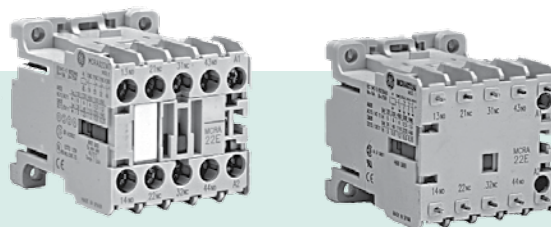
Safety Features — Finger and back-of-hand protection are provided. All screw and quick connect type terminals are clearly marked with dual markings where applicable, for easy identification and wiring convenience. UL and CSA approved.



NON-REVERSING MINI-CONTACTORS

A3

**Non-reversing AC, DC, 3 pole;
6 & 9 amp**



Open Type, Non-Reversing JM Contactor - (AC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		Catalog No.	Price
Ind. AC3	Res. AC1	1 Phase 115V	230V	200V	3 Phase 230V	460V	575V		N.O.	N.C.		
6	15	1/3	1	1 ½	1 ½	3	3	Screw	1 0	0 1	JM6A310AT- * JM6A301AT- *	\$62.00 \$62.00
								Printed Circuit	1 0	0 1	JM6A310AI- * JM6A301AI- *	\$69.00 \$69.00
9	20	½	1 ½	3	3	5	5	Screw	1 0	0 1	JM9A310AT- * JM9A301AT- *	\$82.00 \$82.00
								Printed Circuit	1 0	0 1	JM9A310AI- * JM9A301AI- *	\$89.00 \$89.00

Open Type, Non-Reversing JM Contactor - (DC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		Catalog No.	Price
Ind. AC3	Res. AC1	1 Phase 115V	230V	200V	3 Phase 230V	460V	575V		N.O.	N.C.		
6	20	1/3	1	1 ½	1 ½	3	3	Screw	1 0	0 1	JM6C310AT- • JM6C301AT- •	\$85.00 \$85.00
								Printed Circuit	1 0	0 1	JM6C310AI- • JM6C301AI- •	\$92.00 \$92.00
9	20	½	1 ½	3	3	5	5	Screw	1 0	0 1	JM9C310AT- • JM9C301AT- •	\$82.00 \$82.00
								Printed Circuit	1 0	0 1	JM9C310AI- • JM9C301AI- •	\$118.00 \$118.00

ORDERING INFORMATION

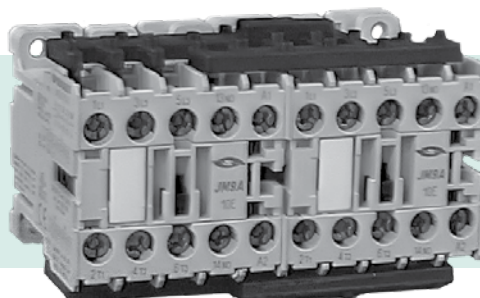
- Use complete catalog number. Replace the (*) with the suffix from the coil table.
- Accessories page A6
- Engineering Data page A7
- Dimension page A8

JM SERIES COIL TABLE

*AC Voltage	Suffix	*AC Voltage	Suffix	• DC Voltage	Suffix
24	C	240/277	N	12	B
120	J	480	W	24	D
208	M	600	Y	48	G
				120	K

Discount Schedule SC-70

Reversing AC, DC, 3 pole;
6 & 9 amp



Open Type, Reversing JM Contactor - (AC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		Catalog No.	Price
Ind. AC3	Res. AC1	1 Phase 115V 230V		3 Phase 200V 230V 460V 575V					N.O.	N.C.		
6	15	1/3	1	1 ½	1 ½	3	3	Screw	0	1	RJM6A301AT- *	\$161.00
								Printed Circuit	0	1	RJM6A301AI- *	\$174.00
9	20	½	1 ½	3	3	5	5	Screw	0	1	RJM9A301AT- *	\$200.00
								Printed Circuit	0	1	RJM9A301AI- *	\$213.00

Open Type, Reversing JM Contactor - (DC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		Catalog No.	Price
Ind. AC3	Res. AC1	1 Phase 115V 230V		3 Phase 200V 230V 460V 575V					N.O.	N.C.		
6	20	1/3	1	1 ½	1 ½	3	3	Screw	0	1	RJM6C301AT- •	\$207.00
								Printed Circuit	0	1	RJM6C301AI- •	\$220.00
9	20	½	1 ½	3	3	5	5	Screw	0	1	RJM9C301AT- •	\$259.00
								Printed Circuit	0	1	RJM9C301AI- •	\$272.00

ORDERING INFORMATION

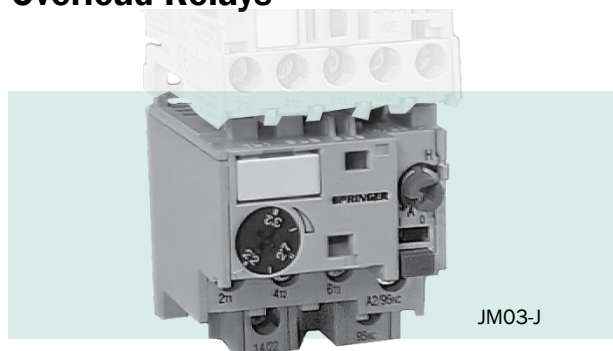
- Use complete catalog number. Replace the (*) with the suffix from the coil table.
- Accessories page A6
- Engineering Data page A7
- Dimension page A8

JM SERIES COIL TABLE

*AC Voltage	Suffix	*AC Voltage	Suffix	•DC Voltage	Suffix
24	C	240/277	N	12	B
120	J	480	W	24	D
208	M	600	Y	48	G
				120	K

Discount Schedule SC-70

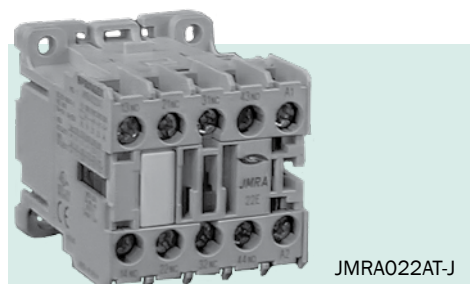
Overload Relays



- Class 10A trip
- Ambient temperature compensation
- Differential phase loss sensitivity
- Trip indication
- Manual trip test
- Stop button (red)
- Reset button (blue), two positions: manual (H) and automatic (A)
- Pre-wired coil and NC contact connection
- Auxiliary contact feed-through wire, to facilitate installation
- Direct mounting or panel mount with base
- Separate panel mount use #MVE0T and #MVB0T (see accessories on page A6)

Catalog No.	Full Load Current Range		Starter Suffix	Price
	Min. A.	Max. A.		
JM03-A	0.11	0.17	A	\$66.00
JM03-B	0.17	0.26	B	\$66.00
JM03-C	0.26	0.43	C	\$66.00
JM03-D	0.43	0.65	D	\$66.00
JM03-E	0.65	1.0	E	\$66.00
JM03-F	0.85	1.3	F	\$66.00
JM03-G	1.1	1.6	G	\$66.00
JM03-H	1.35	2.0	H	\$66.00
JM03-I	1.7	2.4	I	\$66.00
JM03-J	2.2	3.2	J	\$66.00
JM03-R	2.5	4	R	\$66.00
JM03-K	3.0	4.7	K	\$66.00
JM03-L	4.0	6.3	L	\$66.00
JM03-M	5.5	8.0	M	\$66.00
JM03-N	7.5	10.5	N	\$66.00
JM03-P	10	14	P	\$66.00

Control Relays



- Relays are suitable for use on alternating current (ac) control circuits up to 600 volts, and dc control circuits up to 240 volts.
- Control relays may be mounted on 35mm DIN rail EN50022-35, or may be panel-mounted using two or four #8 screws in diagonal corners.
- Screw and quick-connect terminals are protected against accidental contact in accordance with VDE0106T.100 and VBG4.
- Low-coil wattage requirement makes relay ideal for most applications. (24 Vdc PLC interface versions are available.)
- A wide range of accessories, including front-mounted auxiliary contact blocks, side-mounted auxiliary contact blocks, a timer, and surge suppressors, are easily installed on relays.

Control Relays - Type JMRA Ratings A600 & Q600

Contact Arrangement		Screw Terminals					
N.O.	N.C.	Catalog No	AC Coil	Price	Catalog No	DC Coil	Price
4	0	JMRA040AT-	*	\$69.00	JMRC040AT-	•	\$79.00
3	1	JMRA031AT-	*	\$69.00	JMRC031AT-	•	\$79.00
2	2	JMRA022AT-	*	\$69.00	JMRC022AT-	•	\$79.00
1	3	JMRA013AT-	*	\$69.00			
0	4	JMRA004AT-	*	\$69.00			

Relays may be built to provide up to 12 circuits by adding auxiliary contact blocks from page A6.

MINI-CONTACTOR - STARTERS & ACCESSORIES

JM Starters; 6amp, 9amp (Open starter = Contactor + Overload Relay)

Type JM Contactor (AC)

Horsepower Rating (Full Load Amps, 3 Phase)				Open Type Contactor	
200V	230V	460V	575V	Catalog No.	Price
1.5 (6A)	1.5 (5.2A)	3 (4.8A)	3 (3.9A)	JM6A310AT-*	\$62.00
3 (7.8A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	JM9A310AT-*	\$82.00

+ Overload Relay - Type JM (Suffix Letter)

Catalog No.	Full Load Current Range		Starter Suffix	Price
	Min. A.	Max. A.		
JM03-A	0.11	0.17	A	\$66.00
JM03-B	0.17	0.26	B	\$66.00
JM03-C	0.26	0.43	C	\$66.00
JM03-D	0.43	0.65	D	\$66.00
JM03-E	0.65	1.0	E	\$66.00
JM03-F	0.85	1.3	F	\$66.00
JM03-G	1.1	1.6	G	\$66.00
JM03-H	1.35	2.0	H	\$66.00
JM03-I	1.7	2.4	I	\$66.00
JM03-J	2.2	3.2	J	\$66.00
JM03-R	2.5	4	R	\$66.00
JM03-K	3.0	4.7	K	\$66.00
JM03-L	4.0	6.3	L	\$66.00
JM03-M	5.5	8.0	M	\$66.00
JM03-N	7.5	10.5	N	\$66.00
JM03-P	10	14	P	\$66.00

Ordering Example: 5hp, 460V, 3 phase, 7.6 FLA

Part# JM9A310AT-WN \$148.00 List

(9amp mini-contactor, 460V coil, 7.5-10.5 overload, assembled)

*See coil table below

- See page A34 for wiring diagram

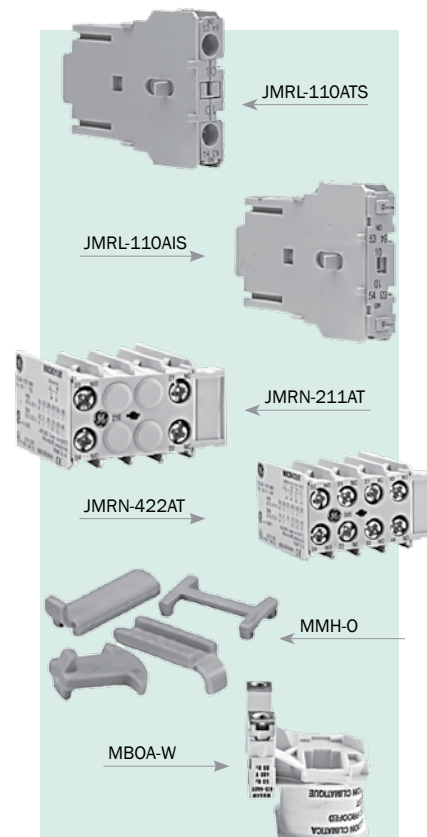
Accessories

Description		Contacts		Catalog No.	Price
		N.O.	N.C.		
Auxiliary Contact Blocks¹	Side Mount Screw Terminal	1	0	JMRL-110ATS	\$12.00
		0	1	JMRL-101ATS	\$12.00
	Side Mount Printed Circuit	1	0	JMRL-110AIS	\$13.00
		0	1	JMRL-101AIS	\$13.00
	Top Mount Two Pole Block	2	0	JMRN-220AT	\$16.00
		1	1	JMRN-211AT	\$16.00
	Top Mount Four Pole Block	4	0	JMRN-440AT	\$33.00
		2	2	JMRN-422AT	\$33.00
Voltage Suppressor					
12 - 60 Volt AC				MPOAAE1	\$27.00
72-240 Volt AC				MPOAAE2	\$27.00
Mechanical Interlock - For reversing contractor assemblies				MMH-0	\$10.00
Coil Kits					
AC Coil Kits				MBOA-*	\$20.00
DC Coil Kits				MBOC-*	\$25.00
Overload Relay - JM03 Series					
Line Terminal - For separate mounting				MVEOT	\$20.00
DIN/Mounting Base - For separate mounting				MVBOT	\$7.00
Auxiliary Contact Block - N.O.				JMTV10AT	\$13.00
Reversing Jumpers				MVM01	\$27.00

*COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix	DC Voltage	Suffix
24	C	240/277	N	12	B
120	J	480	W	24	D
208	M	600	Y	48	G
				120	K

Discount Schedule SC-70



¹ Front mount auxiliary contacts may be combined with side mount auxiliary contacts for a total maximum number of six added auxiliary contacts.

