

Welcome to the new edition of the **Springer Controls Company, Inc. Product Guide**. This guide reflects our continuing commitment to our customers to provide complete, up-to-date product information and technical data. We appreciate your choosing Springer Controls and we will continue to update this information as well as provide new products to meet today's demands for electrical control products.



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This site includes new product information, complete product data with downloads, installation instructions, along with other Springer Control news.



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Mini-Contactors



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SECTION A

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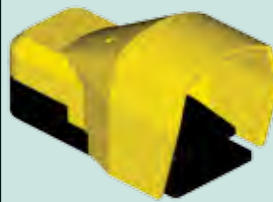
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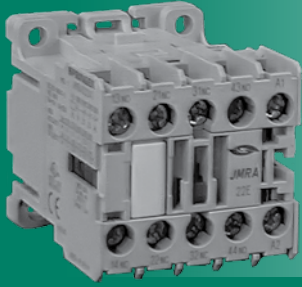
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IEC CONTACTORS / RELAYS



SPRINGER
controls company

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.

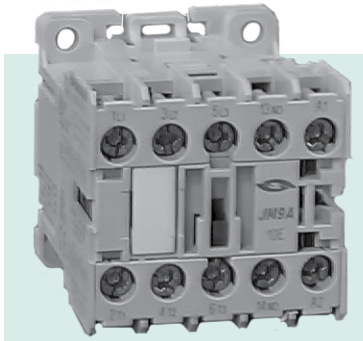
MINI-CONTACTORS; 6 & 9 amp

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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.

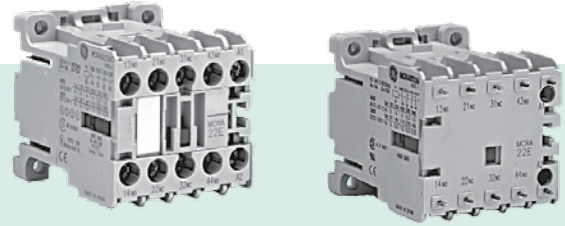
Safety Features — Finger and back-of-hand protection are provided. All screw and quick connect type terminals are clearly marked with dual markings where applicable, for easy identification and wiring convenience. UL and CSA approved.



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	3 Phase 200V 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	3 Phase 200V 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

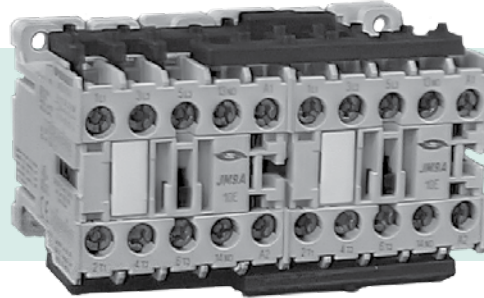
- Use complete catalog number. Replace the (*) with the suffix from the coil table.
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JM SERIES COIL TABLE

*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 1/2	1 1/2	3	3	Screw	0	1	RJM6A301AT- *	\$161.00
								Printed Circuit	0	1	RJM6A301AI- *	\$174.00
9	20	1/2	1 1/2	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 1/2	1 1/2	3	3	Screw	0	1	RJM6C301AT- •	\$207.00
								Printed Circuit	0	1	RJM6C301AI- •	\$220.00
9	20	1/2	1 1/2	3	3	5	5	Screw	0	1	RJM9C301AT- •	\$259.00
								Printed Circuit	0	1	RJM9C301AI- •	\$272.00

ORDERING INFORMATION

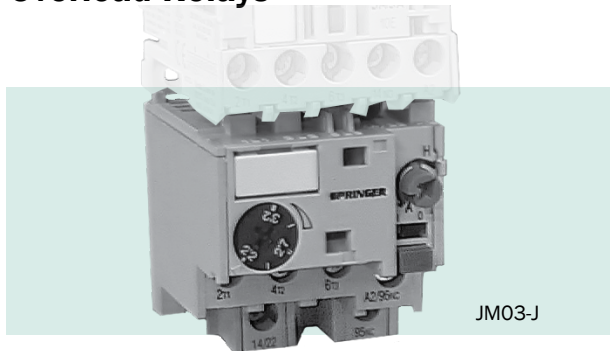
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- Accessories page A6
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- Dimension page A8

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

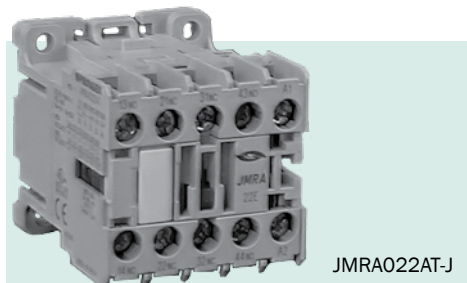
Overload Relays



- 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 #MVBOT (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.

Discount Schedule SC-70

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

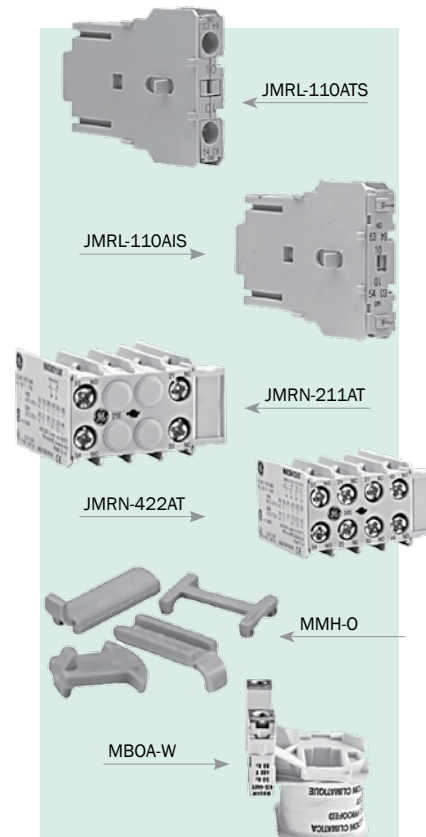
Accessories

Description	Contacts		Catalog No.	Price	
	N.O.	N.C.			
Auxiliary Contact Blocks¹	Side Mount Screw Terminal	1 0	0 1	JMRL-110ATS JMRL-101ATS	\$12.00 \$12.00
	Side Mount Printed Circuit	1 0	0 1	JMRL-110AIS JMRL-101AIS	\$13.00 \$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 72-240 Volt AC			MPOAAE1 MPOAAE2	\$27.00 \$27.00
	Mechanical Interlock - For reversing contractor assemblies			MMH-0	\$10.00
Coil Kits AC Coil Kits DC Coil Kits			MBOA-* MBOC-*	\$20.00 \$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	aM/gl (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

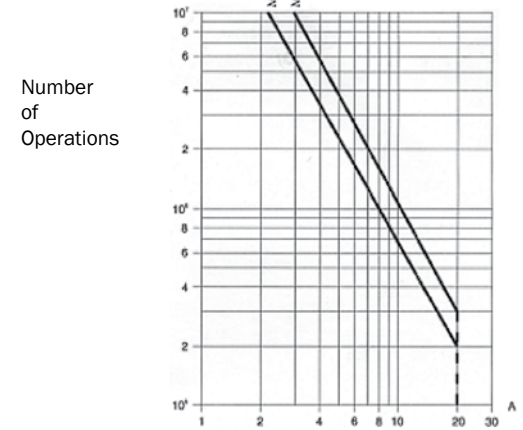
Terminal Capacity

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

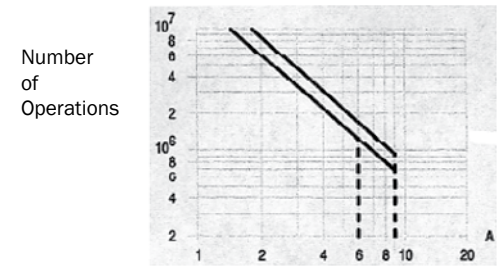
(1) Insulated terminal type B 2.8 x 0.8 with wire 1 mm² Ie = 8A acc, to DIN 46247

Electrical Endurance

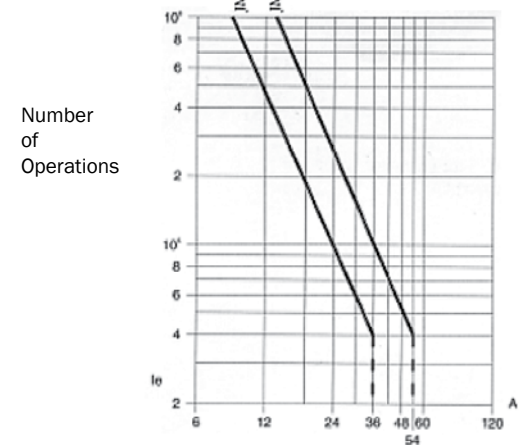
Category AC1



Category AC3

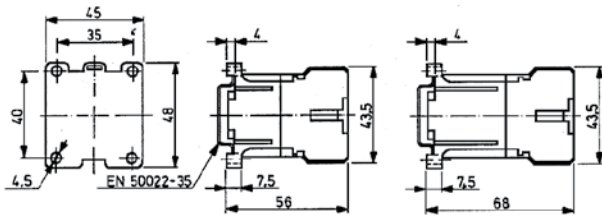


Category AC4



Discount Schedule SC-70

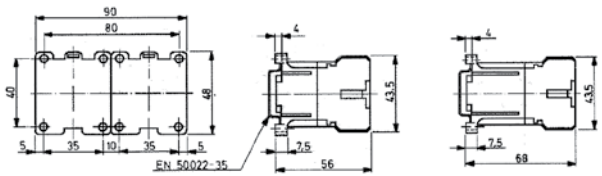
Contactors & Relays - Types JM & JMRA



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

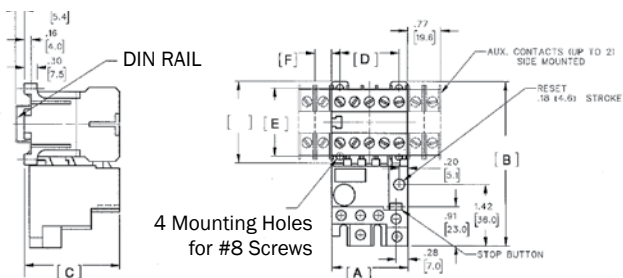
Reversing Contactors & Relays - Type JM



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



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.

Sizing of Contactors

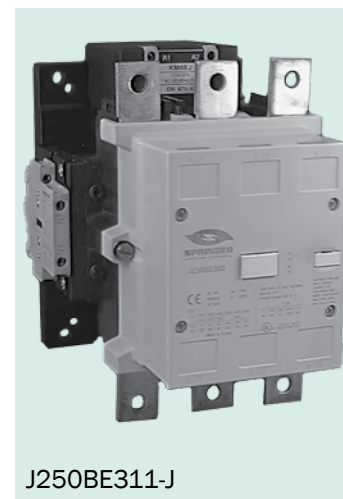
- See pages A22 & A23 for either Horsepower or Kilowatt Motor Ratings
- Amp rating in AC3 (Inductive load) and AC1 (resistive load)



JC12A310T-J

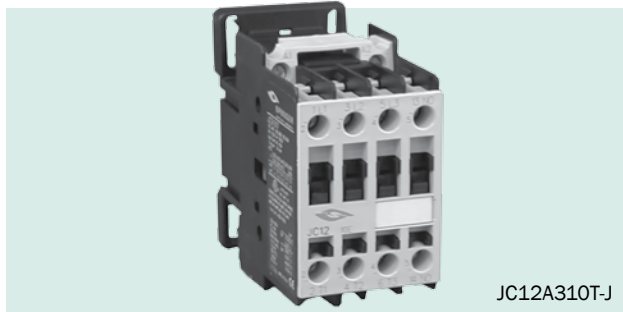


JC50A311M-S



J250BE311-J

NON-REVERSING CONTACTORS; 9 amp - 32 amp



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	N.O.	N.C.	N.O.	N.C.		
9	25	0.75	1.5	3	3	5	7.5	3	0	1	0	JC09A310T-* JC09A301T-*	\$141.00 \$141.00
12	25	0.75	2	3	3	7.5	10	3	0	1	0	JC12A310T-* JC12A301T-* JC12A400T-*	\$176.00 \$176.00 \$176.00
18	32	1	3	5	5	10	15	3	0	1	0	JC18A310T-* JC18A301T-* JC18A400T-*	\$203.00 \$203.00 \$203.00
25	45	2	3	7.5	7.5	15	20	3	0	1	0	JC25A310M-* JC25A301M-* JC25A400M-*	\$226.00 \$226.00 \$289.00
32	60	2	5	10	10	20	25	3	0	1	0	JC32A310M-* JC32A301M-* JC32A400M-*	\$258.00 \$258.00 \$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	N.O.	N.C.	N.O.	N.C.		
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

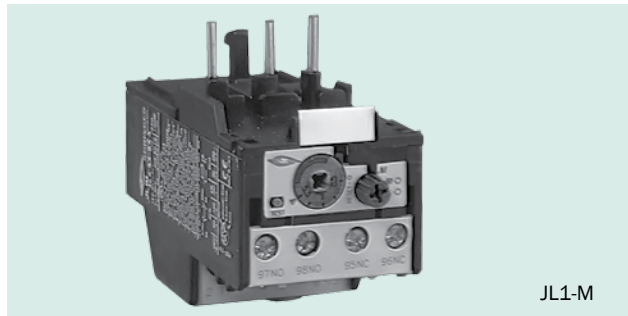
- Use complete catalog number. Replace the (*) with the suffix from the coil table.
- Accessories pages A19 - A21
- Engineering Data pages A24 - A27
- Dimensions pages A28 - A33

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

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) +

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)

Overload Relay - Type JL1

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**

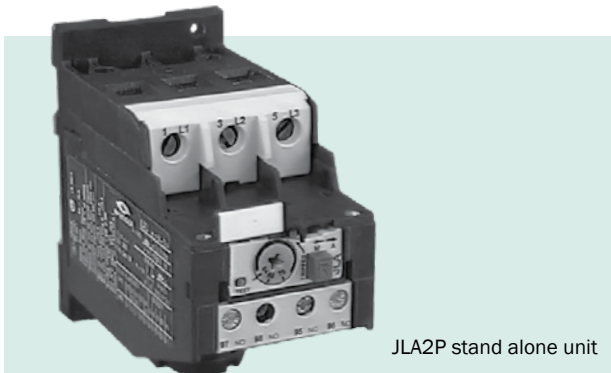
Voltage	Suffix
24-28	D
42-48	F
110-125	J
220-250	N
440-500	Y

Discount Schedule SC-70

JL2 Series Overload Relays



JL2-Series
to be used with
JC50 through
JCC5 contactors



JLA2P stand alone unit

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

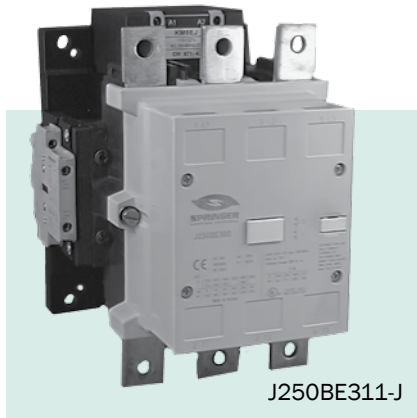
ORDERING EXAMPLE

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. AC3	Res. AC1	200V	3 Phase			3 Pole	N.O.	N.C.		
			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

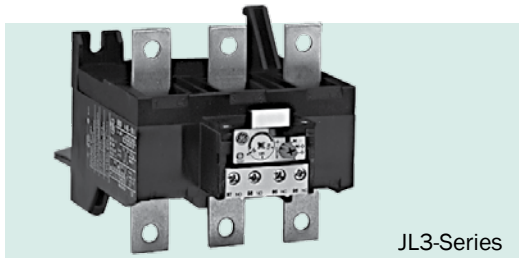
AC Voltage	Suffix	60Hz Voltage	Suffix
24 (50 60Hz)	1	277 (60Hz)	N
120 (50 60Hz)	J	480 (60Hz)	U
208 (60Hz)	L		
240 (60Hz)	S		

* AC/DC COIL TABLE

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

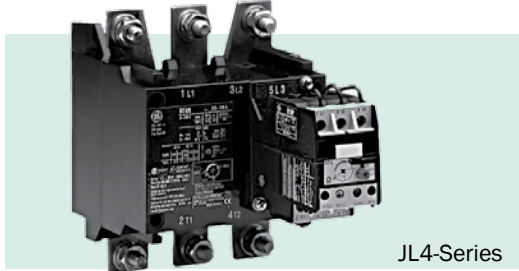
Discount Schedule SC-70

Overload-Relays; Types JL3, JL4, JL5



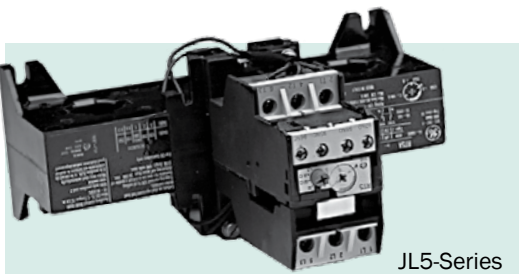
JL-3 Overload Relay

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	N.O.	N.C.	N.O.	N.C.		
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	N.O.	N.C.	N.O.	N.C.		
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		

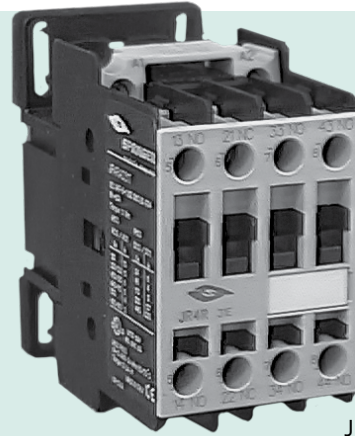
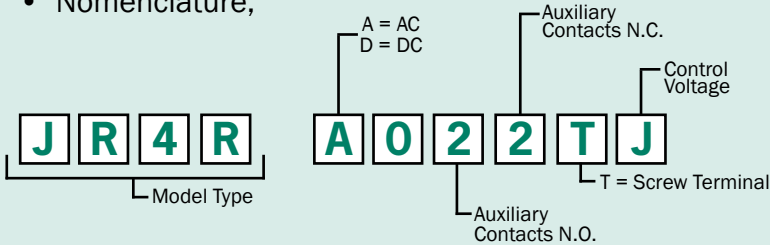
• AC/DC COIL TABLE

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

Discount Schedule SC-70

Control Relays

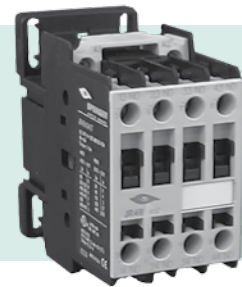
- AC voltage up to 690V, DC voltage up to 440V
- Fixed or din-rail mountable
- Full line of accessories available
- Nomenclature;



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	
N.O.	N.C.	Catalog No.	Price	Catalog No.	Price
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

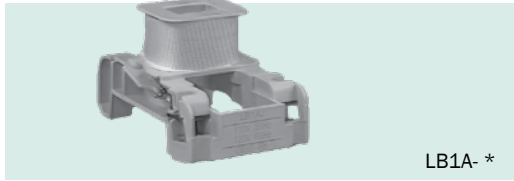
* AC COIL TABLE

• DC COIL

* 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

Discount Schedule SC-70

Accessories; Coils



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



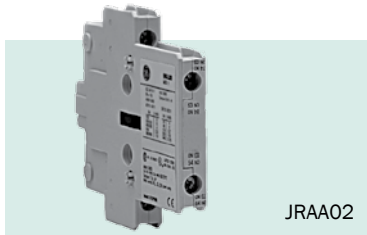
Front-Mount Auxiliary Contact Block*

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



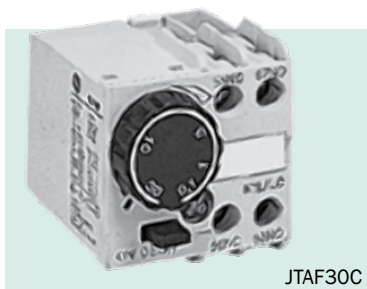
Side-Mount Auxiliary Contact Block*

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



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



Pneumatic Timers

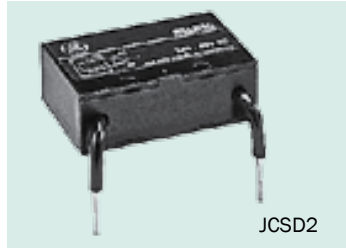
Description	Time Delay	Time Range	Contacts		Catalog No.	Price
			N.O.	N.C.		
For use with JC Contactors JC09-JCC5. (5-75 HP, 460V)	On	1 - 30 Sec.	1	1	JTAF30C	\$144.00
		10-60 Sec.	1	1	JTAF60C	\$144.00
	Off	1 - 30 Sec.	1	1	JTAF30D	\$144.00
		10-60 Sec.	1	1	JTAF60D	\$144.00

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

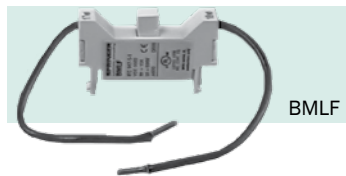
Discount Schedule SC-70



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	V31175CA	\$397.00
JC65A311M	V31207B	\$131.00	J185CA311	V31108CA	\$623.00
JC80A311M	V31208B	\$161.00	J250BE311	V31109BA	\$738.00
JC95A311M	V31209B	\$182.00	J309BE311	V31195BA	\$1,017.00
JCC5A311M	V31210B	\$262.00	J420CE311	V31110CE	\$1,476.00
			J550CE311	V31111CE	\$2,132.00
			J700BE311	V31112BA	\$3,157.00

Discount Schedule SC-70

**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

H.P.	110V - 120V		220V - 240V		380V - 415V		440V - 480V		550V - 600V		2.3 KV	4.16 KV
	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

Power Kilowatts	Single-Phase Motor		Three-Phase Motor					
	120V A	240V A	230V A	400V A	415V A	440V A	500V A	690V 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	64.0	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 q < 55½ 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.)													
Rated thermal current I _{th} at q < 55½ C	(A)		JC12	JC18		JC25	JC32			JC65	JC80	JC95	
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													
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	0.86	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

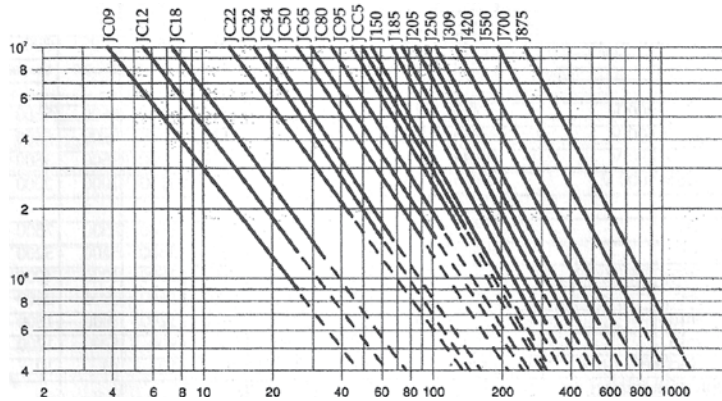
Life Curves - AC Contactors; JC09 - J875

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

ELECTRICAL ENDURANCE

Operation

RATED CURRENT I_e
For all voltages

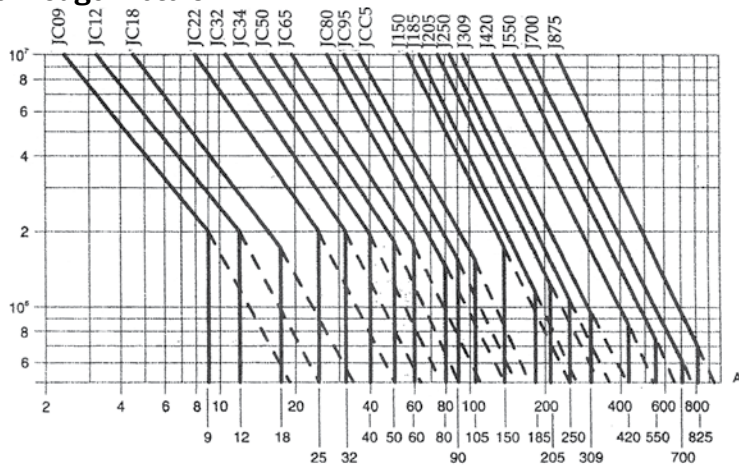


AC-3: Interruption of Running Squirrel - Cage Motors

ELECTRICAL ENDURANCE

Operation

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

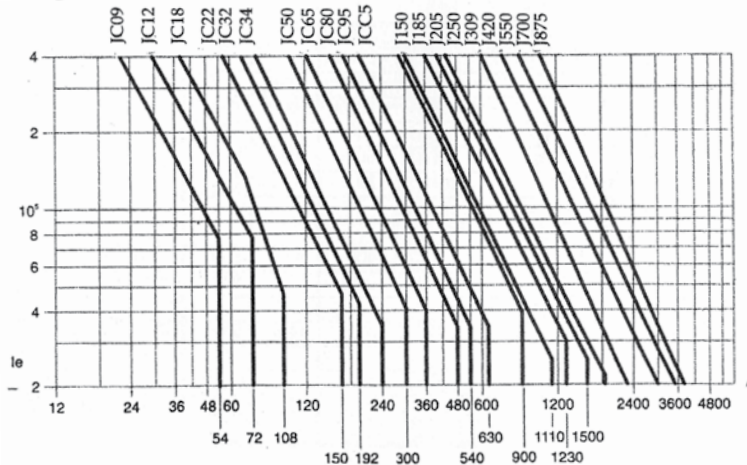


AC-4: Inching (Jogging) of Squirrel - Cage Motors

ELECTRICAL ENDURANCE

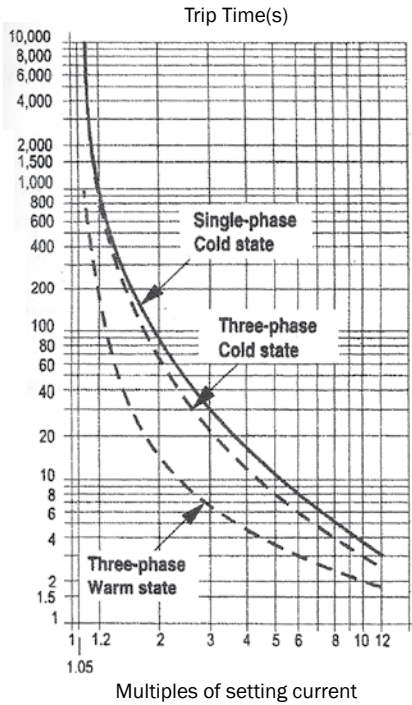
Operation

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

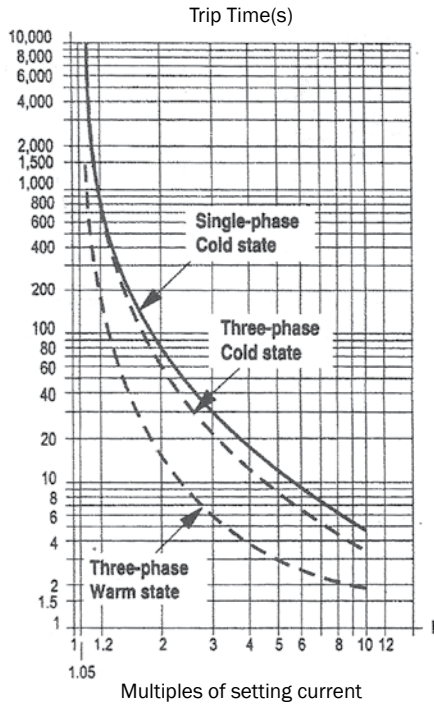


IEC Overload Relays

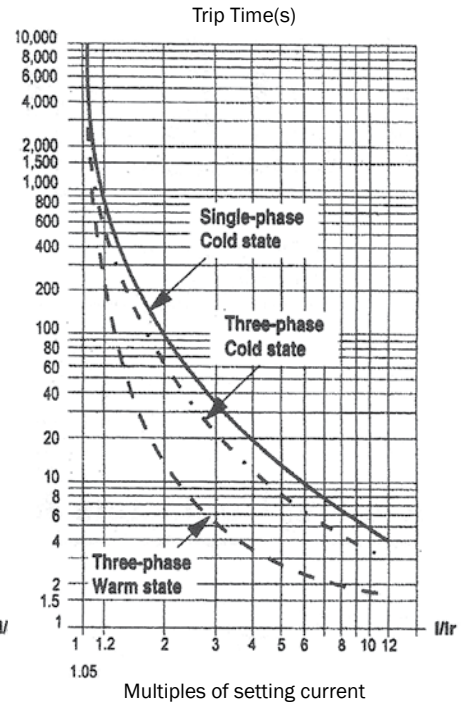
**Tripping Curves
JL1 Class 10A**



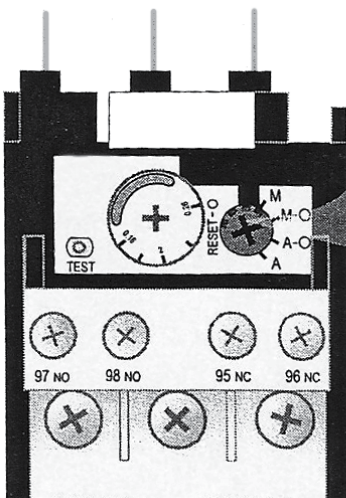
JL2 Class 10A



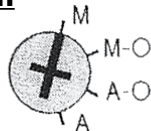
JL3 Class 10A



Functions of the reset-button

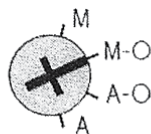


* Recommended setting



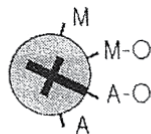
Manual RESET

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



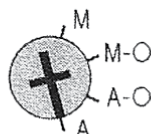
***Manual RESET and STOP**

(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

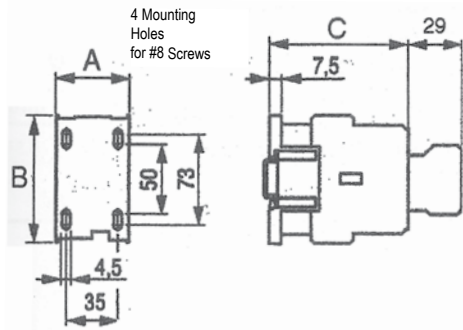
(After tripping, O/L relay will automatically turn on when proper temperature is met. STOP can also be initiated by pushing the reset button which interrupts the holding circuit.)



Automatic RESET no STOP

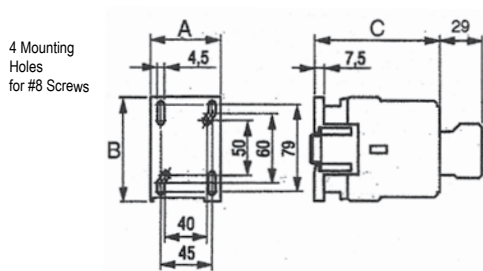
(After tripping, O/L relay will automatically turn on when proper temperature is met.)

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



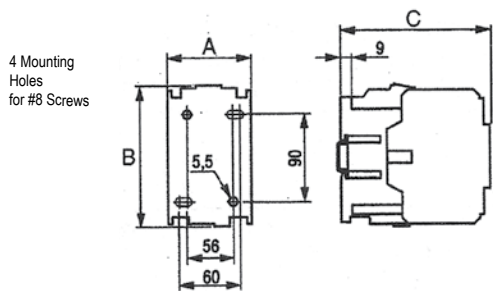
Type	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
	A	B	C	D	E	F	G	Sealed	Inrush
JC09A JC12A JC18A JR4R	1.77 (45)	3.1 (81)	3.34 (85)	1.38 (35)	2.8 (73)	1.97 (50)	.18 (4.5)	6VA	45VA

Contactors - Type JC / JC25 - JC34



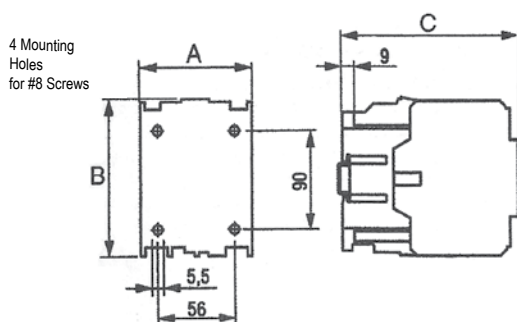
Type	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
	A	B	C	D	E	F	G	Sealed	Inrush
JC25A JC32A JC34A	2.17 (55)	3.43 (87)	3.86 (98)	1.77 (45)	3.11 (79)	1.97 (50)	.18 (4.5)	9VA	88VA

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

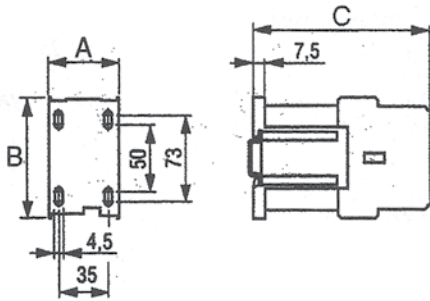
Contactors - Type JC / JC95 - JCC5



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

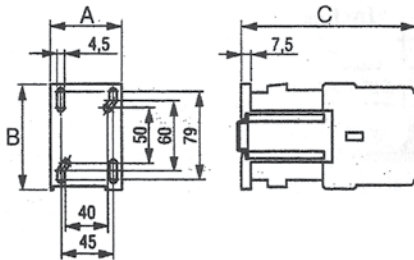
4 Mounting Holes for #8 Screws



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

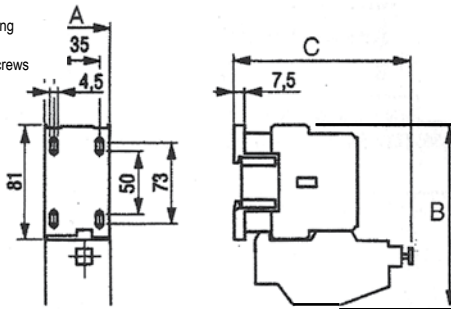
4 Mounting Holes for #8 Screws



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

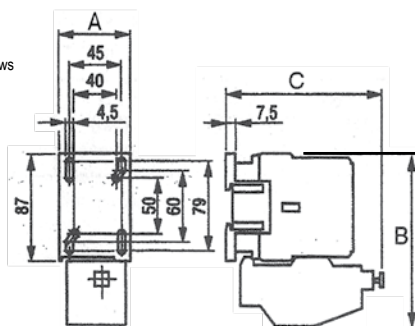
4 Mounting Holes for #8 Screws



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

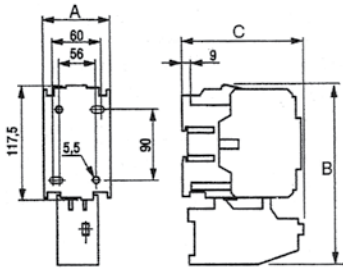
4 Mounting Holes for #8 Screws



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

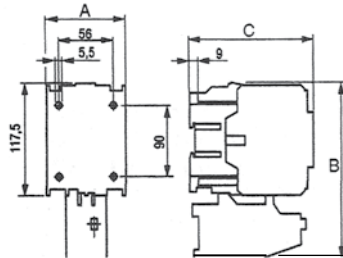
4 Mounting Holes for #10 Screws



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

Starters - Type JC / JC95 - JCC5

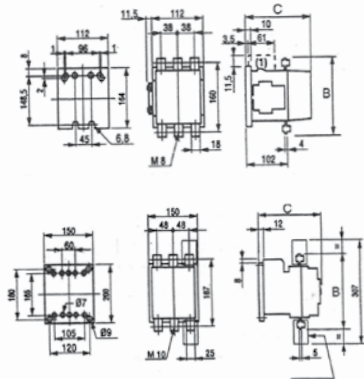
4 Mounting Holes for #10 Screws



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

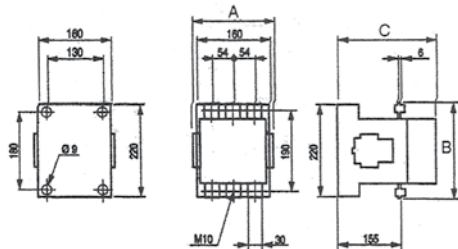
Contactors - Type JC / J150 - J309

4 Mounting Holes for #1/4" Bolts



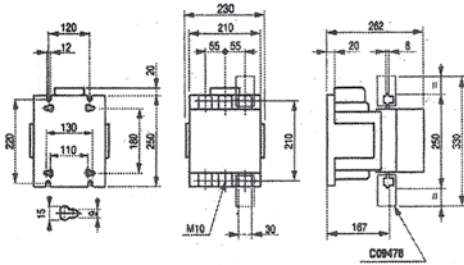
Type	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
	A	B	C	D	E	F	G	Sealed	Inrush
J150C	4.4	7.0	6.5	6.3	5.8	3.5	6.45	32VA	400VA
J185C	(112)	(178)	(166)	(160)	(148.5)	(96)	(164)		
J250B	5.9	8.33	8.2	7.4	7.08	4.72	7.86	60VA	830VA
J309B	(150)	(211.6)	(208)	(187)	(180)	(120)	(200)		

Contactors - Type JC / J420 - J550



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

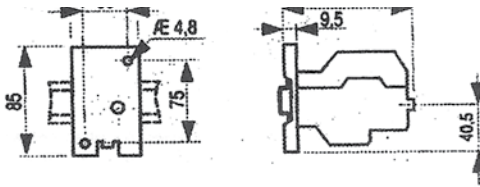
Contactors - Type JC / J700



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

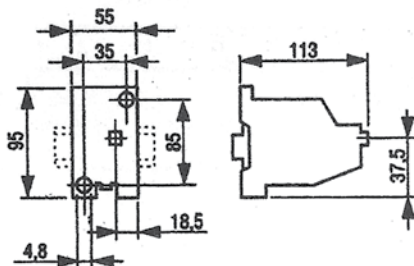
Overload Relays - Separate Panel Mount

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)

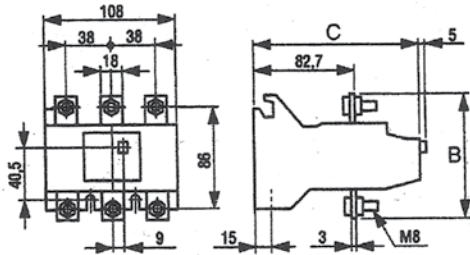
2 Mounting Holes for #8 Screws



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)

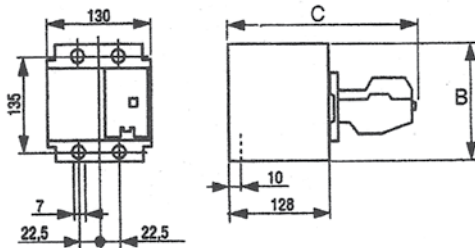
A 32 DIMENSIONS

Overload Relays - Separate Panel Mount (JL3 - JL5)



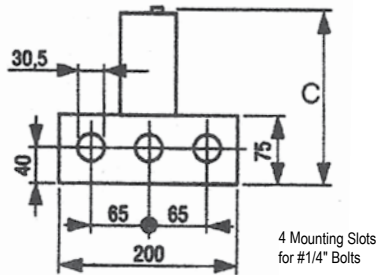
4 Mounting Slots for #1/4" Bolts

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)



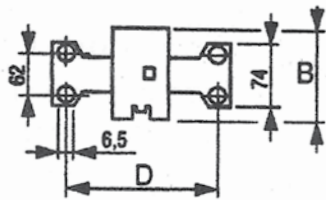
4 Mounting Slots for #1/4" Bolts

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)



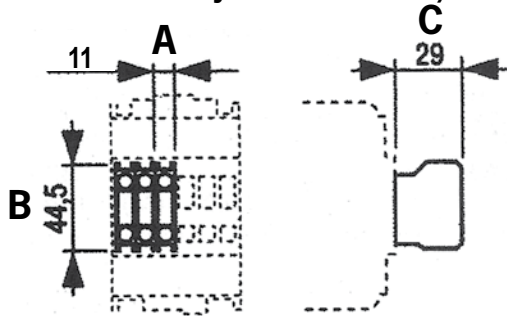
4 Mounting Slots for #1/4" Bolts

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)



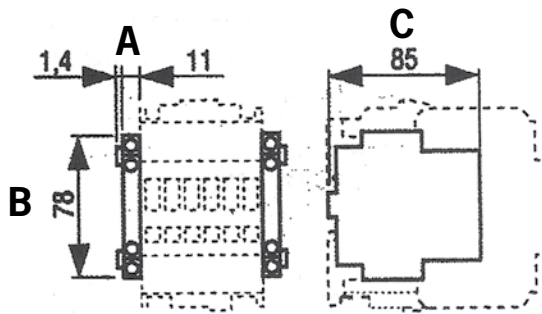
Accessories

Front - Mount Auxiliary Contact Block / JCAF_ _



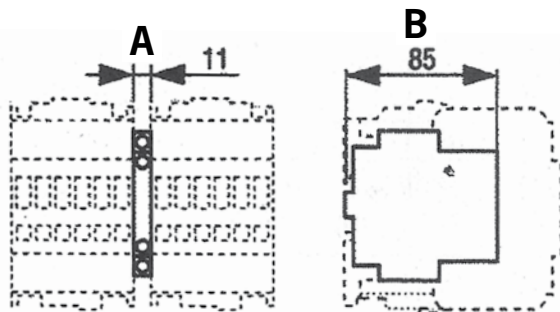
Dimensions - Approximate Inches and (Millimeters)		
A	B	C
.44 (11)	1.77 (44.5)	1.25 (29)

Side - Mount Auxiliary Contact Block / JCAL_ _



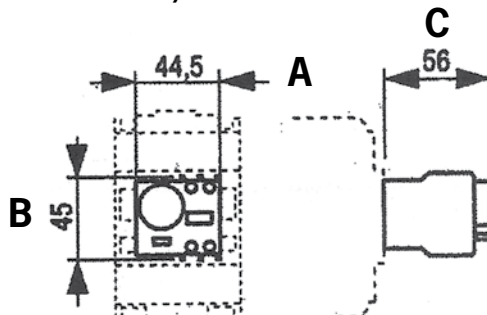
Dimensions - Approximate Inches and (Millimeters)		
A	B	C
.44 (11)	3.11 (78)	3.32 (85)

Mechanical Interlock / JRAA, JRAA02



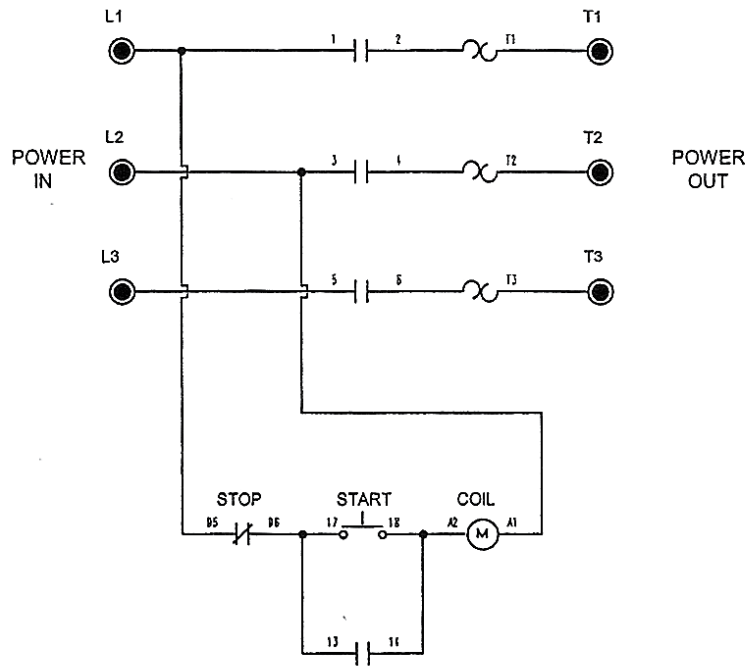
Dimensions - Approximate Inches and (Millimeters)	
A	B
.44 (11)	3.32 (85)

Pneumatic timer / JTAF

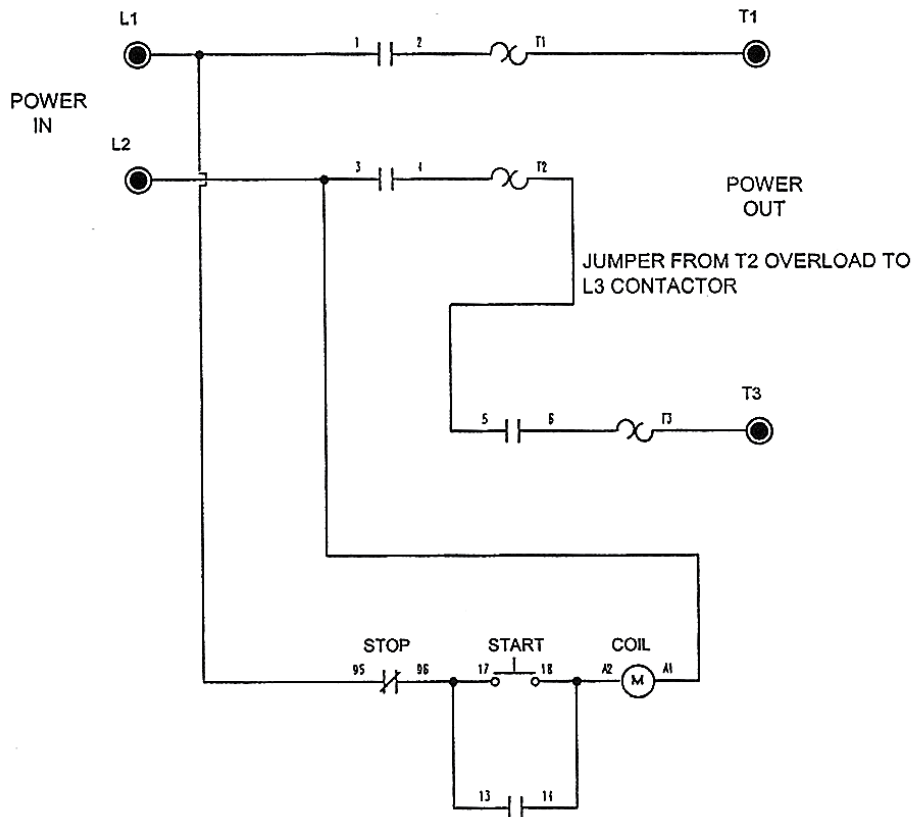


Dimensions - Approximate Inches and (Millimeters)		
A	B	C
1.77 (44.5)	1.8 (45)	2.2 (56)

3-Phase Starter



1-Phase Starter



ENCLOSED DIRECT ON-LINE STARTERS



Springer Controls carries a complete line of IEC enclosed, direct on-line, AC starters up to 60 HP or 80 amp. Springer Controls is UL certified (508A), to build starters and custom control panels up to 500 HP. (See section F for custom built starters.)

ENCLOSED DIRECT ON-LINE STARTERS;

Description / Features / Ordering Instructions	B2
Nomenclature - Part Number	B3
Single Phase, Full Voltage Starters (9amp - 80amp).....	B4
Three Phase, Full Voltage Starters (9amp - 32amp).....	B5
Three Phase, Full Voltage Starters (50amp - 80amp).....	B6
Wiring Diagrams.....	B7
Horsepower Motor Ratings.....	B8
Kilowatt Motor Ratings.....	B9

ENCLOSED ON-LINE AC STARTERS; DESCRIPTION & FEATURES

B 2



AC Starter Display (open)

Description and Features

- Direct On-Line Starters in polycarbonate enclosure. Rated Nema 1, 12, 4 & 4x, IP65
- All contactors and overload relays are UL approved.
- AC3 Inductive Motor rating from 9amp through 80 amp
- Fully assembled single and three phase starters.
- No cover wiring required.
- Full selection of coil voltages and overload relays.
- “Start-Stop” or “Reset” external buttons come standard. (Blank cover or no buttons available on request)



Part# **JC1206P1G-JN**

- 12 amp AC Starter
- 3-phase
- Poly Enclosure - N4x
- Start-Stop Buttons
- Dimensions; 7" x 3½" X 5½"
- 120V AC coil
- Overload Relay; 8-12 amps

Ordering Information

- Determine Single or Three Phase application.
- Determine motor HORSEPOWER or FULL LOAD AMPS (FLA) of the motor.
- Select complete Part Number from designated table.
- “Nomenclature” (page B3) to order non-listed or non-standard starters.
- For starters that are NOT direct on-line, see “Engineered Products” in section F of catalog for custom-built starters.



Part# **JC6506P1K-SH**

- 65 amp AC Starter
- 3-phase
- Poly Enclosure - N4x
- Start-Stop Buttons
- Dimensions; 12" x 8" X 7"
- 240V AC coil
- Overload Relay; 54-65 amps

Nomenclature; AC Starters

Example Part #: **#JC0906P1G-JM**
 Description: 9 amp contactor, wired 3 phase, polycarbonate enclosure with start-stop/reset button, 120volt AC coil, 5.5 - 8.5 current range.



Contactor Size	
JC09	9amp
JC12	12amp
JC18	18amp
JC25	25amp
JC32	32amp
JC50	50amp
JC65	65amp
JC80	80amp

Wiring	
0	Three Phase
1	Single Phase

Enclosure Type	
6	Poly Encl.

Button Configuration	
P1	Start-Stop
R1	Reset Only
S1	No Buttons

Overload Relay*	
Current Range	Suffix
2.5 - 4.0	K
4.0 - 6.3	L
5.5 - 8.5	M
8.0 - 12.0	N
10.0 - 16.0	P
14.5 - 18.0	S
17.5 - 22.0	T
21.0 - 26.0	U
25.0 - 32.0	V
30.0 - 40.0	W

*JC09 through JC32 contactors; see table on page A13 for JL2 O/L relays.

AC Coils	
1	24V
J	120V
L	208V
S	240V
N	277V
U	480V

Enclosure Size; H x W x D		Contactors used
G	7" x 3½" x 5½"	JC09, JC12, JC18
B	7½" x 4" x 6"	JC25, JC32
K	12" x 8" x 7"	JC50, JC65, JC80

ENCLOSED AC STARTERS - SINGLE PHASE

Single Phase, Full Voltage, Across the Line Starters; 9amp - 80amp

B 4



9amp Starter; "Start-Stop" Button



9amp Starter; "Reset only" Button

Horsepower Single Phase (Full Load Amps)		Contactor Series	Overload Relay Range (O/L part#)	Coil Voltage	Complete Part Number* Start-Stop Button	Complete Part Number* Reset only Button	Price
115V	230V						
---	1/4 (2.9)	JC09	2.5 - 4.0 (JL1K)	115V	---	---	\$306.00
---				230V	JC0916P1G-SK	JC0916R1G-SK	
1/6 (4.4)	1/2 (4.9)	JC09	4.0 - 6.3 (JL1L)	115V	JC0916P1G-JL	JC0916R1G-JL	\$309.00
				230V	JC0916P1G-SL	JC0916R1G-SL	
1/3 (7.2)	3/4 (6.9)	JC09	5.5 - 8.5 (JL1M)	115V	JC0916P1G-JM	JC0916R1G-JM	\$309.00
				230V	JC0916P1G-SM	JC0916R1G-SM	
1/2 (9.8)	1.0 (8.0)	JC09	8.0 - 12.0 (JL1N)	115V	JC0916P1G-JN	JC0916R1G-JN	\$309.00
				230V	JC0916P1G-SN	JC0916R1G-SN	
---	1.5 (10.0)	JC12	8.0 - 12.0 (JL1N)	115V	---	---	\$347.00
---				230V	JC1216P1G-SN	JC1216R1G-SN	
---	2.0 (12.0)	JC12	10.0 - 16.0 (JL1P)	115V	---	---	\$347.00
---				230V	JC1216P1G-SP	JC1216R1G-SP	
3/4 (13.8)	---	JC18	10.0 - 16.0 (JL1P)	115V	JC1816P1G-JP	JC1816R1G-JP	\$372.00
				230V	---	---	
1.0 (16.0)	3.0 (17.0)	JC18	14.5 - 18.0 (JL1S)	115V	JC1816P1G-JS	JC1816R1G-JS	\$372.00
				230V	JC1816P1G-SS	JC1816R1G-SS	
1.5 (20.0)	---	JC25	17.5 - 22.0 (JL1T)	115V	JC2516P1B-JT	JC2516R1B-JT	\$416.00
				230V	---	---	
2.0 (24.0)	---	JC25	21.0 - 26.0 (JL1U)	115V	JC2516P1B-JU	JC2516R1B-JU	\$416.00
				230V	---	---	
---	5.0 (28.0)	JC32	25.0 - 32.0 (JL1V)	115V	---	---	\$460.00
---				230V	JC3216P1B-SV	JC3216R1B-SV	
3.0 (34.0)	7.5 (40.0)	JC50	30.0 - 43.0 (JL2E)	115V	JC5016P1K-JE	JC5016R1K-JE	\$774.00
				230V	JC5016P1K-SE	JC5016R1K-SE	
---	10 (50.0)	JC50	42.0 - 55.0 (JL2G)	115V	---	---	\$774.00
---				230V	JC5016P1K-SG	JC5016R1K-SG	
5.0 (56.0)	---	JC65	54.0 - 65.0 (JL2H)	115V	JC6516P1K-JH	JC6516R1K-JH	\$803.00
				230V	---	---	
7.5 (80.0)	---	JC80	64.0 - 82.0 (JL2J)	115V	JC8016P1K-JJ	JC8016R1K-JJ	\$913.00
				230V	---	---	

*See "Nomenclature" page B3 for panel size.

Discount Schedule SC-70

ENCLOSED AC STARTERS - THREE PHASE

B5

Three Phase, Full Voltage, Across the Line Starters; 9amp - 32amp

Horsepower Three Phase (Full Load Amps)			Contactor Series	Overload Relay Range (O/L part#)	Coil Voltage	Complete Part Number* Start-Stop Button	Complete Part Number* Reset only Button	Price
115V	230V	460V						
---	---	1/2 (1.1)	JC09	1.0 - 1.5 (JL1G)	115V	---	---	\$306.00
					230V	---	---	
					460V	JC0906P1G-UG	JC0906R1G-UG	
---	---	3/4 (1.6)	JC09	1.3 - 1.9 (JL1H)	115V	---	---	\$306.00
					230V	---	---	
					460V	JC906P1G-UH	JC0906R1G-UG	
---	1/2 (2.2)	1.0 (2.1)	JC09	1.8 - 2.7 (JL1J)	115V	---	---	\$306.00
					230V	JC0906P1G-SJ	JC0906R1G-SJ	
					460V	JC906P1G-UJ	JC0906R1G-UJ	
---	3/4 (3.2)	1.5/2.0 (3.4)	JC09	2.5 - 4.0 (JL1K)	115V	---	---	\$306.00
					230V	JC0906P1G-SK	JC0906R1G-SK	
					460V	JC0906P1G-UK	JC0906R1G-UK	
1/2 (4.4)	1.0 (4.2)	3.0 (4.8)	JC09	4.0 - 6.3 (JL1L)	115V	JC0906P1G-JL	JC0906R1G-JL	\$309.00
					230V	JC0906P1G-SL	JC0906R1G-SL	
					460V	JC0906P1G-UL	JC0906R1G-UL	
3/4 (6.4)	1.5/2.0 (6.8)	5.0 (7.6)	JC09	5.5 - 8.5 (JL1M)	115V	JC0906P1G-JM	JC0906R1G-JM	\$309.00
					230V	JC0906P1G-SM	JC0906R1G-SM	
					460V	JC0906P1G-UM	JC0906R1G-UM	
1.0 (8.4)	3.0 (9.6)	7.5 (11.0)	JC12	8.0 - 12.0 (JL1N)	115V	JC1206P1G-JN	JC1206R1G-JN	\$347.00
					230V	JC1206P1G-SN	JC1206R1G-SN	
					460V	JC1206P1G-UN	JC1206R1G-UN	
1.5/2.0 (13.6)	---	10.0 (14.0)	JC18	10.0 - 16.0 (JL1P)	115V	JC1806P1G-JP	JC1806R1G-JP	\$372.00
					230V	---	---	
					460V	JC1806P1G-UP	JC1806R1G-UP	
---	5 (15.2)	---	JC18	14.5 - 18.0 (JL1S)	115V	---	---	\$372.00
					230V	JC1806P1G-SS	JC1806R1G-SS	
					460V	---	---	
---	---	15.0 (21.0)	JC25	17.5 - 22.0 (JL1T)	115V	---	---	\$416.00
					230V	---	---	
					460V	JC2506P1B-UT	JC2506R1B-UT	
---	7.5 (22.0)	---	JC25	21.0 - 26.0 (JL1U)	115V	---	---	\$416.00
					230V	JC2506P1B-SU	JC2506R1B-SU	
					460V	---	---	
---	10.0 (28.0)	20.0 (27.0)	JC32	25.0 - 32.0 (JL1V)	115V	---	---	\$460.00
					230V	JC3206P1B-SV	JC3206R1B-SV	
					460V	JC3206P1B-UV	JC3206R1B-UV	
---	---	25.0 (34.0)	JC32	30.0 - 40.0 (JL1W)	115V	---	---	\$482.00
					230V	---	---	
					460V	JC3206P1B-UW	JC3206R1B-UW	

*See "Nomenclature" page B3 for panel size

Discount Schedule SC-70

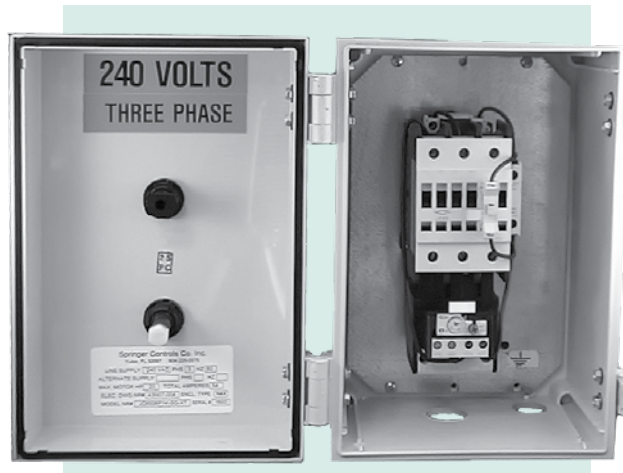
ENCLOSED AC STARTER - THREE PHASE

B 6

Three Phase, Full Voltage, Across the Line Starters; 50amp - 80amp*



65 amp Starter "Stop-Start"



65 amp Starter; open

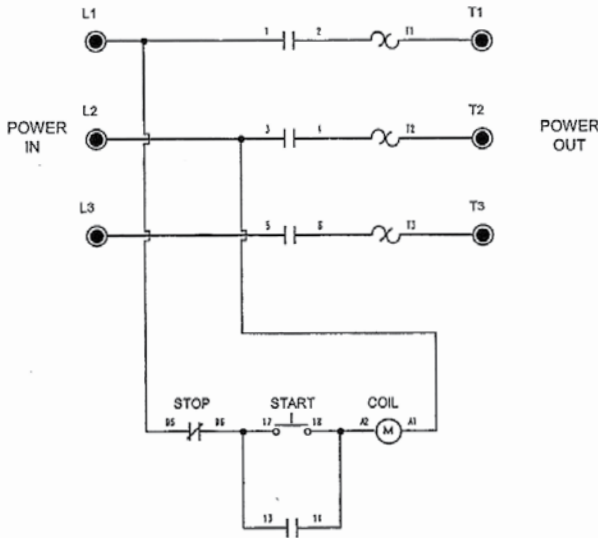
Horsepower Three Phase (Full Load Amps)			Contactor Series	Overload Relay Range (O/L part#)	Coil Voltage	Complete Part Number* Start-Stop Button	Complete Part Number* Reset only Button	Price
115V	230V	460V						
---	15 (42.0)	30 (40.0)	JC50	30 - 43 (JL2E)	115V	---	---	\$774.00
					230V	JC5006P1K-SE	JC5006R1K-SE	
					460V	JC5006P1K-UE	JC5006R1K-UE	
---	---	40 (52.0)	JC50	42 - 55 (JL2G)	115V	---	---	\$774.00
					230V	---	---	
					460V	JC5006P1K-UG	JC5006R1K-UG	
---	20 (54.0)	---	JC65	54 - 65 (JL2H)	115V	---	---	\$803.00
					230V	JC6506P1K-SH	JC6506R1K-SH	
					460V	---	---	
---	25 (68.0)	50 (65.0)	JC80	64 - 82 (JL2J)	115V	---	---	\$913.00
					230V	JC8006P1K-SJ	JC8006R1K-SJ	
					460V	JC8006P1K-UJ	JC8006R1K-UJ	
---	---	60 (77.0)	JC80	64 - 82 (JL2J)	115V	---	---	\$913.00
					230V	---	---	
					460V	JC8006P1K-UJ	JC8006R1K-UJ	

*See "Engineered Products", Section F, for starters larger than 80amp or for any custom built starters.

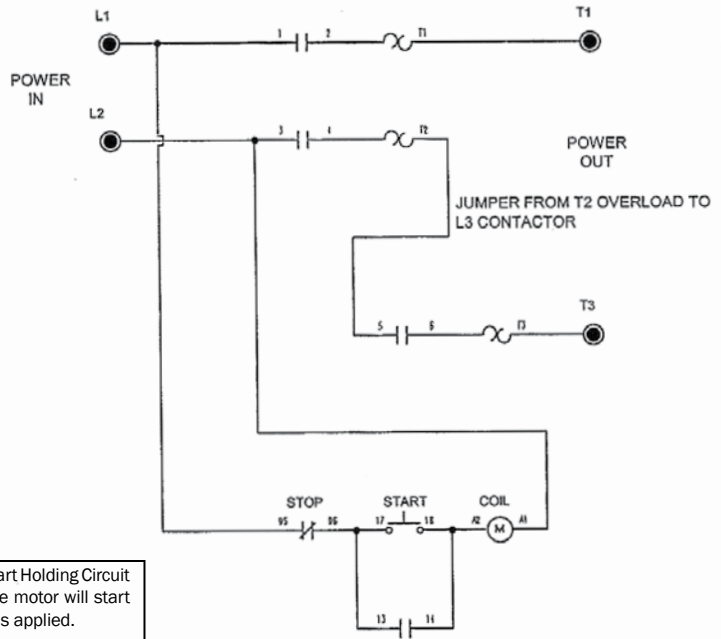
Discount Schedule SC-70

Typical Wiring Diagram "JC" Series

Three Phase Starter



Single Phase Starter

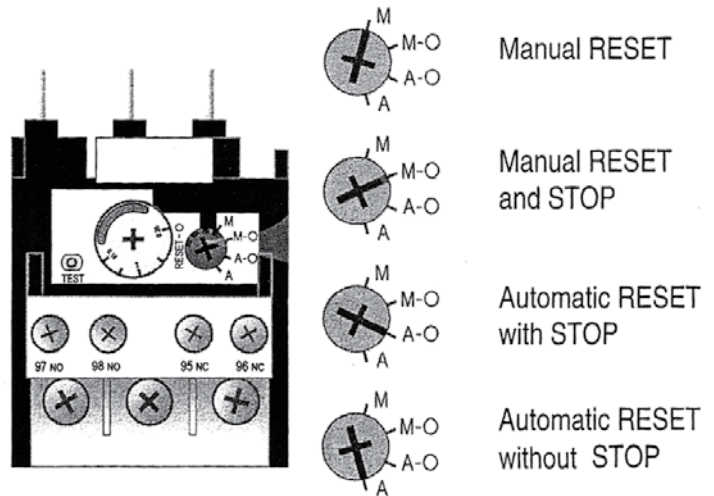


Reset Only - The Start Holding Circuit is removed and the motor will start as soon as power is applied.
Overload contact 95-96 remains in the control circuit.

Note: Wire L1 & L2 control supply voltage only when coil voltage is the same as the line voltage.

Overload Relay Diagram

See Page A27 for detailed description of the dial settings.



HORSEPOWER MOTOR RATINGS

B 8

Full-Load Motor-Running Currents in Amperes
Corresponding to Various AC 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.

H.P.	110V - 120V		220V - 240V ^{1,2}		380V - 415V		440V - 480V		550V - 600V		2.3 KV	4.16 KC
	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

B9

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.

Power Kilowatts	Single-Phase Motor		Three-Phase Motor					
	120V A	240V A	230V A	400V A	415V A	440V A	500V A	690V 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	64.0	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

NOTES

B 10

MANUAL MOTOR STARTERS



SPRINGER
controls company

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C

Springer Controls manual motor starters are 3-pole horsepower rated switches that combine motor thermal overload protection and magnetic short circuit protection in one compact unit. The switches offer motor protection circuit breaker up to 32 amps.

MANUAL MOTOR STARTERS;

Description / Features	C2
GMK Manual Motor Starters (up to 32 amps)	C3
Engineering Data	C4
Wiring Diagrams	C5
Dimensions	C6

DESCRIPTION / FEATURES

C2



Open Manual Motor Starter

Description

Model GMK Motor Protection Switch is a three pole horsepower rated switch which combines motor thermal overload protection and magnetic short circuit protection in one compact unit. The GMK is ideal for applications requiring multi-motor operation.

UL permits Group Fusing for motors up to 10 amperes full load current. This provides the option for grouping a number of motors under one branch circuit disconnect and fuse set. This saves panel space and additional component cost.

Remote control operation and low voltage protection can be provided by adding a Type "JM" Contactor in series with the motor protection switch.



Surface Mount Starter (IP55)

Features

- Motor protection circuit breaker up to 32 amps.
- Manual operation using start-stop push buttons.
- All poles open for both thermal and magnetic trips.
- Differential protection against asymmetrical overloads (single phase protection).
- Class 10 overload protection.
- Ambient temperature compensation between -5 °C and +40 °C.
- Instant magnetic trip when the current passing through the relay reaches 12 times maximum value of the thermal setting.
- Easily accessible Terminals protected against accidental contact.
- Easy Din Rail mounting or panel mounting with screws.
- UL Listed, CSA Approved and meets international standards.



Flush Mount Starter (IP55)

Manual Motor Starter - Type GMK

Motor Full Load Current Range		Maximum Single Phase Horsepower			Maximum Three Phase Horsepower			Magnetic Tripping Current Ampere	UL Requirements		Catalog No.	Price
Min.A	Max.A	115V	200V	230V	230V	460V	575V		Individual Motor Class K5 Max. Fuse Ampere	Group Fusing Max. Fuse Ampere		
0.1	0.16	---	---	---	---	---	---	1.9	15	100	GMKO-A	\$144.00
0.16	0.25	---	---	---	---	---	---	3.0	15	100	GMKO-B	\$144.00
0.25	0.4	---	---	---	---	---	---	4.8	15	100	GMKO-C	\$144.00
0.4	0.63	---	---	---	---	---	---	7.5	15	100	GMKO-D	\$144.00
0.63	1.0	---	---	---	---	1/2	1/2	12	15	100	GMKO-E	\$144.00
1.0	1.6	---	---	1/10	---	3/4	1	19	15	100	GMKO-F	\$164.00
1.6	2.5	---	1/8	1/6	1/2	1	1½	30	15	100	GMKO-G	\$164.00
2.5	4.0	1/8	1/4	1/3	1	2	3	48	15	45	GMKO-H	\$164.00
4.0	6.3	1/4	1/2	1/2	1½	3	5	75	20	45	GMKO-I	\$164.00
6.3	10.0	1/2	1	1½	3	5	7½	120	35	80	GMKO-J	\$164.00
10.0	16.0	1	2	2	5	10	10	190	60	---	GMKO-K	\$205.00
16.0	20.0	1½	3	3	---	---	15	240	80	---	GMKO-L	\$205.00
20.0	25.0	2	---	---	7½	15	20	300	90	---	GMKO-M	\$205.00
25.0	32.0	2	---	5	10	20	25	380	90	---	GMKO-N	\$230.00

Note:

1. Single phase horsepower ratings are based on wiring the 3 starter poles in series.
2. For group motor installations, use lowest maximum fuse size for the group of starters.

ORDERING INFORMATION

- Select starter based on the overload current range required for a given motor. This current range is determined from the motor Full Load Ampere rating and Motor Service Factor usually found on the motor nameplate.
- Engineering data page C4
- Wiring schematics page C5
- Dimension page C6

Enclosures and Accessories

Surface Mounting



Flush Mounting



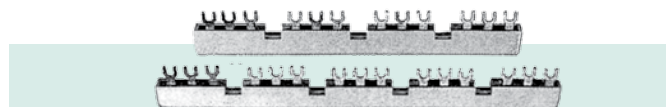
- Made in thermoplastic material.
- Equipped with four cable entries (PG16) and one neutral connection.

			Catalog No.	Price
Surface Mount	General Purpose	IP41	GMS04	\$49.00
	Dust & Water Protection	IP55	GMS05	\$73.00
Flush Mount	General Purpose	IP41	GME04	\$49.00
	Dust & Water Protection	IP55	GME05	\$73.00

Auxiliary Contact Blocks Side Mounting

	Catalog No.	Price
1 NO + 1NC	GMAL11N	\$32.00
2 NO	GMAL20N	\$32.00

Three Phase Busbar Block



	Catalog No.	Price
4 units Ui 660V Ie 80A - length 207mm	GMVE4	consult factory
5 units Ui 660V Ie 80A - length 261mm	GMVE5	
Plastic cover for unused 3 terminatals	GMVEP	

Discount Schedule SC-70

ENGINEERING DATA

C 4

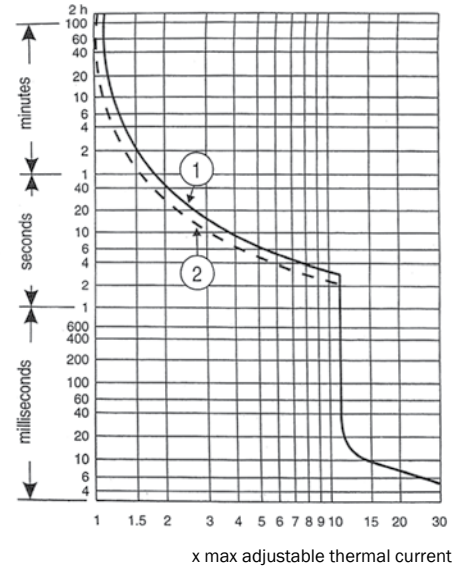
General

Conformity to Standards		IEC 947-2, IEC 947-4-1, VDE 0660	
Approvals		US, CSA	
Rated Thermal Current (I _{th}) at 40 °C		25A	
Rated Insulation Voltage (Ui)		690V	
Rated Operational Voltage (Ue)		AC	690V, 40/60Hz
		DC	220V, with or without earth connection
(See Application Diagram)			
Terminal Type		M4, Pozidriv, safety flange screws	
Wiring Capacity	Rigid Wire	min.	2 wires of 0.75 mm ²
		max.	2 wires of 6 mm ²
	Flexible Wire	min.	2 wires of 0.75 mm ²
		max.	2 wires of 4 mm ²

Main Circuit

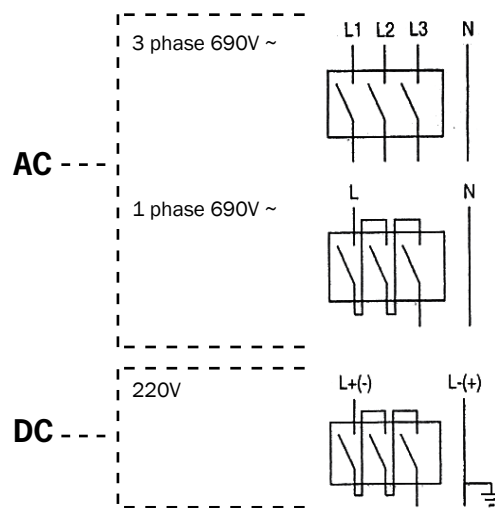
Category		AC3, DC4	
Operational Frequency Limits		40 to 60Hz	
Opening Time		aprox. 7ms	
Mechanical Endurance		10 ⁵ operations	
Electrical Endurance Category AC3		10 ⁵ operations	
Maximum Operating Rate		40 operations/hour	
Total Dissipated power at Rated Thermal Current and Hot State		6W	
Tripping Characteristics			
Thermal	Symmetrical Overloads	Class 10 (see curve 1, tripping curve)	
	Asymmetrical Overloads (phase failure)	To IEC 947-4-1 (see curve 2, tripping curve)	
	Temperature Compensation	-5 to +40 °C	
Magnetic		12 x I _e (I _e = max. thermal setting value)	
Stunt Release	Operating voltage limits	0.7 - 1.2 U _e 100% ED	
	Consumption AC	2.2 VA	
	DC	1W	
Undervoltage Release	Operational Voltages Limits	0.85 - 1,1 U _e 100% ED	
	Breaking Voltage Limits	0.75 - 0.35 U _e	
	Consumption	2.2 VA 1W	

Tripping Curve



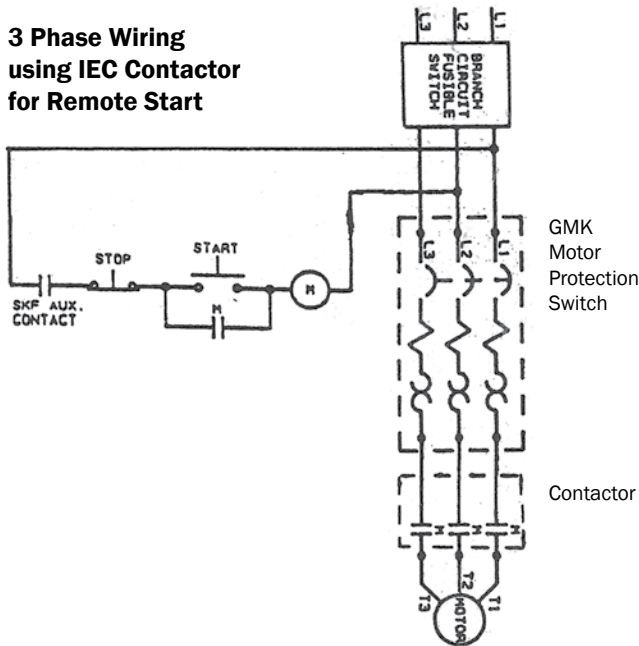
- ① Thermal trip, operating with 3-phases
- ② Thermal-differential trip (from cold) operating with 2-phases

Wiring Diagram

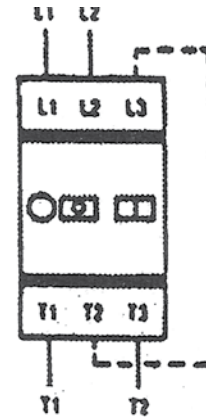


It is recommended to include auxiliary contact number GMAL11N in the control circuit, when using motor protection switches along with a magnetic contactor. It will ensure that the contactor coil is disconnected when the motor protection switch is off. This contact can be wired as shown in the diagram.

3 Phase Wiring using IEC Contactor for Remote Start

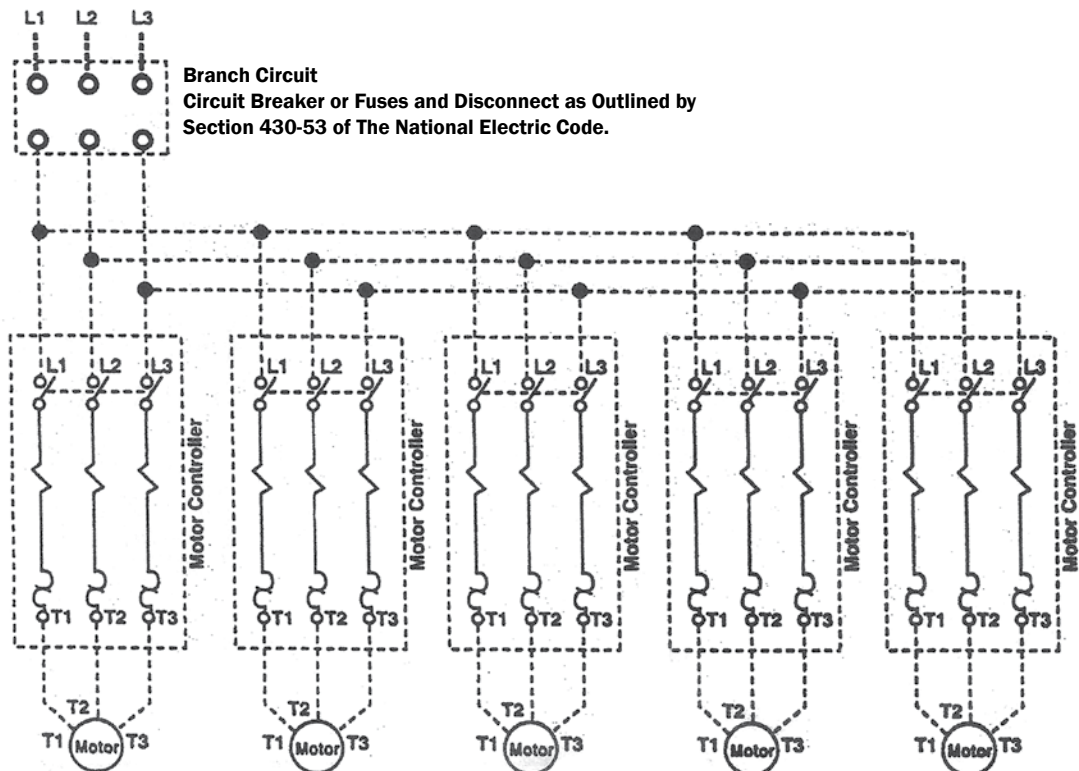


Single Phase Wiring



For single phase motors, the 3 poles of the starter must be wired in series by adding a jumper between terminals L3 and T2 as shown.

Group Fusing Application

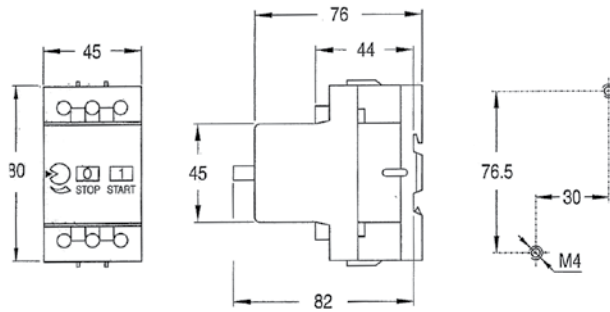


Typical Schematic Diagram; Group Installation of Manual Motor Controller

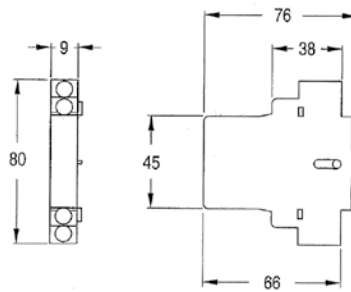
DIMENSIONS

Motor Protection Circuit Breaker

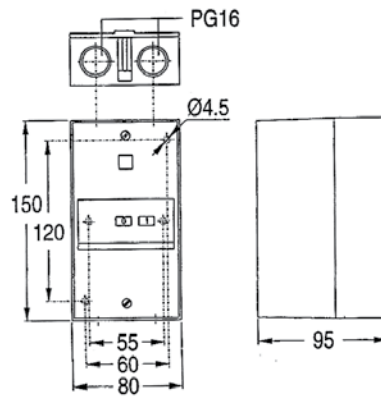
C6



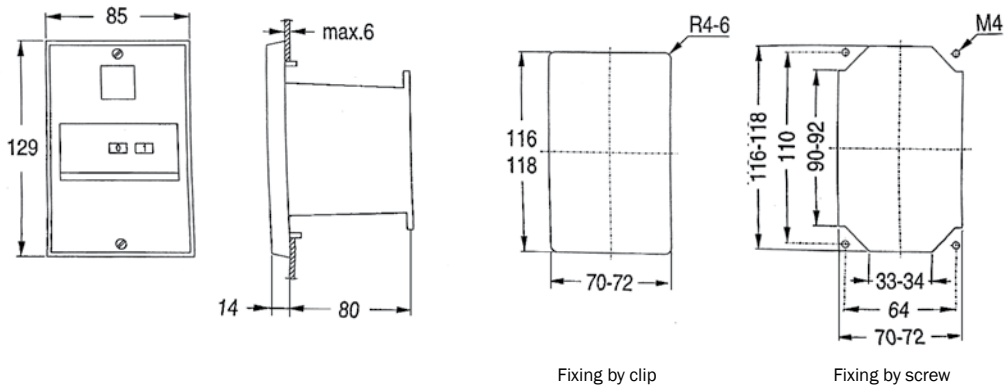
Auxiliary Contact Block



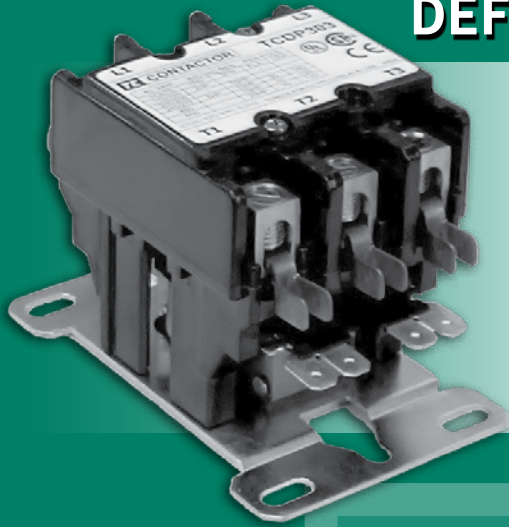
Surface Mounting Enclosure (GMS0_)



Flush Mounting Enclosure (GME0_)



DEFINITE PURPOSE CONTACTORS



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D

Springer Controls Definite Purpose Contactors are used in applications where the control requirements are well defined. This includes the controls of motors, power supplies, heating elements, lighting, HVAC fans and compressors.

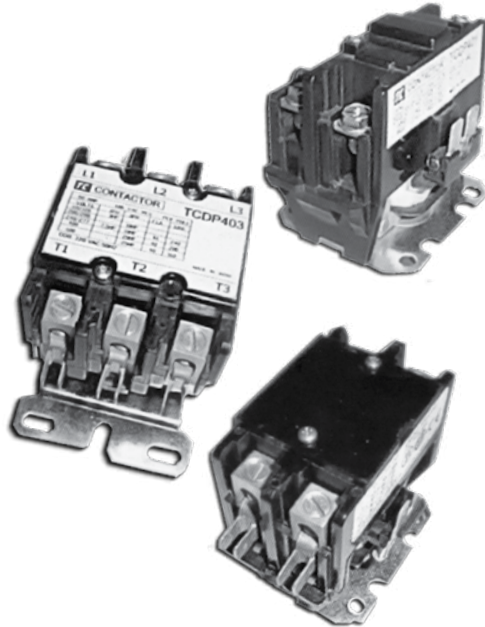
Springer Controls maintains a large inventory of 25, 30 and 40 amp contactors as well as 50 amp through 90 amp. The contactors are available in 1, 2 and 3 poles along with a full range of coil voltages. All contactors are UL approved.

DEFINITE PURPOSE CONTACTORS;

Description / Technical Specifications	D2
TCDP Contactors; 1 - 3 pole, 20 - 40 amps	D3
Dimensions	D4

TECHNICAL SPECIFICATIONS

D2



Description

- DP Contactors are used for control of Motors, Power supplies, Heating Elements, Lighting, HVAC Fans and Compressors.
- Available in 20 amp, 30 amp and 40 amp current rating.
- Contact Springer for pricing on 50 amp through 90 amp contactors.
- 1, 2 & 3 pole available.
- Full range of coil voltages available

Environment

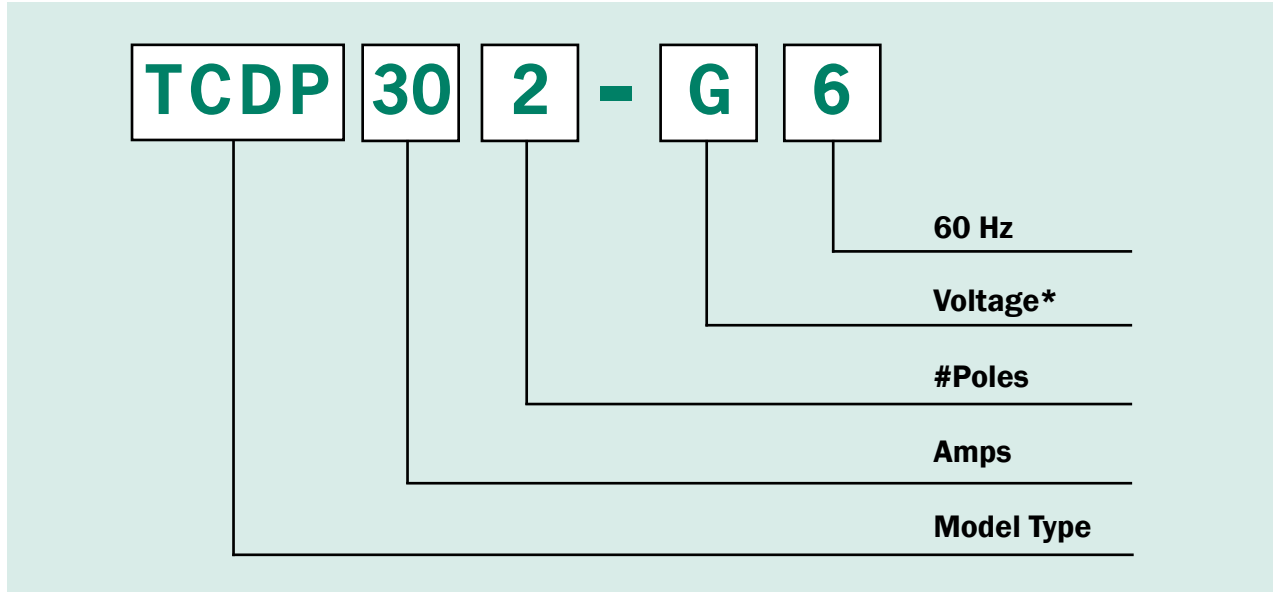
- Maximum Operating Altitude: 2000 meters above sea level.
- Ambient Air Temperature: -40° to 65° Celsius
- Ambient Air Dampness: 45% to 85% RH
- Coil Voltage: 80% - 105% rated voltage.

Technical Data

- Expected Life: 200,000 operations on full load.
- AC Coil: 2 million operations (mechanical)
- Minimum Contact Current: 3A @ 120V AC
- Normal VA: Inrush 65 VA, Sealed 7.5 VA
- Duty Cycle: Continuous
- Initial Insulation Resistance: 100 mega-ohms minimum
- UL and CE certified

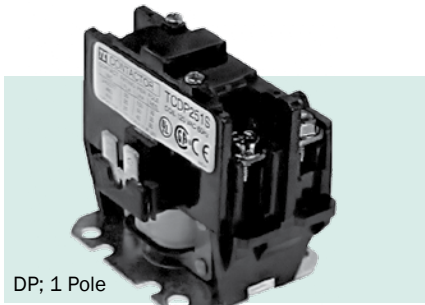


Part Number Nomenclature



D3

• Consult factory for 50, 60, 75, 90 amp contactors.