Engineering Data; JM Series

		JM6	JM9
Rated insulation voltage (Ui) (acc. IEC947-4)	(V)	750	750
Rated thermal current (Ith) q < 60½ C (1)	(A)	20	20
Frequency limits	(Hz)	0...400	0...400
Making capacity (r.m.s.) Ue < 690V 50/60Hz	(A)	160	160
Breaking capacity (r.m.s.) Ue < 440V	(A)	106	106
Ue = 500V	(A)	90	90
Ue = 690V	(A)	80	80
Short-time current			
0.3 sec,	(A)	470	470
1.0 sec,	(A)	250	250
5.0 sec,	(A)	125	125
10.0 sec,	(A)	95	95
30.0 sec,	(A)	70	70
1.0 min,	(A)	50	50
3.0 min,	(A)	40	40
Recovery time	(min.)	10	10
Protection against short-circuits (IEC 947-4)			
Coordination type "2"			
aM/gl	(A)	10/16	12/20
Without welding contacts	(A)	8/12	10/16
Circuit-breaker rating (characteristics G CEE 19.1)		16	20
Impedance per pole	(MΩ)	1.76	1.59
Power dissipation per pole			
AC1	(W)	0.7	0.6
AC3	(W)	0.06	0.128
Insulation resistance			
Between adjacent poles	(MΩ)	>10	>10
Between pole and earth	(MΩ)	>10	>10
Between input and output	(MΩ)	>10	>10
Guaranteed no overlap between NO and NC contacts			
Space	(mm)	1	1
Time	(ms)	>2	>2

Terminal Capacity

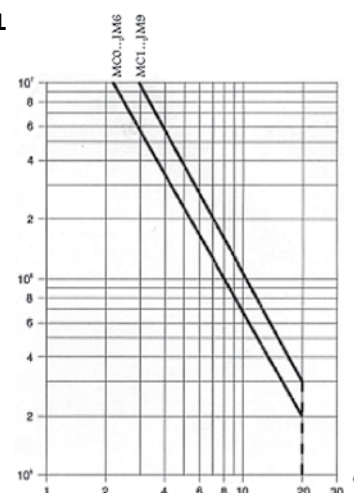
Terminal with M 3.5 screw (with pozidrive head and safety flange)		Tightening torque 0.8Nm - 7Lb-1n
Solid wire	Ømm	0.75 to 2 x 2 w
Flexible wire without terminal	mm²	0.75 to 2.5 x 2 w
Flexible wire with terminal with cap	mm²	0.75 to 2.5 x 1 w
	mm²	0.75 to 1 x 2 w
Faston terminal 2.8 2 insulated terminals	mm²	1 x 2 wires
Terminal for printed circuit (O of PCB hole)		1.8 mm
Ring terminal cap		7.8 mm
Fork terminal cap		6.5 mm

(1) Insulated terminal type B 2.8 x 0.8 with wire 1 mm² Ie = 8A acc, to DIN 46247

Electrical Endurance

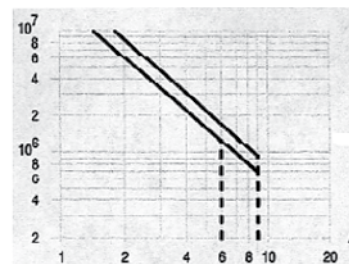
Category AC1

Number of Operations



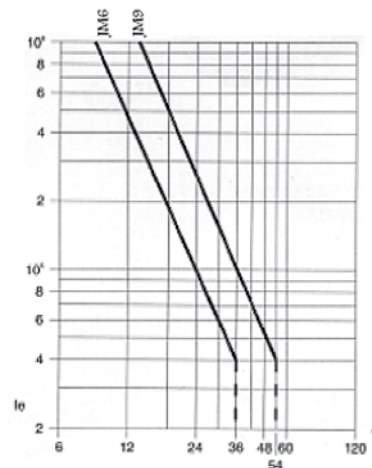
Category AC3

Number of Operations

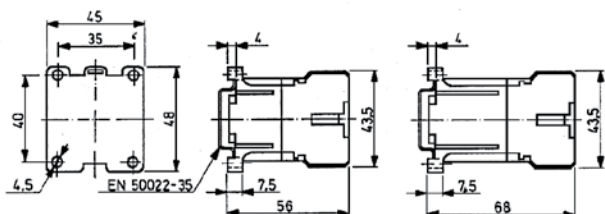


Category AC4

Number of Operations



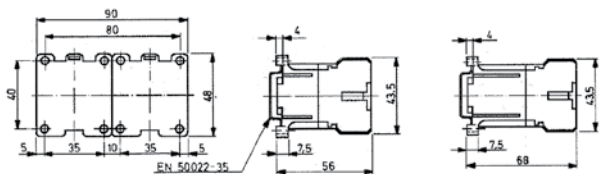
Contactors & Relays - Types JM & JMRA



4 Mounting Holes for #8 Screws

Type	Dimensions - Approximate Inches and (Millimeters)						Coil VA	
	A	B	C	D	E	F	Sealed	Inrush
JM6A JM9A JMRA	1.77 (45)	1.89 (48)	2.20 (56)	1.38 (35)	1.57 (40)	.39 (9.8)	4.9VA	34.2VA
JM6C JM9C JMRC	1.77 (45)	1.89 (48)	2.68 (68)	1.38 (35)	1.57 (40)	.39 (9.8)	3W	3W

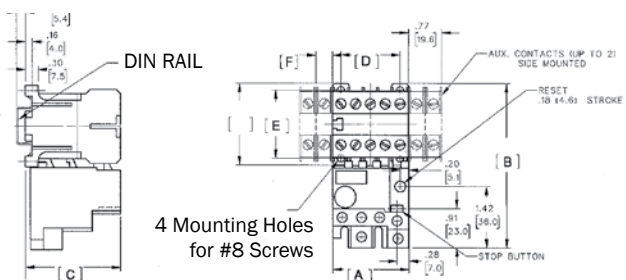
Reversing Contactors & Relays - Type JM



4 Mounting Holes for #8 Screws

Type	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
	A	B	C	D	E	F	G	Sealed	Inrush
JM6A JM9A	3.54 (90)	.39 (10)	2.2 (56)	1.38 (35)	1.89 (48)	1.57 (40)	1.77 (45)	4.9VA	34.2VA

Starters - Type JM



4 Mounting Holes for #8 Screws

Type	Dimensions - Approximate Inches and (Millimeters)						Coil VA	
	A	B	C	D	E	F	Sealed	Inrush
JM6A JM9A	1.77 (45)	3.9 (99)	2.20 (56)	1.38 (35)	1.57 (40)	.39 (9.8)	4.9VA	34.2VA

Standard IEC Contactors; 9amp through 700amp

Description

Contactors are most commonly used to switch motor loads in applications where running over current protection is either not required or is provided separately. Contactors consist of a magnetically actuated switch which can be remotely operated by a push button station or pilot device such as a proximity switch, limit switch, auxiliary contacts, etc.

Standard contactor components are loaded with features that make them easy to install, allow more flexible configurations, lower inventory requirements, and make better use of panel space — and their performance is second to none.

Features

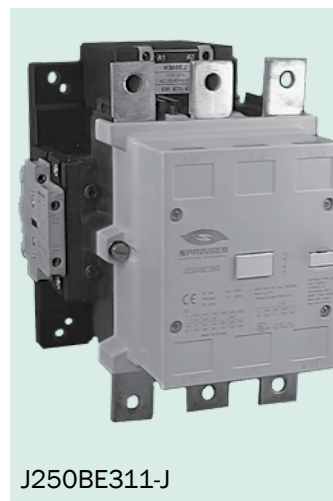
- Power circuit (AC): up to 690v
- UL listed and CSA certified
- Screws protected against accidental contact in accordance with VOE 0106.
- Full compliment of accessories; overload relays, auxiliary top and side mount contacts, mechanical interlocks, electronic timer blocks, pneumatic timer blocks, pole terminated protection.
- AC coils (both 50 Hz and 60 Hz versions) and DC coils are available for a wide range of voltages for flexibility.



JC12A310T-J



JC50A311M-S

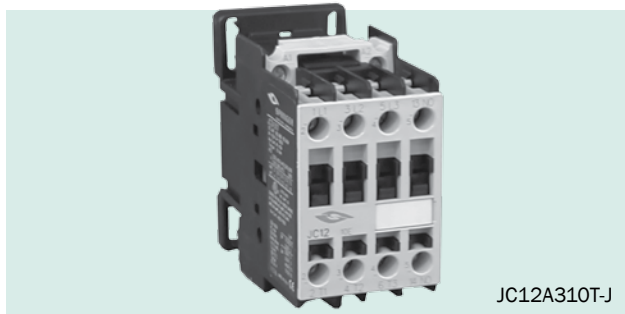


J250BE311-J

Sizing of Contactors

- See pages A22 & A23 for either Horsepower or Kilowatt Motor Ratings
- Amp rating in AC3 (Inductive load) and AC1 (resistive load)

NON-REVERSING CONTACTORS; 9 amp - 32 amp



JC12A310T-J

Non-Reversing Open Type JC Contactors - (AC Coil) 3 & 4 pole, 9amp - 32 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		Catalog No.	Price
Ind.	Res.	1 Phase		3 Phase				N.O.	N.C.	N.O.	N.C.		
AC3	AC1	115V	230V	200V	230V	460V	575V						
9	25	0.75	1.5	3	3	5	7.5	3	0	1	0	JC09A310T-*	\$141.00
								3	0	0	1	JC09A301T-*	\$141.00
12	25	0.75	2	3	3	7.5	10	3	0	1	0	JC12A310T-*	\$176.00
								3	0	0	1	JC12A301T-*	\$176.00
								4	0	0	0	JC12A400T-*	\$176.00
18	32	1	3	5	5	10	15	3	0	1	0	JC18A310T-*	\$203.00
								3	0	0	1	JC18A301T-*	\$203.00
								4	0	0	0	JC18A400T-*	\$203.00
25	45	2	3	7.5	7.5	15	20	3	0	1	0	JC25A310M-*	\$226.00
								3	0	0	1	JC25A301M-*	\$226.00
								4	0	0	0	JC25A400M-*	\$289.00
32	60	2	5	10	10	20	25	3	0	1	0	JC32A310M-*	\$258.00
								3	0	0	1	JC32A301M-*	\$258.00
								4	0	0	0	JC32A400M-*	\$369.00

Notes: Consult factory for 4 pole (2 N.O. / 2 N.C.) units. Dimensions located on page A28.

Non-Reversing Open Type JC Contactors - (DC Coil) 3 pole, 9amp - 32 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		Catalog No.	Price
Ind.	Res.	1 Phase		3 Phase				N.O.	N.C.	N.O.	N.C.		
AC3	AC1	115V	230V	200V	230V	460V	575V						
9	25	0.5	1.5	3	3	5	7.5	3	0	1	0	JC09D310T-•	\$179.00
12	25	0.75	2	3	3	7.5	10	3	0	1	0	JC12D310T-•	\$218.00
18	32	1	3	5	5	10	15	3	0	1	0	JC18D310T-•	\$241.00
25	45	2	3	7.5	7.5	15	20	3	0	1	0	JC25D310M-•	\$272.00
32	54	2	5	10	10	20	25	3	0	1	0	JC32D310M-•	\$320.00

Notes: Consult factory for 4 pole (4 N.O.) units. Dimensions located on page A29.

ORDERING INFORMATION

- Use complete catalog number. Replace the (*) with the suffix from the coil table.
- Accessories pages A19 - A21
- Engineering Data pages A24 - A27
- Dimensions pages A28 - A33

COIL TABLE

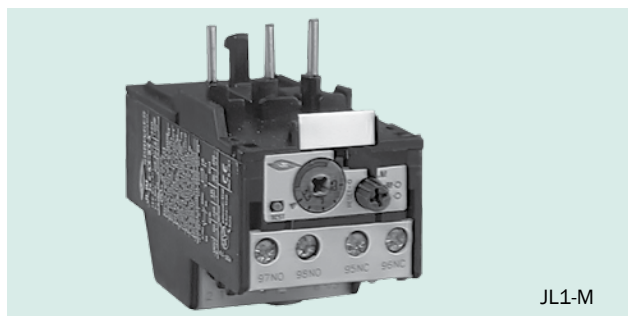
* AC Voltage	Suffix	* AC Voltage	Suffix	• DC Voltage	Suffix
24 (50-60Hz)	1	230 (50Hz)	N	12	B
120 (50-60Hz)	J	415 (50Hz)	W	24	D
208 (60Hz)	L	480 (60Hz)	U	48	G
240 (60Hz)	S	380 (50Hz)	U	125	K
277 (60Hz)	N	600 (60Hz)	Y	250	T

Discount Schedule SC-70

JL1 OVERLOAD RELAYS & OPEN STARTERS

A 11

Overload Relays; Type JL1 (.16 - 40amp range)



JL1 overload relays provide motor overload protection through fixed bimetal heaters. These relays are ambient compensated and utilize a differential mechanism for single phase sensitivity. The trip setting is adjustable for the range listed.

Overload relays may be set for 4 different operational modes — manual reset only, automatic reset only, manual reset/stop or automatic reset/stop. Stop is initiated by pushing the reset button which interrupts the holding circuit in the latter two listed modes (see page A27).

Overload relays feature visible trip indication, reset on the upstroke, weld check, and trip test.

Consult factory for electronic solid state relays.

* Separate, stand-alone overhead relays available by adding part #JLXP (Accessories page A21.)

Overload Relay - Type JL

Catalog No.	Full Load Current Range		Starter Suffix	Price
	Min. A.	Max. A.		
JL1B	0.16	0.26	B	\$90.00
JL1C	0.25	0.41	C	\$90.00
JL1D	0.4	0.65	D	\$90.00
JL1F	0.65	1.1	F	\$90.00
JL1G	1	1.5	G	\$90.00
JL1H	1.3	1.9	H	\$90.00
JL1J	1.8	2.7	J	\$90.00
JL1K	2.5	4	K	\$90.00
JL1L	4	6.3	L	\$93.00
JL1M	5.5	8.5	M	\$93.00
JL1N	8	12	N	\$93.00
JL1P	10	16	P	\$93.00
JL1S	14.5	18	S	\$93.00
JL1T	17.5	22	T	\$93.00
JL1U	21	26	U	\$93.00
JL1V	25	32	V	\$107.00
JL1W	30	40	W	\$128.00

JC Series Open Starters; 9 - 32amp

Starter consists of Type JC Contactor (AC)

+

Overload Relay - Type JL1

Horsepower Rating (Full Load Amps) 3 Phase				Open Type Contactor	
200V	230V	460V	575V	Catalog No.	Price
3 (7.8)	3 (6.2)	5 (7.6)	7.5 (9)	JC09A310T- *	\$141.00
3 (11)	3 (9.6)	7.5 (11)	10 (11)	JC12A310T- *	\$176.00
5 (62)	5 (68)	10 (65)	15 (62)	JC18A310T- *	\$203.00
7.5 (22)	7.5 (22)	15 (21)	20 (27)	JC25A310M- *	\$226.00
10 (32.2)	10 (28)	21 (27)	25 (27)	JC32A310M- *	\$258.00

Notes: Dimensions located on page A29.

COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix
24 (50-60Hz)	1	230 (50Hz)	N
120 (50-60Hz)	J	415 (50Hz)	W
208 (60Hz)	L	480 (60Hz)	U
240 (60Hz)	S	380 (50Hz)	U
277 (60Hz)	N	600 (60Hz)	Y

ORDERING EXAMPLE

10hp, 230V, 3 phase, 28.0 FLA

Part # JC32A310M-SV..... List \$365.00

(32amp contactor, 230V coil, 25-32 amp overload, assembled)

Catalog No.	Full Load Current Range		Starter Suffix	Price
	Min. A.	Max. A.		
JL1B	0.16	0.26	B	\$90.00
JL1C	0.25	0.41	C	\$90.00
JL1D	0.4	0.65	D	\$90.00
JL1F	0.65	1.1	F	\$90.00
JL1G	1	1.5	G	\$90.00
JL1H	1.3	1.9	H	\$90.00
JL1J	1.8	2.7	J	\$90.00
JL1K	2.5	4	K	\$90.00
JL1L	4	6.3	L	\$93.00
JL1M	5.5	8.5	M	\$93.00
JL1N	8	12	N	\$93.00
JL1P	10	16	P	\$93.00
JL1S	14.5	18	S	\$93.00
JL1T	17.5	22	T	\$93.00
JL1U	21	26	U	\$93.00
JL1V	25	32	V	\$107.00
JL1W	30	40	W	\$128.00

Discount Schedule SC-70

Non-Reversing Open Type JC Contactors - (AC Coil) 3 pole & 4 pole , 50amp - 105 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		Catalog No.	Price
Ind.	Res.	1 Phase		3 Phase				N.O.	N.C.	N.O.	N.C.		
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.		
50	90	5	7.5	15	15	40	40	3	0	1	1	JC50A311M-*	\$328.00
65	110	5	10	20	20	50	50	3 4	0 0	1 0	1 0	JC65A311M- * JC65A400M- *	\$394.00 \$458.00
80	110	7.5	15	20	25	50	60	3	0	1	1	JC80A311M- *	\$484.00
95	140	7.5	15	25	30	60	60	3 4	0 0	1 0	1 0	JC95A311M- * JC95A400M- *	\$546.00 \$779.00
105	140	10	20	30	40	75	75	3	0	1	1	JCC5A311M- *	\$779.00

Notes: Four power poles consisting of 2 N.O./2 N.C. are available upon request. Consult factory for part number and pricing.
Dimensions located on page A28

Non-Reversing Open Type JC Contactors - (AC/DC Electronic Coil) 3 pole, 50amp - 105amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		Catalog No.	Consult Factory for Price
Ind.	Res.	1 Phase		3 Phase				N.O.	N.C.	N.O.	N.C.		
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.		
50	90	5	7.5	15	15	40	40	3	0	0	0	JC50E300M-•	\$448.00
65	110	5	10	20	20	50	50	3	0	0	0	JC65E300M- •	\$486.00
80	110	7.5	15	20	25	50	60	3	0	0	0	JC80E300M- •	\$554.00
95	140	7.5	15	25	30	60	60	3	0	0	0	JC95E300M- •	\$628.00
105	140	10	20	30	40	75	75	3	0	0	0	JCC5E300M-	\$879.00

Notes: Four power poles consisting of 4 N.O. or 2 N.O./2 N.C. are available upon request. Consult factory for part number and pricing.

* AC COIL TABLE

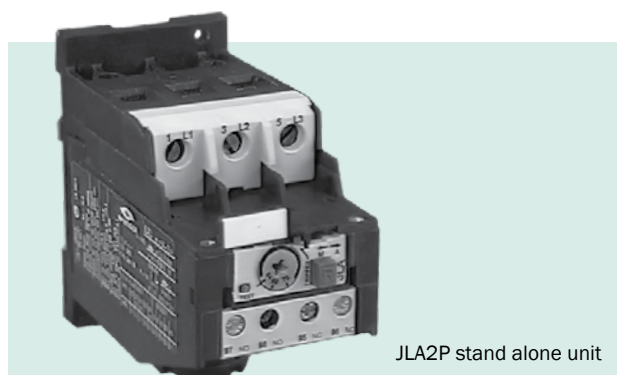
AC Voltage	Suffix	60Hz Voltage	Suffix
24 (50-60Hz)	1	277 (60Hz)	N
120 (50-60Hz)	J	230 (50Hz)	N
208 (60Hz)	L	415 (50Hz)	W
240 (60Hz)	S	480 (60Hz)	U

• AC/DC COIL TABLE

Voltage	Suffix
24-28	D
42-48	F
110-125	J
220-250	N
440-500	Y

Discount Schedule SC-70

JL2 Series Overload Relays



Overload Relay - Type JL2

Catalog No.	Full Load Current Range		Starter Suffix	Price
	Min. A.	Max. A.		
JL2A	11.5	15	A	\$161.00
JL2B	14.5	19	B	\$161.00
JL2C	18.5	25	C	\$161.00
JL2D	24	32	D	\$161.00
JL2E	30	43	E	\$161.00
JL2G	42	55	G	\$161.00
JL2H	54	65	H	\$161.00
JL2J	64	82	J	\$192.00
JL2L	78	97	L	\$235.00
JL2M	90	110	M	\$235.00

Separate Mounted Overload Relay

Type of Mounting	Rated Current (Amps)		Catalog No.	Price
	Min. A.	Max. A.		
Separate or Back-Panel Mount	11.5	15	JLA2PA	\$229.00
	14.5	19	JLA2PB	\$229.00
	18.5	25	JLA2PC	\$229.00
	24	32	JLA2PD	\$229.00
	30	43	JLA2PE	\$229.00
	42	55	JLA2PG	\$229.00
	54	65	JLA2PH	\$229.00
	64	82	JLA2PJ	\$274.00
	78	97	JLA2PL	\$317.00
	90	110	JLA2PM	\$317.00

JC Series Open Starters; 50 amp - 105 amp

Starter consists of Type JC Contactor

Horsepower Rating				Open Type Contactor	
200V	230V	460V	575V	Catalog No.	Price
15	15	40	40	JC50A311M- *	\$328.00
20	20	50	50	JC65A311M- *	\$394.00
20	25	50	60	JC80A311M- *	\$484.00
25	30	60	60	JC95A311M- *	\$546.00
30	40	75	75	JCC5A311M- *	\$779.00

Notes: Dimensions are located on page A30.

*AC COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix
24 (50 60Hz)	1	230 (50Hz)	N
120 (50 60Hz)	J	415 (50Hz)	W
208 (60Hz)	L	480 (60Hz)	U
240 (60Hz)	S	380 (50Hz)	U
277 (60Hz)	N	600 (60Hz)	Y

+ Overload Relay - Type JL2

Catalog No.	Full Load Current Range		Starter Suffix	Price
	Min. A.	Max. A.		
JL2A	11.5	15	A	\$161.00
JL2B	14.5	19	B	\$161.00
JL2C	18.5	25	C	\$161.00
JL2D	24	32	D	\$161.00
JL2E	30	43	E	\$161.00
JL2G	42	55	G	\$161.00
JL2H	54	65	H	\$161.00
JL2J	64	82	J	\$192.00
JL2L	78	97	L	\$235.00
JL2M	90	110	M	\$235.00

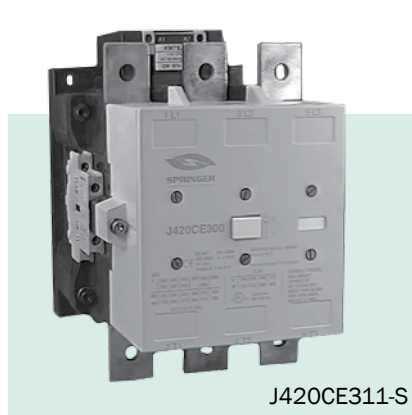
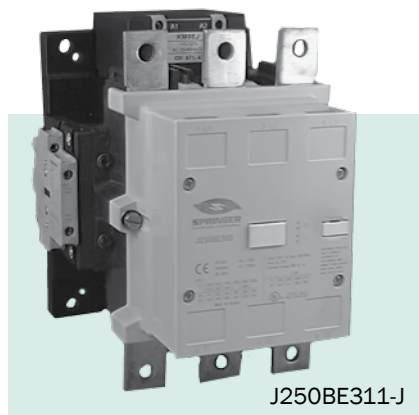
ORDERING EXAMPLE

20hp, 230V, 3 phase, 54.0 FLA
Part # JC65A311M-SH..... List \$555.00
(65amp contactor, 230V coil, 54-65 amp overload, assembled)