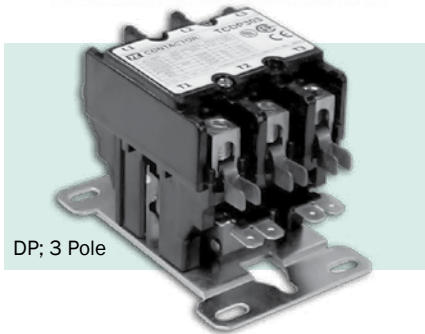
1 Pole (with shunt terminal)

Full Load Amps	Resistive Amps	Catalog No.	Price
25	30	TCDP251S - * 6	\$26.00
30	40	TCDP301S - * 6	\$28.00
40	50	TCDP401S - * 6	\$31.00



2 Pole

Full Load Amps	Resistive Amps	Catalog No.	Price
20	30	TCDP202 - * 6	\$28.00
30	40	TCDP302 - * 6	\$33.00
40	50	TCDP402 - * 6	\$38.00



3 Pole

Full Load Amps	Resistive Amps	Catalog No.	Price
25	35	TCDP253 - * 6	\$40.00
30	40	TCDP303 - * 6	\$45.00
40	50	TCDP403 - * 6	\$50.00

*** Coil Voltage**

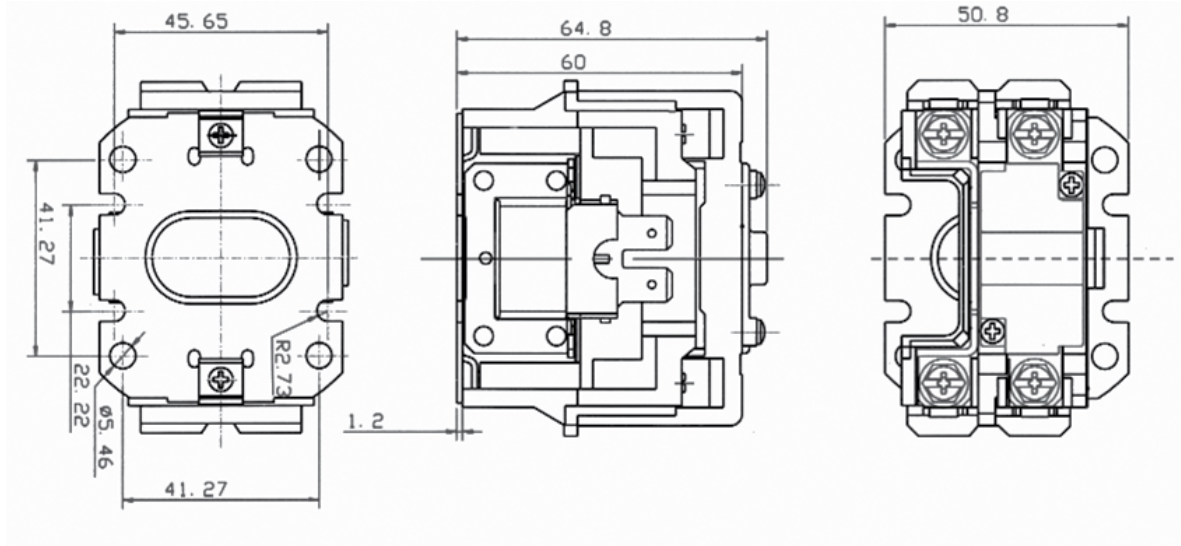
Volts AC	24	120	208	240	277	480
60 Hz	B	G	L	U	W	T

Discount Schedule SC-40

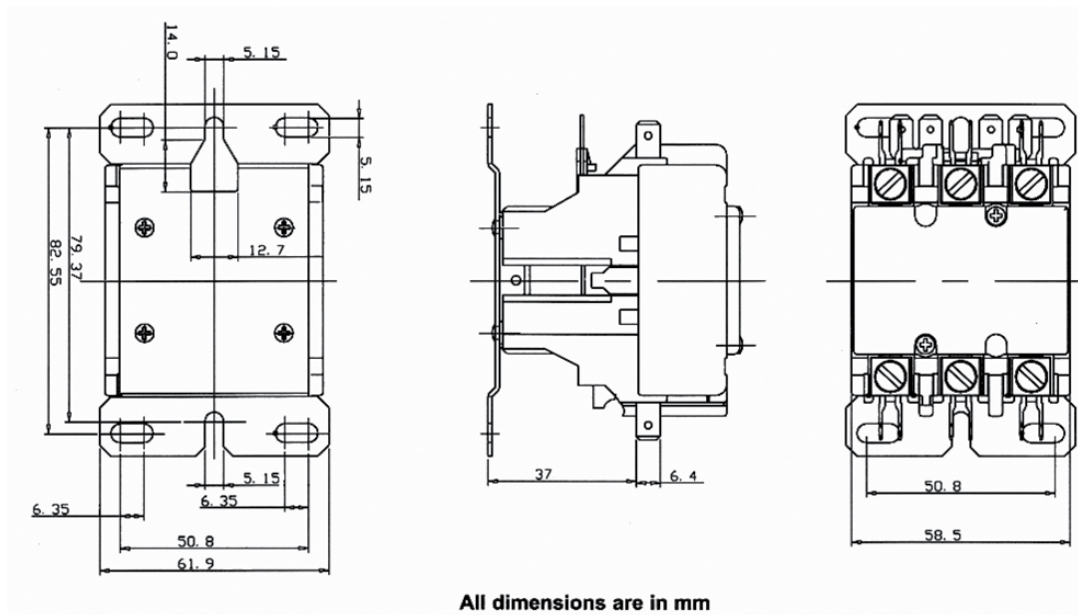
DIMENSIONS

1 Pole; (Shown)

2 Pole: Shares the same mounting foot and terminal spacing



3 Pole; (Shown)



D4

SOLID -STATE CONTACTORS / STARTERS



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controls company

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E

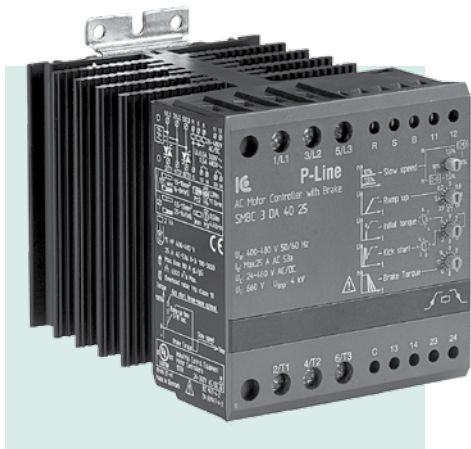
Springer Controls Company carries a full line of solid-state contactors manufactured by IC ELECTRONICS A/S. The product line includes single phase electronic contactors, dual contactors, lamp & transformer controls, three phase contactors, soft-starters (1, 2 & 3 phase), reversing contactors, and starting torque limiters. The controllers are also available with internal by-pass as well as with coil controlled external by-pass.

SOLID-STATE CONTACTORS & STARTERS;

Description / Features	E2
Soft Starters	E3
Soft Starters with Dynamic Breaking.....	E4
Starting Torque Limiter - 1-Phase & 3-Phase.....	E4
Electronic Reversing Contactors - 3-Phase.....	E4
Electronic Contactors - 1 Phase	E5
Electronic Analog Controllers.....	E5
1 & 3-Phase Electronic Contactors.....	E6
Contactors for Resistive Heater Application.....	E7, E8
Dimensions	E8

DESCRIPTION / FEATURES

E 2



Description

Springer Controls Company carries a full line of solid-state contactors manufactured by IC ELECTRONICS A/S. The product line includes single phase electronic contactors, dual contactors, lamp & transformer controls, three phase contactors, soft-starters (1, 2 & 3 phase), reversing contactors, and starting torque limiters. The controllers are also available with internal by-pass as well as with coil controlled external by-pass.

Springer Controls also carries a full line of solid state overload relays manufactured by FANOX. Consult factory for pricing and availability.

Applications

- Motor Controls
- Mercury Switch Replacement
- Heat Controllers
- Lamp Control
- Extreme Vibration
- High Frequency of Operation

Key Features

- Contactors are UL and CSA certified as well as have the IEC international certification.
- Complete solid state SMT
- Top quality design for electrically harsh industrial applications.
- DIN rail mounting options
- Compact modular design; smallest soft-starter made (22.5 mm).
- Operational Voltage; 24V - 600V AC/DC
- Control Voltage; 24V - 600V AC/DC
- IP - 20 protection

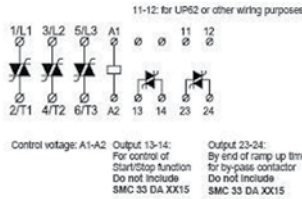


SOFT STARTERS

E 3

Soft Starters - THREE CONTROLLED PHASES

Control voltage: 24-230/480 VAC/DC. Ramp-Up 0.5-30 sec./Ramp-down time 0.5-60 sec. Initial torque adjustment with 200ms selectable kick start. BP= By-Passing the soft starter with an external mechanical contactor.



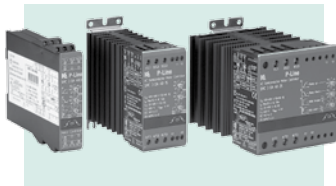
Line voltage 50/60 Hz	Motor Size HP / A without by-pass		Motor Size HP / A with by-pass (BP)		Modul width	Catalog No.	Price
208 - 240VAC	5	15A	---	---	90 mm	SMC 33 DA 2315	\$807.00
400 - 480VAC	10	15A	---	---	90 mm	SMC 33 DA 4015	\$855.00
208 - 240VAC	5	17A	10	25A	90 mm	SMC 33 DA 2325 BP	\$1058.00
400 - 480VAC	10	17A	15	25A	90 mm	SMC 33 DA 4025 BP	\$1191.00
208 - 240VAC	15	35A	20	50A	180 mm	SMC 33 DA 2350 BP	\$1588.00
400 - 480VAC	20	35A	30	50A	180 mm	SMC 33 DA 4050 BP	\$1714.00
550 - 600VAC	30	35A	50	50A	180 mm	SMC 33 DA 6050 BP	\$1856.00

Items for Inside Delta Configuration

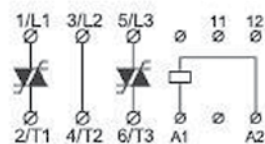
208 - 240VAC	10	29A	15	43A	90 mm	SMC 33 DA 2340 DBP	\$1150.00
400 - 480VAC	20	29A	20	43A	90 mm	SMC 33 DA 4040 DBP	\$1295.00
208 - 240VAC	25	60A	30	86A	180 mm	SMC 33 DA 2385 DBP	\$1906.00
400 - 480VAC	40	60A	60	86A	180 mm	SMC 33 DA 4085 DBP	\$2057.00
550 - 600VAC	40	60A	60	86A	180 mm	SMC 33 DA 6085 DBP	\$2227.00

Soft Starters - TWO CONTROLLED PHASES

Control voltage: 24-230/480 VAC/DC. Ramp-Up/Down time 0.5 - 10/20 sec. Initial torque adjustment with 200ms selectable kick start. BP = By-Passing the soft starter with an external mechanical contactor unless tested as internal.



SMC 3 DA XX15/25
11-12: for UP62 or other wiring purposes



Line voltage 50/60 Hz	Motor Size HP / A without by-pass		Motor Size HP / A with by-pass (BP)		Modul width	Catalog No.	Price
208 - 240VAC	1	3A	Internal by-pass relay		22.5 mm	SMC 3 DA 2303	\$427.00
400 - 415VAC	2	3A	Internal by-pass relay		22.5 mm	SMC 3 DA 4003	\$427.00
440 - 480VAC	2	3A	Internal by-pass relay		22.5 mm	SMC 3 DA 4803	\$453.00
550 - 600VAC	2	3A	Internal by-pass relay		22.5 mm	SMC 3 DA 6003	\$462.00
208 - 240VAC	5	15A	Internal by-pass relay		45 mm	SMC 32 DA 2315 BP	\$587.00
400 - 415VAC	10	15A	Internal by-pass relay		45 mm	SMC 32 DA 4015 BP	\$587.00
440 - 480VAC	10	15A	Internal by-pass relay		45 mm	SMC 32 DA 4815 BP	\$623.00
208 - 240VAC	5	15A			45 mm	SMC 3 DA 2315	\$606.00
400 - 480VAC	10	15A			45 mm	SMC 3 DA 4015	\$635.00
550 - 600VAC	15	15A			45 mm	SMC 3 DA 6015	\$683.00
208 - 240VAC	10	25A			90 mm	SMC 3 DA 2325	\$913.00
400 - 480VAC	15	25A			90 mm	SMC 3 DA 4025	\$952.00
550 - 600VAC	25	25A			90 mm	SMC 3 DA 6025	\$1010.00
208 - 240VAC	10	25A	15	30A	90 mm	SMC 3 DA 2325 BP	\$1013.00
400 - 480VAC	15	25A	20	30A	90 mm	SMC 3 DA 4025 BP	\$1067.00
550 - 600VAC	25	25A	25	30A	90 mm	SMC 3 DA 6025 BP	\$1120.00

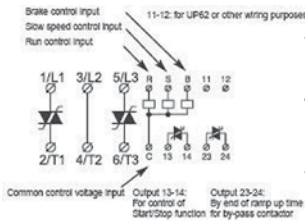
Discount Schedule SC-30

TORQUE LIMITERS & REVERSING CONTACTORS

Soft Starters for 3-Phase Motor Application With Integrated Dynamic Brake

Control voltage: 24-230/480 VAC/DC. Ramp-Up/Down time 0.5 - 10 sec. Initial torque adjustment with 200ms selectable kick start. BP = By-Passing the soft starter with an external mechanical contactor.

Brake

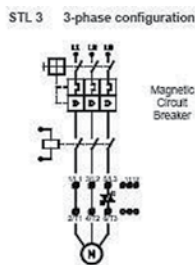


Line voltage 50/60 Hz	Motor Size HP / A without by-pass		Motor Size HP / A with by-pass (BP)		Modul width	Catalog No.	Price
208 - 240VAC	10	25A			90 mm	SMBC 3 DA 2325	\$1795.00
400 - 415VAC	15	25A	20	30A	90 mm	SMBC 3 DA 4025	\$1831.00

Starting Torque Limiter for 3-Phase Motor Applications

Ramp-Up time 0.5 - 5 sec. with initial torque adjustment.

1-controlled phase

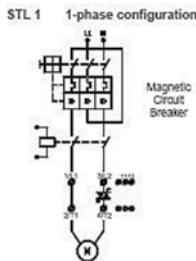


Line voltage 50/60 Hz	Motor Size HP / A without by-pass		Modul width	Catalog No.	Price
120 - 240VAC	5	15A	45 mm	STL 3 1215	\$302.00
208 - 480VAC	10	15A	45 mm	STL 3 4015	\$317.00
550 - 600VAC	10	15A	45 mm	STL 3 6015	\$375.00
120 - 240VAC	2.5	25A	45 mm	STL 3 1225	\$350.00
208 - 480VAC	15	25A	45 mm	STL 3 4025	\$365.00
550 - 600VAC	25	25A	45 mm	STL 3 6025	\$423.00

Starting Torque Limiter for 1-Phase Motor Applications

Ramp-Up time 0.5 - 5 sec. with initial torque adjustment.

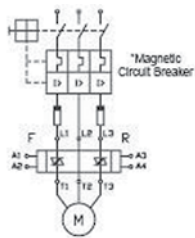
1-controlled phase



Line voltage 50/60 Hz	Motor Size HP / A without by-pass		Modul width	Catalog No.	Price
120 - 240VAC	3	15A	45 mm	STL 1 1215	\$302.00
208 - 480VAC	5	15A	45 mm	STL 1 4015	\$315.00
550 - 600VAC	5	15A	45 mm	STL 1 6015	\$371.00
120 - 240VAC	5	25A	45 mm	STL 1 1225	\$350.00
208 - 480VAC	10	25A	45 mm	STL 1 4025	\$363.00
550 - 600VAC	10	25A	45 mm	STL 1 6025	\$419.00

Electronic Reversing Contactor for 3-Phase Motor Applications

Reversing



Line voltage 50/60 Hz	Motor Size HP / A		Control Voltage	Modul width	Catalog No.	Price
24 - 480VAC	5	10A	5 - 24VDC	45 mm	SRC 3 DD 4010	\$585.00
24 - 480VAC	5	10A	24-230VAC/DC	45 mm	SRC 3 DA 4010	\$606.00

Electronic Reversing Contactor (DOL) for 3-Phase Motor Applications

Reversing



Line voltage 50/60 Hz	Motor Size HP / A		Control Voltage	Modul width	Catalog No.	Price
208 - 240VAC	5	15A	5 - 60VDC	45 mm	SMC 3 DA 2315 DOL	\$365.00
400 - 480VAC	10	15A	&	45 mm	SMC 3 DA 4015 DOL	\$397.00
550 - 600VAC	15	15A	24 - 480VAC	45 mm	SMC 3 DA 6015 DOL	\$413.00

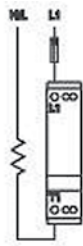
Discount Schedule SC-30

ONE PHASE ELECTRONIC CONTACTORS

E 5

1-Phase Electronic Contactors

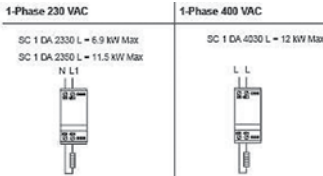
Load 15A / 30A / 50A / 63A



Line voltage 50/60 Hz	Current Load		Control Voltage	Modul width	Catalog No.	Price
	AC-1/51	AC-3/53				
12 - 240VAC	15A	15A	5 - 24VDC	22.5 mm	SC 1 DD 2315	\$169.00
24 - 480VAC	15A	15A	5 - 24VDC	22.5 mm	SC 1 DD 4015	\$189.00
48 - 600VAC	15A	15A	5 - 24VDC	22.5 mm	SC 1 DD 6015	\$238.00
12 - 240VAC	15A	15A	24 - 230VAC/DC	22.5 mm	SC 1 DA 2315	\$198.00
24 - 480VAC	15A	15A	24 - 230VAC/DC	22.5 mm	SC 1 DA 4015	\$217.00
48 - 600VAC	15A	10A	24 - 230VAC/DC	22.5 mm	SC 1 DA 6015	\$266.00
12 - 240VAC	30A	15A	5 - 24VDC	45 mm	SC 1 DD 2330	\$210.00
24 - 480VAC	30A	15A	5 - 24VDC	45 mm	SC 1 DD 4030	\$227.00
48 - 600VAC	30A	15A	5 - 24VDC	45 mm	SC 1 DD 6030	\$278.00
12 - 240VAC	30A	15A	24 - 230VAC/DC	45 mm	SC 1 DA 2330	\$226.00
24 - 480VAC	30A	15A	24 - 230VAC/DC	45 mm	SC 1 DA 4030	\$243.00
48 - 600VAC	30A	15A	24 - 230VAC/DC	45 mm	SC 1 DA 6030	\$300.00
12 - 240VAC	50A	15A	5 - 24VDC	90 mm	SC 1 DD 2350	\$259.00
24 - 480VAC	50A	15A	5 - 24VDC	90 mm	SC 1 DD 4050	\$276.00
48 - 600VAC	50A	15A	5 - 24VDC	90 mm	SC 1 DD 6050	\$279.00
12 - 240VAC	50A	15A	24 - 230VAC/DC	90 mm	SC 1 DA 2350	\$275.00
24 - 480VAC	50A	15A	24 - 230VAC/DC	90 mm	SC 1 DA 4050	\$292.00
48 - 600VAC	50A	15A	24 - 230VAC/DC	90 mm	SC 1 DA 6050	\$313.00
12 - 240VAC	63A	30A	5 - 24VDC	90 mm	SC 1 DD 2363	\$302.00
24 - 480VAC	63A	30A	5 - 24VDC	90 mm	SC 1 DD 4063	\$318.00
48 - 600VAC	63A	30A	5 - 24VDC	90 mm	SC 1 DD 6063	\$356.00
12 - 240VAC	63A	30A	24 - 230VAC/DC	90 mm	SC 1 DA 2363	\$320.00
24 - 480VAC	63A	30A	24 - 230VAC/DC	90 mm	SC 1 DA 4063	\$333.00
48 - 600VAC	63A	30A	24 - 230VAC/DC	90 mm	SC 1 DA 6063	\$373.00

1-Phase Electronic Contactors with Neutral Connection

Load 30A / 50A



Line voltage 50/60 Hz	Motor Size kW / A		Control Voltage	Modul width	Catalog No.	Price
	AC-1/51	AC-3/53				
110 - 230VAC	30A	15A	24 - 230VAC/DC	45 mm	SC 1 DA 2330 L	\$261.00
380 - 415VAC	30A	15A	24 - 230VAC/DC	45 mm	SC 1 DA 4030 L	\$299.00
110 - 230VAC	50A	15A	24 - 230VAC/DC	90 mm	SC 1 DA 2350 L	\$290.00

1-Phase Electronic Analogue Power Controllers (phase angle or burst firing control mode)

Load 30A / 50A



Line voltage 50/60 Hz	Current Load		Control Signal	Modul width	Catalog No.	Price
	AC-1/51	AC-3/53				
208 - 240VAC	30A	30A	0-20mA/20-0mA	45 mm	SPC 1 AD 2330	\$596.00
208 - 240VAC	50A	30A	4-20mA/20-4mA	90 mm	SPC 1 AD 2350	\$660.00
380 - 480VAC	30A	30A	0-10volt/10-0volt	45 mm	SPC 1 AD 4030	\$617.00
380 - 480VAC	50A	30A	0-10kohm/10-0kohm	90 mm	SPC 1 AD 4050	\$682.00

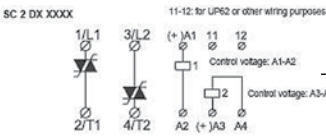
Discount Schedule SC-30

ONE & THREE-PHASE ELECTRONIC CONTACTORS

1-Phase Dual Pole Electronic Contactors (accumulated, two independent controlled phases)

E 6

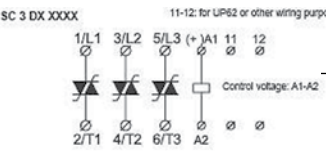
Load 30A / 50A accumulated



Line voltage 50/60 Hz	Current Load		Control Voltage	Modul width	Catalog No.	Price
	AC-1/51	AC-3/53				
12 - 240VAC	30A acc	15A acc	5 - 24VDC	45 mm	SC 2 DD 2330	\$303.00
24 - 480VAC	30A acc	15A acc	5 - 24VDC	45 mm	SC 2 DD 4030	\$337.00
48 - 600VAC	30A acc	15A acc	5 - 24VDC	45 mm	SC 2 DD 6030	\$365.00
12 - 240VAC	30A acc	15A acc	24 - 230VAC/DC	45 mm	SC 2 DA 2330	\$342.00
24 - 480VAC	30A acc	15A acc	24 - 230VAC/DC	45 mm	SC 2 DA 4030	\$377.00
48 - 600VAC	30A acc	15A acc	24 - 230VAC/DC	45 mm	SC 2 DA 6030	\$401.00
12 - 240VAC	50A acc	15A acc	5 - 24VDC	90 mm	SC 2 DD 2350	\$352.00
24 - 480VAC	50A acc	15A acc	5 - 24VDC	90 mm	SC 2 DD 4050	\$387.00
48 - 600VAC	50A acc	15A acc	5 - 24VDC	90 mm	SC 2 DD 6050	\$409.00
12 - 240VAC	50A acc	15A acc	24 - 230VAC/DC	90 mm	SC 2 DA 2350	\$392.00
24 - 480VAC	50A acc	15A acc	24 - 230VAC/DC	90 mm	SC 2 DA 4050	\$426.00
48 - 600VAC	50A acc	15A acc	24 - 230VAC/DC	90 mm	SC 2 DA 6050	\$445.00

3-Phase Electronic Contactors (three controlled phases)

Load 10A / 20A



Line voltage 50/60 Hz	Current Load		Control Voltage	Modul width	Catalog No.	Price
	AC-1/51	AC-3/53				
12 - 240VAC	10A	10A	5 - 24VDC	45 mm	SC 3 DD 2310	\$330.00
24 - 480VAC	10A	10A	5 - 24VDC	45 mm	SC 3 DD 4010	\$382.00
48 - 600VAC	10A	10A	5 - 24VDC	45 mm	SC 3 DD 6010	\$437.00
12 - 240VAC	10A	10A	24 - 230VAC/DC	45 mm	SC 3 DA 2310	\$344.00
24 - 480VAC	10A	10A	24 - 230VAC/DC	45 mm	SC 3 DA 4010	\$382.00
48 - 600VAC	10A	10A	24 - 230VAC/DC	45 mm	SC 3 DA 6010	\$450.00
12 - 240VAC	20A	10A	5 - 24VDC	90 mm	SC 3 DD 2320	\$379.00
24 - 480VAC	20A	10A	5 - 24VDC	90 mm	SC 3 DD 4020	\$431.00
48 - 600VAC	20A	10A	5 - 24VDC	90 mm	SC 3 DD 6020	\$481.00
12 - 240VAC	20A	10A	24 - 230VAC/DC	90 mm	SC 3 DA 2320	\$393.00
24 - 480VAC	20A	10A	24 - 230VAC/DC	90 mm	SC 3 DA 4020	\$446.00
48 - 600VAC	20A	10A	24 - 230VAC/DC	90 mm	SC 3 DA 6020	\$493.00

AC Auxiliary Contact Module

Load 5A



Line voltage 50/60 Hz	Current Load		Control Voltage	Modul width	Catalog No.	Price
	AC-22	DC-22				
208 - 600VAC	5A	3A	208 - 600VAC	22.5 mm	MAUX 01 600	\$173.00

Discount Schedule SC-30

CONTACTORS FOR RESISTIVE HEATER APPLICATION

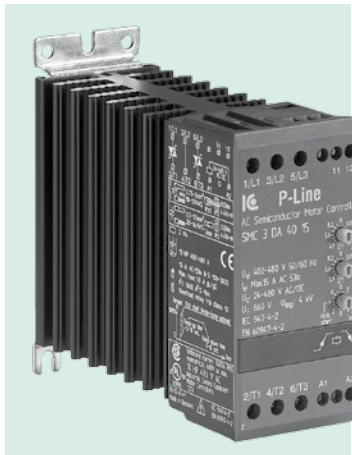
E7

1-Pole Contactors



Line Voltage	Load	Control Voltage	Catalog No.	Price
Electronic Contactor 1-pole 10A 230V				
230 VAC	10A	5 - 24 VDC	RC11DD2310	\$449.00
Electronic Contactor 1-pole 15A 230V				
230 VAC	15A	5 - 24 VDC	RC11DD2315	\$521.00
230 VAC	15A	24 - 230 VAC/DC	RC11DA2315	\$590.00
Electronic Contactor 1-pole 15A 400V				
400VAC	15A	5 - 24 VDC	RC11DD4015	\$535.00
400 VAC	15A	24 - 230 VAC/DC	RC11DA4015	\$625.00
Electronic Contactor 1-pole 30A 230V				
230 VAC	30A	5 - 24 VDC	RC11DD2330	\$611.00
230 VAC	30A	24 - 230 VAC/DC	RC11DA2330	\$666.00
Electronic Contactor 1-pole 50A 230V				
230 VAC	50A	5 - 24 VDC	RC11DD2350	\$784.00
230 VAC	50A	24 - 230 VAC/DC	RC11DA2350	\$881.00
Electronic Contactor 1-pole 30A 400V				
400 VAC	30A	5 - 24 VDC	RC11DD4030	\$625.00
400 VAC	30A	24 - 230 VAC/DC	RC11DA4030	\$680.00
Electronic Contactor 1-pole 50A 400V				
400 VAC	50A	5 - 24 VDC	RC11DD4050	\$798.00
400 VAC	50A	24 - 230 VAC/DC	RC11DA4050	\$867.00

2-Pole Contactors



Line Voltage	Load	Control Voltage	Catalog No.	Price
Electronic Contactor 2-pole 30A 230V				
230 VAC	30A	5 - 24 VDC	RC22DD2330	\$863.00
230 VAC	30A	24 - 230 VAC/DC	RC22DA2330	\$998.00
Electronic Contactor 2-pole 50A 230V				
230 VAC	50A	5 - 24 VDC	RC22DD2350	\$1,105.00
230 VAC	50A	24 - 230 VAC/DC	RC22DA2350	\$1,243.00
Electronic Contactor 2-pole 30A 400V				
400 VAC	30A	5 - 24 VDC	RC22DD4030	\$943.00
400 VAC	30A	24 - 230 VAC/DC	RC22DA4030	\$1,032.00
Electronic Contactor 5-pole 50A 400V				
400 VAC	50A	5 - 24 VDC	RC22DD4050	\$1,122.00
400 VAC	50A	24 - 230 VAC/DC	RC22DA4050	\$1,260.00

Discount Schedule SC-30

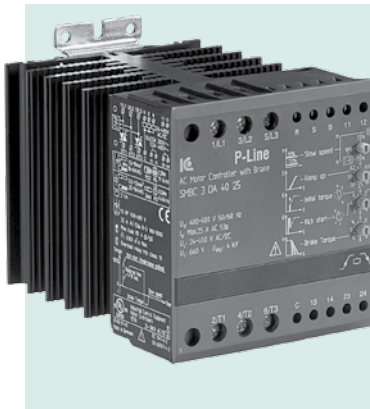
CONTACTORS FOR RESISTIVE HEAT APPLICATION

3-Pole Contactors -- 2 Phases Controlled



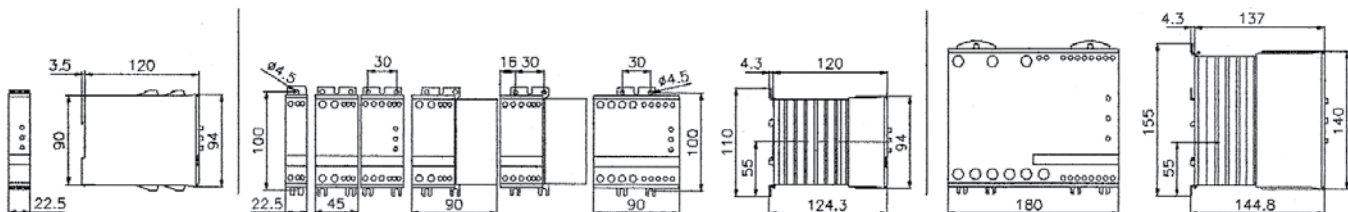
Line Voltage	Load	Control Voltage	Catalog No.	Price
Electronic Contactor 3-pole 15A 400V				
400 VAC	15A	5 - 24 VDC	RC32DD4015	\$881.00
400 VAC	15A	24 - 230 VAC/DC	RC32DA4015	\$932.00
Electronic Contactor 3-pole 25A 400V				
400 VAC	25A	5 - 24 VDC	RC32DD4025	\$1,019.00
400 VAC	25A	24 - 230 VAC/DC	RC32DA4025	\$1,053.00

3-Pole Contactors -- 3 Phases Controlled



Line Voltage	Load	Control Voltage	Catalog No.	Price
Electronic Contactor 3-pole 10A 230V				
230 VAC	10A	5 - 24 VDC	RC33DD2310	\$1,015.00
230 VAC	10A	24 - 230 VAC/DC	RC33DA2310	\$1,064.00
Electronic Contactor 3-pole 20A 230V				
230 VAC	20A	5 - 24 VDC	RC33DD2320	\$1,160.00
230 VAC	20A	24 - 230 VAC/DC	RC33DA2320	\$1,205.00
Electronic Contactor 3-pole 10A 400V				
400 VAC	10A	5 - 24 VDC	RC33DD4010	\$1,043.00
400 VAC	10A	24 - 230 VAC/DC	RC33DA4010	\$1,095.00
Electronic Contactor 3-pole 20A 400V				
400 VAC	20A	5 - 24 VDC	RC33DD4020	\$1,188.00
400 VAC	20A	24 - 230 VAC/DC	RC33DA4020	\$1,240.00

Dimensions



Discount Schedule SC-30

IEC ENGINEERED PRODUCTS



Springer Controls is a UL approved 508a panel manufacturer. We specialize in direct on-line IEC enclosed AC starters. We can custom make panels to customers specifications. **Springer Controls** also manufactures combination starters, reversing starters as well as Wye-Delta starters.

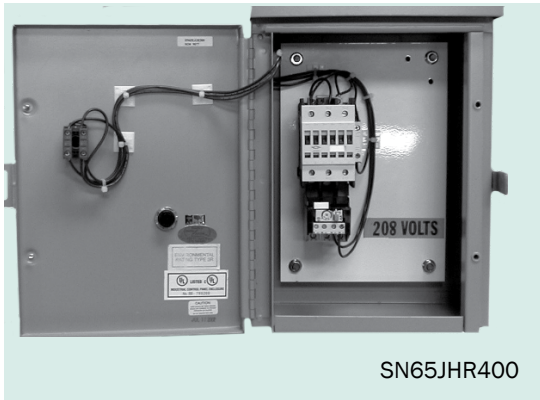
ENGINEERED PRODUCTS;

IEC Enclosed Non-reversing Starters	F2
IEC Enclosed Reversing Starters.....	F3
IEC Enclosed Combination Starters.....	F4
IEC Wye Delta Starters.....	F5
Modifications.....	F6
IEC Enclosure Classification (IP Ratings).....	F7
Horsepower Motor Ratings.....	F8
Kilowatt Motor Ratings.....	F9
Electrical Formulas.....	F10

ENCLOSED NON-REVERSING STARTERS

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Enclosed Non-Reversing Starters



Example: #**SN65JHR400**

- 40 hp 460 Volts
- 120V Control Power
- Overload Relay Protection (54-65 amps)
- Nema 3R Rated Enclosure (16" x 12" x 8")
- Start / Stop Control Buttons on Cover

F 2

Enclosed Non-Reversing Starters

CPT **not** included on starters below 60 HP at 460V

• 120V Control Power

• Start/Stop (Internal Reset)

*Select overload letter from chart on the bottom of this page.

Maximum Motor HP			Nema 1 (metal)		Nema 3R (metal)		Nema 12 (metal)		N1,3,4X, 12 (poly)	
200VAC	230VAC	460VAC	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
3	3	5	SN09J*A400	\$299.00	SN09J*R400	\$394.00	SN09J*T400	\$467.00	JC0906P1G-J*	\$299.00
3	3	7.5	SN12J*A400	\$382.00	SN12J*R400	\$462.00	SN09J*T400	\$506.00	JC1206P1G-J*	\$339.00
5	4	10	SN18J*A400	\$406.00	SN18J*R400	\$494.00	SN12J*T400	\$530.00	JC1806P1G-J*	\$363.00
7.5	7.5	15	SN25J*A400	\$426.00	SN25J*R400	\$510.00	SN18J*T400	\$565.00	JC2506P1B-J*	\$419.00
10	10	20	SN32J*A400	\$486.00	SN32J*R400	\$550.00	SN25J*T400	\$616.00	JC3206P1B-J*	\$470.00
15	15	30	SN50J*A400	\$680.00	SN50J*R400	\$744.00	SN32J*T400	\$798.00	JC5006P1K-J*	\$755.00
20	20	40	SN65J*A400	\$752.00	SN65J*R400	\$816.00	SN50J*T400	\$892.00	JC6506P1K-J*	\$784.00
20	25	50	SN80J*A400	\$930.00	SN80J*R400	\$994.00	SN65J*T400	\$1022.00	JC8006P1K-J*	\$891.00
25	30	60	SN95J*A402	\$1,267.00	SN95J*R402	\$1,410.00	SN80J*T400	\$1,480.00	SN95J*P402	C.F.
30	40	75	SNC5J*A402	\$1,475.00	SNC5J*R402	\$1,629.00	SN95J*T402	\$1,629.00	SNC5J*P402	C.F.
40	50	100	SNC5J*A402	\$2,107.00	SNC5J*R402	\$2,267.00	SNC5J*T402	\$2,267.00	SNC5J*P402	C.F.
50	50	125	SN150J*A402	\$2,864.00	SN150J*R402	\$3,184.00	SNC5J*T402	\$3,184.00	SN105J*P402	C.F.
50	60	150	SN185J*A402	\$3,128.00	SN185J*R402	\$3,448.00	SN150J*T402	\$3,448.00	SN185J*P402	C.F.
60	75	200	SN250J*A402	\$4,384.00	SN250J*R402	\$4,704.00	SN185J*T402	\$4,704.00	SN250J*P402	C.F.
100	100	250	SN309J*A402	\$4,704.00	SN309J*R402	\$4,904.00	SN250J*T402	\$4,904.00	SN309J*P402	C.F.

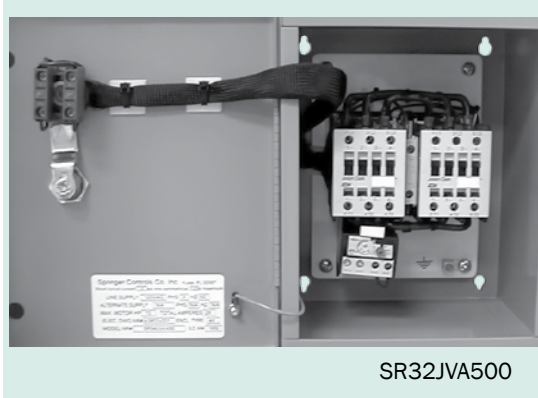
Overload Current	Mdl. Letter	Overload Current	Mdl. Letter
4.0 - 6.3 Amp	L	42.0 - 55.0 Amp	G
5.5 - 8.5 Amp	M	54.0 - 65.0 Amp	H
8.0 - 12.0 Amp	N	64.0 - 82.0 Amp	J
10.0 - 16.0 Amp	P	78.0 - 97.0 Amp	L
14.5 - 18.0 Amp	S	90.0 - 110 Amp	M
17.5 - 22.0 Amp	T	110 - 140 Amp	E
21.0 - 26.0 Amp	U	140 - 190 Amp	F
25.0 - 32.0 Amp	V	175 - 280 Amp	P
30.0 - 40.0 Amp	W	200 - 310 Amp	R

Discount Schedule SC-70

ENCLOSED REVERSING STARTERS

F 3

Enclosed Reversing Starters



Example: #**SR32JVA500**

- 20 hp 460 Volts
- 120V Control Power
- Mechanical Interlock
- Overload Relay Protection (25 - 32 Amps)
- Nema 1 Rated Enclosure (10" x 8" x 6")
- REV-OFF-FWD Cover Controls

Enclosed Reversing Starters with overload protection

CPT **not** included on starters below 60 HP at 460V

• 120V Control Power

• Forward-Off-Reverse

*Select overload letter from chart on the bottom of this page.

Maximum Motor HP			Nema 1 (metal)		Nema 3R (metal)		Nema 12 (metal)		N1,3,4X, 12 (poly)	
200VAC	230VAC	460VAC	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
3	3	5	SR09J*A500	\$691.00	SR09J*R500	\$787.00	SR09J*T500	\$934.00	SR09J*P500	\$691.00
3	3	7.5	SR12J*A500	\$765.00	SR12J*R500	\$925.00	SR12J*T500	\$1,011.00	SR12J*P500	\$765.00
5	5	10	SR18J*A500	\$813.00	SR18J*R500	\$989.00	SR18J*T500	\$1,059.00	SR18J*P500	\$813.00
7.5	7.5	15	SR25J*A500	\$851.00	SR25J*R500	\$1,021.00	SR25J*T500	\$1,130.00	SR25J*P500	\$851.00
10	10	20	SR32J*A500	\$1,008.00	SR32J*R500	\$1,101.00	SR32J*T500	\$1,232.00	SR32J*P500	\$1,008.00
15	15	30	SR50J*A500	\$1,360.00	SR50J*R500	\$1,488.00	SR50J*T500	\$1,597.00	SR50J*P500	C.F.
20	20	40	SR65J*A500	\$1,504.00	SR65J*R500	\$1,632.00	SR65J*T500	\$1,786.00	SR65J*P500	C.F.
20	25	50	SR80J*A500	\$1,699.00	SR80J*R500	\$1,987.00	SR80J*T500	\$2,045.00	SR80J*P500	C.F.
25	30	60	SR95J*A502	\$2,534.00	SR95J*R502	\$2,819.00	SR95J*T502	\$2,960.00	SR95J*P402	C.F.
30	40	75	SRC5J*A502	\$2,950.00	SRC5J*R502	\$3,258.00	SRC5J*T502	\$3,258.00	SRC5J*P402	C.F.
40	50	100	SRC5J*A502	\$4,214.00	SRC5J*R502	\$4,534.00	SRC5J*T502	\$6,134.00	SRC5J*P402	C.F.
50	50	125	SR150J*A502	\$5,728.00	SR150J*R502	\$6,368.00	SR150J*T502	\$6,368.00	SR150J*P402	C.F.
50	60	150	SR185J*A502	\$6,256.00	SR185J*R502	\$6,896.00	SR185J*T502	\$6,896.00	SR185J*P402	C.F.
60	75	200	SR250J*A502	\$8,768.00	SR250J*R502	\$9,408.00	SR250J*T502	\$9,408.00	SR250J*P402	C.F.
100	100	250	SR309J*A502	\$9,408.00	SR309J*R502	\$9,808.00	SR309J*T502	\$9,808.00	SR309J*P402	C.F.

Consult factory for CPT and larger enclosure

Overload Current	Mdl. Letter	Overload Current	Mdl. Letter
4.0 - 6.3 Amp	L	42.0 - 55.0 Amp	G
5.5 - 8.5 Amp	M	54.0 - 65.0 Amp	H
8.0 - 12.0 Amp	N	64.0 - 82.0 Amp	J
10.0 - 16.0 Amp	P	78.0 - 97.0 Amp	L
14.5 - 18.0 Amp	S	90.0 - 110 Amp	M
17.5 - 22.0 Amp	T	110 - 140 Amp	E
21.0 - 26.0 Amp	U	140 - 190 Amp	F
25.0 - 32.0 Amp	V	175 - 280 Amp	P
30.0 - 40.0 Amp	W	200 - 310 Amp	R

Discount Schedule SC-70

ENCLOSED COMBINATION STARTERS; NON-FUSIBLE & FUSIBLE

Enclosed Non-Reversing Starters



Example: #**SCNN09JMP400**

- 9 amp contactor with overload protection
- Main power disconnect switch
- Start-Stop cover controls
- Polycarbonate N4X enclosure

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Combination Non-Reversing Starters - NON-FUSIBLE

CPT **not** included on starters below 60 HP at 460V

• 120V Control Power

• Start/Stop

*Select overload letter from chart on the bottom of this page.

Maximum Motor HP			Nema 1 (metal)		Nema 3R (metal)		Nema 12 (metal)		N1,3,4X, 12 (poly)	
200VAC	230VAC	460VAC	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
3	3	5	SCNN09J*A400	\$880.00	SCNN09J*R400	\$912.00	SCNN09J*T400	\$1,003.00	SCNN09J*P400	\$1,144.00
3	3	7.5	SCNN12J*A400	\$912.00	SCNN12J*R400	\$944.00	SCNN12J*T400	\$1,035.00	SCNN12J*P400	\$1,176.00
5	5	10	SCNN18J*A400	\$944.00	SCNN18J*R400	\$976.00	SCNN18J*T400	\$1,051.00	SCNN18J*P400	\$1,192.00
5	7.5	15	SCNN25J*A400	\$1,032.00	SCNN25J*R400	\$1,157.00	SCNN25J*T400	\$1,203.00	SCNN25J*P400	\$1,275.00
10	10	20	SCNN32J*A400	\$1,120.00	SCNN32J*R400	\$1,277.00	SCNN32J*T400	\$1,291.00	SCNN32J*P400	\$1,363.00
15	15	30	SCNN50J*A400	\$1,232.00	SCNN50J*R400	\$1,379.00	SCNN50J*T400	\$1,774.00	SCNN50J*P400	\$1,398.00
20	20	40	SCNN65J*A400	\$1,760.00	SCNN65J*R400	\$1,907.00	SCNN65H*T400	\$2,302.00	SCNN65J*P400	\$1,926.00
20	25	50	SCNN80J*A400	\$2,000.00	SCNN80J*R400	\$2,147.00	SCNN80J*T400	\$2,542.00	SCNN80J*P400	\$2,166.00
25	30	60	SCNN95J*A402	\$2,448.00	SCNN95J*R402	\$2,448.00	SCNN95J*T402	\$2,811.00	SCNN95J*P402	C.F.
30	40	75	SCNNC5J*A402	\$3,056.00	SCNNC5J*R402	\$3,056.00	SCNNC5J*T402	\$3,419.00	SCNNC5J*P402	C.F.

CPT Fuses for both primary and secondary are included

Combination Non-Reversing Starters - FUSIBLE

CPT **not** included on starters below 60 HP at 460V

• 120V Control Power

• Start/Stop

*Select overload letter from chart on the bottom of this page.

Maximum Motor HP			Nema 1 (metal)		Nema 3R (metal)		Nema 12 (metal)		N1,3,4X, 12 (poly)	
200VAC	230VAC	460VAC	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
3	3	5	SCNF09J*3A400	\$944.00	SCNF09J*3R400	\$1,090.00	SCNF09J*3T400	\$1,240.00	SCNF09J*3P400	\$1,208.00
3	3	7.5	SCNF12J*3A400	\$980.00	SCNF12J*3R400	\$1,132.00	SCNF12J*3T400	\$1,320.00	SCNF12J*3P400	\$1,228.00
3	5	10	SCNF18J*3A400	\$1,040.00	SCNF18J*3R400	\$1,215.00	SCNF18J*3T400	\$1,359.00	SCNF18J*3P400	\$1,248.00
5	7.5	15	SCNF25J*3A400	\$1,223.00	SCNF25J*3R400	\$1,336.00	SCNF25J*3T400	\$1,448.00	SCNF25J*3P400	\$1,356.00
10	10	20	SCNF32J*6A400	\$1,360.00	SCNF32J*6R400	\$1,501.00	SCNF32J*6T400	\$1,645.00	SCNF32J*6P400	\$1,645.00
15	15	30	SCNF50J*6A400	\$1,589.00	SCNF50J*6R400	\$1,754.00	SCNF50J*6T400	\$1,925.00	SCNF50J*6P400	C.F.
20	20	40	SCNF65J*1A400	\$2,144.00	SCNF65J*1R400	\$2,515.00	SCNF65J*1T400	\$2,923.00	SCNF65J*1P400	C.F.
20	25	50	SCNF80J*1A400	\$2,176.00	SCNF80J*1R400	\$2,554.00	SCNF80J*T400	\$2,943.00	SCNF80J*1P400	C.F.
25	30	60	SCNF95J*1A402	\$2,672.00	SCNF95J*1R402	\$3,003.00	SCNF95J*1T402	\$3,437.00	SCNF95J*1P402	C.F.
30	40	75	SCNFC5J*2A402	\$3,376.00	SCNFC5J*2R402	\$3,376.00	SCNFC5J*2T402	\$3,659.00	SCNFC5J*2P402	C.F.

CPT Fuses for both primary and secondary are included

Overload Current	Mdl. Letter	Overload Current	Mdl. Letter
4.0 - 6.3 Amp	L	42.0 - 55.0 Amp	G
5.5 - 8.5 Amp	M	54.0 - 65.0 Amp	H
8.0 - 12.0 Amp	N	64.0 - 82.0 Amp	J
10.0 - 16.0 Amp	P	78.0 - 97.0 Amp	L
14.5 - 18.0 Amp	S	90.0 - 110 Amp	M
17.5 - 22.0 Amp	T	110 - 140 Amp	E
21.0 - 26.0 Amp	U	140 - 190 Amp	F
25.0 - 32.0 Amp	V	175 - 280 Amp	P
30.0 - 40.0 Amp	W	200 - 310 Amp	R

Description	Price
CPT Adder	\$228.00

Fuses for power circuit **NOT** included.

Discount Schedule **SC-70**

ENCLOSED WYE-DELTA STARTERS

Enclosed Starters, Wye-Delta , Open Transition, Non-Reversing - CPT included

- 120V Control Power
- Start/Stop (Internal Reset)
- *Select overload letter from chart below

Maximum Motor HP			Nema 1 (metal)		Nema 3R (metal)		Nema 12 (metal)	
200VAC	230VAC	460VAC	Catalog No.	Price	Catalog No.	Price	Catalog No.	Price
15	20	40	SY32J*A402	\$2,348.00	SY32J*R402	\$2,461.00	SY32J*T402	\$2,461.00
25	30	60	SY50J*A402	\$2,820.00	SY50J*R402	\$3,012.00	SY50J*T402	\$3,012.00
30	40	75	SY65J*A402	\$3,016.00	SY65J*R402	\$3,208.00	SY65J*T402	\$3,208.00
40	50	100	SY95J*A402	\$3,554.00	SY95J*R402	\$3,728.00	SY95J*T402	\$3,728.00
60	60	125	SYC5J*A402	\$4,072.00	SYC5J*R402	\$4,264.00	SYC5J*T402	\$4,264.00
75	75	150	SY150J*A402	\$7,152.00	SY150J*R402	\$7,853.00	SY150J*T402	\$7,853.00
75	100	200	SY185J*A402	\$8,245.00	SY185J*R402	\$8,949.00	SY185J*T402	\$8,949.00
100	125	250	SY250J*A402	\$9,974.00	SY250J*R402	\$10,597.00	SY250J*T402	\$10,597.00

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Overload Current	Mdl Letter	Overload Current	Mdl Letter
30.0 - 40.0 Amp	W	90.0 - 110 Amp	M
42.0 - 55.0 Amp	G	110 - 140 Amp	E
54.0 - 65.0 Amp	H	140 - 190 Amp	F
64.0 - 82.0 Amp	J	175 - 280 Amp	P
78.0 - 97.0 Amp	L	200 - 310 Amp	R

Motor FLA x .58 = O/L Amps.

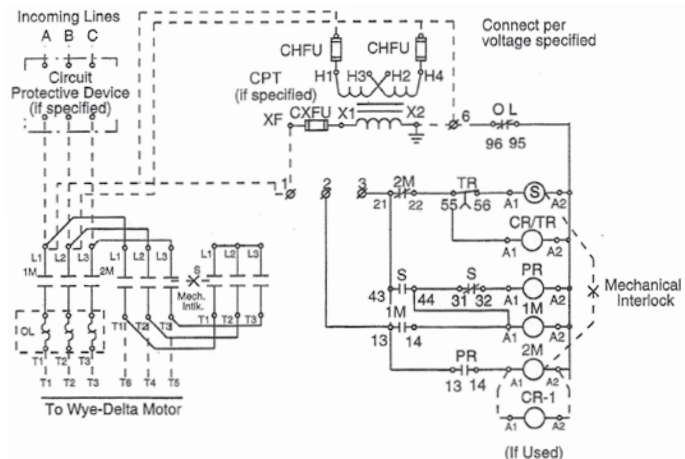
Circuit Diagrams for Reduced Voltage Starters - Wye-Delta

Wye-Delta, open transition

The wye-delta open transition starter starts the motor by closing the S and 1M contactors which energize the windings in wye. The inrush current in wye is reduced to 33% of what it would be if the motor was started with an across the line starter.

The starting time in wye is adjustable with a timer. After the elapsed time of 10 seconds, the S contactor opens which closes the 2M contactor; there is a short period (about 50ms) when the motor is not energized; and then the motor runs full voltage in delta.

A wye-delta starter requires a wye-delta wound motor with all six leads terminated outside the motor housing.



Legend:

CPT	-Control power Transformer	TR	-Timing Relay
CHF	-Primary Fuse	1M	-First Contactor
CXF	-Secondary Fuse	2M	-Second Main Contactor
XF	-Control Power Connection Point	S	-Shorting Contactor
CR, CR1	-Control Relays	OL	-Overload Relay
PR	-Pilot Relay		

Discount Schedule SC-70

MODIFICATIONS

VOLTAGE	Old Code	New Code
24 VAC	-1	1
48 VAC	-9	9
120 VAC	J	4
208 VAC	L	L
240 VAC	S	7
277 VAC	N	N
480 VAC	U	15
600 VAC	Y	Y
DC VOLTAGE		
12 VDC	B	B
24 VDC	D	D
48 VDC	G	G
125 VDC	K	K
250 VDC	T	T

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Cover Control

Modification Adders	Code	Price
No Cover Controls	0	(\$50.00)
Reset Only	1	(\$30.00)
HOA + Reset	2	\$48.00
Start/Stop + Reset	3	\$48.00
Start/Stop	4	No charge
HOA only	5	No charge
HOA + Start/Stop	6	\$80.00
2 pos. sel sw	7	No charge
2 pos sel sw + Reset	8	\$48.00

Pilot Lights	Code	Price
None	0	No charge
Amber	A	\$64.00
Blue	B	
Green	G	
Red	R	
White	W	

CPT Designation	Code	Price 50VA	Price 100VA	Price 200VA
None	0	No charge	\$160.00	\$320.00
2540pri - 120 sec	1			
480/240pri - 120 sec	2			
240/120pri - 24 SEC	3			
480/240pri - 24 SEC	4			
480/240/208pri - 120/24 sec	5			

Discount Schedule SC-70

IEC ENCLOSURE CLASSIFICATION

The degree of protection is indicated by two letters (IP) and two numerals. International Standards IEC 529 contains descriptions and associated test requirements that define the degree of protection each numeral specifies. The following table indicates the general degree of protection. For complete test requirements refer to IEC 529.

Example; IP65 ; Dust tight enclosure and protection against water jets.

First Numeral <i>Protection of persons against hazardous parts and protection against penetration of solid foreign objects.</i>	Second Numeral <i>Protection against ingress of water under test conditions specified in IEC 529.</i>
0 Non-protected	0 Non-protected
1 Back of hand; objects greater than 50mm in diameter	1 Vertically falling drops of water
2 Finger; objects greater than 12.5mm in diameter	2 Vertically falling drops of water with enclosure tilted 15 degrees
3 Tools or objects greater than 1.0mm in diameter	3 Spraying water
4 Tools or objects greater than 1.0mm in diameter	4 Splashing water
5 Dust-protected (dust may enter during specified test but must not interfere with operation of the equipment or impair safety)	5 Water jets
6 Dust tight (no dust observable inside enclosure at end of test)	6 Powerful water jets
	7 Temporary submersion
	8 Continuous submersion

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Note:

All first numerals and second numbers up to and including characteristic numerals 6, imply compliance also with the requirements for all lower characteristic numerals in their respective series (first or second).

Second numerals 7 and 8 do not imply suitability for exposure to water jets (second characteristic numeral 5 or 6) unless dual coded; e.g., IP_1/IP_7.

HORSEPOWER MOTOR RATINGS

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

H.P.	110V - 120V		220V - 240V		380V - 415V		440V - 480V		550V - 600V		2.3 KV	4.16 KC
	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.

KILOWAT MOTOR RATINGS

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

Power Kilowatts	Single-Phase Motor		Three-Phase Motor					
	120V	240V	230V	400V	415V	440V	500V	690V
	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	64	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

ELECTRICAL FORMULAS

Amperes, Horsepower, Kilowatts and KVA

To find	Single Phase	Three Phase	Direct Current
Kilowatts (KW)	$\frac{1 \times E \times PF}{1000}$	$\frac{1 \times E \times 1.73 \times PF}{1000}$	$\frac{1 \times E}{1000}$
KVA	$\frac{1 \times E}{1000}$	$\frac{1 \times E \times 1.73}{1000}$	--
Horsepower (HP) (output)	$\frac{1 \times E \times \% \text{ Eff} \times PF}{1000}$	$\frac{1 \times E \times 1.73 \times \% \text{ Eff} \times PF}{1000}$	$\frac{1 \times E \times \% \text{ Eff}}{746}$
Amperes when Horsepower is known	$\frac{H.P. \times 746}{E \times \% \text{ Eff} \times PF}$	$\frac{H.P. \times 746}{1.73 \times E \times \% \text{ Eff} \times PF}$	$\frac{H.P. \times 746}{E \times \% \text{ Eff}}$
Amperes when Kilowatts is known	$\frac{KW \times 1000}{E \times PF}$	$\frac{KW \times 1000}{1.73 \times E \times PF}$	$\frac{KW \times 1000}{E}$
Amperes when KVA is known	$\frac{KVA \times 1000}{E}$	$\frac{KVA \times 1000}{1.73 \times E}$	--

E = Volts	I = Amperes
% Eff = Per cent efficiency	PF = Power Factor

Average efficiency and power factor values of motors

When the actual efficiencies and power factors of the motors to be controlled are not known, the following approximations may be used.

Efficiencies:

DC motors, 35 horsepower and less 80% to 85%
 DC motors above 35 horsepower 85% to 90%
 Synchronous motors (at 100% power factor) 91% to 95%

“Apparent” efficiencies (=Efficiency x Power factor):

Three phase induction motors, 25 horsepower and less than 70%
 Three phase induction motors above 25 horsepower 80%
 These figures may be decreased slightly for single phase induction motors.

Ratings for three-phase, single-speed, full-voltage, magnetic controllers for non-plugging and non-jogging duty

Size of Contoller	Continuous current rating	Horsepower* at				Service-limit current rating Amperes
		60Hz		50Hz	60Hz	
		200 Volts	230 Volts	380 Volts	460 or 575 Volts	
00	9	1 1/2	1	1	2	11
0	18	3	3	5	5	21
1	27	7 1/2	7 1/2	10	10	32
2	45	10	15	25	25	52
3	90	25	30	50	50	104
4	135	40	50	75	100	156
5	270	75	100	150	200	311
6	540	150	200	300	400	621
7	810	--	300	--	600	932
8	1215	--	450	--	900	1400
9	2250	--	800	--	1600	2590

* These horsepower ratings are based on typical locked-rotor current ratings. For motors having higher locked-rotor currents, a larger controller should be used so that its locked-rotor current rating is not exceeded.

22MM (N5) PILOT DEVICES



SPRINGER
controls company

Springer Controls offers a complete line of rugged, industrial grade pilot devices. We carry both the 22mm and 30mm (section H) oil-tight devices. See page G26 for complete, assembled push button stations.

Index
G

22MM (N5) PILOT DEVICES:

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FEATURES

Shape, Material and Colors



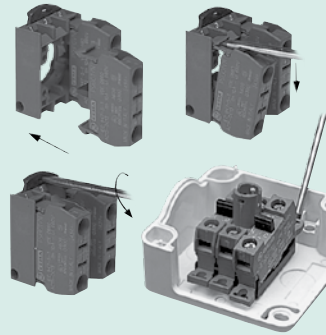
The N5 line offers two bezel types for operators:

- round in chrome
- round in black thermoplastic (4x)

Modern ergonomic N5 actuators are available in a wide variety of styles and colors, and are the result of superior industrial design experience.

Series N5 satisfies any sophisticated industrial applications.

Fast Mounting



All the N5 rear panel devices are snap-on.

Mounting between panel and operator is accomplished by means of a patented snap-on flange which ensures a fast fitting.

For base mounting, the fitting is done directly on the adaptor inside the enclosures base.

Each single block can be mounted or removed individually.

In panel mounting, it is also possible to install or remove the snap-on mounting flange with the contact block group.

Blocks and/or flange can be disassembled by a standard screwdriver, to simplify operations.

Fitting and Positioning



All the N5 operators are fitted with seal to ensure IP66 N12 degree of protection.

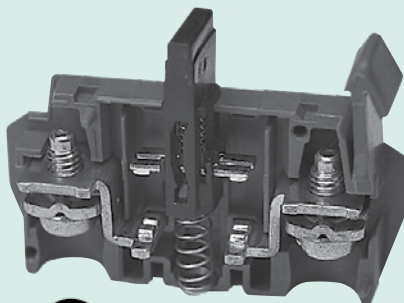
A locating tab on the operator allows the correct positioning on panels.

The tab also ensures panel stability and prevents unwanted rotations.

The tab can be removed with a screwdriver for applications in holes without a notch.

Suitable for use in NEMA types 1, 3, 3R, 3S, 4, 4X, 12 and 13 enclosures.

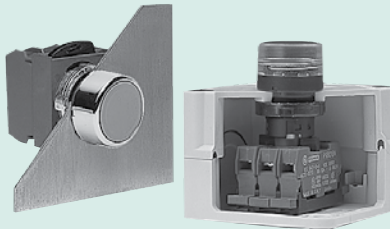
Safety and Reliability



The N5 contact blocks are designed to ensure maximum reliability in every condition and to monitor control circuits at low energy levels (12V-5mA minimum), thanks to advanced solution such as:

- Four contact points
- High efficiency self-cleaning operation
- Silver contacts properly shaped
- High contact pressure
- UL certified
- AC/DC Rating (page G22)

Mounting System



The N5 line offers a wide variety of operators, contact blocks and power supplies for panel mounting.

Furthermore, a range of operators, contact blocks and power supplies are available for base mounting.

The base mounting option is simple with our plastic enclosures fitted with a standard mounting adaptor, which allows a snap-on and secure fastening.

Rear Locking and Back Mounting Procedure



N5 operators are back mounted to the panel by a patented locking ring. The units can be assembled using a standard screwdriver.

As an option, an assembly wrench is available. (N5ACWAF)

N5 CATALOG NUMBERING SYSTEM

Standard & Illuminated Push-Buttons

Operators
Page G6 & Page G14

N5		P				
Bezel Style	Type	Type	Cap Color	Push-Button Type	Lens Type	
C = Chrome X = Round Plastic	P = Push Button	N = Non-illuminated L = Illuminated	O = No Cap N = Black R = Red V = Green G = Yellow L = Blue B = White	G = Flush S = Extended E = Recessed	D = Diffused for illuminated push-button only	

Double Function Push-Buttons

Page G13

N5	D	P	L				
Bezel Style	Type	Type	Cap Color	Push-Button Type	ISO Symbols		
D = Square Plastic	P = Push Button	L = Illuminated	N = Black V = Green	G = Flush S = Top Flush Button Extended	00 = No Symbol 01 = With Symbol		

Pilot Lights

Page G7

N5						
Bezel Style	Type	Color	Lens Type	For Unibloc Type only		
C = Chrome X = Round Plastic	L = Standard U = Unibloc	R = Red V = Green G = Yellow L = Blue B = White I = Clear A = Amber	D = Diffused R = Retraced V = Glass	D0 = Full Voltage		

Mushroom Head Push-Buttons

Page G6

N5	E					
Bezel Style	Type	Mushroom Diameter	Color	Illumination	Position Type	
C = Chrome X = Round Plastic	M = Momentary T = Push/Pull R = Turn to reset C = Key to reset	3 = Ø 28 mm 4 = Ø 40 mm 6 = Ø 60 mm	N = Black R = Red V = Green G = Yellow	N = Non Illuminated L = Illuminated	1 = Push-Pull 2 = 3 pos; maint. Push-Mom-Pull 3 = 3 pos; mom Push-Mom-Pull 95 = Keyed	

N5 CATALOG NUMBERING SYSTEM

Knob & Lever Selector Switches

Pages G9, G10 & G12

N5	□	S	□	□	□	□
Bezel Style	Type	Type	Cam	Spring Return	Color	
C = Chrome X = Round Plastic		M = Knob V = Lever L = Illuminated Knob	D, I or H = 2 positions E, L, U or Z = 3 positions X = 4 positions Y or W = 5 positions	0 = Fixed 1 = From Left 3 = From Left & Right 5 = From Right	N = Black R = Red V = Green G = Yellow L = Blue	

Key Selector Switches

Page G11

N5	□	S	C	□	□	□	9	5
Bezel Style	Type	Cam	Spring Return	Key Removal	Key Selection			
C = Chrome X = Round Plastic		D, I or H = 2 positions E, L, U or Z = 3 positions X = 4 positions	2/4 Positions 0 = Fixed 5 = From right 3 Positions 0 = Fixed 5 = From right 3 = From left & right	See key removal position page G9				

Contact Blocks

Page G5

N5	B	□	□	□	□
Bezel Style	Contacts	Terminal Type	Contact Type		
	01 = 1 NC 10 = 1 NO 11 = 1 NO + 1 NC 20 = 2 NO 02 = 2 NC	V = Standard Screw F = Faston B = Base Mounting Screw	N = Normal A = Early Closing R = Late Opening		

Power Supplies

Page G5

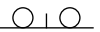
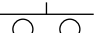
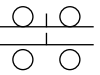
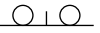
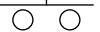
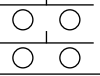
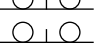
N5	P	□	□	□	□
Type	Style	Terminal Type	Full Voltage		
D = Full Voltage T = Transformer R = Resistor	N = Normal M = Multifunction continuous blinking	V = Standard Screw B = Base Mounting Screw	0 = No Bulb A = 6V B = 12V D = 24V G = 48V L = 120V Transformer / Resistor 110 - 120V = J 220 - 250V = N 480 - 500V = Y		

ASSEMBLY of 22mm PILOT DEVICES
Contacts and Power Supplies

Complete Unit Assembly

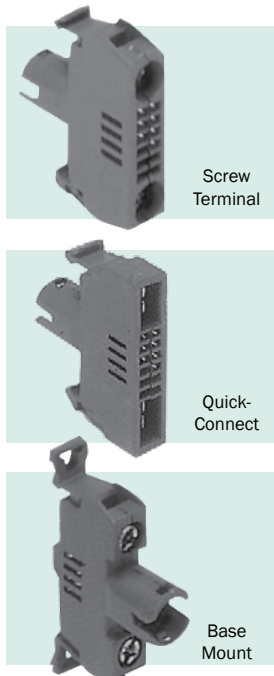
22mm OPERATOR **+** **CONTACT BLOCK** **or** **POWER SUPPLY** **or** **OPTIONAL ACCESSORIES**
 Pages G6 - G17 Page G5 Page G5 Pages G19 - G21
 (Assembled Push Button Stations - pages G26 - G28)

Contact Blocks (For use with all Panel Mounted Operations)

Type	Symbol	Screw Terminal Catalog No.	Quick Connect Terminal Catalog No.	Price
N.C.		N5B01VN	N5B01FN	\$11.50
N.O.		N5B10VN	N5B10FN	\$11.50
N.C. N.O.		N5B11VN	Not Available	\$23.00
N.C. Late Break		N5B01VR	Not Available	\$11.50
N.O. Early Make		N5B10VA	Not Available	\$11.50
N.O. N.O.		N5B20VN	Not Available	\$23.00
N.C. N.C.		N5B02VN	Not Available	\$23.00

G5

Power Supplies; Includes bulb¹ (For use with all Panel Mounted Operations)



	Voltage	Screw Terminal Catalog No.	Quick Connect Terminal Catalog No.	Base Mt. Terminal Catalog No.	Price
Full Voltage	No Lamp	N5PDNVO	N5PDNFO	N5PDNB0	\$27.00
	6V	N5PDNVA	N5PDNFA	N5PDNBA	\$32.50
	12V	N5PDNVB	N5PDNFB	N5PDNBB	\$32.50
	24V	N5PDNVD	N5PDNFD	N5PDNBD	\$32.50
	48V	N5PDNVG	N5PDNFG	N5PDNBBG	\$32.50
	120V	N5PDNVL	N5PDNFL	N5PDNBL	\$32.50
Transformer	120 - 6V	N5PTNVJ	N5PDNFJ	N5PDNBJ	\$66.00
	240 - 6V	N5PTNVN	N5PDNFN	N5PDNBN	\$66.00
	480 - 6V	N5PTNVY	N5PDNFY	N5PDNBY	\$66.00
Resistor AC/DC	110 - 120V	N5PRNVJ	N5PDNFJ	N5PDNBJ	\$54.00
	220 - 240V	N5PRNVN	N5PDNFN	N5PDNBN	\$54.00
Flashing Full Voltage	110v AC/DC BA9S 130V-2W	N5PDMVJ	N5PDNFJ	N5PDNBJ	\$79.00
Flashing Transformer	120 - 6V BA9S 6V - 6W 220/250V	N5PTMVJ	N5PDNFJ	N5PDNBJ	\$103.00

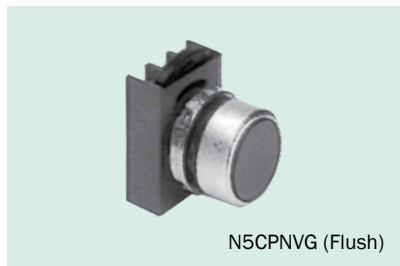
Notes:

1. To order LED bulbs, see page G7. LED bulbs are sold separately

Discount Schedule SC-36

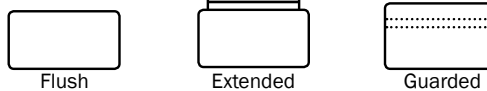
PUSH BUTTONS *(Operators only - add contacts on page G5)*

Standard - Momentary

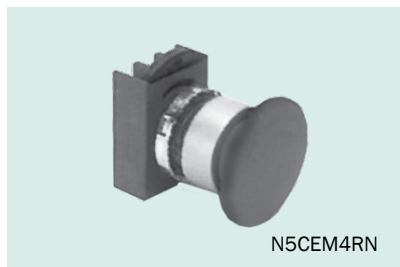


Operator (only) ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
With Flush Cap	N5CPN • G	N5XPN • G	\$13.00
With Extended Cap	N5CPN • S	N5XPN • S	\$13.00
Guarded Cap	N5CPN • E	---	\$13.00

(• See Color Table Below)



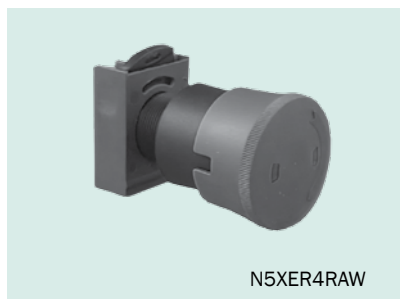
Mushroom Head - Momentary



Operator (only) ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
Mushroom Head 28mm	N5CEM3 • N	N5XEM3 • N	\$25.50
Mushroom Head 40mm	N5CEM4 • N	N5XEM4 • N	\$25.50
Mushroom Head 60mm	N5CEM6 • N	N5XEM6 • N	\$29.00

(• See Color Table Below)

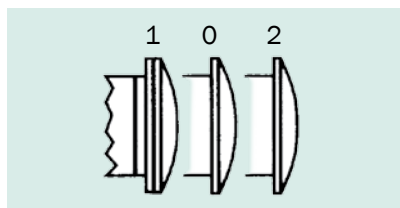
Mushroom Head - with Latch



Operator (only) ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price	
Push-Pull 40mm (2 pos. Maint.)	N5CET4 • N1	N5XET4 • N1	\$33.50	
Twist Release	Red 28mm	N5CER3RN	N5XER3RN	\$60.00
	Red 40mm	N5CER4RN	N5XER4RN	\$60.00
	EN418 ²	---	N5XER4RAN	\$65.00
	EN418-IND ³	---	N5XER4RAW	\$70.00
Key Release	Red 40mm	N5CEC4RN95	N5XEC4RN95	\$83.00
	EN418 ²	---	N5XER4RA95N	\$88.00

See page G26 for complete Emergency Stop Stations

Mushroom Head - 3 Position Push Pull



Operator (only) ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
Maintained Push (0 to 1) Momentary Pull (0 to 2)	N5CET4 • N2	N5XET4 • N2	\$48.00
Momentary Push (0 to 1) Momentary Pull (0 to 2)	N5CET4 • N3	N5XET4 • N3	\$48.00

(• See Color Table Below)

• COLOR TABLE

- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Black	Red	Green	Yellow	Brown	Blue	White	Grey	W/O cap	w/Red,Blk/Green/Yellow
Caps	N	R	V	G	M	L	B	H	0	Z ⁴
Mushroom Heads	N	R	V	G	-	-	-	-	-	-

- Notes:**
- 1 Contact Blocks not included; see page G5
 - 2 Emergency Stop Operator; Complies with EN418 Machinery Safety Standard.
 - 3 Emergency Stop Operator with status indication. EN418 approved
 - 4 When ordering operator with 4 color caps (Red, Black, Green & Yellow) add \$3.00

Discount Schedule SC-36

PILOT LIGHTS (Complete Unit = Operator + Power Supply)

Pilot Lights - Standard

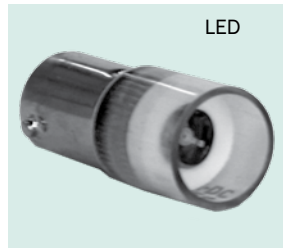
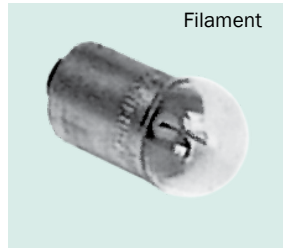


Lens & Lamp Holder		Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
Standard¹	Diffused Lens	N5CL • D	N5XL • D	\$9.50
	Glass Lens	N5CL • V	---	\$29.00
Unibloc Full Voltage (complete Pilot Light, Bulb not included)		---	N5XU • DD0	\$18.50

(* See Color Table Below)

Unibloc combines an indicator light and full voltage power in one unit. 250V maximum

Bulbs



Description	Volts Nominal	Watts Nominal	Catalog No.	Price
N59S Filament Type	6	0,6	N59S06	\$4.50
	6	1,5	N59S15	\$4.50
	12	2	N59S12	\$4.50
	24	2	N59S24	\$4.50
	30	2,1	N59S30	\$4.50
	48	2	N59S48	\$4.50
	60	1,2	N59S60	\$4.50
	130	2	N59S130	\$4.50

Description	Volts Nominal	Catalog No.	Price
Multi-LED	6	BA9S06L *	\$28.00
	12	BA9S12L *	\$28.00
	24	BA9S24L *	\$28.00
	48	BA9S48L *	\$28.00
	110	BA9S110L *	\$28.00
	230	BA9S230L *	\$28.00

* LED Color Table	Red	Green	Yellow
	R	V	G

• COLOR TABLE

- use complete catalog number when ordering. Replace the (*) with the suffix from the table below.

Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

Notes: 1 Lens & Lamp holder only; select Power Supply from page G5

PRESS-TO-TEST PILOT LIGHTS (Complete Unit = Part number with competed suffixes)

Press-To-Test Pilot Lights; includes power supply, contacts, and incandescent bulb

N5CPLVSDFL



N5CPLVSD



N5B01VN



N5B10VN

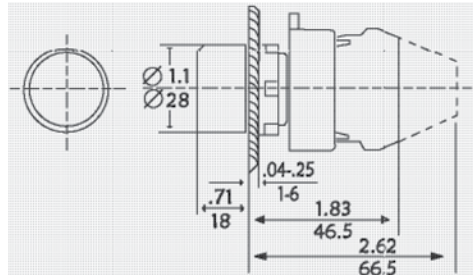


N5PDNVL

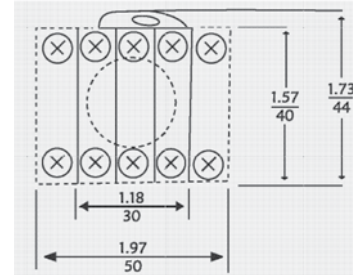
Operator	Chrome Bezel Catalog No.	4X Bezel Catalog No.	Price
Full Voltage	N5CPL • SDF *	N5XPL • SDF *	\$75
Transformer	N5CPL • SDT *	N5XPL • SDR *	\$109
Resistor	N5CPL • SDR *	N5XPL • SDR *	\$93

(• See Color Table Below)

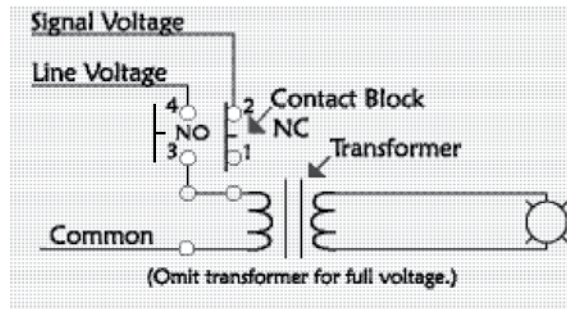
(* Add Power Supply suffix from table below)



Round Recessed Push Button



Typical Back Side View



Wire Diagram

*Power Supply (For Press-To-Test Pilot Lights)

Power Supply Type	Lamp	Incandescent Bulb Power Supply Suffix *
Full Voltage	6V	A
	12V	B
	24V	D
	48V	G
	60V	H
	120V	L
Transformer (AC Only)	110 - 120V	J
	220 - 250V	N
	480 - 500V	Y
Standard Resister (AC/DC)	110 - 120V	J
	220 - 240V	N

• COLOR TABLE

- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Red	Green	Yellow	Blue	White	Amber	Clear	w/o Lens
Color Code	R	V	G	L	B	A	I	O

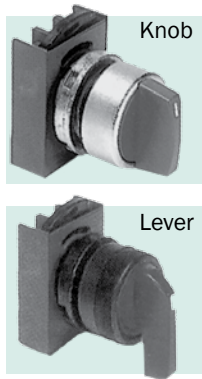
Discount Schedule SC-36

2 POSITION SELECTOR SWITCHES

(Complete Unit = Operator + Contact Block)

2 Position Selector Switches - Standard

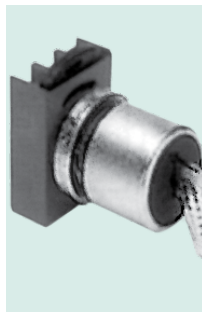
(Contact Block & Legend Plates sold separately; page G5, G21)



Operating Mode	Cam	Knob Type ¹		With Black Lever		Price
		Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	
Maintained	D	N5CSMD0 •	N5XSMD0 •	N5CSVD0N	N5XSVD0N	\$22.50
	I	N5CSMI0 •	N5XSMI0 •	N5CSVION	N5XSIVION	\$22.50
	H	N5CSMH0 •	N5XSMH0 •	N5CSVHON	N5XSVHON	\$22.50
Spring Return						
Right To Left	D	N5CSMD5 •	N5XSMD5 •	N5CSVD5N	N5XSVD5N	\$22.50
Right To Center	I	N5CSMI5 •	N5XSMI5 •	N5CSVI5N	N5XSVI5N	\$22.50
Left To Center	H	N5CSMH1 •	N5XSMH1 •	N5CSVH1N	N5XSVH1N	\$22.50

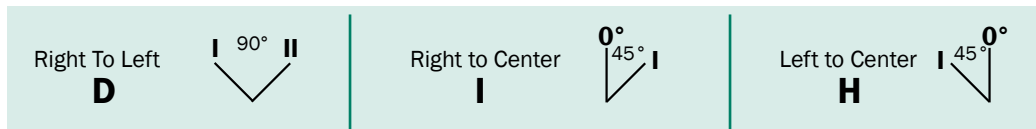
(• See Color Table Below)

2 Position Selector Switches - Key Operated²



Operating Mode	Cam	Key Removal	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
Maintained	D	Left	N5CSCD0A95	N5XSCD0A95	\$67.50
		Right	N5CSCD0E95	N5XSCD0E95	\$67.50
		Left & Right	N5CSCD0K95	N5XSCD0K95	\$67.50
	I	Center	N5CSCI0C95	N5XSCI0C95	\$67.50
		Right	N5CSCI0E95	N5XSCI0E95	\$67.50
		Center & Right	N5CSCION95	NRXSCION95	\$67.50
	H	Left	N5CSCHOA95	N5XSCHOA95	\$67.50
		Center	N5CSCHOC95	N5XSCHOC95	\$67.50
		Center & Left	N5CSCH0H95	N5XSCH0H95	\$67.50
Spring Return					
Right To Left	D	Left	N5CSD5A95	N5XSCD5A95	\$88.00
Right To Center	I	Center	N5CSCI5C95	N5XSCI5C95	\$88.00
Left To Center	H	Center	N5CSCH1C95	N5XSCH1C95	\$88.00

Cam Mode



Contact Switching Sequence

Cam Mode	↶	↑	↷	Screw Terminal Contact Block	
				Left Position	Right Position
D	0	--	X	--	N5B10VN
	X	--	0	N5B01VN	--
I	0	--	X	N5B11VN	--
	X	--	0	--	N5B10VN
H	--	0	X	--	N5B10VN
	--	X	0	N5B01VN	--
H	--	0	X	N5B11VN	--
	--	X	0	--	N5B10VN
H	0	X	--	--	N5B10VN
	X	0	--	N5B01VN	--
	0	X	--	N5B11VN	--
H	X	0	--	N5B01VN	--
	0	X	--	N5B11VN	--

• COLOR TABLE - use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Black	Red	Green	Yellow	Blue
Color Code	N	R	V	G	L

Notes: 1 Add Suffix from Color Table.

2 Supplied with standard #95 key (spare keys found on page G20)

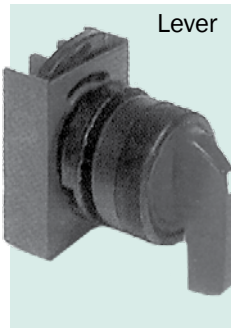
Discount Schedule SC-36

3 POSITION SELECTOR SWITCHES

(Complete Unit = Operator + Contact Block)

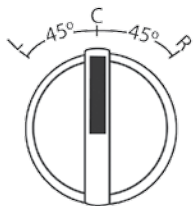
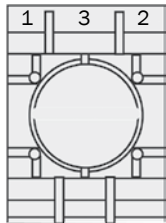
(Contact Block & Legend Plates sold separately; page G5, G21)

3 Position Selector Switches - Standard



Operating Mode	Cam	Knob Type		With Black Lever		Price
		Catalog No. Chrome Bezel	Catalog No. Type 4X Bezel	Catalog No. Chrome Bezel	Catalog No. Type 4X Bezel	
Maintained	E	N5CSME0 •	N5XSME0 •	N5CSVEON	N5XSVEON	\$22.50
	L	N5CSML0 •	N5XSML0 •	N5CSVLON	N5XSVLON	\$22.50
	U	N5CSMU0 •	N5XSMU0 •	N5CSVUON	N5XSVUON	\$22.50
	Z	N5CSMZ0 •	N5XSMZ0 •	N5CSVZON	N5XSVZON	\$22.50
Spring Return Left To Center, Maintained Right	E	N5CSME1 •	N5XSME1 •	N5CSVE1N	N5XSVE1N	\$25.50
	L	N5CSML1 •	N5XSML1 •	N5CSVL1N	N5XSVL1N	\$25.50
	U	N5CSMU1 •	N5XSMU1 •	N5CSVU1N	N5XSVU1N	\$25.50
	Z	N5CSMZ1 •	N5XSMZ1 •	N5CSVZ1N	N5XSVZ1N	\$22.50
Spring Return Right To Center Maintained Left	E	N5CSME5 •	N5XSME5 •	N5CSVE5N	N5XSVE5N	\$25.50
	L	N5CSML5 •	N5XSML5 •	N5CSVL5N	N5XSVL5N	\$25.50
	U	N5CSMU5 •	N5XSMU5 •	N5CSVU5N	N5XSVU5N	\$25.50
	Z	N5CSMZ5 •	N5XSMZ5 •	N5CSVZ5N	N5XSVZ5N	\$25.50
Spring Return Left & Right To Center	E	N5CSME3 •	N5XSME3 •	N5CSVE3N	N5XSVE3N	\$25.50
	L	N5CSML3 •	N5XSML3 •	N5CSVL3N	N5XSVL3N	\$25.50
	U	N5CSMU3 •	N5XSMU3 •	N5CSVU3N	N5XSVU3N	\$25.50
	Z	N5CSMZ3 •	N5XSMZ3 •	N5CSVZ3N	N5XSVZ3N	\$25.50

Contact Switching Sequence



Cam Mode	↶	↑	↷	Screw Terminal Contact Block		
				Left Position	Right Position	
Z	0	0	X	N5B10VN	---	0° 45° 45°
	X	0	0	---	N5B10VN	
	X	X	0	N5B01VN	---	
	0	X	X	---	N5B01VN	
	0	0	X	N5B11VN	---	
	X	X	0			
	X	0	0	---	N5B11VN	
	0	X	X	---	N5B11VN	
E	0	0	X	---	N5B01VN	0° 45° 45°
	0	X	0	N5B10VN	---	
	0	0	X	N5B11VN	---	
	0	X	0			
L	X	0	0	---	N5B10VN	0° 45° 45°
	0	X	0	N5B01VN	---	
	X	0	0	N5B11VN	---	
	0	X	0			
U	0	0	X	N5B11VN	---	0° 45° 45°
	0	X	0			
	0	0	X	---	N5B11VN	
	X	0	0			

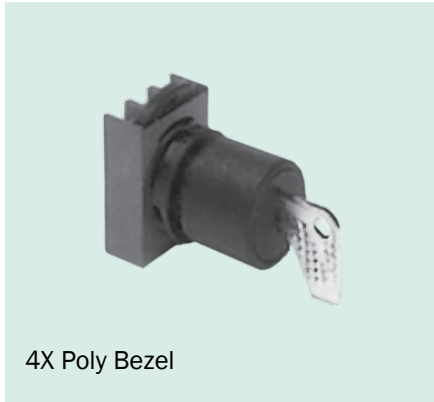
• COLOR TABLE - use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Black	Red	Green	Yellow	Blue
Color Code	N	R	V	G	L

3 POSITION KEYED SELECTOR SWITCHES

(Contact Block & Legend Plates sold separately; page G5, G21)

3 Position Selector Switches - Key Operated - Maintained¹



Cam ²	Key Removal	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
Z	Left	N5CSCZ0A95	N5XSCZ0A95	\$67.50
	Center	N5CSCZ0C95	N5XSCZ0C95	\$67.50
	Right	N5CSCZ0E95	N5XSCZ0E95	\$67.50
	Left - Center	N5CSCZ0H95	N5XSCZ0H95	\$67.50
	Left - Right	N5CSCZ0K95	N5XSCZ0K95	\$67.50
	Center - Right	N5CSCZ0N95	N5XSCZ0N95	\$67.50
	Left - Center - Right	N5CSCZ0T95	N5XSCZ0T95	\$67.50
E	Left	N5CSCE0A95	N5XSCE0A95	\$67.50
	Center	N5CSCE0C95	N5XSCE0C95	\$67.50
	Right	N5CSCE0E95	N5XSCE0E95	\$67.50
	Left - Center	N5CSCE0H95	N5XSCE0H95	\$67.50
	Left - Right	N5CSCE0K95	N5XSCE0K95	\$67.50
	Center - Right	N5CSCE0N95	N5XSCE0N95	\$67.50
	Left - Center - Right	N5CSCE0T95	N5XSCE0T95	\$67.50
L	Left	N5CSCL0A95	N5XSCL0A95	\$67.50
	Center	N5CSCL0C95	N5XSCL0C95	\$67.50
	Right	N5CSCL0E95	N5XSCL0E95	\$67.50
	Left - Center	N5CSCL0H95	N5XSCL0H95	\$67.50
	Left - Right	N5CSCL0K95	N5XSCL0K95	\$67.50
	Center - Right	N5CSCL0N95	N5XSCL0N95	\$67.50
	Left - Center - Right	N5CSCL0T95	N5XSCL0T95	\$67.50
U	Left	N5CSCU0A95	N5XSCU0A95	\$67.50
	Center	N5CSCU0C95	N5XSCU0C95	\$67.50
	Right	N5CSCU0E95	N5XSCU0E95	\$67.50
	Left - Center	N5CSCU0H95	N5XSCU0H95	\$67.50
	Left - Right	N5CSCU0K95	N5XSCU0K95	\$67.50
	Center - Right	N5CSCU0N95	N5XSCU0N95	\$67.50
	Left - Center - Right	N5CSCU0T95	N5XSCU0T95	\$67.50

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3 Position Selector Switches - Key Operated - Spring Return¹

Cam ²	Key Removal	L → C		C ← R		L → C ← R		Price
		Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	
Z	Left	--	--	N5CSCZ5A95	N5XSCZ5A95	--	--	\$67.50
	Center	N5CSCZ1C95	N5XSCZ1C95	N5CSCZ5C95	N5XSCZ5C95	N5CSCZ3C95	N5XSCZ3C95	\$67.50
	Right	N5CSCZ1E95	N5XSCZ1E95	--	--	--	--	\$67.50
	Left - Center	--	--	N5CSCZ5H95	N5XSCZ5H95	--	--	\$67.50
	Center - Right	N5CSCZ1N95	N5XSCZ1N95	--	--	--	--	\$67.50
E	Left	--	--	N5CSCE5A95	N5XSCE5A95	--	--	\$88.00
	Center	N5CSCE1S95	N5XSCE1C95	N5CSCE5C95	N5XSCE5C95	N5CSCE3C95	N5XSCE3C95	\$88.00
	Right	N5CSCE1E95	N5XSCE1E95	--	--	--	--	\$88.00
	Left - Center	--	--	N5CSCE5H95	N5XSCE5H95	--	--	\$88.00
	Center - Right	N5CSCE1N95	N5XSCE1N95	--	--	--	--	\$88.00
L	Left	--	--	N5CSCL5A95	N5XSCL5A95	--	--	\$88.00
	Center	N5CSCL1C95	N5XSCL1C95	N5CSCL5C95	N5XSCL5C95	N5CSCL3C95	N5XSCL3C95	\$88.00
	Right	N5CSCL1E95	N5XSCL1E95	--	--	--	--	\$88.00
	Left - Center	--	--	N5CSCL5H95	N5XSCL5H95	--	--	\$88.00
	Center - Right	N5CSCL1N95	N5XSCL1N95	--	--	--	--	\$88.00
U	Left	--	--	N5CSCU5A95	N5XSCU5A95	--	--	\$88.00
	Center	N5CSCU1C95	N5XSCU1C95	N5CSCU5C95	N5XSCU5C95	N5CSCU3C95	N5XSCU3C95	\$88.00
	Right	N5CSCU1E95	N5XSCU1E95	--	--	--	--	\$88.00
	Left - Center	--	--	N5CSCU5H95	N5XSCU5H95	--	--	\$88.00
	Center - Right	N5CSCU1N95	N5XSCU1N95	--	--	--	--	\$88.00

Notes: 1 Supplied with 2- #95 Keys

2 See contact switching , page G10

Discount Schedule SC-36

4 & 5 POSITION SELECTOR SWITCHES

(Complete Unit = Operator + Contact Block)

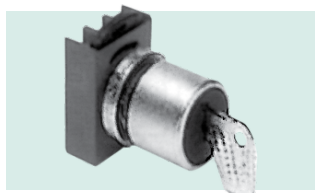
(Contact Block & Legend Plates sold separately; page G5, G21)

4 Position Selector Switches; Standard

Operating Mode	Cam	with Knob		with Black Lever		Price
		Chrome Bezel Catalog No. ¹	Type 4X Bezel Catalog No. ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	
Maintained	X	N5CSMXO •	N5XSMXO •	N5CSVXON	NTXSVXON	\$22.50
Spring Return (4 to 3 only, maintained (1-2-3))	X	N5CSMX5 •	N5XSMX5 •	N5CSVX5N	N5XSVX5N	\$29.00

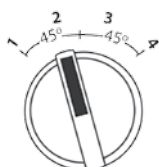
(See Color Table Below)

4 Position Selector Switches; Key Operated (Operators only)

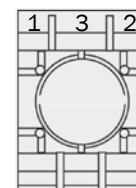


Operating Mode	Cam	Key Removal	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
Maintained	X	All	N5CSCXOZ95	N5XSCXOZ95	\$82.50
Spring Return (4 to 3 only, maintained (1-2-3))	x	1-2-3	N5CSCX5R95	N5XSCX5R95	\$102.50

Contact Switching Sequence



Cam Code	← ↶ ↷ →				Screw Terminal Contact Block	
	←	↶	↷	→	Left Position	Right Position
X	0	X	0	0	N5B11VN	---
	0	0	0	X		
	0	0	X	0	---	N5B11VN
	X	0	0	0		

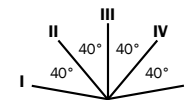
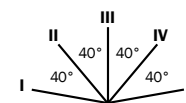


5 Position Selector Switches; Standard

Operating Mode	Cam	with Knob		with Black Lever		Price
		Chrome Bezel Catalog No. ¹	Type 4X Bezel Catalog No. ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	
Maintained	Y	N5CSMYO •	N5XSMYO •	N5CSVYON	N5XSVYON	\$40.50
	W	N5CSMWO •	N5XSMWO •	N5CSVWON	N5XSVWON	\$40.50

Contact Switching Sequence

Cam Code	← ↶ ↷ →					Screw Terminal Contact Block	
	←	↶	↷	→	Left Position	Right Position	
W	0	X	0	0	N5B11VN	---	
	0	0	0	X			
	0	0	X	0	---	N5B11VN	
	0	0	0	X			
Y	0	X	0	0	N5B11VN	---	
	0	0	0	X			
	0	0	0	X	---	N5B11VN	
	X	0	0	0			



• **COLOR TABLE** - use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Black	Red	Green	Yellow	Blue
Color Code	N	R	V	G	L

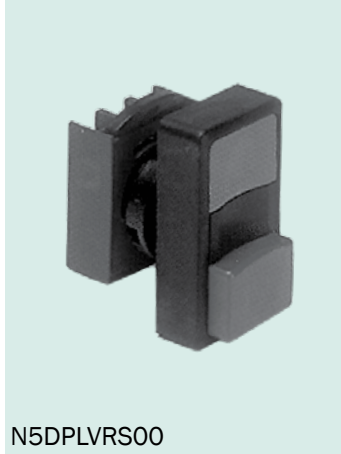
Note: 1 Add Color Suffix from Color Table above

Discount Schedule SC-36

DOUBLE PUSH BUTTONS (Start-Stop)

(Complete Unit = Operator + Power Supply (optional) + Contact Blocks)

Double Push Button without Symbols

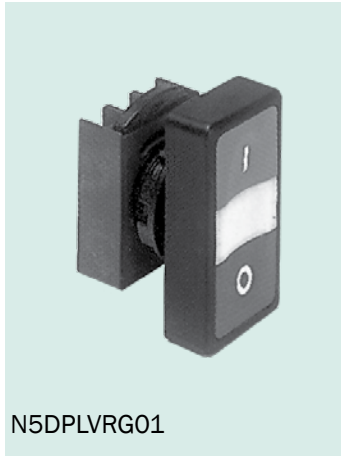


Button Level	Button Color	Catalog No. Button without Symbols ¹	Price
Flush Top Indicator Light*	Black - Red	N5DPLNRG00	\$33.50
Flush Bottom	Green - Red	N5DPLVRG00	\$33.50
Flush Top Indicator Light*	Black - Red	N5DPLNRS00	\$33.50
Extended Bottom	Green - Red	N5DPLVRS00	\$33.50

*Double Push Buttons come with both a white transparent lens for use with indicator light and a black insert for non-illuminated feature.

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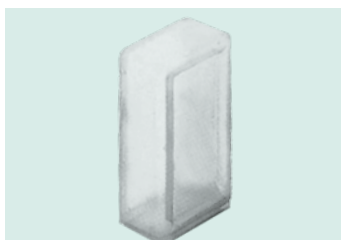
Double Push Button with Symbols



Button Level	Button Color	Catalog No. Button with Symbols ¹	Price
Flush Top Indicator Light*	Black - Red	N5DPLNRG01	\$33.50
Flush Bottom	Green - Red	N5DPLVRG01	\$33.50
Flush Top Indicator Light*	Black - Red	N5DPLNRS01	\$33.50
Extended Bottom	Green - Red	N5DPLVRS01	\$33.50

*Double Push Buttons come with both a white transparent lens for use with indicator light and a black insert for non-illuminated feature.

Double Push Button Accessory



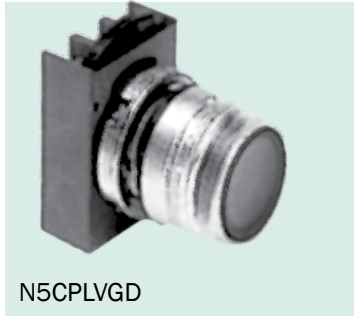
Description	Catalog No.	Price
Silicone rubber boot for use with flush operators	080CPDT	\$7.00

Notes: 1 Bulb and Power Supply not included. To order necessary Power Supply and Bulb see page G5

ILLUMINATED PUSH BUTTONS

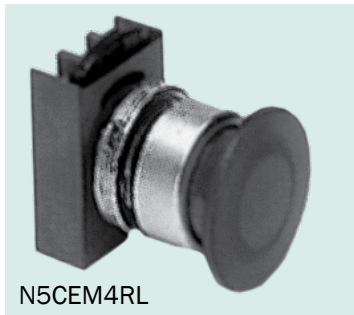
(Complete Unit = Operator + Power Supply + Contact Blocks)

Standard - Momentary



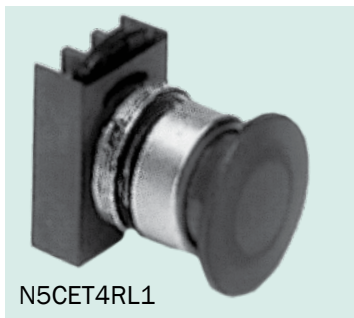
Operator (Only) ¹ (with diffused lens)	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
With Flush Cap	N5CPL • GD	N5XPL • GD	\$18.00
With Extended Cap	N5CPL • SD	N5XPL • SD	\$18.00
Guarded	N5CPL • ED	N5XPL • ED	\$18.00

Mushroom Head - Momentary



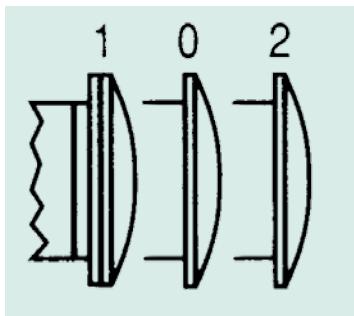
Operator (Only) ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
Mushroom Head 40mm	N5CEM4 • L	N5XEM4 • L	\$25.50

Mushroom Head - With Latch (Maintained)



Operator (Only) ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
40mm Push To Latch - Pull To Release	N5CET4 • L1	N5XET4 • L1	\$36.50

Mushroom Head - 3-Position Push Pull (Center Rest)



Operator (Only) ¹	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Price
40mm 3-Position -Maintained Push (0 to 1) -Momentary Pull (0 to 2)	N5CET4 • L2	N5XET4 • L2	\$48.00
40mm 3-Position -Momentary Push (0 to 1) -Momentary Pull (0 to 2)	N5CET4 • L3	N5XET4 • L3	\$48.00

• **COLOR TABLE** - use complete catalog number when ordering. Replace the (*) with the suffix from the table below.

Color	Black	Red	Green	Yellow	Blue
Color Code	N	R	V	G	L

Note: 1 Order Contact Blocks & Powre Supply from page G5

Discount Schedule SC-36

2 & 3 POSITION ILLUMINATED SELECTOR SWITCHES

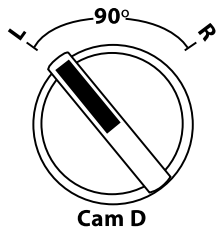
(Complete Unit = Operator + Power Supply + Contact Blocks)

2-Position Illuminated Selector Switches



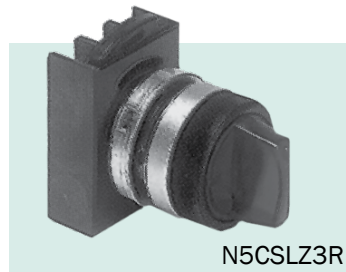
Operating Mode	Cam	Chrome Bezel Catalog No. ¹	Type 4X Bezel Catalog No. ¹	Price
Maintained	D	N5CSLD0 •	N5XSLD0 •	\$29.00

Contact Switching Sequence



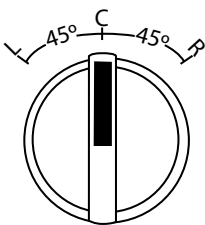
Cam Code	←	↑	Screw Terminal Contact Block	
			Left Position	Right Position
D	0	X	---	N5B10VN
	X	0	N5B01VN	---
	0	X	N5B11VN	---
	X	0		

3-Position Illuminated Selector Switches



Operating Mode	Cam	Chrome Bezel Catalog No. ¹	Type 4X Bezel Catalog No. ¹	Price
Maintained	Z	N5CSLZ0 •	N5XSLZ0 •	\$29.00
Spring Return Left To Center Maintained Right	Z	N5CSLZ1 •	N5XSLZ1 •	\$40.50
Spring Return Right To Center Maintained Left	Z	N5CSLZ5 •	N5XSLZ5 •	\$40.50
Spring Return Left & Right To Center	Z	N5CSLZ3 •	N5XSLZ3 •	\$40.50

Contact Switching Sequence



Cam Code	←	↑	↗	Screw Terminal Contact Block	
				Left Position	Right Position
Z	0	0	X	N5B10VN	---
	X	0	0	---	N5B10VN
	X	X	0	N5B01VN	---
	0	X	X	---	N5B01VN
	0	0	X	N5B11VN	---
	X	X	0		
	X	0	0	---	N5B11VN
	0	X	X		

• **COLOR TABLE** - use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

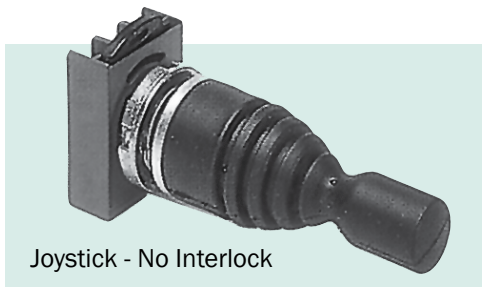
Note: 1 Order Contact Blocks, Power Supplies and Bulbs from page G5

Discount Schedule SC-36

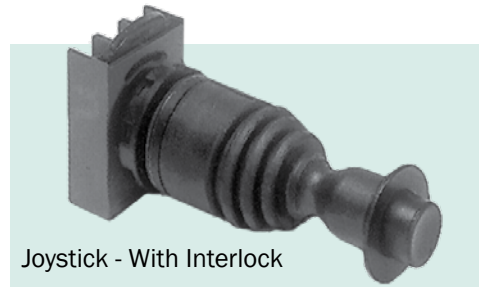
SPECIAL OPERATORS (Complete Unit = Operator + Contact Blocks)

Joystick - Operators - Type 4X

Positions (see below)	Mechanical Interlock	Maintained All Positions Catalog No.	Momentary All Positions Catalog No.	Price
3	No	N5XMN2F	N5XMN2T	\$132.00
3	Yes	N5XMB2F	N5XMB2T	\$132.00
5	No	N5XMN4F	N5XMN4T	\$179.00
5	Yes	N5XMB4F	N5XMB4T	\$179.00

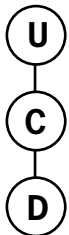


Joystick - No Interlock



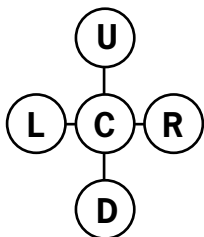
Joystick - With Interlock

3-Position Joystick Contact Arrangement



Position			Screw Terminal Contact Block Catalog No. and Mounting Position	
Up	Center	Down	Position 1	Position 2
0	0	X	N5B11VN	---
X	0	0	---	N5B11VN
X	0	0	---	N5B11VN
0	0	X	---	N5B11VN

5-Position Joystick Contact Arrangement

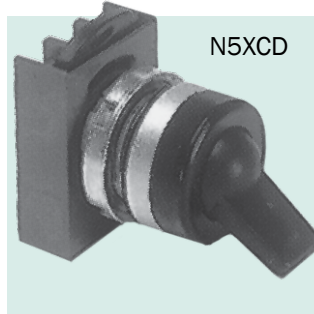


Position					Screw Terminal Contact Block Catalog No. and Mounting Position	
Up	Right	Center	Down	Left	Position 1	Position 2
0	0	0	X	0	N5B11VN	---
X	0	0	0	0	---	N5B11VN
0	X	0	0	0	---	N5B11VN
0	0	0	0	X	---	N5B11VN

Discount Schedule SC-36

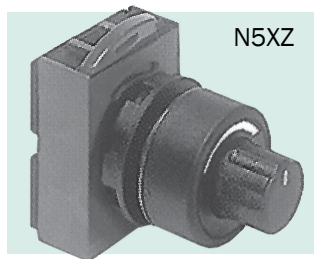
SPECIAL OPERATORS

Toggle Switches & Cams - Operator Only (Note selection and position of contact block(s) operation)



Position			Contact Block Mounting Position		Positions & Catalog No.	Price
Up	Center	Down	1	2		
X	---	0	---	N5B10VN	2 Position Maintained N5XCD	\$24.00
0	---	X	N5B01VN	---		
X	---	0	N5B11VN	---		
0	---	X	---	---		
X	0	0	---	N5B10VN	3 Position Maintained N5XCB	\$24.00
0	0	X	N5B01VN	---		
X	0	0	N5B11VN	---		
0	0	X	---	---		

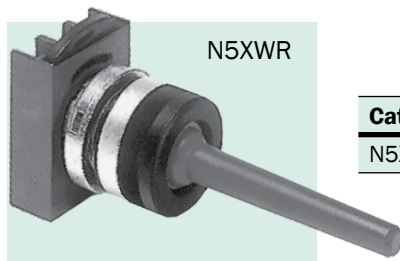
Potentiometer Operators*



Style	Catalog No.	Price
Chrome Bezel (Operator)*	N5CZ	\$60.00
4X Bezel (Operator)*	N5XZ	\$60.00
10 K-OHM (Operator)*	2W10K	\$75.00

* Potentiometer Operator use .25" x 2" stem.

Wobble Sticks - Type 4X



Catalog No.	Price
N5XWR	\$48.00

Reset Push Buttons (Flush blue push buttons with white "R" provided with screw adjustable from 60mm to 80mm depth)



Style	Catalog No.	Price
Chrome Bezel	N5CRG	\$19.50
4X Bezel	N5XRG	\$19.50
Reset Rod (extended screw 170mm)	N5ACVLR	\$11.50

Discount Schedule SC-36

22mm PRE-ASSEMBLED OPERATORS

The 22mm Pilot Device units listed below are the most commonly ordered units. The units are complete and include operator, contact mounting base and contact blocks. Legend plates are not included. They may be ordered separately from page G21. Units are packed, unassembled in a single carton.

Push Buttons - Momentary

Operator / Description	Type 1, 3, 3R, 4, 12, 13 IP66 Chrome Bezel	Catalog No.	Price
Flush Pushbutton - 1N.O. Contact Block - Black Cap		N5CPNNG10	\$24.50
Flush Pushbutton - 1 N.O. & 1 N.C. Contact Block - Black Cap		N5CPNNG11	\$36.00
Flush Pushbutton - 1 N.O. Contact Block - Green Cap		N5CPNVG10	\$24.50
Flush Pushbutton - 1 N.O. & 1 N.C. Contact Block - Green Cap		N5CPNVG11	\$36.00
Flush Pushbutton - 1 N.C. Contact Block - Red Cap		N5CPNRG01	\$24.50
Extended Pushbutton - 1 N.C. Contact Block - Red Cap		N5CPNRS01	\$24.50
Extended Pushbutton - 1 N.O. & 1 N.C. Contact Block - Red Cap		N5CPNRS11	\$36.00
Guarded Pushbutton - 1 N.O. Contact Block - Black Cap		N5CPNNE10	\$24.50
Guarded Pushbutton - 1 N.O. & 1 N.C. Contact Block - Black Cap		N5CPNNE11	\$36.00
Mushroom 40mm Pushbutton - 1 N.C. Contact Block - Red Cap (Momentary)		N5CEM4RN01	\$37.00
Mushroom 40mm Twist-Release - 1 N.C. Contact Block - Red Cap		N5CER4RN01	\$71.50
Double Pushbutton Flush - 1 N.O. & 1 N.C. Contact Block - Black-Red Cap (No power supply)		N5DPLNRG0011	\$56.50
Double Pushbutton Flush - 1 N.O. & 1 N.C. Contact Block - Green-Red Cap (No power supply)		N5DPLVRG0011	\$56.50

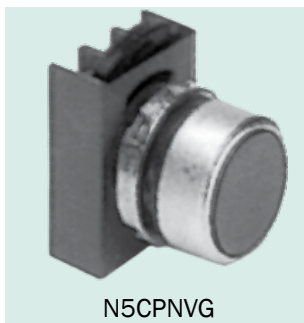
Selector Switches - Maintained

Operator / Description	Type 1, 3, 3R, 4, 12, 13 IP66 Chrome Bezel	Catalog No.	Price
3 Position Sel. Sw. - 2 N.O. Contact Blocks - Cam Z - Black Knob		N5CSMZON20	\$45.50
2 Position Sel. Sw. - 1 N.O. Contact Block - Cam D - Black Knob		N5CSMDON10	\$34.00
3 Position Sel. Sw. Key Operated - 2 N.O. Contact Block - Cam Z - Center Removal		N5CSCZOC9520	\$90.50
2 Position Sel. Sw. Key Operated - 1 N.O. & 1 N.C. Contact Block - Cam Z Left-Right Removal		N5CSCDOK9511	\$90.50

Selector Switches - Maintained

Operator / Description	Type 1, 3, 3R, 4, 12, 13 IP66 Chrome Bezel	Catalog No.	Price
Std. Full Voltage Pilot Light 120V - Red Cap (Bulb included)		N5CLRDL	\$42.00
Std. Full Voltage Pilot Light 120V - Green Cap (Bulb included)		N5CLVDL	\$42.00
Std. Full Voltage Pilot Light 120V - Amber Cap (Bulb included)		N5CLADL	\$42.00
Uniblock 300V max. Pilot Light - Red Cap (Bulb included)		N5XURDDO	\$18.50
Uniblock 300V max. Pilot Light - Green Cap (Bulb included)		N5XUVDDO	\$18.50
Uniblock 300V max. Pilot Light - Amber Cap (Bulb included)		N5XUADDO	\$18.50
Uniblock 300V max. Pilot Light - Blue Cap (Bulb included)		N5XULDDO	\$18.50

N5CPNVG11 (Pre-assembled)



+



+



Discount Schedule SC-36

ACCESSORIES / REPLACEMENT PARTS

Pushbutton Caps



Description	Catalog No.	Price
Flush & Guarded Operator	N5ARBG •	\$1.50
Extended Operator	N5ARBS •	

Momentary Operators (Mushroom)



Description	Catalog No.	Price
28mm	N5ARB3 •	\$11.00
40mm	N5ARB4 •	
60mm	N5ARB6 •	

Push-Pull Operators (Mushroom)



Description	Catalog No.	Price
40mm	N5ACB4 •	\$12.50

Knobs & Levers



Description	Catalog No.	Price
Knob for Selector Switches	N5ACMN •	\$4.50
Lever for Selector Switches	N5ARMV •	

Lenses (Pilot Lights)



Description	Catalog No.	Price
Diffused Version	N5ARGLD •	\$1.00
Refracted Version	N5ARGLR •	\$1.50
Glass Version	N5ARGLV •	\$21.00

Illuminated Push Button Lens



Description	Catalog No.	Price
Illuminated Push Button Lens	N5ARGPD •	\$1.00

Illuminated Mushroom Head Push Buttons



Description	Catalog No.	Price
Momentary 40mm	N5ARGP4 •	\$11.00
Push-Pull 40mm	N5ACGP4 •	\$12.50
Illuminated Lever Selector Switch	N5ACGSL •	\$4.50

Rubber Protective Caps (Standard Flush Push Buttons)



Description	Catalog No.	Price
Colored	080CP •	\$8.00
Clear	080CPT	

Rubber Protective Cab (Raised Push Buttons)



Description	Catalog No.	Price
Clear	N5ARCST	\$8.00

COLOR TABLE

• Use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Colors	Black	Red	Green	Yellow	Brown	Blue	White	Grey	Amber	Clear	w/o Cap	Red, Black, Green, Yellow
Pushbutton Caps	N	R	V	G	M	L	B	H	---	---	O	Z ¹
Mushroom Heads	N	R	V	G	---	---	---	---	---	---	---	---
Knobs	N	R	V	G	---	L	---	---	---	---	---	---
Lenses	---	R	V	G	---	L	B	---	A	I	---	---
Protective Caps	N	R	V	G	---	---	---	---	---	---	---	---

Note 1: When ordering operator with 4-color caps (Red/Black/Green/Yellow) add \$3.00

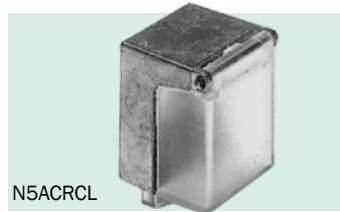
Discount Schedule SC-36

ACCESSORIES / REPLACEMENT PARTS



Plugs (fill a 22mm hole)

Description	Catalog No.	Price
Round Plug	N5ARHPR	\$8.00

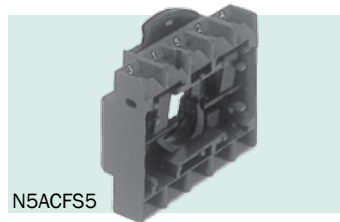


Printed Circuit Board Adaptor

Description	Catalog No.	Price
Adaptor	N5ACA6	\$6.00

Protections

Description	Catalog No.	Price
Extended Guard for 40mm mushroom head	N5ARRE4	\$15.50
Protection Cover: padlockable for standard push buttons, illuminated push buttons, selector switches, illuminated selector switches with knob.	N5ACRCL	\$23.00



Flanges *(For mounting contact blocks)*

Description	Catalog No.	Price
Three position - 30 x 50mm	N5ACFS3	\$4.50
Five position - 50 x 50mm	N5ACFS5	\$8.00



Keys

Description	Catalog No.	Price
Extra Key; Selector Switch	077C3095	\$5.50



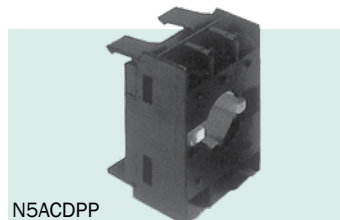
Adapter

Description	Catalog No.	Price
Gives round control and signalling units a square appearance. -- Made in black thermoplastic. -- Excluded for mushroom flush buttons with positive break and Push-Pull units.	N5ARSN1	\$2.50



Reset Adjustment Screw

Description	Catalog No.	Price
Extended Screw (170mm)	N5ACVLR	\$11.50



Push-On / Push-Off

Description	Catalog No.	Price
Device for standard push buttons and illuminated push buttons. -- To be added only to single-pole contact blocks. -- The N.O.-contacts must be early closing types.	N5ACDPP	\$40.50



Ring Adaptor *(Allows N5 series to be mounted in 30mm hole)*

Description	Catalog No.	Price
Chrome	N5ARAM32	\$11.50
4X Bezel	N5ARAX32	\$11.50



Tools

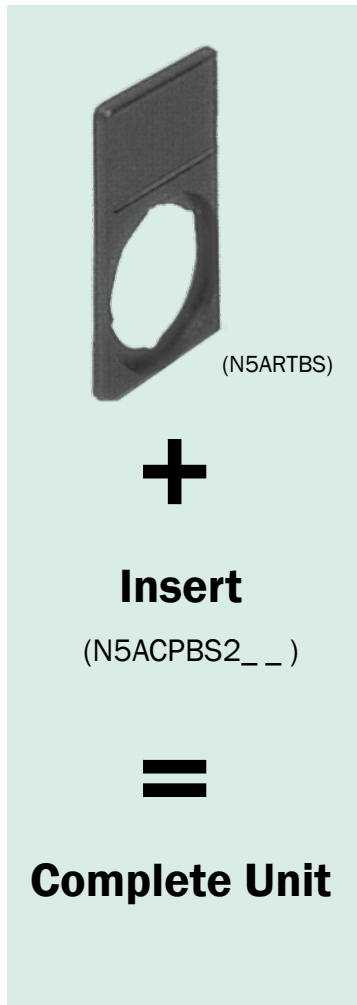
Description	Catalog No.	Price
Locking ring wrench	N5ACWAF	\$11.50
Bulb extractor	080E35L	\$6.00

Discount Schedule SC-36

LEGEND PLATES

(Complete Unit = Legend Insert + Insert Holder)

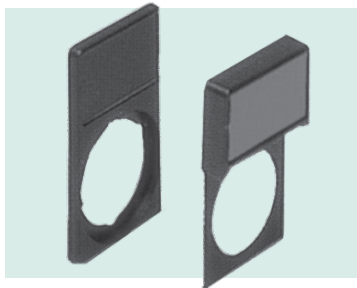
Legend Inserts (used with N5ARTBS Insert Holder – Black background except when noted)



Marking	Catalog No.	Price
Start	N5ACPBS202	\$1.00
Stop (Red)	N5ACPBS201	\$1.00
Forward	N5ACPBS214	\$1.00
Reverse	N5ACPBS215	\$1.00
Close	N5ACPBS205	\$1.00
Open	N5ACPBS206	\$1.00
Up	N5ACPBS204	\$1.00
Down	N5ACPBS203	\$1.00
Left	N5ACPBS222	\$1.00
Right	N5ACPBS224	\$1.00
Fast	N5ACPBS208	\$1.00
Slow	N5ACPBS207	\$1.00
Open-Close	N5ACPBS234	\$1.00
Stop-Start	N5ACPBS232	\$1.00
Forward-Reverse	N5ACPBS231	\$1.00
Off-On	N5ACPBS233	\$1.00
Forward-O-Reverse	N5ACPBS239	\$1.00
Emergency Stop (Red)	N5ACPBS229	\$1.00
Inch	N5ACPBS209	\$1.00
Jog	N5ACPBS210	\$1.00
Lower	N5ACPBS217	\$1.00
Off (Red)	N5ACPBS213	\$1.00
On	N5ACPBS212	\$1.00
Power On	N5ACPBS240	\$1.00
Push To Stop / Pull To Start	N5ACPBS241	\$1.00
Reset	N5ACPBS291	\$1.00
Run	N5ACPBS211	\$1.00
Start - Stop	N5ACPBS255	\$1.00
Up - Down	N5ACPBS256	\$1.00
Hand - Off - Auto	N5ACPBS261	\$1.00
Blank Insert	N5ACPBS	\$1.00
Transparent Insert	N5ACPTS	\$1.00
Custom Engrave	NSACPBSX	\$8.00

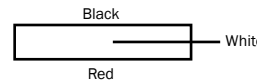
G21

Insert Holders Insert Holders come with blank insert which can be used to make your own legend. One side Red - One side Black.



- Legend Plates are used for Pilot Device identification of application function.
- Legend Plate requires Legend Holder and Legend Insert
- Legend Plates can be custom engraved at \$8.00 each

Description	Catalog No.	Price
Supplied with neutral insert engravable on both sides		
Standard 30 x 50mm	N5ARTBS	\$1.50
Extended 45 x 50mm	N5ARTBM	\$2.50



Emergency Stop Yellow Ring



Description	Catalog No.	Price
58mm Dia	080XTGR02	\$3.00
78MM Dia	080XTG802	\$3.00

Discount Schedule SC-36

TECHNICAL DATA

General Specifications

Conformity to Standards	UL508 (USA) NEMA ICS-2 (USA) VDE 0600 (Germany) BSI (Great Britain) CEI EN60947.5.1 (Italy) CENELEC EN 5000 7 (Europe)	CSA C22.2 No. 14-M91 (Canada) IEC 947.5.1 (International) UTE (France) NFC 63140 (France) JIS (Japan)	
Approvals	UL listed - File Number E170195 Manufacturing Facility is registered to ISO 9000		
Finger Protection at Terminals	IP2X according to IEC 529 Terminal identification is registered to ISO 9000		
Enclosure Ratings	Suitable for use in NEMA Types 1, 3, 3R, 3S, 4, 4X, 12 and 13 enclosures. (Multi-function push buttons are suitable for NEMA Type 1 enclosures only unless used with protective rubber cap accessory.) IP66 per IEC529, when mounted in enclosures with equal or superior seal.		
Ambient Temperature	Operating -13° to +158°F -25° to +70°C	Storage -40° to +158°F -40° to +70°C	
Climate Suitability / Humidity	Climate Type Temperature Wet Hot Wet Variable Wet	Temperature 74°F (23°C) 74°F (23°C) 104°F (40°C) 74° to 104°F (23° to 40°C)	Relative Humidity 50% 83% 92% 83% to 92%
Resistance to Vibration	Per IEC 68-2-6, 16g with a frequency from 40-500 Hz and maximum peak-to-peak amplitude of 0.75mm		
Resistance to Shock	According to MIL 202B, method 202A. Test was performed for 1/2 sinusoid for 11md, 38g max for all operators with transformers and 100g for all other operators.		
Operating Force	Standard push button operator: 2.5lbs (11N). Each contact block: 1.3lbs (6N). Selector switch operator: 2.4in/lb (0.27Nm)		

Wire Terminals

Wire Capacity and Terminal Torque Requirements	Suitable for #22 - #12 AWG stranded or solid copper wires, single or parallel conductors of same size. Terminal torque: 7-12 in/lb. Parallel conductor size combinations (stranded or solid wire):	
	Parallel Conductor Size Combinations (Stranded or Solid Wire)	Terminal Torque
	#12 with #14	12 in/lb
	#14 with #16	12 in/lb
	#16 with #18	12 in/lb
	#16 with #20	12 in/lb
	#16 with #22	12 in/lb
	#18 with #22	10 - 12 in/lb
	#18 with #20	10 - 12 in/lb
	#20 with #22	7 - 12 in/lb
Quick Connect Terminals	Suitable for one female tab connector measuring 0.25 x 0.03 inches (6.35 x 0.8 mm) or two female tab connectors measuring 0.11 x 0.03 inches (2.8 x 0.8 mm).	

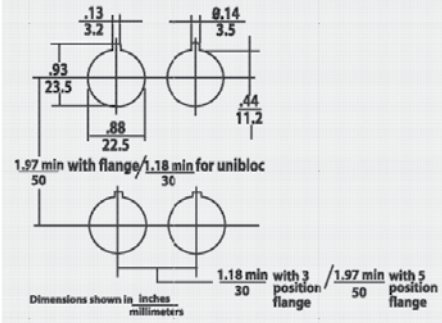
Contact Data

Electrical Reliability Data	Electrical life and reliability in low level current: 80 million operations at 12V, 5mA, resistive load. (32 contacts tested successfully for 2.5 million operations).								
Dust Resistance	In extremely dusty environments, electrical life at low level current is 250,000 operations at 12V, 5mA, resistive load. In a clean environment, electrical life at low level current is 10 million operations at 12V, 5mA, resistive load.								
Thermal Current	I _{th} = 10A per IEC 947-5-1								
Insulation Voltage	U _i = 660 Volts ac/dc (opposite polarity) except 2NO and 2NC blocks 300 Vac/dc								
Protection from Electrical Shock	Class I per IEC 536 for metal operators Class II (double insulation) per IEC 536 for plastic operators								
Insulation Category	Group "C" per VDE 0110								
Dielectric Strength	2500 volts								
Short Circuit Protection	10A type G fuse, per IEC 269.1 & 269.3								
	A600 (maximum make volt-amperes = 7200; maximum break volt-amperes = 720; PF- .25)								
	Volts (AC - V)	12	24	48	60	120	240	480	600
	Continuous (A)	10	10	10	10	10	10	10	10
	Making (A)	100	100	100	60	60	30	15	12
	Breaking (A)	10	10	10	6	6	3	1.5	1.2
Pilot Duty Ratings	Q300 (maximum make or break vold-amperes = 69)								
	Volts (DC - V)	12	24	48	60	125	250	300	
	Continuous (A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Making (A)	2.5	2.5	1.4	1.1	0.55	0.27	0.23	
	Breaking (A)	2.5	2.5	1.4	1.1	0.55	0.27	0.23	

Contact Data

IEC Utilization Categories	AC 5 Control of AC Electromagnetic Loads Rated Operational Voltage and Current									
	Ue (V)	12	24	48	60	110	220	380	500	600
	Ie	10	10	10	10	6	3	2	1.5	1.2
Contact Characteristics	DC1 3 Control of DC Electromagnets Rated Operational Voltage and Current									
	UE (M)	12	24	48	60	110	220	300		
	LE (A)	2.5	2.5	1.4	10	0.55	0.27	0.2		
Contact Resistance Contact Fidelity	NC: slow make, double break (positive opening) NO: slow make, double break Self-cleaning (wiping action) contact Double-bridge contacts with four points of contact									
Logic Reed Contact Data (Special Order)	<25mOhm per IEC 255.7 category 3 @ 24V, 1 amp Minimum current: 5mA Minimum voltage: 12 Vac/dc. maximum resistance - 2 ohms NC: Single break NO: Single break 120 Vac maximum, 0.1 5A maximum, 8VA maximum 30 Vdc maximum, 15A maximum, 4.5W maximum									

Mounting

Acceptable Panel Thickness	.040 - .236 inches (1-6 mm)	
Operator Locking Ring Torque	26 in/lb (3 N -m)	
Force Required to Forcibly Remove Contact Blocks and Flange	Contact block or power supply from flange: 27 lbs (118N) 3- or 5-block flange from metal operator: 88 lbs (392 N) 3- or 5-block flange from plastic operator: 66 lbs (294 N)	
Mounting Dimensions		
Mechanical Life Ratings for Operators	Operators	Number of Operations
	Standard Push Buttons	3,000,000
	Illuminated Push Buttons ¹	1,000,000 - 3,000,000
	Momentary Mushroom-head Push Buttons	3,000,000
	Maintained Mushroom-head Push Buttons	500,000
	Push-to-Latch, Turn-to-Release Mushroom-Head Push Buttons	300,000
	3-Position Mushroom-head Push Buttons	300,000
	Non-Illuminated Selector Switches	1,000,000
	Illuminated Selector Switches	500,000
	Joysticks	500,000
	Toggle Switches	1,000,000
	Wobble Sticks	500,000
	Key-Operated Push Buttons	1,000,000
	Selector Push Buttons	

¹ Number of operations dependent on the operating duration of the lamp. If the lamp is left on for long periods of time, its heat can reduce mechanical life. All illuminated push buttons meet at least 1,000,000 operations.

POLYCARBONATE ENCLOSURES, NAMEPLATES, CONTACT BLOCKS POWER SUPPLIES FOR BASE-MOUNTED PILOT DEVICES

(See pg. G26-28 for assembled push-button stations. Consult factory for custom stations)

NEMA 1, 3, 3R, 4, 4X, 12, 13, & IP66

(For use with operators from pages G6 - G15. Requires base-mount contact blocks & power supplies) (maximum of 3 per operator)

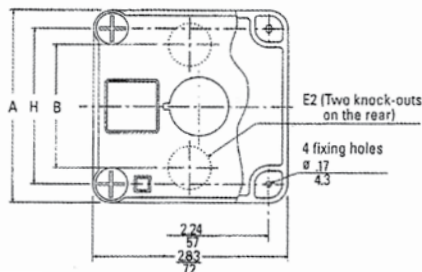
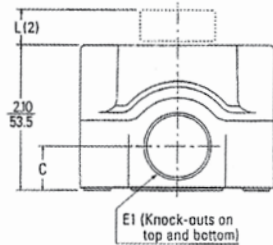
Plastic Enclosures

NEMA 1, 3 3R,3S, 4, 4X, 12, 13 and IP66

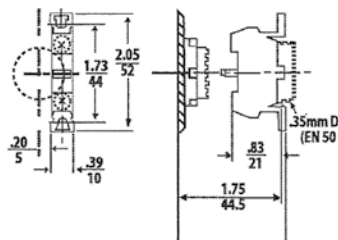
Enclosure Holes	Center Distance (in/mm)	Dimension A (in/mm)	Dimension B (in/mm)	Dimension C (in/mm)
1		2.83 (72)	1.81 (46)	.65 (16.5)
2	1.18 (30)	4.33 (110)	3.07 (78)	.65 (16.5)
3	1.18 (30)	5.51 (140)	4.25 (108)	.65 (16.5)
4	1.18 (30)	6.89 (175)	5.63 (143)	.65 (16.5)
6	1.18 (30)	9.25 (235)	7.87 (200)	.77 (19.5)

Enclosure Holes	Center Distance (in/mm)	Dimension E1 (in/mm)	Dimension E2 ¹ (in/mm)	Dimension H (in/mm)
1		.91 (23)	.61 (15.5)	2.24 (57)
2	1.18 (30)	.91 (23)	.85 (21.5)	3.74 (95)
3	1.18 (30)	.91 (23)	.85 (21.5)	4.92 (125)
4	1.18 (30)	.91 (23)	.85 (21.5)	6.30 (160)
6	1.18 (30)	1.14 (29)	.91 (23)	8.66 (220)

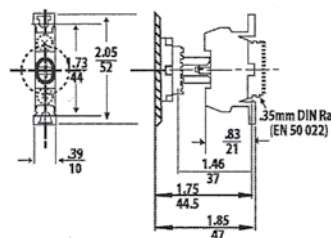
¹ 1-, 2-, 3-, and 4-hole enclosures suitable for cable gland, with locknut, PG16 or ½" NPT.
6-hole enclosures suitable for cable gland, with locknut GP12 or ¾" NPT.



Base Mount Contact Blocks with Screw Terminal



Base Mount Power Supply



Polycarbonate Enclosures

Holes	Color	Encl. Length	Catalog No.	Price
1	Gray	2.83"	N5EPE01	\$23.00
2	Gray	4.33"	N5EPE02	\$27.00
3	Gray	5.51"	N5EPE03	\$35.00
4	Gray	6.89"	N5EPE04	\$50.00
6	Gray	9.25"	N5EPE06	\$76.00

Base-Mount Contact Block

(Screw Terminals only for use with Polycarbonate Enclosures)

Type	Contacts	Catalog No.	Price
Base-Mount	1 NO	N5B10BN	\$11.50
Base-Mount	1 NC	N5B01BN	\$11.50

Base-Mount Power Supply

(Screw Terminals only)

Type	Voltage AC/DC	Catalog No. with Incandescent Bulb	Price
Full Voltage	No Lamp	N5PDNBO	\$27.00
	6	N5PDNBA	\$32.50
	12	N5PDNBB	\$32.50
	24	N5PDNBD	\$32.50
	48	N5PDNBG	\$32.50
	120	N5PDNBL	\$32.50
Standard Resistor	110 - 120	N5PRNBJ	\$54.50
	220 - 240	N5PRNBN	\$54.50

Legend plates for Plastic Enclosures (Self adhesive, black background)

Marking	Catalog No.	Price
Stop	N5AELN201	\$2.50
Start	N5AELN202	\$2.50
Down	N5AELN203	\$2.50
Up	N5AELN204	\$2.50
Close	N5AELN205	\$2.50
Open	N5AELN206	\$2.50
On	N5AELN212	\$2.50
Off	N5AELN213	\$2.50
Forward	N5AELN214	\$2.50
Reverse	N5AEL215	\$2.50
Left	N5AELN222	\$2.50
Right	N5AELN224	\$2.50

Discount Schedule SC-36

METAL ENCLOSURES FOR TYPE N5 OILTIGHT PILOT DEVICES

NEMA 12 surface mounting enclosure is available with one through sixteen elements openings. All enclosures will accommodate non-illuminated operators with up to two contact blocks (1 per side). Consult factory for stations with 7 through 20 elements and all custom built assembled push-button stations.

N5 Separate Enclosures



Enclosures only (No operators or contacts)

Type 12, Metal, Surface Mounted Enclosure

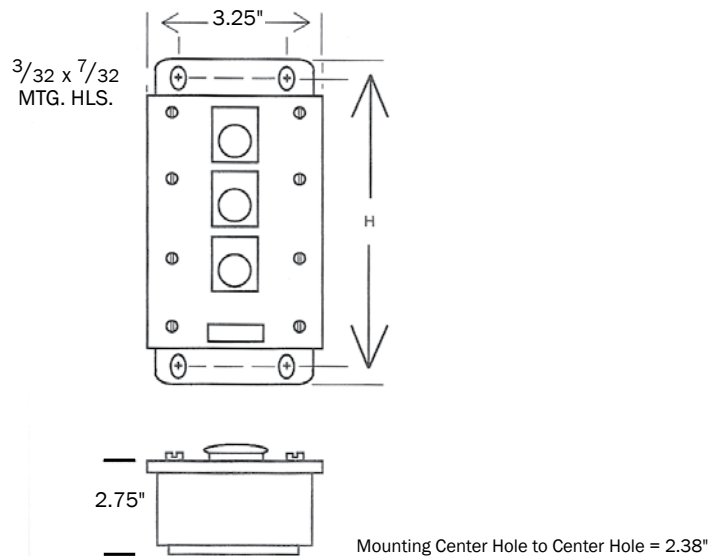
Number of Element(s)	Catalog No.	Price
1	N5SPPSL - 1	\$124.50
2	N5SPPSL - 2	\$140.00
3	N5SPPSL - 3	\$155.50
4	N5SPPSL - 4	\$194.00
5	N5SPPSL - 5	\$194.00
6	N5SPPSL - 6	\$233.00
7 - 20	Consult factory	

Dimensions

Type12, Metal

Number of Element(s)	W	Surface Mounted Enclosure	D
		H	
1	3.25"	3.50"	2.75"
2		5.75"	
3		8.00"	
4		10.25"	
5		12.50"	
6		14.75"	

NEMA 12 Painted Metal



Note: Consult factory for extra deep or wide enclosure and stainless steel NEMA 4X

Ordering Information: Select Enclosure Desired by Catalog Number

Discount Schedule SC-36

22mm ASSEMBLED PUSH-BUTTON STATIONS

22mm push-button stations are available assembled in NEMA 1,3,3R,4, 4X, 12, 13, & IP66 rated polycarbonate enclosures. Assembled stations include operators, contact blocks, pilot lights, bulbs and legend plates as indicated. For other assembled stations not listed below please consult factory.

Single Element 22mm Push-Button Stations



Description (CHROME BEZEL)	Catalog No.	Price
Start PB Station Green Flush Push-Button Momentary	N5PEC101	\$57.50
Stop PB Station Red Extended Push-Button Momentary	N5PEC102	\$57.50
Stop PB Station Red 40mm Mushroom Push-Button Momentary	N5PEC103	\$70.00
Stop PB Station Red 40mm Push-Pull	N5PEC104	\$78.00

Consult factory for additional custom push-button stations



Description (4X BEZEL)	Catalog No.	Price
Start PB Station Green Flush Push-Button Momentary	N5PEX101	\$57.50
Stop PB Station Red Extended Push-Button Momentary	N5PEX102	\$57.50
Emergency PB Station Red 40mm Mushroom Push Button, twist release EN418 approved	N5PEX103	\$88.00
Stop PB Station Red 40mm Push-Pull	N5PEX104	\$78.00

Consult factory for additional custom push-button stations



Discount Schedule SC-36

22mm ASSEMBLED PUSH-BUTTON STATIONS

Two Element 22mm Push-Button Stations



Description (CHROME BEZEL)	Catalog No.	Price
Start-Stop PB Station Green Flush, Red Extended Push-Buttons Momentary	N5PEC201	\$93.00
Start-Stop PB Station Green Flush, Red 28mm Mushroom PB Momentary	N5PEC202	\$105.50
Open-Close PB Station Two Black Flush Push-Buttons Momentary	N5PEC203	\$93.00
Up-Down PB Station Two Black Flush Push-Buttons Momentary	N5PEC204	\$93.00
Forward-Reverse PB Station Two Black Flush Push-Buttons Momentary	N5PEC205	\$93.00

Consult factory for additional custom push-button stations.



Description (4X BEZEL)	Catalog No.	Price
Start-Stop PB Station (Green Flush, Red Extended Push-Buttons)	N5PEX201	\$93.00
Start-Stop PB Station (Green Flush, Red 28mm mushroom PB)	N5PEX202	\$105.50
Open-Close PB Station (Two Black Flush Push-Buttons)	N5PEX203	\$93.00
Up-Down PB Station (Two Black Flush Push-Buttons)	N5PEX204	\$93.00
Forward-Reverse PB Station (Two Black Flush Push-Buttons)	N5PEX205	\$93.00

Consult factory for additional custom push-button stations.

Discount Schedule SC-36

22mm ASSEMBLED PUSH-BUTTON STATIONS

Three Element 22mm Push-Button Stations



Description (CHROME BEZEL)	Catalog No.	Price
Forward - Reverse - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEC301	\$132.00
Open - Close - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEC302	\$132.00
Up - Down - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEC303	\$132.00
Start - Stop - On Light PB Station One Green Flush, One Red Extended Momentary, Pilot Light Green 120V	N5PEC304	\$149.00
Start - Stop - Selector Switch One Green, One Red Momentary, 2 pos Sel. Sw. Maintained	N5PEC305	\$152.00

Consult factory for additional custom push-button stations.

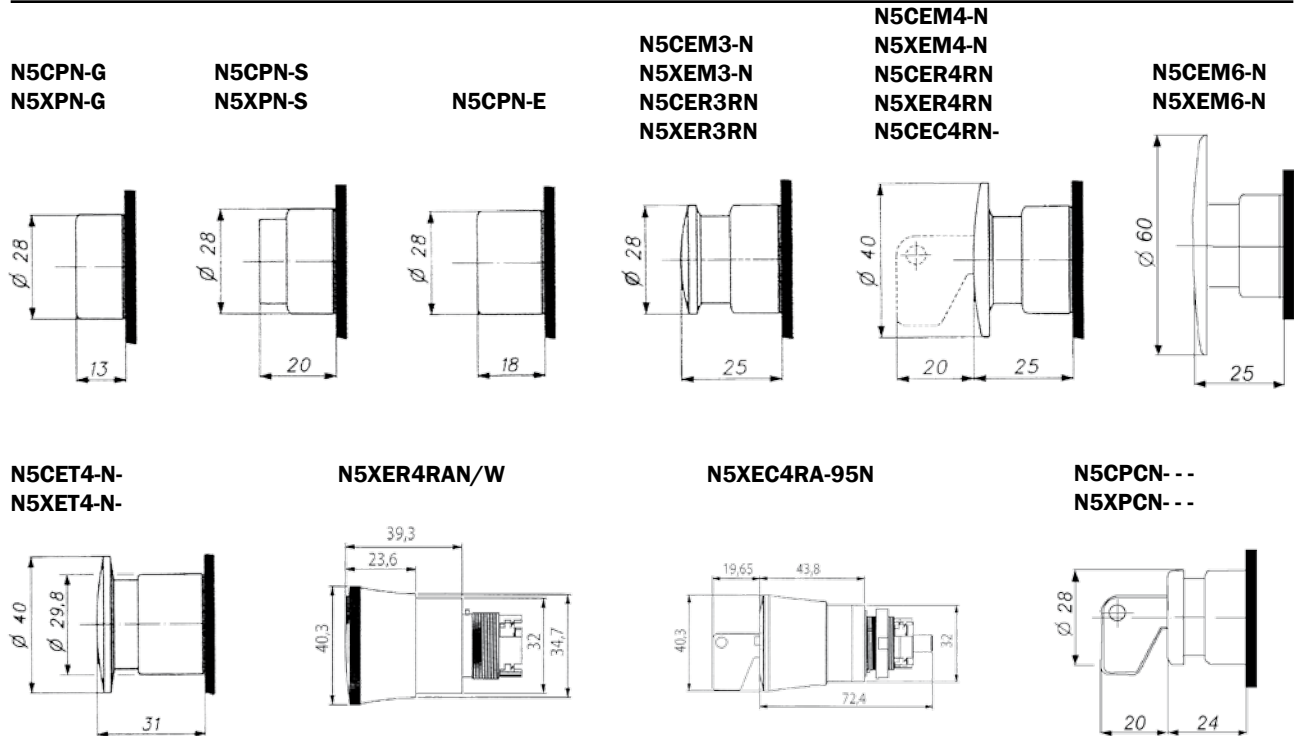


Description (4X BEZEL)	Catalog No.	Price
Forward - Reverse - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEX301	\$132.00
Open - Close - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEX302	\$132.00
Up - Down - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEX303	\$132.00
Start - Stop - On Light PB Station One Green Flush, One Red Extended Momentary, Pilot Light Green 120V	N5PEX304	\$149.00
Start - Stop - Selector Switch One Green, One Red Momentary, 2 pos. Sel. Sw. maintained	N5PEX305	\$152.00

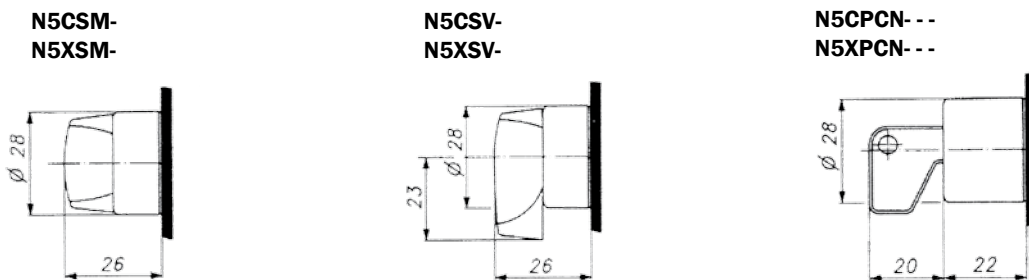
Consult factory for additional custom push-button stations.

Discount Schedule SC-36

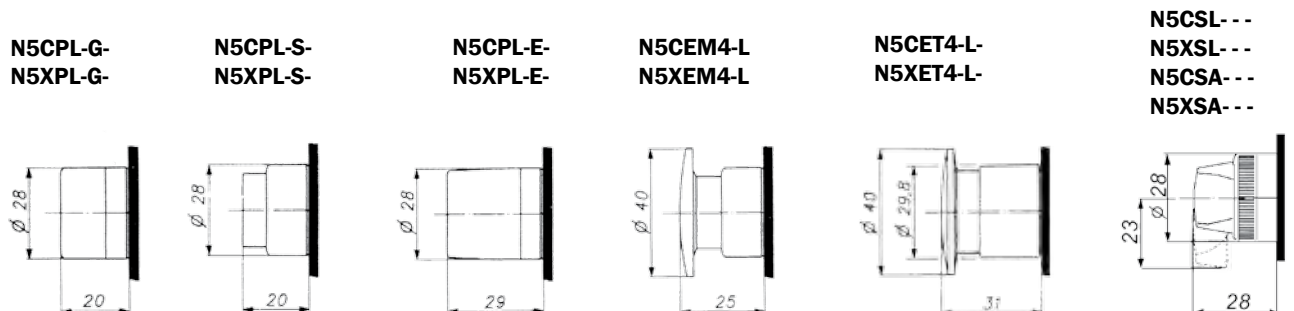
Round Operators - Push-Buttons



Round Operators - Selector Switches



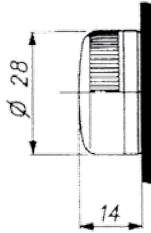
Round Operators - Illuminated Push-Buttons and Selector Switches



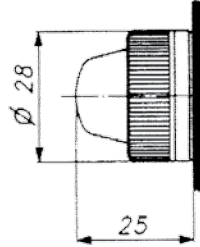
DIMENSIONS

Round Operators - Pilot Lights

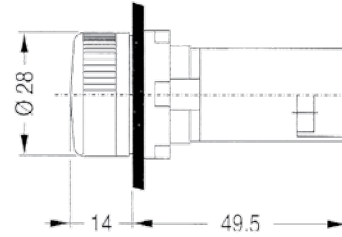
**N5CL--
N5XL--**



N5CL-V

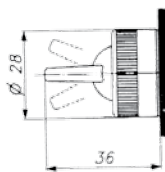


N5XU--

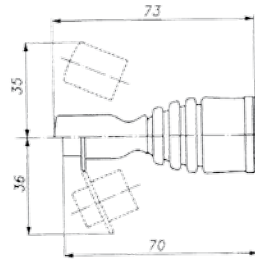


Round Operators - Other Devices

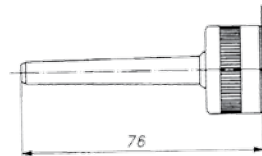
N5XC-



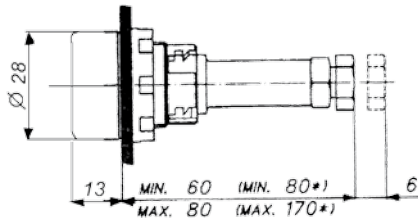
**N5CMN-
N5XMN--**



N5XMB--

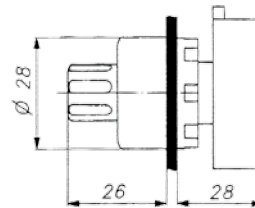


**N5CRG
N5XRG**



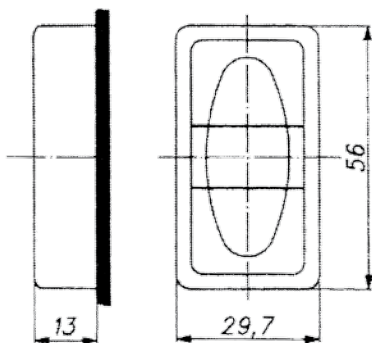
*with accessory N5ACVLR

**N5CZ
N5XZ**

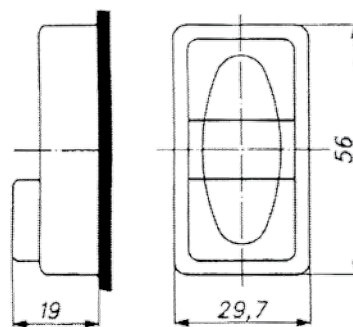


Square Operators - Double Function Push-Buttons

N5DPL-- G --

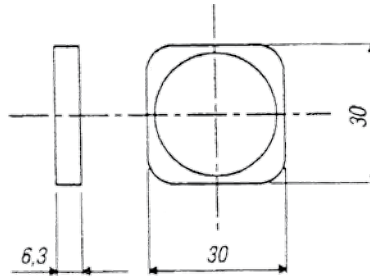


N5DPL-- S --



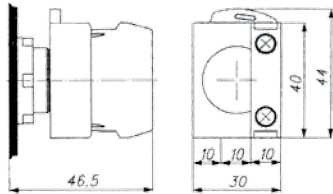
Square Operators - Other Devices

**Adaptor
N5ARSN1**

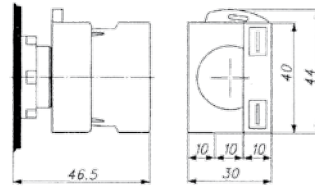


Contact Blocks

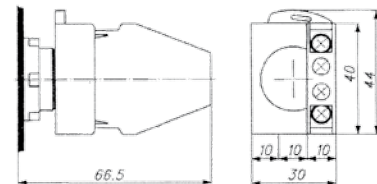
N5B01V- /



N5B01FN /



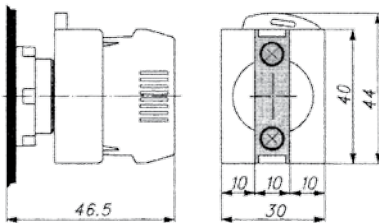
**N5B011VN
N5B02VN
N5B20VN**



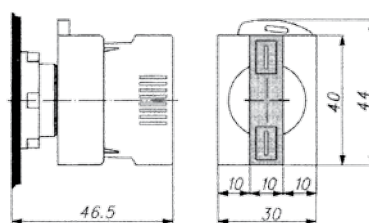
G31

Power Supplies

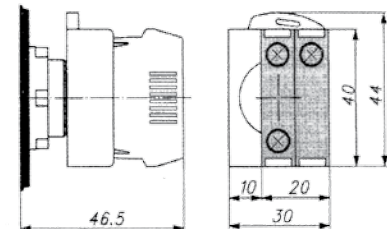
**N5PDNV0
N5PRLV -
N5PRDV-**



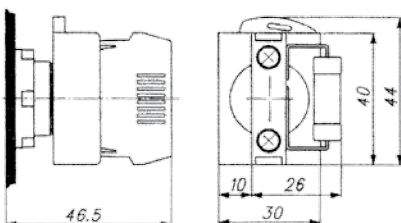
N5PDNF0



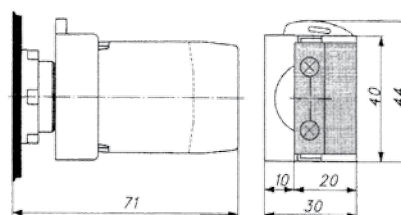
**N5PRNV-
N5PDTV0
N5PRTV-**



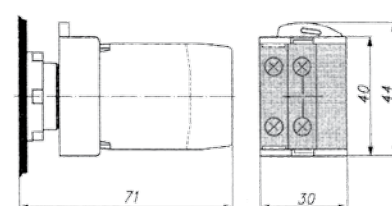
N5PREV-



N5PTNV-



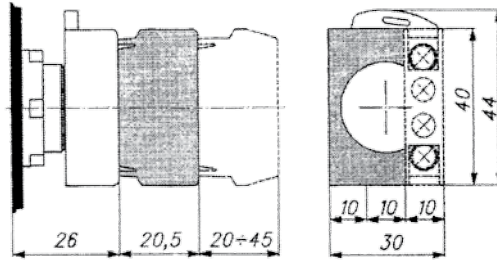
N5PDMV- /



DIMENSIONS

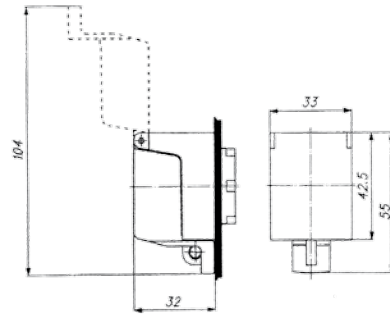
Push-On / Push-Off Devices

N5ACDPP



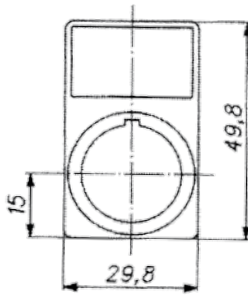
Protection Cover

N5ACRCL

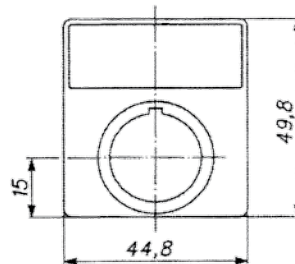


Insert Holders and Plates

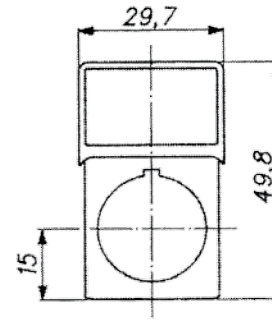
N5ARTBS



N5ARTBM

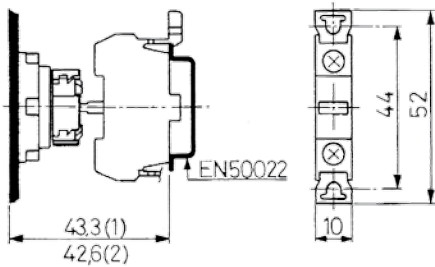


N5ASTBS



Contact Blocks

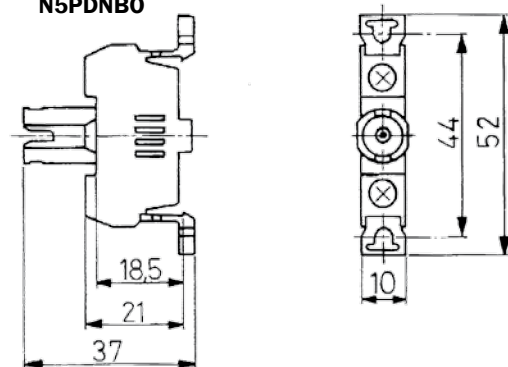
**N5B01BN
N5B10BN**



(1) With insert holder
(2) Without insert holder

Power Supplies

N5PDNB0



30MM (N7) PILOT DEVICES



SPRINGER
controls company



Springer Controls offers a complete line of rugged, industrial grade pilot devices. We carry both the 30mm and 22mm (section G) oil-tight devices. We custom assemble push button stations from 1 - 16 buttons in polycarbonate or metal enclosures. (page H18)

Index
H

30MM (N7) PILOT DEVICES:

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Illuminated Standard Push-Buttons	H8
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Keyed Selector Switches: 2-3-4 Position	H12
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Selector Switches	H14
Joysticks	H15
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Legend Plates	H19
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N7 Technical Data	H21
N7 Dimensions	H22, H23

CATALOG NUMBERING SYSTEM

Push-Buttons & Push-Pull Operators

N7 **PNG** **V** **10**

Contact Arrangement

See Contact Block on page H16

Color Cap

N* Black	A Amber
R* Red	L Blue
V* Green	M Brown
G* Yellow	B White

(*Colors Available for Mushroom Heads)

Operator Type

PNS Extended - Push-Button	EM6 Jumbo Mushroom Head PB
PNG Flush - Push- Button	ER3 Twist Release Motor Head
PNE Recessed Guard	ET3 Push-Pull Std. Mushroom Head
EM3 Std. Mushroom Head PB	ET6 Push-Pull Jumbo Mushroom Head

30mm Series

Selector Switch Operators

N7 **SM** **B** **N** **0** **11**

Contact Arrangement

See Contact Block on page H16

Operator Function

0 ... Maintained
5 ... Spring Return from Right
1 ... Spring Return from Left
3 ... Spring Return from Both Left and Right

Knob Color

N Black	G Yellow
R Red	L Blue
V Green	

Cam Number

See Tables on page H14

Operator Type

SM Selector Switch Knob (standard)
SV Selector Switch Metal Lever

30mm Series

CATALOG NUMBERING SYSTEM

Pilot Lights & Press-To-Test Lights

N7 **L** **N** **V** **D** **J**

Voltage

A ... 6V	D ... 24V	L ... 130V	W ... 415V
B ... 12V	J ... 120V	N ... 240V	Y ... 480V

Power Supply

- T ... Transformer Type
- R ... Resistor Type
- D ... Full Voltage Type

Lens Color

R ... Red	G ... Yellow	L ... Blue	I ... Clear
V ... Green	A ... Amber	B ... White	O ... No Lens

Function

- N Normal
- M Multifunction

Operator Type

- L Standard Pilot Light
- T Press-To-Test Pilot Light

30mm Series

H3

Illuminated Push Button & Push-Pull Operators

N7 **PL** **S** **V** **D** **J** **11**

Contact Arrangement

See Contact Block on page H16

Voltage

A... 6V*	G ...48V	N ...220-25V	Y ... 480-500V
B ... 12V*	L ...130V*	U ... 380V	*FV only
D ... 24V*	J ... 110-120v	W ... 415V	

Power Supply

- T ... Transformer Type
- R ... Resistor Type
- D ... Full Voltage Type

Lens Color

R ... Red	G ... Yellow	L ... Blue	B ... White
V ... Green	A ... Amber	M ... Brown	I ... Clear

Guard

- S Extended without guard
- M Flush with guard

Operator Type

- PL Lighted Push-Button
- EL Lighted Mushroom Head

30mm Series

CATALOG NUMBERING SYSTEM

Illuminated Selector Switch



Contact Arrangement

See Contact Block on page H16

Voltage

A...6V*	G ...48V	N ...220-25V	Y ...480-500V
B ... 12V*	L ...130V*	U ...380V	*FV only
D ... 24V*	J ... 110-120V*	W ... 415V	

Power Supply

- T ... Transformer Type
- R ... Resistor Type
- D ... Full Voltage Type

Lens Color

R ... Red	G ... Yellow	L ... Blue	B ... White
V ... Green	A ... Amber	M ... Brown	I ... Clear

Position Cam

D ... 2 Position	L ... 3 Position
B ... 3 Position	Z ... 3 Position

Operator Designation

SL Selector Illuminated (Knob Type Only)

30mm Series

ORDERING INFORMATION AND CONTACTS

Ordering Information

- Use complete catalog number when ordering. Contacts can be included in part number. Replace the (•) with the suffix from the color table.
- Additional items available:
 - Accessories..... H20
 - Legend Plates..... H19
 - Ratings & Dimensions H22 - H24

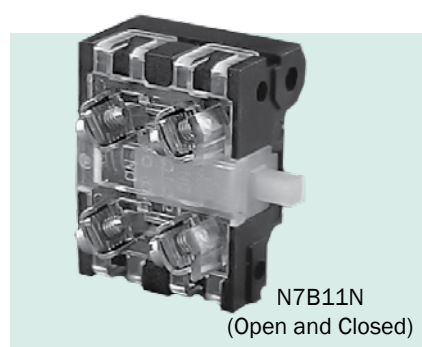
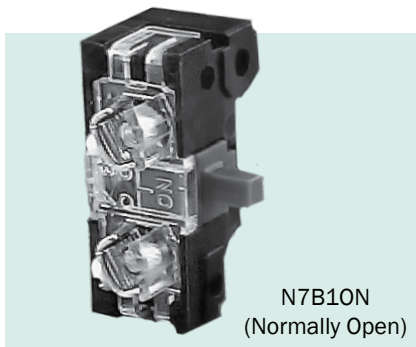
Contact Table

For this Contact Arrangement	Catalog No.	Price
1 N.O.	N7B10N	\$14.00
1 N.C.	N7B01N	\$14.00
2 N.O.	N7B20N	\$28.00
2 N.C.	N7B02N	\$28.00
1 N.O., 1 N.C.	N7B11N	\$28.00

H5

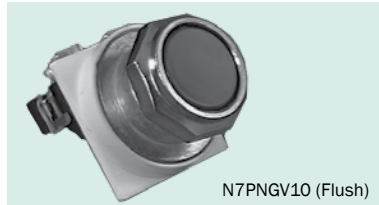
Contact Ratings

NEMA Rating	Amp. Rating Max. Volts	VA Make	Break	Continuous	Make	Break
Maximum AC Contact Rating Per Pole, 50 or 60 Hz						
A600	120	60	6	10	7200	720
	240	30	3			
	480	15	1.5			
	600	12	1.2			
Maximum DC Contact Rating Per pole						
P600	125	1.1	5	138		
	250	0.55		138		
	301-600	0.2		120		



Discount Schedule SC-36

PUSH BUTTONS; STANDARD & MUSHROOM HEAD



Push Buttons - Momentary Operation

Operator	Contact Arrangement	Catalog No.	Price
Extended	Without Contacts	N7PNS • 00	\$27.00
	1 N.O.	N7PNS • 10	\$41.00
	2 N.O.	N7PNS • 20	\$55.00
	1 N.C.	N7PNS • 01	\$41.00
	2 N.C.	N7PNS • 02	\$55.00
	1 N.O. , 1 N.C.	N7PNS • 11	\$55.00
Flush	Without Contacts	N7PNG • 00	\$27.00
	1 N.O.	N7PNG • 10	\$41.00
	2 N.O.	N7PNG • 20	\$55.00
	1 N.C.	N7PNG • 01	\$41.00
	2 N.C.	N7PNG • 02	\$55.00
	1 N.O. , 1 N.C.	N7PNG • 11	\$55.00
Recessed	Without Contacts	N7PNE • 00	\$27.00
	1 N.O.	N7PNE • 10	\$41.00
	2 N.O.	N7PNE • 20	\$55.00
	1 N.C.	N7PNE • 01	\$41.00
	2 N.C.	N7PNE • 02	\$55.00
	1 N.O. , 1 N.C.	N7PNE • 11	\$55.00

H6

Mushroom Operators - Momentary Operation



Operator	Contact Arrangement	Catalog No.	Price
35mm Mushroom	Without Contacts	N7EM3 • 00	\$55.00
	1 N.O.	N7EM3 • 10	\$69.00
	2 N.O.	N7EM3 • 20	\$83.00
	1 N.C.	N7EM3 • 01	\$69.00
	2 N.C.	N7EM3 • 02	\$83.00
	1 N.O. , 1 N.C.	N7EM3 • 11	\$83.00
60mm Mushroom	Without Contacts	N7EM6 • 00	\$55.00
	1 N.O.	N7EM6 • 10	\$69.00
	2 N.O.	N7EM6 • 20	\$83.00
	1 N.C.	N7EM6 • 01	\$69.00
	2 N.C.	N7EM6 • 02	\$83.00
	1 N.O. , 1 N.C.	N7EM6 • 11	\$83.00

Mushroom Operators - Latched Operation (Twist to Release)

Operator	Contact Arrangement	Catalog No.	Price
35mm Mushroom	Without Contacts	N7ER3R00	\$83.00
	1 N.O.	N7ER2R10	\$97.00
	2 N.O.	N7ER3R20	\$111.00
	1 N.C.	N7ER3R01	\$97.00
	2 N.C.	N7ER3R02	\$111.00
	1 N.O. , 1 N.C.	N7ER3R11	\$111.00

Mushroom Operators - Push-Pull

Operator	Contact Arrangement	Catalog No.	Price	Operator	Contact Arrangement	Catalog No.	Price
35mm Mushroom	Without Contacts	N7ET3 • 00	\$83.00	60mm Mushroom	Without Contacts	N7ET6 • 00	\$83.00
	1 N.O.	N7ET3 • 10	\$97.00		1 N.O.	N7ET6 • 10	\$97.00
	2 N.O.	N7ET3 • 20	\$111.00		2 N.O.	N7ET6 • 20	\$111.00
	1 N.C.	N7ET3 • 01	\$97.00		1 N.C.	N7ET6 • 01	\$97.00
	2 N.C.	N7ET3 • 02	\$111.00		2 N.C.	N7ET6 • 02	\$111.00
	1 N.O. , 1 N.C.	N7ET3 • 11	\$111.00		1 N.O. , 1 N.C.	N7ET6 • 11	\$111.00

• COLOR TABLE

Use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Colors	Black	Red	Green	Yellow	Brown ¹	Blue ¹	White ¹	Amber ¹
Caps	N	R	V	G	M	L	B	A

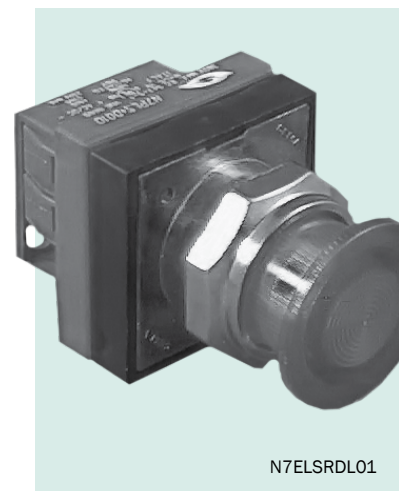
Note:
¹ Colors not available in mushroom heads

Discount Schedule SC-36

PILOT LIGHTS AND ILLUMINATED MUSHROOM HEAD



N7LNRTJ



N7ELSRDL01

Pilot Lights

Type	Function	Catalog No.	Price
Full Voltage	Normal	N7LN • D*	\$83.00
Resistor	Normal	N7LN • R*	\$83.00
Transformer	Normal	N7LN • T*	\$101.00

Push to Test¹

Full Voltage	Normal	N7TN • D*	\$111.00
Resistor	Normal	N7TN • R*	\$111.00
Transformer	Normal	N7TN • T*	\$129.00

Illuminated Mushroom Push Button - Momentary Operation

Type	Function	Catalog No.	Price
Full Voltage	1 N.O.	N7ELS • D*10	\$118.00
	2 N.O.	N7ELS • D*20	\$132.00
	1 N.C.	N7ELS • D*01	\$118.00
	2 N.C.	N7ELS • D*02	\$132.00
	1 N.O. - 1 N.C.	N7ELS • D*11	\$132.00
Resistor	1 N.O.	N7ELS • R*10	\$118.00
	2 N.O.	N7ELS • R*20	\$132.00
	1 N.C.	N7ELS • R*01	\$118.00
	2 N.C.	N7ELS • R*02	\$132.00
	1 N.O. - 1 N.C.	N7ELS • R*11	\$132.00
Transformer	1 N.O.	N7ELS • T*10	\$137.00
	2 N.O.	N7ELS • T*20	\$151.00
	1 N.C.	N7ELS • T*01	\$137.00
	2 N.C.	N7ELS • T*02	\$151.00
	1 N.O. - 1 N.C.	N7ELS • T*11	\$151.00

H7

COLOR TABLE

Use complete catalog number when ordering. Replace the (*) with the suffix from the table below.

Lens Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

Full Voltage Suffix	No Bulb O	6V A	12V * Standard	24V Filament	130V Bulbs included in price
Transformer Suffix	120V J	240-250V N	380V U	415V W	480V Y
Resistor Suffix	110-120V J	220-250V N			

LED Lamps - 110V AC (consult factory for other voltages)

Color*	Catalog No	Price
Red	BA9S11OLR	\$28.00
Green	BA9S11OLV	\$28.00
Blue	BA9S11OLL	\$28.00
Yellow	BA9S11OLG	\$28.00
White	BA9S11OLB	\$28.00

Replacement Filament Bulbs can be ordered from page G8

Note:

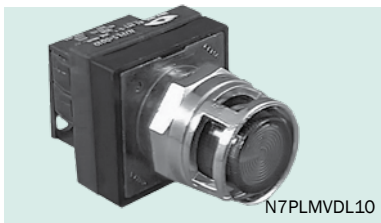
¹ Refer to page G8 for Push-to-Test Diagram

* Use same color lens and LED without diffuser.

** Add Suffix letter "L" for LED bulb to above part number plus add \$18.00 list

Discount Schedule SC-36

ILLUMINATED STANDARD PUSH BUTTONS - Momentary Operation



Full Voltage Type	Contact Arrangement	Catalog No.	Price
Extended	Without Contacts	N7PLS•D*00	\$83.00
	1 N.O.	N7PLS•D*10	\$97.00
	2 N.O.	N7PLS•D*20	\$111.00
	1 N.C.	N7PLS•D*01	\$97.00
	2 N.C.	N7PLS•D*02	\$111.00
	1 N.O. , 1 N.C.	N7PLS•D*11	\$111.00
Flush with Guard	Without Contacts	N7PLM•D*00	\$92.00
	1 N.O.	N7PLM•D*10	\$106.00
	2 N.O.	N7PLM•D*20	\$120.00
	1 N.C.	N7PLM•D*01	\$106.00
	2 N.C.	N7PLM•D*02	\$120.00
	1 N.O. , 1 N.C.	N7PLM•D*11	\$120.00

Resistor Type	Contact Arrangement	Catalog No.	Price
Extended	Without Contacts	N7PLS•R*00	\$83.00
	1 N.O.	N7PLS•R*10	\$97.00
	2 N.O.	N7PLS•R*20	\$111.00
	1 N.C.	N7PLS•R*01	\$97.00
	2 N.C.	N7PLS•R*02	\$111.00
	1 N.O. , 1 N.C.	N7PLS•R*11	\$111.00
Flush with Guard	Without Contacts	N7PLM•R*10	\$92.00
	1 N.O.	N7PLM•R*10	\$106.00
	2 N.O.	N7PLM•R*20	\$120.00
	1 N.C.	N7PLM•R*01	\$106.00
	2 N.C.	N7PLM•R*02	\$120.00
	1 N.O. , 1 N.C.	N7PLM•R*11	\$120.00

Transformer Type	Contact Arrangement	Catalog No.	Price
Extended	Without Contacts	N7PLS•T*00	\$101.00
	1 N.O.	N7PLS•T*10	\$115.00
	2 N.O.	N7PLS•T*20	\$129.00
	1 N.C.	N7PLS•T*01	\$115.00
	2 N.C.	N7PLS•T*02	\$129.00
	1 N.O. , 1 N.C.	N7PLS•T*11	\$129.00
Flush with Guard	Without Contacts	N7PLM•T*00	\$111.00
	1 N.O.	N7PLM•T*10	\$125.00
	2 N.O.	N7PLM•T*20	\$139.00
	1 N.C.	N7PLM•T*01	\$125.00
	2 N.C.	N7PLM•T*02	\$139.00
	1 N.O. , 1 N.C.	N7PLM•T*11	\$139.00

COLOR TABLE

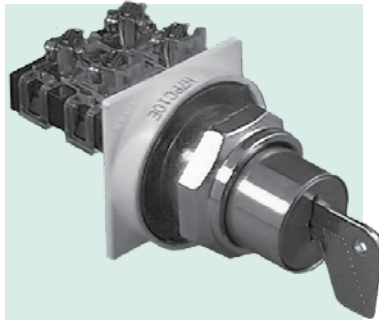
• Use complete catalog number when ordering. Replace the (*) with the suffix from the table below.

Lens Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

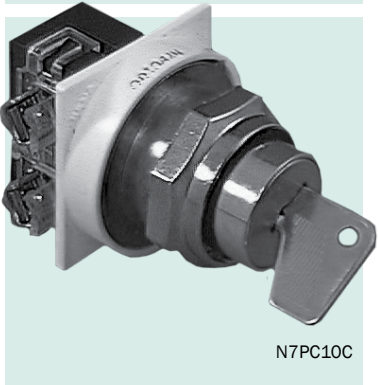
*	Full Voltage Suffix	No Bulb O	6V A	12V B	24V D	130V L
	Transformer Suffix	120V J	240-250V N	380V U	415V W	480V Y
	Resistor Suffix	110-120V J	220-250V N	* Standard Filament Bulbs included in price.		