Discount Schedule SC-70

NON-REVERSING CONTACTORS; 150 amp - 700 amp

Non-reversing Open Type JC Contactors - 3 pole, AC & DC 150 amp - 700 amp



Amp Rating		Horsepower Rating (Full Load Amps)				Control Circuit	Auxiliary Contact		Catalog No.	Price
Ind.	Res.	3 Phase				3 Pole	N.O.	N.C.		
AC3	AC1	200V	230V	460V	575V					
150	250	50	50 (130)	125 (156)	125 (125)	AC AC/DC	1 1	1 1	J150CA311 * J150CE311 •	\$1,189.00 \$1,312.00
185	250	50	60 (154)	150 (180)	150 (144)	AC AC/DC	1 1	1 1	J185CA311 * J185CE311 •	\$1,550.00 \$1,673.00
250	315	60	75 (192)	150 (180)	150 (144)	AC/DC	1	1	J250BE311 •	\$2,173.00
309	450	100	100 (248)	250 (302)	300 (289)	AC/DC	1	1	J309BE311 •	\$2,952.00
420	600	125	150 (360)	300 (361)	400 (382)	AC/DC	1	1	J420CE311 •	\$4,428.00
550	700	150	200 (480)	400 (477)	500 (472)	AC/DC	1	1	J550CE311 •	\$6,888.00
700	1,000	200	250	500 (590)	600	AC/DC	1	1	J700BE311 •	\$9,348.00

Notes: Dimensions located on page A30, A31

* AC COIL TABLE

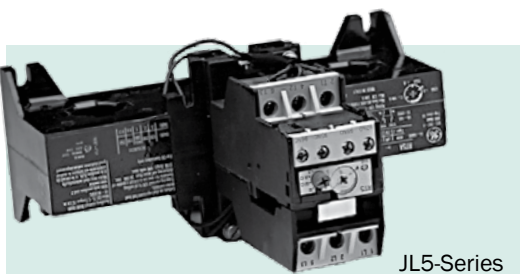
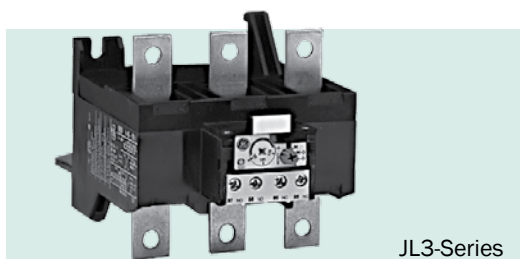
AC Voltage	Suffix	60Hz Voltage	Suffix
24 (50 60Hz)	1	277 (60Hz)	N
120 (50 60Hz)	J	480 (60Hz)	U
208 (60Hz)	L		
240 (60Hz)	S		

• AC/DC COIL TABLE

Voltage	Suffix
24V-28V	D
110V-127V	J
220V-250V	N
440V-500V	Y

Discount Schedule SC-70

Overload-Relays; Types JL3, JL4, JL5



JL-3 Overload Relay

For Use With	Type of Mounting	Rated Current (Amps)		Catalog No.	Starter Suffix	Price
		Min.	Max.			
J150 or J185	Direct or Separate Mount	55	80	JL3B	B	\$303.00
		63	90	JL3C	C	\$303.00
		90	120	JL3D	D	\$303.00
		110	140	JL3E	E	\$369.00
		140	190	JL3F	F	\$369.00

JL-4 Overload Relay

For Use With	Type of Mounting	Rated Current (Amps)		Catalog No.	Starter Suffix	Price
		Min.	Max.			
J250 or J309	Separate Mount	120	190	JL4N	N	\$467.00
		175	280	JL4P	P	\$467.00
		200	310	JL4R	R	\$623.00

JL-5 Overload Relay

For Use With	Type of Mounting	Rated Current (Amps)		Catalog No.	Starter Suffix	Price
		Min.	Max.			
J420 or J550 or J700	Separate Mount	120	190	JL5A	A	\$1,051.00
		175	280	JL5B	B	\$1,051.00
		250	400	JL5C	C	\$1,051.00
		315	500	JL5D	D	\$1,481.00
		430	700	JL5E	E	\$1,481.00

JC Series Open Starters; 150amp - 700amp

Open Type, JC Contactor - (AC/DC Coil) + Overload Relay

Ind. AC3 Rating	Horsepower Rating (Full Load Amps)				Open Type Contactor Catalog No.	Price	Overload Relay
	200V	230V	460V	575V			
150	50	50 (130)	125 (156)	125 (125)	J150CE311 *	\$1,312.00	+ JL3 Series Overload (see above starter suffix)
185	50	60 (154)	150 (180)	150 (144)	J185CE311 *	\$1,673.00	
250	60	75 (192)	150 (180)	150 (144)	J250BE311 •	\$2,173.00	+ JL4 Series Overload (see above starter suffix)
309	100	100 (248)	250 (302)	300 (289)	J309BE311 •	\$2,952.00	
420	125	150 (360)	300 (361)	400 (382)	J420CE311 •	\$4,428.00	+ JL5 Series Overload (see above starter suffix)
550	150	200 (480)	400 (477)	500 (473)	J550CE311 •	\$6,888.00	
700	200	250	500 (590)	600	J700BE311 •	\$9,348.00	

Ordering Example

250hp , 460V, 3 phase = Catalog # J309BE311-YR.....List \$3,575.00
(309amp contactor, 460V Coil, 200-310 overload, assembled)

Discount Schedule SC-70

REVERSING CONTACTORS; 9 amp - 32 amp



Reversing Open Type JC Contactors - (AC Coil) 3 pole, 9 amp - 32 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		Catalog No.	Price
Ind.	Res.	1 Phase		3 Phase				N.O.	N.C.	N.O.	N.C.		
AC3	AC1	115V	230V	200V	230V	460V	575V						
9	25	0.75	1.5	3	3	5	7.5	3	0	1	0	RJC09A310T -*	\$362.00
12	25	0.75	2	3	3	7.5	10	3	0	1	0	RJC12A310T- *	\$432.00
18	32	1	3	5	5	10	15	3	0	1	0	RJC18A310T- *	\$486.00
25	45	2	3	7.5	7.5	15	20	3	0	1	0	RJC25A310M- *	\$558.00
32	60	2	5	10	10	20	25	3	0	1	0	RJC32A310M- *	\$622.00

Notes: All reversers come standard with a mechanical interlock that consists of 2 normally closed auxiliaries along with the unit pre-wired for "reversing" application. To add overload relay see page A11.

Reversing Open Type JC Contactors - (DC Coil) 3 pole, 9amp - 32amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		Catalog No.	Price
Ind.	Res.	1 Phase		3 Phase				N.O.	N.C.	N.O.	N.C.		
AC3	AC1	115V	230V	200V	230V	460V	575V						
9	25	0.5	1.5	3	3	5	7.5	3	0	1	0	RJC09D310T- •	\$438.00
12	25	0.75	2	3	3	7.5	10	3	0	1	0	RJC12D310T- •	\$516.00
18	32	1	3	5	5	10	15	3	0	1	0	RJC18D310T- •	\$562.00
25	45	2	3	7.5	7.5	15	20	3	0	1	0	RJC25D310T- •	\$650.00
32	54	2	5	10	10	20	25	3	0	1	0	RJC32D310M- •	\$746.00

Notes: All reversers come standard with a mechanical interlock that consists of 2 normally closed auxiliaries along with the unit pre-wired for "reversing" application. To add overload relay see page A11.

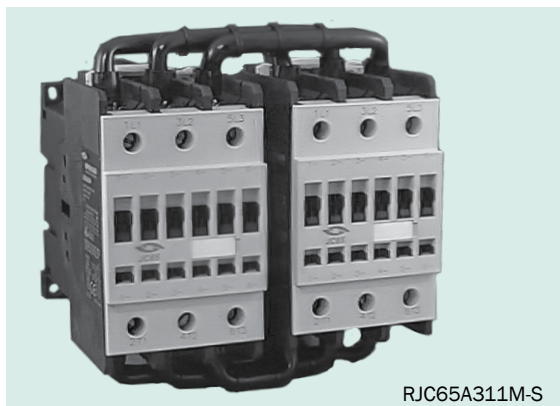
* AC COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix	AC Voltage	Suffix
24 (50-60Hz)	1	277 (60Hz)	N	380 (50Hz)	U
120 (50-60Hz)	J	230 (50Hz)	N	600 (60Hz)	Y
208 (60Hz)	L	415 (50Hz)	W		
240 (60Hz)	S	480 (60Hz)	U		

• DC COIL TABLE

DC Voltage	Suffix
12	B
24	D
48	G
125	K
250	T

Discount Schedule SC-70

Reversing Open Type JC Contactors - (AC, AC/DC Coil) 3 pole, 50 amp - 700 amp


RJC65A311M-S

Amp Rating		Horsepower Rating				Power Poles		Auxiliary Contact		Catalog No.	Price
Ind.	Res.	3 Phase				N.O.	N.C.	N.O.	N.C.		
AC3	AC1	200V	230V	460V	575V						
50	90	15	15	40	40	3	0	1	1	RJC50A311M *	\$788.00
65	110	20	20	50	50	3	0	1	1	RJC65A311M *	\$920.00
80	110	20	25	50	60	3	0	1	1	RJC80A311M *	\$1,100.00
95	140	20	30	60	60	3	0	1	1	RJC95A311M *	\$1,224.00
105	140	30	40	75	75	3	0	1	1	RJCC5A311M *	\$1,690.00
150	250	50	50	125	125	3	0	1	1	RJ150CA311M *	\$2,585.00
185	250	50	60	150	150	3	0	1	1	RJ185CA311M *	\$3,307.00
250	315	60	75	150	150	3	0	1	1	RJC250BE311M-*	\$4,553.00
309	500	100	100	250	300	3	0	1	1	RJ309BE311M-*	\$6,111.00
420	600	125	150	300	400	3	0	1	1	RJ420CE311M-*	\$9,063.00
550	700	150	200	400	500	3	0	1	1	RJ550BE311M *	\$13,983.00
700	1000	200	250	500	600	3	0	1	1	RJ700BE311M-*	\$18,903.00

Notes: All reversers come standard with a mechanical interlock that consists of 2 normally closed auxiliaries along with the unit pre-wired for "reversing" application. To add overload relay see page A13.

*** AC COIL TABLE**

AC Voltage	Suffix	60Hz Voltage	Suffix
24 (50-60Hz)	1	277 (60Hz)	N
120 (50-60Hz)	J	480 (60Hz)	U
208 (60Hz)	L		
240 (60Hz)	S		

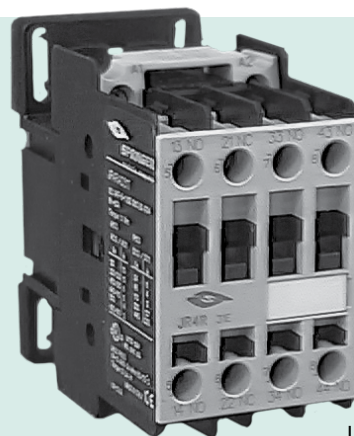
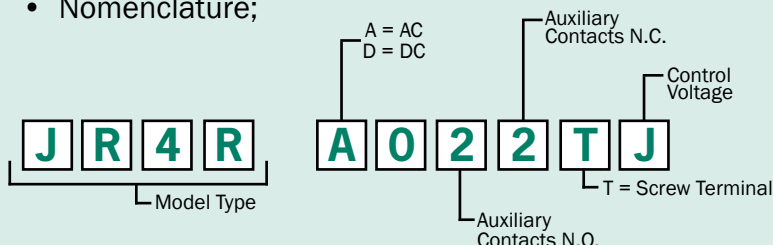
• AC/DC COIL TABLE

Voltage	Suffix
24V-28V	D
110V-127V	J
220V-250V	N
440V-500V	Y

Discount Schedule SC-70

Control Relays

- AC voltage up to 690V, DC voltage up to 440V
- Fixed or din-rail mountable
- Full line of accessories available
- Nomenclature;



JR4RA031T-J

I.E. Control Relay; AC, 2 Normally Open & 2 Normally Closed Contacts, Screw Terminals, 120V Coil

Control Relay - Type JR4R (Ratings A600 & P600)



JR4RA040T-J

Contact Arrangement		AC Coil		DC Coil	
		Catalog No.	Price	Catalog No.	Price
N.O.	N.C.				
4	0	JR4RA040T *	\$94.00	JR4RD040T •	\$164.00
3	1	JR4RA031T *	\$94.00	JR4RD031T •	\$164.00
2	2	JR4RA022T *	\$94.00	JR4RD022T •	\$164.00
0	4	JR4RA004T *	\$94.00	JR4RD004T •	\$164.00

Relay may be built to provide up to 12 circuits by adding auxiliary contact blocks from page A20

Contact Ratings

NEMA Rating Design	Max. Volts	Amperes			Voltamperes	
		Make	Break	Continuous	Make	Break
Maximum AC Contact Rating Per Pole, 50 or 60 Herz						
A600	120	60	6	10	7200	720
	240	30	3	10	7200	720
	480	15	1.5	10	7200	720
	600	12	1.2	10	7200	720
Maximum DC Contact Rating Per Pole, 50 or 60 Herz						
Q600	125	.55	.55	2.5	69	69
	250	.27	.27	2.5	69	69
	600	.1	.1	2.5	-	-
P600	125	1.1	1.1	5	138	138
	250	.55	.55	5	138	138
	600	.2	.2	5	-	-