Discount Schedule SC-36

KEY SELECTOR PUSH BUTTONS & PUSH BUTTON ACCESSORIES



N7PC10E



N7PC10C

Key Selector Push Buttons

Contact Arrangement	Lockable Position	Catalog No.	Price
Without Contacts	Released	N7PC00E	\$83.00
1 N.O.	Released	N7PC10E	\$97.00
2 N.O.	Released	N7PC20E	\$111.00
1 N.C.	Released	N7PC01E	\$97.00
2 N.C.	Released	N7PC02E	\$111.00
1 N.O. - 1 N.C.	Released	N7PC11E	\$111.00

Contact Arrangement	Lockable Position	Catalog No.	Price
Without Contacts	Depressed	N7PC00F	\$83.00
1 N.O.	Depressed	N7PC10F	\$97.00
2 N.O.	Depressed	N7PC20F	\$111.00
1 N.C.	Depressed	N7PC01F	\$97.00
2 N.C.	Depressed	N7PC02F	\$111.00
1 N.O. - 1 N.C.	Depressed	N7PC11F	\$111.00

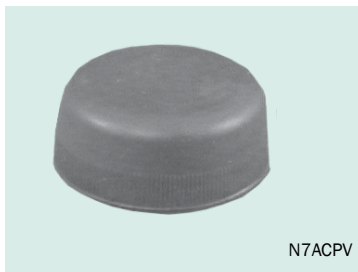
Contact Arrangement	Lockable Position	Catalog No.	Price
Without Contacts	Both	N7PC00C	\$83.00
1 N.O.	Both	N7PC10C	\$97.00
2 N.O.	Both	N7PC20C	\$111.00
1 N.C.	Both	N7PC01C	\$97.00
2 N.C.	Both	N7PC02C	\$111.00
1 N.O. - 1 N.C.	Both	N7PC11C	\$111.00



N7AG02, N7AG01, N7AG03

Push Button Accessories

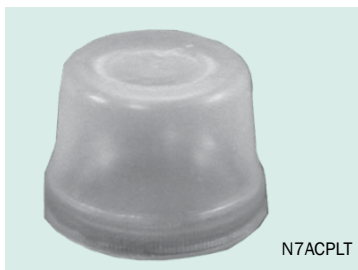
Description	Catalog No.	Price
Guard Rings for Push Buttons		
Unguarded (Extended)	N7AG02	\$4.50
Guarded (Flush)	N7AG01	\$4.50
Extended Guard (Recessed)	N7AG03	\$9.00



N7ACPV

Water Resistant Boots for Push Buttons

Black	N7ACPN	\$18.50
Red	N7ACPR	\$18.50
Green	N7ACPV	\$18.50
Yellow	N7ACPG	\$18.50
Translucent	N7ACPT	\$18.50
Translucent Water Resistant Boots for Illuminated Push Buttons, Pilot Lights and Press-To-Test Pilot Lights	N7ACPLT	\$28.00

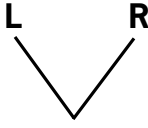

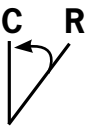
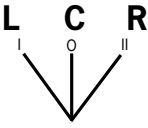
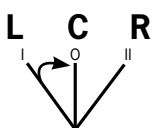
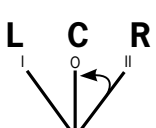
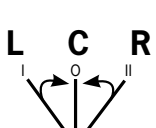
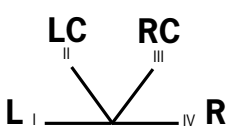


N7ACPLT

Additional accessories see page H20

Discount Schedule SC-36

SELECTOR SWITCHES WITH METAL LEVER

Description	Function	Code	Contact Arrangement	Catalog No.	Price
2 Position Maintained		D	1 N.O. - 1 N.C.	N7SVD0011	\$64.00
		I	1 N.O. - 1 N.C.	N7SVI0011	\$64.00
2 Position Spring Return From Right		I	1 N.O. - 1 N.C.	N7SVI0511	\$83.00
3 Position Maintained		B	1 N.O. - 1 N.C.	N7SVB0011	\$64.00
		E	1 N.O. - 1 N.C.	N7SVE0011	\$64.00
		L	1 N.O. - 1 N.C.	N7SVL0011	\$64.00
		U	2 N.O. - 2 N.C.	N7SVU0022	\$92.00
		Z	2 N.O. - 2 N.C.	N7SVZ0022	\$92.00
3 Position Spring Return From Left		B	1 N.O. - 1 N.C.	N7SVB0111	\$83.00
		E	1 N.O. - 1 N.C.	N7SVE0111	\$83.00
		L	1 N.O. - 1 N.C.	N7SVL0111	\$83.00
		U	2 N.O. - 2 N.C.	N7SVU0122	\$111.00
		Z	2 N.O. - 2 N.C.	N7SVZ0122	\$111.00
3 Position Spring Return From Right		B	1 N.O. - 1 N.C.	N7SVB0511	\$83.00
		E	1 N.O. - 1 N.C.	N7SVE0511	\$83.00
		L	1 N.O. - 1 N.C.	N7SVL0511	\$83.00
		U	2 N.O. - 2 N.C.	N7SVU0522	\$111.00
		Z	2 N.O. - 2 N.C.	N7SVZ0522	\$111.00
3 Position Spring Return To Center		B	1 N.O. - 1 N.C.	N7SVB0311	\$83.00
		E	1 N.O. - 1 N.C.	N7SVE0311	\$83.00
		L	1 N.O. - 1 N.C.	N7SVL0311	\$83.00
		U	2 N.O. - 2 N.C.	N7SVU0322	\$111.00
		Z	2 N.O. - 2 N.C.	N7SVZ0322	\$111.00
4 Position Maintained		X	2 N.O. - 2 N.C.	N7SVX0022	\$92.00

Notes:

- Cam Function Code Operation, page H14
- For operator only, replace last 2 digit with "00". Omit contact price

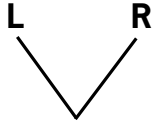
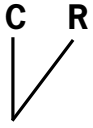
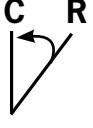
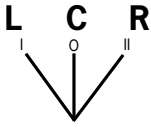
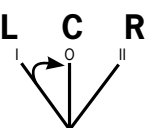
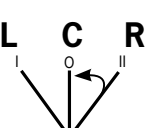
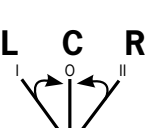
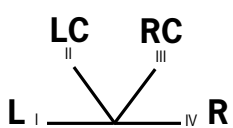
Ordering Information

Items: • Accessories - page H20 • Legend Plates - page H19 • Ratings & Dimensions - page H22-H23

Discount Schedule SC-36

SELECTOR SWITCHES WITH COLORED KNOB

(see page H14 for Contact Switching Sequence)

Description	Function	Code	Contact Arrangement	Catalog No.	Price
2 Position Maintained		D	1 N.O. - 1 N.C.	N7SMD•011	\$64.00
		I	1 N.O. - 1 N.C.	N7SMI•011	\$64.00
2 Position Spring Return From Right		I	1 N.O. - 1 N.C.	N7SMI•511	\$83.00
3 Position Maintained		B	1 N.O. - 1 N.C.	N7SMB•011	\$64.00
		E	1 N.O. - 1 N.C.	N7SME•011	\$64.00
		L	1 N.O. - 1 N.C.	N7SML•011	\$64.00
		U	2 N.O. - 2 N.C.	N7SMU•022	\$92.00
		Z	2 N.O. - 2 N.C.	N7SMZ•022	\$92.00
3 Position Spring Return From Left		B	1 N.O. - 1 N.C.	N7SMB•111	\$83.00
		E	1 N.O. - 1 N.C.	N7SME•111	\$83.00
		L	1 N.O. - 1 N.C.	N7SML•111	\$83.00
		U	2 N.O. - 2 N.C.	N7SMU•122	\$111.00
		Z	2 N.O. - 2 N.C.	N7SMZ•122	\$111.00
3 Position Spring Return From Right		B	1 N.O. - 1 N.C.	N7SMB•511	\$83.00
		E	1 N.O. - 1 N.C.	N7SME•511	\$83.00
		L	1 N.O. - 1 N.C.	N7SML•511	\$83.00
		U	2 N.O. - 2 N.C.	N7SMU•522	\$111.00
		Z	2 N.O. - 2 N.C.	N7SMZ•522	\$111.00
3 Position Spring Return To Center		B	1 N.O. - 1 N.C.	N7SMB•311	\$83.00
		E	1 N.O. - 1 N.C.	N7SNE•311	\$83.00
		L	1 N.O. - 1 N.C.	N7SML•311	\$83.00
		U	2 N.O. - 2 N.C.	N7SMU•322	\$111.00
		Z	2 N.O. - 2 N.C.	N7SMZ•322	\$111.00
4 Position Maintained		X	2 N.O. - 2 N.C.	N7SMX•022	\$92.00

Notes:

- Cam Function Code Operation, page H14
- For operator only, replace last 2 digit with "00". Omit contact price




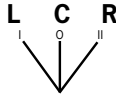
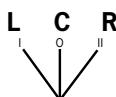
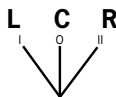
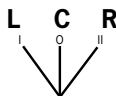
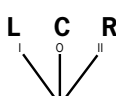
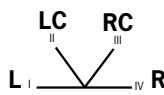
Color Table • Use complete catalog number when ordering. Replace (•) with the suffix from the table below

Colors	Black	Red	Green	Yellow	Blue
Knobs	N	R	V	G	L

Discount Schedule SC-36

KEYED SELECTOR SWITCHES

(see page H14 for Contact Switching Sequence)

Description	Function	Code	Contact Arrangement	Key Removal	Catalog No.	Price
2 Position Maintained		D	1 N.C. - 1 N.O.	L	N7SCD0A1195	\$120.00
				R	N7SCD0E1195	\$120.00
				L-R	N7SCD0K1195	\$120.00
2 Position Maintained		I	1 N.C. - 1 N.O.	C	N7SCIO1195	\$120.00
				R	N7SCIOE1195	\$120.00
				C-R	N7SCION1195	\$120.00
2 Position with Spring Return From Right		I	1 N.C. - 1 N.O.	C	N7SCI5C1195	\$139.00
3 Position Maintained		B	1 N.C. - 1 N.O.	L	N7SCB0A1195	\$120.00
				C	N7SCB0C1195	\$120.00
				R	N7SCB0E1195	\$120.00
				L-C	N7SCB0H1195	\$120.00
				L-R	N7SCB0K1195	\$120.00
				C-R	N7SCBOT1195	\$120.00
				L-C-R	N7SCBOT1195	\$120.00
3 Position Maintained		E	1 N.C. - 1 N.O.	L	N7SCE0A1195	\$120.00
				C	N7SCE0C1195	\$120.00
				R	N7SCE0E1195	\$120.00
				L-C	N7SCE0H1195	\$120.00
				L-R	N7SCE0K1195	\$120.00
				C-R	N7SCE0N1195	\$120.00
				L-C-R	N7SCE0T1195	\$120.00
3 Position Maintained		L	1 N.C. - 1 N.O.	L	N7SCL0A1195	\$120.00
				C	N7SCL0C1195	\$120.00
				R	N7SCL0E1195	\$120.00
				L-C	N7SCL0H1195	\$120.00
				L-R	N7SCL0K1195	\$120.00
				C-R	N7SCL0N1195	\$120.00
				L-C-R	N7SCL0T1195	\$120.00
3 Position Maintained		U	2 N.O. - 2 N.C.	L	N7SCU0A2295	\$148.00
				C	N7SCU0C2295	\$148.00
				R	N7SCU0E2295	\$148.00
				L-C	N7SCU0H2295	\$148.00
				L-R	N7SCU0K2295	\$148.00
				C-R	N7SCU0N2295	\$148.00
				L-C-R	N7SCU0T2295	\$148.00
3 Position Maintained		Z	2 N.O. - 2 N.C.	L	N7SCZ0A2295	\$148.00
				C	N7SCZ0C2295	\$148.00
				R	N7SCZ0E2295	\$148.00
				L-C	N7SCZ0H2295	\$148.00
				L-R	N7SCZ0K2295	\$148.00
				C-R	N7SCZ0N2295	\$148.00
				L-C-R	N7SCZ0T2295	\$148.00
4 Position Maintained		X	2 N.O. - 2 N.C.	All	N7SCX0A2295	\$148.00

Notes:

-For key removal option on 4 position consult factory.
-Cam function code operation, pg H14

Ordering Information

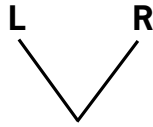
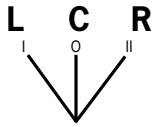
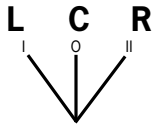
• Accessories - page H20 • Legend Plates - page H19 • Ratings & Dimensions - page H22-H23

Discount Schedule SC-36

ILLUMINATED SELECTOR SWITCHES

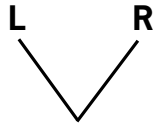
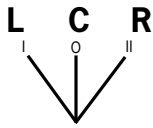
(see page H14 for Contact Switching Sequence)

Full Voltage Type

Description	Function	Code	Contact	Catalog No.	Price
2 Position Maintained		D	Without Contact	N7SLD•D*00	\$92.00
			1 N.C. - 1 N.O.	N7SLD•D*11	\$120.00
3 Position Maintained		B	Without Contact	N7SLB•D*00	\$92.00
		L	Without Contact	N7SLL•D*00	\$92.00
		Z	Without Contact	N7SLZ•D*00	\$92.00
3 Position Maintained		B	1 N.C. - 1 N.O.	N7SLB•D*11	\$120.00
		L	1 N.C. - 1 N.O.	N7SLL•D*11	\$120.00
		Z	1 N.C. - 1 N.O.	N7SLZ•D*11	\$120.00

H13

Transformer Type

Description	Function	Code	Contact	Catalog No.	Price
2 Position Maintained		D	Without Contact	N7SLD•T*00	\$111.00
			1 N.C. - 1 N.O.	N7SLD•T*11	\$139.00
3 Position Maintained		B	1 N.C. - 1 N.O.	N7SLB•T*11	\$139.00
		L	1 N.C. - 1 N.O.	N7SLL•T*11	\$139.00
		Z	1 N.C. - 1 N.O.	N7SLZ•T*11	\$139.00

* Full Voltage Suffix	No Bulb O	6V A	12V B	24V D	130V L
Transformer Suffix	120V J	240-250V N	380V U	415V W	480V Y
Resistor Suffix	110-120V J	220-250V N	*Standard filament bulbs Included in price.		

Notes:

-Cam Function Code Operation, page H14

Color Table • Use complete catalog number when ordering. Replace (•) with the suffix from the table below

Colors	Black	Red	Green	Yellow	Blue
Knobs	N	R	V	G	L

Discount Schedule SC-36

SELECTOR SWITCHES - CAM CODE AND SWITCHING SEQUENCE



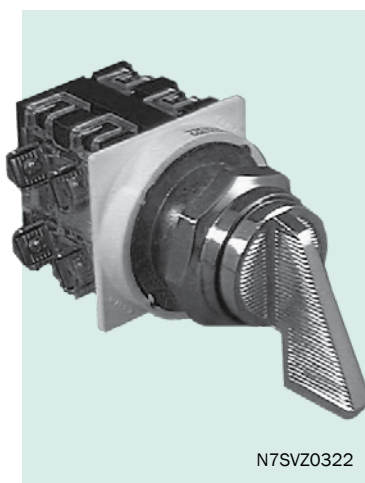
2 Position Selector Switch

Location of Contact Block (Front View)	Contact Block			Cam Code				
	Catalog No.	Symbol	Rod Color	D		I		
				Left	Right	Center	Right	
Left	N.O.	N7B10		Green	0	X	0	X
	N.C.	N7B01		Red	X	0	X	0
Right	N.O.	N7B10		Green	0	X	0	X
	N.C.	N7B01		Red	X	0	X	0

3 Position Selector Switch

Location of Contact Block (Front View)	Contact Block			Cam Code																
	Catalog No.	Symbol	Rod Color	B			E			L			Z			U				
				Left	Center	Right	Left	Center	Right	Left	Center	Right	Left	Center	Right	Left	Center	Right		
Left	N.O.	N7B10		Green	0	0	X	0	0	X	X	0	0	0	0	0	X	0	0	X
	N.C.	N7B01		Red	X	0	0	0	X	0	0	X	0	X	X	0	X	0	0	0
Right	N.O.	N7B10		Green	0	0	X	0	0	X	X	0	0	X	0	0	0	0	0	X
	N.C.	N7B01		Red	X	0	0	0	X	0	0	X	0	0	X	X	0	X	0	0

4 Position Selector Switch



Location of Contact Block (Front View)	Contact Block			Cam Code				
	Catalog No.	Symbol	Rod Color	Left	Left Center	Right Center	Right	
Left	N.O.	N7B10		Green	0	0	X	0
	N.C.	N7B01		Red	X	0	0	0
Right	N.O.	N7B10		Green	0	X	0	0
	N.C.	N7B01		Red	0	0	0	X

Standard Contact Blocks

Contact Configuration	Operating Plunger Color Code	Catalog No.	Price
1 N.O. - 1 N.C.	White	N7B11N	\$28.00
1 N.O.	Green	N7B10N	\$14.00
1 N.C.	Red	N7B01N	\$14.00
1 N.O. (early close)	White	N7B01A	\$14.00
1 N.C. (late open)	White	N7B01R	\$14.00

Ordering Information

Items: • Accessories - page H20 • Legend Plates - page H19 • Ratings & Dimensions - page H22-H23

Discount Schedule SC-36

Joystick Operator

The Joystick Operator is available in three (left-center-right) and five (left-up-right-down-center) position, maintained and spring return (to center) types. They are also available with a release button on the end of the operator which must be depressed in order to operate the joystick







N7MN2T22N

Joystick (Legend plate note included)

Type	Without Release Button		With Release Button	
	Catalog No.	Price	Catalog No.	Price
3 Positions Maintained	N7MN2F22N	\$220.00	N7MB2F22N	\$230.00
3 Positions Spring Return to Center	N7MN2T22N	\$220.00	N7MB2T22N	\$230.00
5 Positions Maintained	N7MN4F22N	\$257.00	N7MB4F22N	\$267.00
5 Positions Spring Return to Center	N7MN4T22N	\$257.00	N7MB4T22N	\$267.00





Three Position Joystick (Contact Sequence)

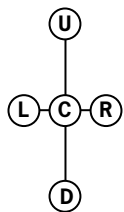
Type	Contacts		Rod Color	Joy Stick Position (Front View)		
	Location (Front View)	Type and Symbol		Left	Center	Right
3 Positions, Maintained and Spring Return to Center With or Without Release Button	Left		Green	X	0	0
			Red	0	0	X
	Right		Green	0	0	X
			Red	X	0	0



N7MB4T22N

Five Position Joystick (Contact Sequence)

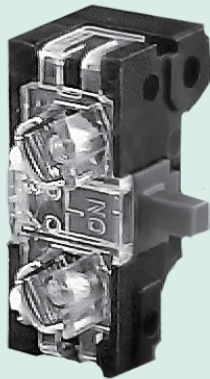
Type	Contacts		Rod Color	Joy Stick Position (Front View)				
	Location (Front View)	Type and Symbol		Left	Up	Center	Down	Right
Five Positions, Maintained and Spring Return to Center With or Without Release Button	Left		Green	0	0	0	X	0
			Red	0	X	0	0	0
	Right		Green	0	0	0	0	X
			Red	X	0	0	0	0



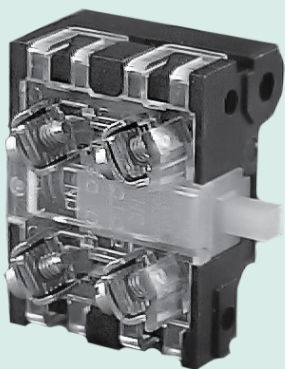
Ordering Information

Items: • Accessories - page H20 • Legend Plates - page H19 • Ratings & Dimensions - page H22-H23

CONTACT RATINGS - CONTACT BLOCKS



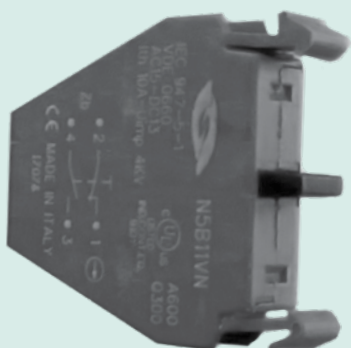
N7B10N



N7B11N



N7APTB10



N5B11VN

Contact Ratings

AC Ratings, NEMA A600 Heavy Pilot Duty			
Maximum AC Voltage	Continuous Current Amperes	AC Voltamperes 60/50 Hz ¹	
		Make	Break
600	10	7200	720

¹ Maximum make and break currents are 60 and 6 amperes respectively for voltages of 120 and below.

DC Ratings, NEMA P600		
Maximum Make or Break Amperes		
125V	250V	600V
1.1	0.55	0.2

¹ Maximum make and break currents are 60 and 6 amperes respectively for voltages of 120 and below.

Standard Contact Blocks

Contact Configuration	Operating Plunger Color Code	Standard Contact Block	
		Catalog No.	Price
1 N.O. - 1 N.C.	White	N7B11N	\$28.00
1 N.O.	Green	N7B10N	\$14.00
1 N.C.	Red	N7B01N	\$14.00
1 N.O. (early close)	White	N7B10A	\$14.00
1 N.C. (late open)	White	N7B01R	\$14.00

Gold Flashed Contact Blocks (Special Order)

Contact Configuration	Operating Plunger Color Code	Standard Contact Block	
		Catalog No.	Price
1 N.O. - 1 N.C.	White	N7B11D	\$56.00
1 N.O.	Green	N7B10D	\$28.00
1 N.C.	Red	N7B01D	\$28.00

Finger-Safe Guards

For Use With	Catalog No.	Price
1 N.O.	N7APTB10	\$4.50
1 N.C.	N7APTB01	\$4.50
1 N.O. - 1 N.C.	N7APTB11	\$6.00

Suitable for use in NEMA Types 1, 3, 3R, 4, 4X, 12 and 13 applications when mounted in enclosures rated for those same applications. For some NEMA Type 4X applications, protective caps will improve corrosion resistance.

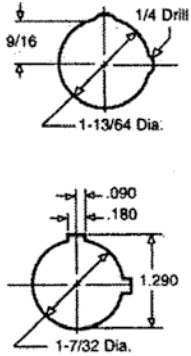
Contacts for Illuminated Push buttons & Illuminated Selector Switches

For Use With	Catalog No.	Price
1 N.O. - 1 N.C.	N5B11VN	\$23.00
1 N.O.	N5B10VN	\$11.50
1 N.C.	N5B01VN	\$11.50
2 N.O.	N5B20BN	\$23.00
2 N.C.	N5B02VN	\$23.00

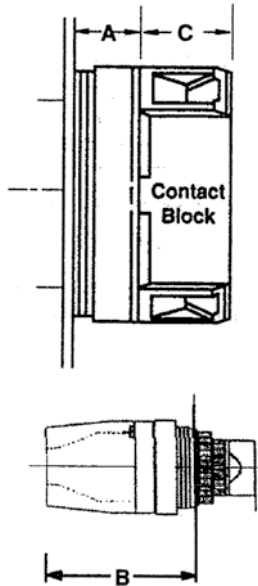
Discount Schedule SC-36

DIMENSIONS & RATINGS

Panel Drilling



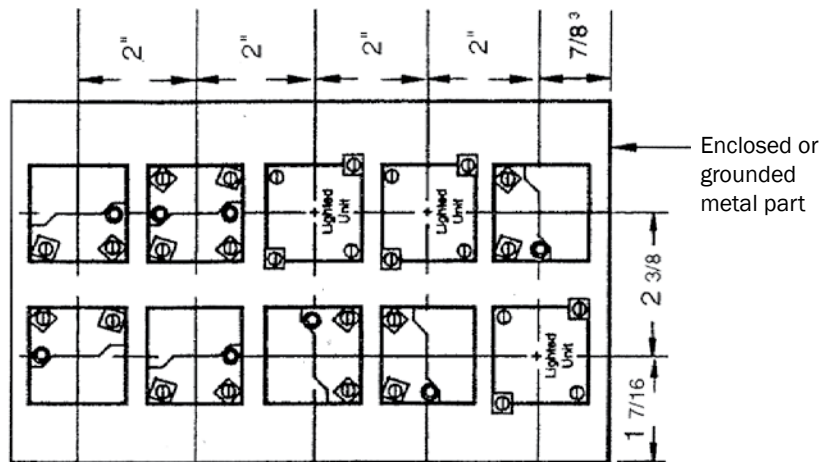
Rear of Mounting Panel



Contact Ratings

NEMA Rating	Max. Volts	Amp. Rating			VA	
		Make	Break	Continuous	Make	Break
Maximum AC Contact Rating Per Pole, 50 or 60 Hz						
A600	120	60	6	10	7200	720
	240	30	3			
	480	15	1.5			
	600	12	1.2			
Maximum DC Contact Rating Per Pole						
P600	125	1.1			138	
	250	0.55			138	
	301-600	0.5			120	

Minimum Center-line Clearance



Dimensions

Depth Behind Panel	Push Buttons & Selector Switches	Push-Pull Units Non-Illuminated	Illuminated	
			FV	XFMR
A ³	21/32	1 11/32		
B	---	---	1 7/8"	2 3/8"
C ⁴	3/4	3/4	---	---

Maximum Panel Thickness, Inches	Spacers Required
1/16	3
1/8	2
3/16	1

Panels thicker than 3/16" must be counter bored.

Notes:

1. Use the trim washer if no legend plate is used. Discard the trim washer when using a legend plate.
2. When using Legend Plate, both horizontal and vertical centerlines between operators must be 2 1/2" minimum. When using either 2 1/4" mushroom head or lever selector switch, both horizontal and vertical centerlines between operators must be 2 1/4" minimum.
3. Depth when three neoprene spacers are used. Reduce depth by 1/16" for each spacer omitted.
4. Depth per contact block. Maximum contact stack depth is three (3) inches.

Discount Schedule SC-36

SEPARATE ENCLOSURES FOR TYPE N7 OILTIGHT PILOT DEVICES

N7 (30mm) surface mounting enclosures are available from one through sixteen element openings. All enclosures are UL approved. Enclosures will accommodate non-illuminated operators with up to two contact blocks (1 per side). Consult factory for stations with 7 through 16 elements and all custom assembled push button stations.

N7 Separate Enclosures; Metal and Polycarbonate

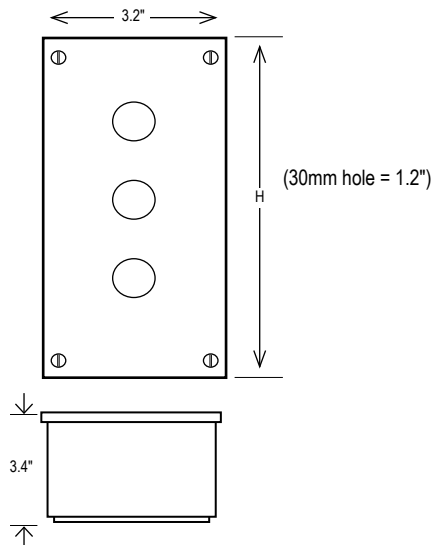
Enclosures Only (No Operators or Contacts)

Element	Type 3R, 4X Polycarbonate Surface Mounted Enclosure		Type 12 Metal Surface Mounted Enclosure	
	Catalog No.	Price	Catalog No.	Price
1	N7EPE01	\$92.00	N7SPPB-1	\$125.00
2	N7EPE02	\$108.00	N7SPPB-2	\$140.00
3	N7EPE03	\$120.00	N7SPPB-3	\$156.00
4	**consult factory	**consult factory	N7SPPB-4	\$194.00
5			N7SPPB-5	\$194.00
6			N7SPPB-6	\$233.00
7-16			**consult factory	**consult factory

H18

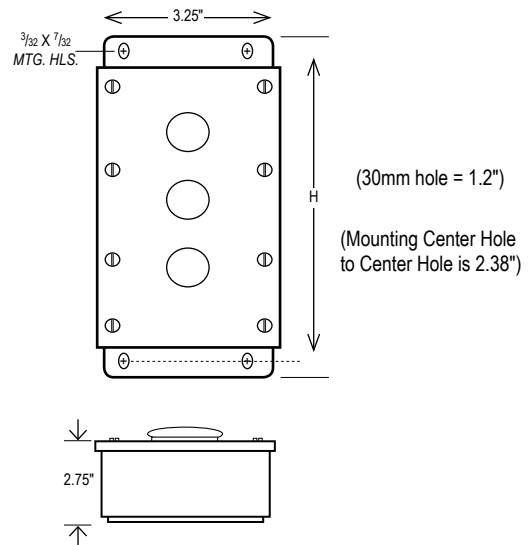
Enclosure Dimensions

NEMA Polycarbonate 3R, 4X



Number of Elements	W	H	D
1	3.2"	4.3"	3.4"
2		6.7"	
3		9.1"	

NEMA 12 Painted Metal



Number of Elements	W	H	D
1	3.25"	3.50"	2.75"
2		5.75"	
3		8.00"	
4		10.25"	
5		12.50"	
6		14.75"	

Ordering Information:

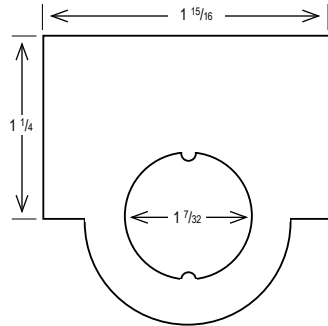
-Select Enclosure Desired by Catalog Number

-Extra Deep Enclosures Available

Discount Schedule SC-36

LEGEND PLATES

Standard Plates (Listed below; Aluminium with Black Surface)



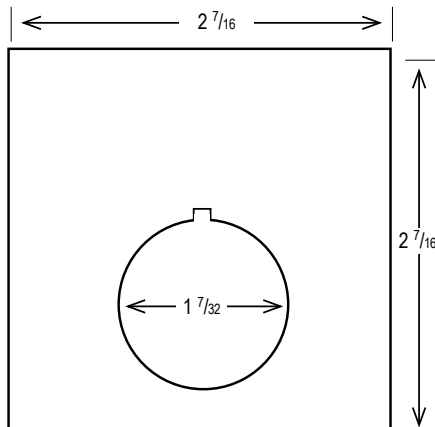
Standard Size Character height is 1/8 inch on standard plate

Catalog No.	Price
N7TNA_● (see below)	\$3.00
N7TNA-X (custom)	\$15.50

Marking	Catalog No.	Marking	Catalog No.	Marking	Catalog No.
Pushbutton		Pushbutton		2 Pos. Selector Switch	
Start	N7TNA41	Raise	N7TNA59	Man-Auto	N7TNA231
Stop	N7TNA40	Lower	N7TNA60	Off-On	N7TNA230
Fast	N7TNA49	Jog	N7TNA51	Jog-Run	N7TNA234
Slow	N7TNA48	Inch	N7TNA50	Up-Down	N7TNA232
Open	N7TNA47	Run	N7TNA52	3 Pos. Selector Switch	
Close	N7TNA46	Forward	N7TNA55	Auto-Off-Hand	N7TNA310
Off	N7TNA54	Reverse	N7TNA56	Open-Off-Close	N7TNA312
On	N7TNA53	Power On	N7TNA42	Up-Off-Down	N7TNA313
Up	N7TNA45	(Blank)	N7TNA	4 Pos. Selector Switch	
Down	N7TNA44			1-2-3-4	N7TNA4
				(Blank)	N7TNC

H19

Extra Large Plates





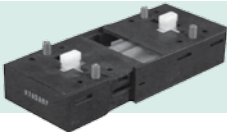





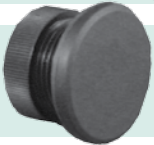


Extra large Plates Character height is 1/4 on extra large plate

Brushed Aluminized Surface			Plastic	
	Catalog No.	Price	Catalog No.	Price
Blank	N7TNBM	\$9.50	N7TMBP	\$7.50
Engraved	N7TNBM-X	\$19.00	N7TMBP-X	\$17.50

Discount Schedule SC-36

ACCESSORIES

Accessories

	Description	Catalog No.	Price
 <p>N7ACST</p>	Translucent Water Resistant Boots for Knob Operated Standard and Illuminated Selector Switches	N7ACST	\$28.00
 <p>N7ADIM</p>	Mechanical Interlock for Push Buttons (Interlocks two buttons so they cannot be simultaneously depressed)	N7ADIM	\$28.00
 <p>N7ADAMP</p>	Maintained Interlock for Push Buttons (Interlocks two buttons so that when one is depressed, the other is released-maintained operation)	N7ADAMP	\$28.00
 <p>N7ADPP</p>	Push-On/Push-off (Converts standard momentary operator to push-on/push-off)	N7ADPP	\$28.00
 <p>N7CHG</p>	Guard Ring Wrench (for Octagonal Guard Rings)	N7CHG	\$39.00
 <p>N7AOPZ</p>	Potentiometer operator only	N7AOPZ	\$109.00
 <p>N7ALPS</p>	Chrome Lever attachment for Selector-Push Units	N7ALPS	\$18.50
 <p>077C3095</p>	Key (2-3-4 Position/Non-Illuminated Selector Switch)	077C3095	\$5.50
 <p>N7ATPF</p>	Hole Plug, 1 & 13 -Grey	N7ATPF	\$9.00
 <p>N7ADET</p>	Push-Pull module for Mushroom	N7ADET	\$28.00
 <p>N7AXG</p>	Lockout Attachments	N7AXG	\$28.00

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Discount Schedule SC-36

TECHNICAL DATA

Compliance With Standards

IEC 947.5.1 - VDE 0660 - NFC 63140
CEI EN 60947.5.1 - UTE - BSI - NEMA
CENELEC EN 50007

Approvals

UL (USA) - CSA (Canada) - RINA -
Lloyd's Register of Shipping



Climactic Protections

The standard versions are suitable for use in the following climates:

Temperate Climate cat. 23/50 (DIN 50014)
Wet Climate cat. 23/83 (DIN 50015)
Hot Wet Climate cat. 40/92 (DIN 50015)
Var. Wet Climate cat. FW24 (DIN 50016)

Temperature Ranges

Operation -25° C tot +70° C
Storage -40° C tot +70° C

Protection Degree of Operators

IP65 according to IEC 529 when they are mounted into enclosures with the same or a higher degree of protection.
IP66 with appropriate protective caps.

Protection Degree of Terminals

IP2x according to IEC 529.
Fully integrated on signaling units, illuminated push-buttons and illuminated selector switches. With accessory on contact blocks for control units.

Rated Insulation Voltage

690V according to EN 60947.1

Impulse Withstand Voltage

4kV according to EN 60947.1

Insulation Class

Group C according to VDE 0110

Electric Shocks Protection

Class 1 according to IEC 536

Short Circuit Protection

With fuses type gI of 10A according to IEC 947.5.1

Connection Terminals

Screw type with retractable clamp.
Clamping capacity of rigid and/or flexible conductors:
- minimum 22 AWG (0.32mm²)
- maximum 12 AWG (3.3 mm²)

Performances of the Contacts

- Slow acting
- Self-Cleaning
- NC forced breaking
- Double break

Electrical Performances

Rated thermal current I_{th} = 10 A

Performances according to IEC 947.5.1

Category AC15 (A600)

Voltage U _e (V)	24	48	60	110	220	380	500	600
----------------------------	----	----	----	-----	-----	-----	-----	-----

Current I _e (A)	10	10	10	6	3	2	1.5	1.2
----------------------------	----	----	----	---	---	---	-----	-----

Category DC13 (P600)

Voltage U _e (V)	24	48	60	110	220	380	500	600
----------------------------	----	----	----	-----	-----	-----	-----	-----

Current I _e (A)	5	2.7	2	1.1	0.55	0.3	0.22	0.2
----------------------------	---	-----	---	-----	------	-----	------	-----

Category DC13 (Q300)

(for illuminated push-buttons and illum. selector switches)

Voltage U _e (V)	24	48	60	110	220	300
----------------------------	----	----	----	-----	-----	-----

Current I _e (A)	2.5	1.4	1	0.55	0.27	0.2
----------------------------	-----	-----	---	------	------	-----

Performances according to CSA and UL

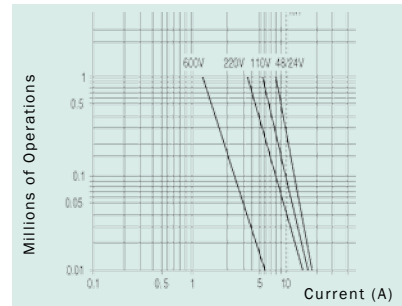
AC Heavy Duty (A600)

DC Standard Duty (P600)

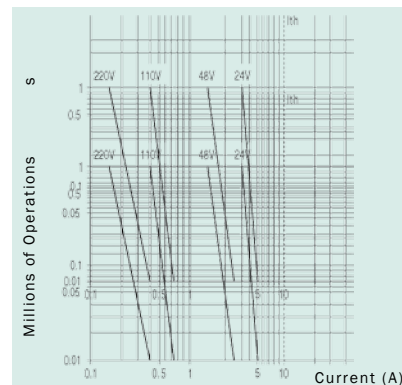
(Q300) for illuminated push-button and illuminated selector switch.

Electrical Endurance

Alternative current 50/60 Hz cat. Ac15



Direct current cat. DC 13



Mechanical Endurance

Joysticks Key Push-Buttons Locking Emergency	0.5x10 ⁶ op.
Knob Selector Switches Lever Selector Switches Key Selector Switches Illum. Selector Switches Selector Push-Buttons Timed Push-Buttons Illuminated Push-Buttons	1x10 ⁶ op.
Momentary std. Push-Buttons Momentary mush. Push-Buttons	3x10 ⁶ op.

Number of Contact Blocks

Momentary std. Push-Buttons Momentary mush. Push-Buttons	4 double pole (8 single pole)
Key Push-Buttons Locking Emergency	4 double pole (8 single pole)
Selector Switches (4 pos. types excl.)	6 double pole (6 single pole)
4 pos. Selector Switches	2 double pole
Selector Push-Buttons	6 double pole (6 single pole)
Joysticks 2 and 4 positions	4 double pole (4 single pole)
Illuminated Push-Buttons Illuminated Selector Switches	for different contacts configuration, contact our sales office.

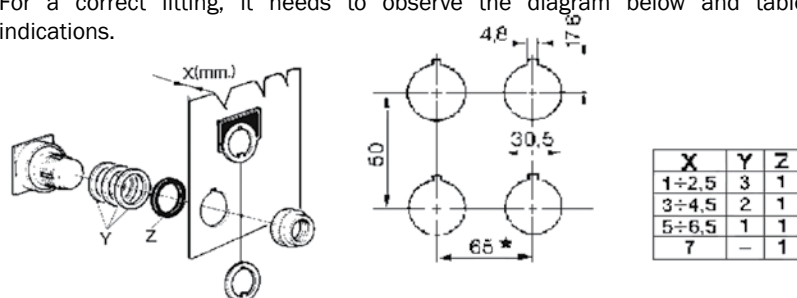
Fitting of Units

The units of Series N7 are designed for fitting onto panels with a thickness between 1 and 7 mm, with holes of 30.5 mm diameter, according to the rules established by EN 60947.5.1.

A special metal ring supplied with each unit or one of the nameplates included among the fittings, enables the unit to be exactly positioned.

All equipment is supplied with a set of spacing rings to adjust variations in the thickness of the panel thus ensuring a uniform front protrusion.

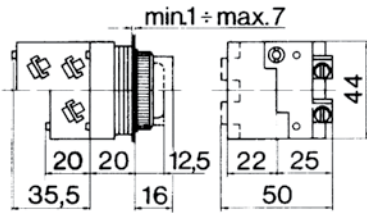
For a correct fitting, it needs to observe the diagram below and tables indications.



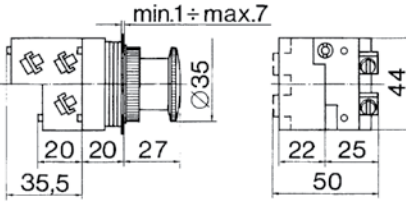
DIMENSIONS

Push-Buttons

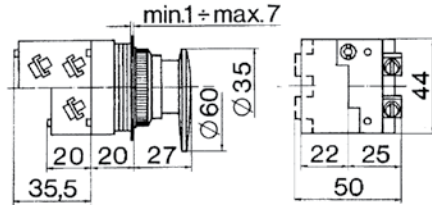
N7PN



N7EM3

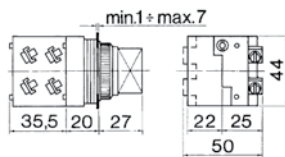


N7EM6

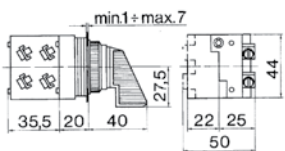


Selector Switches

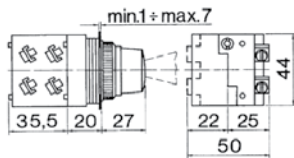
N7SM_ _ _



N7SV_ _ _



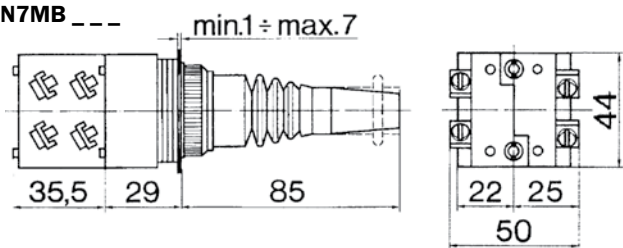
N7SL_ _ _



Joysticks

N7MN_ _ _

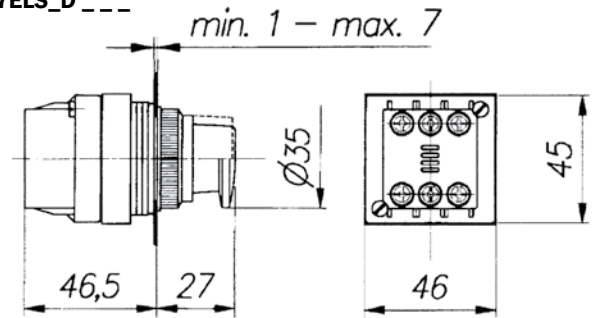
N7MB_ _ _



Illuminated Push-Buttons

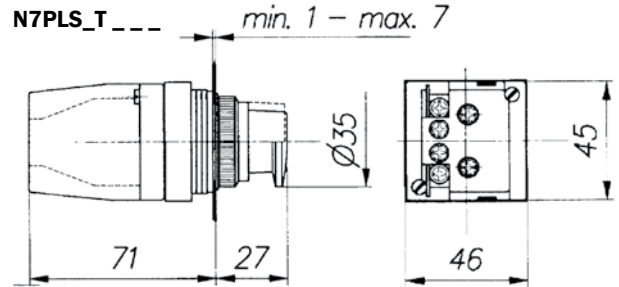
N7PLS_D_ _ _

N7ELS_D_ _ _



N7PLS_R_ _ _

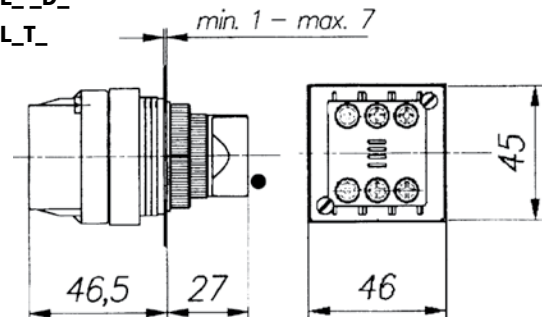
N7PLS_T_ _ _



Illuminated Selector Switches

N7SL_D_ _ _

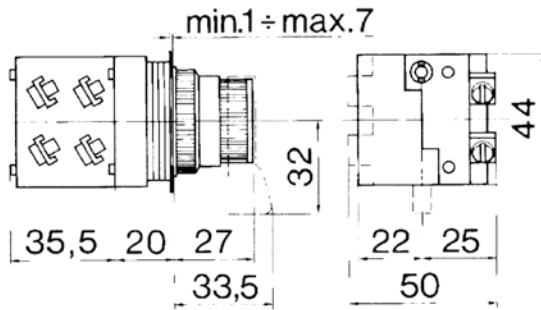
N7SL_T_ _ _



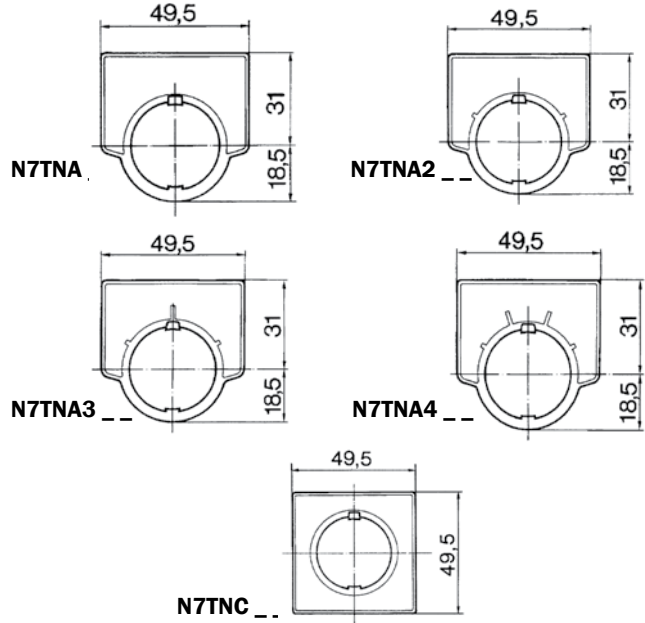
DIMENSIONS

Selector Push-Buttons

N7LN_ _ _

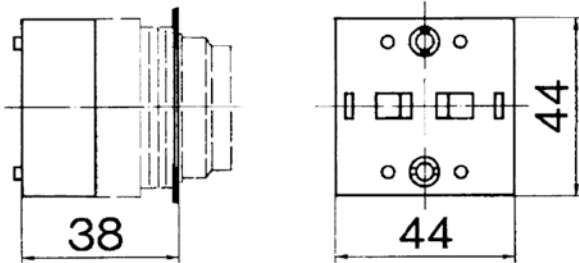


Nameplates

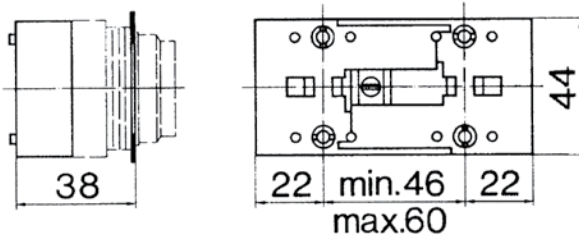


Kits

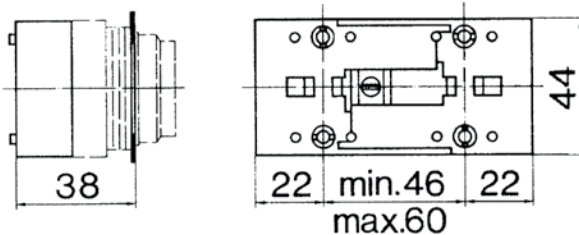
N7ADPP



N7ADAMP

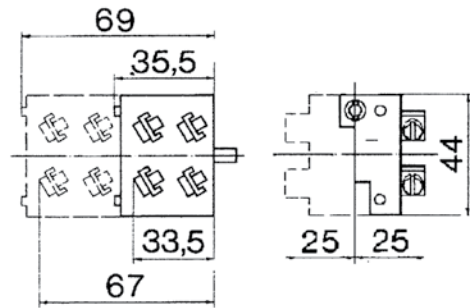


N7ADIM

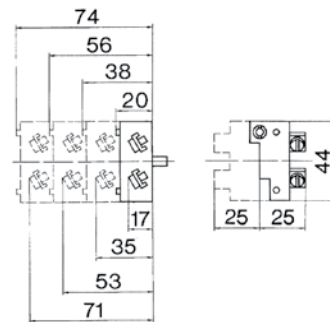


Contact Blocks

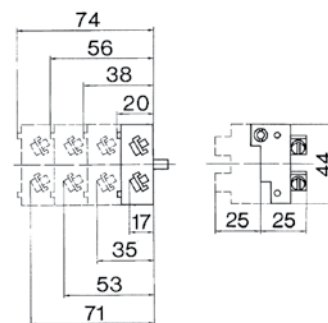
N7B11N



N7B10N



N7B01N



NOTES

DISCONNECT SWITCHES



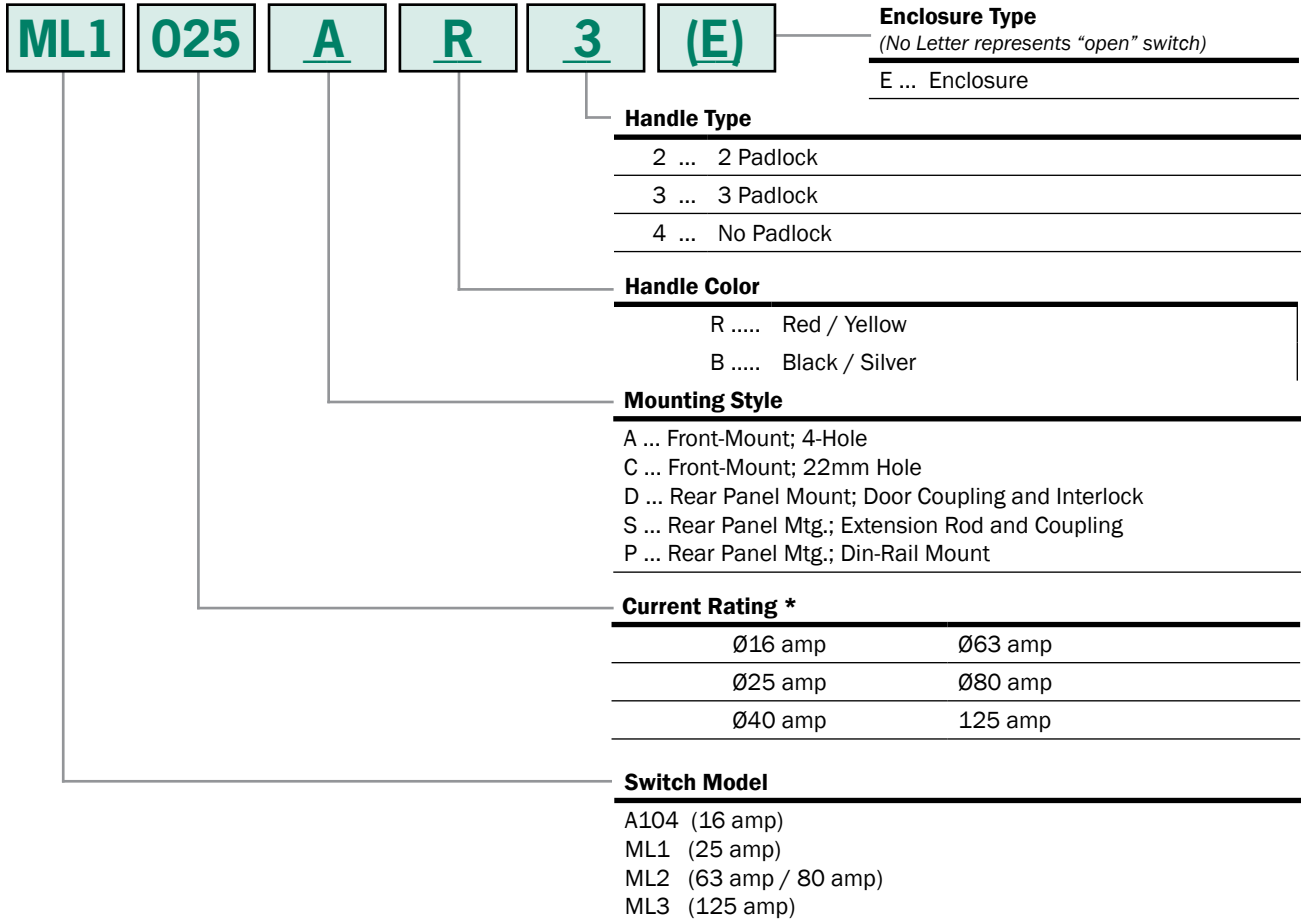
Springer Controls is partnered with **MERZ-PCE**, a world leader in the manufacturing of switch gears. We carry a complete line of UL approved, CSA listed, Disconnect Switches from 16A to 125A. Springer now offers larger disconnect switches rated up to 630 amps (consult factory for part number and pricing of switches greater than 125 amps.) Switches are available as an open type or in a polycarbonate enclosure (see page I-6.) Designed and tested to the most demanding standards, the switches will provide years of satisfied service under rated conditions. Switches meet IEC 947-3, EN60947-3, and DIN VDE Part 107. A complete line of Merz CAM SWITCHES can be found in section J of this catalog.

Index

DISCONNECT SWITCHES (16 TO 630 amp)

Product Numbering System / Model Ratings.....	I 2
Handle Types / Mounting Styles	I 3
Front Panel Mounting Disconnects	I 4
Rear Panel Mounting Disconnects.....	I 5, I 6
Enclosed Disconnect Switches	I 6
Accessories.....	I 7, I 8
Dimensions; Disconnect Switches.....	I 9 - I 12
Dimensions; Enclosures.....	I 13

PRODUCT NUMBERING SYSTEM



*Consult factory for current ratings above 125 amp. (160A, 200A, 250A, 315A, 400A, 500A, 630A, rated switches available.)

Model Ratings



Switch Model			104	ML1	ML1	ML2	ML2	ML3
General Purpose	3-phase	Amps	16	25	40	63	80	125
		Volts	600	600	600	600	600	600
Motor 3-phase	240V	hp	3	7.5	10	15	20	25
	480V	hp	5	10	20	30	40	50
	600V	hp	5	10	20	30	40	50
Motor 1-phase	125V	hp	.5	1	1.5	3	4	6
	240V	hp	1.5	2	3	7.5	10	15

Notes:

A full complement of accessories are available, additional power contacts, ground terminal, neutral terminals and auxiliary contacts. Finger protector terminal covers are available as well as legend plates. The shaft extension kits cover a complete range of panel depth up to 21.7 inches.

HANDLE TYPES / MOUNTING STYLES

Operating Handle Types



Type #2

- Lockout Handle
- 1 or 2 Padlocks
- Red / Yellow
- Black / Silver



Type #3

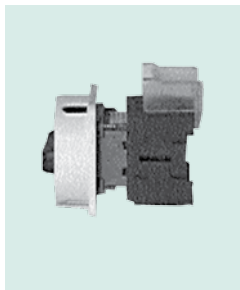
- Lockout Handle
- 3 Padlocks
- Red / Yellow
- Black / Silver



Type #4

- Handle Without Lockout
- Red / Yellow
- Black / Silver

Mounting Styles



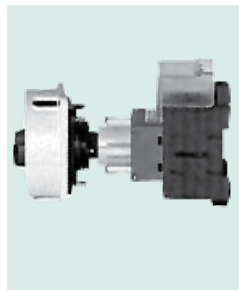
Type A

- 4- Hole Mounting
- Terminal Screws on Rear of Base
- Front Panel Mount



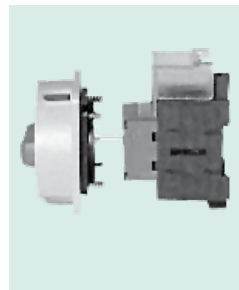
Type C

- 22.5 mm Hole Mounting
- Terminal Screws on Rear of Base
- Front Panel Mount



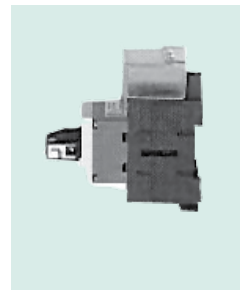
Type D

- Front Panel 4-Hole
- Door Coupling and Door Interlock in "ON" Position
- Terminal Screws on Front of Base
- Rear Panel Din Mount



Type S

- Front Panel 4-Hole
- Shaft Extender Required
- Terminal Screws on Front of Base
- Rear Panel Din Mount



Type P

- Handle Mounted to Base
- Terminal Screws on Front of Base
- Rear Panel Din Mount

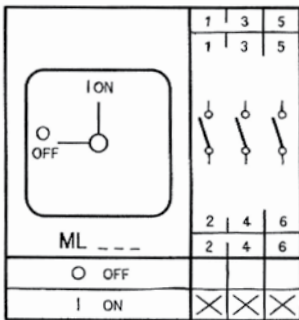
FRONT PANEL MOUNTING DISCONNECTS

Front Panel Mounting (4) Hole mounting "A"



Thermal Rated Current @ 600V	HP					No Padlock Handle IP55	Price	Two Padlock Handle IP55	Price	Three Padlock Handle IP55	Price
	1 phase		3 phase								
	120V	240V	240V	480V	600V						
16A	.5	1.5	3	5	5	A104-016-AB4	\$54.00	A104-016-A*2	\$54.00	A104-016-A*3	\$66.00
25A	1	3	7.5	10	10	ML1-025-AB4	\$64.00	ML1-025-A*2	\$68.00	ML1-025-A*3	\$74.00
40A	1.5	3	10	20	20	ML1-040-AB4	\$104.00	ML1-040-A*2	\$108.00	ML1-040-A*3	\$114.00
63A	3	7.5	15	30	30	ML2-063-AB4	\$124.00	---	---	ML2-063-A*3	\$134.00
80A	4	10	20	40	40	ML2-080-AB4	\$164.00	---	---	ML2-080-A*3	\$198.00
125A	6	15	25	50	50	ML3-125-AB4	\$230.00	---	---	ML3-125-A*3	\$240.00

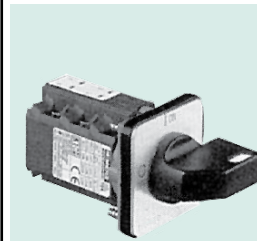
Contact Diagram 3-Pole



Dimension Fig.9, pg 111



Dimension Fig.1, pg 19



Dimension Fig.2, pg 19



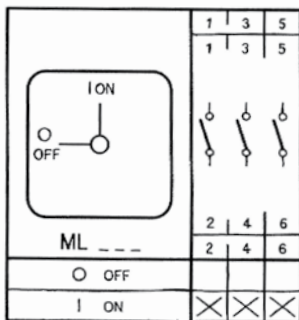
4

Front Panel Mounting (22.5mm) Hole Mounting "C"

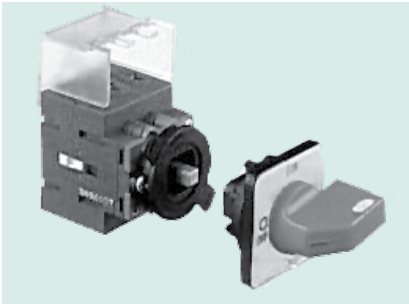


Thermal Rated Current @ 600V	HP					Two Padlock Handle IP65	Price	Three Padlock Handle IP65	Price
	1 phase		3 phase						
	120V	240V	240V	480V	600V				
16A	.5	1.5	3	5	5	A104-016-C*2	\$55.00	A104-016C*3	\$69.00
25A	1	3	7.5	10	10	ML1-025-C*2	\$73.00	ML1-025-C*3	\$76.00
40A	1.5	3	10	20	20	ML1-040-C*2	\$113.00	ML1-040-C*3	\$116.00
63A	3	7.5	15	30	30	---	---	---	---
80A	4	10	20	40	40	---	---	---	---
125A	6	15	25	50	50	---	---	---	---

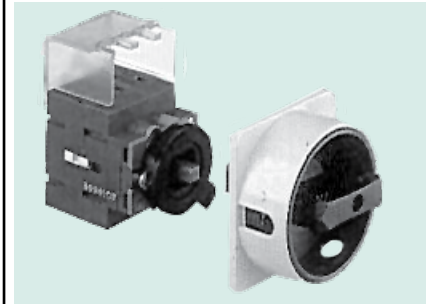
Contact Diagram 3-Pole



Dimension Fig.3, pg 19



Dimension Fig.4, pg 110



* R = Red/Yellow Handle / * B = Black/Silver Handle

Discount Schedule SC-10

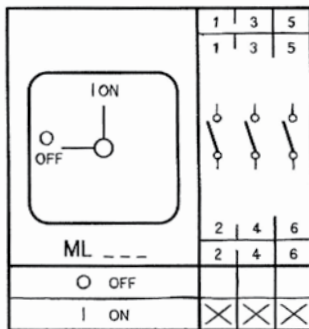
REAR PANEL MOUNTING DISCONNECTS

Rear Panel Mounting, Door Coupling & Interlock (4) Hole Mounting "D"

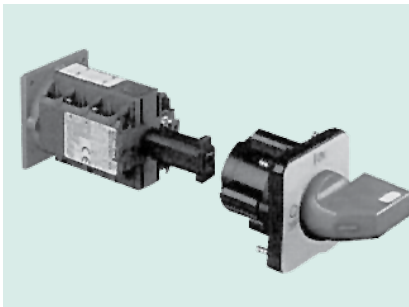


Thermal Rated Current @ 600V	HP					Two Padlock Handle IP55	Price	Three Padlock Handle IP55	Price
	1 phase		3 phase						
	120V	240V	240V	480V	600V				
16A	.5	1.5	3	5	5	A104-016-D*2	\$72.00	A104-016-D*3	\$80.00
25A	1	3	7.5	10	10	ML1-025-D*2	\$86.00	ML1-025-D*3	\$94.00
40A	1.5	3	10	20	20	ML1-040-D*2	\$123.00	ML1-040-D*3	\$125.00
63A	3	7.5	15	30	30	---	---	ML2-063-D*3	\$150.00
80A	4	10	20	40	40	---	---	ML2-080-D*3	\$220.00
125A	6	15	25	50	50	---	---	ML3-125-D*3	\$260.00

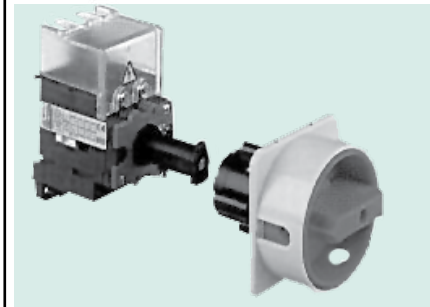
Contact Diagram 3-Pole



Dimension Fig. 5, pg 110



Dimension Fig. 6, pg 110

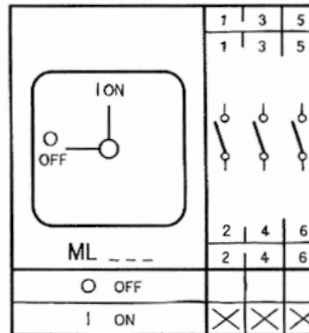


Rear Panel Mounting, Extension Rod & Coupling (4) Hole Mounting "S"

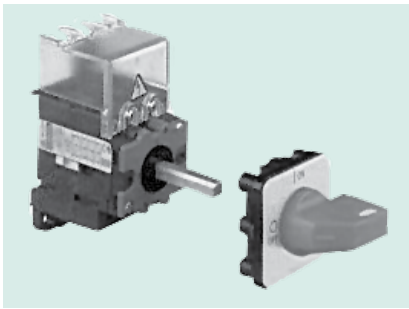


Thermal Rated Current @ 600V	HP					Two Padlock Handle IP55	Price	Three Padlock Handle IP55	Price
	1 phase		3 phase						
	120V	240V	240V	480V	600V				
16A	.5	1.5	3	5	5	A104-016-S*2	\$70.00	A104-016-S*3	\$78.00
25A	1	3	7.5	10	10	ML1-025-S*2	\$86.00	ML1-025-S*3	\$94.00
40A	1.5	3	10	20	20	ML1-040-S*2	\$123.00	ML1-040-S*3	\$123.00
63A	3	7.5	15	30	30	---	---	ML2-063-S*3	\$148.00
80A	4	10	20	40	40	---	---	ML2-080-S*3	\$218.00
125A	6	15	25	50	50	---	---	ML3-125-S*3	\$258.00

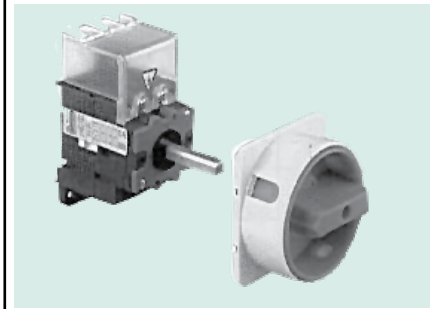
Contact Diagram 3-Pole



Dimension Fig. 7, pg 111



Dimension Fig. 8, pg 111



* R = Red/Yellow Handle / * B = Black/Silver Handle

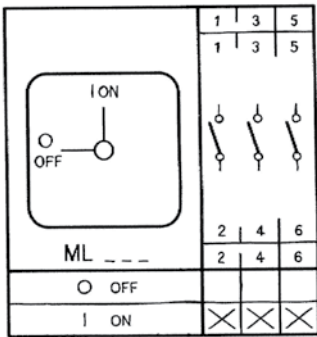
REAR PANEL DISCONNECTS / ENCLOSED DISCONNECTS

Rear Panel Mounting Including Handle Din Rail Mounting "P"

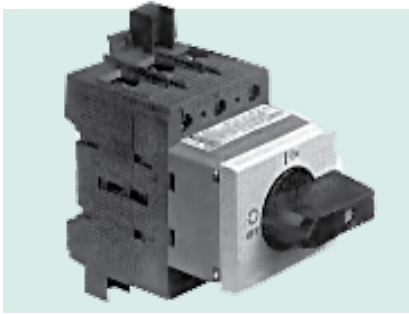


Thermal Rated Current @ 600V	HP					No Padlock Handle IP30	Price	Two Padlock Handle IP30	Price
	1 phase		3 phase						
	120V	240V	240V	480V	600V				
16A	.5	1.5	3	5	5	A104-016-PB4	\$60.00	A104-016-P*2	\$72.00
25A	1	3	7.5	10	10	ML1-025-PB4	\$75.00	ML1-025-P*2	\$82.00
40A	1.5	3	10	20	20	ML1-040-PB4	\$104.00	ML1-040-P*2	\$119.00
63A	3	7.5	15	30	30	ML2-063-PB4	\$125.00	ML2-063-P*2	\$144.00
80A	4	10	20	40	40	ML2-125-PB4	\$172.00	ML2-080-P*2	\$214.00
125A	6	15	25	50	50	ML3-125-PB4	\$241.00	ML3-125-P*2	\$254.00

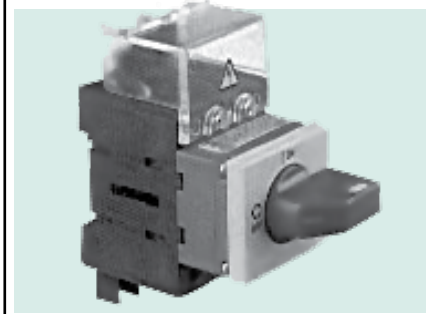
Contact Diagram 3-Pole



Dimension Fig.10, pg 112



Dimension Fig.11, pg 112



16

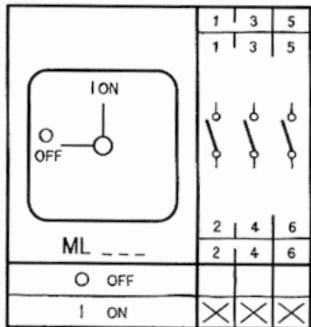
Enclosed Disconnect Switches



Thermal Rated Current @ 600V	HP					Three Padlock Handle IP65	Price	Enclosure Size	Protection Class
	1 phase		3 phase						
	120V	240V	240V	480V	600V				
16A	.5	1.5	3	5	5	A105-016-A*3E	\$104.00	C12B	IP55
25A	1	3	7.5	10	10	ML1-025-A*3E	\$141.00	E2	IP65
32A	1.5	3	10	20	20	ML1-040-A*3E	\$209.00	E3	IP65
50A	3	7.5	15	30	30	ML2-063-A*3E	\$237.00	E4	IP65
63A	4	10	20	40	40	ML2-080-A*3E	\$294.00	E5	IP65
100A	6	15	25	50	50	ML3-125-A*3E ¹	\$338.00	I7	IP65

See Page I13 for Encl. Dimensions

Contact Diagram 3-Pole



Dimension Fig.12, pg 112



- Extra poles and auxiliaries available; consult factory.
- * R = Red/Yellow Handle / * B = Black/Silver Handle
- ¹ ML3 - 125 - A*3E comes with a transparent front cover (Enclosure #I7)

Discount Schedule SC-10

Extra Poles & Terminals

Type	Front Mount	Din Base Mount	Switching Norm Open	Price	Ground Terminal	Price	Neutral Terminal	Price	Neutral Contact Early Make	Price
ML1-025, ML1-040	X		SK1-E	\$35.00	PE1-E	\$23.00	N1-E	\$23.00	NV1-E	\$35.00
ML1-025P, ML1-040P		X	SK1-V	\$35.00	PE1-V	\$23.00	N1-V	\$23.00	NV1-V	\$35.00
ML2-063, ML2-080	X		SK2-E	\$50.00	PE2-E	\$31.00	N2-E	\$31.00	NV2-E	\$50.00
ML2-063P, ML2-080P		X	SK2-V	\$50.00	PE2-V	\$31.00	N2-V	\$31.00	NV2-V	\$50.00
ML3-125	X		SK3-E	\$61.00	PE3-E	\$39.00	N3-E	\$39.00	NV3-E	\$60.00
ML3-125P		X	SK3-V	\$61.00	PE3-V	\$39.00	NE-V	\$39.00	NV3-V	\$60.00

The maximum amount of poles and auxiliary contacts used on switches:

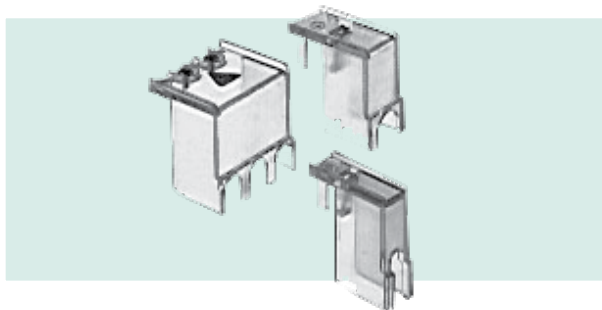
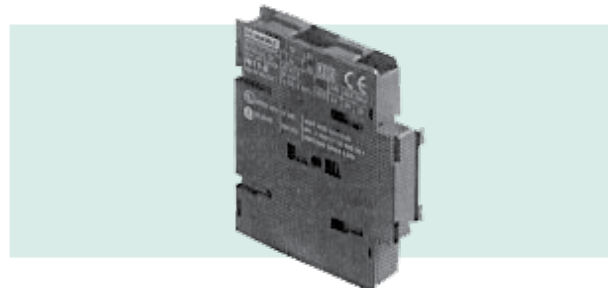
Type	SK or NV	HI 11 (auxiliary)
ML1	2	0
	2	1
	1	2
	2	2
ML 2 / 3	2	0
	2	1
	1	2
	0	3

Auxiliary Contacts

Type	Catalog No.	Price
Front Mount	HI11-E	\$42.00
Din Base Mount	HI11-V	\$42.00

Notes:

- 1 N.O., 1 N.C.
- Max. 3 Auxiliaries
- Snap on left or right side



Terminal Covers

Type	Catalog No.	Price
ML1- 1 Pole	HS1-ML1	\$3.00
ML1- 3 Pole	HS3-ML1	\$7.00
ML2/3 -1 Pole	HS1-ML2/3	\$6.00
ML2- 3 Pole	HS3-ML2	\$9.00
ML3- 3 Pole	HS3-ML3	\$11.00

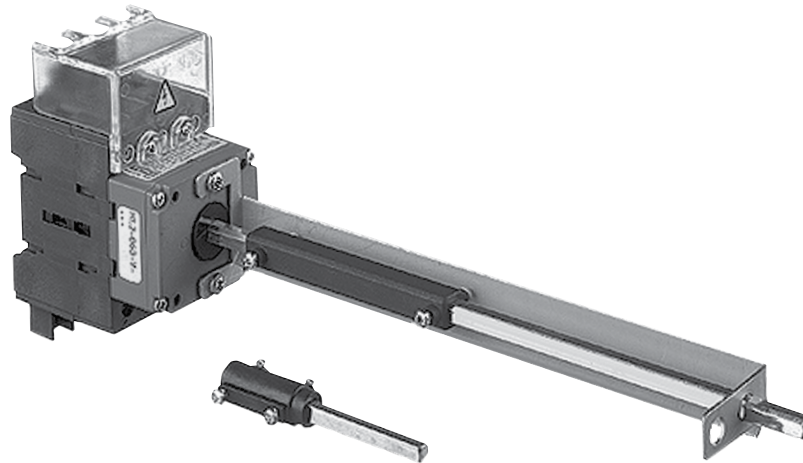
Nameplates

For 3 Padlock Style	Catalog No.	Price
Legend Plate w. Blank Insert	ALP	\$8.00
Legend Plate w. Engraved Insert	ALP-E	\$20.00



Discount Schedule SC-10

ACCESSORIES



Shaft Extension

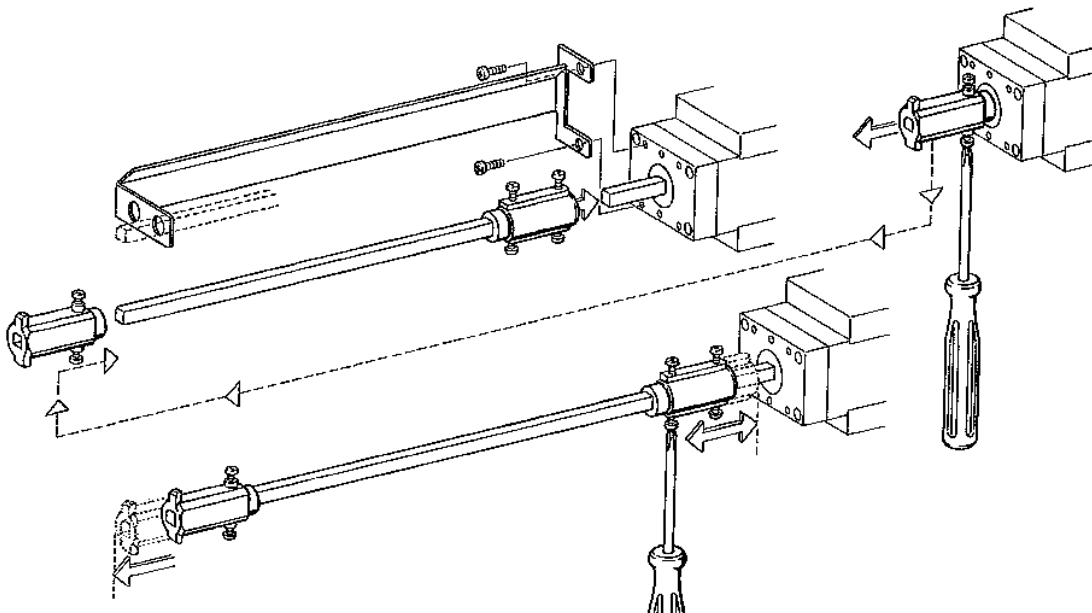
Mounting Depth Required ¹		Shaft Part No. Required	Price
A104 & ML1	ML2 & ML3		
4.13" - 5.31"	4.72" - 5.9"	None - Required	---
6.70" - 8.46"	7.28" - 9.06"	AL-65	\$25.00
10.43" - 13.19"	11.02" - 13.78"	AL-165	\$25.00
14.47" - 17.13"	14.96" - 17.72"	AL-265 ^{1, 2}	\$58.00
13.31" - 21.06"	18.90" - 21.65"	AL-365 ^{1, 2}	\$60.00
Extended Shaft Support Bracket		ALSS	\$60.00

Notes:

¹ Mounting depth is from outside of door to disconnect mounting plate. Shaft extension can be easily cut to size in the field.

² Shaft support ALSS required for AL-265 and AL-365

Shaft Extension Diagram



Discount Schedule SC-10

DIMENSIONS; DISCONNECT SWITCHES

Figure 1

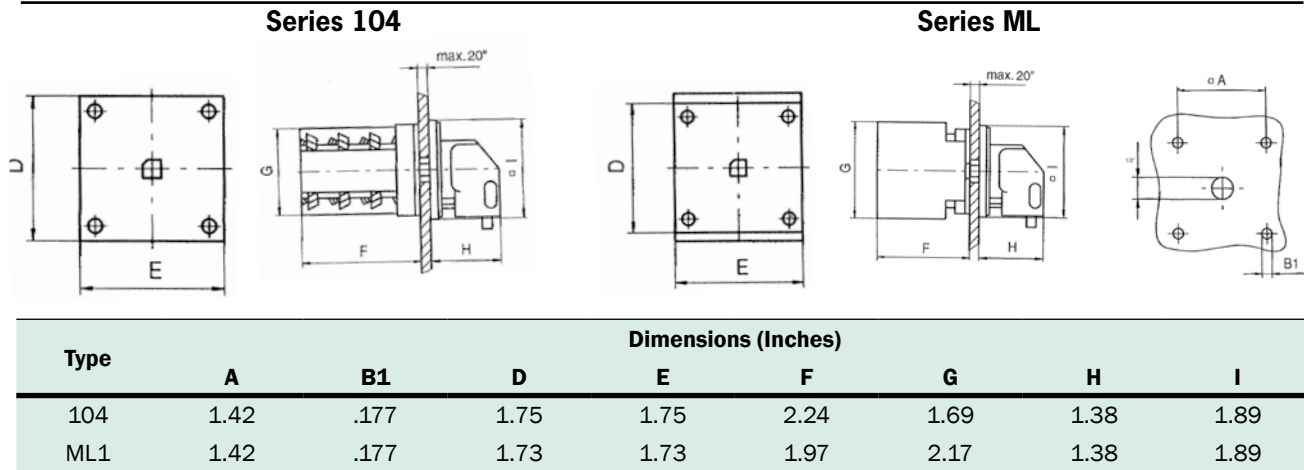


Figure 2

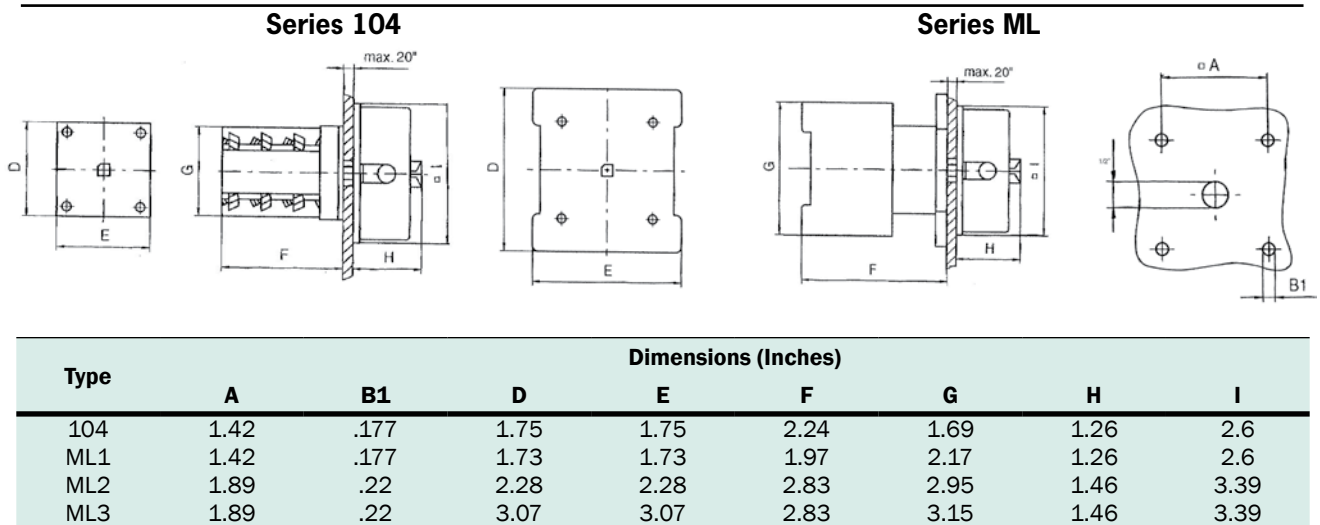
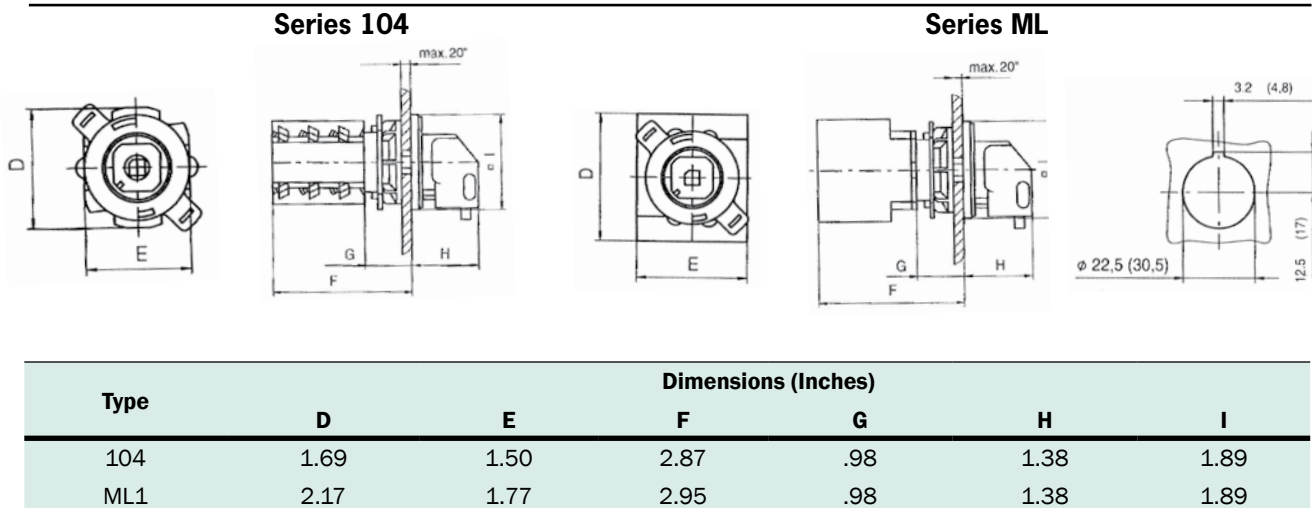
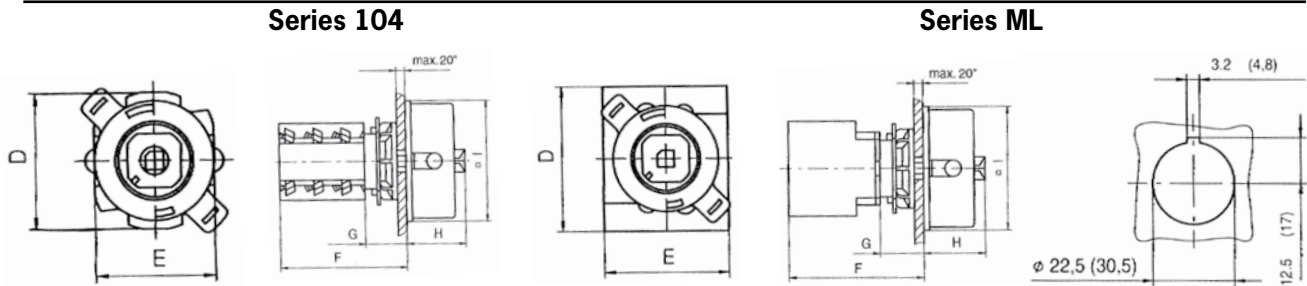


Figure 3



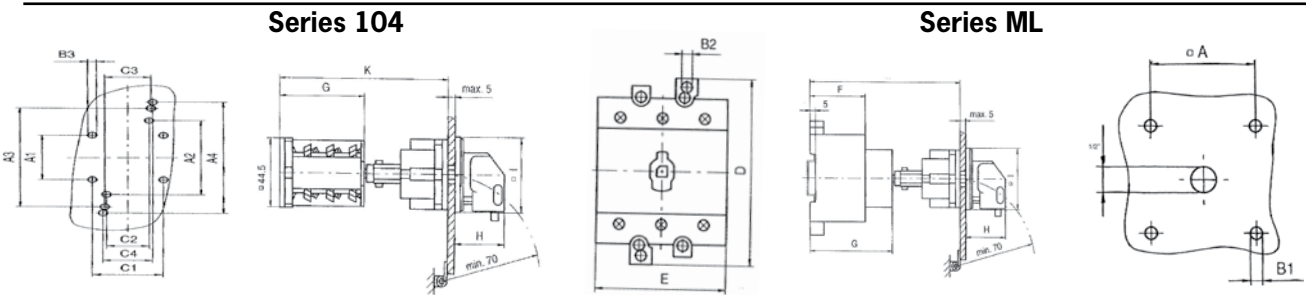
DIMENSIONS; DISCONNECT SWITCHES

Figure 4



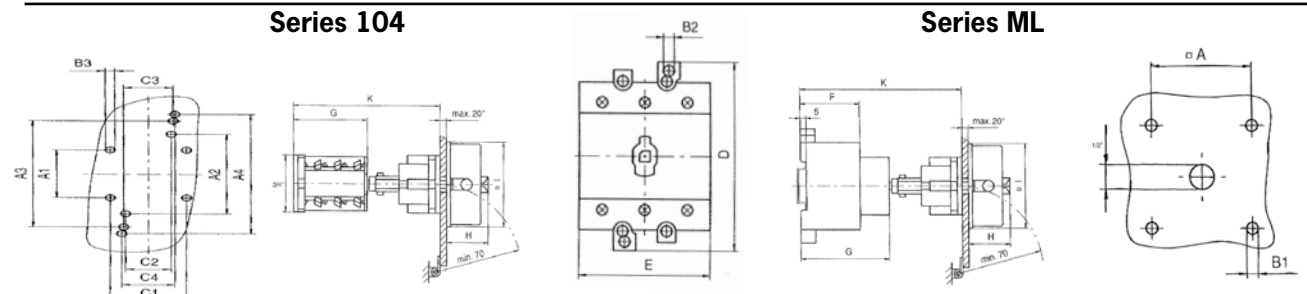
Type	Dimensions (Inches)					
	D	E	F	G	H	I
104	1.69	1.50	2.87	.98	1.26	2.60
ML1	2.17	1.77	2.95	.98	1.26	2.60

Figure 5



Type	Dimensions (Inches)																
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K
104	1.42	1.42	--	--	--	.18	1.42	--	--	--	--	--	--	2.32	1.38	1.89	4.45-5.63
ML1	1.42	--	2.36	2.56	2.76	.18	--	.87	1.18	.98	3.07	1.77	1.65	2.17	1.38	1.89	4.13-5.31

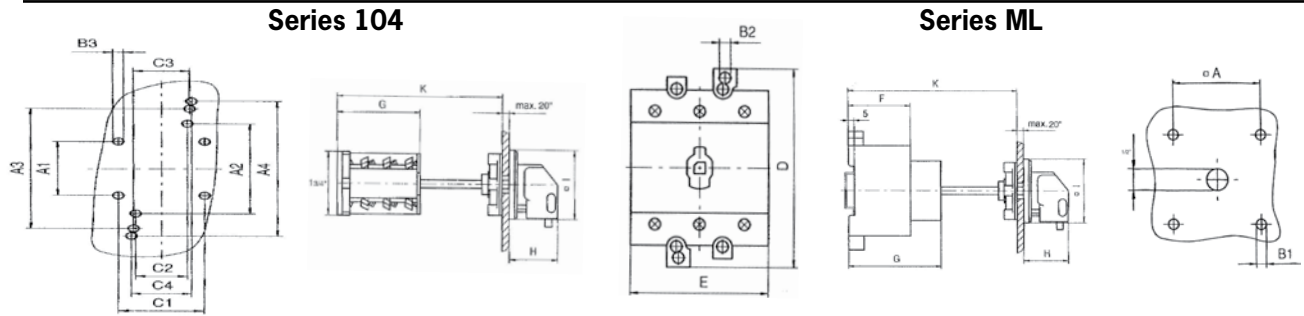
Figure 6



Type	Dimensions (Inches)																
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K
104	1.42	1.42	--	--	--	.18	1.42	--	--	--	--	--	--	2.32	1.26	2.60	4.45-5.63
ML1	1.42	--	2.36	2.56	2.76	.18	--	.87	1.18	.98	3.07	1.77	1.65	2.17	1.26	2.60	4.13-5.31
ML2	1.89	--	--	3.15	3.54	.22	--	--	.93	.98	3.94	2.11	1.93	2.83	1.46	3.39	4.72-5.91
ML3	1.89	--	--	3.15	3.54	.22	--	--	.93	.98	3.94	2.76	1.93	2.83	1.46	3.39	4.72-5.91

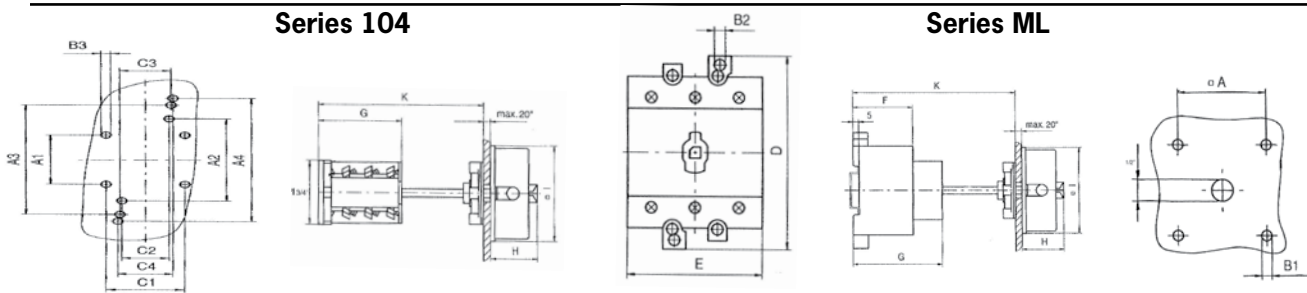
DIMENSIONS; DISCONNECT SWITCHES

Figure 7



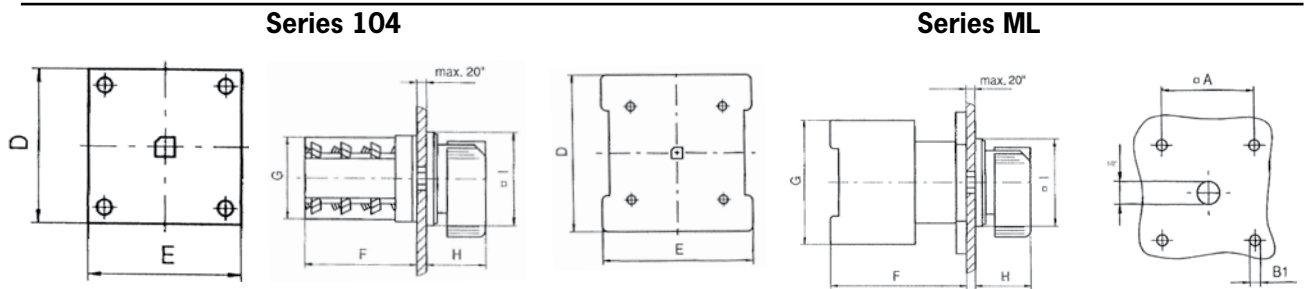
Type	Dimensions (Inches)																	
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K	
104	1.42	1.42	--	--	--	.18	1.42	--	--	--	--	--	--	2.32	1.38	1.89	3.46 - 3.86	
ML1	1.42	--	2.36	2.56	2.76	.18	--	.87	1.18	.98	3.07	1.77	1.65	2.17	1.38	1.89	3.46 - 3.86	

Figure 8



Type	Dimensions (Inches)																	
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K	
104	1.42	1.42	--	--	--	.18	1.42	--	--	--	--	--	--	2.32	1.26	2.60	3.46 - 3.86	
ML1	1.42	--	2.36	2.56	2.76	.18	--	.87	1.18	.98	3.07	1.77	1.65	2.17	1.26	2.60	3.46 - 3.86	
-ML2	1.89	--	--	3.54	3.54	.22	--	--	.93	.98	3.94	2.11	1.93	2.83	1.54	3.39	4.06 - 4.45	
ML3	1.89	--	--	3.54	3.54	.22	--	--	.93	.98	3.94	2.76	1.93	2.83	1.54	3.39	4.06 - 4.45	

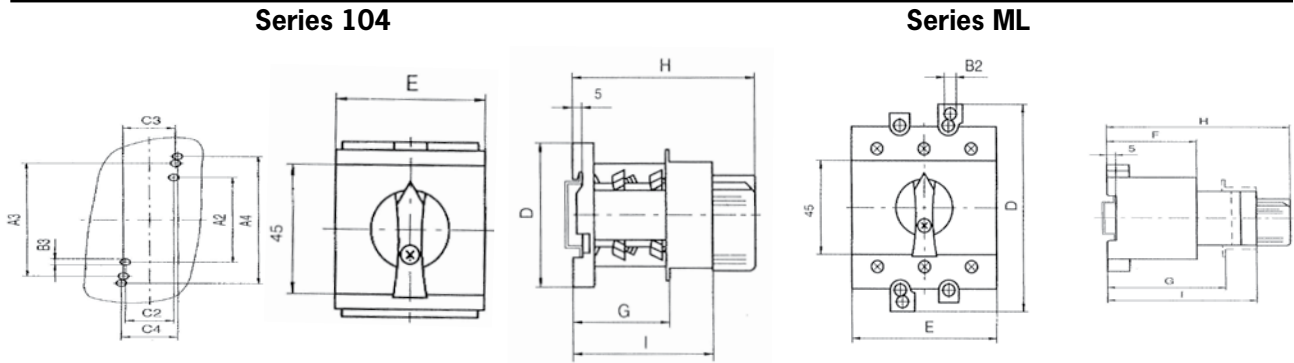
Figure 9



Type	Dimensions (Inches)							
	A	B1	D	E	F	G	H	I
104	1.42	.18	1.75	1.75	2.24	1.69	1.14	1.89
ML1	1.42	.18	1.73	1.73	1.97	2.17	1.14	1.89
ML2	1.89	.22	2.28	2.28	2.83	2.95	1.30	2.52
ML3	2.68	.22	3.07	3.07	2.83	3.15	1.38	3.46

DIMENSIONS; DISCONNECT SWITCHES

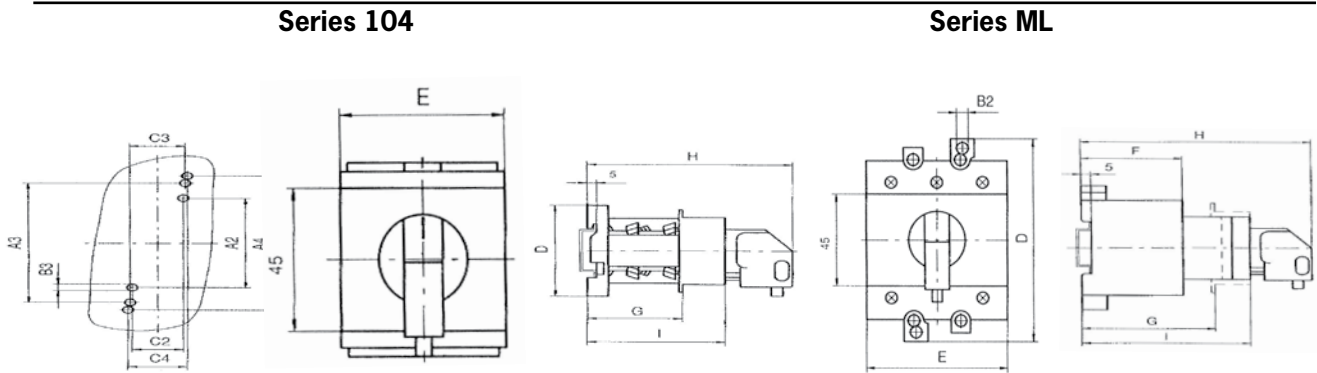
Figure 10



Type	Dimensions (Inches)												
	A2	A3	A4	B3	C2	C3	C4	D	E	F	G	H	I
104	—	—	—	—	—	—	—	2.36	2.07	—	1.85	3.39	2.6
ML1	2.36	2.56	2.76	.15	.87	1.18	.98	3.07	2.07	1.65	1.91	3.44	2.66
ML2	—	3.15	3.54	.20	—	.93	.98	3.94	2.11	1.93	—	3.94	3.11
ML3	—	3.15	3.54	.20	—	.93	.98	3.94	2.76	1.93	—	3.94	3.11

12

Figure 11



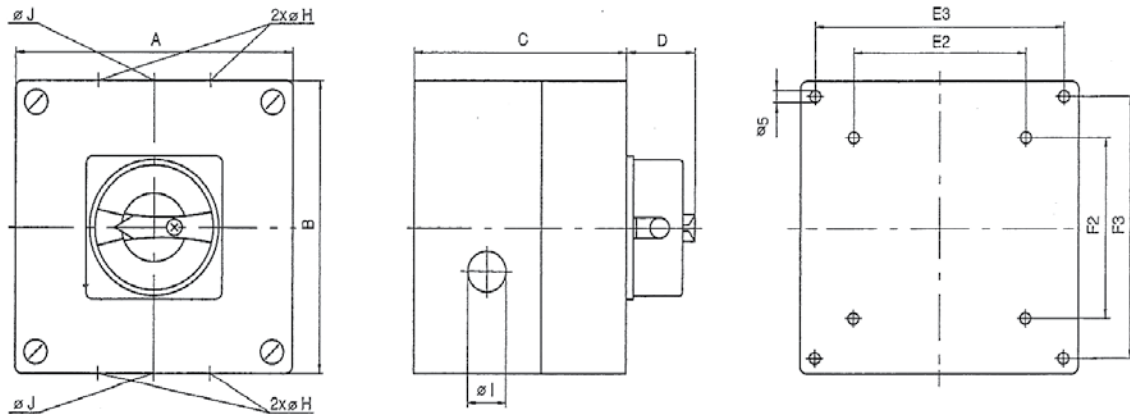
Type	Dimensions (Inches)												
	A2	A3	A4	B3	C2	C3	C4	D	E	F	G	H	I
104	—	—	—	—	—	—	—	2.36	2.07	—	1.85	3.54	2.60
ML1	2.36	2.56	2.76	.15	.87	1.18	.98	3.07	2.07	1.65	1.91	3.60	2.66
ML2	—	3.15	3.54	.20	—	.93	.98	3.94	2.11	1.93	—	4.09	3.11
ML3	—	3.15	3.54	.20	—	.93	.98	3.94	2.76	1.93	—	4.09	3.11

DIMENSIONS; ENCLOSURES

Enclosed Switches



Figure 12



Type	Dimensions (Inches)							
	A	B	C	D	E2	E3	F2	F3
C12B	3.39	—	2.87	1.38	—	2.68	—	—
E2	3.70	5.12	3.19	1.26	—	3.11	—	4.53
E3	5.12	5.12	3.90	1.26	—	4.53	—	4.53
E4	4.33	7.09	4.37	1.26	1.97	3.74	4.72	6.50
E5	7.09	7.17	4.37	1.46	4.72	6.50	4.72	6.57
E6	7.09	10.00	4.37	1.46	4.72	6.50	7.76	9.41
I7	12.00	12.00	6.75	1.46	—	—	—	—

Notes: I7 enclosure comes with a transparent front cover (see above photo #ML3-125-AR3E)



NOTES

CAM SWITCHES



Springer Controls is partnered with **MERZ-PCE**, a world leader in the manufacturing of switch gears. We offer complete line of Cam Switches with as many as 24 switch contacts. Each contact has two fixed terminals and a moving contact bridge. All switches are designed with four switching angles, finger proof construction, captive screws and cable end stops, along with quality construction and excellent engineered design that surpasses the industry standards. UL, CSA, and VDE 0660 part 107 approvals as well as meeting IEC 947-3, EN60947-3 and CE all verify the excellence of the product. All MERZ products meet ROHS certification as well.