ORDERING INFORMATION

• Accessories page A20

• Dimensions page A28

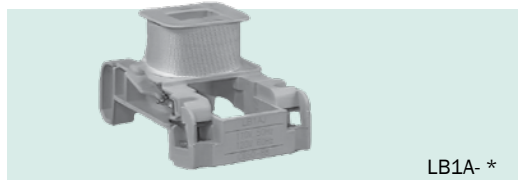
* AC COIL TABLE

* AC Voltage	Suffix	* AC Voltage	Suffix	* DC Voltage	Suffix
24	1	277	N	24	D
120	J	480	U	48	G
208	L	600	Y	125	K
240	S			250	T

• DC COIL

Discount Schedule SC-70

Accessories; Coils



LB1A- *



LB3A- *



LB4A- *



C12168- *



KB4E- * + KM4E- *

AC & DC Coils for JC Contactors

For Use With	Coil Frequency	Catalog No.	Price
JC09 JC12 JC18 JC22	AC	LB1A- *	\$39.00
JC25 JC32 JC34	AC	LB3A- *	\$54.00
JC50 JC65 JC80 JC95 JCC5	AC	LB4A- *	\$62.00
JC09 JC12 JC18 JC22	DC	LB1D- •	\$59.00
JC25 JC32 JC34	DC	LB3D- •	\$82.00

AC Coils for Standard Type J Contactors

For Use With	Coil Frequency	Catalog No.	Price
J150CA J185CA	AC	C12168- *	\$118.00
J150BA	AC	C04255- *	\$118.00
J185BA	AC	C04787- *	\$118.00

AC/DC Electronic Coils; J150CE - J700BE

For Use With	Coil Frequency	Coil No.	Price	Module No.	Price
J150CE J185CE	AC/DC	KB4E- •	\$164.00	KM4E- •	\$295.00
J250BE J309BE	AC/DC	KB5E- •	\$205.00	KM5E- •	\$336.00
J420CE J550CE J700BE	AC/DC	KB7E- •	\$304.00	KM7E- •	\$369.00

Notes: Both **Coil No.** and **Module No.** must be used together

* AC COIL TABLE

Voltage	Suffix	Voltage	Suffix
24 (50-60Hz)	1	230 (50Hz)	N
120 (50-60Hz)	J	415 (50Hz)	W
208 (60Hz)	L	480 (60Hz)	U
240 (60Hz)	S	380 (50Hz)	U
277 (60Hz)	N	600 (60Hz)	Y

• DC COIL TABLE

DC Voltage	Suffix
12	B
24	D
48	G
125	K
250	T

• AC & DC ELECTRONIC COIL TABLE

Voltage	Suffix
24V - 28V	D
110V - 127V	J
220V - 250V	N
440V - 500V	Y

Discount Schedule SC-70



JCAF10

Front-Mount Auxiliary Contact Block*

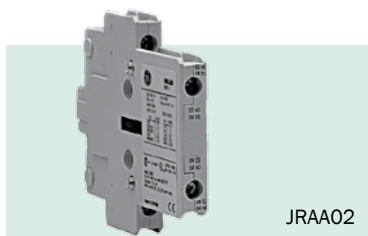
Description		Contacts		Catalog No	Price
		N.O.	N.C.		
For Use With- All JC Contactors JC09-JCC5	<i>Overlapping</i>	1	0	JCAF10	\$18.00
		0	1	JCAF01	\$18.00
		1	0	JCAF10G	\$25.00
		0	1	JCAF01G	\$25.00



JCAL11

Side-Mount Auxiliary Contact Block*

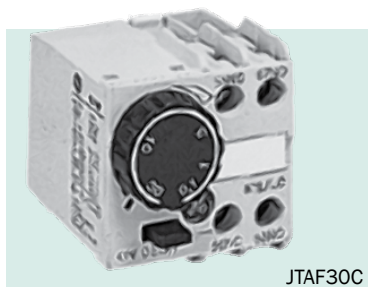
Description		Contacts		Catalog No	Price
		N.O.	N.C.		
For Use With- All JC Contactors JC09-J700	<i>Base Block</i>	1	1	JCAL11	\$31.00
		2	0	JCAL20	\$31.00
	<i>Adder Block</i>	1	1	JRAL11	\$31.00
		2	0	JRAL20	\$31.00



JRAA02

Mechanical Interlocks

Contactor Size	Contacts	Catalog No	Price
For Use With - JC09, JC12, JC18, JC22, JC25, JC32, JC34, JC50, JC65, JC80, JC95, JCC5	Without built-in contacts	JRAA	\$41.00
	With 2 built-in N.C. contacts	JRAA02	\$57.00
J150-J700	Horizontal	BEKHJ	\$107.00
J150-J309	Vertical	BEKVSJ	\$295.00
J420-J700	Vertical	BEKVAJ	\$328.00



JTA30C

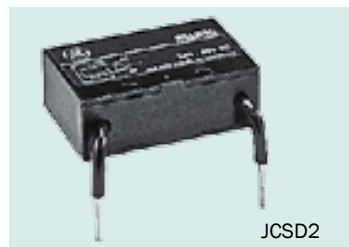
Pneumatic Timers

Description	Time Delay	Time Range	Contacts		Catalog No.	Price
			N.O.	N.C.		
For use with JC Contactors JC09-JCC5. (5-75 HP, 460V)	On	1 - 30 Sec. 10-60 Sec.	1 1	1 1	JTAF30C JTAF60C	\$144.00 \$144.00
	Off	1 - 30 Sec. 10-60 Sec.	1 1	1 1	JTAF30D JTAF60D	\$144.00 \$144.00

ORDERING INFORMATION*** MAXIMUM # OF AUXILIARY CONTACT BLOCKS PER EACH CONTACTOR**

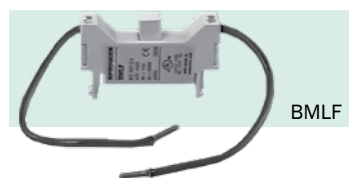
For Use With	Maximum Numbers of Aux. Contact Blocks	Arrangement of Aux. Contact Blocks
5-15 Hp contactors; JC09 JC12, JC18	4	4 Front-Mount, or 1 Side-Mount on each side
20-25 Hp contactors; JC25, JC32, JC34	6	4 Front-Mount plus 1 Side-Mount, or 2 Front-Mount plus 1 Side-Mount on each side
30-75 Hp contactors; JC50, JC65, JC80, JC95, JCC5	8	6 Front-Mount plus 1 side Mount, or 2 Side-Mount on each side

Discount Schedule SC-70



Surge Suppressor

Surge Suppressor Type		Horsepower	Voltage	Catalog No.	Price
RC	For Use With- JC09, JC12, JC18, JC22, JC32, JC34 contactors	5-25 hp AC	24-48 VAC	JCSR2G	\$39.00
			50-127 VAC	JCSR2K	\$39.00
			130-240 VAC	JCSR2R	\$39.00
RC	For Use With- JC50, JC65, JC80, JC95, JCC5 contactors	30-75 hp AC	24-48 VAC	JCSR3G	\$39.00
			50-127 VAC	JCSR3K	\$39.00
			130-240 VAC	JCSR3R	\$39.00
DIODE	For Use With- All JC contactors	5-25 hp DC	12-600 VDC	JCSD2	\$39.00
VARISTOR	For Use With- All JC contactors	50-75 hp AC/DC	24 - 48 V,AC-DC	JCSV3G	\$39.00
			50 - 127 V,AC-DC	JCSV3K	\$39.00
			130-250 V,AC-DC	JCSV3R	\$39.00
			380-500 V,AC-DC	JCSV3U	\$52.00



Misc. Accessories

Description	Catalog No.	Price
Overload Base - Separate Mounting	JL1 Series JLXP	\$34.00
	JL2 Series JL2XP	\$68.00
DIN Rail 6 ft. Length	DINRAIL	\$30.00
Start Contact Block (JC09 - JC34 Starters)	BMLF	\$16.00

Contact Kits type JC & J

Main Contact Kit - Includes 3 Sets of Contacts and Springs for:	Catalog No.	Price	Main Contact Kit - Includes 3 Sets of Contacts and Springs for:	Catalog No.	Price
JC50A311M	V31206B	\$110.00	J150CA311	V1175CA	\$397.00
JC65A311M	V31207B	\$131.00	J185CA311	V1108CA	\$623.00
JC80A311M	V31208B	\$161.00	J250BE311	V1109BA	\$738.00
JC95A311M	V31209B	\$182.00	J309BE311	V1195BA	\$1,017.00
JCC5A311M	V31210B	\$262.00	J420CE311	V1110CE	\$1,476.00
			J550CE311	V1111CE	\$2,132.00
			J700BE311	V1112BA	\$3,157.00

Full-Load Motor-Running Currents in Amperes Corresponding to Various A.C. Horsepower Motor Ratings

The table below provides the average full-load currents of squirrel cage motors in accordance with IEC conventions. These are given only as a guide. Refer to the actual motor nameplate for full-load current values

	110V - 120V		220V - 240V		380V - 415V		440V - 480V		550V - 600V		2.3 KV	4.16 KV
H.P.	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Three Phase	Three Phase
1/10	3.0	---	1.5	---	---	---	---	---	---	---	---	---
1/8	3.8	---	1.9	---	---	---	---	---	---	---	---	---
1/6	4.4	---	2.2	---	1.4	---	---	---	---	---	---	---
1/4	5.8	---	2.9	---	1.85	---	---	---	---	---	---	---
1/3	7.2	---	3.6	---	2.32	---	---	---	---	---	---	---
1/2	9.8	4.4	4.9	2.2	3.19	1.28	2.5	1.1	2.0	0.9	---	---
3/4	13.8	6.4	6.9	3.2	4.47	1.78	3.5	1.6	2.8	1.3	---	---
1	16.0	8.4	8.0	4.2	5.12	2.30	4.0	2.1	3.2	1.7	---	---
1.5	20.0	12.0	10.0	6.0	6.38	3.32	5.0	3.0	4.0	2.4	---	---
2	24.0	13.6	12.0	6.8	7.66	4.34	6.0	3.4	4.8	2.7	---	---
3	34.0	19.2	17.0	9.6	10.87	6.14	8.5	4.8	6.8	3.9	---	---
5	56.0	30.4	28.0	15.2	17.90	9.71	14.0	7.6	11.2	6.1	---	---
7.5	80.0	44.0	40.0	22.0	26.80	14.00	21.0	11.0	16.0	9.0	---	---
10	100.0	56.0	50.0	28.0	33.2	17.90	26.0	14.0	20.0	11.0	---	---
15	135.0	84.0	68.0	42.0	---	26.80	34.0	21.0	27.0	17.0	---	---
20	---	108.0	88.0	54.0	---	34.50	44.0	27.0	35.0	22.0	---	---
25	---	136.0	110.0	68.0	---	43.50	55.0	34.0	44.0	27.0	---	---
30	---	160.0	136.0	80.0	---	51.20	68.0	40.0	54.0	32.0	---	---
40	---	208.0	176.0	104.0	---	66.50	88.0	52.0	70.0	41.0	---	---
50	---	260.0	216.0	130.0	---	83.10	108.0	65.0	86.0	52.0	---	---
60	---	---	---	154.0	---	103.0	---	77.0	---	62.0	16.	9.
75	---	---	---	192.0	---	128.0	---	96.0	---	77.0	20.	11.
100	---	---	---	248.0	---	165.0	---	124.0	---	99.0	26.	14.3
125	---	---	---	312.0	---	208.0	---	156.0	---	125.0	31.	17.
150	---	---	---	360.0	---	240.0	---	180.0	---	144.0	37.	20.
200	---	---	---	480.0	---	320.0	---	240.0	---	192.0	49.	27.
250	---	---	---	602.0	---	403.0	---	302.0	---	242.0	60.	33.
300	---	---	---	---	---	482.0	---	361.0	---	289.0	72.	40.
350	---	---	---	---	---	560.0	---	414.0	---	336.0	83.	46.
400	---	---	---	---	---	636.0	---	477.0	---	382.0	95.	52.
500	---	---	---	---	---	786.0	---	590.0	---	472.0	118.	65.

Notes:

1. To obtain F.L.C. for 200 and 208 volt motors multiply 230 volts values by 1.15 and 1.10 respectively.
2. To obtain F.L.C. for 265 and 277 volt motors multiply 230 volts values by .87 and .83 respectively.