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J

CAM SWITCHES

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MODEL AND PRODUCT INFORMATION

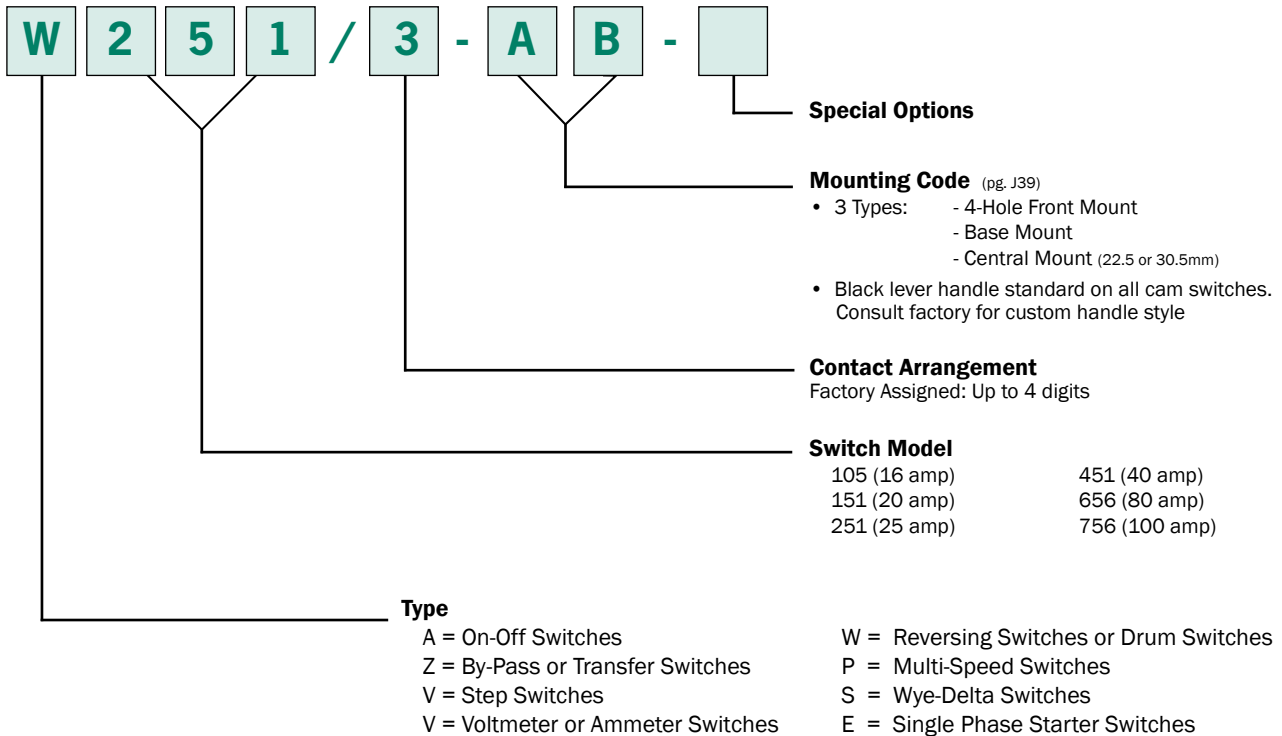
Cam Switch Model Ratings



Switch Model			105	151	251	451	656	756
General Purpose 3-phase	A		16	20	25	40	80	100
	V		600	600	600	600	600	600
Motor 3-phase	240V hp		3	5	7.5	10	25	30
	480V hp		5	10	15	20	50	60
	600V hp		5	10	20	30	50	60
Motor 1-phase	120V hp		.5	1	1.5	2	7.5	10
	240V hp		1.5	2.0	3	5.0	15	20

Product Numbering System

J2




Example: Reversing Switch; 25amp, 3-pole maintained, 4-hole, front mount handle = Part# W251/3-AB

Technical Data acc. to IEC 947-3, EN 60947-3 (DIN VDE 0660 part 107), UL and CSA

Series Type			105	151	251	451	656*	756*
Rated Uninterrupted current (by max. cross section)								
I_U open - 1_{th}	A		20	32	40	63	80*	125*
I_{the} encapsulated	A		16	25	40	63	80*	125*
Rated insulation voltage U_i (III/3)	V		690	690	690	690	690	690
Rated impulse with stand. voltage U_{imp} (III/3)	kV		6	6	6	6	6	6
Rated operational current I_e AC-21 A	A		16	25	32	50	80*	125*
Rated operational voltage U_e	A		690	690	690	690	690	690
Making / Breaking capacity Utilization category AC-3								
	3 x 230V	kW	3	5,5	7,5	11	22	22
Motor switches	3 x 400V	kW	5,5	7,5	11	18,5	37	45
for operational switching	3 x 690V	kW	5,5	11	15	22	45	45
Single phase motor	1 x 230V	kW	2,2	3	4	5,5	11	11
	1 x 400V	kW	3	4	5,5	7,5	15	18,5
Utilization category AC-23 A								
Motor switches (Main Switches	3 x 230V	kW	4	7,5	11	15	22	37
Maintenance Switches)	3 x 400V	kW	7,5	11	15	22	37	45
	3 x 690V	kW	7,5	15	18,5	30	45	45
Rated breaking capacity	3 x 230V	A	150	255	370	520	750	930
AC-23 A	3 x 400V	A	150	230	300	430	700	850
	3 x 690V	A	90	170	210	330	490	490
Utilization category AC-15								
Control Switches	230V	A	6	10	12	16	20	20
Rated operational current L_e	400V	A	4	6	10	12	16	16
Short-circuit capacity								
Max. fuse rating (gl-Char.)		A	25	35	50	63	125	160
Rated conditional short-circuit current		kA_{eff}	4	6	6	6	-	-
Rated short-circuit making capacity I_{cm}		kA	-	-	-	-	3,4	3,4
Rated short-time withstand I_{cw} (1-s-current)		A_{eff}	240	30	400	60	1200	1550
Isolating characteristics up to		V	500	500	690	690	690	690
Mechanical life – Operating cycles			10^6	10^6	10^6	10^6	10^6	10^6
Terminal screws (Pozidrive)			M3	M3,5	M4	M5	M8	2 x M4
Screwdriver: Pozidrive		Size	1	2	2	2	2	2
Torque terminal screws		Nm	0,8	1,0	1,8	2,2	3,5	3,5
Cable cross section		min. mm ²	1,0	1,0	1,0	1,5	1,5	1,5
Solid or multi-stranded		min. mm ²	4,0	4,0	6,0	10,0	25,0	35,0
Flexible with ferrule		min. mm ²	1,0	1,0	1,0	1,5	1,5	1,5
(DIN 46228)		max. mm ²	2,5	2,5	4,0	6,0	16,0	35,0

*656 = 100 A, 756 = 160 A with usage of extension terminals. (non-UL rating)

UL Ratings:

	General Purpose 3-Phase	A	16	20	25	40	80	100	
		V	600	600	600	600	600	600	
	Motor 3-Phase	240V	hp	3	5	7,5	10	25	30
		480V	hp	5	10	15	20	50	60
	Motor 1-Phase (2 pole)	600V	hp	5	10	20	30	50	60
		120V	hp	0,5	1,0	1,5	2,0	7,5	10,0
		240V	hp	1,5	3,0	3,0	5,0	15,0	20,0
	Cable cross section	AWG-No		16-10	16-10	14-8	14-6	14-4	14-1

TYPE: ON-OFF SWITCHES

ON-OFF SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	A105/1 -	XX	\$38.00	
	20	A151/1 -	XX	\$45.00	
	25	A251/1 -	XX	\$61.00	
	40	A451/1 -	XX	\$81.00	
	80	A656/1 -	XX	\$119.00	
	100	A756/1 -	XX	\$168.00	
2 Pole	16	A105/2 -	XX	\$46.00	
	20	A151/2 -	XX	\$55.00	
	25	A251/2 -	XX	\$79.00	
	40	A451/2 -	XX	\$110.00	
	80	A656/2 -	XX	\$161.00	
	100	A756/2 -	XX	\$220.00	
3 Pole	16	A105/3 -	XX	\$54.00	
	20	A151/3 -	XX	\$72.00	
	25	A251/3 -	XX	\$104.00	
	40	A451/3 -	XX	\$149.00	
	80	A656/3 -	XX	\$224.00	
	100	A756/3 -	XX	\$277.00	
4 Pole	16	A105/4 -	XX	\$62.00	
	20	A151/4 -	XX	\$80.00	
	25	A251/4 -	XX	\$117.00	
	40	A451/4 -	XX	\$172.00	
	80	A656/4 -	XX	\$266.00	
	100	A756/4 -	XX	\$334.00	
1 Pole	16	A105/62 -	XX	\$38.00	
	20	A151/62 -	XX	\$45.00	
	25	A251/62 -	XX	\$61.00	
	40	A451/62 -	XX	\$81.00	
	80	A656/62 -	XX	\$119.00	
	100	A756/62 -	XX	\$168.00	

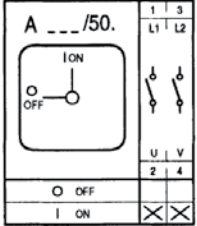
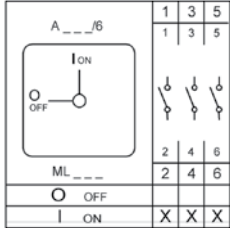
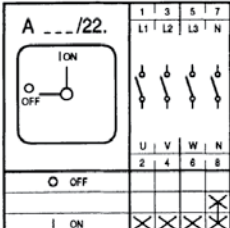
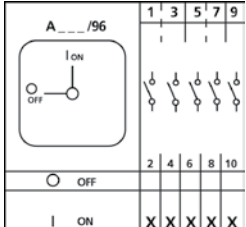
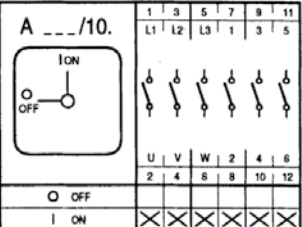
XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

J4

TYPE: ON-OFF SWITCHES

ON-OFF SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
2 Pole	16	A105/50 -	XX	\$46.00	
	20	A151/50 -	XX	\$55.00	
	25	A251/50 -	XX	\$79.00	
	40	A451/50 -	XX	\$110.00	
	80	A656/50 -	XX	\$161.00	
	100	A756/50 -	XX	\$220.00	
3 Pole	16	A105/6 -	XX	\$54.00	
	20	A151/6 -	XX	\$72.00	
	25	A251/6 -	XX	\$104.00	
	40	A451/6 -	XX	\$149.00	
	80	A656/6 -	XX	\$224.00	
	100	A756/6 -	XX	\$277.00	
4 Pole 1-contact priority	16	A105/22 -	XX	\$62.00	
	20	A151/22 -	XX	\$80.00	
	25	A251/22 -	XX	\$117.00	
	40	A451/22 -	XX	\$172.00	
	80	A656/22 -	XX	\$266.00	
	100	A756/22 -	XX	\$334.00	
5 Pole	16	A105/96 -	XX	\$75.00	
	20	A151/96 -	XX	\$98.00	
	25	A251/96 -	XX	\$142.00	
	40	A451/96 -	XX	\$209.00	
	80	A656/96 -	XX	\$330.00	
	100	A756/96 -	XX	\$405.00	
6 Pole	16	A105/10 -	XX	\$86.00	
	20	A151/10 -	XX	\$106.00	
	25	A251/10 -	XX	\$151.00	
	40	A451/10 -	XX	\$224.00	
	80	A656/10 -	XX	\$363.00	
	100	A756/10 -	XX	\$448.00	

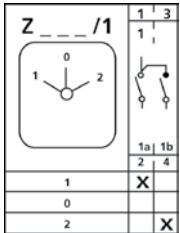
J5

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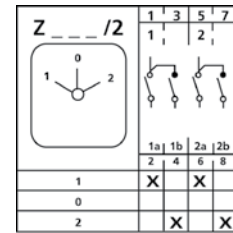
Discount Schedule SC-10

TYPE: CHANGE-OVER SWITCHES WITH O-POSITION

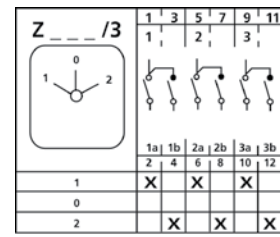
CHANGE-OVER SWITCHES WITH O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole Maintained	16	Z105/1 -	XX	\$43.00	
	20	Z151/1 -	XX	\$55.00	
	25	Z251/1 -	XX	\$79.00	
	40	Z451/1 -	XX	\$110.00	
	80	Z656/1 -	XX	\$161.00	
	100	Z756/1 -	XX	\$220.00	

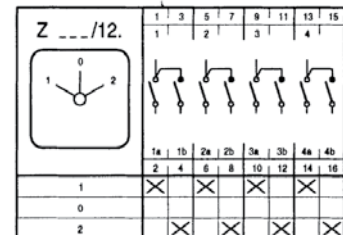
2 Pole Maintained	16	Z105/2 -	XX	\$53.00
	20	Z151/2 -	XX	\$80.00
	25	Z251/2 -	XX	\$117.00
	40	Z451/2 -	XX	\$172.00
	80	Z656/2 -	XX	\$266.00
	100	Z756/2 -	XX	\$334.00



3 Pole Maintained	16	Z105/3 -	XX	\$74.00
	20	Z151/3 -	XX	\$106.00
	25	Z251/3 -	XX	\$151.00
	40	Z451/3 -	XX	\$224.00
	80	Z656/3 -	XX	\$363.00
	100	Z756/3 -	XX	\$448.00



4 Pole Maintained	16	Z105/12 -	XX	\$83.00
	20	Z151/12 -	XX	\$132.00
	25	Z251/12 -	XX	\$184.00
	40	Z451/12 -	XX	\$272.00
	80	Z656/12 -	XX	\$448.00
	100	Z756/12 -	XX	\$563.00

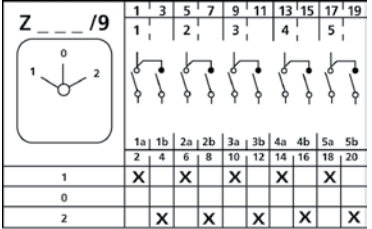


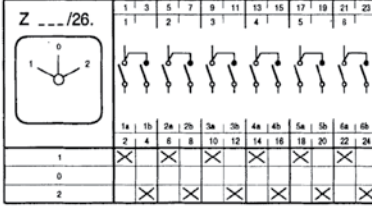
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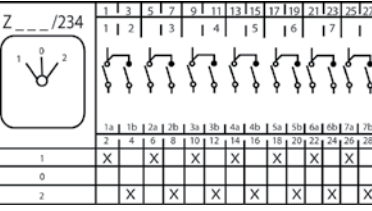
Discount Schedule SC-10

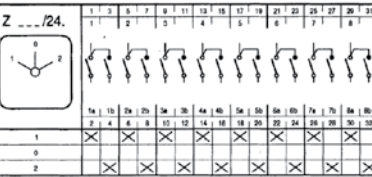
TYPE: CHANGE-OVER SWITCHES WITH O-POSITION

CHANGE-OVER SWITCHES WITH O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Font Plate / Contact Diagram
5 Pole Maintained	16	Z105/9 -	XX	\$108.00	
	20	Z151/9 -	XX	\$160.00	
	25	Z251/9 -	XX	\$219.00	
	40	Z451/9 -	XX	\$318.00	
	80	Z656/9 -	XX	\$534.00	
	100	Z756/9 -	XX	\$673.00	

6 Pole Maintained	16	Z105/26 -	XX	\$125.00	
	20	Z151/26 -	XX	\$186.00	
	25	Z251/26 -	XX	\$252.00	
	40	Z451/26 -	XX	\$368.00	
	80	Z656/26 -	XX	\$620.00	
	100	Z756/26 -	XX	\$790.00	

7 Pole Maintained	16	Z105/234 -	XX	\$135.00	
	20	Z151/234 -	XX	\$212.00	
	25	Z251/234 -	XX	\$286.00	
	40	Z451/234 -	XX	\$415.00	
	80	Z656/234 -	XX	\$707.00	
	100	Z756/234 -	XX	\$908.00	

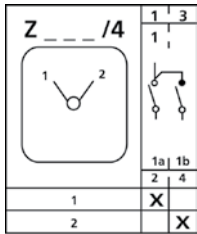
8 Pole Maintained	16	Z105/24 -	XX	\$145.00	
	20	Z151/24 -	XX	\$238.00	
	25	Z251/24 -	XX	\$320.00	
	40	Z451/24 -	XX	\$466.00	
	80	Z656/24 -	XX	\$794.00	
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XX - Replace with Handle Suffix from page J39.

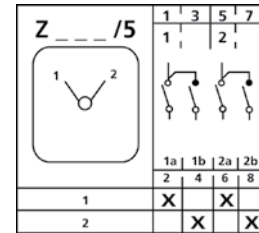
Discount Schedule SC-10

TYPE: CHANGE-OVER SWITCHES WITH NO O-POSITION

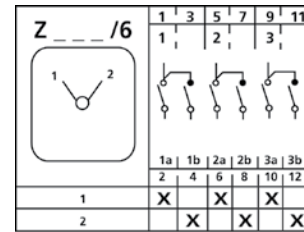
CHANGE-OVER SWITCHES WITH NO O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole Maintained	16	Z105/4 -	XX	\$43.00	
	20	Z151/4 -	XX	\$55.00	
	25	Z251/4 -	XX	\$79.00	
	40	Z451/4 -	XX	\$110.00	
	80	Z656/4 -	XX	\$161.00	
	100	Z756/4 -	XX	\$220.00	

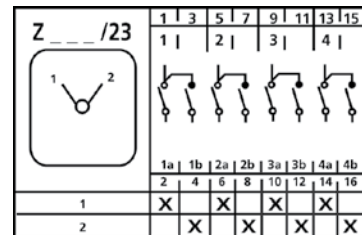
2 Pole Maintained	16	Z105/5 -	XX	\$53.00
	20	Z151/5 -	XX	\$80.00
	25	Z251/5 -	XX	\$117.00
	40	Z451/5 -	XX	\$172.00
	80	Z656/5 -	XX	\$266.00
	100	Z756/5 -	XX	\$334.00



3 Pole Maintained	16	Z105/6 -	XX	\$74.00
	20	Z151/6 -	XX	\$106.00
	25	Z251/6 -	XX	\$151.00
	40	Z451/6 -	XX	\$224.00
	80	Z656/6 -	XX	\$363.00
	100	Z756/6 -	XX	\$448.00



4 Pole Maintained	16	Z105/23 -	XX	\$83.00
	20	Z151/23 -	XX	\$132.00
	25	Z251/23 -	XX	\$184.00
	40	Z451/23 -	XX	\$292.00
	80	Z656/23 -	XX	\$448.00
	100	Z756/23 -	XX	\$563.00

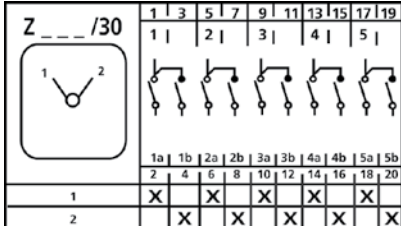


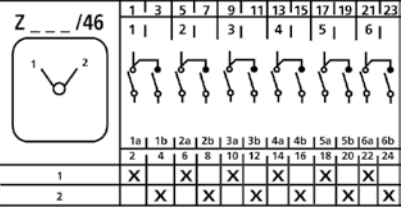
XX - Replace with Handle Suffix from page J39.

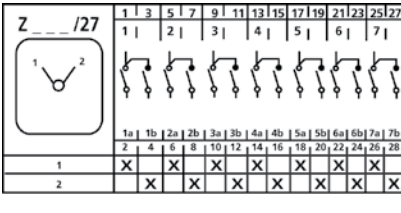
Discount Schedule SC-10

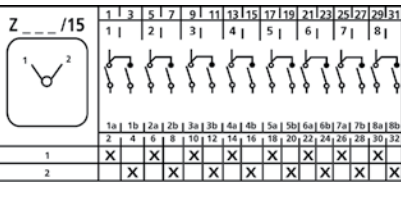
TYPE: CHANGE-OVER SWITCHES WITH NO O-POSITION

CHANGE-OVER SWITCHES WITH NO O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
5 Pole Maintained	16	Z105/30 -	XX	\$108.00	
	20	Z151/30 -	XX	\$159.00	
	25	Z251/30 -	XX	\$219.00	
	40	Z451/30 -	XX	\$238.00	
	80	Z656/30 -	XX	\$534.00	
	100	Z756/30 -	XX	\$673.00	

6 Pole Maintained	16	Z105/46 -	XX	\$125.00	
	20	Z151/46 -	XX	\$186.00	
	25	Z251/46 -	XX	\$252.00	
	40	Z451/46 -	XX	\$368.00	
	80	Z656/46 -	XX	\$620.00	
	100	Z756/46 -	XX	\$790.00	

7 Pole Maintained	16	Z105/27 -	XX	\$135.00	
	20	Z151/27 -	XX	\$212.00	
	25	Z251/27 -	XX	\$286.00	
	40	Z451/27 -	XX	\$417.00	
	80	Z656/27 -	XX	\$707.00	
	100	Z756/27 -	XX	\$908.00	

8 Pole Maintained	16	Z105/15 -	XX	\$145.00	
	20	Z151/15 -	XX	\$238.00	
	25	Z251/15 -	XX	\$320.00	
	40	Z451/15 -	XX	\$466.00	
	80	Z656/15 -	XX	\$794.00	
	100	Z756/15 -	XX	\$1025.00	

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

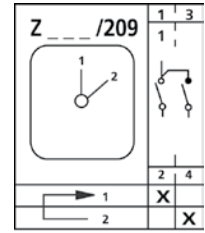
J9

TYPE: CHANGE-OVER SWITCHES WITH NO O-POSITION

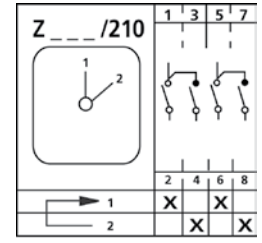
CHANGE-OVER SWITCHES WITH NO O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
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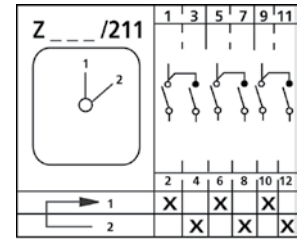
1 Pole Spring Return	16	Z105/209 -	XX	\$43.00
	20	Z151/209 -	XX	\$56.00
	25	Z251/209 -	XX	\$79.00
	40	Z451/209 -	XX	\$110.00
	80	Z656/209 -	XX	\$161.00
	100	Z756/209 -	XX	\$220.00



2 Pole Spring Return	16	Z105/210 -	XX	\$53.00
	20	Z151/210 -	XX	\$81.00
	25	Z251/210 -	XX	\$117.00
	40	Z451/210 -	XX	\$172.00
	80	Z656/210 -	XX	\$266.00
	100	Z756/210 -	XX	\$334.00



3 Pole Spring Return	16	Z105/211 -	XX	\$74.00
	20	Z151/211 -	XX	\$107.00
	25	Z251/211 -	XX	\$151.00
	40	Z451/211 -	XX	\$224.00
	80	Z656/211 -	XX	\$361.00
	100	Z756/211 -	XX	\$448.00

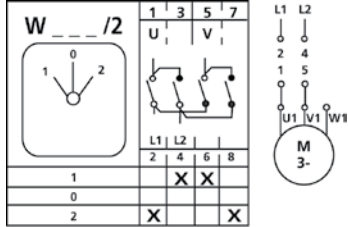
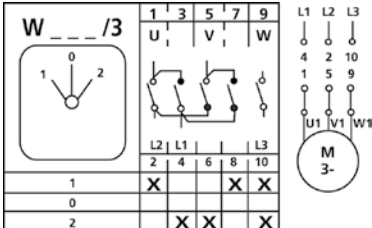
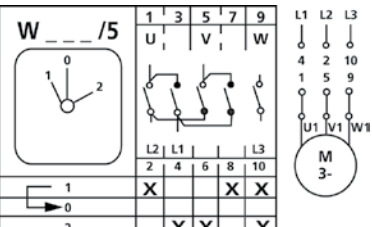
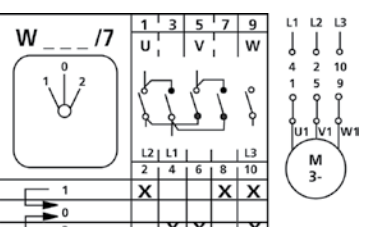
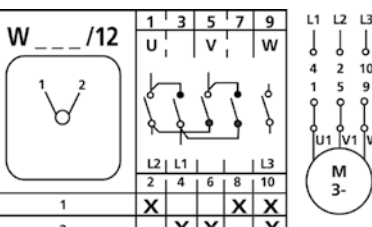


XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: REVERSING SWITCHES

REVERSING SWITCHES

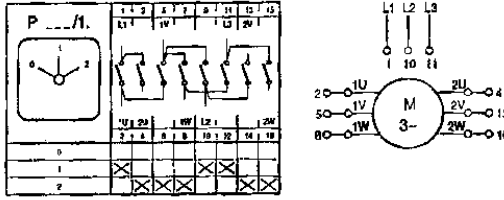
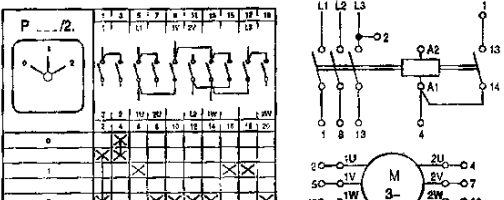
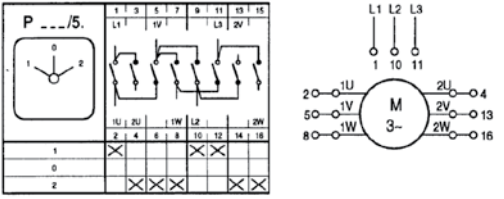
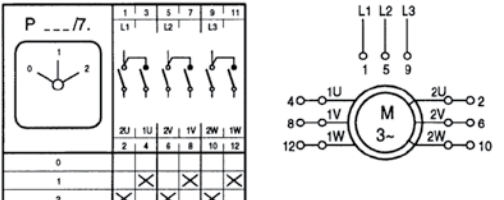
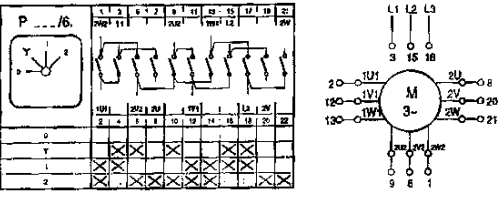
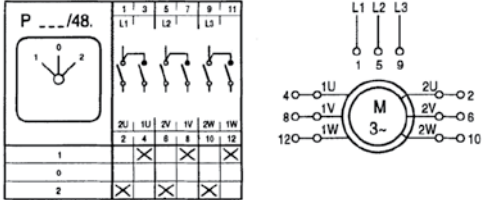
Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
2 Pole Maintained	16	W105/2 -	XX	\$53.00	
	20	W151/2 -	XX	\$80.00	
	25	W251/2 -	XX	\$117.00	
	40	W451/2 -	XX	\$172.00	
	80	W656/2 -	XX	\$266.00	
	100	W756/2 -	XX	\$334.00	
3 Pole Maintained	16	W105/3 -	XX	\$63.00	
	20	W151/3 -	XX	\$98.00	
	25	W251/3 -	XX	\$142.00	
	40	W451/3 -	XX	\$209.00	
	80	W656/3 -	XX	\$329.00	
	100	W756/3 -	XX	\$405.00	
3 Pole with spring return from 1 - 0	16	W105/5 -	XX	\$63.00	
	20	W151/5 -	XX	\$98.00	
	25	W251/5 -	XX	\$142.00	
	40	W451/5 -	XX	\$209.00	
	80	W656/5 -	XX	\$329.00	
	100	W756/5 -	XX	\$405.00	
3 Pole with spring return both sides	16	W105/7 -	XX	\$63.00	
	20	W151/7 -	XX	\$98.00	
	25	W251/7 -	XX	\$142.00	
	40	W451/7 -	XX	\$209.00	
	80	W656/7 -	XX	\$329.00	
	100	W756/7 -	XX	\$405.00	
3 Pole without 0-Position Maintained	16	W105/12 -	XX	\$63.00	
	20	W151/12 -	XX	\$98.00	
	25	W251/12 -	XX	\$142.00	
	40	W451/12 -	XX	\$209.00	
	80	W656/12 -	XX	\$329.00	
	100	W756/12 -	XX	\$405.00	

J11

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: MULTI-SPEED SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
2-Speed Switches Tapped Windings	16	P105/1 -	XX	\$83.00	
	20	P151/1 -	XX	\$132.00	
	25	P251/1 -	XX	\$184.00	
	40	P451/1 -	XX	\$272.00	
	80	P656/1 -	XX	\$448.00	
	100	P756/1 -	XX	\$563.00	
2-Speed Switches Tapped Windings with 1 Contact	16	P105/2 -	XX	\$107.00	
	20	P151/2 -	XX	\$159.00	
	25	P251/2 -	XX	\$218.00	
	40	P451/2 -	XX	\$320.00	
	80	P656/2 -	XX	\$534.00	
	100	P756/2 -	XX	\$677.00	
2-Speed Switches Tapped Windings 0 Middle	16	P105/5 -	XX	\$83.00	
	20	P151/5 -	XX	\$132.00	
	25	P251/5 -	XX	\$184.00	
	40	P451/5 -	XX	\$272.00	
	80	P656/5 -	XX	\$448.00	
	100	P756/5 -	XX	\$563.00	
2-Speed Switches 2 Separate Windings	16	P105/7 -	XX	\$74.00	
	20	P151/7 -	XX	\$106.00	
	25	P251/7 -	XX	\$151.00	
	40	P451/7 -	XX	\$224.00	
	80	P656/7 -	XX	\$363.00	
	100	P756/7 -	XX	\$448.00	
2-Speed Switches With Starting Position	16	P105/6 -	XX	\$118.00	
	20	P151/6 -	XX	\$176.00	
	25	P251/6 -	XX	\$240.00	
	40	P451/6 -	XX	\$352.00	
	80	P656/6 -	XX	\$590.00	
	100	P756/6 -	XX	\$747.00	
2-Speed Switches 2 Separate Windings	16	P105/48 -	XX	\$74.00	
	20	P151/48 -	XX	\$106.00	
	25	P251/48 -	XX	\$151.00	
	40	P451/48 -	XX	\$224.00	
	80	P656/48 -	XX	\$363.00	
	100	P756/48 -	XX	\$448.00	

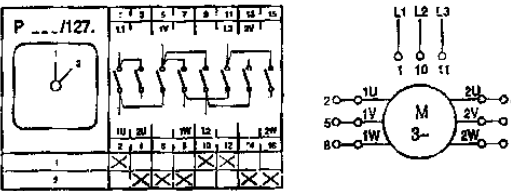
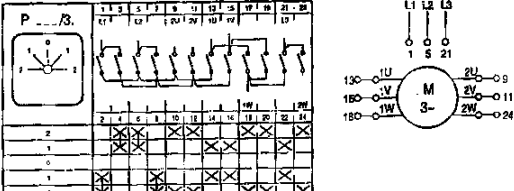
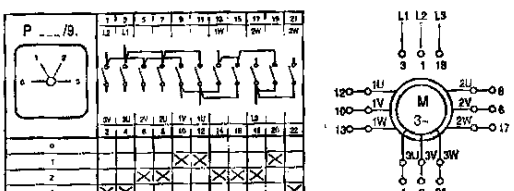
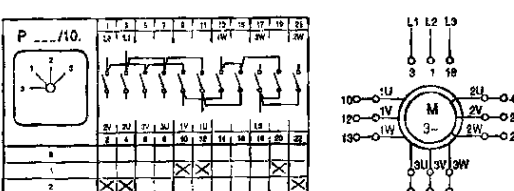
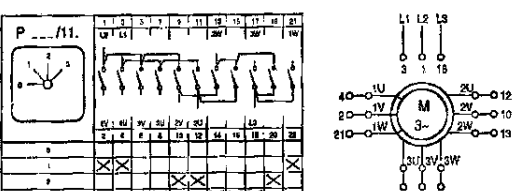
XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

J12

TYPE: MULTI-SPEED SWITCHES

MULTI-SPEED SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
2-Speed Switches Tapped Windings Without 0 Position	16	P105/127 -	XX	\$83.00	
	20	P151/127 -	XX	\$132.00	
	25	P251/127 -	XX	\$184.00	
	40	P451/127 -	XX	\$272.00	
	80	P656/127 -	XX	\$448.00	
100	P756/127 -	XX	\$563.00		
2-Speed Switches Tapped Windings 2 Reversing	16	P105/3 -	XX	\$127.00	
	20	P151/3 -	XX	\$186.00	
	25	P251/3 -	XX	\$251.00	
	40	P451/3 -	XX	\$368.00	
	80	P656/3 -	XX	\$620.00	
100	P756/3 -	XX	\$791.00		
3-Speed Tapped Windings 1 and 2	16	P105/9 -	XX	\$118.00	
	20	P151/9 -	XX	\$176.00	
	25	P251/9 -	XX	\$240.00	
	40	P451/9 -	XX	\$352.00	
	80	P656/9 -	XX	\$590.00	
100	P756/9 -	XX	\$747.00		
3-Speed Switches Tapped Windings 1 and 3	16	P105/10 -	XX	\$118.00	
	20	P151/10 -	XX	\$176.00	
	25	P251/10 -	XX	\$240.00	
	40	P451/10 -	XX	\$352.00	
	80	P656/10 -	XX	\$590.00	
100	P756/10 -	XX	\$747.00		
3-Speed Switches Tapped Windings 2 and 3	16	P105/11 -	XX	\$118.00	
	20	P151/11 -	XX	\$176.00	
	25	P251/11 -	XX	\$240.00	
	40	P451/11 -	XX	\$352.00	
	80	P656/11 -	XX	\$590.00	
100	P756/11 -	XX	\$747.00		

J13

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

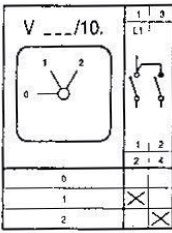
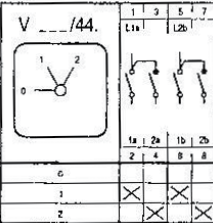
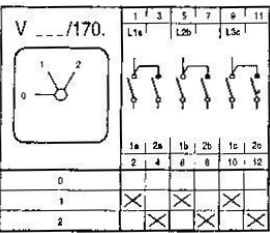
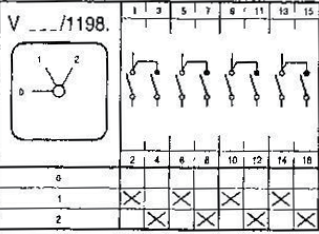
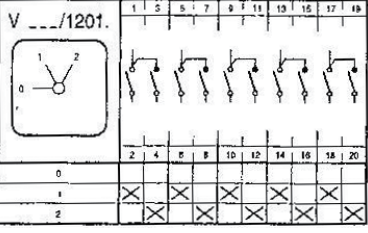
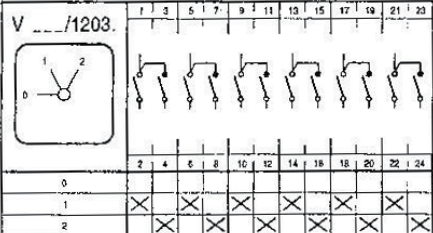
TYPE: WYE-DELTA SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
Standard	16	S105/1 -	XX	\$83.00	
	20	S151/1 -	XX	\$132.00	
	25	S251/1 -	XX	\$184.00	
	40	S451/1 -	XX	\$272.00	
	80	S656/1 -	XX	\$448.00	
	100	S756/1 -	XX	\$563.00	
With 1 Contact without Main Contacts	16	S105/2 -	XX	\$80.00	
	20	S151/2 -	XX	\$124.00	
	25	S251/2 -	XX	\$174.00	
	40	S451/2 -	XX	\$257.00	
	80	S656/2 -	XX	\$418.00	
	100	S756/2 -	XX	\$519.00	
With 1 Contact	16	S105/26 -	XX	\$107.00	
	20	S151/26 -	XX	\$159.00	
	25	S251/26 -	XX	\$218.00	
	40	S451/26 -	XX	\$320.00	
	80	S656/26 -	XX	\$534.00	
	100	S756/26 -	XX	\$677.00	
For Individually Compensated Motors	16	S105/5 -	XX	\$83.00	
	20	S151/5 -	XX	\$132.00	
	25	S251/5 -	XX	\$184.00	
	40	S451/5 -	XX	\$272.00	
	80	S656/5 -	XX	\$448.00	
	100	S756/5 -	XX	\$563.00	
2 Reversing	16	S105/3 -	XX	\$107.00	
	20	S151/3 -	XX	\$159.00	
	25	S251/3 -	XX	\$218.00	
	40	S451/3 -	XX	\$320.00	
	80	S656/3 -	XX	\$534.00	
	100	S756/3 -	XX	\$677.00	
2 Reversing With Contact	16	S105/16 -	XX	\$125.00	
	20	S151/16 -	XX	\$186.00	
	25	S251/16 -	XX	\$251.00	
	40	S451/16 -	XX	\$368.00	
	80	S656/16 -	XX	\$620.00	
	100	S756/16 -	XX	\$791.00	
2 Reversing for Individually Compensated Motors	16	S105/27 -	XX	\$107.00	
	20	S151/27 -	XX	\$159.00	
	25	S251/27 -	XX	\$218.00	
	40	S451/27 -	XX	\$320.00	
	80	S656/27 -	XX	\$534.00	
	100	S756/27 -	XX	\$677.00	

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: STEP SWITCHES WITH 0-POSITION 2 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/10 -	XX	\$43.00	
	20	V151/10 -	XX	\$56.00	
	25	V251/10 -	XX	\$80.00	
	40	V451/10 -	XX	\$111.00	
	80	V656/10 -	XX	\$161.00	
	100	V756/10 -	XX	\$220.00	
2 Pole	16	V105/44 -	XX	\$53.00	
	20	V151/44 -	XX	\$80.00	
	25	V251/44 -	XX	\$117.00	
	40	V451/44 -	XX	\$172.00	
	80	V656/44 -	XX	\$266.00	
	100	V756/44 -	XX	\$334.00	
3 Pole	16	V105/170 -	XX	\$74.00	
	20	V151/170 -	XX	\$106.00	
	25	V251/170 -	XX	\$151.00	
	40	V451/170 -	XX	\$224.00	
	80	V656/170 -	XX	\$363.00	
	100	V756/170 -	XX	\$448.00	
4 Pole	16	V105/1198 -	XX	\$84.00	
	20	V151/1198 -	XX	\$132.00	
	25	V251/1198 -	XX	\$185.00	
	40	V451/1198 -	XX	\$271.00	
	80	V656/1198 -	XX	\$448.00	
	100	V756/1198 -	XX	\$563.00	
5 Pole	16	V105/1201 -	XX	\$108.00	
	20	V151/1201 -	XX	\$159.00	
	25	V251/1201 -	XX	\$218.00	
	40	V451/1201 -	XX	\$317.00	
	80	V656/1201 -	XX	\$534.00	
	100	V756/1201 -	XX	\$677.00	
6 Pole	16	V105/1203 -	XX	\$124.00	
	20	V151/1203 -	XX	\$185.00	
	25	V251/1203 -	XX	\$252.00	
	40	V451/1203 -	XX	\$366.00	
	80	V656/1203 -	XX	\$620.00	
	100	V756/1203 -	XX	\$791.00	

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: STEP SWITCHES WITH 0-POSITION 3 STEPS

STEP SWITCHES WITH 0-POSITION 3 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/1224 -	XX	\$48.00	
	20	V151/1224 -	XX	\$72.00	
	25	V251/1224 -	XX	\$104.00	
	40	V451/1224 -	XX	\$149.00	
	80	V656/1224 -	XX	\$224.00	
	100	V756/1224 -	XX	\$277.00	
2 Pole	16	V105/17 -	XX	\$74.00	
	20	V151/17 -	XX	\$107.00	
	25	V251/17 -	XX	\$152.00	
	40	V451/17 -	XX	\$224.00	
	80	V656/17 -	XX	\$363.00	
	100	V756/17 -	XX	\$448.00	
3 Pole	16	V105/18 -	XX	\$102.00	
	20	V151/18 -	XX	\$150.00	
	25	V251/18 -	XX	\$208.00	
	40	V451/18 -	XX	\$305.00	
	80	V656/18 -	XX	\$502.00	
	100	V756/18 -	XX	\$633.00	
4 Pole	16	V105/1199 -	XX	\$124.00	
	20	V151/1199 -	XX	\$185.00	
	25	V251/1199 -	XX	\$252.00	
	40	V451/1199 -	XX	\$366.00	
	80	V656/1199 -	XX	\$620.00	
	100	V756/1199 -	XX	\$791.00	
5 Pole	16	V105/1202 -	XX	\$140.00	
	20	V151/1202 -	XX	\$229.00	
	25	V251/1202 -	XX	\$308.00	
	40	V451/1202 -	XX	\$449.00	
	80	V656/1202 -	XX	\$761.00	
	100	V756/1202 -	XX	\$978.00	

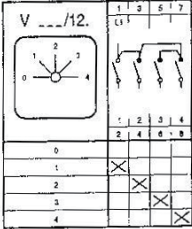
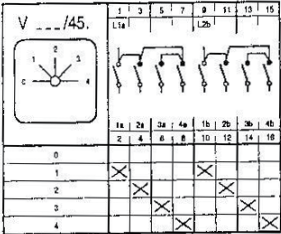
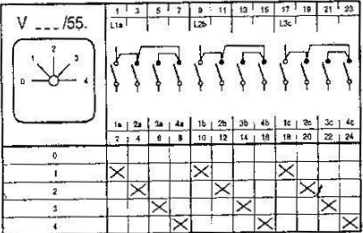
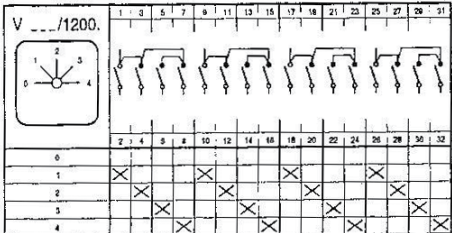
XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

J16

TYPE: STEP SWITCHES WITH 0-POSITION 4 STEPS

STEP SWITCHES WITH 0-POSITION 4 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/12 -	XX	\$53.00	
	20	V151/12 -	XX	\$81.00	
	25	V251/12 -	XX	\$117.00	
	40	V451/12 -	XX	\$172.00	
	80	V656/12 -	XX	\$266.00	
	100	V756/12 -	XX	\$334.00	
2 Pole	16	V105/45 -	XX	\$84.00	
	20	V151/45 -	XX	\$132.00	
	25	V251/45 -	XX	\$185.00	
	40	V451/45 -	XX	\$271.00	
	80	V656/45 -	XX	\$448.00	
	100	V756/45 -	XX	\$563.00	
3 Pole	16	V105/55 -	XX	\$124.00	
	20	V151/55 -	XX	\$185.00	
	25	V251/55 -	XX	\$252.00	
	40	V451/55 -	XX	\$366.00	
	80	V656/55 -	XX	\$620.00	
	100	V756/55 -	XX	\$791.00	
4 Pole	16	V105/1200 -	XX	\$144.00	
	20	V151/1200 -	XX	\$237.00	
	25	V251/1200 -	XX	\$318.00	
	40	V451/1200 -	XX	\$465.00	
	80	V656/1200 -	XX	\$791.00	
	100	V756/1200 -	XX	\$1021.00	

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

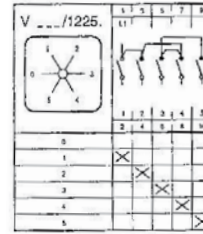
J17

TYPE: STEP SWITCHES WITH 0-POSITION 5 STEPS

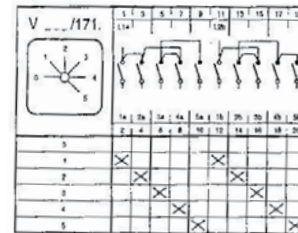
STEP SWITCHES WITH 0-POSITION 5 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
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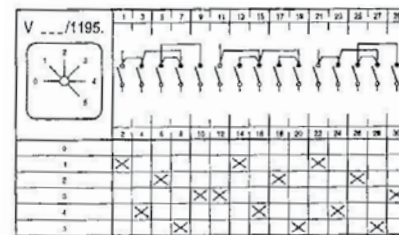
1 Pole	16	V105/1225 -	XX	\$70.00
	20	V151/1225 -	XX	\$98.00
	25	V251/1225 -	XX	\$141.00
	40	V451/1225 -	XX	\$208.00
	80	V656/1225 -	XX	\$329.00
	100	V756/1225 -	XX	\$403.00



2 Pole	16	V105/171 -	XX	\$108.00
	20	V151/171 -	XX	\$159.00
	25	V251/171 -	XX	\$218.00
	40	V451/171 -	XX	\$317.00
	80	V656/171 -	XX	\$620.00
	100	V756/171 -	XX	\$677.00



3 Pole	16	V105/1195 -	XX	\$140.00
	20	V151/1195 -	XX	\$229.00
	25	V251/1195 -	XX	\$308.00
	40	V451/1195 -	XX	\$449.00
	80	V656/1195 -	XX	\$761.00
	100	V756/1195 -	XX	\$978.00



J18

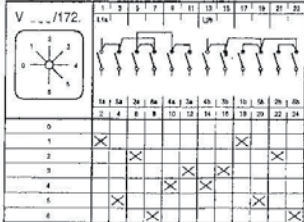
XX - Replace with Handle Suffix from page J39.

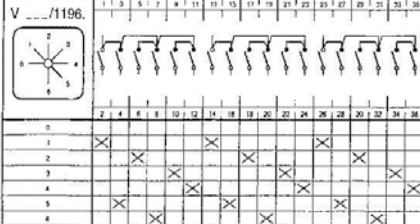
Discount Schedule SC-10

TYPE: STEP SWITCHES WITH 0-POSITION 6 STEPS

STEP SWITCHES WITH 0-POSITION 6 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/60 -	XX	\$74.00	
	20	V151/60 -	XX	\$106.00	
	25	V251/60 -	XX	\$151.00	
	40	V451/60 -	XX	\$224.00	
	80	V656/60 -	XX	\$363.00	
	100	V756/60 -	XX	\$448.00	

2 Pole	16	V105/172 -	XX	\$125.00	
	20	V151/172 -	XX	\$186.00	
	25	V251/172 -	XX	\$251.00	
	40	V451/172 -	XX	\$368.00	
	80	V656/172 -	XX	\$620.00	
	100	V756/172 -	XX	\$791.00	

3 Pole	16	V105/1196 -	XX	\$155.00	
	20	V151/1196 -	XX	\$264.00	
	25	V251/1196 -	XX	\$352.00	
	40	V451/1196 -	XX	\$513.00	
	80	V656/1196 -	XX	\$877.00	
	100	V756/1196 -	XX	\$1138.00	

J19

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

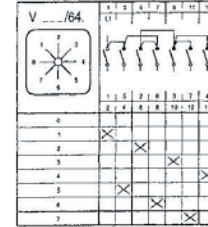
TYPE: STEP SWITCHES WITH 0-POSITION 7/8/9 STEPS

STEP SWITCHES WITH 0-POSITION 7/8/9 STEPS

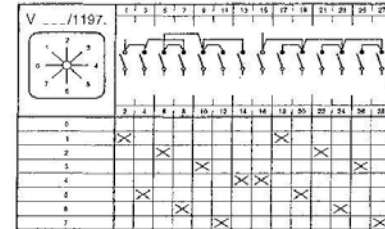
Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
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Step switches with 0-Position - 7 steps

1 Pole	16	V105/64 -	XX	\$80.00
	20	V151/64 -	XX	\$124.00
	25	V251/64 -	XX	\$174.00
	40	V451/64 -	XX	\$257.00
	80	V656/64 -	XX	\$418.00
	100	V756/64 -	XX	\$517.00



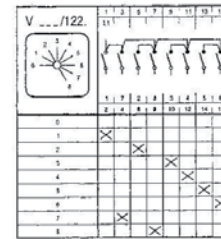
2 Pole	16	V105/1197 -	XX	\$135.00
	20	V151/1197 -	XX	\$211.00
	25	V251/1197 -	XX	\$285.00
	40	V451/1197 -	XX	\$415.00
	80	V656/1197 -	XX	\$705.00
	100	V756/1197 -	XX	\$905.00



J20

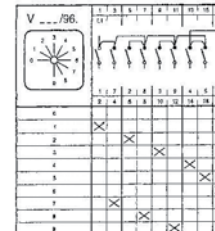
Step switches with 0-Position - 8 steps

1 Pole	16	V105/122 -	XX	\$83.00
	20	V151/122 -	XX	\$132.00
	25	V251/122 -	XX	\$184.00
	40	V451/122 -	XX	\$272.00
	80	V656/122 -	XX	\$448.00
	100	V756/122 -	XX	\$563.00



Step switches with 0-Position - 9 steps

1 Pole	16	V105/96 -	XX	\$102.00
	20	V151/96 -	XX	\$150.00
	25	V251/96 -	XX	\$207.00
	40	V451/96 -	XX	\$305.00
	80	V656/96 -	XX	\$504.00
	100	V756/96 -	XX	\$633.00

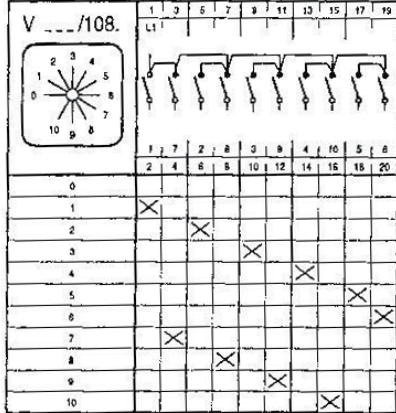


XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

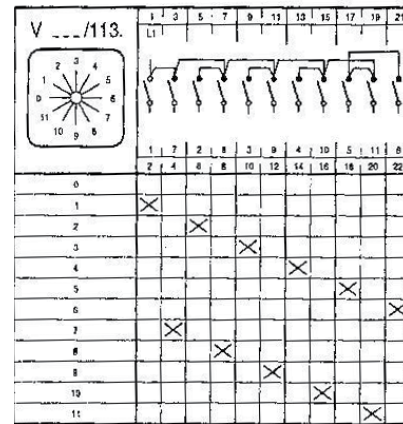
TYPE: STEP SWITCHES WITH 0-POSITION 10/11 STEPS

STEP SWITCHES WITH 0-POSITION 10/11 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
Step switches with 0-Position - 10 steps					
1 Pole	16	V105/108 -	XX	\$107.00	
	20	V151/108 -	XX	\$159.00	
	25	V251/108 -	XX	\$218.00	
	40	V451/108 -	XX	\$320.00	
	80	V656/108 -	XX	\$534.00	
	100	V756/108 -	XX	\$677.00	

Step switches with 0-Position - 11 steps

2 Pole	16	V105/113 -	XX	\$118.00
	20	V151/113 -	XX	\$176.00
	25	V251/113 -	XX	\$240.00
	40	V451/113 -	XX	\$352.00
	80	V656/113 -	XX	\$590.00
	100	V756/113 -	XX	\$747.00



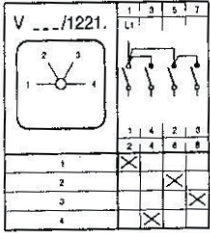
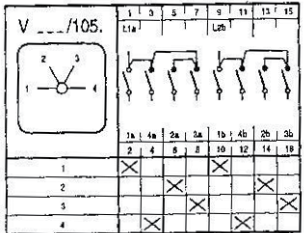
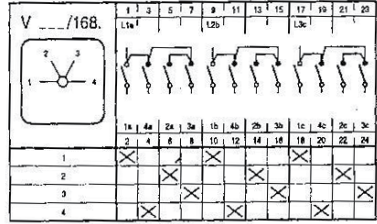
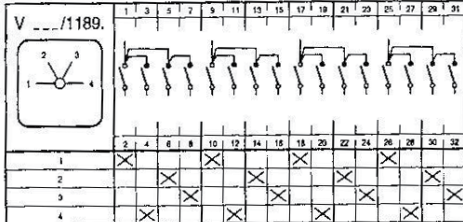
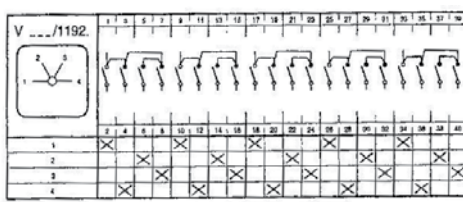
J21

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: STEP SWITCHES WITH NO 0-POSITION 4 STEPS

STEP SWITCHES WITH NO 0-POSITION 4 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/1221 -	XX	\$53.00	
	20	V151/1221 -	XX	\$80.00	
	25	V251/1221 -	XX	\$117.00	
	40	V451/1221 -	XX	\$172.00	
	80	V656/1221 -	XX	\$266.00	
	100	V756/1221 -	XX	\$332.00	
2 Pole	16	V105/105 -	XX	\$83.00	
	20	V151/105 -	XX	\$132.00	
	25	V251/105 -	XX	\$184.00	
	40	V451/105 -	XX	\$272.00	
	80	V656/105 -	XX	\$448.00	
	100	V756/105 -	XX	\$563.00	
3 Pole	16	V105/168 -	XX	\$125.00	
	20	V151/168 -	XX	\$186.00	
	25	V251/168 -	XX	\$251.00	
	40	V451/168 -	XX	\$368.00	
	80	V656/168 -	XX	\$620.00	
	100	V756/168 -	XX	\$791.00	
4 Pole	16	V105/1189 -	XX	\$144.00	
	20	V151/1189 -	XX	\$237.00	
	25	V251/1189 -	XX	\$318.00	
	40	V451/1189 -	XX	\$465.00	
	80	V656/1189 -	XX	\$791.00	
	100	V756/1189 -	XX	\$1021.00	
5 Pole	16	V105/1192 -	XX	\$165.00	
	20	V151/1192 -	XX	\$290.00	
	25	V251/1192 -	XX	\$386.00	
	40	V451/1192 -	XX	\$563.00	
	80	V656/1192 -	XX	\$964.00	
	100	V756/1192 -	XX	\$1255.00	

J22

XX - Replace with Handle Suffix from page J39.

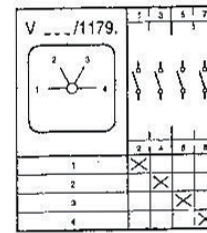
Discount Schedule SC-10

TYPE: STEP SWITCHES WITH NO 0-POSITION 4 STEPS

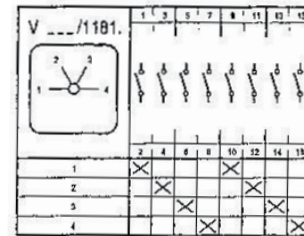
STEP SWITCHES WITH NO 0-POSITION 4 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
6 Pole	16	V105/1194 -	XX	\$205.00	
	20	V151/1194 -	XX	\$342.00	
	25	V251/1194 -	XX	\$452.00	
	40	V451/1194 -	XX	\$658.00	
	80	V656/1194 -	XX	\$1136.00	
	100	V756/1194 -	XX	\$1482.00	

1 Pole Separate Contacts	16	V105/1179 -	XX	\$53.00
	20	V151/1179 -	XX	\$81.00
	25	V251/1179 -	XX	\$117.00
	40	V451/1179 -	XX	\$172.00
	80	V656/1179 -	XX	\$266.00
	100	V756/1179 -	XX	\$332.00



2 Pole Separate Contacts	16	V105/1181 -	XX	\$83.00
	20	V151/1181 -	XX	\$132.00
	25	V251/1181 -	XX	\$185.00
	40	V451/1181 -	XX	\$271.00
	80	V656/1181 -	XX	\$448.00
	100	V756/1181 -	XX	\$563.00



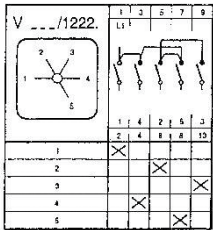
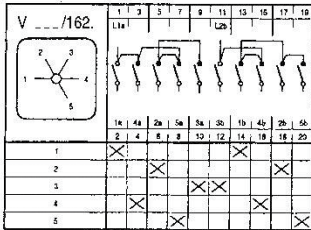
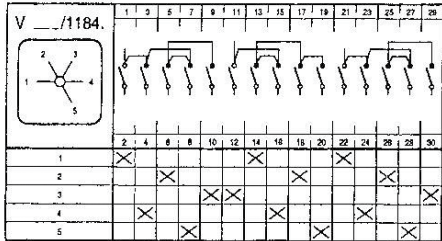
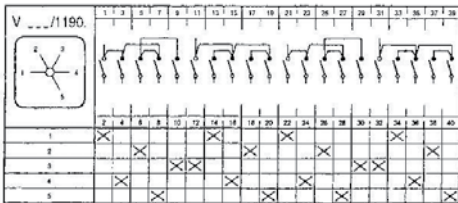
XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

J23

TYPE: STEP SWITCHES WITH NO 0-POSITION 5 STEPS

STEP SWITCHES WITH NO 0-POSITION 5 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/1222 -	XX	\$70.00	
	20	V151/1222 -	XX	\$98.00	
	25	V251/1222 -	XX	\$142.00	
	40	V451/1222 -	XX	\$209.00	
	80	V656/1222 -	XX	\$329.00	
	100	V756/1222 -	XX	\$403.00	
2 Pole	16	V105/162 -	XX	\$107.00	
	20	V151/162 -	XX	\$159.00	
	25	V251/162 -	XX	\$218.00	
	40	V451/162 -	XX	\$320.00	
	80	V656/162 -	XX	\$532.00	
	100	V756/162 -	XX	\$677.00	
3 Pole	16	V105/1184 -	XX	\$140.00	
	20	V151/1184 -	XX	\$229.00	
	25	V251/1184 -	XX	\$308.00	
	40	V451/1184 -	XX	\$449.00	
	80	V656/1184 -	XX	\$761.00	
	100	V756/1184 -	XX	\$978.00	
4 Pole	16	V105/1190 -	XX	\$165.00	
	20	V151/1190 -	XX	\$290.00	
	25	V251/1190 -	XX	\$386.00	
	40	V451/1190 -	XX	\$563.00	
	80	V656/1190 -	XX	\$964.00	
	100	V756/1190 -	XX	\$1255.00	

J24

XX - Replace with Handle Suffix from page J39.

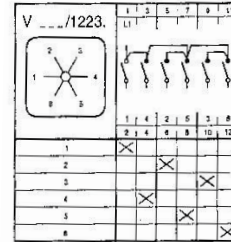
Discount Schedule SC-10

TYPE: STEP SWITCHES WITH NO 0-POSITION 6 STEPS

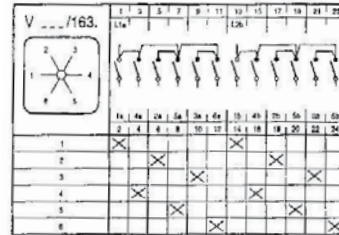
STEP SWITCHES WITH NO 0-POSITION 6 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
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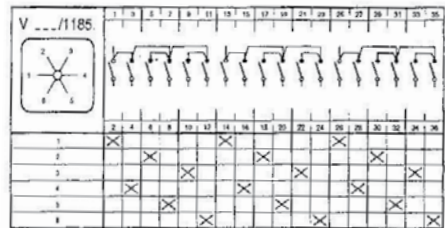
1 Pole	16	V105/1223 -	XX	\$74.00
	20	V151/1223 -	XX	\$106.00
	25	V251/1223 -	XX	\$151.00
	40	V451/1223 -	XX	\$224.00
	80	V656/1223 -	XX	\$361.00
	100	V756/1223 -	XX	\$448.00



2 Pole	16	V105/163 -	XX	\$125.00
	20	V151/163 -	XX	\$186.00
	25	V251/163 -	XX	\$251.00
	40	V451/163 -	XX	\$368.00
	80	V656/163 -	XX	\$620.00
	100	V756/163 -	XX	\$791.00



3 Pole	16	V105/1185 -	XX	\$155.00
	20	V151/1185 -	XX	\$264.00
	25	V251/1185 -	XX	\$352.00
	40	V451/1185 -	XX	\$513.00
	80	V656/1185 -	XX	\$877.00
	100	V756/1185 -	XX	\$1138.00



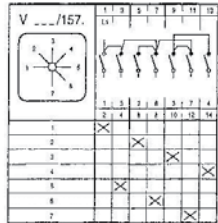
J25

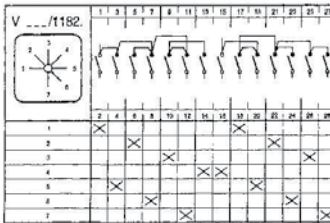
XX - Replace with Handle Suffix from page J39.

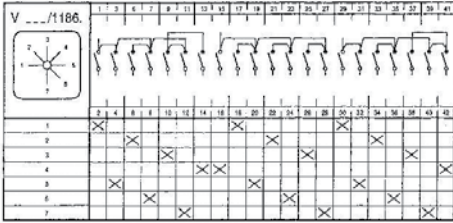
Discount Schedule SC-10

TYPE: STEP SWITCHES WITH NO 0-POSITION 7 STEPS

STEP SWITCHES WITH NO 0-POSITION 7 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/157-	XX	\$80.00	
	20	V151/157 -	XX	\$124.00	
	25	V251/157 -	XX	\$174.00	
	40	V451/157 -	XX	\$257.00	
	80	V656/157 -	XX	\$418.00	
	100	V756/157 -	XX	\$517.00	

2 Pole	16	V105/1182 -	XX	\$135.00	
	20	V151/1182 -	XX	\$211.00	
	25	V251/1182 -	XX	\$285.00	
	40	V451/1182 -	XX	\$415.00	
	80	V656/1182 -	XX	\$705.00	
	100	V756/1182 -	XX	\$908.00	

3 Pole	16	V105/1186 -	XX	\$171.00	
	20	V151/1186 -	XX	\$299.00	
	25	V251/1186 -	XX	\$419.00	
	40	V451/1186 -	XX	\$578.00	
	80	V656/1186-	XX	\$994.00	
	100	V756/1186 -	XX	\$1298.00	

J26

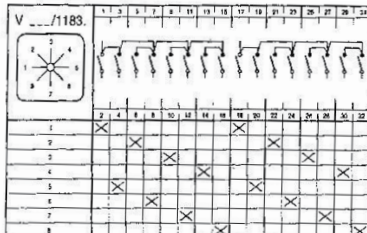
XX - Replace with Handle Suffix from page J39.

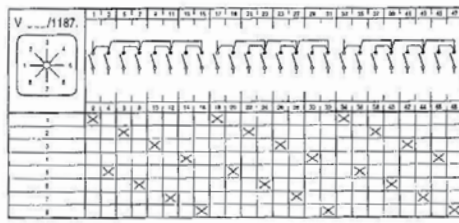
Discount Schedule SC-10

TYPE: STEP SWITCHES WITH NO 0-POSITION 8 STEPS

STEP SWITCHES WITH NO 0-POSITION 8 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/106-	XX	\$83.00	
	20	V151/106 -	XX	\$132.00	
	25	V251/106 -	XX	\$184.00	
	40	V451/106 -	XX	\$272.00	
	80	V656/106 -	XX	\$448.00	
	100	V756/106 -	XX	\$563.00	

2 Pole	16	V105/1183 -	XX	\$144.00	
	20	V151/1183 -	XX	\$237.00	
	25	V251/1183 -	XX	\$318.00	
	40	V451/1183 -	XX	\$464.00	
	80	V656/1183 -	XX	\$791.00	
	100	V756/1183 -	XX	\$1021.00	

3 Pole	16	V105/1187 -	XX	\$205.00	
	20	V151/1187 -	XX	\$342.00	
	25	V251/1187 -	XX	\$452.00	
	40	V451/1187 -	XX	\$658.00	
	80	V656/1187-	XX	\$1136.00	
	100	V756/1187 -	XX	\$1482.00	

J27

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

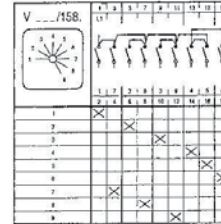
TYPE: STEP SWITCHES WITH NO 0-POSITION 9/10/11 /12 STEPS

STEP SWITCHES WITH NO 0-POSITION 9/10/11/12 STEPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
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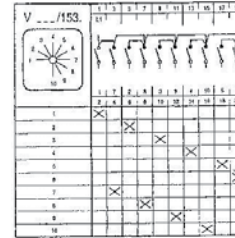
Step Switches without 0-Position - 9 Steps

1 Pole	16	V105/158 -	XX	\$102.00
	20	V151/158 -	XX	\$150.00
	25	V251/158 -	XX	\$207.00
	40	V451/158 -	XX	\$305.00
	80	V656/158 -	XX	\$502.00
	100	V756/158 -	XX	\$633.00



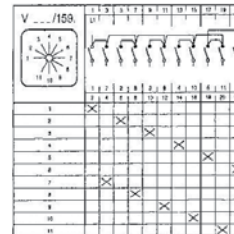
Step Switches without 0-Position - 10 Steps

1 Pole	16	V105/153 -	XX	\$107.00
	20	V151/153 -	XX	\$159.00
	25	V251/153 -	XX	\$218.00
	40	V451/153 -	XX	\$320.00
	80	V656/153 -	XX	\$534.00
	100	V756/153 -	XX	\$677.00



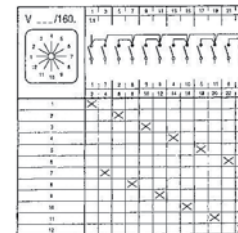
Step Switches without 0-Position - 11 Steps

1 Pole	16	V105/159 -	XX	\$118.00
	20	V151/159 -	XX	\$176.00
	25	V251/159 -	XX	\$240.00
	40	V451/159 -	XX	\$352.00
	80	V656/159 -	XX	\$590.00
	100	V756/159 -	XX	\$747.00



Step Switches without 0-Position - 12 Steps

1 Pole	16	V105/160 -	XX	\$125.00
	20	V151/160 -	XX	\$186.00
	25	V251/160 -	XX	\$251.00
	40	V451/160 -	XX	\$368.00
	80	V656/160 -	XX	\$620.00
	100	V756/160 -	XX	\$791.00



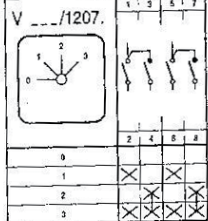
XX - Replace with Handle Suffix from page J39.

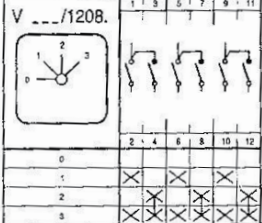
Discount Schedule SC-10

TYPE: GROUP SWITCHES, 2 GROUPS IN SERIES

GROUP SWITCHES, 2 GROUPS IN SERIES

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/1206-	XX	\$43.00	
	20	V151/1206 -	XX	\$59.00	
	25	V251/1206 -	XX	\$80.00	
	40	V451/1206 -	XX	\$110.00	
	80	V656/1206 -	XX	\$161.00	
	100	V756/1206 -	XX	\$220.00	

2 Pole	16	V105/1207 -	XX	\$53.00	
	20	V151/1207 -	XX	\$81.00	
	25	V251/1207-	XX	\$117.00	
	40	V451/1207 -	XX	\$172.00	
	80	V656/1207 -	XX	\$266.00	
	100	V756/1207 -	XX	\$334.00	

3 Pole	16	V105/1208 -	XX	\$74.00	
	20	V151/1208 -	XX	\$107.00	
	25	V251/1208 -	XX	\$152.00	
	40	V451/1208 -	XX	\$223.00	
	80	V656/1208-	XX	\$363.00	
	100	V756/1208 -	XX	\$448.00	

J29

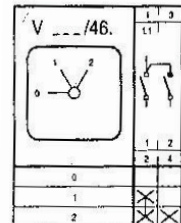
XX - Replace with Handle Suffix from page J39.

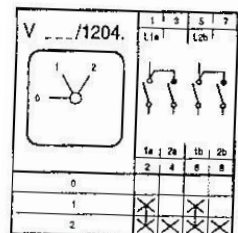
Discount Schedule SC-10

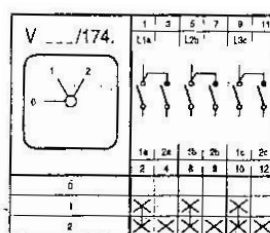
TYPE: GROUP SWITCHES, 2 GROUPS

GROUP SWITCHES, 2 GROUPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
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1 Pole	16	V105/46-	XX	\$43.00	
	20	V151/46 -	XX	\$55.00	
	25	V251/46 -	XX	\$79.00	
	40	V451/46 -	XX	\$110.00	
	80	V656/46 -	XX	\$161.00	
	100	V756/46 -	XX	\$220.00	

2 Pole	16	V105/1204 -	XX	\$53.00	
	20	V151/1204 -	XX	\$81.00	
	25	V251/1204-	XX	\$117.00	
	40	V451/1204 -	XX	\$172.00	
	80	V656/1204 -	XX	\$266.00	
	100	V756/1204 -	XX	\$334.00	

3 Pole	16	V105/174-	XX	\$74.00	
	20	V151/174 -	XX	\$106.00	
	25	V251/174 -	XX	\$151.00	
	40	V451/174 -	XX	\$224.00	
	80	V656/174-	XX	\$363.00	
	100	V756/174 -	XX	\$448.00	

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

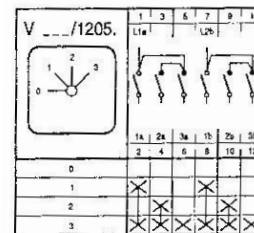
J 30

TYPE: GROUP SWITCHES, 3 GROUPS

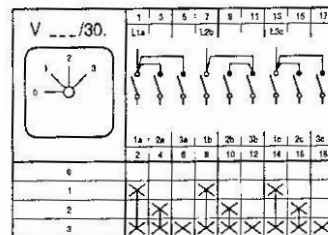
GROUP SWITCHES, 3 GROUPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole	16	V105/38-	XX	\$48.00	
	20	V151/38 -	XX	\$72.00	
	25	V251/38 -	XX	\$104.00	
	40	V451/38 -	XX	\$149.00	
	80	V656/38 -	XX	\$224.00	
	100	V756/38 -	XX	\$277.00	

2 Pole	16	V105/1205 -	XX	\$74.00
	20	V151/1205 -	XX	\$107.00
	25	V251/1205-	XX	\$152.00
	40	V451/1205 -	XX	\$223.00
	80	V656/1205 -	XX	\$363.00
	100	V756/1205 -	XX	\$448.00



3 Pole	16	V105/30-	XX	\$102.00
	20	V151/30 -	XX	\$205.00
	25	V251/30 -	XX	\$305.00
	40	V451/30 -	XX	\$353.00
	80	V656/30-	XX	\$504.00
	100	V756/30 -	XX	\$633.00



J31

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: CODE SWITCHES, BINARY CODE

CODE SWITCHES, BINARY CODE

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
0-7	16	V105/1403-	XX	\$48.00	
	20	V151/1403 -	XX	\$72.00	
	25	V251/1403 -	XX	\$104.00	
0-7 Compliment	16	V105/1404-	XX	\$48.00	
	20	V151/1404 -	XX	\$72.00	
	25	V251/1404 -	XX	\$104.00	
0-7 + Compliment	16	V105/1405-	XX	\$74.00	
	20	V151/1405 -	XX	\$107.00	
	25	V251/1405 -	XX	\$152.00	
0-11	16	V105/1406-	XX	\$53.00	
	20	V151/1406 -	XX	\$81.00	
	25	V251/1406 -	XX	\$117.00	
0-11 Compliment	16	V105/1407-	XX	\$53.00	
	20	V151/1407 -	XX	\$81.00	
	25	V251/1407 -	XX	\$117.00	
0-11 + Compliment	16	V105/1408-	XX	\$84.00	
	20	V151/1408 -	XX	\$132.00	
	25	V251/1408 -	XX	\$185.00	

J 32

XX - Replace with Handle Suffix from page J39.

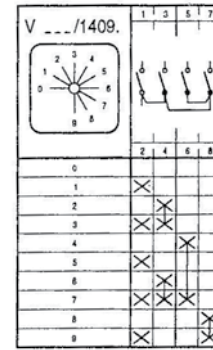
Discount Schedule SC-10

TYPE: CODE SWITCHES, BCD CODE

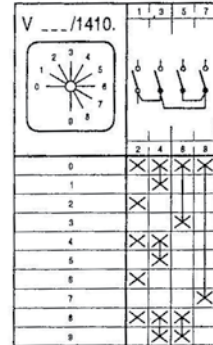
CODE SWITCHES, BCD CODE

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
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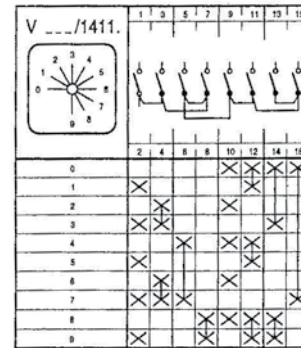
0-9	16	V105/1409-	XX	\$53.00
	20	V151/1409 -	XX	\$81.00
	25	V251/1409 -	XX	\$117.00



0-9 Compliment	16	V105/1410-	XX	\$53.00
	20	V151/1410 -	XX	\$81.00
	25	V251/1410 -	XX	\$117.00



0-9 + Compliment	16	V105/1411-	XX	\$84.00
	20	V151/1411 -	XX	\$132.00
	25	V251/1411 -	XX	\$185.00



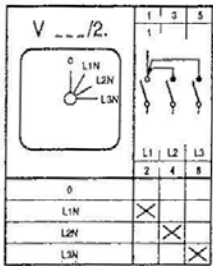
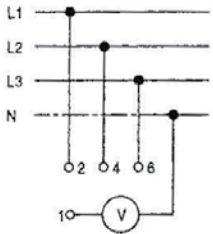
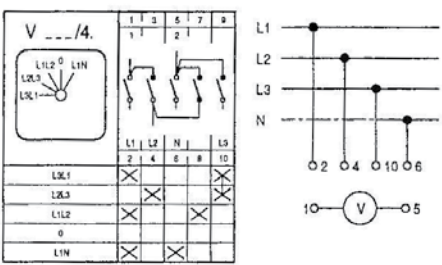
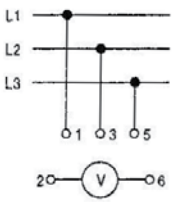
XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

J33

TYPE: VOLTMETER SELECTOR

VOLTMETER SELECTOR

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
3 Phases to N	16	V105/2-	XX	\$48.00	
3 Line Voltages	16	V105/3-	XX	\$53.00	
3 Line Voltages 1 Phase to N	16	V105/4-	XX	\$70.00	
3 Line Voltages 3 Phases to N	16	V105/49-	XX	\$74.00	

J 34

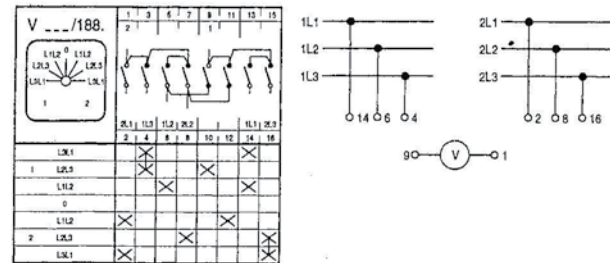
XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

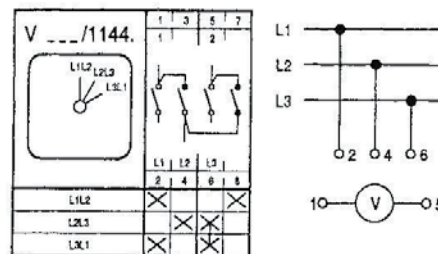
TYPE: VOLTMETER SELECTOR

VOLTMETER SELECTOR

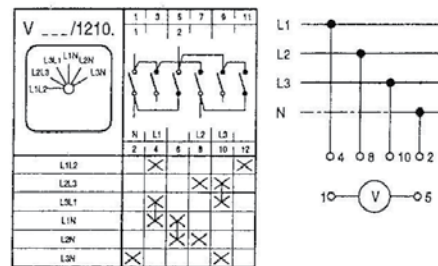
Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
3 Line Voltages for 2 Mains	16	V105/188-	XX	\$83.00	



3 Line Voltages	16	V105/1144-	XX	\$53.00	
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3 Line Voltages 3 Phase to N	16	V105/1210-	XX	\$74.00	
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XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: AMMETER SELECTOR

AMMETER SELECTOR

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole 3 Transformer Circuits	16	V105/147-	XX	\$74.00	<p>Diagram for V105/147- showing a 1-pole selector with 3 transformer circuits. The front plate diagram shows three selector switches (L, K) connected to three lines (L1, L2, L3). The contact diagram shows a grid with terminals 0-3 and 1-11, and a circuit diagram with an ammeter (A) connected to terminal 2.</p>
2 Pole 3 Transformer Circuits	16	V105/1145-	XX	\$107.00	<p>Diagram for V105/1145- showing a 2-pole selector with 3 transformer circuits. The front plate diagram shows three selector switches (L, K) connected to three lines (L1, L2, L3). The contact diagram shows a grid with terminals 0-3 and 1-19, and a circuit diagram with an ammeter (A) connected to terminal 2.</p>
3 Voltages 3 Currents	16	V105/1146-	XX	\$107.00	<p>Diagram for V105/1146- showing a selector with 3 voltages and 3 currents. The front plate diagram shows three selector switches (L, K) connected to three lines (L1, L2, L3). The contact diagram shows a grid with terminals 0-3 and 1-14, and a circuit diagram with a voltmeter (V) and an ammeter (A) connected to terminals 4 and 13 respectively.</p>
1 Pole 3 Transformer Circuits	16	V105/1212-	XX	\$74.00	<p>Diagram for V105/1212- showing a 1-pole selector with 3 transformer circuits. The front plate diagram shows three selector switches (L, K) connected to three lines (L1, L2, L3). The contact diagram shows a grid with terminals 0-3 and 1-11, and a circuit diagram with an ammeter (A) connected to terminal 4.</p>

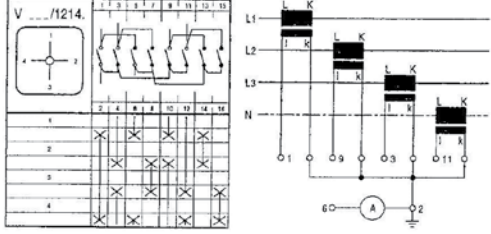
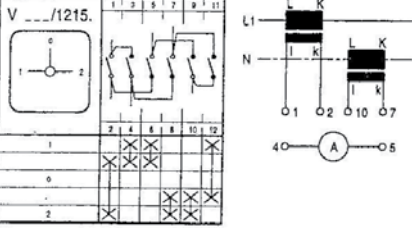
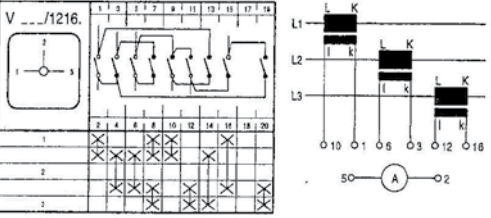
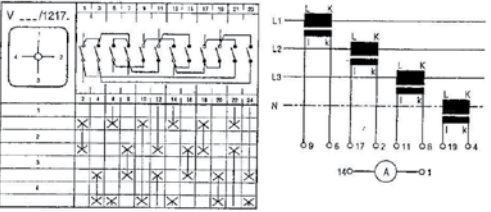
J 36

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: AMMETER SELECTOR

AMMETER SELECTOR

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
1 Pole 4 Transformer Circuits	16	V105/1214-	XX	\$83.00	
2 Pole 2 Transformer Circuits	16	V105/1215-	XX	\$74.00	
2 Pole 3 Transformer Circuit	16	V105/1216-	XX	\$107.00	
2 Pole	16	V105/1217-	XX	\$125.00	

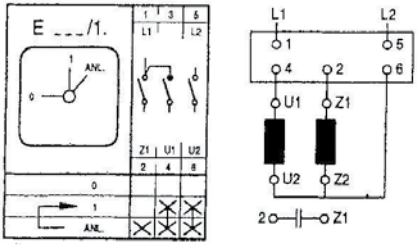
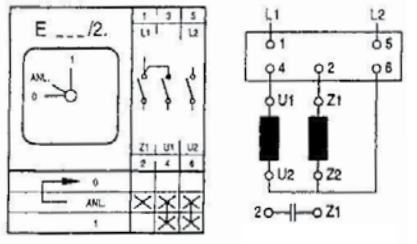
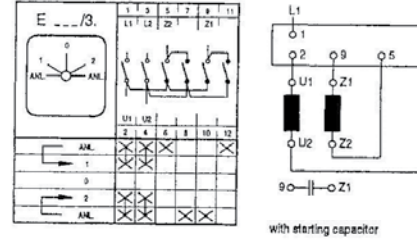
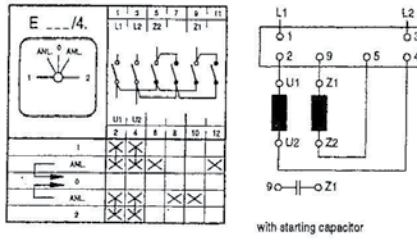
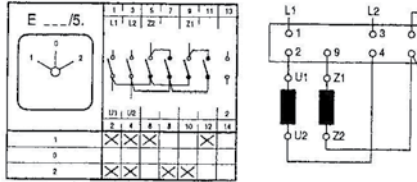
J37

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

TYPE: SINGLE-PHASE STARTER SWITCHES

SINGLE-PHASE STARTER SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code (see pg. J39)	Price	Front Plate / Contact Diagram
With Starter Capacitor	16	E105/1-	XX	\$48.00	 <p>with starting capacitor</p>
	20	E151/1-	XX	\$72.00	
	25	E251/1-	XX	\$104.00	
With Starter Capacitor	20	E151/2-	XX	\$107.00	 <p>with starting capacitor</p>
	25	E251/2-	XX	\$104.00	
2 Reversing	16	E105/3-	XX	\$74.00	 <p>with starting capacitor</p>
	20	E151/3-	XX	\$106.00	
	25	E251/3-	XX	\$152.00	
2 Reversing	20	E151/4-	XX	\$106.00	 <p>with starting capacitor</p>
	25	E251/4-	XX	\$152.00	
With Running Capacitor	16	E105/5-	XX	\$74.00	
	20	E151/5-	XX	\$106.00	
	25	E251/5-	XX	\$152.00	

XX - Replace with Handle Suffix from page J39.

Discount Schedule SC-10

HANDLE & MOUNTING CODE - CAM SWITCHES

- 3 mounting styles available for cam switches (see below).
Replace “XX” suffix from cam part number with letter suffix below. (Example: A251/6-AB, Front Mount 4-hole)
- Standard black lever handle used on all cam switches (custom handles are available on request.)
- Price of switch includes handle and mounting style.
- Cam switches available with enclosure; polycarbonate or aluminum. Consult factory.

Front Mount; 4-hole*



Model / Series	Suffix*
105, 151	AA
251, 451	AB
656, 756	AC

Base Mount; Screw Fixing*



Model / Series	Suffix*
105, 151	PB
251, 451	PC
656, 756	PD

Central Mount; 1-Hole (22.5mm or 30.5mm)*

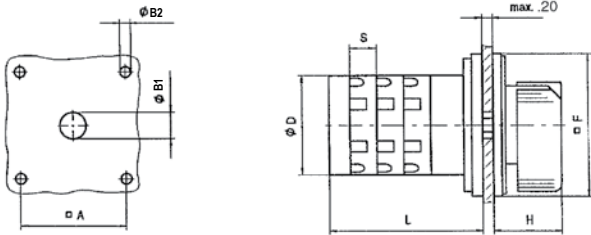


Model / Series	Suffix*
105, 151, 251	CA
451, 656, 756	Not Available

* All cam handles Black/Grey in color. Consult factory for Red/Yellow. See page J40 for dimensions.

HANDLE & MOUNTING DIMENSIONS

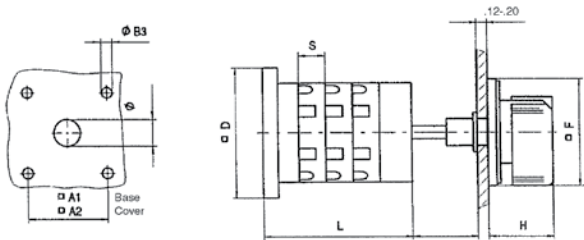
Front Mount; 4-Hole Dimensions



Type	Dimension (Inches)							L By Switch Contacts			
	A	B1	B2	D	F	H	S	1-2	3-4	5-6	7-8
105	1.42	.47	.18	1.73	1.89	1.14	.49	1.34	1.83	2.32	2.81
151	1.42	.47	.18	1.93	1.89	1.14	.49	1.79	2.28	2.78	3.27
251	1.89	.47	.22	2.48	2.52	1.30	.49	1.93	2.42	2.91	3.41
451	1.89	.47	.22	2.83	2.52	1.30	.69	2.13	2.81	3.50	4.19
656	2.68	.59	.22	3.15	3.46	1.38	.63	2.13	2.76	3.39	4.02
756	2.68	.59	.22	3.39	3.46	1.38	1.04	2.52	3.56	4.61	5.65

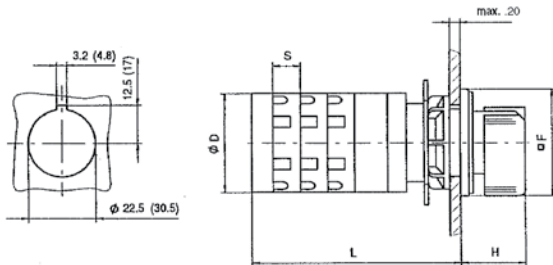
Base Mount; Screw Fixing Dimensions

J40



Type	Dimension (Inches)							L By Switch Contacts			
	A1	A2	B3	D	F	H	S	1-2	3-4	5-6	7-8
105	1.42	1.42	.18	1.73	1.89	1.14	.49	1.34	1.83	2.32	2.81
151	1.89	1.42	.18	2.40	1.89	1.14	.49	1.71	2.20	2.70	3.19
251	1.89	1.89	.20	2.40	2.52	1.30	.49	1.85	2.34	2.83	3.33
451	2.68	1.89	.20	3.62	2.52	1.30	.69	2.05	2.74	3.43	4.11
656	2.68	2.68	.22	3.62	3.46	1.38	.63	2.05	2.68	3.31	3.94
756	2.68	2.68	.22	3.62	3.46	1.38	1.04	2.44	3.48	4.53	5.57

Central Mount; 1 Hole Dimensions (22.5mm or 30.5mm)



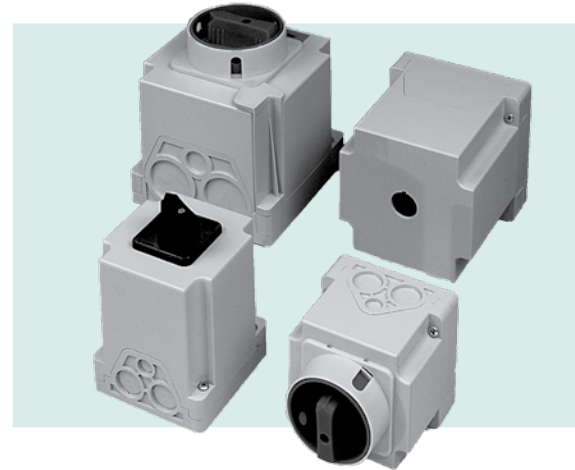
Type	Dimension (Inches)				L By Switch Contacts			
	D	F	H	S	1-2	3-4	5-6	7-8
105	1.73	1.89	1.14	.49	1.89	2.38	2.87	3.37
151	1.93	1.89	1.14	.49	2.70	3.19	3.68	4.17
251	2.48	2.52	1.30	.49	2.83	3.33	3.82	4.31

CAM SWITCH ENCLOSURES

All cam switches can be designated to an enclosure. Enclosures are available in polycarbonate or aluminum cast-iron. Consult factory for pricing of a complete enclosed switch.

Dimensional Data

Dimensions are enclosure only; does not include the handle dimension.



Polycarbonate (IP65 rated)

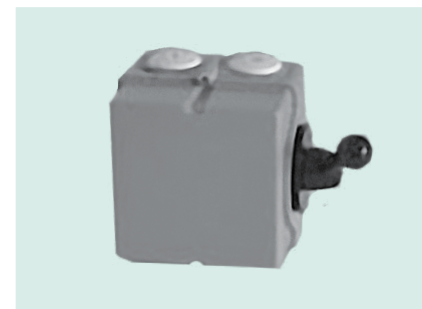
Series	L x W x D (mm)	Mounting Hole to Hole	Enclosure Type
105	90.5 x 90.5 x 73	80 mm	I1 - D - NL4
105	90.5 x 90.5 x 110	80 mm	I1 - D - HL4
151, 251, ML1	115 x 115 x 98	100 mm	I2 - D - NL4
151, 251, ML1	115 x 115 x 125	100 mm	I2 - D - HL4
451, ML2	145 x 145 x 120	130 mm	I3 - D - NL4
451, ML2	145 x 145 x 150	130 mm	I3 - D - HL4
656*, 756*	300 x 300 x 170	271 mm	I7N
656*, 756*	300 x 300 x 214	271 mm	I7H

* Clear polycarbonate cover face

Aluminum Cast-Iron (IP54 rated)

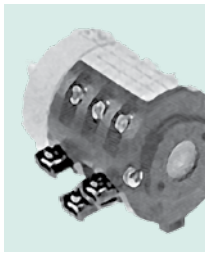
Series	L x W x D (mm)	Mounting Hole to Hole	Enclosure Type
105, 151	105 x 105 x 79	80 mm	A18
151, 251	121 x 121 x 92	80 mm	A19

* Consult factory for additional sizes



CAM SWITCH ACCESSORIES

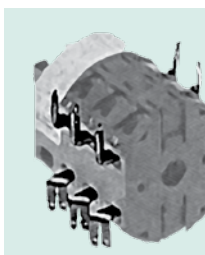
Extension Terminal



Type	Catalog No.	Price
Extension Terminals	AS	*C.F.

* C.F. - Consult Factory items will vary in price according to switch configuration.

Blade Terminal



Type	Catalog No.	Price
Blade Terminals	F	*C.F.

* C.F. - Consult Factory items will vary in price according to switch configuration.

Auxiliaries



Type	Catalog No.	Price
PE Terminals	PE	\$11
N Terminals	N	\$11

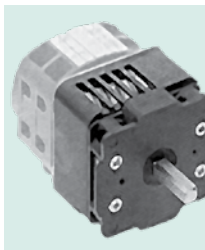
Protection Covers



Type	Catalog No.	Price
Protection Covers	DH	*C.F.

* C.F. - Consult Factory items will vary in price according to switch configuration.

Voltage Release - Loss of Voltage

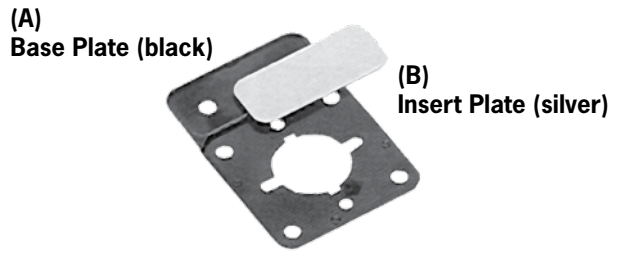


Type	Catalog No.	Price
Voltage Release	U	*C.F.

24V AC, 120V AC, 240V AC

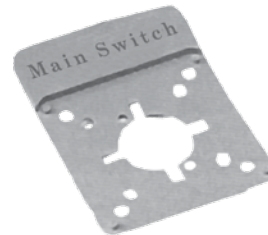
* C.F. - Consult Factory items will vary in price according to switch configuration.

Front Plates For Central 2 & 3 Hole Mounting



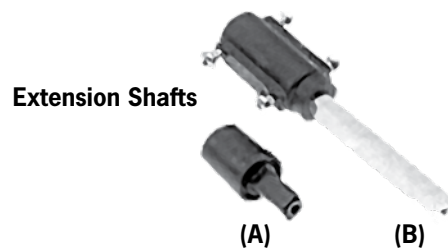
Type	Color	Size	Dimension	Catalog No.	Price
A	Black	0	30 x 51mm	EB91	\$3.00
A	Black	1	48 x 69mm	EB64	\$3.00
B	Silver	0		ES	\$3.00
B	Silver	1		ES1	\$3.00

Front Plates Size 1 & Size 2



Color	Size	Dimension	Catalog No.	Price
Yellow	1	66 x 89mm	MSY	\$8.00
Grey	2	86 x 108mm	MSG	\$8.00

Base & Rear Mounting Up To Series 451



Type	Size	Catalog No.	Price
A	18mm (max. 5 pcs.)	AL18	\$3.00
B	65 - 80mm	AL-65	\$16.00
B	165 - 205mm	AL165	\$19.00
B	265 - 305mm	AL265	\$23.00
B	365 - 405mm	AL365	\$31.00

Discount Schedule SC-10

SPECIAL ORDER FORM

Name: _____

Company: _____

P.O. Box: _____

Street Address: _____

City, State, Zip _____

Telephone # _____

Fax # _____

e-mail address _____

send to:

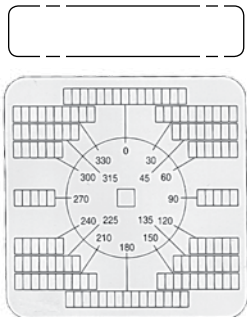
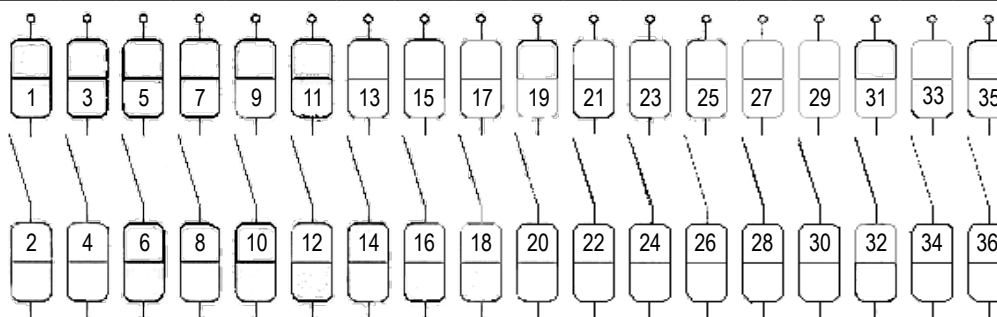
Springer Controls Co., Inc.

96074 Chester Road
Yulee, Florida 32097

Phone: (904) 225-0575

Fax: (904) 225-9084

www.SpringerControls.com

Front Plate 																	
Switching Angle	<input type="radio"/> Complete <input type="checkbox"/> Rotation																
Switch Position Marking	Degree																
<input checked="" type="checkbox"/> Key Removable <input type="checkbox"/> Spring Return		<input checked="" type="checkbox"/> Contact Closed				<input checked="" type="checkbox"/> Contact Closed Without Interruption				<input checked="" type="checkbox"/> Wiping Contact							
Series:		Accessories:															
Application:																	
Quantity:																	
Date:	Writer:	Factory Type:								Factory Order No.:							

J43



NOTES

HAZARDOUS LOCATION SWITCHES



SPRINGER
controls company

Springer Controls hazardous location switches, also known as oil immersed switches, are designed to provide dependable, heavy duty performance in indoor or outdoor locations; specifically where atmospheric conditions are dusty, corrosive or hazardous. Their positive action and heavy-duty construction make them suitable for the most rugged application. They are dependable under the most extreme operating conditions.

HAZARDOUS LOCATION / OIL IMMERSED SWITCHES

Description / Features.....	K2
Specifications.....	K3
Model # & Pricing.....	K4, K5
Accessories.....	K6, K7
Dimensions.....	K8

Index
K

DESCRIPTION / FEATURES



2080-ZQ11

Description

Springer Controls hazardous location switches, also known as oil immersed switches, are designed to provide dependable heavy duty performance in indoor or outdoor locations; specifically where atmospheric conditions are dusty, corrosive or hazardous. Their positive action and heavy-duty construction make them suitable for the most rugged application. They are dependable under the most extreme operating conditions.

Features

Typical applications include: oil refineries, chemical plants, textile mills, paper mills, steel mills, food processing and any area where corrosive or hazardous conditions exist.

The standard enclosure consists of heavily constructed cast iron top and tank - a functional design that facilitates installation and provides a dust-tight, weather-resistant lever operator. The top casting has a provision to lock the operating lever in either the "on" or "off" position.

The operating mechanism consists of heavy duty contacts, a molded phenolic mounting panel and push-rod, wing-type cast iron operating lever, monel shaft, stainless steel bushings and washers.

All operator stations are designed with maximum flexibility of contact arrangement and access to operating parts for easy installation, maintenance and inspection.


The control of corrosion from atmospheric conditions and the elimination of exposed arcs are accomplished by the immersion of all operating parts in oil. The Type 675 has the Underwriters Laboratory (UL) approval for Hazardous Location, File #184636.



2080-AF8-1

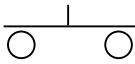
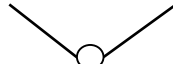
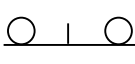
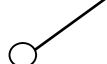
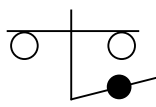
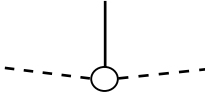
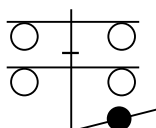
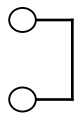
K2

Specifications

Type 675		Type 604
Type 675 Hazardous Locations Nema 3R, 7, 8, 9 Class I, Group B, C, D Class II, Group E, F, G		Type 604 Watertight, Corrosion Proof Nema 3, 4, 11, 12 Class I, Group D, Div. 2
Specifications		
	675 Dim. 1	604 Dim. 1
Approx. Ship wt. Lbs.	18lb	17lb
Oil ¹ Capacity Qts.	1	1
Hub Size (Two / Unit)	3/4"	3/4"
Dia. Mounting Holes	3/8"	3/8"
¹ All units shipped less oil		
Contact Rating - AC Air or Oil - NEMA A600		
6 Amps - 120V		Recommended switch oil or transformer oil is Chevron "Univolt N61". (Not provided with switch)
3 Amps - 240V		
1.5 Amps - 480V		
1.2 Amps - 600V		

K3

Contact Configuration - Handle Lever Style

	Indicates momentary make; spring return		Indicates common double lever
	Indicates momentary break; spring return		Indicates single lever
	Indicates maintained contact		Indicates 3 position selector
	Indicates maintained contact; two circuit		Indicates removable

MODEL # AND PRICING


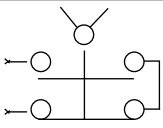
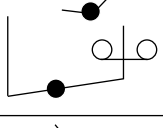
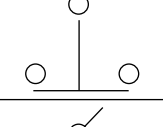
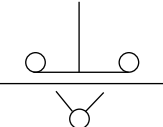
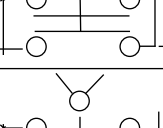
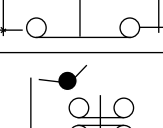
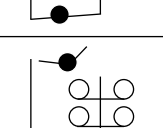
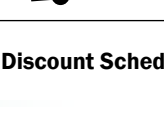


Springer Controls line of corrosive-hazardous location operators stations offer heavy duty construction and positive contact action. Internal contact assemblies are identical in each type of station.

Approved enclosures for Springer Controls Push Buttons are:
 Type 604 - designed for use in NEMA 3, 4, 11, and 12.
 Type 675 - designed for use in NEMA 3R, 7, 8, and 9.


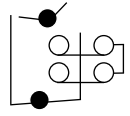
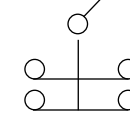
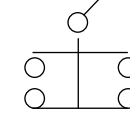
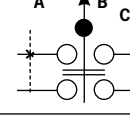
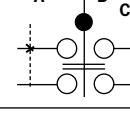
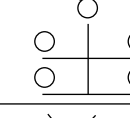
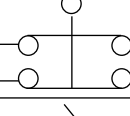
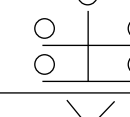
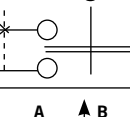
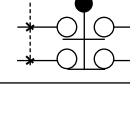
For maximum protection against corrosion and elimination of exposed arcs, switch oil is recommended.

All **Type 675** stations are **UL** Listed and **cUL** Listed

NEMA 3R, 7, 8, 9 Type 675 		NEMA 3, 4, 11, 12 Type 604		Contact Arrangement	
2080-AF8	\$1085.00	2080-AF11	\$879.00	1 N.O. - 1 N.C. Momentary	
2080-B8	\$1062.00	2080-B11	\$856.00	1 N.C. Maintained	
2080C8	\$1104.00	2080-C11	\$903.00	1 N.O. Momentary	
2080-D8	\$1104.00	2080-D11	\$903.00	1 N.C. Momentary	
2080-E8	\$1104.00	2080-E11	\$903.00	2 N.O. Momentary	
2080-F8	\$1104.00	2080-F11	\$903.00	1 N.O. - 1 N.C. Momentary	
2080-I8	\$1104.00	2080-I11	\$903.00	1 N.O. - 1 N.C. Maintained	
2080-J8	\$1104.00	2080-J11	\$903.00	2 N.C. Maintained	

Discount Schedule SC-81

MODEL # AND PRICING

NEMA 3R, 7, 8, 9 Type 675		NEMA 3, 4, 11, 12 Type 604	Contact Arrangement		
2080-R8	\$1197	2080-R11	\$974.00	2 N.C. Maintained	
2080-S8	\$1163.00	2080-S11	\$974.00	2 N.C. Momentary	
2080-T8	\$1146.00	2080-T11	\$940.00	1 N.O. - 1 N.C. Momentary	
2080-TY8 (not UL)	\$1862.00	2080-TY11	\$1159.00	Sel. Sw.; Left Spring Return, Maintained Right	
2080-VV8	\$1293.00	2080-VV11	\$1054.00	Sel. Sw; Maintained Left, Center Right	
2080-WL8	\$1184.00	2080-WL11	\$987.00	2 N.O. Momentary	
2080-WS8	\$1184.00	2080-WS11	\$987.00	2 N.C. Momentary	
2080-Y08	\$1148.00	2080-Y011	\$951.00	2 N.O. Momentary	
2080-YT8	\$1092.00	2080-YT11	\$886.00	2 N.O. Momentary	
2080-ZQ8	\$1104.00	2080-ZQ11	\$903.00	Sel. Sw.; Left Spring Return, Maintained Right	

K5

Discount Schedule SC-81

ACCESSORIES

Springer Controls can help you meet any requirement. Our custom built stations include special maintained and momentary contact arrangements, lever guards and special conduit hubs. Custom nameplate kits available as well.

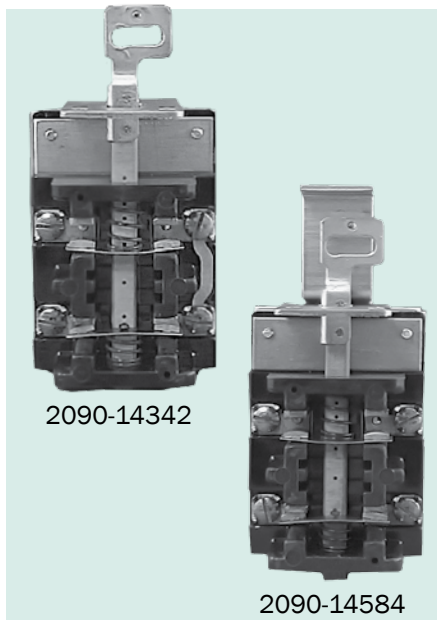
Custom Build - Suffix

Add the "catalog-suffix" to the switch part number to obtain factory built modifications.

ie. 2080-ZQ8-1...
Complete unit with operating lever guard installed

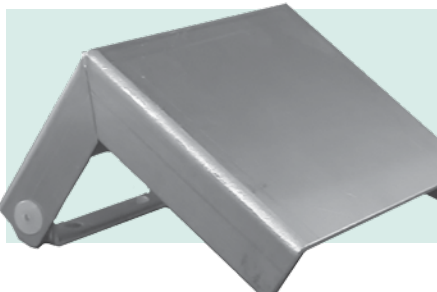
Factory Modification		Cat. Suffix	Price
Operating Lever Guard	LG 1	-1	\$84.00
Optional Hubs	1 Inch	-3	\$105.00
Optional Hubs	1 1/4 Inch	-4	\$168.00

Contact Assemblies (Type 2080-604 & 2080-675)



Replacement Parts	Catalog No.	Price
Switch Rod	2090-14309	\$197.00
Push Button Contact Assembly - AF	2090-14342	\$273.00
Push Button Contact Assembly - B	2090-14440	\$273.00
Push Button Contact Assembly - C	2090-14441	\$273.00
Push Button Contact Assembly - D	2090-14442	\$273.00
Push Button Contact Assembly - I	2090-14567	\$273.00
Push Button Contact Assembly - ZQ	2090-14584	\$394.00
Push Button Contact Assembly - J	2090-14829	\$338.00
Push Button Contact Assembly - VV	2090-17574	\$478.00
Push Button Contact Assembly - TO	2090-24482	\$781.00
Push Button Contact Assembly - TY	2090-14522	\$583.00

Field Kit: Operating Lever Guard



Accessories and Parts	Catalog No.	Price
Lever Guard - Single Tank	2080-LG1	\$84.00

Discount Schedule SC-81

Standard Nameplate Kits *(includes the rivets for field installation)*

● **HANDS-OFF-AUTO** ●

2080-N5

Nameplate specs.

Width: 3/8"

Length: 3.25"

Hole Ø: 1/8" (Two holes)



2080-ZQ11
with 2080-N5 Nameplate

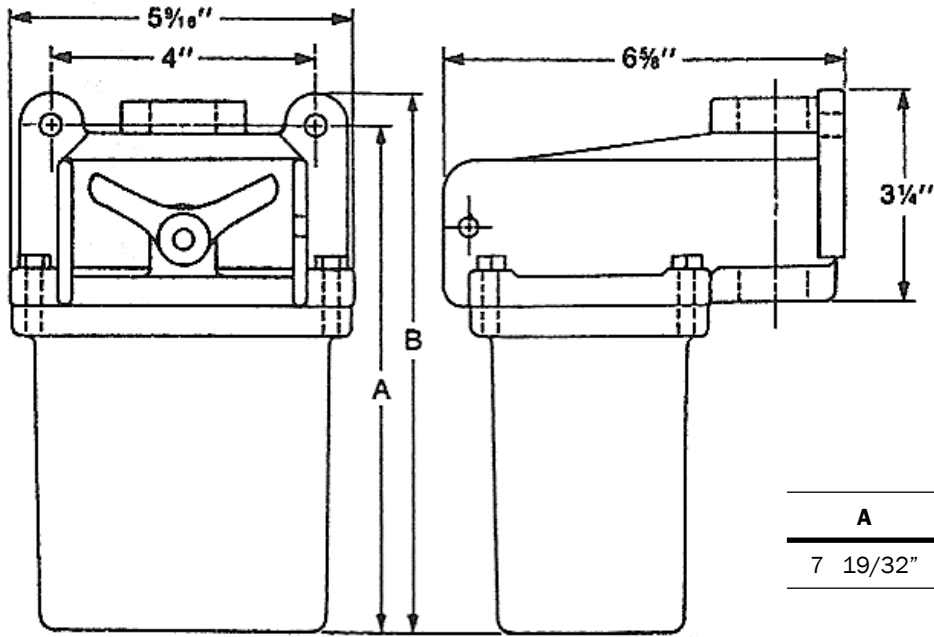
Nameplate	Catalog No.	Price
Nameplate "Start-Stop"	2080-N1	\$29.00
Nameplate "Start"	2080-N2	\$29.00
Nameplate "Stop"	2080-N3	\$29.00
Nameplate "Reset"	2080-N4	\$29.00
Nameplate "Hands-Off-Auto"	2080-N5	\$29.00
Nameplate "Automatic"	2080-N6	\$29.00
Nameplate "Down"	2080-N7	\$29.00
Nameplate "Emergency"	2080-N8	\$29.00
Nameplate "Fast-Off-Slow"	2080-N9	\$29.00
Nameplate "Forward-Off-Reverse"	2080-N10	\$29.00
Nameplate "Hand"	2080-N11	\$29.00
Nameplate "Hand-Auto-Off"	2080-N12	\$29.00
Nameplate "Reset-Stop-Start"	2080-N13	\$29.00
Nameplate "Jog"	2080-N14	\$29.00
Nameplate "Tower"	2080-N15	\$29.00
Nameplate "Off"	2080-N16	\$29.00
Nameplate "On"	2080-N17	\$29.00
Nameplate "Open"	2080-N18	\$29.00
Nameplate "Raise"	2080-N19	\$29.00
Nameplate "Reverse"	2080-N20	\$29.00
Nameplate "Run"	2080-N21	\$29.00
Nameplate "Start-On-Off"	2080-N22	\$29.00
Nameplate "Start-Run-Stop"	2080-N23	\$29.00
Nameplate "Test"	2080-N24	\$29.00
Nameplate "Up"	2080-N25	\$29.00
Nameplate "Trip"	2080-N26	\$29.00
Nameplate "Manual-Off-Auto"	2080-N27	\$29.00
Nameplate "Slow-Fast"	2080-N28	\$29.00
Nameplate "Run-Stop"	2080-N29	\$29.00
Nameplate "ON-Off"	2080-N30	\$29.00
Nameplate "Jog-Auto-Off"	2080-N31	\$29.00
Nameplate "Jog-Off-Auto"	2080-N32	\$29.00
Nameplate "Start-Auto-Off"	2080-N33	\$29.00
Nameplate "Fire-Shunt"	2080-N34	\$29.00

K7

Discount Schedule SC-81

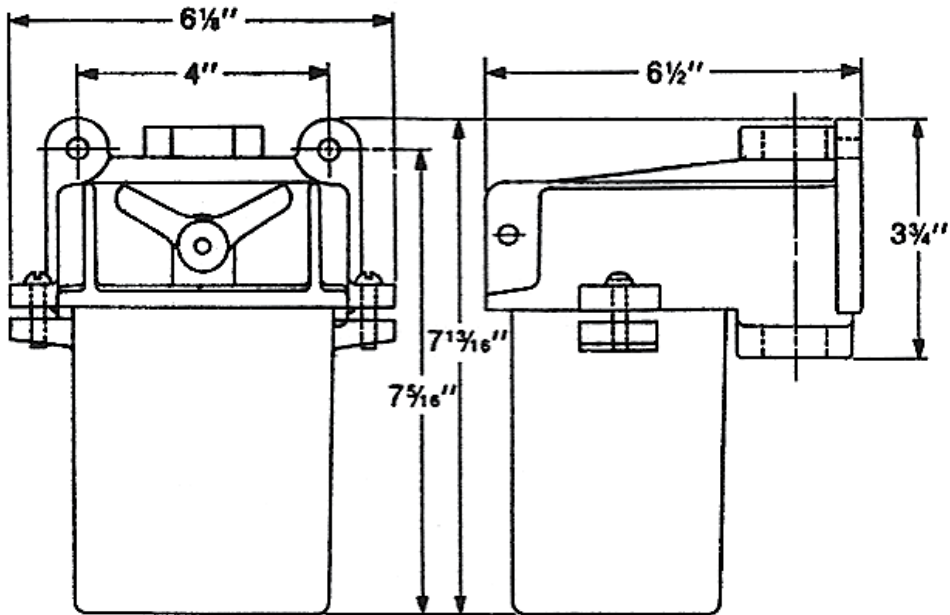
DIMENSIONS

Type 675



K8

Type 604



CIRCUIT BREAKERS



SPRINGER
controls company

Springer Controls carries a complete line of Techna Miniature Circuit Breakers rated from 0.5 amps through 63.0 amps. Applications include usage in UL508A panels, motor group installations, motor disconnects or whenever a circuit breaker is required in power or control circuitry.

CIRCUIT BREAKERS

Jtec UL (Motor Disconnect)

General Information	L2
Trip Curves & Dimensions	L3

Jtec 489 (Branch Circuit Protection)

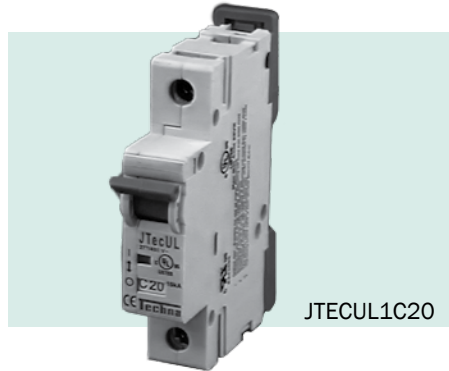
General Information	L4
Trip Curves & Dimensions	L5

Accessories	L6
Technical Data	L7

JtecUL MOTOR DISCONNECT

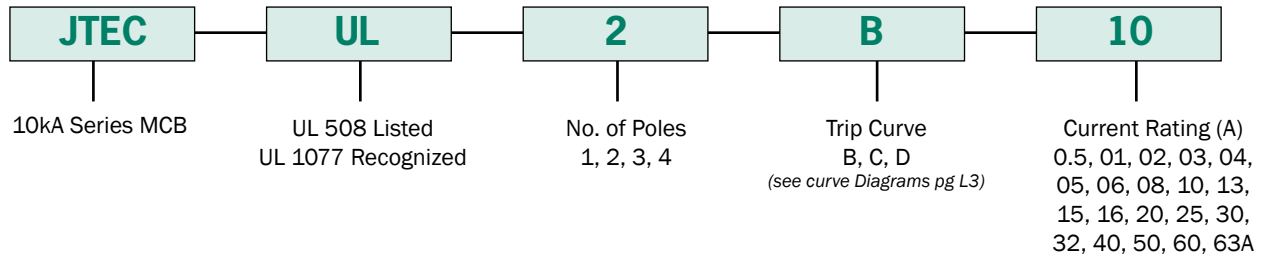
Springer Controls carries a complete line of Techna Miniature Circuit Breakers rated from 0.5 amps through 63.0 amps. Applications include usage in UL508A panels, motor group installations, motor disconnects or whenever a circuit breaker is required in power or control circuitry.

JtecUL - General Information



- 0.5 amp through 63.0 amps
- Rated as a manual motor controller switch suitable for motor disconnect. Separate switch not required.
- UL 1077 recognized, UL 508 listed
- 10kA, 480Y / 277 VAC
- 1,2,3,4 Poles

JtecUL Nomenclature



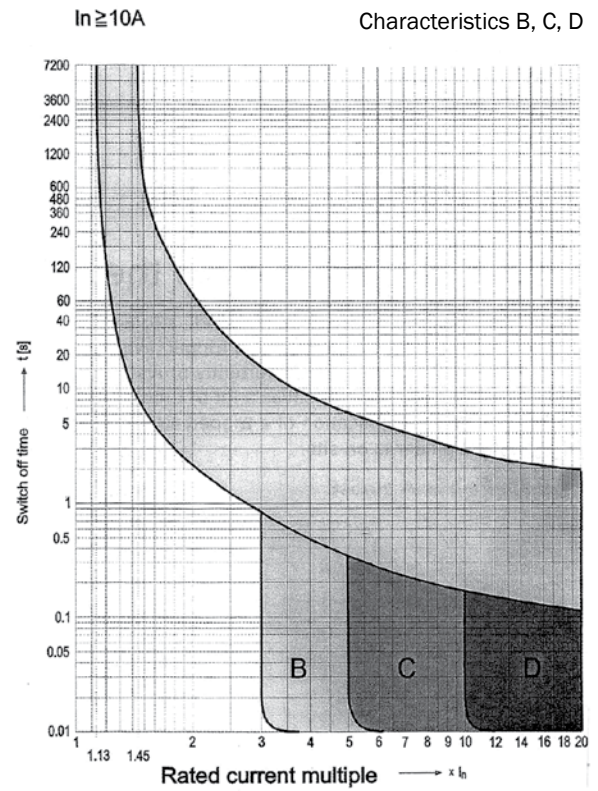
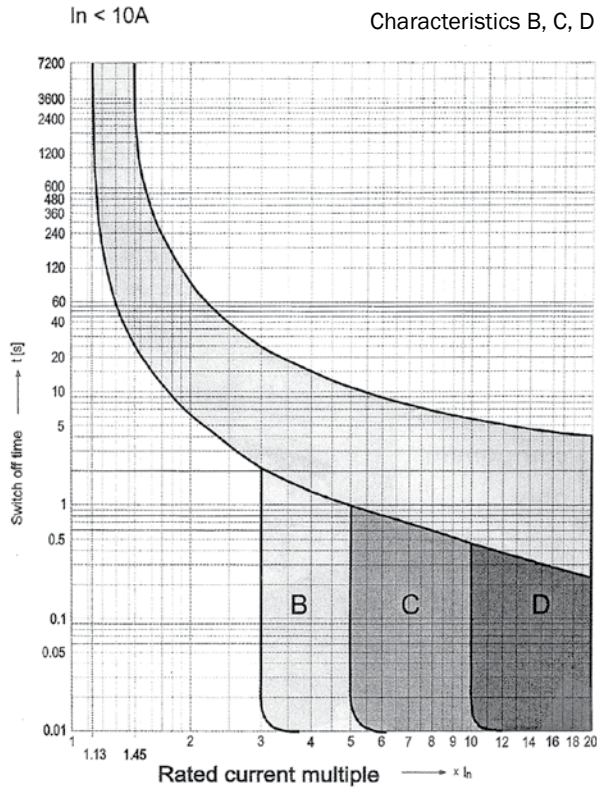
JtecUL Part # and Pricing

		Model No.	0.5 - 32amp Price	40 - 63amp Price
1-Pole	Curve B	JTECUL1B*	\$18.00	\$20.00
	Curve C	JTECUL1C*	\$18.00	\$20.00
	Curve D	JTECUL1D*	\$21.00	\$22.00
2-Pole	Curve B	JTECUL2B*	\$42.00	\$46.00
	Curve C	JTECUL2C*	\$42.00	\$46.00
	Curve D	JTECUL2D*	\$46.00	\$52.00
3-Pole	Curve B	JTECUL3B*	\$67.00	\$72.00
	Curve C	JTECUL3C*	\$67.00	\$72.00
	Curve D	JTECUL3D*	\$74.00	\$78.00
4-Pole	Curve B	JTECUL4B*	\$147.00	\$147.00
	Curve C	JTECUL4C*	\$147.00	\$147.00
	Curve D	JTECUL4D*	\$147.00	\$147.00

* Amps.= 0.5, 1, 2, 3, 4, 5, 6, 8, 10, 13, 15, 16, 20, 25, 30, 32, 40, 50, 60, 63A
(see curve diagram on page L3 for selection)

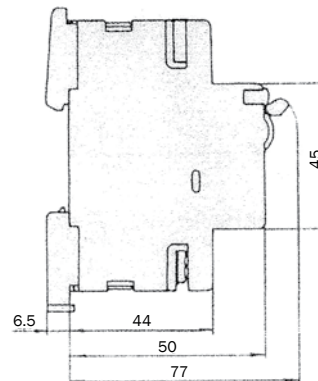
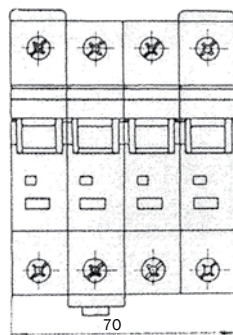
Discount Schedule SC-45

JtecUL Trip Curves



B= Shorter Trip, C= Medium Trip, D= Longer Trip

JtecUL Dimensions (mm)



JTEC 489; BRANCH CIRCUIT PROTECTION

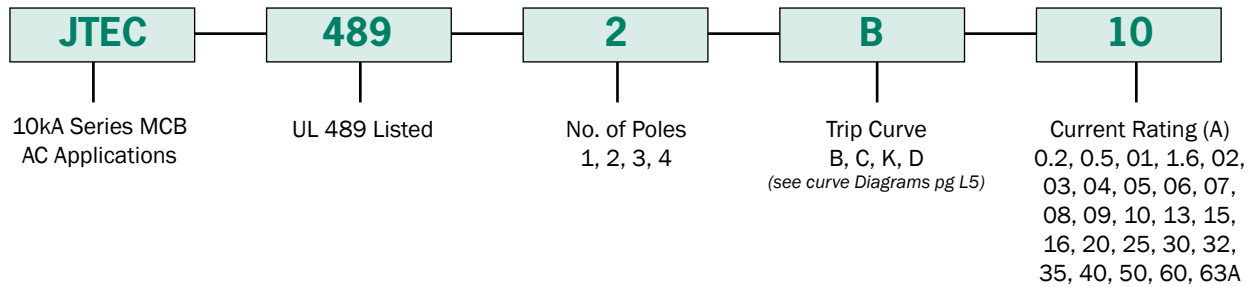
Jtec 489 - General Information



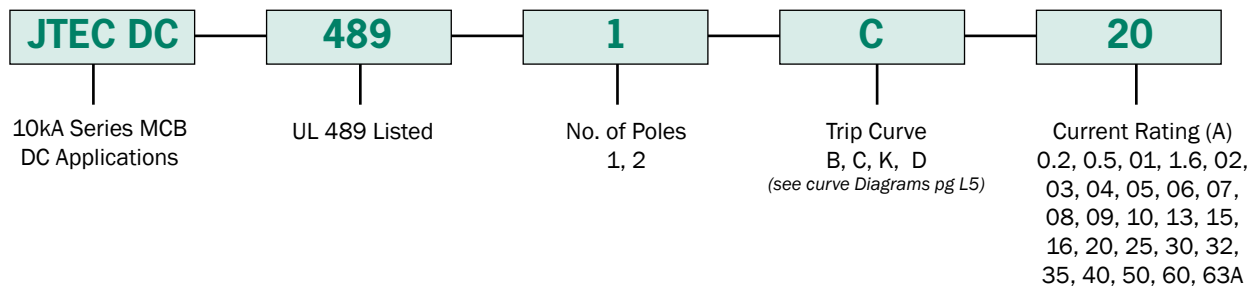
- 0.2 amp through 63.0 amps
- Rated as a branch circuit breaker able to be used to protect a branch circuit without a backup device.
- UL 489 listed
- 10kA, 480Y/277 VAC (up to 32 amps); 240 VAC (33 to 63 amps)
10kA, 125 VDC 1 pole; 250VDC 2 poles
- 1,2,3,4 Poles (AC); 1, 2 Poles (DC)

JTEC 489 Nomenclature

Ordering Code - AC



Ordering Code - DC



* special current ratings available on request

Jtec 489 Part # and Pricing

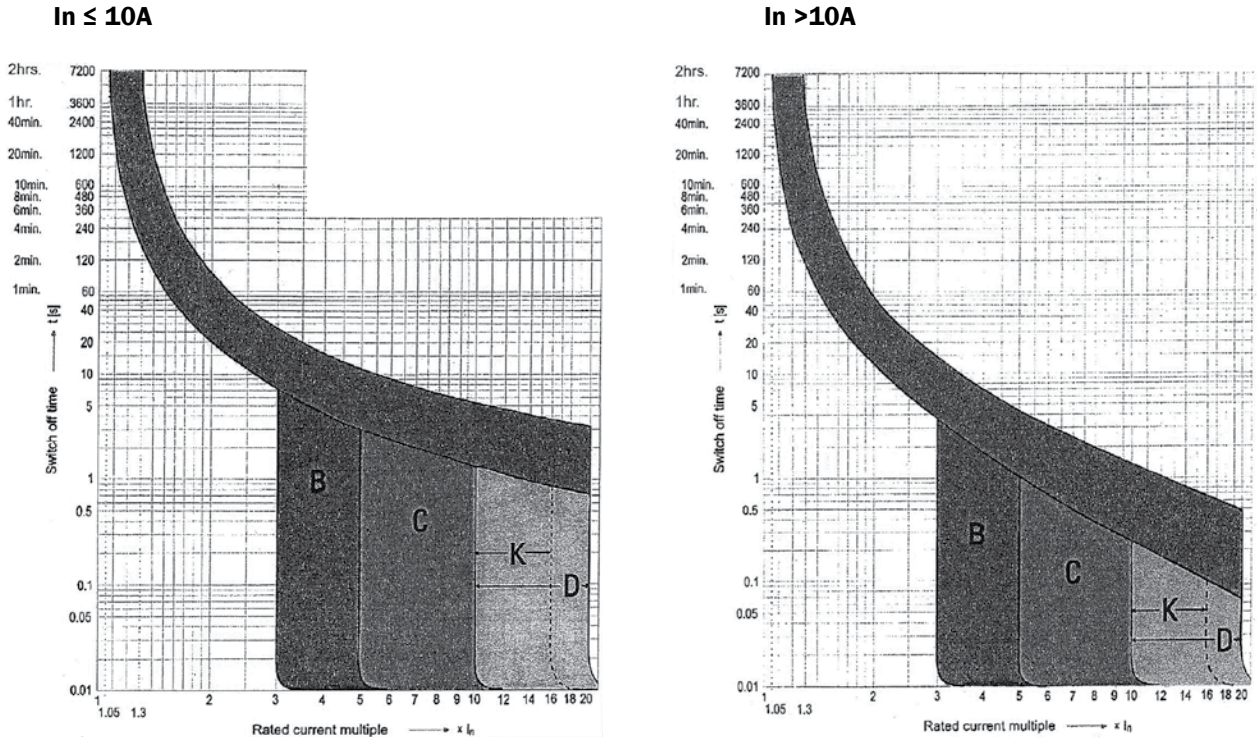
		Model No.	0.5 - 32amp Price	40 - 63amp Price
1-Pole	Curve B, C, K, D	JTEC489-1#*	\$41.00	\$45.00
2-Pole	Curve B, C, K, D	JTEC489-2#*	\$82.00	\$93.00
3-Pole	Curve B, C, K, D	JTEC489-3#*	\$122.00	\$134.00
4-Pole	Curve B, C, K, D	JTEC489-4#*	\$204.00	\$225.00

- Curve = **B - Quick**, **C - Medium**, **K - Motor**, **D - Long**

* Amps.= 0.2, 0.5, 1, 1.6, 2, 3, 4, 5, 6, 8, 10, 13, 15, 16, 20, 25, 30, 32, 40, 50, 60, 63A
(see curve diagram on page L5)

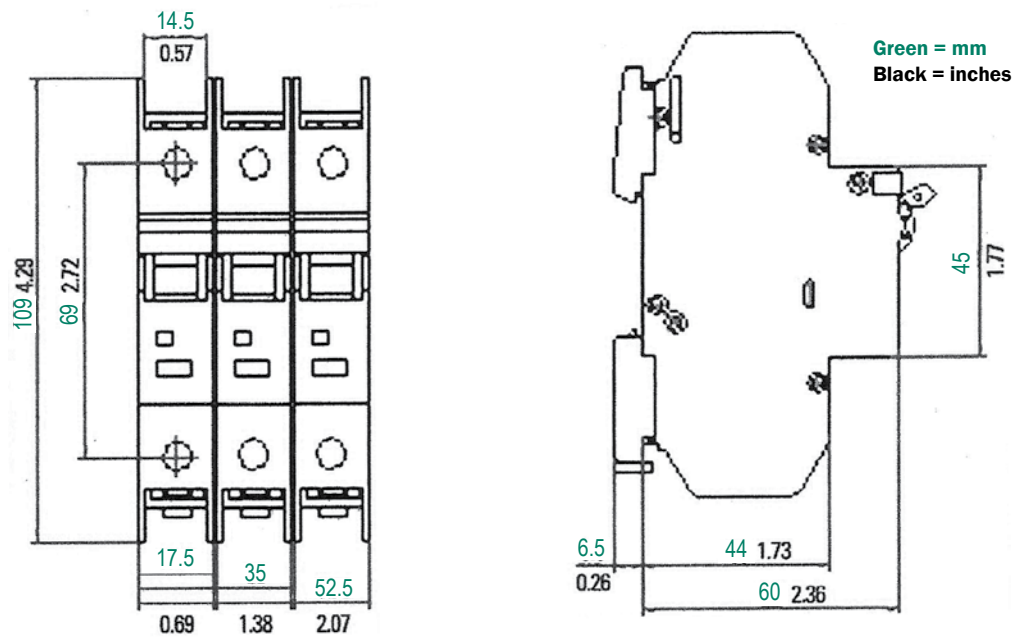
Discount Schedule SC-45

Jtec 489 Trip Curves

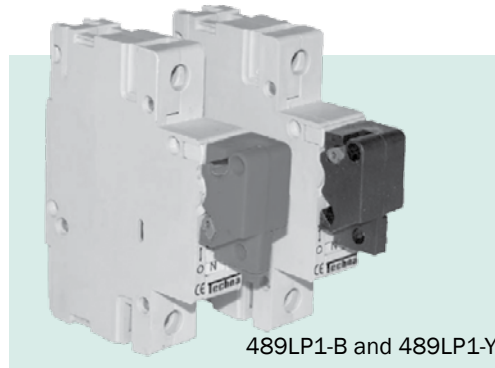
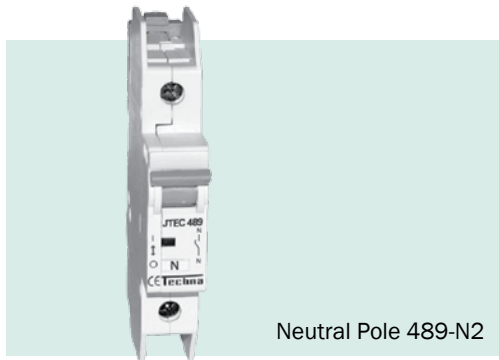


B= Short Trip, C= Medium Trip, K= Motor Trip, D= Longer Trip

Jtec 489 Dimensions



Accessories for JtecUL and Jtec 489



Description	JTEC UL Catalog No.	Price	JTEC 489 Catalog No.	Price
Auxiliary & Single Contacts:				
1 Changeover	JTECULAUX1CO	\$40.00	JTEC489AUX1CO	\$40.00
2 Changeover	JTECULAUX2CO	\$46.00	JTEC489AUX2CO	\$46.00
1 Changeover + 1 Signal Changeover	JTECULAUXSCO	\$48.00	JTEC489AUXSCO	\$48.00
1 Changeover + 1 Signal + Test Button	JTECULAUXSTCO	\$48.00	JTEC489AUXSTCO	\$48.00
Neutral Pole	JTECN2	\$36.00	JTECN2	\$36.00

Shunt - Trip - Release

12V - AC	JTECULST12AC	\$60.00	JTEC489ST12AC	\$60.00
24V - AC	JTECULST24AC	\$60.00	JTEC489ST24AC	\$60.00
48V - AC	JTECULST48AC	\$60.00	JTEC489ST48AC	\$60.00
60V - AC	JTECULST60AC	\$60.00	JTEC489ST60AC	\$60.00
110V - AC	JTECULST110AC	\$60.00	JTEC489ST110AC	\$60.00
120V - AC	JTECULST120AC	\$60.00	JTEC489ST120AC	\$60.00
230V - AC	JTECULST230AC	\$60.00	JTEC489ST230AC	\$60.00
277V - AC	JTECULST277AC	\$60.00	JTEC489ST277AC	\$60.00
400V - AC	JTECULST400AC	\$60.00	JTEC489ST400AC	\$60.00
12V - DC	JTECULST12DC	\$60.00	JTEC489ST12DC	\$60.00
24V - DC	JTECULST24DC	\$60.00	JTEC489ST24DC	\$60.00
48V - DC	JTECULST48DC	\$60.00	JTEC489ST48DC	\$60.00
110V - DC	JTECULST110DC	\$60.00	JTEC489ST110DC	\$60.00

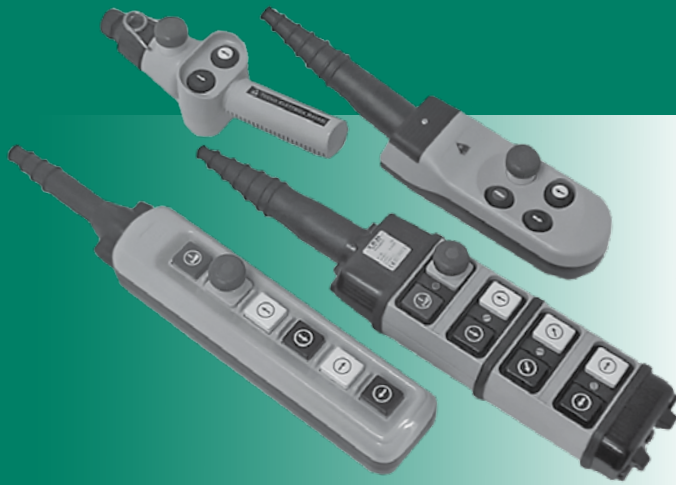
(Consult factory for under voltage release)

Discount Schedule SC-45

Technical Data for JTECUL and JTEC489

	Jtec UL		Jtec 489	
Current Ratings (A)	0.5, 1, 2, 3, 4, 6, 8, 10, 13, 16, 20, 25, 32, 40, 50, 60, 63A		0.2, 0.5, 1.0, 1.6, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 20, 25, 30, 32, 35, 40, 50, 60, 63A	
Number of Poles	1, 2, 3, 4, I+N, 3+N		1, 2, 3, 4, I+N, 3+N	
Trip Curves	B, C, D		B, C, K, D	
Rated Voltage	230/400V AC 277/480V AC 600V AC	(EN60898) (UL1077/508) (UL1077/508)	230/400V AC 480Y/277V AC 240V AC	(EN60898) (UL489, up to 32A) (UL489, up to 63A)
Rated Frequency	50/60 Hz		50/60 Hz	
Short Circuit Capacity	10kA		10kA	
UL Interrupt Rating	5kA (No back-up) 10kA (With back-up fuse)		10kA	
Electrical Life	6000 cycles on/off		6000 cycles on/off	
Mechanical Life	100,000 cycles on/off		100,000 cycles on/off	
Protection Degree	IP20 at Front		IP20 at Front	
Ambient Temp. Range	-13°F - 140°F		-13°F - 140°F	
Operational Position	In any Plane		In any Plane	
Compliance Standards	UL1077 / UL508 EN60898		UL489 / UL489A EN60898 / EN60947-2	
Vibration Resistance	3g (8 - 50 Hz)		3g (8 - 50 Hz)	
Resistance to Thermal Shocks	284°F		284°F	
Tighting Torque	(min) (max)	13 lb/inch 17.5 lb/inch	13 lb/inch 17.5 lb/inch	

PENDANT STATIONS



Springer Controls is the North American distributor for the Italian based company Tecno Elettrica Ravasi®. T.E.R. is a world leader in the manufacturing of Crane & Hoist Controls. We offer 4 models of pendant stations. Each offers outstanding quality, versatile designs, and rugged dependability. All pendant models can be custom made to fit your specifications.

PENDANT STATIONS

Charlie Pendant; Economical • 2 to 3 button control • 1, 2 speed switches

Charlie Pendant Control Station.....	M2
Dimensions.....	M3
Accessory Parts and Technical Data.....	M4, M5
Maintenance Instructions.....	M6
Request Form - Non-Standard Pendant Stations.....	M7

Alpha Pendant; Ergonomic size & shape • 2 - 12 button, double column • 1, 2 speed switches

Alpha Pendant Control Station.....	M8
Dimensions.....	M9
Accessory Parts and Technical Data.....	M10-M12
Maintenance Instructions.....	M13
Request Form - Non-Standard Pendant Stations.....	M14

NPA Pendant; Custom availability • 2 - 12 button, single column • 1, 2, 3 speed switches

NPA Pendant Control Station.....	M16
Dimensions.....	M17
Accessory Parts and Technical Data.....	M18-M21
Maintenance Instructions.....	M22
Request Form - Non-Standard Pendant Stations.....	M23

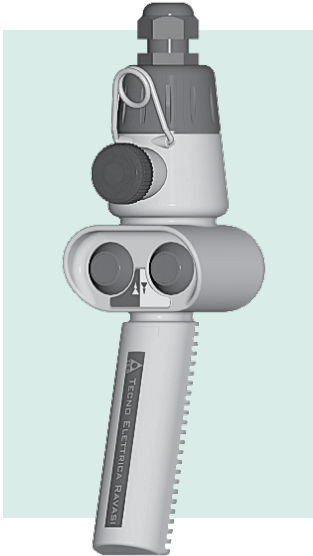
SPA Pendant; Heavy-duty design • 2 - 20 button, double column • 1, 2 speed switches

SPA Pendant Control Station.....	M24
Dimensions.....	M25
Accessory Parts and Technical Data.....	M26-M29
Maintenance Instructions.....	M30
Request Form - Non-Standard Pendant Stations.....	M31

CHARLIE PENDANT STATION

M₂

Charlie Pendant Control Station



The **Charlie Series Pendant Station** is a low cost, ergonomic design for one hand operation of up to three buttons. A patented unique clamshell design allows the installer the convenience of opening the unit without external screws, clamps, etc. Lightweight, easy to hold, provides one hand control of numerous equipment functions.

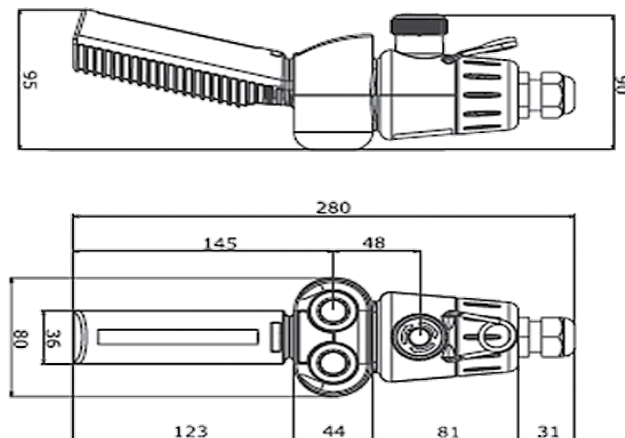
- Economical
- 2 to 3 button control
- 1, 2 speed switches
- IP65 rated

Charlie Pendant Control Station - Part No. & Pricing

No. Buttons	ASSEMBLY			Part No.	Price
	E - Stop	1 Speed	2 Speed		
	1 N.C.	1 N.O. + 1 N.O. + com	1 N.O. + 1 N.O. + 1 N.O. + com		
2		2		PF39020001	\$125.00
			2	PF39020002	\$135.00
3	1	2		PF39030001	\$140.00
	1		2	PF39030002	\$150.00

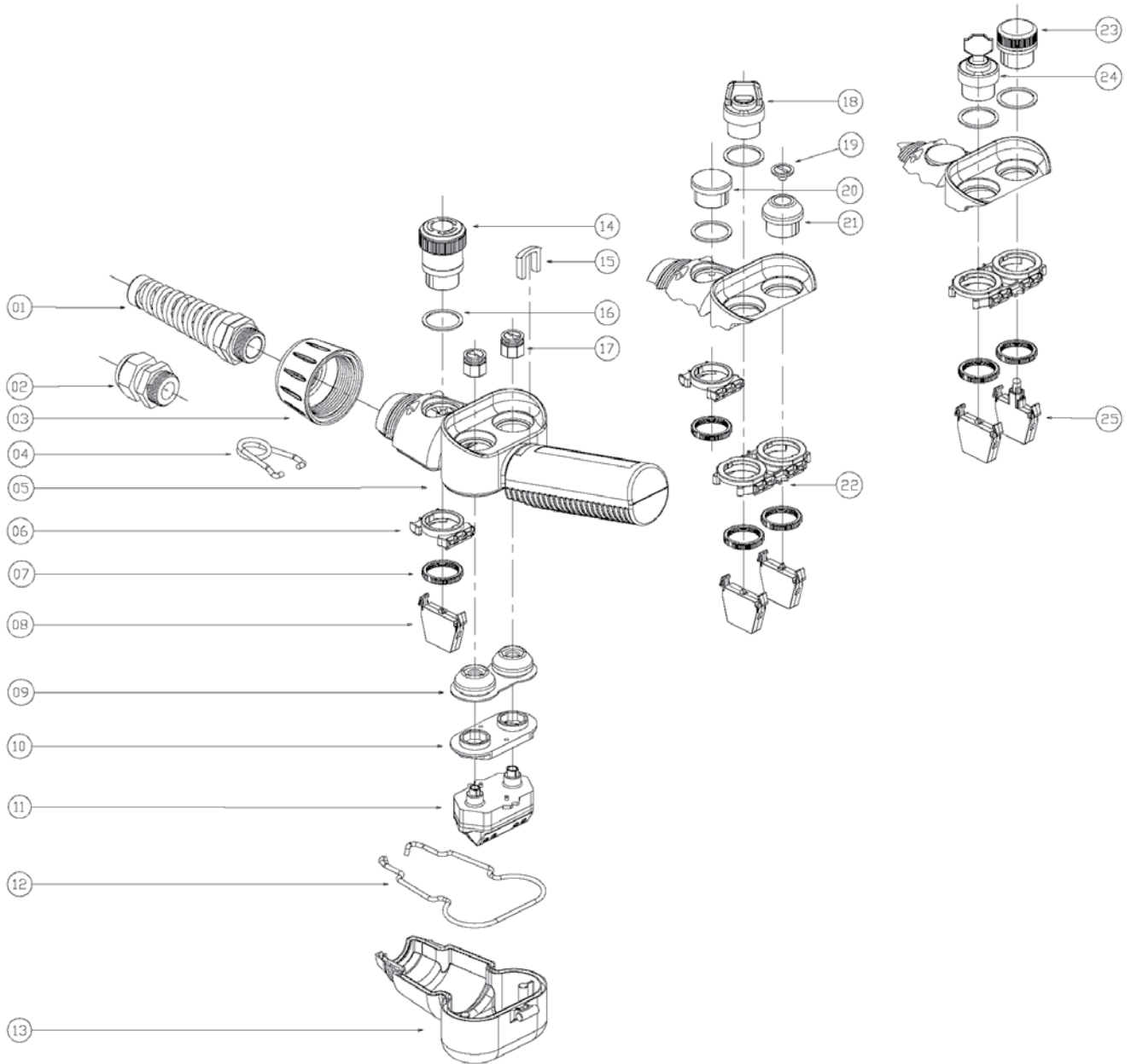
* Custom Units available - Part Number assigned by factory; PF390 _J _ _ _ _
See request form page M7

Charlie Pendant - Dimensions (mm)



Discount Schedule SC-20

Charlie Pendant - Detailed Drawing *



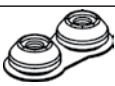












* See page M4 for spare part pricing














CHARLIE PENDANT - ACCESSORY PARTS

Spare Parts

M 4

Reference	Illustration	Description	Part No.	Price
01		Spiral Cable Clamp	PRPS0025PE	\$32.00
08		1 N.O. Switch 1 N.C. Switch	PRSL1000PI PRSL1001PI	\$40.00
09		Rubber Boot for Double Push-Button (without buttons)	PRG0020PE	\$20.00
11		1-Speed Double Switch 2-Speed Double Switch	PRSL1002PI PRSL1003PI	\$52.00 \$90.00
14		Emergency Stop Mushroom Push-Button	PRSL1011PI	\$94.00
17		Button for Double Push-Button	PRTA2xxxPI*	\$12.50
18		Spring Return Selector Switch (on-off) Selector Switch (on-off)	PRSL1015PI PRSL1016PI	\$77.00
		Spring Return 3-Position Selector Switch 3-Position Selector Switch	PRSL1026PI PRSL1027PI	\$90.00
19		Button for Single Push-Button	PRTA1xxxPI*	\$11.00
20		Blanking Plug	PRSL1023PI	\$32.00
21		Single Push-Button (without button)	PRSL1010PI	\$22.00
23		Red Pilot Light Yellow Pilot Light Green Pilot Light	PRSL1012PI PRSL1013PI PRSL1014PI	\$63.00
24		Key Selector Switch (on-off)	PRSL1017PI	\$99.00
25		Lamp Holder (12V or 24V only)	PRSL1004PI	\$63.00

*Standard Buttons

						
PRTA1000PI PRTA2000PI	PRTA1001PI PRTA2001PI	PRTA1002PI PRTA2002PI	PRTA1003PI PRTA2003PI	PRTA1004PI PRTA2004PI	PRTA1005PI PRTA2005PI	PRTA1006PI PRTA2006PI
						
PRTA1007PI PRTA2007PI	PRTA1010PI PRTA2010PI	PRTA1011PI PRTA2011PI	PRTA1012PI PRTA2012PI	PRTA1013PI PRTA2013PI	PRTA1030PI PRTA2030PI	

Discount Schedule SC-20

Technical Specifications

Conformity to Community Directives	73/23/CEE	93/68/CEE		
Conformity to Standards	EN 60204-1 EN 60529	EN 60947-1 EN 418	EN 60947-5-1 EN 50013	IEC 536
Ambient Temperature	Storage Operational	-40° C / +70° C -25° C / +70° C		
Protection Degree	IP 65			
Insulation Category	Class II			
Cable Entry	Cable Clamp PG16			
Operating Positions	Any Position			
Weight	~ 320g			
Approvals	CE			

Technical Specifications of Contact Switches

Utilisation Category	AC 15
Rated Operational Current	3 A
Rated Operational Voltage	250V
Rated Thermal Current	10 A
Rated Insulation Voltage	500V ~
Mechanical Life	0,5 x 10 ⁶ operations
Terminal Referencing	According to EN 50013
Connections	Screw-Type Terminals
Approvals	CE - UL - cUL
Operating Force	2.0 - 2.4 lbs

Features of the Contact Switches

The single switches PRSL1000PI and PRSL1001PI have 1 N.C. contacts with 2 connecting terminals.

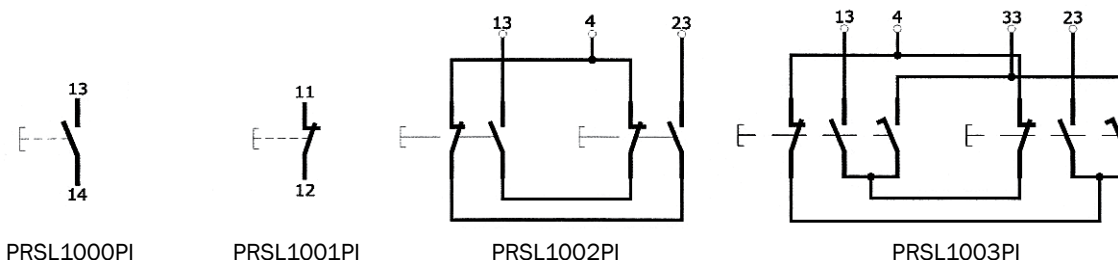
The double switch PRSL1002PI (1-speed)) has:

1 N.O. contact with 1 connecting terminal for the first speed for each opposite function - 1 single terminal for both functions

The double switch PRSL1003PI (2-speeds) has:

1 N.O. contact with 1 connecting terminal for the first speed for each opposite function - 1 N.O. contact with 1 connecting terminal for the second speed for both functions - 1 single terminal for both functions.

All N.C. contacts are of the positive opening operation type.
The switches have the following reference for internal wiring.



CHARLIE PENDANT - MAINTENANCE INSTRUCTIONS

M 6

Use & Maintenance Instructions

The **Charlie Pendant Control Station** is an electromechanical device for low voltage control circuits (EN 60947-1, EN60947-5-1) to be used as electrical equipment on machines (EN 60204-1) in compliance with the fundamental requirements of the Low Voltage Directive 73/23/CEE and of the Machine Directive 89/392/CEE.

The pendant station is designed for industrial use and also for use under particularly severe climactic conditions (operational temperature -25°C to +70°C, suitable for use in tropical environment). The equipment is not suitable for use in environments with potentially explosive atmosphere, corrosive agents or a high percentage of sodium chloride (saline fog). Oils, acids or solvents may damage the equipment.

The switches (08, 11) are designed for auxiliary control of contactors or electromagnetic loads (utilisation category AC-15 according to EN 60947-5-1). Do not connect more than one phase to each switch (08, 11). Do not oil or grease the control elements (14, 17, 18, 21, 24) or the switches (08, 11).

The installation of the pendant station shall be carried out by an expert and trained personnel. Wiring shall be properly done according to current instructions.

Prior to installation and the maintenance of the pendant station, the main power of the machinery shall be turned off.

Steps for the proper installation of the pendant station

- unscrew and remove the front ring (03) and the cable clamp (02)
 - open the lower cover (13)
 - insert the cable into the cable clamp (02) to a length suitable for wiring the switches
 - strip the cable to a length suitable for wiring the switches (08, 11)
 - tape the stripped part of the cable
- connect all the switches (08, 11) according to the contact scheme printed on the switches (tighten the wires into the terminals with a torque equal to 0.6 Nm; insertability of wires into the switch terminals equal to 2 x 1.5mm² - 1 x 2.5mm²).
- screw the front ring (03) to close enclosure and lower cover (13) (check the proper positioning of the coupling pin of the lower cover (13) and of the rubber (12))
 - tighten the cable clamp (02) on the cable tight enough to guarantee protection against water and/or dust

Periodic Maintenance Steps

- check the proper tightening of the front ring (03)
- check the proper tightening of the cable clamp (02)
- check the proper tightening of the switch (08, 11) terminal screws
- check all wiring (in particular where wires clamp into the switches)
- check the conditions of the rubber (12) fit into the lower cover (13) and of the rubber of the control elements (09,21)
- check that the plastic enclosure (03, 05, 13) of the pendant station is not broken

In case any component of the pendant station is modified, the validity of the markings and the guarantee on the equipment are annulled. Should any component need replacement, use original spare parts only.














Springer Controls declines all responsibility for damages caused by the improper use or installation of the equipment.

Request Form for Non-Standard Pendant Stations

Instructions:

- Write the number corresponding to the **control element** required (broken line box). When buttons are required and when necessary, mark the direction of the arrow into the corresponding circle.
- Selector Switches PRSL1026PI and PRSL1027PI can be assembled only in the center-top position. (3 position switches)
- Write the number corresponding to the single or double switches.
- Mark the appropriate box to show either the **spiral cable clamp** or the **cable clamp (PG16)**. Cable clamp comes standard.

Control Elements

1  (green)	8 	14 PRSL1009PI - Mushroom Pushbutton	20 PRSL1017PI - Key Selector Switch (on-off)
2  (green)	9 	15 PRSL1012PI - Red Pilot Light	21 PRSL1026PI - Spring Return 3 Pos. Selector Sw.
3  (yellow)	10 	16 PRSL1013PI - Yellow Pilot Light	22 PRSL1027PI - 3 Position Selector Switch
4  (red)	11 	17 PRSL1014PI - Green Pilot Light	23 PRSL1023PI - Blanking Plug
5 	12 	18 PRSL1015PI - Spring Return Selector Sw (on-off)	24 PRSL1024PI - Spring Return Key Selector Sw. (2 pos.)
6 	13 	19 PRSL1016PI - Selector Switch (on-off)	
7 			

Single Switches

1 PRSL1000PI - 1 N.O.

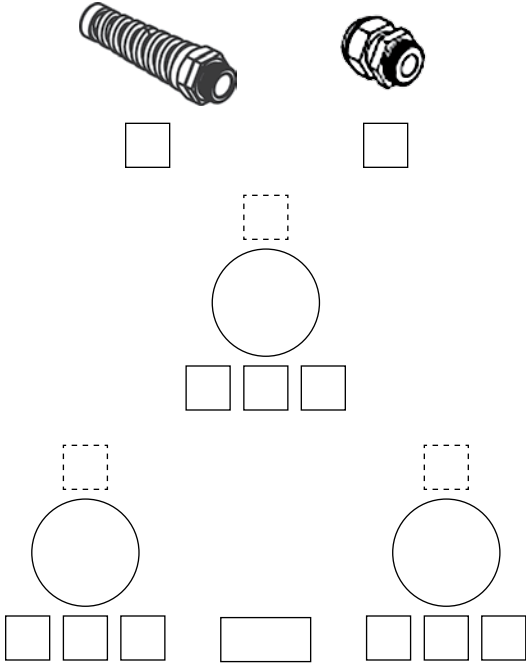
2 PRSL1001PI - 1 N.C.

3 PRSL1004PI - Lamp Holder (12V or 24V)

Double Switches

1 PRSL1002PI - 1 speed

2 PRSL1002PI - 2 speed



Remarks:

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.....

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.....

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Springer Controls - Fax: 904-225-9084

ALPHA PENDANT CONTROL STATION

M8

Alpha Pendant Control Station



The **Alpha Series Pendant Station** is the latest ergonomic design in 2 column pendant stations. Using symbols for button identification, this rubber gasketed unit provides a solid feel and immediate response. Available in 1 or 2 speeds and multiples up to 12 buttons, it is a very compact, lightweight station. A NEMA 4 rated polycarbonate enclosure is a striking yellow and black design. It provides the operator with a pendant that fits firmly in the hand but will not create fatigue to the operator.

- Convenient, ergonomic size & shape
- 2 to 12 button, double column
- 1, 2 speed switches
- IP65 rated

Alpha Pendant - Part No. & Pricing*

No. Buttons	Assembly			Standard Part No.	Price
	E-Stop	Start/Reset	1 Speed		
	1 N.C.	1 N.O.	1 N.O. + 1 N.O. + com		
2			2	PF38020001	\$197.00
3	1		2	PF38030001	\$278.00
4	1	1	2	PF38040002	\$305.00
4			4	PF38040004	\$231.00
5	1		4	PF38050003	\$312.00
6	1	1	4	PF38060001	\$513.00
8	1	1	6	PF38080001	\$542.00
9	1		8	PF38090001	\$569.00
10	1	1	8	PF38100001	\$643.00
12	1	1	10	PF38120001	\$672.00

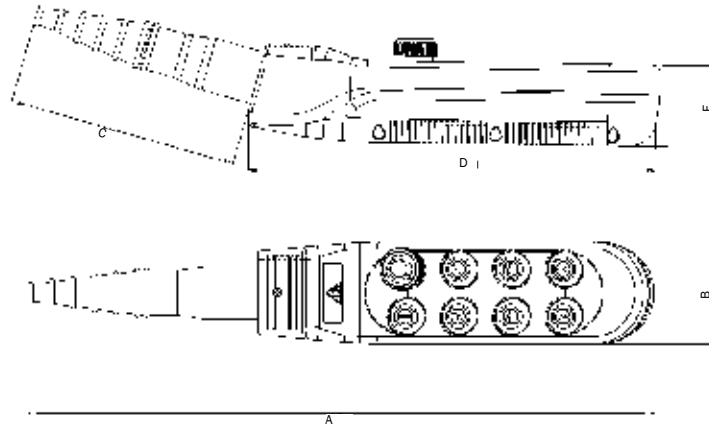
* Custom units available - Part number assigned by factory; #PF38 __ _ J _ _ _ (see request form on page M14)

Discount Schedule SC-20

ALPHA PENDANT CONTROL STATION - DIMENSIONS

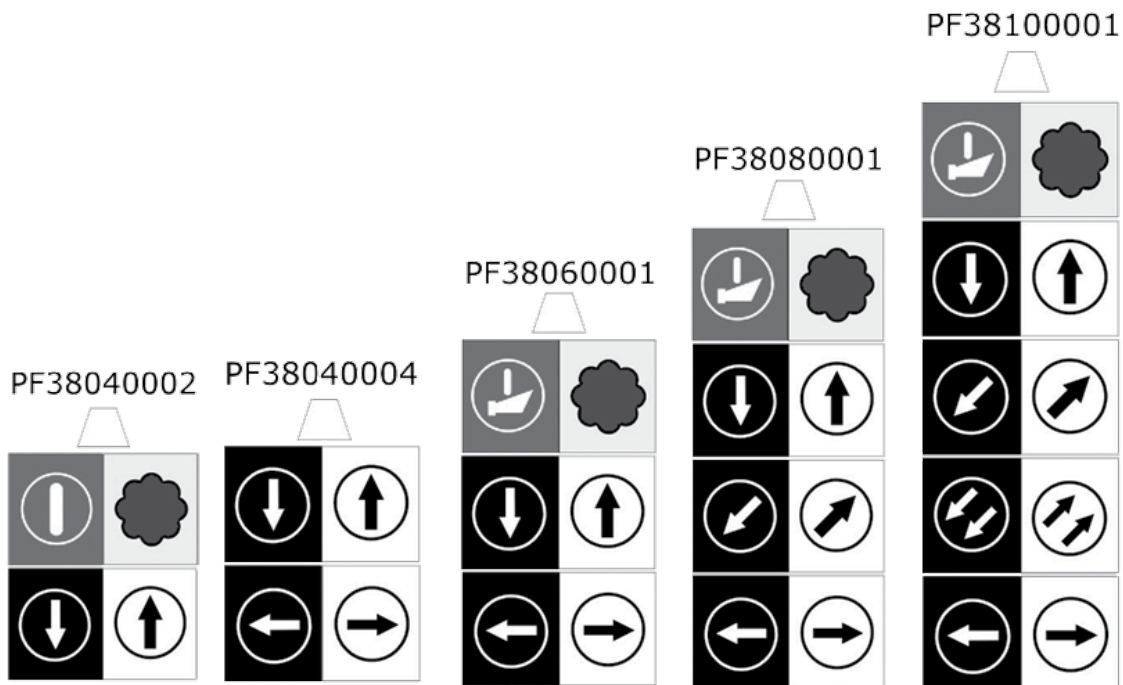
M9

Alpha Pendant Control Station - Dimensions



No. of Buttons	Weight (lbs.)	Overall Dimensions (in)				
		A	B	C	D	E
2, 4	1.04	15.04	2.95	6.65	8.66	2.36
6, 8	1.59	18.11	2.95	6.65	11.89	2.36
10, 12	1.96	21.14	2.95	6.65	15.04	2.36

Standard Alpha Button Configuration

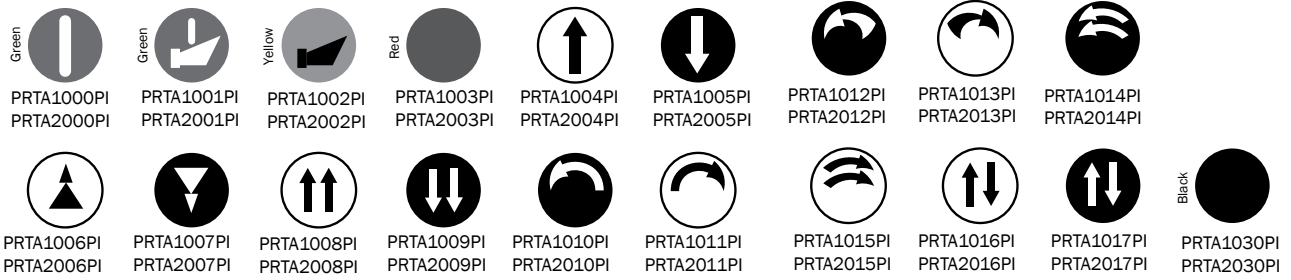


* 2, 3, 5, 12 Alpha Pendants also available

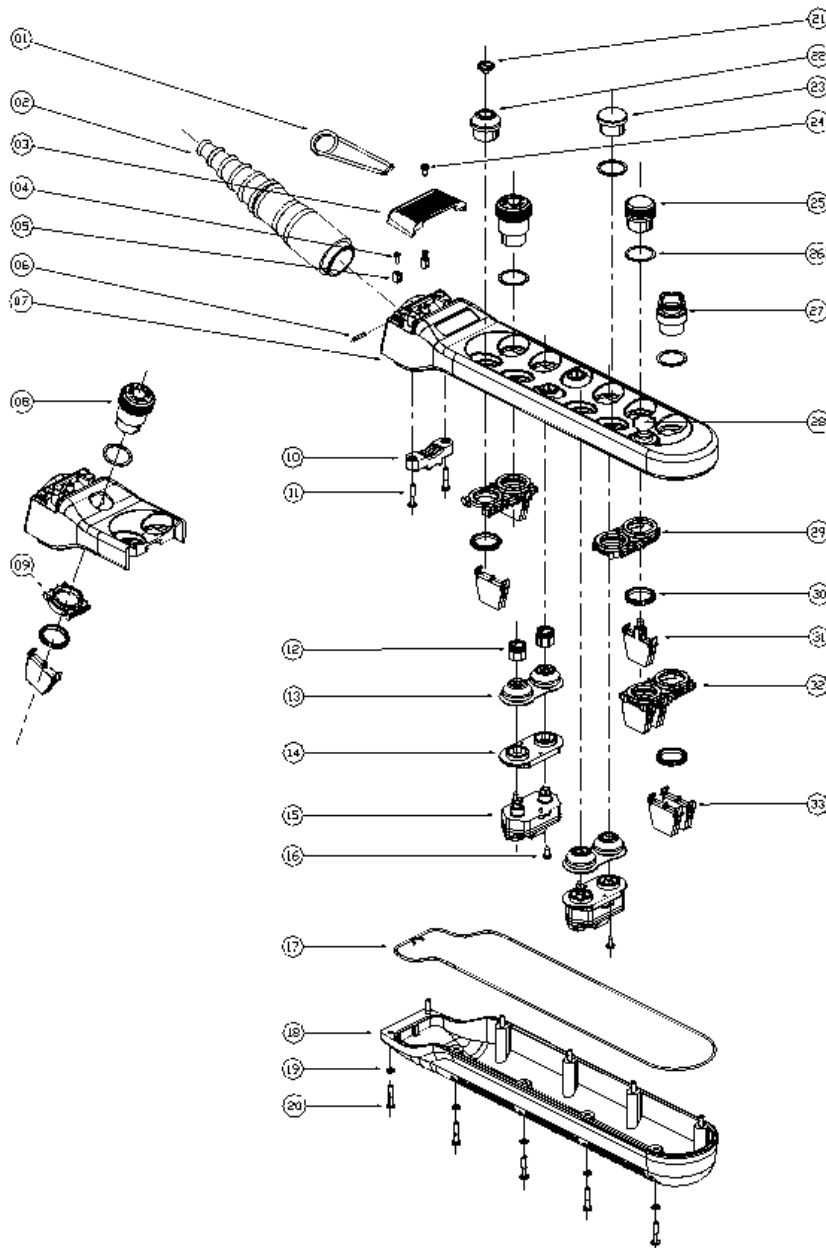
ALPHA PENDANT - ACCESSORY PARTS

M 10

Alpha Pendant - Standard Buttons

















Alpha Pendant - Detailed Drawing



* See page M11 for spare part pricing

Spare Parts

Reference	Illustration	Description	Part No.	Price
01		Hook	PRGA0012PE	\$5.50
02		Cable Sleeve	PRSL0145PE	\$68.00
08		Emergency Stop Mushroom Push-Button	PRSL1011PI	\$94.00
12		Button for Double Push-Button	PRTA2xxxPI (see standard buttons)	\$12.50
13		Rubber for Double Push-Button (without buttons)	PRG00020PE	\$20.00
15		1-Speed Double Switch	PRSL1002PI	\$52.00
		2-Speed Double Switch	PRSL1003PI	\$90.00
21		Button for Single Push-Button	PRTA1xxxPI (see standard buttons)	\$11.00
22		Single Push-Button (without Button)	PRSL1010PI	\$22.00
23		Blanking Plug	PRSL1023PI	\$32.00
25		Red Pilot Light Yellow Pilot Light Green Pilot Light	PRSL1012PI PRSL1013PI PRSL1014PI	\$63.00
27		Spring Return Selector Switch (on-off) Maint. Selector Switch (on-off)	PRSL1015PI PRSL1016PI	\$77.00
		Spring Return 3-Position Selector Switch Maint. 3-Position Selector Switch	PRSL1026PI PRSL1027PI	\$90.00
28		Maint. Key Selector Switch (on-off)	PRSL1017PI	\$99.00
31		Lamp Holder (12V or 24V only)	PRSL1004PI	\$63.00
33		1 N.O. Switch 1 N.C. Switch	PRSL1000PI PRSL1001PI	\$40.00

Discount Schedule SC-20

ALPHA PENDANT - TECHNICAL DATA

M 12

The space available for the conductors is dimensioned for a 48 x 1.5 mm² cable. All switches have terminals facing the cable clamp of the pendant station and screws on the opposite side to facilitate wiring. All electronic connections use screw-type terminals. The Emergency Stop Mushroom Pushbutton complies with the EN 418 standard and is equipped with positive opening N.C. switches.

Technical Specifications

Conformity to Community Directives	73/23/CEE	93/68/CEE		
Conformity to Standards	EN 60204-1 EN 60529	EN 60947-1 EN 418	EN 60947-5-1 EN 50013	IEC 536
Ambient Temperature	Storage Operational	-40 °C / +70 °C -25 °C / +70 °C		
Protection Degree	IP 65			
Insulation Category	Class II			
Cable Entry	Rubber Cable Sleeve (Ø 14÷26 mm)			
Operating Positions	Any Position			
Weight	~ 320g			
Approvals	CE, c CSA us			

Technical Specifications of Contact Switches

Utilisation Category	AC 15
Rated Operational Current	3 A
Rated Operational Voltage	250V
Rated Thermal Current	10 A
Rated Insulation Voltage	500V ~
Mechanical Life	0,5 x 10 ⁶ operations
Terminal Referencing	According to EN 50013
Connections	Screw-Type Terminals
Approvals	UL - cUL

Features of the Contact Switches

The single switches PRSL1000PI and PRSL1001PI have 1 N.O. or 1 N.C. contact with 2 connecting terminals.

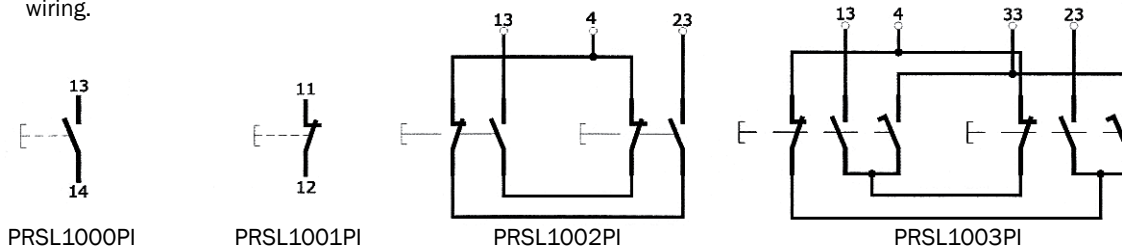
The double switch PRSL1002PI (1-speed)) has:

1 N.O. contact with 1 connecting terminal for the first speed for each opposite function - 1 single terminal for both functions

The double switch PRSL1003PI (2-speeds) has:

1 N.O. contact with 1 connecting terminal for the first speed for each opposite function - 1 N.O. contact with 1 connecting terminal for the second speed for both functions - 1 single terminal for both functions.

All N.C. contacts are of the positive opening operation type. The switches have the following reference for internal wiring.



ALPHA PENDANT - MAINTENANCE INSTRUCTIONS

M13

Use & Maintenance Instructions

The **Alpha Pendant Control Station** is an electromechanical device for low voltage control circuits (EN 60947-1, EN60947-5-1) to be used as electrical equipment on machines (EN 60204-1) in compliance with the fundamental requirements of the Low Voltage Directive 73/23/CEE and of the Machine Directive 89/392/CEE.

The pendant station is designed for industrial use and also for use under particularly severe climactic conditions (operational temperature -25 °C to +70 °C, suitable for use in tropical environment). The equipment is not suitable for use in environments with potentially explosive atmosphere, corrosive agents or a high percentage of sodium chloride (saline fog). Oils, acids or solvents may damage the equipment.

The switches (24, 42) are designed for auxiliary control of contactors or electromagnetic loads (utilisation category AC-15 according to EN 60947-5-1). Do not connect more than one phase to each switch (24, 42). Do not oil or grease the control elements (19, 21, 31, 36, 37) or the switches (24, 42).

The installation of the pendant station shall be carried out by an expert and trained personnel. Wiring shall be properly done according to current instructions.

Prior to installation and the maintenance of the pendant station, the main power of the machinery shall be turned off.

Steps for the proper installation of the pendant station

- remove the screws on the enclosure (27) to open the pendant station
- cut the variable selection rubber cable sleeve (5) and insert the cable tight enough to guarantee protection against water and/or dust.
- fix the cable to the cable sleeve (5) using a cable tie (not supplied).
- strip the cable to a length suitable for wiring the switches (24, 42)
- tape the stripped part of the cable
- connect all the switches (24, 42) according to the contact scheme printed on the switches (tighten the wires into the terminals with a torque equal to 0.6 Nm; insertability of wires into the switch terminals equal to 2 x 1.5mm² - 1 x 2.5mm²).
- close the pendant station checking the proper positioning of the rubber (26) in the enclosure (27).