Kilowatt Motor Ratings

The table below provides the average full-load currents of squirrel cage motors in accordance with IEC conventions. These are given only as a guide. Refer to the actual motor nameplate for full-load current values

	Single-Phase Motor		Three-Phase Motor					
Power	120V	240V	230V	400V	415V	440V	500V	690V
Kilowatts	A	A	A	A	A	A	A	A
0.37	3.9	3.6	2	.98	—	0.99	1	—
0.55	5.2	4.8	2.8	1.5	—	1.36	1.21	—
0.75	6.6	6.1	3.6	1.9	2	1.68	1.5	—
1.1	9.6	8.8	5.2	2.5	2.5	2.37	2	—
1.5	12.7	11.7	6.8	3.4	3.5	3.06	2.6	—
1.8	15.7	14.4	—	—	—	—	—	—
2.2	18.6	17.1	9.6	4.8	5	4.42	3.8	—
3	24.3	22.2	—	6.3	6.5	5.77	5	3.5
3.7	—	—	15.2	—	—	—	—	—
4	29.6	27.1	—	8.1	8.4	7.9	6.5	4.9
4.4	34.7	31.8	—	—	—	—	—	—
5.2	39.8	36.5	—	—	—	—	—	—
5.5	42.2	38.7	22	11	11	10.4	9	6.7
6	44.5	40.8	—	—	—	—	—	—
7	49.5	45.4	—	—	—	—	—	—
7.5	54.4	50	28	14.8	14	13.7	12	9
9	—	—	—	18.1	17	16.9	13.9	10.5
11	—	—	42	21	21	20.1	18.4	12.1
15	—	—	54	28.5	28	26.5	23	16.5
18.5	—	—	68	35	35	32.8	28.5	20.2
22	—	—	80	42	40	39	33	24.2
30	—	—	104	57	55	51.5	45	33
37	—	—	130	69	66	640	55	40
45	—	—	154	81	80	76	65	46.8
55	—	—	192	100	100	90	80	58
75	—	—	248	131	135	125	105	75.7
90	—	—	312	162	165	146	129	94
110	—	—	360	195	200	178	156	113
132	—	—	—	233	240	215	187	135
—	—	—	480	222	260	236	207	—
160	—	—	—	285	280	256	220	165
—	—	—	600	—	—	—	—	—
200	—	—	—	352	340	321	281	203
220	—	—	720	388	385	353	310	224
250	—	—	840	437	425	401	360	253
280	—	—	—	—	—	—	—	—
315	—	—	—	555	535	505	445	321
—	—	—	1080	—	—	—	—	—
355	—	—	—	605	580	549	500	350
—	—	—	1200	—	—	—	—	—
400	—	—	—	675	650	611	540	390
450	—	—	1440	—	—	—	—	—
500	—	—	—	855	820	780	680	494
560	—	—	—	950	920	870	760	549
630	—	—	—	1045	1020	965	850	605
710	—	—	—	1200	1140	1075	960	694
800	—	—	—	—	1320	1250	1100	790
900	—	—	—	—	1470	1390	1220	880

Power Circuit JC09 - JCC5 Series

Three-pole version		JC09	JC12	JC18	JC22	JC25	JC32	JC34	JC50	JC65	JC80	JC95	JCC5
Rated thermal current I _{th} at $\vartheta < 55\frac{1}{2}^{\circ}\text{C}$	(A)	25	25	32	45	45	60	60	90	110	110	140	140
Rated operational current I _e	(A)	9	12	18	22	25	32	34	50	65	80	95	105
Rated operational voltage U _e	(V)	690	690	690	690	690	690	690	690	690	690	690	690
Four-pole version (4 N.O., 2 N.O. + 2 N.C.)			JC12	JC18		JC25	JC32			JC65	JC80	JC95	
Rated thermal current I _{th} at $\vartheta < 55\frac{1}{2}^{\circ}\text{C}$	(A)		25	32		45	60			110	110	140	
Rated operational current I _e	(V)		690	690		690	690			690	690	690	
		(1) 2 NO + 2 NC only											
		(2) 4 NO only											
Three-Pole and Four-Pole Version		JC09	JC12	JC18	JC22	JC25	JC32	JC34	JC50	JC65	JC80	JC95	JCC5
Rated insulation voltage U _i	(V)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Maximum continuous current AC1	(A)	25	25	32	45	45	60	60	90	110	110	140	140
Frequency limits (Hz)		25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400
Making capacity (RMS) (acc. IEC 947)	(A)	450	450	450	450	550	550	550	1000	1000	1000	1280	1280
Breaking capacity (RMS) (acc. IEC 947)													
U _e < 400V	(A)	250	250	250	350	450	450	450	920	920	920	1050	1050
U _e = 500V	(A)	250	250	250	320	450	450	450	920	920	920	1050	1050
U _e = 690V	(A)	130	130	130	170	205	205	205	780	780	780	950	950
Short-time current													
1 sec.	(A)	455	455	570	630	1010	1010	1265	1580	2530	2530	3300	3300
5 sec.	(A)	205	205	254	280	450	450	450	710	1130	1130	1485	1485
10 sec.	(A)	144	144	180	200	320	320	400	500	800	800	1050	1050
30 sec.	(A)	85	85	104	115	185	185	230	290	460	460	600	600
1 min.	(A)	60	60	74	80	130	130	165	205	325	325	430	430
3 min.	(A)	35	35	45	50	90	90	100	120	185	185	250	250
Recovery time	(min.)	10	10	10	10	10	10	10	10	10	10	10	10
Protection against short-circuit with fuses													
Coordination type "2"													
aM	(A)	10	12	20	25	25	35	40	50	80	80	125	160
gL-gG	(A)	25	35	35	50	63	63	63	100	160	160	200	200
Without welding													
aM	(A)	8	8	16	20	20	20	25	40	50	50	80	80
gL-gG	(A)	10	10	25	35	35	35	50	80	100	100	160	160
Impedance per pole		mΩ	2.35	2.35	2.41	1.65	1.28	1.28	0.95	0.85	0.86	0.76	0.76
Power dissipation per pole													
AC1	(W)	1.47	1.47	2.46	3.34	2.59	4.6	3.42	6.89	10.4	10.4	14.89	14.89
AC3	(W)	0.19	0.34	0.78	1.03	0.80	1.31	1.52	2.12	3.63	5.5	6.86	8.37
Insulation resistance													
Between adjacent poles	mΩ	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Between poles and earth	mΩ	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Between input and output	mΩ	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10

Power Circuit J150 - J825 Series

Three-pole contactors		J150	J185	J250	J309	J420	J550	J700	J825
Rated thermal current I _{th} at q < 40½ C	(A)	250	250	315	450	600	700	1000	1250
Rated operational current I _e AC3	(A)	150	185	250	309	420	550	700	825
Rated operational voltage U _e	(V)	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage U _i	(V)	1000	1000	1000	1000	1000	1000	1000	1000
Maximum continuous current AC1	(A)	250	250	315	450	600	700	1000	1250
Frequency limits	(Hz)	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400
Breaking capacity (RMS)									
U _e < 400V	(A)	1600	1600	3500	3500	5600	5600	7300	6600
U _e = 500V	(A)	1600	1600	3500	3500	5600	5600	7300	6600
U _e = 690V	(A)	100	100	2200	2200	3500	3500	6700	6000
U _e = 1000V	(A)	350	350	1100	1100	2000	2000	3500	3500
Short-time current									
1 sec.	(A)	2500	2500	5500	5500	7500	7500	9700	11600
5 sec.	(A)	2500	2500	3500	3500	5200	5200	7700	8800
10 sec.	(A)	2300	2300	2500	2500	4000	4000	6100	7350
30 sec.	(A)	1250	1250	1600	1600	2800	2800	4400	5300
1 min.	(A)	900	900	1200	1200	1800	1800	3500	4500
3 min.	(A)	600	600	900	900	1200	1200	2300	2800
Recovery time	(min.)	10	10	10	10	10	10	10	10
Short-circuit protection with fuses									
Coordination type "2"									
aM	(A)	160	200	250	315	400	500	630	1000
gL-gG	(A)	250	250	400	500	630	800	1000	1250
Impedance per pole	(mΩ)	0.30	0.30	0.28	0.28	0.15	0.13	0.14	0.11
Power dissipation per pole									
AC1	(W)	19	19	27.7	56.7	54.3	63.7	140	171.8
AC3	(W)	6.8	10.3	17.5	26.7	26.5	45.3	68.6	74.8
Insulation resistance									
Between adjacent poles	(mΩ)	>10	>10	>10	>10	>10	>10	>10	>10
Between poles and earth	(mΩ)	>10	>10	>10	>10	>10	>10	>10	>10
Between input and output	(mΩ)	>10	>10	>10	>10	>10	>10	>10	>10
Four-pole contactors		J185	J250	J309	J420	J550	J700	J825	
Rated thermal current I _{th} at q < 40½ C	(A)	325	400	500	600	700	1000	1250	
Rated operational voltage U _e	(V)	1000	1000	1000	1000	1000	1000	1000	
Rated insulation voltage U _i	(V)	1000	1000	1000	1000	1000	1000	1000	
Maximum continuous current AC1	(A)	325	400	500	600	700	100	1250	
Frequency limits	(Hz)	25...400	25...400	25...400	25...400	25...400	25...400	25...400	
Making capacity (RMS)	(A)	1850	2500	3700	6500	6500	6700	8250	
Breaking capacity (RMS)									
U _e < 400V	(A)	1600	3500	3500	5600	5600	6700	6600	
U _e = 500V	(A)	1600	3500	3500	5600	5600	6700	6600	
U _e = 690V	(A)	1000	2200	2200	5000	5000	6000	6000	
U _e = 1000V	(A)	350	1100	1100	300	300	3500	3500	
Short-time current									
1 sec.	(A)	2500	5500	5500	7500	7500	9700	11600	
5 sec.	(A)	2500	3500	3500	5200	5200	7700	8800	
10 sec.	(A)	2300	2500	2500	4000	4000	6100	7350	
30 sec.	(A)	1250	1600	1600	2800	2800	4400	5300	
1 min.	(A)	900	1200	1200	1800	1800	3500	4500	
3 min.	(A)	600	900	800	1200	1200	2300	2800	
Recovery time	(min.)	10	10	10	10	10	10	10	
Short-circuit protection with fuses									
Coordination type "2"									
gL-gG	(A)	400	500	500	6300	800	1000	1250	
Impedance per pole	(mΩ)	0.32	0.28	0.28	0.15	0.13	0.14	0.11	
Power dissipation per pole									
AC1	(W)	33.8	44.8	56.7	61.2	68.6	140	171.8	
Insulation resistance									
Between adjacent poles	(mΩ)	>10	>10	>10	>10	>10	>10	>10	>10
Between poles and earth	(mΩ)	>10	>10	>10	>10	>10	>10	>10	>10
Between input and output	(mΩ)	>10	>10	>10	>10	>10	>10	>10	>10

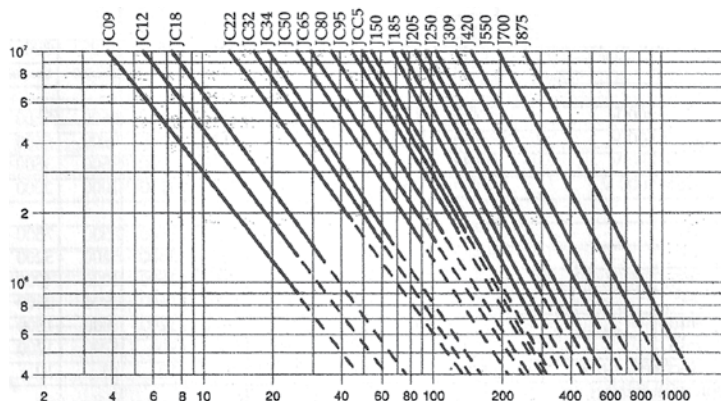
Life Curves - AC Contactors; JC09 - J875

AC-1: Non-inductive, or lightly inductive loads, e.g., resistance furnaces

ELECTRICAL ENDURANCE

Operation

RATED CURRENT I_e
For all voltages

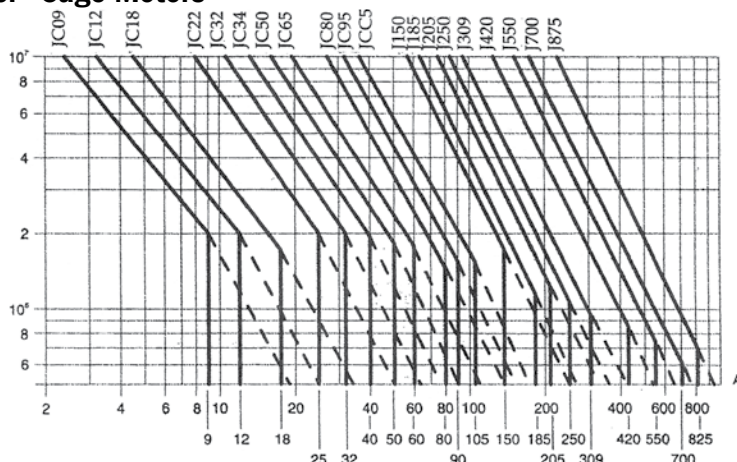


AC-3: Interruption of Running Squirrel - Cage Motors

ELECTRICAL ENDURANCE

Operation

RATED CURRENT I_e
($U_e \leq 440V$)