Additional steps for the installation of self-supporting cables

- remove the small cover (03) screwed on the cover of the pendant station.
- put the terminals (05) into their seats and insert the suspension wires of the self-supporting cable.
- pull the suspension wires to obtain the right inclination of the pendant station and screw the wires into the terminals (05).
- close the small cover (03) and put the exceeding suspension wires in the seats next to the terminals (05).

Periodic Maintenance Steps

- check the proper tightening of the screws (29) of the enclosure (15, 27)
- check the proper tightening of the switch (24, 42) terminal screws,
- check the wiring conditions (in particular where wires clamp into the switches)
- check the conditions of the rubber (26) fit into the enclosure (27), of the rubber of the control elements (22, 31) and of the cable sleeve (05).
- check that the plastic enclosure (15, 27) of the pendant station is not broken

In case any component of the pendant station is modified, the validity of the markings and the guarantee on the equipment are annulled. Should any component need replacement, use original spare parts only.

Springer Controls declines all responsibility for damages caused by the improper use or installation of the equipment.

ALPHA PENDANT REQUEST FORM




















Request Form for Non-Standard Alpha Pendant Stations

M 14

Instructions:

- Write the number corresponding to the **control element** required (broken line box). When buttons are required and when necessary, mark the direction of the arrow into the corresponding circle.
- Write the number corresponding to the single **or** double switches.
- Mark the appropriate box to show where the cable sleeve must be assembled (top or bottom)

Control Elements

1  (green)	8 	15 
2  (green)	9 	16 
3  (yellow)	10 	17 
4  (red)	11 	18 
5 	12 	19 
6 	13 	
7 	14 	

- | | |
|---|--|
| 20 PRSL1009PI - Mushroom Pushbutton | 26 PRSL1017PI - Key Selector Switch (on-off) |
| 21 PRSL1012PI - Red Pilot Light | 27 PRSL1023PI - Blanking Plug |
| 22 PRSL1013PI - Yellow Pilot Light | 28 PRSL1014PI - Spring Return Key Selector Sw. |
| 23 PRSL1014PI - Green Pilot Light | 29 PRSL1026PI - Spring Return 3 Pos. Selector Sw. |
| 24 PRSL1015PI - Spring Return Selector Sw (on-off) | 30 PRSL1027PI - 3 Position Selector Switch |
| 25 PRSL1016PI - Selector Switch (on-off) | |

Single Switches		Double Switches	
1	PRSL1000PI - 1 N.O.	1	PRSL1002PI - 1 speed
2	PRSL1001PI - 1 N.C.	2	PRSL1002PI - 2 speed
3	PRSL1004PI - Lamp Holder (12V or 24V)		

Hook

Cable Sleeve

Single

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single	Double	Single
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single	Double	Single
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single	Double	Single
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single	Double	Single
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single	Double	Single
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Single	Double	Single

Cable Sleeve

Remarks:.....

NPA PENDANT STATION

M 16

NPA Pendant Station



The **NPA Series Pendant Station** is the leader in versatility and rugged design. With a choice of operators from 2 to 12, and a selection of up to 3 speed contacts, selector switches and pilot lights as well as potentiometers, the NPA leads the way for the industry. Economical in cost, flexible in choice of operators, and using the latest in new polymers, it has become the standard both indoors or outside in rugged weather.

- Custom availability
- 2 to 12 button, single column
- 1, 2, 3 speed switches
- IP65 rated

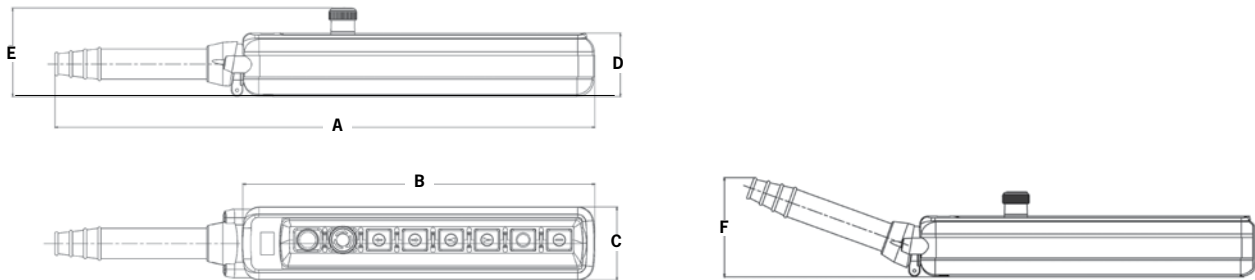
NPA Pendant Station - Part No. & Pricing*

No. Buttons	Assembly			Standard Part No.	Price
	E-Stop	Start/Reset	1 Speed		
	1 N.C.	1 N.O.	1 N.O. + 1 N.O. + com		
2			2	PF03020005	\$206.00
3	1		2	PF03030004	\$327.00
4	1	1	2	PF03040105	\$365.00
4			4	PF03040022	\$426.00
6	1	1	4	PF03060293	\$479.00
8	1	1	6	PF03080201	\$583.00
10	1	1	8	PF03100334	\$675.00
12	1	1	10	PF03120282	\$764.00

* Custom units available - part number assigned by factory; PF03 __ J __ __. See request form on page M23.

Discount Schedule SC-20

NPA Pendant - Dimensions



No. of Buttons	Weight (lbs)	Overall Dimensions (inches)					
		A	B	C	D	E	F
2	.99	11.50	5.51	3.00	2.76	3.90	3.43
3	1.21	13.11	7.13	3.00	2.76	3.90	3.43
4	1.43	14.65	8.74	3.00	2.76	3.90	3.43
6	1.98	18.07	12.09	3.00	2.76	3.90	3.43
8	2.65	23.82	15.47	3.27	2.76	3.90	4.57
10	3.09	26.97	18.66	3.27	2.76	3.90	4.57
12	3.75	30.35	22.05	3.27	2.76	3.90	4.57

Standard NPA Pendants



4 Button
PF03040105



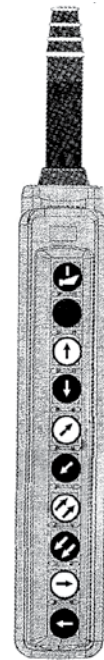
4 Button
PF03040022



6 Button
PF03060293



8 Button
PF03080201



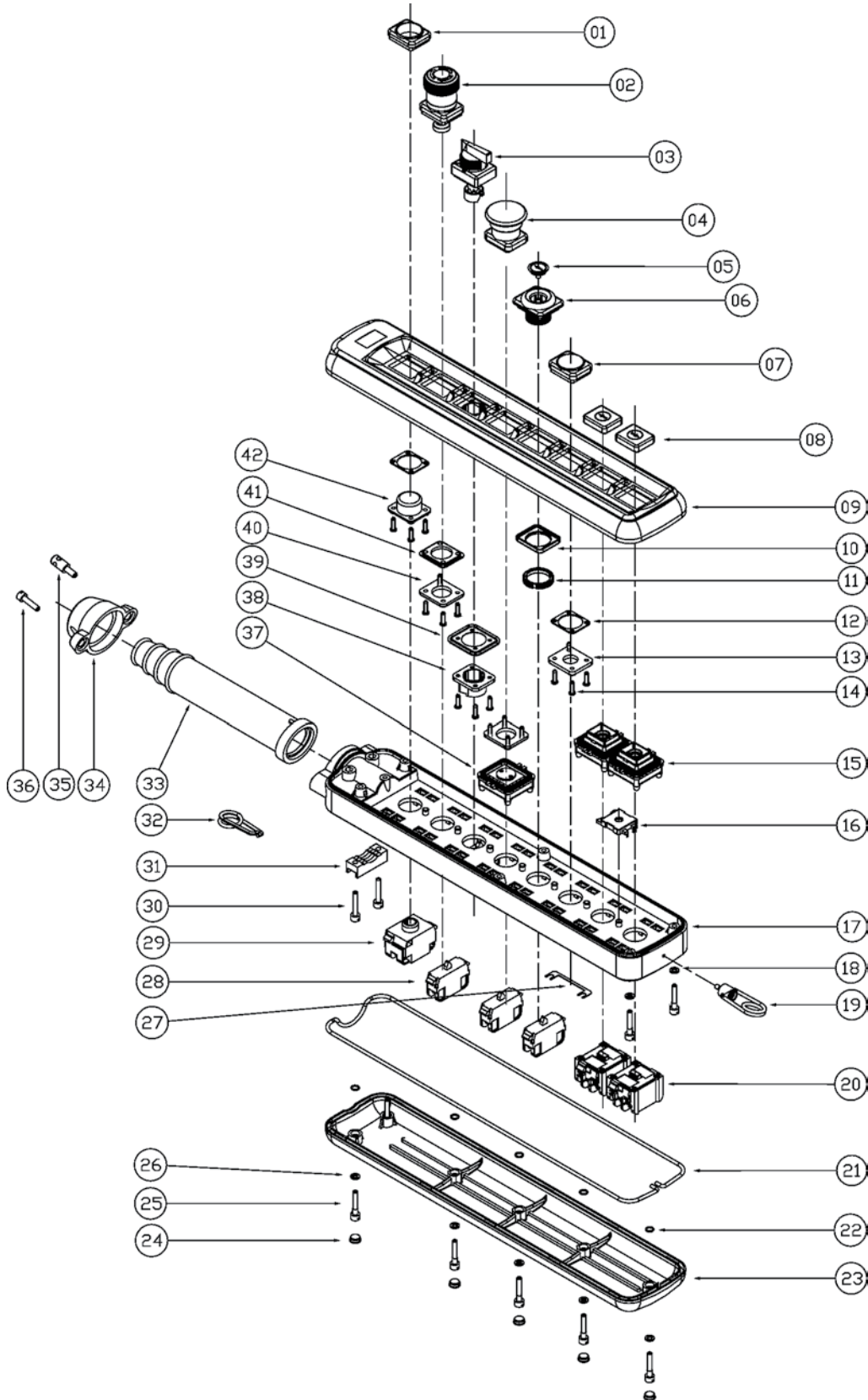
10 Button
PF03100334

- 2, 3, 12 button NPA Pendants also available
- Custom Pendants available; Part number assigned by Springer Controls.











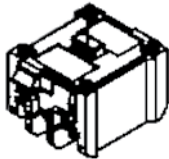



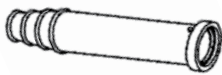
NPA PENDANT ACCESSORY PARTS

M 18

NPA Pendant - Detailed Drawing



Spare Parts

Reference	Illustration	Description	Part No.	Price
01		Red Pilot Light	PRSL0515UL	\$47.00
		Green Pilot Light	PRSL0516UL	
		Yellow Pilot Light	PRSL0521UL	
02		Emergency Stop Twist Release Mushroom Push-Button	PRSL0500UL	\$113.00
03		3 Position Key Selector Switch	PRSL0513UL	\$95.00
		3 Position Selector Switch Spring Return 3 Position Selector Switch	PRSL0514UL PRSL0519UL	\$94.00 \$94.00
04		Impulse Mushroom Push-Button	PRSL0512UL	\$92.00
		Key Mushroom Push-Button	PRSL0520UL	\$175.00
05		Disk for Dust-tight Push-Button	PRTAxxxxxx (see page M20)	\$7.00
06		Dust-tight Push-Button	PRSL0550UL	\$22.00
07		Blanking Plug	PRSL0517UL	\$32.00
08		Standard Button	PRTAxxxxxx (see page M20)	\$14.00
16		Mechanical Interlock	PRSL7816PI	\$11.00
19		Lower Hook	PRGA0051PE	\$22.00
20		1-Speed Switch - 1 N.O.+1 N.C.+1 N.O. simultaneous 2-Speed Switch - 1 N.O.+1 N.C.+1 N.O. sequenced	PRSL0504UL PRSL0505UL	\$56.00 \$81.00
		1-Speed Switch - 3 N.O. simultaneous 3-Speed Switch - 3 N.O. sequenced	PRSL0506UL PRSL0507UL	\$58.00 \$92.00
28		1 N.C. Switch	PRSL0502UL	\$27.00
		1 N.O. Switch	PRSL0503UL	\$27.00
29		Lamp Holder (full voltage)	PRSL0501UL	\$61.00
32		Upper Hook	PRGA0001PE	\$11.00
33		Cable Sleeve for 2, 6 button units	PRG00100PE	\$32.00
		Cable Sleeve for 8, 12 button units	PRG00105PE	\$40.00

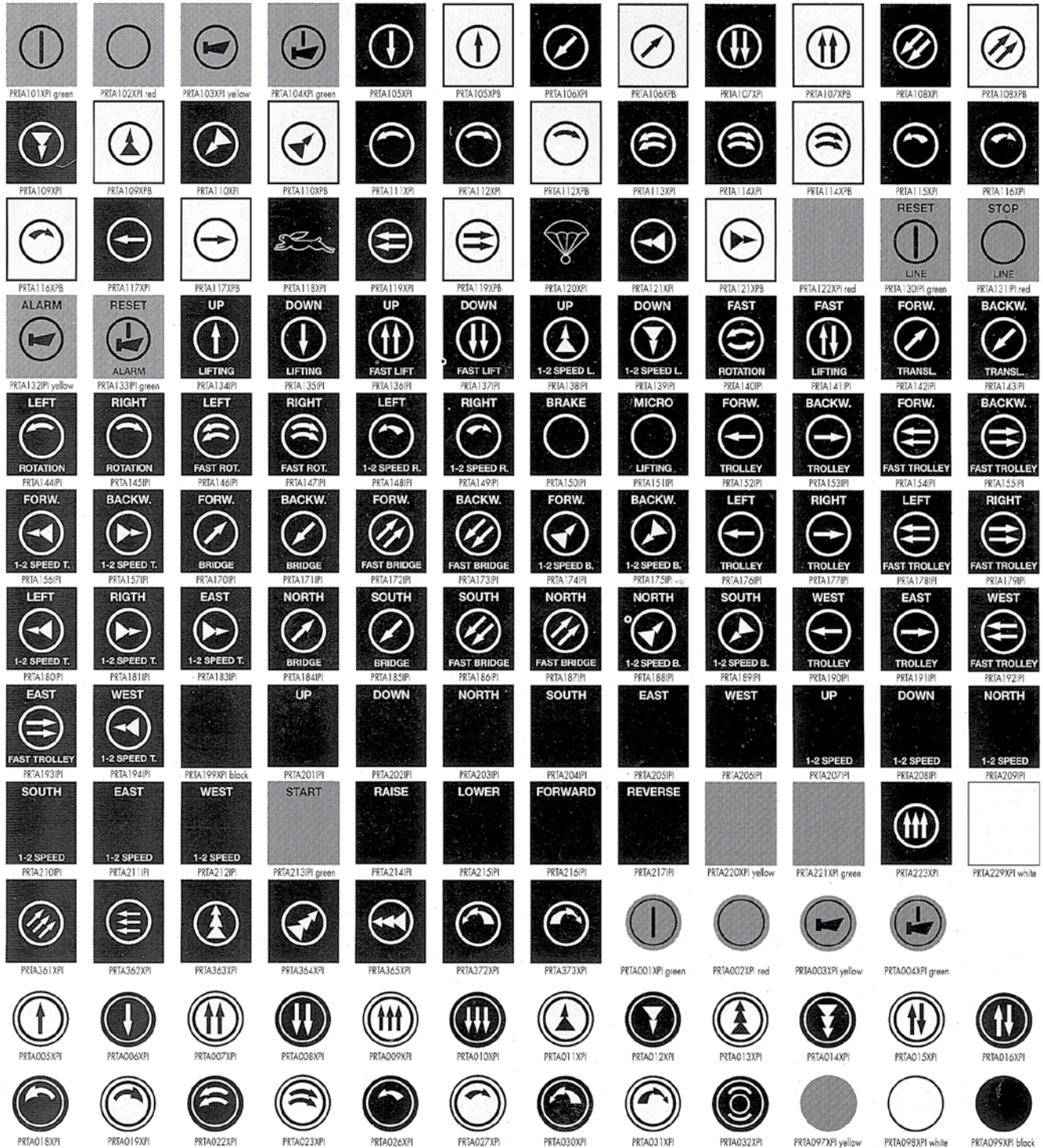
Discount Schedule SC-20

NPA PENDANT - STANDARD BUTTONS


M 20

Standard Buttons



Square buttons used on standard NPA units. Round or disk style button used on "dust-tight" button (PRSL0550UL). Custom Engraving available \$20.00 each (list).



Technical Specifications

Conformity to Community Directives	73/23/CEE	93/68/CEE		
Conformity to Standards	EN 60204-1 EN 60529	EN 60947-1 EN 418	EN 60947-5-1 EN 50013	IEC 536
Ambient Temperature	Storage Operational	-40 °C / +70 °C -25 °C / +70 °C		
Protection Degree	IP 65			
Insulation Category	Class II			
Cable Entry	2 - 6 buttons; Rubber Cable Sleeve (Ø 10÷18 mm) 8 - 12 buttons; Rubber Cable Sleeve (Ø 17÷ 26 mm)			
Operating Positions	Any Position			
Weight	~ 320g			
Approvals				

Technical Specifications of Contact Switches

Utilisation Category	AC 15
Rated Operational Current	3 A
Rated Operational Voltage	250V
Rated Thermal Current	10 A
Rated Insulation Voltage	500V ~
Mechanical Life	0,5 x 10 ⁶ operations
Terminal Referencing	According to EN 50013
Connections	Screw-Type Terminals
Approvals	 

NPA PENDANT - MAINTENANCE INSTRUCTIONS

M 22

Use & Maintenance Instructions

The **NPA Pendant Control Station** is an electromechanical device for low voltage control circuits (EN 60947-1, EN60947-5-1) to be used as electrical equipment on machines (EN 60204-1) in compliance with the fundamental requirements of the Low Voltage Directive 73/23/CEE and of the Machine Directive 89/392/CEE.

The pendant station is designed for industrial use and also for use under particularly severe climactic conditions (operational temperature -25 °C to +70 °C, suitable for use in tropical environment). The equipment is not suitable for use in environments with potentially explosive atmosphere, corrosive agents or a high percentage of sodium chloride (saline fog). Oils, acids or solvents may damage the equipment.

The switches are designed for auxiliary control of contactors or electromagnetic loads (utilisation category AC-15 according to EN 60947-5-1). Do not connect more than one phase to each switch. Do not oil or grease the control elements or the switches.

The installation of the pendant station shall be carried out by an expert and trained personnel. Wiring shall be properly done according to current instructions.

Prior to installation and the maintenance of the pendant station, the main power of the machinery shall be turned off.

Steps for the proper installation of the pendant station

- remove the screws on the lower cover to open the pendant station
- cut the variable selection rubber cable sleeve and insert the cable tight enough to guarantee protection against water and/or dust.
- fix the cable to the cable sleeve using a cable tie (not supplied).
- strip the cable to a length suitable for wiring the switches
- tape the stripped part of the cable
- fix the cable inside the pendant station using the cable clamp
- connect all the switches according to the contact scheme printed on the switches (tighten the wires into the terminals with a torque equal to 0.8 Nm; insertability of wires into the switch terminals equal to 2 x 1.5mm² - 1 x 2.5mm²).
- close the pendant station checking the proper positioning of the rubber in the cover and of the "O" rings
- put the rubber caps for the screws into the holes in the lower cover.

Additional steps for mounting / replacing control / signalling bulbs into the lamp holders

- push the two clips on the sides of the lamp holder to remove it from the central part of the pendant station
- put the bayonet-type bulb into its seat (use BA9s, 125V-2.6W (max) bulbs)
- assemble the lamp holder on the central part of the pendant station checking that the two clips are properly coupled

Periodic maintenance steps

- check the proper tightening of the screws of the enclosure
- check the proper tightening of the switch terminal screws
- check all wiring (in particular where wires clamp into the switches)
- check the conditions of the rubber fit into the lower cover of the rubber of the control elements and of the cable sleeve.
- check that the plastic enclosure of the pendant station is not broken

In case any component of the pendant station is modified, the validity of the markings and the guarantee on the equipment are annulled. Should any component need replacement, use original spare parts only.

Springer Controls declines all responsibility for damages caused by the improper use or installation of the equipment.

Request Form for Non-Standard NPA Pendant Stations

Instructions:

- Fill in the **Pendant Station scheme** for the number of control elements required (2, 3, 4, 6, 8, 10 buttons)
- Write the number corresponding to the **control element** required (broken line box). When buttons are required and when necessary, mark the direction of the arrow into the corresponding circle. In case buttons different from those listed below are needed, fill in the number code required. (Button selection on page M20)
- Write the number corresponding to the **switches** required, keeping in mind that it is possible to assemble up to two switches number 2 & 3 under each control element, but only one of the other switches.
- Circle the box corresponding to the type of **buttons** required (rectangular or disks).
- Mark the rectangular box **between** the push-buttons when the mechanical interlock is required.
- Mark the appropriate box to show where the cable sleeve and the hook must be assembled (top or bottom)

Control Elements

1	8	15	22
2	9	16	23
3	10	17	24
4	11	18	25
5	12	19	26
6	13	20	27
7	14	21	28

- 29 PRSL0500UL - Emergency Stop Mushroom Pushbutton
- 30 PRSL0512UL - Impulse Mushroom Pushbutton
- 31 PRSL0513UL - 3 Position Key Selector Switch
- 32 PRSL0514UL - 3 Position Selector Switch
- 33 PRSL0515UL - Red Pilot Light

- 34 PRSL0516UL - Green Pilot Light
- 35 PRSL0517UL - Blanking Plug
- 36 PRSL0519UL - Spring Return - 3 pos. Selector Switch
- 37 PRSL0520UL - Key Mushroom Pushbutton
- 38 PRSL0521UL - Yellow Pilot Light

Switches	
1 PRSL0501UL - Lamp Holder	6 PRSL0506UL - 1 Speed 3 N.O. simultaneous
2 PRSL0502UL - 1 N.C. Switch	7 PRSL0507UL - 1 Speed 3 N.O. sequenced
3 PRSL0503UL - 1 N.O. Switch	
4 PRSL0504UL - 1 Speed 1 N.O.+1 N.C.+1 N.O. simultaneous	
5 PRSL0505UL - 2 Speed 1 N.O.+1 N.C.+1 N.O. sequenced	
Buttons (circle)	
1 Rectangular Buttons	
2 Disks (dust-tight)	

Hook	<input type="checkbox"/>
Cable Sleeve	<input type="checkbox"/>
Switches	<input type="checkbox"/> <input type="checkbox"/>
Mechanical Interlock	<input type="checkbox"/>
Control Elements	<input type="checkbox"/>
	PRTA _____ PI
Switches	<input type="checkbox"/> <input type="checkbox"/>
Mechanical Interlock	<input type="checkbox"/>
Control Elements	<input type="checkbox"/>
	PRTA _____ PI
Switches	<input type="checkbox"/> <input type="checkbox"/>
Mechanical Interlock	<input type="checkbox"/>
Control Elements	<input type="checkbox"/>
	PRTA _____ PI
Switches	<input type="checkbox"/> <input type="checkbox"/>
Mechanical Interlock	<input type="checkbox"/>
Control Elements	<input type="checkbox"/>
	PRTA _____ PI
Switches	<input type="checkbox"/> <input type="checkbox"/>
Mechanical Interlock	<input type="checkbox"/>
Control Elements	<input type="checkbox"/>
	PRTA _____ PI
Switches	<input type="checkbox"/> <input type="checkbox"/>
Mechanical Interlock	<input type="checkbox"/>
Control Elements	<input type="checkbox"/>
	PRTA _____ PI
Switches	<input type="checkbox"/> <input type="checkbox"/>
Mechanical Interlock	<input type="checkbox"/>
Control Elements	<input type="checkbox"/>
	PRTA _____ PI
Cable Sleeve	<input type="checkbox"/>
Hook	<input type="checkbox"/>

Remarks:.....

SPA PENDANT CONTROL STATION

M 24

SPA Pendant



The **SPA Series Pendant** is a rugged 2 column design with rubber bumper protection around every 4 button section. With millions in use around the world this unit has proven to be a workhorse in the environment of steel mills and heavy machinery. Available up to 20 buttons with NEMA 12 rating and 1 or 2 speed operators, selector switches and indicators.

- Rugged, Heavy-Duty Design
- 2 to 20 button, double column
- 1, 2 speed switches
- IP65 rated

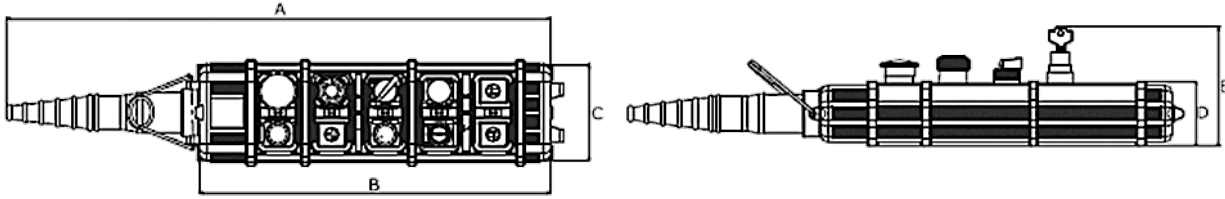
SPA Pendant - Part No. & Pricing*

No. Buttons	Assembly			Standard Part No.	Price
	E-Stop	Start/Reset	1 Speed		
	1 N.C.	1 N.O.	1 N.O.		
2			2	PF02020007	\$284.00
3	1		2	PF02040185	\$500.00
4	1	1	2	PF02040241	\$500.00
6	1	1	4	PF02060355	\$663.00
8	1	1	6	PF02080237	\$798.00
10	1	1	8	PF02100324	\$912.00
12	1	1	10	PF02120306	\$1047.00

* Units 13 through 20 available along with custom units. Part numbers assigned by factory; PF02 __ J ____.
See request form on page M31.

Discount Schedule SC-20

SPA Pendant Control Station - Dimensions



No. of Buttons	Weight (lbs)	Overall Dimensions (inches)				
		A	B	C	D	E
2	1.15	12.52	5.20	3.7	2.52	4.56
4	1.54	14.57	7.24	3.7	2.52	4.56
6	1.94	16.14	9.29	3.7	2.52	4.56
8	2.29	18.66	11.34	3.7	2.52	4.56
10	2.87	20.71	13.39	3.7	2.52	4.56
12	3.04	22.76	15.43	3.7	2.52	4.56
14	3.42	24.80	17.48	3.7	2.52	4.56
16	3.77	26.85	19.53	3.7	2.52	4.56
18	4.17	28.90	21.57	3.7	2.52	4.56
20	4.52	30.95	23.62	3.7	2.52	4.56

Standard SPA Pendants



4 Button
PF02040241



6 Button
PF02060355



8 Button
PF02080237



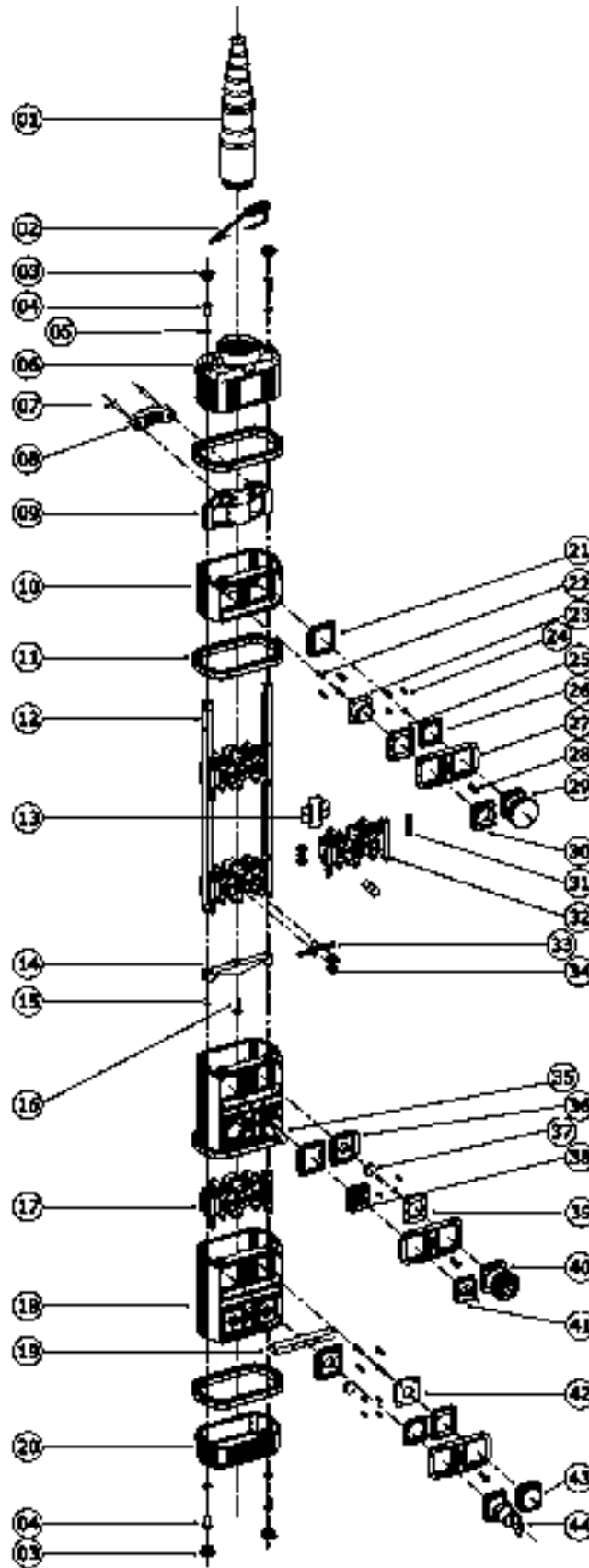
10 Button
PF02100324

- 2, 3, 12 button standard units available
- 12 - 20 button pendants and custom pendants available - see page M31

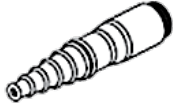




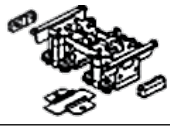





SPA PENDANT - ACCESSORY PARTS

M 26

SPA Pendant - Detailed Drawing



Spare Parts

Reference	Illustration	Description	Part No.	Price
01		Cable Sleeve	PRSL0146PE	\$68.00
02		Hook	PRGA0012PE	\$5.50
17		1 N.O. + 1 N.C. / 1 N.O. + 1 N.C. Switch 2 N.O. + 1 N.C. / 2 N.O. + 1 N.C. Switch 1 N.O. + 1 N.C. / 2 N.O. + 2 N.C. Switch 2 N.O. + 2 N.C. / 2 N.O. + 2 N.C. Switch	PRSL0074XX PRSL0075XX PRSL0076XX PRSL0077XX	\$95.00 \$139.00 \$153.00 \$180.00
23		Red Pilot Light Green Pilot Light Yellow Pilot Light	PRSL3534UL PRSL3535UL PRSL3542UL	\$47.00 \$47.00 \$47.00
29		Impulse Mushroom Push-Button	PRSL3531PI	\$56.00
32		1 N.O. + 1 N.C. Switch / Lamp Holder	PRSL0073XX	\$139.00
35		2 Position Selector Switch 3 Position Selector Switch	PRSL3540PI PRSL3543PI	\$52.00 \$72.00
40		Emergency Stop Mushroom Push-Button	PRSL3500PI	\$113.00
41		Button	PRTAXXXXXX (see page M30)	\$14.00
43		Blanking Plug	PRSL0517UL	\$32.00
44		2 Position Key Selector Switch	PRSL3539PI	\$133.00

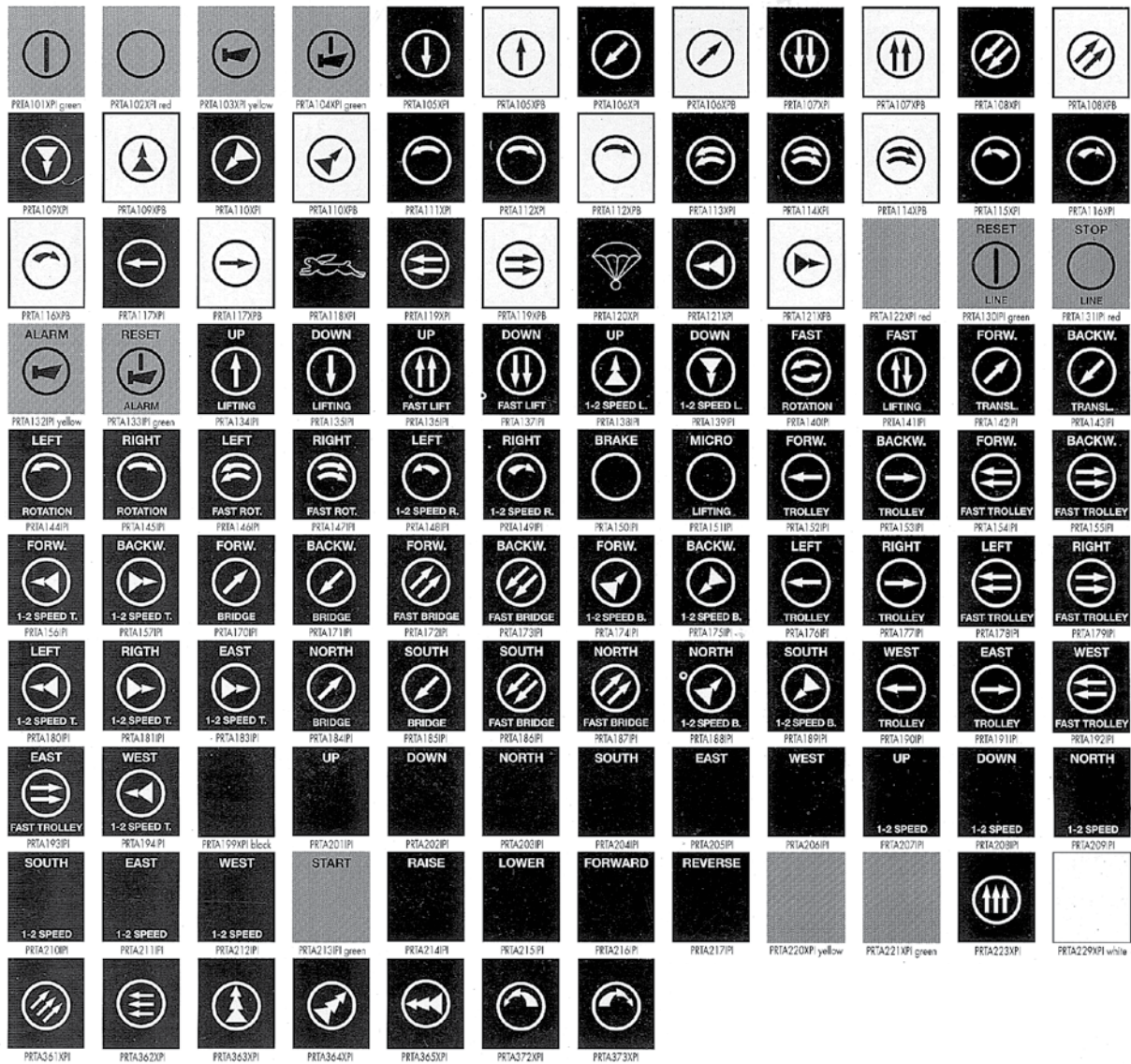
Discount Schedule SC-20

SPA PENDANT - STANDARD BUTTONS

M 28

Standard Buttons

Custom Engraving available - consult factory \$20.00 each (list).



SPA PENDANT CONTROL STATION - TECHNICAL SPECIFICATIONS

Technical Specifications

Conformity to Community Directives	73/23/CEE	93/68/CEE		
Conformity to Standards	EN 60204-1 EN 60529	EN 60947-1 EN 418	EN 60947-5-1 EN 50013	IEC 536
Ambient Temperature	Storage Operational	-40° C / +70° C -25° C / +70° C		
Protection Degree	IP 65			
Insulation Category	Class II			
Cable Entry	Rubber Cable Sleeve (Ø 14+ 26 mm)			
Operating Positions	Any Position			
Approvals	CE			

Technical Specifications of Contact Switches

Utilisation Category	AC 15
Rated Operational Current	1.9 A
Rated Operational Voltage	380V
Rated Thermal Current	10 A
Rated Insulation Voltage	500V ~
Mechanical Life	1 x 10 ⁶ operations
Terminal Referencing	According to EN 50013
Connections	Screw-Type Terminals
Approvals	CE cUL_{us}

SPA PENDANT - MAINTENANCE INSTRUCTIONS

M 30

Use & Maintenance Instructions

The **SPA Pendant Control Station** is an electromechanical device for low voltage control circuits (EN 60947-1, EN60947-5-1) to be used as electrical equipment on machines (EN 60204-1) in compliance with the fundamental requirements of the Low Voltage Directive 73/23/CEE and of the Machine Directive 89/392/CEE.

The pendant station is designed for industrial use and also for use under particularly severe climactic conditions (operational temperature -25 °C to +70 °C, suitable for use in tropical environment). The equipment is not suitable for use in environments with potentially explosive atmosphere, corrosive agents or a high percentage of sodium chloride (saline fog). Oils, acids or solvents may damage the equipment.

The switches (17, 32) are designed for auxiliary control of contactors or electromagnetic loads (utilisation category AC-15 according to EN 60947-5-1). Do not connect more than one phase to each switch (17, 32). Do not oil or grease the control elements (29, 35, 40, 41, 44) or the switches (17, 32).

The installation of the pendant station shall be carried out by an expert and trained personnel. Wiring shall be properly done according to current instructions.

Prior to installation and the maintenance of the pendant station, the main power of the machinery shall be turned off.

Steps for the proper installation of the pendant station

- remove the plastic plugs (03) from the lower cover (20)
- remove the screws (04) from the lower cover (20)
- remove the lower cover (20), the rubber frames (11) and the sections (10, 18) from the inner part of the pendant station; make sure to follow the same sequence when reassembling the sections (10, 18)
- remove the plastic plugs (03) from the upper cover (06)
- remove the screws (04) from the upper cover (06) and the latter from the inner part of the pendant station
- screw the variable section rubber cable sleeve (01) on the upper cover (06)
- cut the variable section rubber cable sleeve (33) and insert the cable tight enough to guarantee protection against water and/or dust
- strip the cable to a length suitable for wiring the switches (17, 32)
- tape the stripped part of the cable
- fix the cable inside the pendant station using the cable clamp (07, 08)
- connect all the switches (17, 32) (tighten the wires into the terminals with a torque equal to 0.8 Nm; insertability of wires into the switch terminals equal to 2 x 1.5mm² - 1 x 2.5mm²); for the correct positioning of the wires into the pendant station, remove the wire covers (13) from the switches (17,32), place the wires into the seats and fix the wire covers again (13)
- mount the upper cover (06), make sure that the writing "TER" and the label identifying the product are on the same side of the actuators (29, 35, 40, 41, 44)
- screw the plastic plugs (03) on the lower cover (20)
- assemble the hook (02)

Additional steps for replacing the switches

- open the pendant station as explained in the installation steps
- remove possible wires from the switch (17, 32) needing replacement loosen the screw (16) on the bottom of the inner part of the pendant station
- remove the two plastic guides (31) from the switch (17, 32) and remove the latter from the pendant station
- remove the two plastic guides (31) from the new switch (17, 32)
- place the switch (17, 32) on the inner part of the pendant station
- place back the two plastic guides (31) checking that they are on the right side (the slightly raised part of the guides must be in touch with the metal rods (12) of the pendant station)
- tighten the screw (16) on the bottom of the inner part of the pendant station in order to fix the switches (17, 32)
- wire back the switch and close the pendant station as explained in the installation steps

Periodic maintenance steps

- check the proper tightening of the screws (04, 28)
- check the proper tightening of the switch (17, 32) terminal screws
- check all wiring (in particular where wires clamp into the switches)
- check the conditions of the rubber frames (11) of the rubber of the actuators (21, 25, 36) and of the cable sleeve (01)
- check that the plastic enclosure (06, 10, 18, 20) of the pendant station is not broken

In case any component of the pendant station is modified, the validity of the markings and the guarantee on the equipment are annulled. Should any component need replacement, use original spare parts only.

Springer Controls declines all responsibility for damages caused by the improper use or installation of the equipment.

SPA PENDANT CONTROL STATION

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Request Form for Non-Standard SPA Pendant Stations

Instructions:

- Fill in the **Pendant Station** scheme for the number of control elements required (2, 3, 4, 6, 8, 10, 12, 14, 16, 18 or 20 buttons).
- Write the number corresponding to the **control element** required (broken line box). When buttons are required, fill in the PRTA_____ code and when necessary, mark the direction of the arrow into the corresponding box.
- Write the number corresponding to the **switches** required. When PRSL0076xx is required, mark the position of the 2 N.O. + 2 N.C. contacts (left or right).
- Mark the box corresponding to the mechanical interlock when required.
- Mark the appropriate box to show where the cable sleeve and the hook must be assembled (top or bottom).

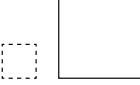


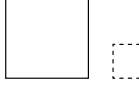









































Control Elements

- | | |
|---|---|
| 1 | PRSL3500PI - Emergency Stop Mushroom Pushbutton |
| 2 | PRSL3531PI - Impulse Mushroom Pushbutton |
| 3 | PRSL3539PI - 2 Position Key Selector Switch |
| 4 | PRSL3540PI - 2 Position Selector Switch |
| 5 | PRSL3543PI - 3 Position Selector Switch |
| 6 | PRSL3534UL - Red Pilot Light |
| 7 | PRSL3535UL - Green Pilot Light |
| 8 | PRSL3542UL - Yellow Pilot Light |
| 9 | PRSL0517UL - Blanking Plug |

Switches

- | | |
|---|--|
| 1 | PRSL0073XX - 1 N.O. + 1 N.C. / Lamp Holder |
| 2 | PRSL0074XX - 1 N.O. + 1 N.C. / 1 N.O. + 1 N.C. |
| 3 | PRSL0075XX - 2 N.O. + 1 N.C. / 2 N.O. + 1 N.C. |
| 4 | PRSL0076XX - 1 N.O. + 1 N.C. / 2 N.O. + 2 N.C. |
| 5 | PRSL0077XX - 2 N.O. + 2 N.C. / 2 N.O. + 2 N.C. |

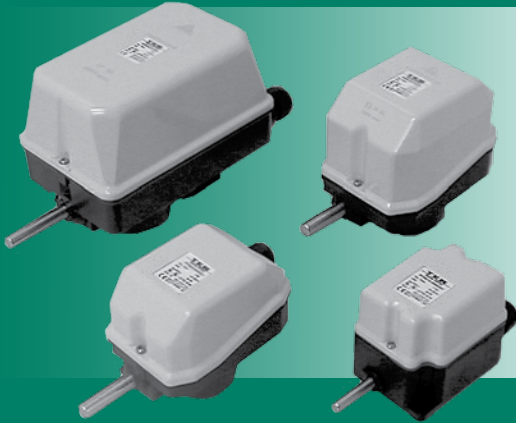
Remarks:.....

	Hook	<input type="checkbox"/>				
	Cable Sleeve	<input type="checkbox"/>				
<input type="checkbox"/>  PRTA _____	<input type="checkbox"/>  Switch	<input type="checkbox"/>  Mechanical Interlock	<input type="checkbox"/>  PRTA _____	<input type="checkbox"/> 		
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	Cable Sleeve	<input type="checkbox"/>	Hook	<input type="checkbox"/>		

NOTES

M 32

ROTARY GEAR LIMIT SWITCHES



SPRINGER
controls company

Index
N

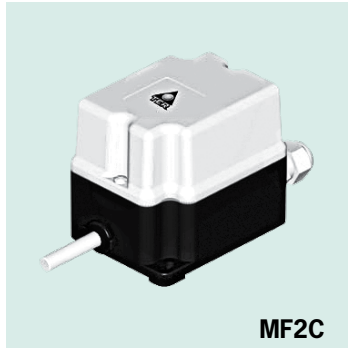
Springer Controls offers a complete line of the T.E.R. (Tecno Elettrica Ravasi) Rotary Gear Limit Switches with ratios from 1:1 to 1:9,400. Outputs with 2 to 12 switches along with optimal potentiometer outputs. All units are manufactured by Tecno Elettrica Ravasi to ISO 9001 standards and are UL and c-UL approved. Some applications include but are not limited to; overhead doors, overhead crane applications, boat hoists, and theatrical stage applications. **Springer Controls** can customize all model types, along with gear ratios, to meet your application.

ROTARY GEAR LIMIT SWITCHES

Model/Types & General Operation.....	N2, N3
MF2C Part No. - Pricing, Request Form.....	N4, N5
PF2C Part No. - Pricing, Request Form.....	N6, N7
GF4C Part No. - Pricing, Request Form.....	N8, N9
SF12C Part No. - Pricing, Request Form.....	N10, N11
Accessory Parts & Specifications.....	N12
Dimensions.....	N13, N14

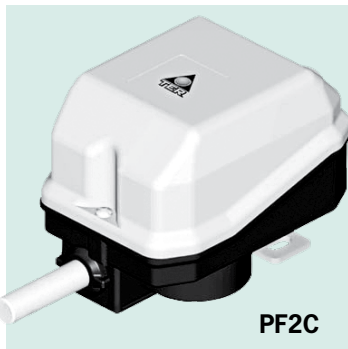
ROTARY GEAR LIMIT SWITCHES - MODEL TYPES & GENERAL OPERATION

N₂



MF2C

- 1:15 to 1:150 speed ratio, 2 or 3 micro-switches (2 standard), snap action
- 600 Maximum RPM
- Smallest RGLS; Weight .6 lbs
- IP65 rated



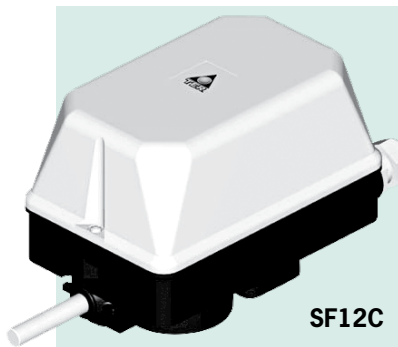
PF2C

- 1:1 to 1:295 speed ratio, 2 micro-switches, snap action or slow break
- 1 potentiometer in place of micro-switches.
- 1200 Maximum RPM
- Weight 1.2 lbs
- IP65 rated



GF4C

- 1:1 to 1:900 speed ratio, 1 to 6 micro-switches (4 standard), snap action or slow break
- 1 potentiometer in place of micro-switch
- 1800 Maximum RPM
- Weight 1.6 lbs
- IP65 rated

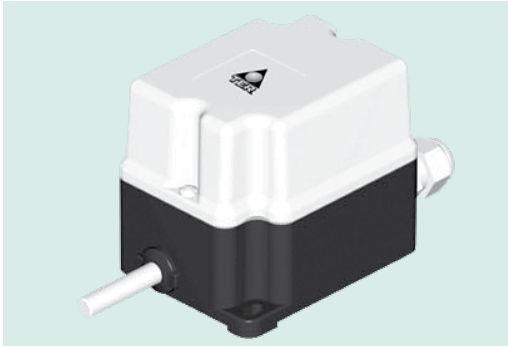


SF12C

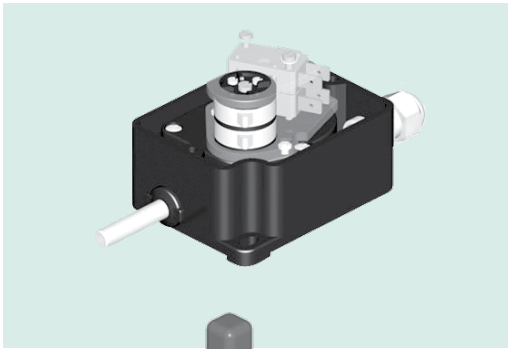
- 1:1 to 1:9400 speed ratio, 12 micro-switches, snap action or slow break
- 2 potentiometer in addition to 4 micro-switches
- 1800 Maximum RPM
- Weight 1.6 lbs
- IP65 rated

ROTARY GEAR LIMIT SWITCHES - GENERAL OPERATION

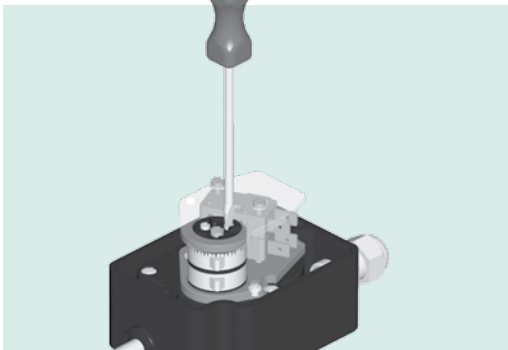
N3



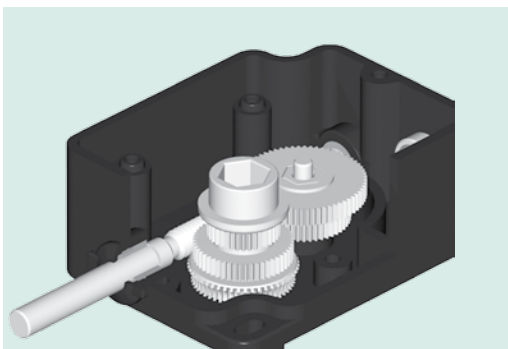
The rotary limit switch is used to control the movement of industrial machinery. It operates as an auxiliary controller of electrical motors through a power interface, such as a contactor or PLC. Suitable for heavy duty, its shaft is connected to the motor and, after a set number of revolutions, the cams operate the switches, thus starting the predetermined movement.



Revolution ratios ranging from 1:1 to 1:9400 results from the use of different combinations of gear wheels between the input shaft and the output shaft, which is connected to the cams operating the micro-switches. The cam-switch sets can be substituted for potentiometers suitable for the connection of electronic equipment.



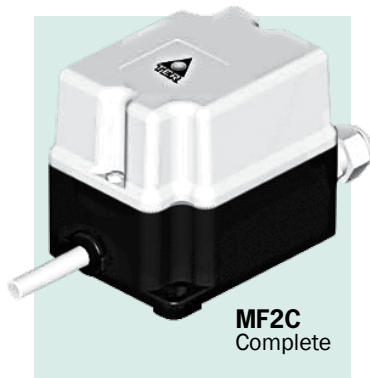
Each cam can be set with great accuracy using the cam adjusting screws. The micro-switches are of a positive opening type, thus suitable for safety functions. It is available with direct control switches for operating directly on the motor. Materials and components are wear resistant and protect the equipment against water and dust.



The part number listed for each model type utilize the standard, or most common ratio's. Any ratio can be requested, and a custom part # given, at no extra cost.

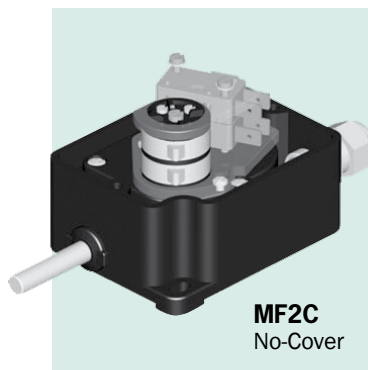
MF2C ROTARY LIMIT SWITCH

N4



MF2C Standard Pricing

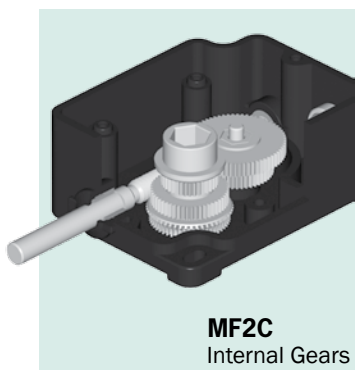
Type	# of Switches	Price
MF2C	2	\$253.00
	3	\$307.00



MF2C General Information



- 1:15 to 1:150 speed ratio, 2 or 3 micro-switches, snap action
- IP65 rated
- 600 Maximum RPM
- 8mm shaft standard
- Smallest RGLS; Weight .6 lbs
- UL approved
- 3 amp rated operating current



MF2C Standard Units Part Number*

Revolution Ratio	2 Switches	3 Switches
1:15	F5901 0015 0003	F5901 0015 0004
1:25	F5901 0025 0005	F5901 0025 0006
1:50	F5901 0050 0005	F5901 0050 0012
1:75	F5901 0075 0004	F5901 0075 0005
1:100	F5901 0100 0005	F5901 0100 0007
1:150	F5901 0150 0003	F5901 0150 0004

Standard limit switches are equipped with 2 or 3 snap-action switches and with pointed cams (PRSL7140PI). Maximum revolution ratio 1:150.

* Other assemblies and revolution ratios are available upon request. See MF2C request form on page N5. See page N13 for dimensional specifications.

Discount Schedule SC-20






REQUEST FORM FOR NON-STANDARD MF2C LIMIT SWITCHES

N5

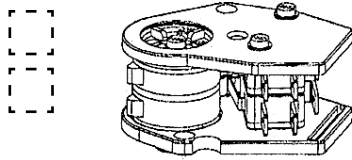
Instructions

- Write the number corresponding to the **cams** and to the **pinion gear** required
- Write the **revolution ratio** required
- Mark the boxes corresponding to the components required

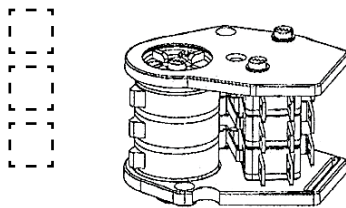
CAMS

- | | | |
|--------------------------|---|------------|
| <input type="checkbox"/> |  | PRSL7140PI |
| <input type="checkbox"/> |  | PRSL7141PI |
| <input type="checkbox"/> |  | PRSL7142PI |
| <input type="checkbox"/> |  | PRSL7143PI |
| <input type="checkbox"/> |  | PRSL7144PI |

CAMS

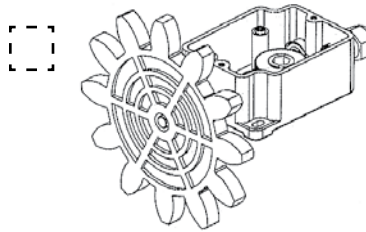


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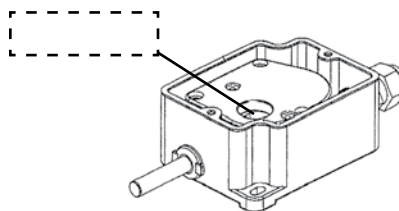


PINION GEARS

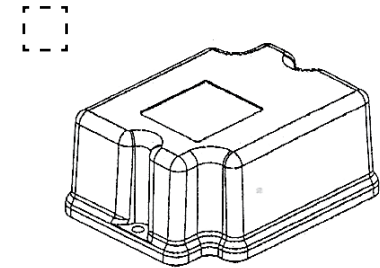
- | | | |
|--------------------------|------------|---------|
| <input type="checkbox"/> | PRSL0911PI | M10 Z12 |
| <input type="checkbox"/> | PRSL0912PI | M12 Z10 |
| <input type="checkbox"/> | PRSL0913PI | M14 Z10 |
| <input type="checkbox"/> | PRSL0914PI | M16 Z10 |
| <input type="checkbox"/> | PRSL0915PI | M20 Z8 |
| <input type="checkbox"/> | PRSL0916PI | M5 Z12 |
| <input type="checkbox"/> | PRSL0917PI | M6 Z11 |
| <input type="checkbox"/> | PRSL0918PI | M8 Z12 |
| <input type="checkbox"/> | PRSL0944PI | M12 Z12 |



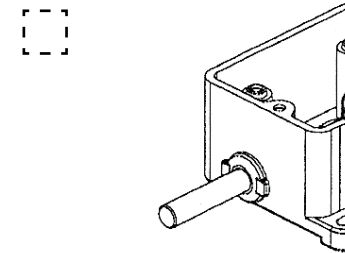
REVOLUTION RATIO



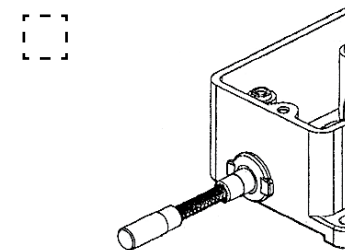
COVER



STANDARD SHAFT



FLEXIBLE SHAFT



Remarks:

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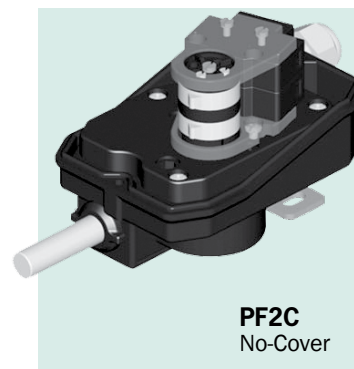
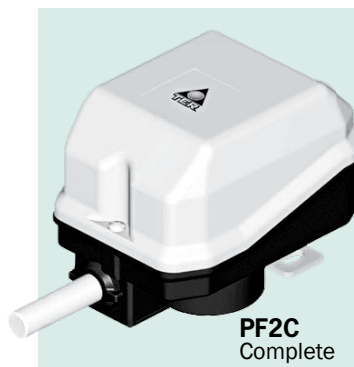
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PF2C ROTARY LIMIT SWITCH

N6



PF2C Standard Pricing

Type	Revolution Ratio	Price
PF2C	1:1 thru 1:19	\$520.00
	1:20 thru 1:295	\$460.00

PF2C General Information



- 1:1 to 1:295 speed ratio, 2 micro-switches (snap action or slow break)
- Optional potentiometer
- IP65 rated
- 1200 Maximum RPM
- 12mm input shaft
- Weight 1.2 lbs
- UL approved
- 3 amp rated operating current

PF2C Standard Units Part Number*

Revolution Ratio	Type of Contact	2 Switches
1:10	Snap	F5902 0010 0001
	Slow	F5902 0010 0004
1;15	Snap	F5902 0015 0001
	Slow	F5902 0015 0003
1;20	Snap	F5902 0020 0002
	Slow	F5902 0020 0008
1;25	Snap	F5902 0025 0001
	Slow	F5902 0025 0003
1;50	Snap	F5902 0050 0001
	Slow	F5902 0050 0006
1;75	Snap	F5902 0075 0001
	Slow	F5902 0075 0003
1;100	Snap	F5902 0100 0001
	Slow	F5902 0100 0002
1;150	Snap	F5902 0150 0001
	Slow	F5902 0150 0002
1;200	Snap	F5902 0200 0001
	Slow	F5902 0200 0002
1;250	Snap	F5902 0250 0002
	Slow	F5902 0250 0003

*Standard limit switches are equipped with 2 snap or slow action switches and with pointed cams (PRSL714OPI). Other assemblies and revolution ratios are available upon request. See PF2C request form on page N7. See page N13 for dimensional specifications.

Discount Schedule SC-20






REQUEST FORM FOR NON-STANDARD PF2C LIMIT SWITCHES

N7

Instructions

- Write the number corresponding to the **cams**, the **switches**, the **pinion gear** and **potentiometers** required
- When a potentiometer is required, mark the box corresponding to the type of **coupling** needed
- Write the **revolution ratio** required
- Mark the boxes corresponding to the components required.

CAMS

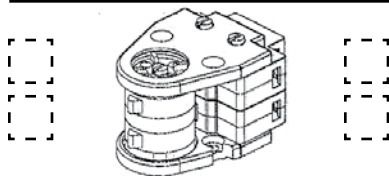
- | | | |
|--------------------------|---|------------|
| <input type="checkbox"/> |  | PRSL7140PI |
| <input type="checkbox"/> |  | PRSL7141PI |
| <input type="checkbox"/> |  | PRSL7142PI |
| <input type="checkbox"/> |  | PRSL7143PI |
| <input type="checkbox"/> |  | PRSL7144PI |

SWITCHES

- | | | |
|--------------------------|------------|-------------|
| <input type="checkbox"/> | PRSL0036XX | Snap Action |
| <input type="checkbox"/> | PRSL0037XX | Slow Action |

CAMS

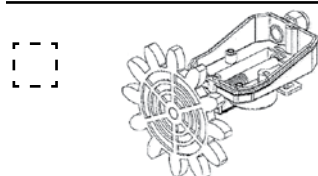
SWITCHES



PINION GEARS

- | | | |
|--------------------------|------------|---------|
| <input type="checkbox"/> | PRSL0911PI | M10 Z12 |
| <input type="checkbox"/> | PRSL0912PI | M12 Z10 |
| <input type="checkbox"/> | PRSL0913PI | M14 Z10 |
| <input type="checkbox"/> | PRSL0914PI | M16 Z10 |
| <input type="checkbox"/> | PRSL0915PI | M20 Z8 |
| <input type="checkbox"/> | PRSL0916PI | M5 Z12 |
| <input type="checkbox"/> | PRSL0917PI | M6 Z11 |
| <input type="checkbox"/> | PRSL0918PI | M8 Z12 |
| <input type="checkbox"/> | PRSL0944PI | M12 Z12 |

PINION GEAR

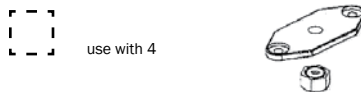


POTENTIOMETERS

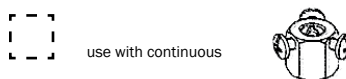
- | | |
|--------------------------|---|
| <input type="checkbox"/> | PRVV9020PE
Megatron 4.7 k
continuous rotation |
| <input type="checkbox"/> | PRVV9025PE
Megatron 10 k
continuous rotation |
| <input type="checkbox"/> | PRVV9035PE
Megatron 2.2 k
continuous rotation |
| <input type="checkbox"/> | PRVV9030PE
MCB 10 k (320° thread) |
| <input type="checkbox"/> | PRVV9031PE
MCB 10 k
continuous rotation |



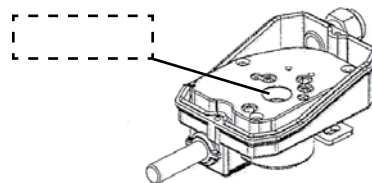
O-RING COUPLING



FIXED COUPLING



REVOLUTION RATIO



Remarks:

.....

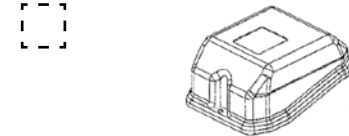
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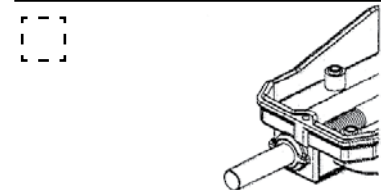
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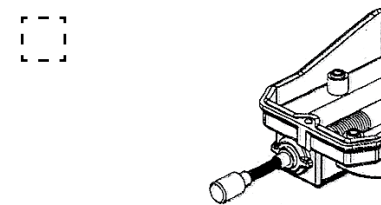
COVER



STANDARD SHAFT



FLEXIBLE SHAFT



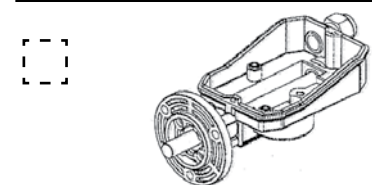
MALE COUPLING



FEMALE COUPLING



FLANGE



GF4C ROTARY LIMIT SWITCH



N8

GF4C Standard Pricing

Type	Revolution Ratio	2 Switch Price	3 Switch Price	4 Switch Price
GF4C	1:1 thru 1:20	\$614.00	\$713.00	\$813.00
	1:25 thru 1:960	\$533.00	\$623.00	\$722.00

GF4C General Information



- 1:1 to 1:960 speed ratio, 4 micro-switches (snap action or slow break)
- Optional potentiometer
- IP65 rated
- 1800 Maximum RPM
- 12mm input shaft
- Weight 1.2 lbs
- UL approved
- 3 amp rated operating current

GF4C Standard Units Part Number*

Revolution Ratio	Type of Contact	2 Switches	3 Switches	4 Switches
1:1	Snap	F5903 0001 0003	F5903 0001 0002	F5903 0001 0001
	Slow	F5903 0001 0004	F5903 0001 0005	F5903 0001 0006
1:5	Snap	F5903 0005 0002	F5903 0005 0003	F5903 0005 0001
	Slow	F5903 0005 0004	F5903 0005 0005	F5903 0005 0006
1:10	Snap	F5903 0010 0003	F5903 0010 0004	F5903 0010 0002
	Slow	F5903 0010 0005	F5903 0010 0006	F5903 0010 0007
1:15	Snap	F5903 0015 0004	F5903 0015 0003	F5903 0015 0002
	Slow	F5903 0015 0007	F5903 0015 0008	F5903 0015 0001
1:20	Snap	F5903 0020 0002	F5903 0020 0003	F5903 0020 0001
	Slow	F5903 0020 0004	F5903 0020 0005	F5903 0020 0006
1:25	Snap	F5903 0025 0006	F5903 0025 0003	F5903 0025 0001
	Slow	F5903 0025 0007	F5903 0025 0008	F5903 0025 0002
1:50	Snap	F5903 0050 0002	F5903 0050 0003	F5903 0050 0006
	Slow	F5903 0050 0028	F5903 0050 0017	F5903 0050 0007
1:75	Snap	F5903 0075 0007	F5903 0075 0008	F5903 0075 0004
	Slow	F5903 0075 0009	F5903 0075 0010	F5903 0075 0006
1:100	Snap	F5903 0100 0002	F5903 0100 0004	F5903 0100 0003
	Slow	F5903 0100 0001	F5903 0100 0013	F5903 0100 0004
1:150	Snap	F5903 0100 0002	F5903 0150 0011	F5903 0150 0008
	Slow	F5903 0150 0001	F5903 0150 0009	F5903 0150 0003
1:200	Snap	F5903 0200 0006	F5903 0200 0002	F5903 0200 0003
	Slow	F5903 0200 0007	F5903 0200 0004	F5903 0200 0008
1:250	Snap	F5903 0250 0003	F5903 0250 0007	F5903 0250 0008
	Slow	F5903 0250 0009	F5903 0250 0010	F5903 0250 0011
1:300	Snap	F5903 0300 0004	F5903 0300 0006	F5903 0300 0007
	Slow	F5903 0300 0008	F5903 0300 0009	F5903 0300 0010

*Standard limit switches are equipped with 2, 3 or 4 snap or slow action switches and with pointed cams (PRSL7140PI). Other assemblies and revolution ratios are available upon request. See GF4C request form on page N9. It is possible to assemble up to 6 switches. Maximum ratio 1:960. See page N13 for dimensional specifications.

Discount Schedule SC-20






REQUEST FORM FOR NON-STANDARD GF4C LIMIT SWITCHES

N₉

Instructions

- Write the number corresponding to the **components** required
- Write the numbers corresponding to the **cams**, the **switches**, the **pinion gear** and the **potentiometers** required
- When a potentiometer is required, mark the box corresponding to the type of **coupling** needed
- Write the **revolution ratio** required for each output

CAMS

1		PRSL7140PI
2		PRSL7141PI
3		PRSL7142PI
4		PRSL7143PI
5		PRSL7144PI

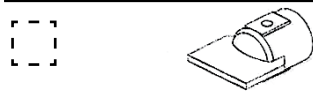
SWITCHES

1	PRSL0036XX	Snap Action
2	PRSL0037XX	Slow Action

POTENTIOMETERS

1	PRVV9020PE	Megatron 4.7 k continuous rotation
2	PRVV9025PE	Megatron 10 k continuous rotation
3	PRVV9035PE	Megatron 2.2 k continuous rotation
4	PRVV9030PE	MCB 10 k
5	PRVV9031PE	MCB 10 k continuous rotation

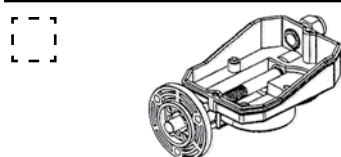
MALE COUPLING



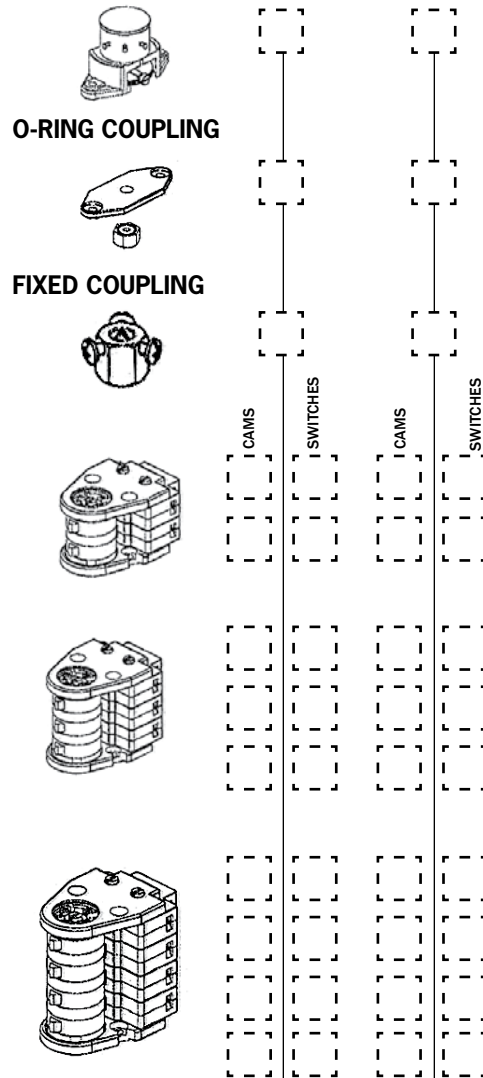
FEMALE COUPLING



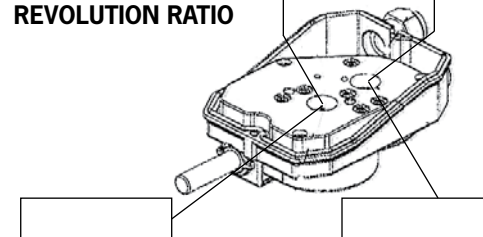
FLANGE



POTENTIOMETERS



REVOLUTION RATIO



COVER



STANDARD SHAFT



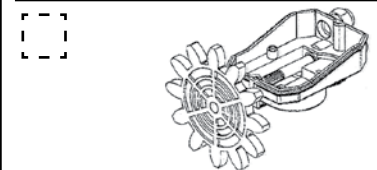
FLEXIBLE SHAFT



PINION GEARS

1	PRSL0911PI	M10 Z12
2	PRSL0912PI	M12 Z10
3	PRSL0913PI	M14 Z10
4	PRSL0914PI	M16 Z10
5	PRSL0915PI	M20 Z8
6	PRSL0916PI	M5 Z12
7	PRSL0917PI	M6 Z11
8	PRSL0918PI	M8 Z12
9	PRSL0944PI	M12 Z12

PINION GEAR



Remarks:.....

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SF12C ROTARY LIMIT SWITCH

SF12C Standard Pricing

Type	Revolution Ratio	2 Switch Price	3 Switch Price	4 Switch Price	6 Switch Price	8 Switch Price	10 Switch Price	12 Switch Price
SF12C	1:1 thru 1:15	\$1044	\$1152	\$1255	\$1539	\$1734	\$2025	\$2223
	1:16 thru 1:24	\$1015	\$1127	\$1235	\$1512	\$1716	\$2005	\$2203
	1:25 thru 1:2700	\$912	\$1015	\$1127	\$1411	\$1620	\$1900	\$2113
	1:2750 thru 1:9400	\$1029	\$1129	\$1237	\$1512	\$1716	---	---

N10



SF12C General Information



- 1:1 to 1:9400 speed ratio, 12 micro-switches (snap action or slow break)
- Optional potentiometer (2 total)
- IP65 rated
- 1800 Maximum RPM
- 12mm input shaft
- Weight 3.4 lbs
- 3 amp rated operating current

SF12C Standard Units Part Number*

Revolution Ratio	Type of Contact	2 Switches	3 Switches	4 Switches	6 Switches	8 Switches	10 Switches	12 Switches
1:1	Snap	F5904 0001 0001	F5904 0001 0002	F5904 0001 0003	F5904 0001 0004	F5904 0001 0005	F5904 0001 0006	F5904 0001 0007
	Slow	F5904 0001 0008	F5904 0001 0009	F5904 0001 0010	F5904 0001 0011	F5904 0001 0012	F5904 0001 0013	F5904 0001 0014
1:5	Snap	F5904 0005 0004	F5904 0005 0005	F5904 0005 0003	F5904 0005 0006	F59040005 0007	F5904 0005 0008	F5904 0005 0009
	Slow	F5904 0005 0010	F5904 0005 0011	F5904 0005 0012	F5904 0005 0013	F5904 0005 0014	F5904 0005 0015	F5904 0005 0016
1:10	Snap	F5904 0010 0002	F5904 0010 0003	F5904 0010 0004	F5904 0010 0005	F5904 0010 0006	F5904 0010 0007	F5904 0010 0008
	Slow	F5904 0010 0009	F5904 0010 0010	F5904 0010 0011	F5904 0010 0012	F5904 0010 0013	F59040010 0014	F5904 0010 0015
1:15	Snap	F5904 0015 0007	F5904 0015 0008	F5904 0015 0002	F5904 0015 0010	F5904 0015 0001	F5904 0001 0011	F5904 0001 0012
	Slow	F5904 0015 0003	F5904 0015 0013	F5904 0015 0014	F5904 0015 0016	F5904 0015 0016	F5904 0001 0017	F5904 0001 0018
1:20	Snap	F5904 0020 0002	F5904 0020 0003	F5904 0020 0004	F5904 0020 0005	F5904 0020 0001	F5904 0020 0006	F5904 0020 0007
	Slow	F5904 0020 0008	F5904 0020 0009	F5904 0020 0010	F59040020 0011	F5904 0020 0012	F5904 0020 0013	F5904 0020 0014
1:25	Snap	F5904 0025 0003	F5904 0025 0004	F5904 0025 0005	F5904 0025 0006	F5904 0025 0001	F5904 0025 0002	F5904 0025 0007
	Slow	F5904 0025 0008	F5904 0025 0009	F5904 0025 0010	F5904 0025 0011	F5904 0025 0012	F5904 0025 0013	F5904 0025 0014
1:50	Snap	F5904 0050 0002	F59040050 0004	F5904 0050 0003	F5904 0050 0007	F5904 0050 0001	F5904 0050 0006	F5904 0050 0011
	Slow	F5904 0050 0008	F5904 0050 0005	F5904 0050 0014	F5904 0050 0015	F5904 0050 0016	F5904 0050 0017	F5904 0050 0018
1:75	Snap	F5904 0075 0014	F5904 0075 0002	F5904 0075 0003	F5904 0075 0001	F5904 0075 0004	F5904 0075 0005	F5904 0075 0006
	Slow	F5904 0075 0007	F5904 0075 0008	F5904 0075 0009	F5904 0075 0010	F5904 0075 0011	F5904 0075 0012	F5904 0075 0013
1:100	Snap	F5904 0100 0001	F5904 0100 0006	F5904 0100 0003	F5904 0100 0013	F5904 0100 0005	F5904 0100 0014	F5904 0100 0015
	Slow	F5904 0100 0002	F5904 0100 0016	F5904 0100 0018	F5904 0100 0019	F5904 0100 0019	F5904 0100 0020	F5904 0100 0021
1:150	Snap	F5904 0150 0005	F5904 0150 0006	F5904 0150 0007	F5904 0150 0009	F5904 0150 0009	F5904 0150 0010	F5904 0150 0011
	Slow	F5904 0150 0012	F5904 0150 0013	F5904 0150 0014	F5904 0150 0015	F5904 0150 0016	F5904 0150 0017	F5904 0150 0018
1:200	Snap	F5904 0200 0001	F5904 0200 0008	F5904 0200 0006	F5904 0200 0009	F5904 0200 0010	F5904 0200 0007	F5904 0200 0011
	Slow	F5904 0200 0012	F5904 0200 0013	F5904 0200 0014	F5904 0200 0002	F5904 0200 0015	F5904 0200 0016	F5904 0200 0017
1:250	Snap	F5904 0250 0009	F5904 0250 0010	F5904 0250 0011	F5904 0250 0012	F5904 0250 0013	F5904 0250 0014	F5904 0250 0015
	Slow	F5904 0250 0005	F5904 0250 0016	F5904 0250 0013	F5904 0250 0017	F5904 0250 0018	F5904 0250 0019	F5904 0250 0020
1:300	Snap	F5904 0300 0009	F5904 0300 0010	F5904 0300 0011	F5904 0300 0012	F5904 0300 0013	F5904 0300 0014	F5904 0300 0015
	Slow	F5904 0300 0005	F5904 0300 0013	F5904 0300 0013	F5904 0300 0018	F5904 0300 0018	F5904 0300 0019	F5904 0300 0020

*Standard limit switches are equipped with 2, 3, 4, 6, 8, 10 or 12 snap or slow action switches and with pointed cams (PRSL7140PI). Other assemblies and revolution ratios are available upon request. See SF12C request form on page N11. It is possible to assemble up to 12 switches. Maximum ratio 1:9400.

Discount Schedule SC-20






REQUEST FORM FOR NON-STANDARD SF12C LIMIT SWITCHES

N11

Instructions

- Write the number corresponding to the **components** required
- Write the numbers corresponding to the **cams**, the **switches**, the **pinion gear** and the **potentiometers** required
- When a potentiometer is required, mark the box corresponding to the type of **coupling** needed
- Write the **revolution ratio** required for each output

CAMS

- | | | |
|---|---|------------|
| 1 |  | PRSL7140PI |
| 2 |  | PRSL7141PI |
| 3 |  | PRSL7142PI |
| 4 |  | PRSL7143PI |
| 5 |  | PRSL7144PI |

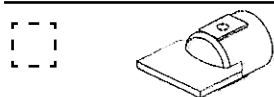
SWITCHES

- | | |
|---|------------------------|
| 1 | PRSL0036XX Snap Action |
| 2 | PRSL0037XX Slow Action |

POTENTIOMETERS

- | | |
|---|---|
| 1 | PRVV9020PE
Megatron 4.7 k
continuous rotation |
| 2 | PRVV9025PE
Megatron 10 k
continuous rotation |
| 3 | PRVV9035PE
Megatron 2.2 k
continuous rotation |
| 4 | PRVV9030PE
MCB 10 k |
| 5 | PRVV9031PE
MCB 10 k
continuous rotation |

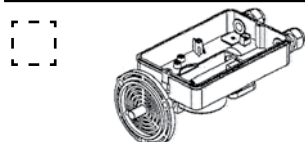
MALE COUPLING



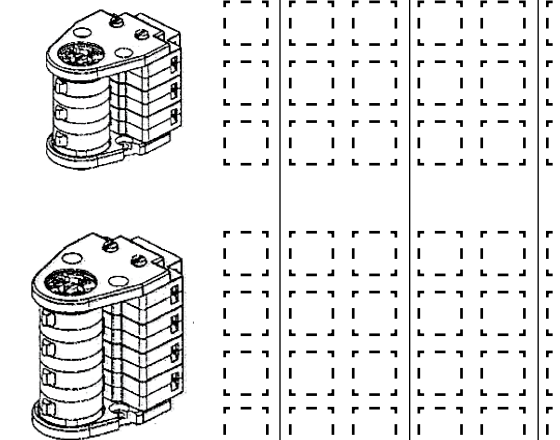
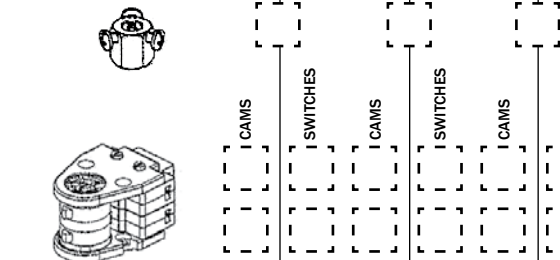
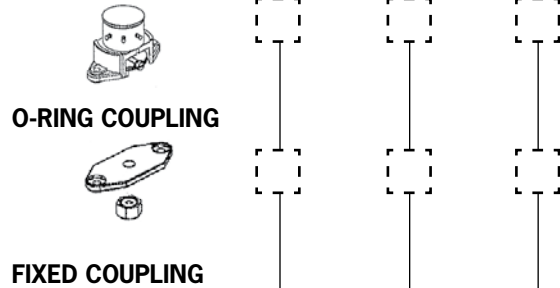
FEMALE COUPLING



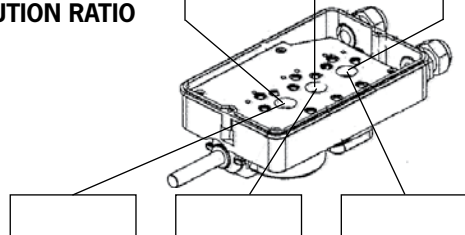
FLANGE



POTENTIOMETERS



REVOLUTION RATIO



Remarks:

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COVER



STANDARD SHAFT



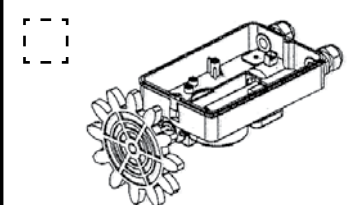
FLEXIBLE SHAFT



PINION GEARS

- | | |
|---|--------------------|
| 1 | PRSL0911PI M10 Z12 |
| 2 | PRSL0912PI M12 Z10 |
| 3 | PRSL0913PI M14 Z10 |
| 4 | PRSL0914PI M16 Z10 |
| 5 | PRSL0915PI M20 Z8 |
| 6 | PRSL0916PI M5 Z12 |
| 7 | PRSL0917PI M6 Z11 |
| 8 | PRSL0918PI M8 Z12 |
| 9 | PRSL0944PI M12 Z12 |


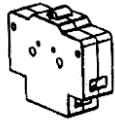

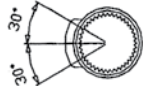




PINION GEAR



PENDANT STATIONS ACCESSORIES

Accessory Parts for all Units

N12

	Description	Part Number	Price
	Snap Action Switch; MF2C	PRSL0003XX	\$65.00
	Snap Action Switch; PF2C, GF4C, SF12C	PRSL0036XX	\$56.00
	Slow Action Switch; PF2C, GF4C, SF12C	PRSL0037XX	\$56.00
	Pointed Cam	PRSL7140PI	\$7.00
	Sector Cam (60°)	PRSL7141PI	\$7.00
	10 Point Cam	PRSL7142PI	\$9.00
	Circular Cam	PRSL7143PI	\$12.50
	180° Cam	PRSL7144PI	\$12.50
	Potentiometer MCB 10k ohm	PRVV9030PE	\$800.00

Technical Specifications

Conformity to Community Directives	73/23/CEE	93/668/CEE		
Conformity to Standards	EN 60204-1 EN 60529	EN 60947-1 EN 418	EN 60947-5-1 EN 50013	IEC 536
Ambient Temperature	Storage Operational	-40°C / +70°C -25°C / +70°C		
Protection Degree		IP 65		
Insulation Category		Class II		
Cable Entry		Rubber Cable Sleeve Ø 14+26mm		
Operating Positions		Any Position		
Homologations		CE, UL, (c)UL		

Technical Specifications of the Contact Switches

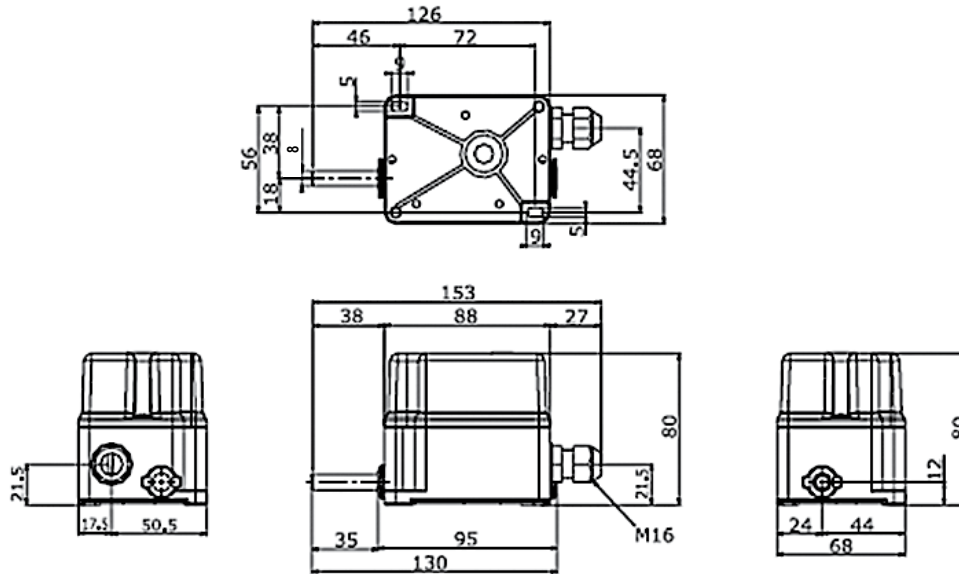
Utilisation Category	AC 15
Rated Operational Current	1.9 A
Rated Operational Voltage	380V
Rated Thermal Current	10 A
Rated Insulation Voltage	500V ~
Mechanical Life	1 x 10 ⁶ operations
Terminal Referencing	According to EN 50013
Connections	Screw-Type Terminals
Homologations	CE, UL, (c)UL

Discount Schedule SC-20

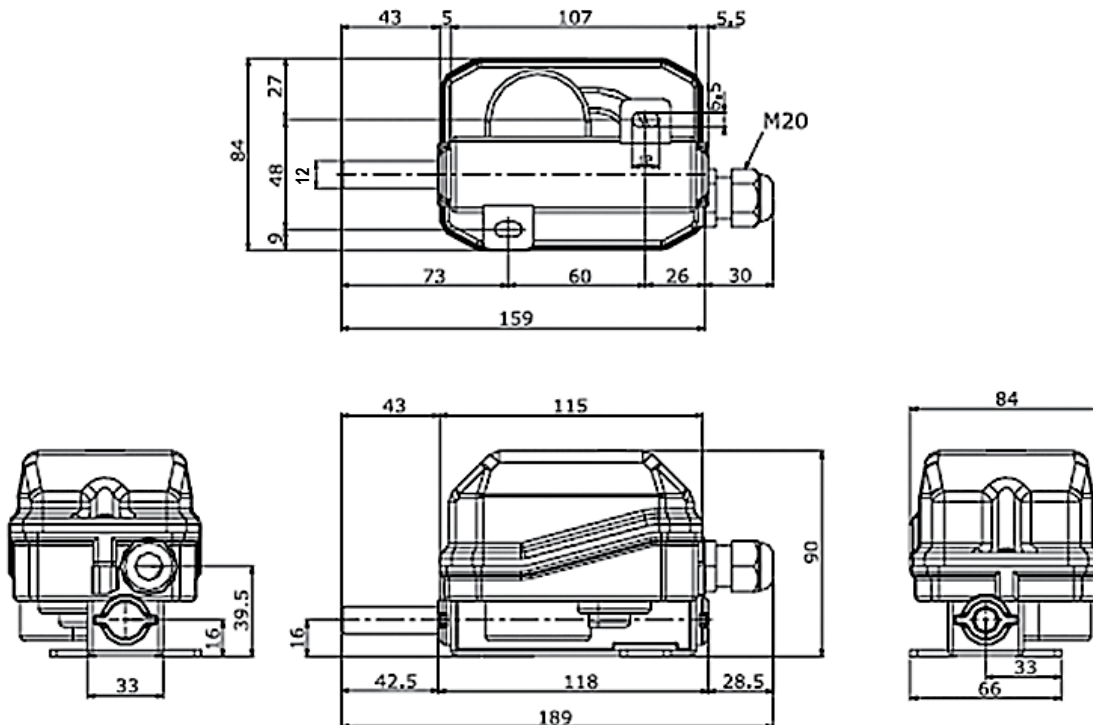
ROTARY LIMIT SWITCH - DIMENSIONS

N13

MF2C Dimensions (mm)



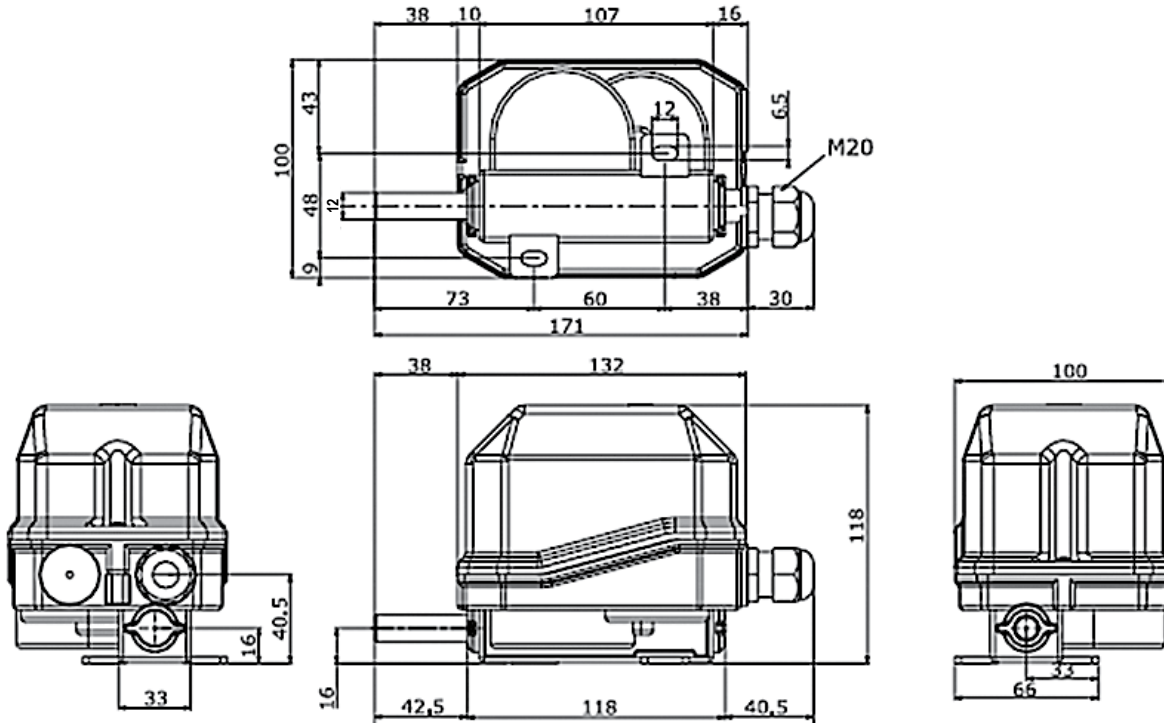
PF2C Dimensions (mm)



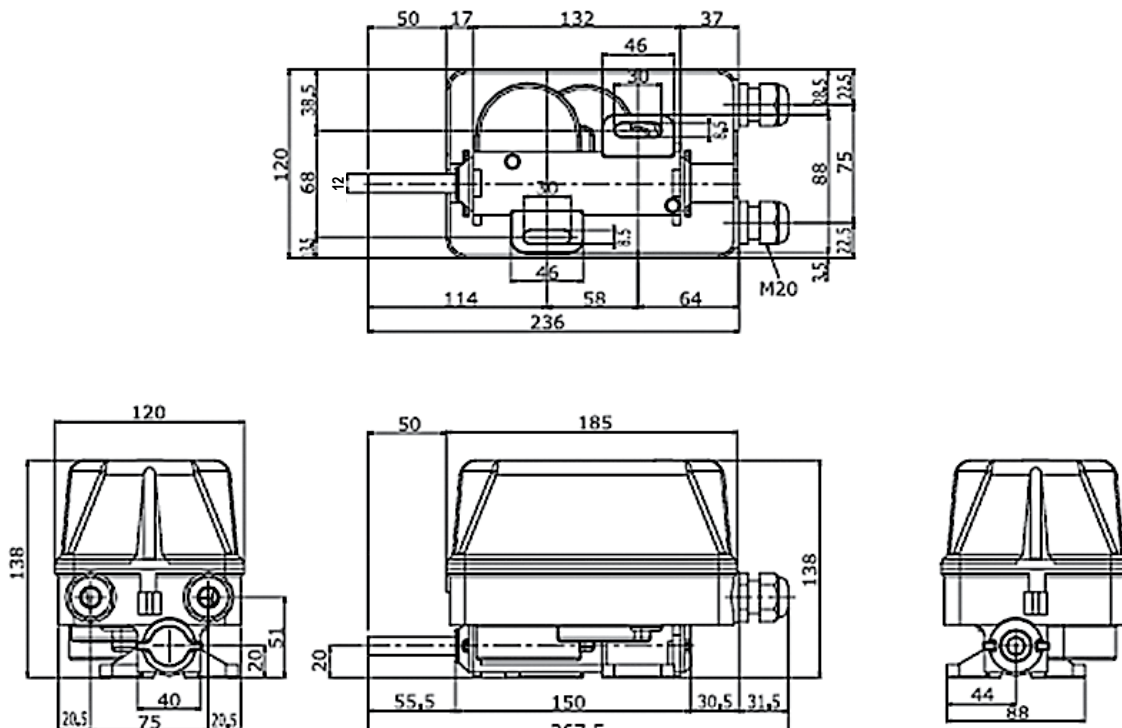
ROTARY LIMIT SWITCH DIMENSIONS

GF4C Dimensions (mm)

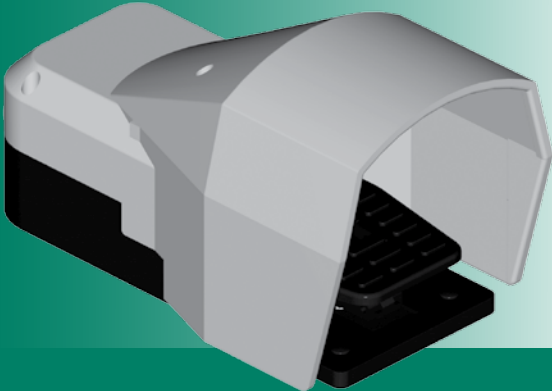
N14



SF12C Dimensions (mm)



FOOT SWITCHES



SPRINGER
controls company

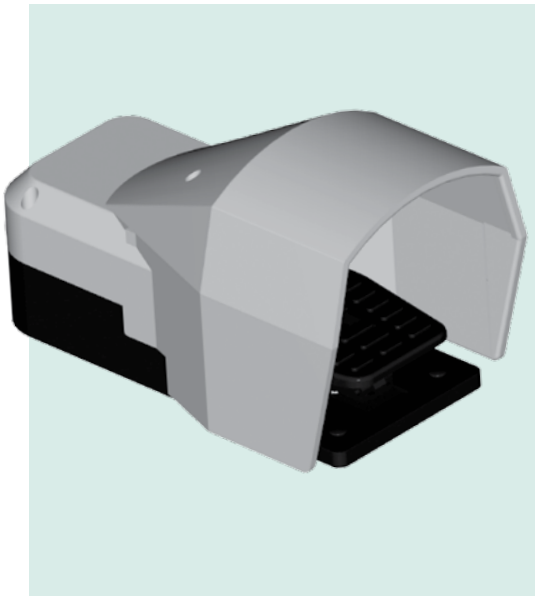
Springer Controls is the North America Distributor for Tecno Elettrica Ravasi®. We offer 2 types of foot switches with either standard or large cover availability. Each model offers outstanding quality, heavy-duty performance and great dependability

Foot Switches

Description / Technical Specifications	02
Model Types & Dimensions	03

FOOT-SWITCHES; DESCRIPTION & TECHNICAL SPECS

02



Springer Controls offer a complete line of Tecno Elettrica Ravasi (T.E.R.) series foot switches. The industrial foot switches can be used for the auxiliary control of motors on machine tools, conveyors, lifts, and auxiliary foot operated devices.