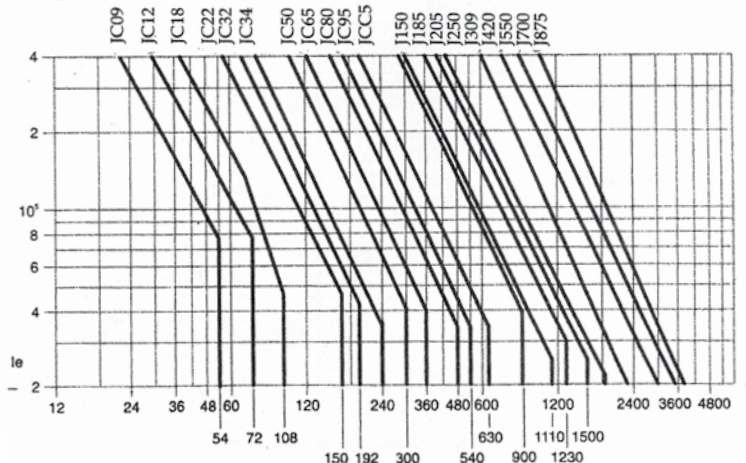


AC-4: Inching (Jogging) of Squirrel - Cage Motors

ELECTRICAL ENDURANCE

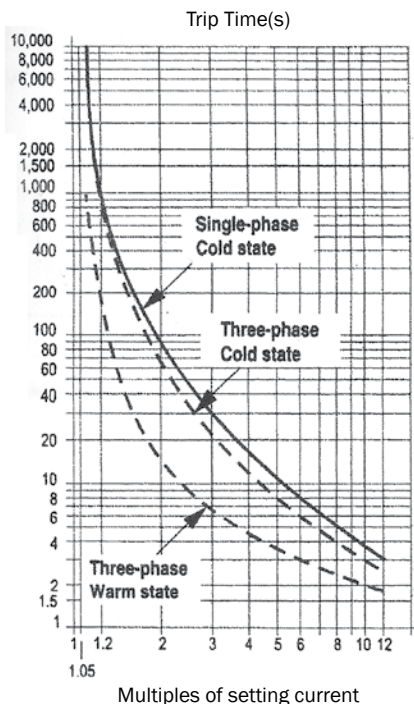
Operation

RATED CURRENT I_e
($U_e \leq 440V$)

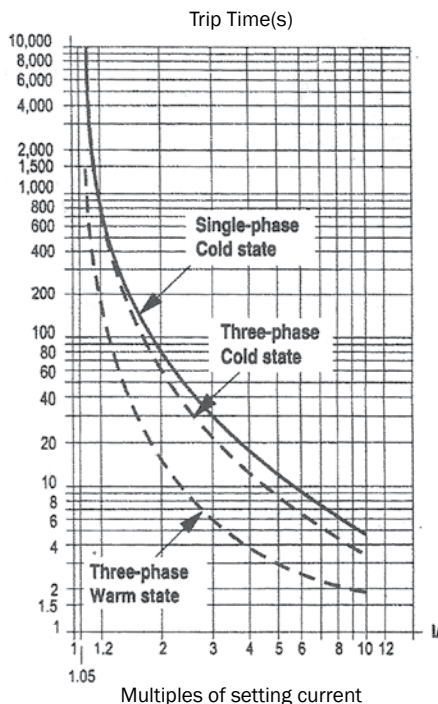


IEC Overload Relays

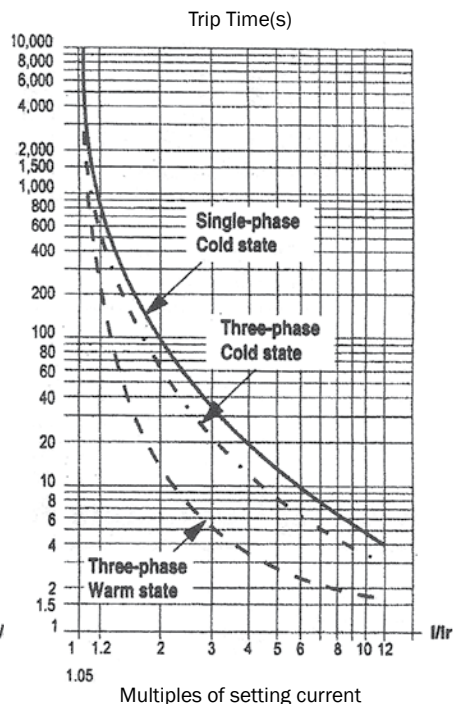
Tripping Curves JL1 Class 10A



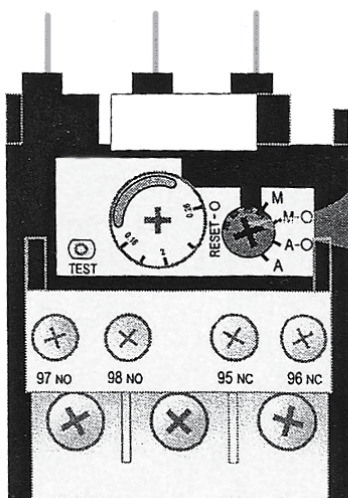
JL2 Class 10A



JL3 Class 10A



Functions of the reset-button

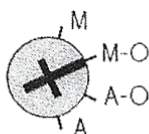


* Recommended setting



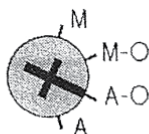
Manual RESET

(Operator must manually reset O/L relay when tripped)



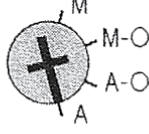
*Manual RESET and STOP

(Operator must manually reset O/L relay when tripped. STOP can also be initiated by pushing the reset button which interrupts the holding circuit)



Automatic RESET and STOP

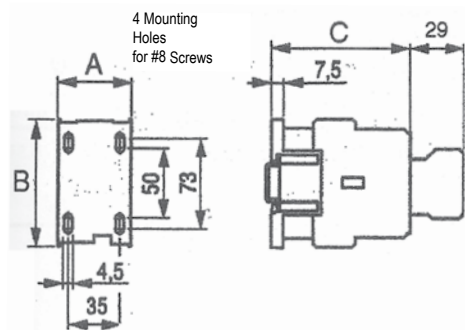
(After tripping, O/L relay will automatically turn on when proper temperature is met. STOP can also be initiated by pushing the reset button which interrupts the holding circuit.)



Automatic RESET no STOP

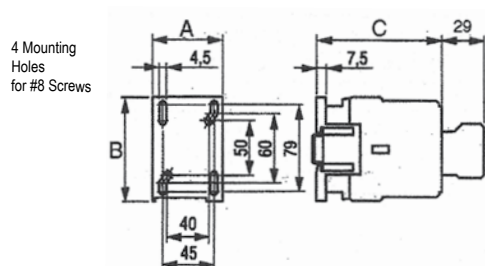
(After tripping, O/L relay will automatically turn on when proper temperature is met.)

Contactors & Relays - Types JC & JR4R / JC09 - JC18



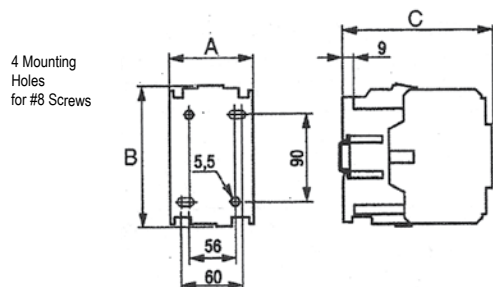
Type	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
	A	B	C	D	E	F	G	Sealed	Inrush
JC09A JC12A JC18A JR4R	1.77 (45)	3.1 (81)	3.34 (85)	1.38 (35)	2.8 (73)	1.97 (50)	.18 (4.5)	6VA	45VA

Contactors - Type JC / JC25 - JC34



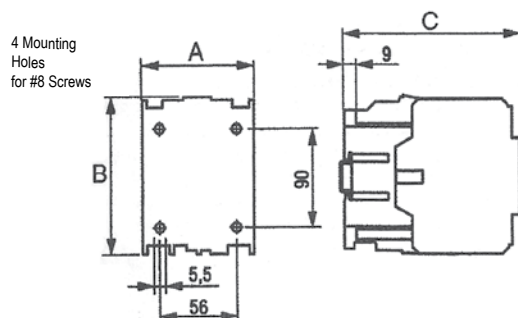
Type	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
	A	B	C	D	E	F	G	Sealed	Inrush
JC25A JC32A JC34A	2.17 (55)	3.43 (87)	3.86 (98)	1.77 (45)	3.11 (79)	1.97 (50)	.18 (4.5)	9VA	88VA

Contactors - Type JC / JC50 - JC80



Type	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
	A	B	C	D	E	F	G	Sealed	Inrush
JC50A JC65A JC80A	2.6 (66)	4.6 (117.5)	4.57 (116)	3.54 (90)	2.38 (60)	2.2 (56)	.22 (5.5)	15.5VA	191VA

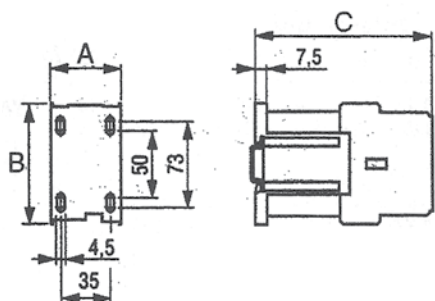
Contactors - Type JC / JC95 - JCC5



Type	Dimensions - Approximate Inches and (Millimeters)						Coil VA	
	A	B	C	D	E	F	Sealed	Inrush
JC95A JCC5A	2.95 (75)	4.63 (117.5)	4.96 (126)	3.54 (90)	2.2 (56)	.22 (5.5)	15.5VA	191VA

Contactors - Types JC (DC) / JC09D - JC18D

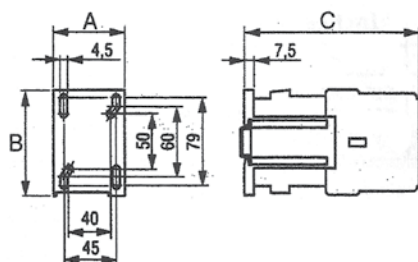
4 Mounting
Holes
for #8 Screws



Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
JC09D	1.77	3.1	4.53	1.38	2.8	1.97	.18	5.5W	5.5W
JC12D	(45)	(81)	(115)	(35)	(73)	(50)	(4.5)		
JC18D									

Contactors - Types JC (DC) / JC25D - JC34D

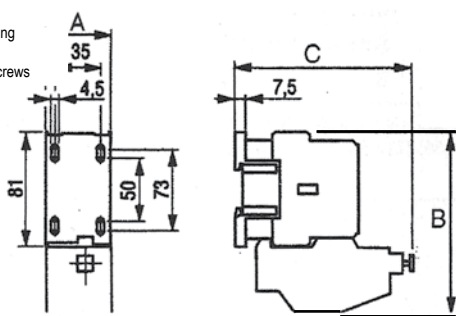
4 Mounting
Holes
for #8 Screws



Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
JC25D	2.17	3.43	5.26	1.77	3.11	1.97	.18	7.5W	7.5W
JC32D	(55)	(87)	(134)	(45)	(79)	(50)	(4.5)		
JC34D									

Open Starters - Types JC / JC09 - JC18

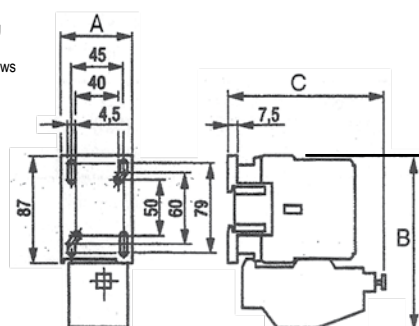
4 Mounting
Holes
for #8 Screws



Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
JC09	1.77	5.03	4.3	1.38	2.72	1.97	.18	6VA	45VA
JC12	(45)	(128)	(108)	(35)	(70)	(50)	(4.5)		
JC18									

Open Starters - Types JC / JC25 - JC34

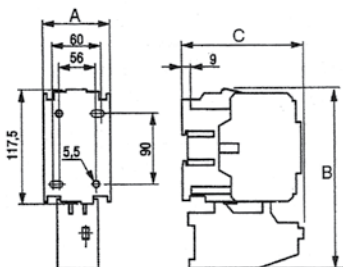
4 Mounting
Holes
for #8 Screws



Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
JC25	2.17	5.27	4.06	1.77	1.97	3.11	.18	9VA	88VA
JC32	(55)	(134)	(103)	(45)	(50)	(79)	(4.5)		
JC34	2.17	5.27	5.00	1.77	1.97	3.11	.18	9VA	88VA
	(55)	(134)	(127)	(45)	(50)	(79)	(4.5)		

Starters - Type JC / JC50-JC80

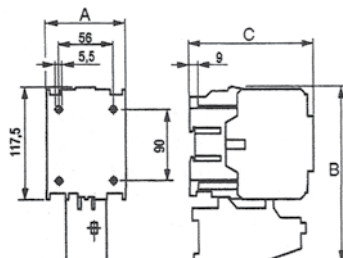
4 Mounting
Holes
for #10 Screws



Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
JC50A JC65A JC80A	2.6 (66)	7.23 (188)	4.57 (117)	3.54 (90)	2.38 (60)	2.2 (56)	.22 (5.5)	15.5VA	191VA

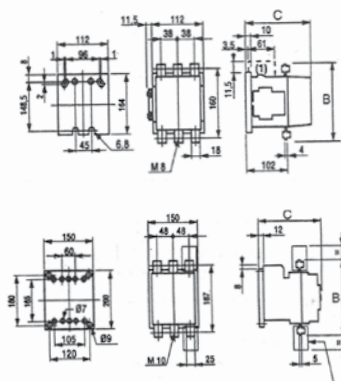
Starters - Type JC / JC95 - JCC5

4 Mounting
Holes
for #10 Screws



Type	Dimensions - Approximate Inches and (Millimeters)						Coil	VA
	A	B	C	D	E	F	Sealed	Inrush
JC95A JCC5A	2.95 (66)	7.43 (188.5)	4.96 (126)	3.54 (90)	2.2 (56)	.022 (5.5)	15.5VA	191VA

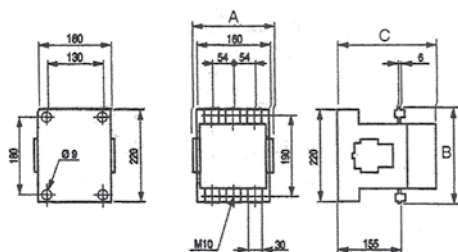
Contactors - Type JC / J150 - J309



4 Mounting
Holes
for #1/4" Bolts

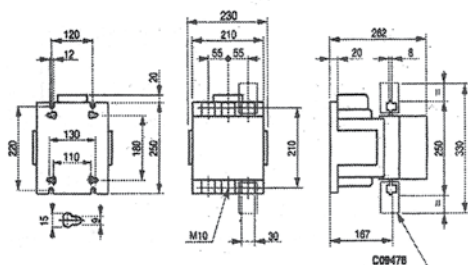
Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
J150C J185C	4.4 (112)	7.0 (178)	6.5 (166)	6.3 (160)	5.8 (148.5)	3.5 (96)	6.45 (164)	6VA	45VA
J250B J309B	5.9 (150)	8.33 (211.6)	8.2 (208)	7.4 (187)	7.08 (180)	4.72 (120)	7.86 (200)	60VA 13VA	830VA 340VA

Contactors - Type JC / J420 - J550



Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
J420C J550C	7.2 (183)	8.97 (228)	8.97 (228)	7.48 (190)	7.09 (180)	5.12 (130)	8.66 (220)	23VA	680VA

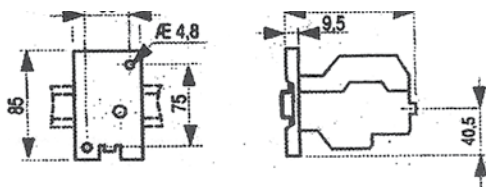
Contactors - Type JC / J700



Type	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
	A	B	C	D	E	F	G	Sealed	Inrush
J700B	9.06 (230)	9.84 (250)	10.31 (262)	8.27 (210)	8.66 (220)	4.72 (120)	.47 (12)	25VA	750VA

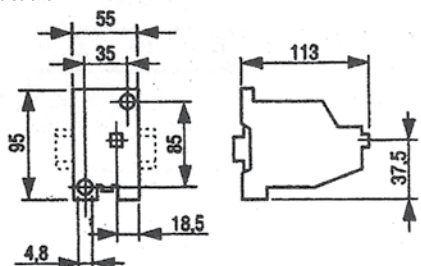
Overload Relays - Separate Panel Mount

2 Mounting Holes
for #8 Screws



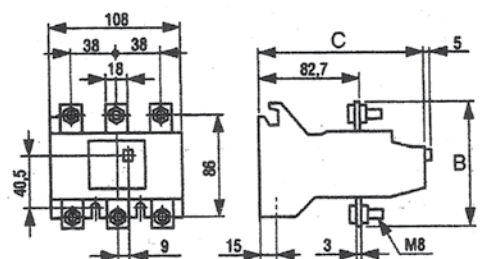
Type	Dimensions - Approximate Inches and (Millimeters)						
	A	B	C	D	E	F	G
JL1 JLXP	1.77 (45)	3.38 (85.8)	4.24 (107.7)	1.38 (35)	2.97 (75)	1.8 (45.7)	.55 (13.5)

2 Mounting Holes
for #8 Screws



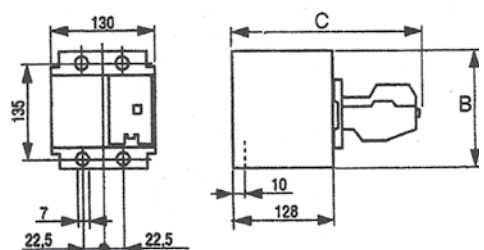
Type	Dimensions - Approximate Inches and (Millimeters)						
	A	B	C	D	E	F	G
JLA2P	2.16 (54.9)	3.75 (95.2)	4.4 (113)	1.38 (35)	3.34 (84.8)	1.83 (46.2)	1.42 (37)

Overload Relays - Separate Panel Mount (JL3 - JL5)



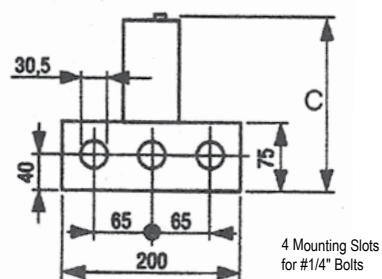
4 Mounting Slots
for #1/4" Bolts

Type	Dimensions - Approximate Inches and (Millimeters)							
	A	B	C	D	E	F	G	H
JL3	4.25 (108)	4.14 (105)	5.4 (137)	1.34 (34)	.47 (12)	1.57 (40.5)	2.48 (62.9)	2.75 (70)



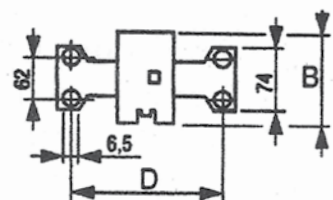
4 Mounting Slots
for #1/4" Bolts

Type	Dimensions - Approximate Inches and (Millimeters)						
	A	B	C	D	E	F	G
JL4	5.08 (129.2)	6.90 (177)	9.12 (231.6)	1.67 (42.4)	5.35 (13.5)	3.51 (89.2)	1.85 (46.9)



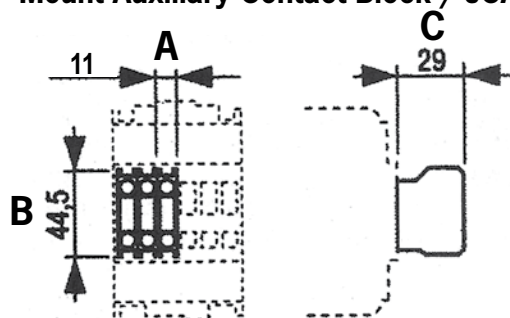
4 Mounting Slots
for #1/4" Bolts

Type	Dimensions - Approximate Inches and (Millimeters)						
	A	B	C	D	E	F	G
JL5	7.9 (200)	3.25 (82)	7.05 (179)	7.13 (181)	2.38 (60.4)	2.93 (74)	.26 (6.5)



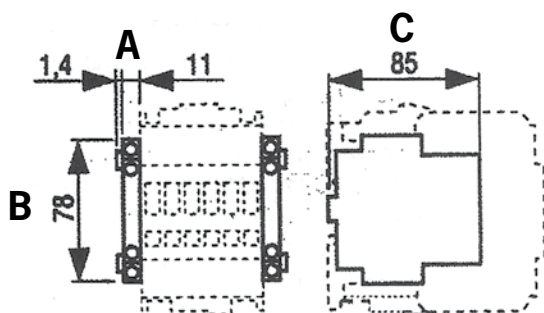
Accessories

Front - Mount Auxiliary Contact Block / JCAF_ _



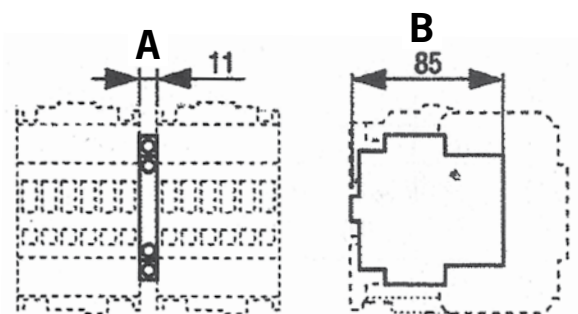
Dimensions - Approximate Inches and (Millimeters)		
A	B	C
.44 (11)	1.77 (44.5)	1.25 (29)

Side - Mount Auxiliary Contact Block / JCAL_ _



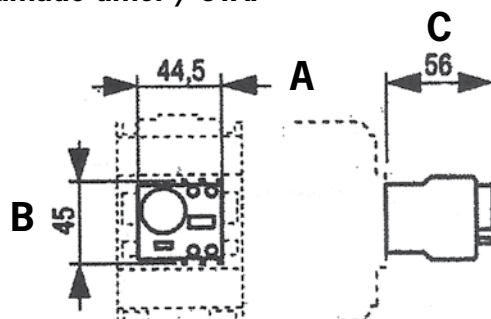
Dimensions - Approximate Inches and (Millimeters)		
A	B	C
.44 (11)	3.11 (78)	3.32 (85)

Mechanical Interlock / JRAA, JRAA02



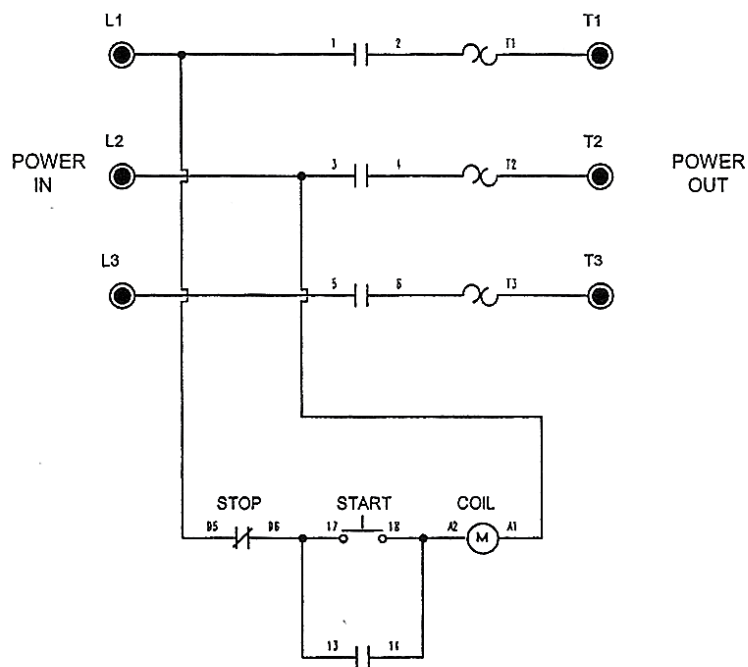
Dimensions - Approximate Inches and (Millimeters)	
A	B
.44 (11)	3.32 (85)

Pneumatic timer / JTAF



Dimensions - Approximate Inches and (Millimeters)		
A	B	C
1.77 (44.5)	1.8 (45)	2.2 (56)

3-Phase Starter



1-Phase Starter