Both, shock-resistant thermoplastic and die-cast aluminum units are available, either having a standard cover or a larger cover to fit a safety shoe. All foot switches are fitted with rubber feet to prevent slipping and increase the stability of the equipment, the thermoplastic units have an iron core base to help stability. All are equipped with a safety lock to prevent accidental tripping.

The foot switches are equipped with one or two snap action (1 N.O. + 1 N.C. or 2 N.O. + 2 N.C.) contact elements. The N.C. contacts are of the positive opening type.

Double-unit foot switches are available by request along with "slow-action" contacts or 3 contact switch units. Consult factory.

Foot-Switch Part# & Pricing

Number of Contacts	Contacts	Shock-resistant Thermoplastic Series				Die-cast Aluminium Series			
		Std. Cover Catalog No	Price	Large Cover Catalog No	Price	Std. Cover Catalog No	Price	Large Cover Catalog No	Price
1	1 N.O. + 1 N.C.	PF18620010	\$126	PF54612100	\$145	PF54615100	\$307	PF54617100	\$342
2	2 N.O. + 2 N.C.	PF18620025	\$152	PF54612200	\$171	PF54615200	\$333	PF54617200	\$368

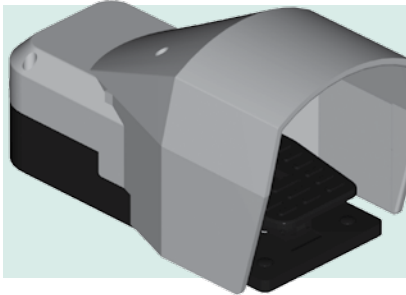
Technical Specifications

Conformity to Community Directives	73/23/CEE	93/68/CEE	
Conformity to Standards	EN 60947-1	EN 947-5-1	EN 60204-1
Ambient Temperature	Storage	-40 °C / +70 °C	
	Operational	-25 °C / +70 °C	
Protection Degree	IP 53		
Insulation Category	Class I		
Cable Entry	Cable Clamp M20		
Approvals	CE (Switches = UL, (c)UL)		
Switch Rated Operational Current	3A		
Switch Rated Operational Voltage	250V		
Switch Rated Thermal Current	10A		

Discount Schedule SC-20

FOOT-SWITCHES; DESCRIPTION & TECHNICAL SPECS

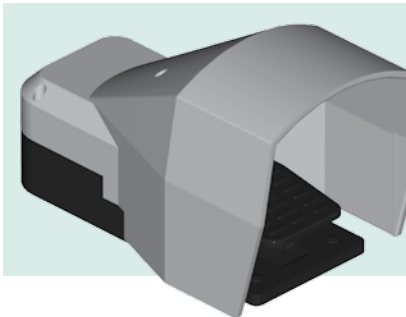
Industrial Foot-Switch; Standard Cover



- Available in thermoplastic or die-cast aluminium
- 1 or 2 switch contacts available. (Consult factory for 3 switch)

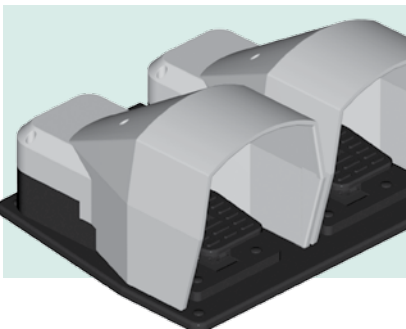
03

Industrial Foot-Switch; Large Cover



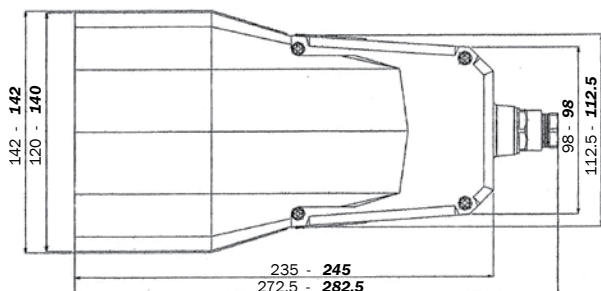
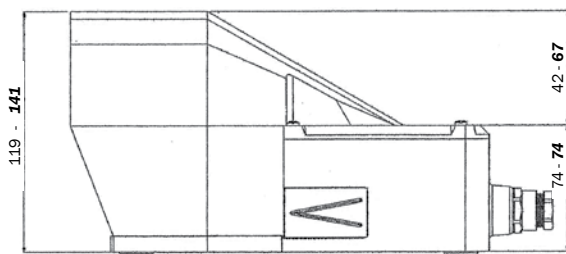
- Available in thermoplastic or die-cast aluminium
- 1 or 2 switch contacts available. (Consult factory for 3 switch)
- Larger Cover; designed for steel toed safety shoes

Industrial Foot-Switch; Double



- Consult factory for pricing and availability of a “double foot-switch”
- Double foot-switches are fixed on a metal plate and can be supplied with emergency stop mushroom push-button.

DIMENSIONS (mm)

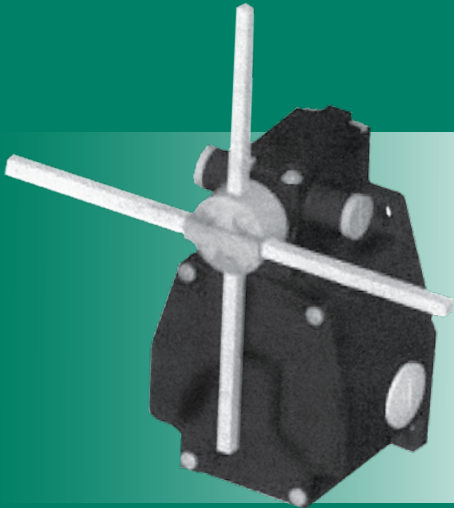


- Foot switch with standard protection
- **Foot switch with large protection**

NOTES

04

POSITION LIMIT SWITCHES



SPRINGER
controls company

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P

Springer Controls is the North American distributor for Tecno Elettrica Ravasi (T.E.R.). The Position Limit Switch can be used as control devices for overhead traveling cranes, hoists and machine tools. We offer 3 models; 4 switch (windmill), X-FSC and the X-FRZ. Each style offers outstanding quality, versatile design and rugged dependability.

POSITION (WINDMILL) LIMIT SWITCHES

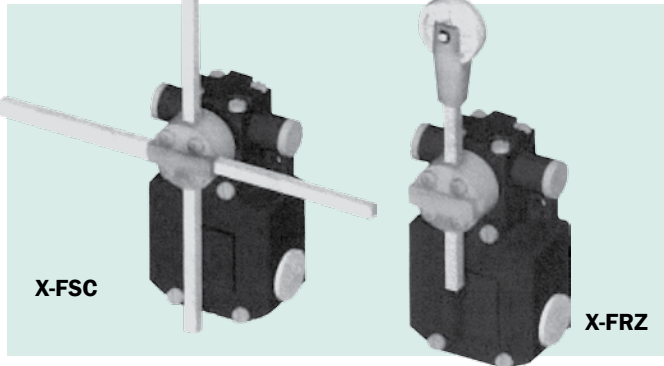
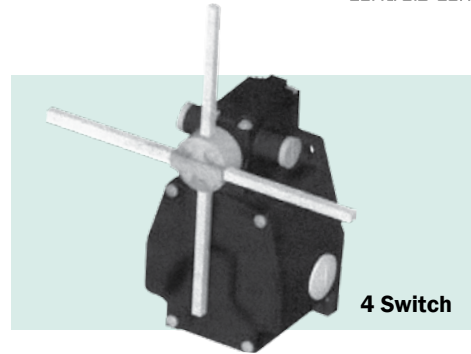
General Description; 4-switch, X-FSC, X-FRZ	P2
Technical Specifications	P2
Part Number and Pricing.....	P3
Dimensions	P4

GENERAL DESCRIPTION

Position limit switches are control devices for overhead travelling cranes, hoists and machine tools.

They operate as auxiliary controllers of electrical motors through power interfaces, such as controllers or PLCs. Materials and components are wear resistant and protect the equipment against water and dust.

The "4 Switch" limit switch is made of die-cast aluminum and has cross rods which operate 4 switches and move to maintained positions.



Both the enclosure and the head of the X-FSC limit switch are made of plastic (nylon reinforced with fiberglass) and the "T" or "cross" rods may move to 3 or 4 maintained positions.

The X-FRZ limit switch is made of the same plastic, but it features a single rod or a rod with roller with spring return movements.

The limit switches are equipped with 1 N.O. + 1 N.C. snap action switches or, upon request, with 1 N.C. slow action switches. All switches are of the positive opening type, thus suitable for safety functions.

Technical Specifications

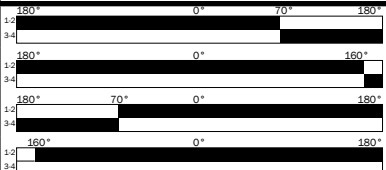
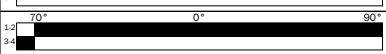
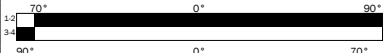
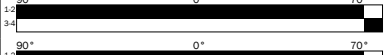

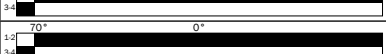
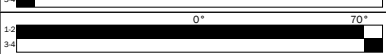
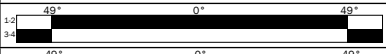
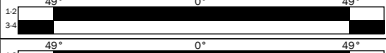

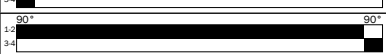
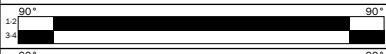



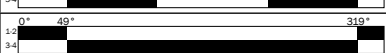
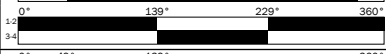
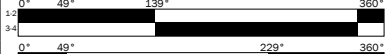


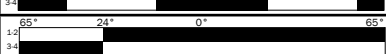
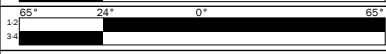
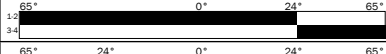
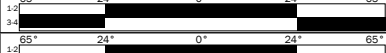

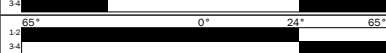
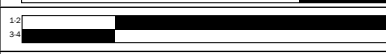
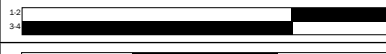

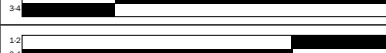


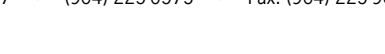
Conformity to Community Directives	73/23/CEE 93/68/CEE
Conformity to Standards	EN 60204-1 EN 60947-1 EN 60947-5-1 EN 60529 EN 50013 IEC 536
Ambient Temperature	Storage; -40°C / +70°C Operational; -25°C / +70°C
Protective Degree	IP 65
Insulation Category	X-FSC and X-FRZ; Class II 4 Switches; Class I
Cable Entry	X-FXC and X-FRZ; cable clamp PG 13,5 4 Switches; cable clamp PG 16
Operating Positions	Any position
Actuating Speed	3m/s max.
Approvals	CE

Technical Specifications of the Switches

Utilisation Category	AC 15
Rated Operational Current	3 A
Rated Operational Voltage	250V
Rated Thermal Current	10 A
Rated Insulation Voltage	300V ~
Mechanical Life	1 x 10 ⁶ operations
Terminal Referencing	According to EN 50013
Connections	Screw-type terminals with self-lifting pads
Approvals	CE UL (c)UL

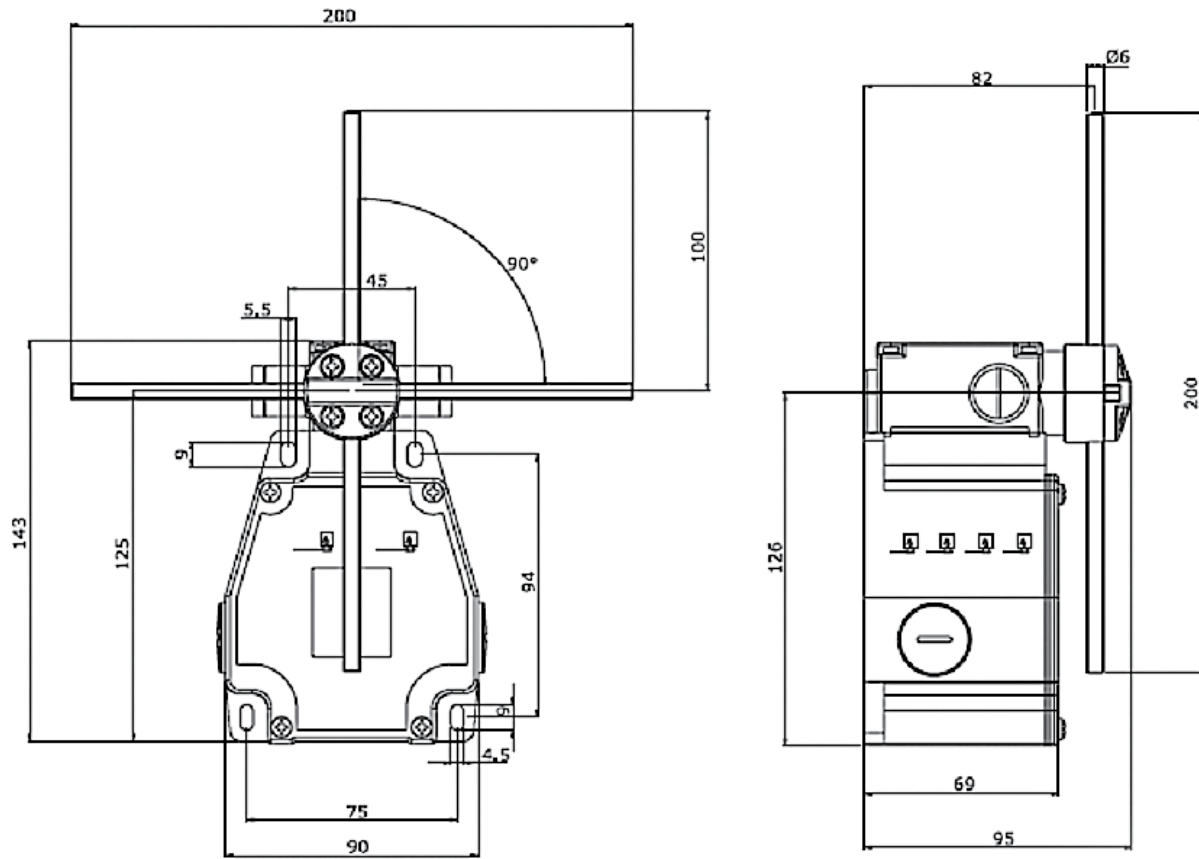
Actuating Dimensions

"T" rods - Cross rods with 3 maintained positions	
Pre-travel angle for contact operation	70° - 49°
Maximum rotation angle	90°
Average angle for the mechanical tripping	48°
Rod - Rod and roller	
Pre-travel angle for contact operation	24°
Maximum rotation angle	65°
Cross rods with 4 maintained positions	
Pre-travel angle for rotation contact operation	49°
Maximum rotation angle for each maintained position	90°
Average angle for the mechanical tripping	48°
Maintained positions each	90°

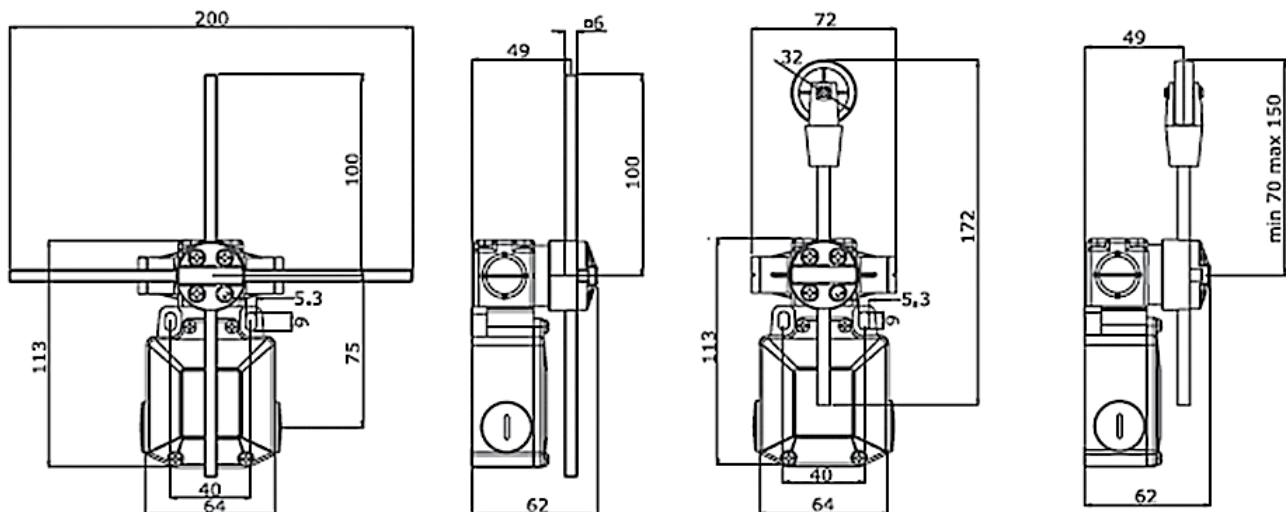
Series	Control Element	Positions	Actuating Travel	Catalog No.	Price	
4 Switches	Cross Rods	4 maintained		PF26755100	\$821.00	
						
						
						
						
						
						
						
						
			X-FSC			"T" Rods
	PF33711100	\$463.00				
	PF33712100	\$463.00				
	PF33713100	\$463.00				
	PF33714100	\$463.00				
	PF33715100	\$463.00				
	PF33710200	\$463.00				
	PF33711200	\$463.00				
	PF33712200	\$463.00				
	PF33713200	\$463.00				
	PF33714200	\$463.00				
	PF33715200	\$463.00				
Cross Rods	3 maintained			PF33750100	\$507.00	
				PF33751100	\$507.00	
				PF33752100	\$507.00	
				PF33753100	\$507.00	
				PF33750100	\$507.00	
				PF33753100	\$507.00	
X-FRZ	Rod	Spring Return			PF33700100	\$449.00
					PF33701100	\$449.00
				PF33702100	\$449.00	
				PF33703100	\$449.00	
				PF33704100	\$449.00	
				PF33705100	\$449.00	
				PF33700200	\$470.00	
				PF33701200	\$470.00	
				PF33702200	\$470.00	
				PF33703200	\$470.00	
		PF33704200	\$470.00			
		PF33705200	\$470.00			
	Rod & Roller	Spring Return		PF33700100	\$449.00	
				PF33701100	\$449.00	
				PF33702100	\$449.00	
			PF33703100	\$449.00		
			PF33704100	\$449.00		

DIMENSIONS

4 Switches (mm)



X-FSC / X-FRZ (mm)





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Springer Controls is the North American distributor for Tecno Elettrica Ravasi® joysticks. **Springer Controls** offers 2 models of industrial joysticks; **CK Series** and **PM Series**. Each offers outstanding quality, versatile design and rugged dependability. All joystick models can be custom made to meet your specifications.

INDUSTRIAL JOYSTICKS

CK JOYSTICKS

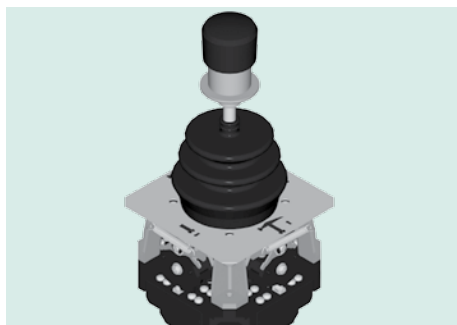
Features	Q2
Technical Specifications	Q2
Standard Unit Part No. & Pricing	Q2
Dimensions & Replacement Parts	Q3

PM JOYSTICKS

Features	Q4
Technical Specifications	Q4
Standard Unit Part No. & Pricing	Q4
Dimensions & Replacement Parts	Q5

FEATURES - CK SERIES

Joysticks - CK Series



- Large Heavy Duty
- Standard units come with spring action return and mechanical interlock handle (360° movement unless otherwise noted)
- Up to 5 steps in each direction
- Potentiometer / variable speed available
- Custom Joysticks available
- UL - cUL contact switches

Q2

Technical Specifications - CK Series

Conformity to Community Directives	73/23/CEE 93/68/CEE
Conformity to Standards	EN 60204-1 EN 60947-1 EN 60947-5-1 EN 60529 EN 418 EN 50013 IEC 536
Ambient Temperature	Storage; -40°C / +70°C Operational; -25°C / +70°C
Protective Degree	IP 00
Operating Positions	Any position
Weight	900g
Homologations	CE

Technical Specifications - Switches

Utilisation Category	AC 15
Rated Operational Current	1.9 A
Rated Operational Voltage	380V
Rated Thermal Current	10 A
Rated Insulation Voltage	500V~
Mechanical Life	.5 x 10 ⁶ operations
Connections	Screw-type Terminals
Homologations	CE UL (c)UL

Part No. & Pricing*: Standard units come with spring action return and mechanical interlock handle (360° movement.)

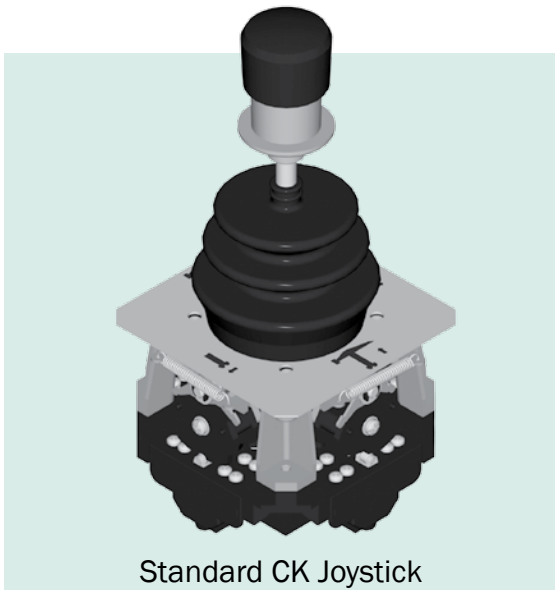
Steps Up-Down	Steps Right-Left	Catalog No.	Price
1	0	PF08020378	\$746.00
2	0	PF08020004	\$796.00
3	0	PF08020003	\$847.00
3	1	PF08010005	\$950.00
3	2	PF08010016	\$1000.00
3	3	PF08010002	\$1050.00
4	0	PF08020076	\$900.00
4	1	PF08010017	\$1000.00
4	3	PF08010039	\$1102.00
5	0	PF08020215	\$950.00
5	1	PF08010007	\$1051.00
5	3	PF08010012	\$1152.00
5	5	PF08010003	\$1255.00

*Consult factory for “maintained” style, potentiometer style, or cross-movement custom joysticks.

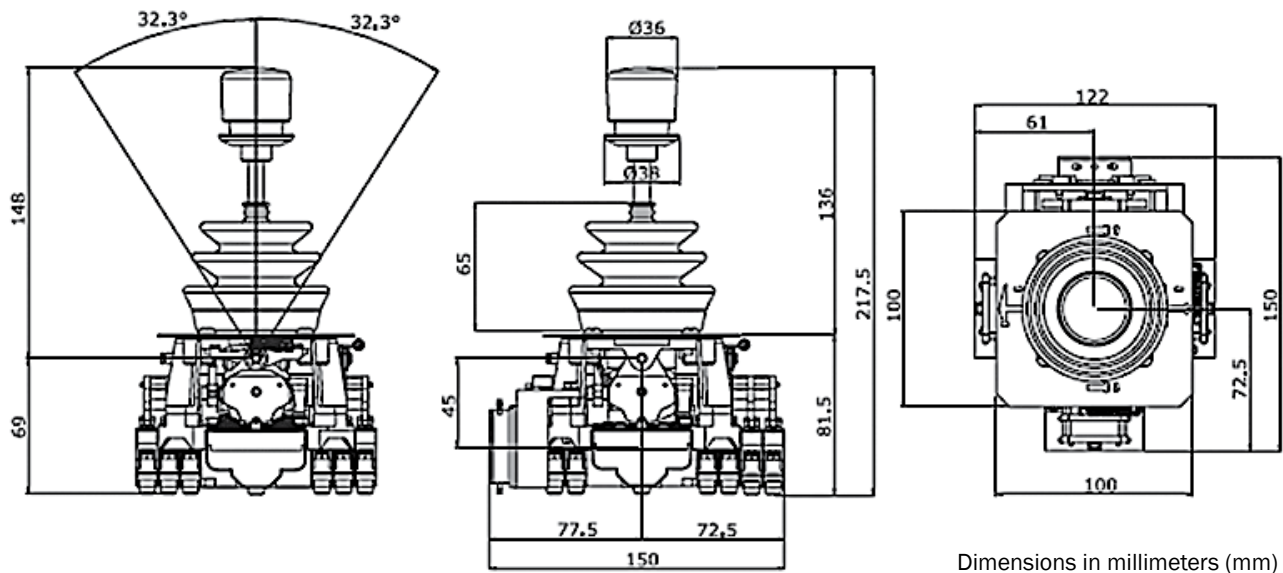
Discount Schedule SC-20

DIMENSIONS & REPLACEMENT PARTS

Dimensions



Q3



Replacement Parts & Pricing

Description	Catalog No.	Price
Bellow / Gasket	PRGU6040PE	\$67.00
Potentiometer - 10k	PRVV9025PE	\$800.00
1 Normally Open Switch	PRSL0007XX	\$54.00

*Consult factory for joysticks with potentiometer or any custom joysticks

Discount Schedule SC-20

FEATURES - PM SERIES

Joysticks - PM Series



- Small Compact Size
- Standard units come with spring action return and mechanical interlock handle (360° movement.)
- Up to 5 steps in each direction
- Custom Joysticks available

Technical Specifications - PM Series

Conformity to Community Directives	73/23/CEE 93/68/CEE
Conformity to Standards	EN 60204-1 EN 60947-1 EN 60947-5-1 EN 60529 EN 418 EN 50013 IEC 536
Ambient Temperature	Storage; -40°C / +70°C Operational; -25°C / +70°C
Protective Degree	IP 00 (IP 65 max. when assembled in specific enclosure)
Operating Positions	Any position
Weight	250g
Homologations	CE

Technical Specifications - Switches

Utilisation Category	AC 15
Rated Operational Current	2 A
Rated Operational Voltage	48V
Rated Thermal Current	8 A
Rated Insulation Voltage	60V~
Mechanical Life	0,5 x 10 ⁶ operations
Connections	2,8mm Faston taps / terminal board
Homologations	CE

Part No. & Pricing*: Standard units come with spring action return and mechanical interlock handle (360° movement.)

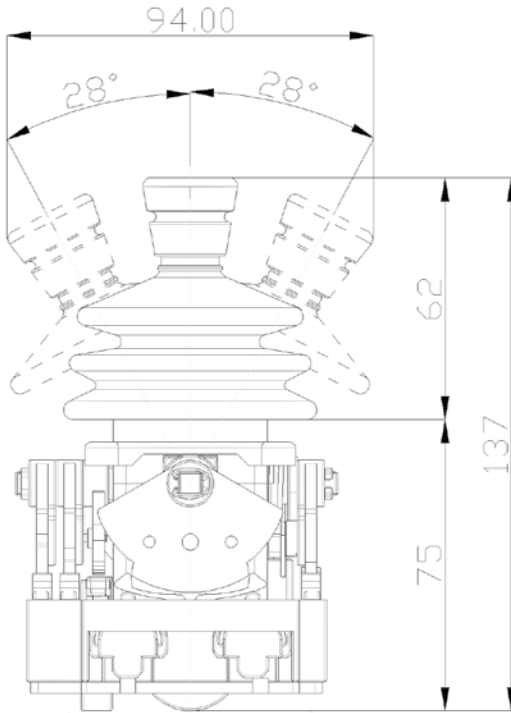
Steps Up-Down	Steps Right-Left	No. Switches	Catalog No.	Price
1	0	2	F340210000004	\$394.00
1	1	4	F340211000001	\$538.00
1	2	5	F340212000001	\$612.00
1	3	6	F340213000001	\$683.00
1	5	8	F340215000001	\$827.00
2	0	3	F340220000004	\$470.00
2	2	6	F340222000001	\$688.00
2	3	7	F340223000001	\$757.00
3	0	4	F340230000004	\$538.00
3	3	8	F340233000001	\$827.00
3 cross	3 cross	8	F340233000004	\$827.00
3	5	10	F340235000001	\$970.00
4	0	5	F340240000004	\$612.00
5	5	12	F340255000001	\$1114.00
5 cross	5 cross	12	F340255000004	\$1114.00

*Consult factory for "maintained" style, potentiometer style, or cross-movement custom joysticks.

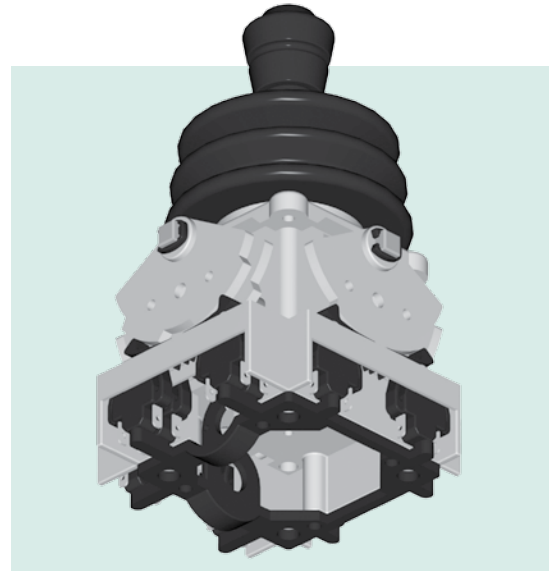
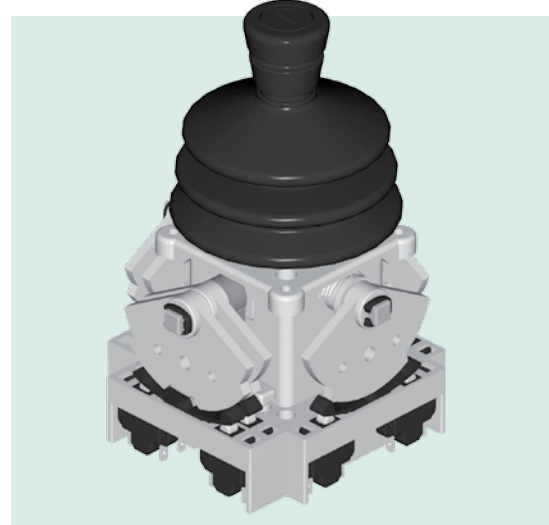
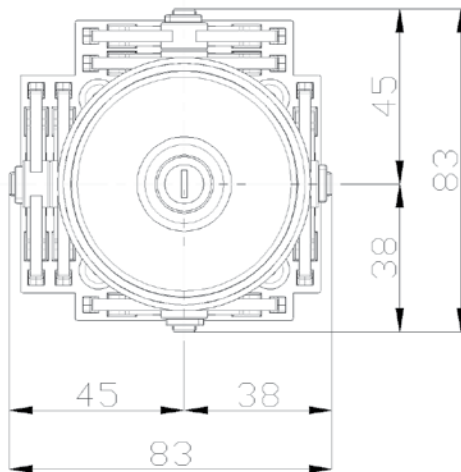
Discount Schedule SC-20

DIMENSIONS & REPLACEMENT PARTS

Dimensions



Dimensions in millimeters (mm)



Q5

Replacement Parts & Pricing

Description	Catalog No.	Price
5 Position Switch Board	93546	Consult Factory
3 Position Switch Board	93557	Consult Factory
Bellow / Gasket	PRGU6042PE	\$42.00

Discount Schedule SC-20

NOTES

Q6



LIGHT ALERT



Springer Controls is the North American distributor for Texelco, an Italian based lighting manufacturer. Our stacking indicating lights and audio units come in 2 models to meet your specifications. The “**Series 70**” is the industry standard for stacking lights. It has a 70mm diameter and can stack up to 7 modular units. The “**Series 45**” is a smaller, 45mm diameter, compact unit that can stack up to 5 modular units and can be mounted into a single, 22mm hole. Both series offer a user friendly modular concept, a large variety of color choices, along with bases and audio units.

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LIGHT ALERT (STACKING LIGHTS)

SERIES 70; Light Alert - 24V AC/DC, 115 Vac, 240 Vac

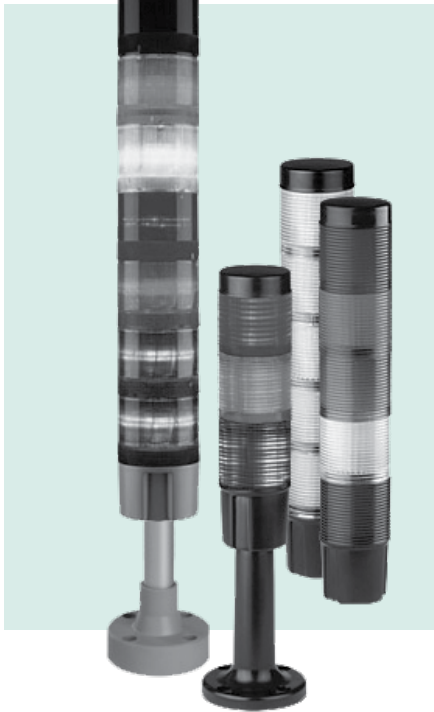
Series 70 Stacking Lights; Features	R2
Series 70 Modular System	R3
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Terminal Unit & Steady Light; Part# & Pricing	R5
Flashing Light & Strobe Light; Part# & Pricing	R6
Multi-function LED Light; Part# & Pricing.....	R7
Audio Signal Devices; Part # & Pricing.....	R8, R9
Mounting Accessories; Part # & Pricing	R9
Bulbs; Filament & LED	R10
Assembled Series 70 Order Form.....	R11
Dimensional Data.....	R18

SERIES 45; Light Alert - 24V AC/DC

Series 45 Stacking Lights; Features	R13
Assembly & Technical Specifications.....	R14
Terminal Unit, Steady Light, Audio Device Part# & Pricing.....	R15
Mounting Accessories.....	R16
Assembled Series 45 Order Form.....	R17
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SERIES 70 STACKING LIGHT - FEATURES

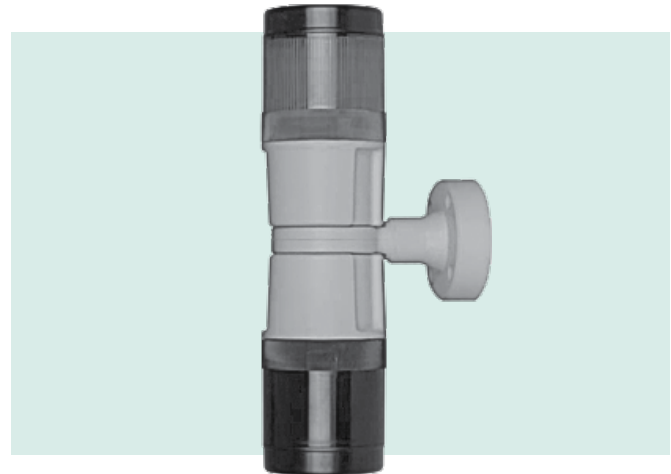
Light Alert - Series 70 - Stacking Light & Audible Signals



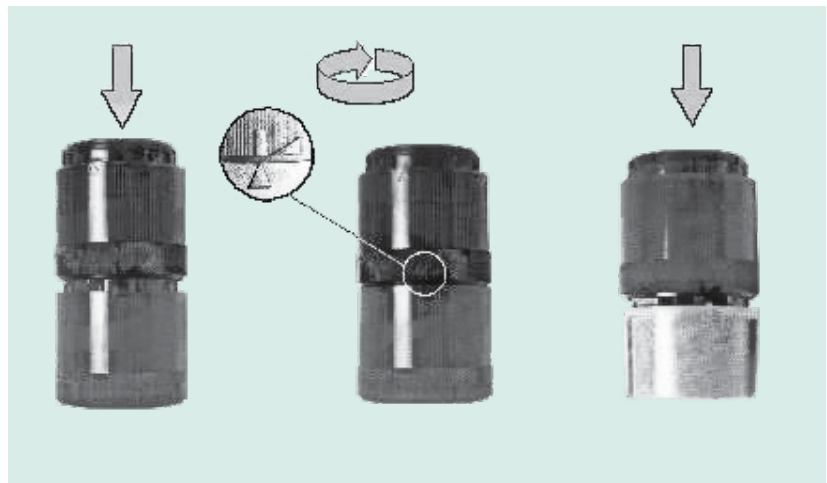
- User Friendly modular concept
- One terminal unit can be combined with up to seven modular signal units.
- Six colored light units include your selection of steady, flashing, strobe, or LED light units. Replaceable bulbs available.
- Audio units include your selection of pulsating, constant, or multi-functional tone signal for maximum safety.
- UL approved & NEMA 3R rated for use in extreme conditions.
- 70mm diameter lens
- 24V AC/DC, 115V AC, 240V AC

R2

- Wall mount, visual and audio signal device

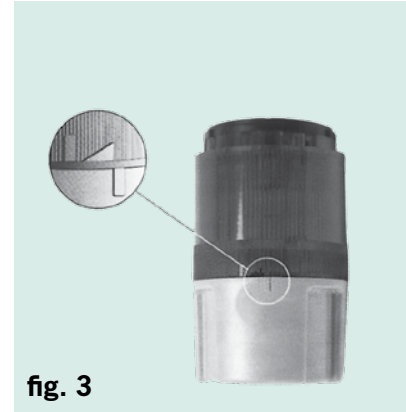
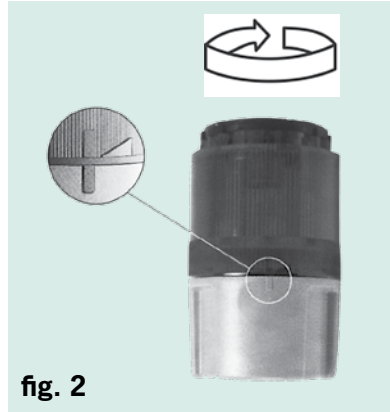
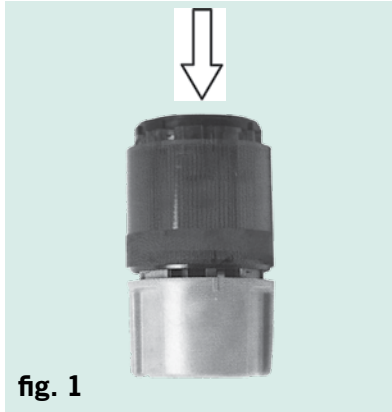


- A bayonet mounting system allows a quick and simultaneous method of joining the signal units together in any sequence desired.
- Special design makes assembly quick, easy and without the use of tools.
- Series 70 units can be ordered as a fully assembled unit (page R11) or as individual parts.



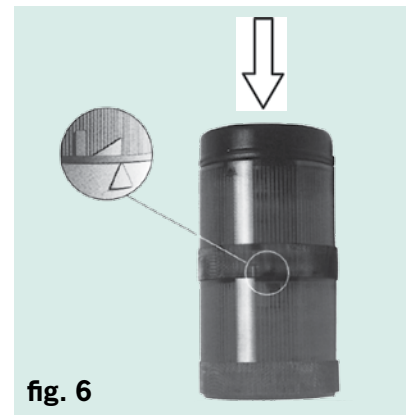
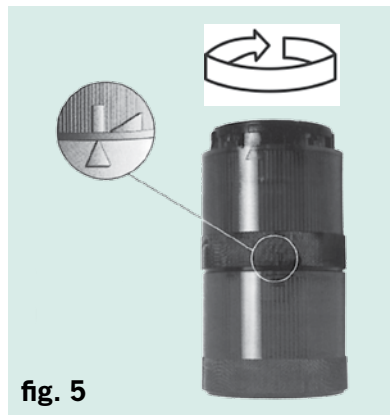
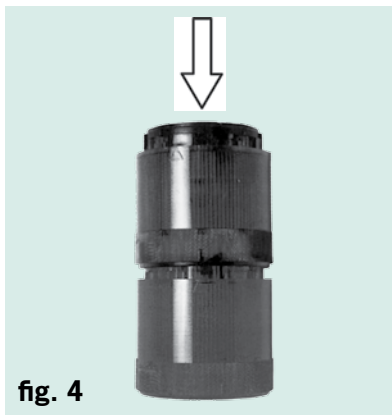
Light Alert - Series 70 - Modular System

Place the signaling unit onto terminal unit (fig.1)
Align the reference marks first and then twist clockwise until they click locked (fig. 2-3)

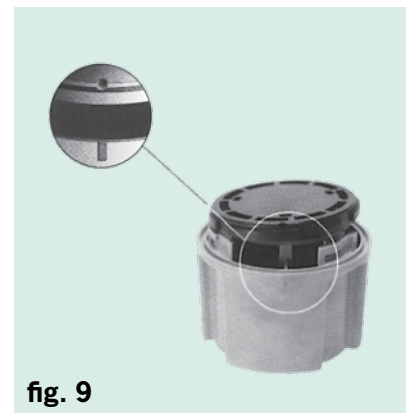


R3

Follow the same steps as above to add more signaling units (fig. 4, 5 and 6). On the last unit mount the cap (fig. 6).
Since the audio indicators is equipped with a cap, it can be mounted as a final unit.



In order to fix the extension tube (a base is always included with it), insert it into the relevant hole and tighten the screw on the side (fig. 7). In order to make the connections, reach the terminal board by pressing the back disc (fig. 8). Connect to terminals (colored units are numbered from base to top). Place the terminal board back into position by aligning the reference marks (fig. 9) and pressing inwards.



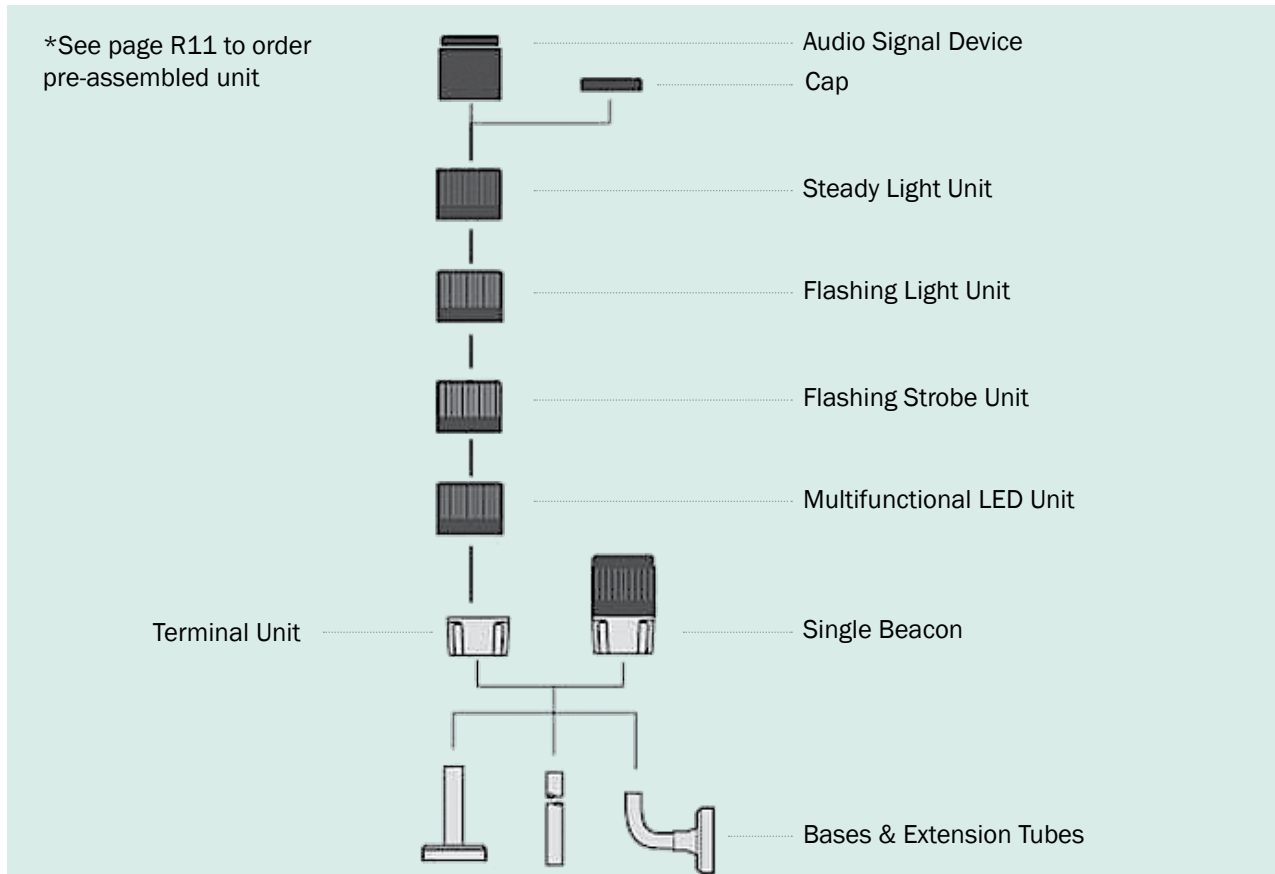
SERIES 70 - TECHNICAL SPECIFICATIONS

Technical Features

Compliance	EEC regulation 73/23 Low Voltage and following amendments (EEC 94/68) EEC regulation 89/336 Electromagnetic Compatibility
Conformity to Standards	EN 60947.5.1 - EN 0073 - EN 60529 - EN 60068-2-6 - EN 457 - EN 981 - IEC 536
Material	Visual and audio module, cable unit, cap and base: polycarbonate
Voltage	250V max.
Protection Degree	IP 64 (if correctly assembled with cap and gasket) according to EN 60529
Protection against electric shock	Class II, in case of double insulation and polycarbonate support tubes
Operating Temperature	-4 °F - 122 °F
Resistance to Vibrations	2g min. (10 - 150 Hx), according to EN 60068-2-6
Unit Colors	Amber - Blue - Yellow - Green - Red - Clear, according to EN 60073
Bulb	Bayonet connection Type: BA 15d - 5W max. - With flash circuits; Xenon bulbs
Number of Combinable Units	For all indicators; each cable unit can be combined with up to seven (7) modular units (except for the single beacon type, which can be combined with maximum two (2) units).
Connections	Screw clamps with binding post max. gauge 1,5mm ²
Connection ID Code	C - common to all signal units Numbers from 1 - 7 refer to each single module from the base to the top (for the single beacon type the reference is from 1 - 2).

* See Dimensional Data - page R18

Structure Options



SERIES 70 - PART# & PRICING; TERMINAL & STEADY UNITS

Terminal Unit



Clamps

screw clamps with binding post

Maximum Gauge

16 AWG

Connection ID Code

C- common to all units

Numbers from 1 to 7 refer to the colors, from the base to the top.

Color	Catalog No.	Price
Gray	LAT 70G	\$62.00
Black	LAT 70B	\$62.00

Steady Light Unit



Illumination

LED or filament bulb

Bulb Type

With bayonet connection BA 15d - max. 7 W

Voltage

24V AC/DC, 120 VAC, 240 VAC

Current Consumption

With 5 W filament bulbs;

24V, 210 mA / 115V, 43 mA / 240V, 22 mA

With LED bulbs;

24V, < 50 mA / 115V, < 18 mA / 240V, < 17 mA

Steady Light Units - Filament Bulb Included

Color	24 VAC/VDC Catalog No.	120 VAC Catalog No.	240 VAC Catalog No.	Price
Red	LA70CRO24	LA70CR115	LA70CR240	\$42.00
Amber	LA70CA024	LA70CA115	LA70CA240	\$42.00
Yellow	LA70CY024	LA70CY115	LA70CY240	\$42.00
Green	LA70CG024	LA70CG115	LA70CG240	\$42.00
Blue	LA70CB024	LA70CB115	LA70CB240	\$42.00
Clear	LA70CC024	LA70CC115	LA70CC240	\$42.00

Steady Light Units - LED Bulb Included

Color	24 VAC/VDC Catalog No.	Price	120 VAC Catalog No.	240 VAC Catalog No.	Price
Red	LA70CLR024	\$115.00	LA70CLR115	LA70CLR240	\$150.00
Amber	LA70CLA024	\$115.00	LA70CLA115	LA70CLA240	\$150.00
Yellow	LA70CLY024	\$115.00	LA70CLY115	LA70CLY240	\$150.00
Green	LA70CLG024	\$115.00	LA70CLG115	LA70CLG240	\$236.00
Blue	LA70CLB024	\$115.00	LA70CLB115	LA70CLB240	\$236.00
Clear	LA70CLC024	\$115.00	LA70CLC115	LA70CLC240	\$236.00

Discount Schedule SC-50

SERIES 70 - PART# & PRICING; FLASHING STROBE UNITS

Flashing Light Unit



Illumination

LED or filament bulb

Bulb Type

Bayonet connection BA 15d - max. 5 W

Voltage

24V AC/DC, 120 VAC, 240 VAC

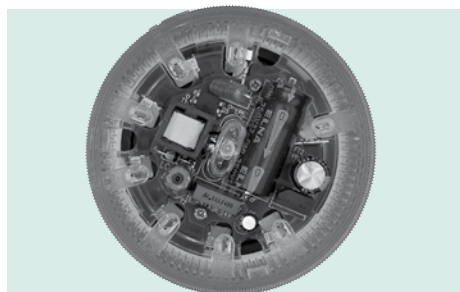
Flashing Light Units - Filament Bulb Included

Color	24 VAC/VDC Catalog No.	120 VAC Catalog No.	240 VAC Catalog No.	Price
Red	LA70FCR024	LA70FCR115	LA70FCR240	\$121.00
Amber	LA70FCA024	LA70FCA115	LA70FCA240	\$121.00
Yellow	LA70FCY024	LA70FCY115	LA70FCY240	\$121.00
Green	LA70FCG024	LA70FCG115	LA70FCG240	\$121.00
Blue	LA70FCB024	LA70FCB115	LA70FCB240	\$121.00
Clear	LA70FCC024	LA70FCC115	LA70FCC240	\$121.00

Flashing Light Units - LED Bulb Included

Color	24 VAC/VDC Catalog No.	Price	120 VAC Catalog No.	240 VAC Catalog No.	Price
Red	LA70FCLR024	\$148.00	LA70FCLR115	LA70FCLR240	\$232.00
Amber	LA70FCLA024	\$148.00	LA70FCLA115	LA70FCLA240	\$232.00
Yellow	LA70FCLY024	\$148.00	LA70FCLY115	LA70FCLY240	\$232.00
Green	LA70FCLG024	\$148.00	LA70FCLG115	LA70FCLG240	\$318.00
Blue	LA70FCLB024	\$148.00	LA70FCLB115	LA70FCLB240	\$318.00
Clear	LA70FCLC024	\$148.00	LA70FCLC115	LA70FCLC240	\$378.00

Flashing Strobe Unit



Illumination

4-Joule Xenon bulb

Voltage

24V AC/DC, 120 VAC, 240 VAC

Current Consumption

24V DC, 75 mA / 24 VAC, 135 mA / 115V, 20 mA / 240V, 15 mA

Flash Frequency

1.4 Hz approx. (84 flashes per min.) according to EN 60073

Flashing Strobe Units - Xenon Bulb Included

Color	24 VAC/VDC Catalog No.	Price	120 VAC Catalog No.	240 VAC Catalog No.	Price
Red	LA70SR024	\$196.00	LA70SR115	LA70SR240	\$219.00
Amber	LA70SA024	\$196.00	LA70SA115	LA70SA240	\$219.00
Yellow	LA70SY024	\$196.00	LA70SY115	LA70SY240	\$219.00
Green	LA70SG024	\$196.00	LA70SG115	LA70SG240	\$219.00
Blue	LA70SB024	\$196.00	LA70SB115	LA70SB240	\$219.00
Clear	LA70SC024)	\$196.00	LA70SC115	LA70SC240	\$219.00

Discount Schedule SC-50

R6

SERIES 70 - PART# & PRICING; MULTI-FUNCTION LED UNITS

Multifunction LED Light Unit



Illumination

24 ultra bright integrated LEDs

Duration

more than 50,000 working hours

Operating Modes

Steady light, flashing or rotating light
(to change the function just remove or shift the CN1 jumper)

Voltage

24V DC/AC

Current Consumption

24V DC, 55 mA / 24V AC, 85 mA

Flash Frequency

1 revolution per second approx.

R7

Multifunction LED Light Unit - Steady, Flashing, Rotating

Color	24 VAC/VDC - LED	Price
Red	LA70UR024	\$342.00
Amber	LA70UA024	\$342.00
Yellow	LA70UY024	\$342.00
Green	LA70UG024	\$443.00
Blue	LA70UB024	\$443.00
Clear	LA70UC024	\$443.00

Multifunction LED Light Unit - Steady, Flashing only

Color	24 VAC/VDC - LED	Price
Red	LA70NR024	\$148.00
Amber	LA70NA024	\$148.00
Yellow	LA70NY024	\$148.00
Green	LA70NG024	\$168.00
Blue	LA70NB024	\$168.00
Clear	LA70NC024	\$178.00

Discount Schedule SC-50

SERIES 70 - PART# & PRICING; AUDIO UNITS

Audio Signal Device

Already equipped with a cap, the audio indicator can be mounted as final top unit only.



Sound

Intermittent or steady
(to change it, just remove or insert the relevant jumper in the printed circuit)

Sound Frequency

2600 Hz according to EN 457

Signal Repetition Rate

1 Hz according to EN 457

Weighted Sound Level A at 1 m

LA70CW24 Intermittent signal 100 dB - Continuous signal 98 dB
LA70CW15 Intermittent signal 95 dB - Continuous signal 93 dB
LA70CW30 Intermittent signal 95 dB - Continuous signal 93 dB

Voltage

LA70CW24 24V AC/DC
LA70CW15 115V AC
LA70CW30 240V AC

Current Consumption

LA70CW24 AC/DC 200 mA
LA70CW15 AC 40 mA
LA70CW30 AC 30 mA

Protection Degree

IP64

R8

Audible Signals - Intermittent or Steady

Voltage	Catalog No.	Price
24V AC/DC	LA70CW024	\$213.00
120V AC	LA70CW115	\$264.00
240V AC	LA70CW230	\$264.00

Audio Signal Device - Dedicated Usage - 24V AC/DC



Already equipped with a cap, the audio indicator can be mounted as final top unit only.

Sound

Intermittent

Sound Frequency

3300 Hz, 2900 Hz

Signal Repetition Rate

.8 Hz

Weighted Sound Level A at 1 m

80 dB, 90 dB

Voltage

24V AC/DC

Current Consumption

24V DC, 32 mA - 24V AC, 100 mA

Audible Signals - Intermittent - 24 VAC/VDC

		Catalog No.	Price
IP30	3300 Hz - 80dB	LA70PD024	\$123.00
IP54	2900 Hz - 90dB	LA70PR024	\$162.00
IP64	3300 Hz - 76dB	LA70PW024	\$123.00

Discount Schedule SC-50

SERIES 70 - PART# & PRICING; MOUNTING ACCESSORIES

Audio Signal Device - Selectable Sounds



Already equipped with a cap, the audio indicator can be mounted as final top unit only.

Sound

LA70C024; 16 sounds selectable by means of a dip switch

Sound Frequency

2500 - 2900 Hz according to EN 547

Weighted Sound Level A at 1 m

LA70 16 Sounds, Max 90 dB

Current Consumption

LA70C024 Type 75-MB: DC/AC 40 mA

Protection Degree

IP54

Audible Signals - 16 Sounds

Voltage	Catalog No.	Price
24V AC/DC	LA70C024	\$184.00

Polycarbonate Mounting Accessories (All mounting accessories available in "metal"; consult factory for pricing)



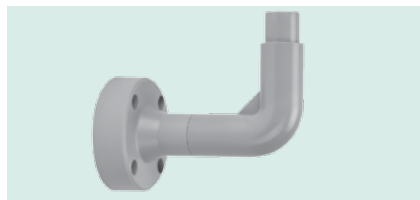
FLANGE BASE

Height	Gray Catalog No.	Black Catalog No.	Price
4"	LA5401	LA5410	\$24.00
8"	LA5402	LA5420	\$27.00
12"	LA5403	LA5430	\$29.00
16"	LA5404	LA5440	\$34.00
20"	LA5405	LA5450	\$38.00



EXTENSION TUBE

	Gray Catalog No.	Black Catalog No.	Price
4"	LA8801	LA8810	\$10.00



90 FLANGE BASE

	Gray Catalog No.	Black Catalog No.	Price
	LA5409	LA5490	\$34.00



WALL FLANGE SUPPORT

	Gray Catalog No.	Black Catalog No.	Price
Single	LA54T19	LA54T91	\$40.00
Double	LA54T29	LA54T92	\$40.00



22mm HOLE (1/2 NPT) ADAPTOR

	Black Catalog No.	Price
	LA88A22	\$30.00

Discount Schedule SC-50

R9

SERIES 70 - PART# & PRICING; BULBS

Filament (Incandescent) Bulbs



Bulb:
BA15d

Filament:
shockproof

Duration:
2,000 working hours

Description	Catalog No.	Price
24V - 5W	LA11S24	\$7.00
115V - 5W	LA11E15	\$7.00
230V - 5W	LA11E30	\$7.00

R 10

LED Bulbs



Bulb:
BA15d Lateral Light - 9 LED's

Duration:
more than 50,000 working hours

Specs:
Perfect operation even in cases of strong vibration or hits.
No maintenance or service costs.

Color	Catalog No. 24V/5W	Price	Catalog No. 115V/5W	Catalog No. 230V/5W	Price
Red	LA11EB2	\$51.00	LA11EF2	LA11EG2	\$59.00
Yellow	LA11EB4	\$51.00	LA11EF4	LA11EG4	\$59.00
Green	LA11EB5	\$51.00	LA11EF5	LA11EG5	\$59.00
Blue	LA11EB6	\$51.00	LA11EF6	LA11EG6	\$59.00
Clear	LA11EB9	\$51.00	LA11EF9	LA11EG9	\$59.00

Discount Schedule SC-50

ASSEMBLED LIGHT ALERT SERIES 70 - REQUEST FORM









Part # assigned by factory: # **LA70** -

(Example LA70 - 0001 = Light Alert; Series 70, issue 0001)

Check and complete appropriate boxes:

Voltage: **24V AC** **110V AC** **230V AC** **24V AC/DC**

Bulb Type: **Filament** **LED**

	POSITION	STYLE	COLOR
	Position #7	_____	_____
	Position # 6	_____	_____
	Position # 5	_____	_____
	Position # 4	_____	_____
	Position # 3	_____	_____
	Position # 2	_____	_____
	Position # 1	_____	_____
	Terminal;	<input type="checkbox"/> Gray	<input type="checkbox"/> Black

Starting at Position #1 fill in the style and color of each position needed. Please note; if selecting "audio" style, this must be the last or top position.

Style Selection:








- **STEADY** (Filament or LED)
- **FLASHING** (Filament or LED)
- **STROBE** (Xenon bulb only)
- **MULTI-FUNCTIONAL** (LED only)
- **AUDIO;**
Decibel rating based on voltage.
Intermittent or steady selection.

Color Selection:

- **(R) Red**
- **(A) Amber**
- **(Y) Yellow**
- **(G) Green**
- **(B) Blue**
- **(C) Clear**

Terminal Base mounts directly to fixture, optional bases and extensions available below.

Optional Bases: (Base color will be identical to terminal color selected)

	<input type="checkbox"/> 4" Base	<input type="checkbox"/> 12" Base		<input type="checkbox"/> 90° Flange	
	<input type="checkbox"/> 8" Base	<input type="checkbox"/> 16" Base		<input type="checkbox"/> Wall Flange (single)	
	<input type="checkbox"/> Wall Flange (double)		<input type="checkbox"/> 4" Extension Tube		<input type="checkbox"/> 22mm Adapter

Optional Extensions: (Extension color will be identical to terminal color selected)

R11

NOTES

R12

SERIES 45 STACKING LIGHTS FEATURES

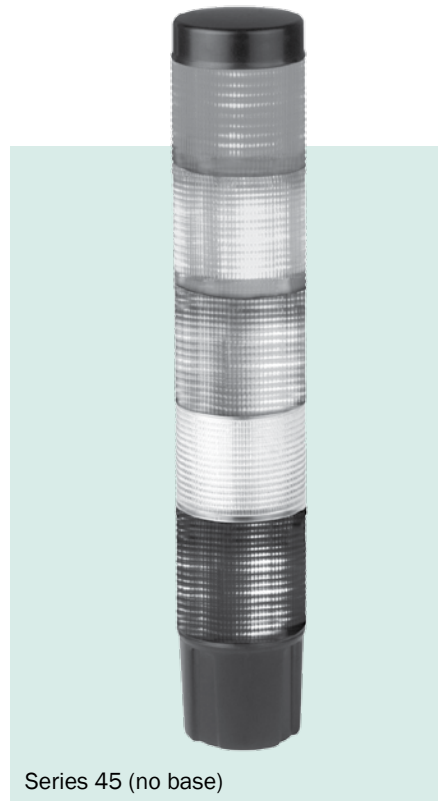
Light Alert - Series 45 - Stacking Light & Audible Signals



Series 45 (with flange base)

- User Friendly modular concept
- One terminal unit can be combined with up to five modular signal units.
- Six colored light choices in steady or constant mode
- Audio units available for final (top) module.
- 45mm diameter lens
- Single hole (22mm) mounting capability
- 24V AC/DC

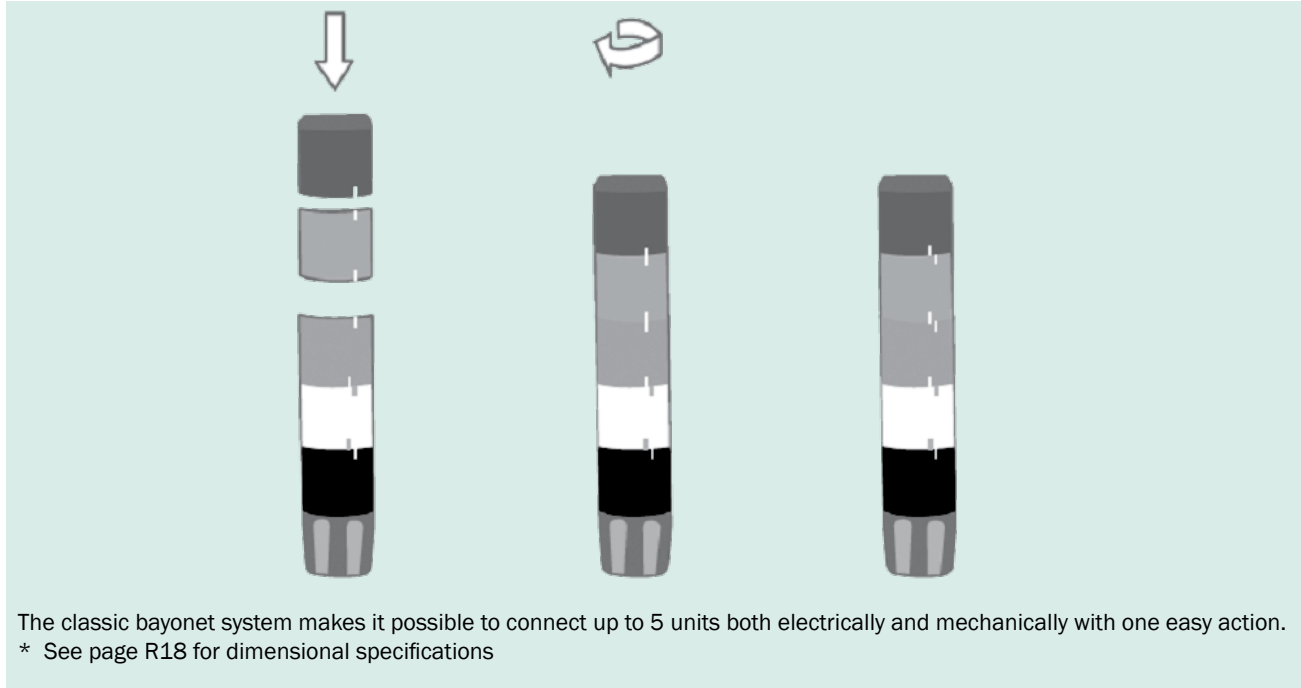
- A bayonet mounting system allows a quick and simultaneous method of joining the signal units together in any sequence desired.
- Ultra-bright LEDs and an accurate illumination system guarantee large visibility.
- The audio signal devices increase the signaling possibilities.
- Series 45 units can be ordered as a fully assembled unit (see page R17) or as individual parts.



Series 45 (no base)

SERIES 45 - ASSEMBLY & TECHNICAL SPECS

Assembly



Technical Specifications

Compliance	EEC regulation 73/23 Low Voltage and following amendments (EEC 94/68) EEC regulation 89/336 Electromagnetic Compatibility
Conformity to Standards	EN60947.5.1 - EN60073 - EN60529 - EN60068-2-6 - EN457 - EN981 - IEC536
Material	Polycarbonate
Voltage	250V max.
Protection Degree	IP 64 (if correctly assembled with cap and gasket); IP 54 (with an audio unit) according to EN60529
Protection against electric shock	Class II, safety insulation - according to IEC536
Operating Temperature	-4 °F - 122 °F
Resistance to Vibrations	2g min. (10 - 150 Hz), according to EN 60068-2-6
Color of the Modules	Amber - Blue - Yellow - Green - Red - Clear, according to EN 60073
Number of Combinable Units	Max. 5
Connections	Screw clamps with binding post gauge max. 1,5mm ² inside the wiring unit

SERIES 45 - TERMINAL, LIGHT, AUDIO UNITS

Terminal Unit



Clamp connections - With pre-cabled wire upon request

Clamps

screw clamps with binding post

Maximum Gauge

1.5 mm²

Connection ID Code

C- common to all units

Numbers from 1 to 5 refer to the colors, from the base to the top.

Color	Catalog No.	Price
Gray	LA45G	\$77.00
Black	LA45B	\$77.00

Light Unit



Illumination

Steady light by means of 6 ultra-bright LEDs

Voltage

24V DC/AC (+/-%)

Current Consumption

24V DC - 35 mA / 24V AC - 55 mA

Color	24 VAC/VDC	Price
Red	LA45CLR024	\$115.00
Amber	LA45CLA024	\$115.00
Yellow	LA45CLY024	\$115.00
Green	LA45CLG024	\$136.00
Blue	LA45CLB024	\$136.00
Clear	LA45CLC024	\$136.00

R15

Audio Unit



The audio signal device already has a cap and can be used as the final module.

Sound

Intermittent and continuous

Sound Frequency

3,700 Hz,

Signal Repetition Rate

1 Hz, according to EN457

Weighted Sound Level A at 1 m

LA45P024 signal 82 dB

LA45PW024 signal 75 dB

Voltage

24V DC (+/-10%)

Current Consumption

24V DC, 35 mA - 24V AC, 40 mA

Rating	Catalog No.	Price
IP54	LA45P024	\$186.00
IP65	LA45PW024	\$182.00

Discount Schedule SC-50

SERIES 45 - MOUNTING ACCESSORIES

Mounting Accessories

*Spare Bulbs on Page R10



Description	Black Catalog No.	Price
Polycarbonate Cap	LA60098	\$23.00



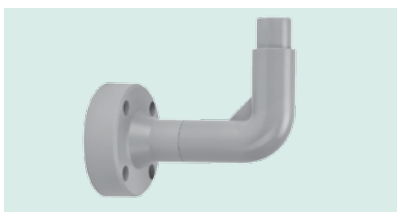
Description	Black Catalog No.	Price
Adaptor for 22mm hole	LA88A22	\$30.00



Description	Gray Catalog No.	Black Catalog No.	Price
Polycarbonate Base	LA5401	LA5410	\$24.00



Description	Gray Catalog No.	Black Catalog No.	Price
Polycarbonate Extension Tube - 4"	LA8801	LA8810	\$10.00



Description	Gray Catalog No.	Black Catalog No.	Price
Polycarbonate 90° Base	LA5409	LA5490	\$34.00

R 16

Discount Schedule SC-50

ASSEMBLED LIGHT ALERT SERIES 45 - REQUEST FORM

Part # assigned by factory: # **LA45** -







(Example LA45 - 0001 = Light Alert; Series 45, issue 0001)

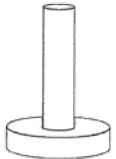
Check and complete appropriate boxes:

Voltage: **24V AC/DC** (only voltage available)

Bulb Type: **LED** (only available in LED)

R17

	<u>POSITION</u>	<u>STYLE</u>	<u>COLOR</u>
	Position # 5	_____	_____
	Position # 4	_____	_____
	Position # 3	_____	_____
	Position # 2	_____	_____
	Position # 1	_____	_____
	Terminal;	<input type="checkbox"/> Gray	<input type="checkbox"/> Black



Starting at Position #1 fill in the style and color of each position needed. Please note; if selecting "audio" style, this must be the last or top position.

Style Selection:




- **STEADY Light** (6 ultra bright LED's)
 - **AUDIO** (Select either...)
- continuous** **intermittent**

Color Selection for STEADY LIGHT:


- **(R) Red**
- **(A) Amber**
- **(Y) Yellow**
- **(G) Green**
- **(B) Blue**
- **(C) Clear**

Terminal Base mounts directly to fixture, optional bases and extensions available below.

Optional Bases: (Base color will be identical to terminal color selected)

4" Base  **90° Base**  **22mm Hole** 

Optional Extensions: (Extension color will be identical to terminal color selected)

4" Extension 

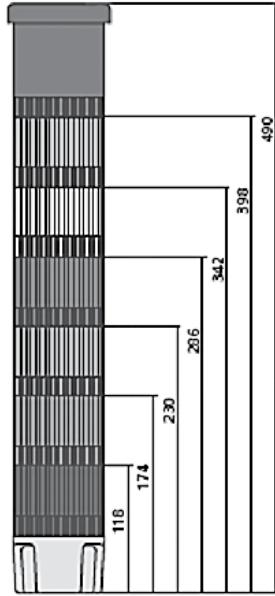
DIMENSIONAL DATA

“Series 70” and “Series 45” Dimensional Diagrams

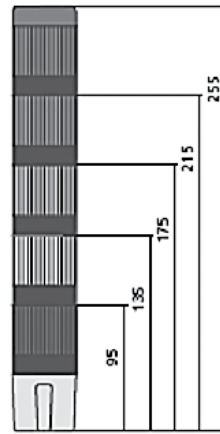
R18



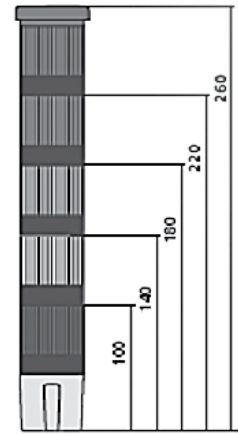
370
IP 64



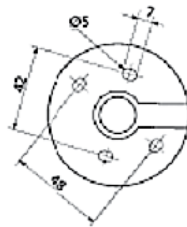
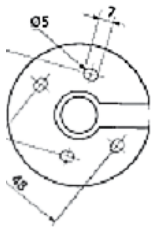
370
IP 54



450
IP 64



450
IP 54



MULTI-COLOR SINGLE LIGHT



SPRINGER
controls company

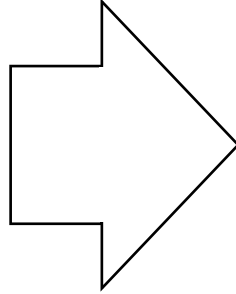
Springer Controls is the North American distributor for Texelco, an Italian based lighting manufacturer. We specialize in visual and audio indicators. We carry a complete line of stacking indicating lights, multi-color single lights, and dome lighting.

Index
S

MULTI-COLOR SINGLE LIGHT

Description	S2
Features / Technical Information	S3
Part Number & Pricing	S3

DESCRIPTION



The Multi-color lamp can also stack an audio signal* device.

* Consult factory.

S2

Springer Controls “Multi-color” single light unit is a change from the standard 3 unit stacking lights. It can be 3 colors within one unit, one single lamp indicates the different conditions of a machine and can include audio as well.

Features

- Used as a single multi-color lamp; an alternative to the 3 color stacking unit.
- 24V DC, 70mm diameter
- Illuminated by means of ultra bright LED's.
- The only multi-color lamp unit which can be used with an audio signal device.
- Variety of bases and mounting accessories available.

S 3

Technical Information

Conformity to Standards	EN60947.5.1 EN457	EN60073 EN981	EN60529 IEC536	EN6068-2-6
Material	Polycarbonate; 70mm diameter			
Voltage	24V DC (+/- 10%)			
Current Consumption	90 mA			
Protection Degree	IP64			
Operating Temperature	-4 °F to 122 °F			

Part Number & Pricing*

Type	Catalog No.	Price
Three-color - Lamp with Audio Green, Amber and Red	LA94T7B	\$452.00
Three-color Lamp Green, Amber and Red	LA94T1B	\$351.00

* See page R9 for mounting accessories.

NOTES

S 4

DOME LIGHTING



SPRINGER
controls company

Springer Controls is the North American distributor for Texelco, an Italian based lighting manufacturer. We specialize in visual and audio indicators. We carry a complete line of stacking indicating lights, multi-color single lights, and dome lighting.

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T

SERIES 180 DOME LIGHTING

Features - Series 180 Dome Lighting.....	T2
Ordering Instruction & Technical Specifications	T3
Constant Dome Lighting: 24V, 115V, 240V (AC/DC).....	T4
Flashing or Constant Light: 24V AC/DC, 115V AC, 240V AC	T5
Xenon Lamps: 24V AC/DC	T5
LED Lamps with Audio Signals: 24V AC/DC.....	T6
One & Two Light Housings.....	T6
Dome Base Fittings.....	T7
Bulbs; LED & Filament.....	T8
Enclosure Dimensions.....	T8
Light Fitting Dimensions.....	T9
Lamp Dimensions	T10

SERIES 180 DOME LIGHTING

Springer Controls Series 180 Dome Lighting act as single indicating devices with extreme flexibility. There are 8 different ways of assembly, 4 kinds of illumination to choose from and 2 types of domes.

Series 180 Dome Lighting - Features

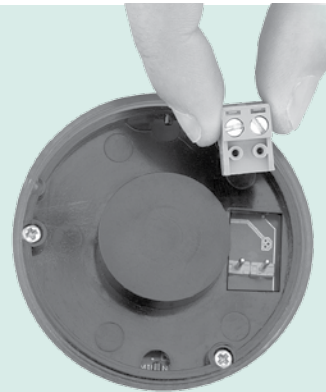


Modular visual and audio indicators

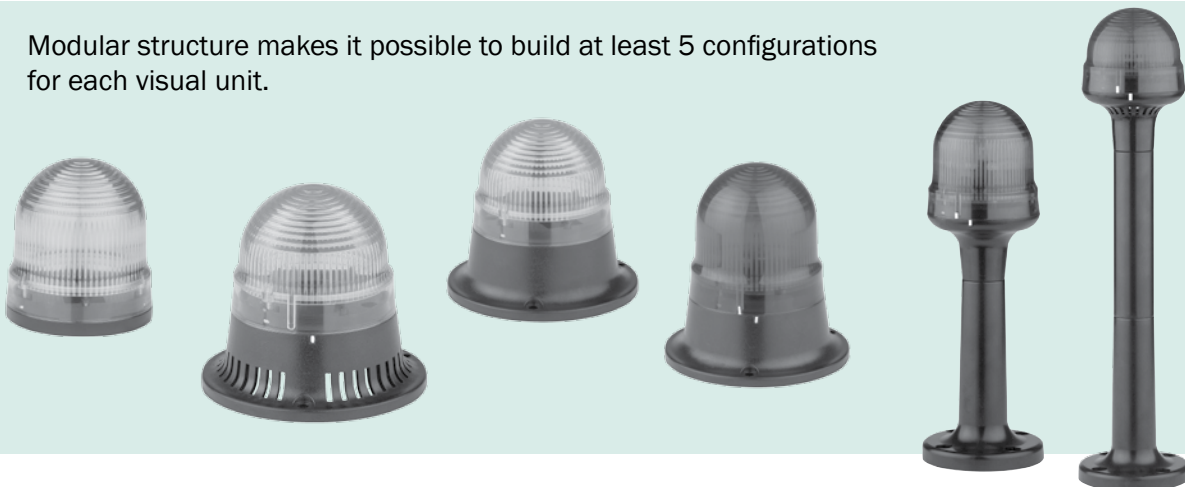


A simple bayonet system simplifies the mounting and maintenance which can be performed in complete safety.

The wiring unit can be easily reached and extracted, thus simplifying the wiring operation.



Modular structure makes it possible to build at least 5 configurations for each visual unit.



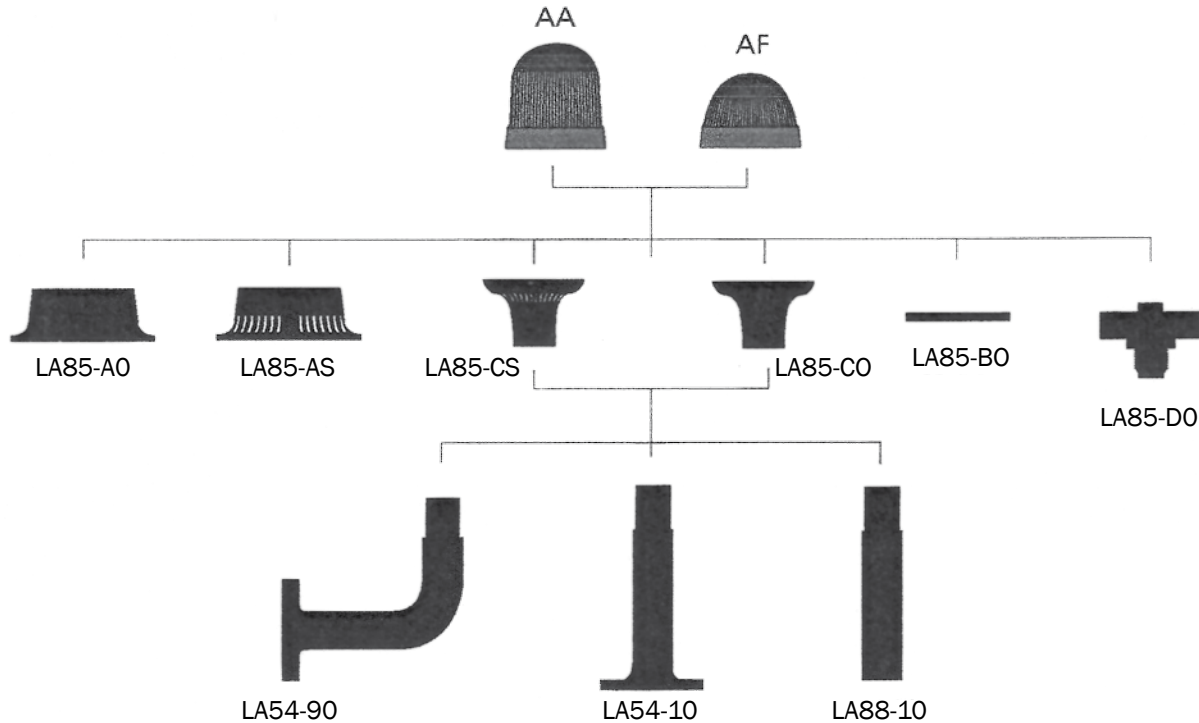
T2

SERIES 180 STRUCTURE & TECHNICAL SPECIFICATIONS

Ordering Instructions

Complete Unit = Dome Style (Part #; pages T4 to T6) + Fitting Type (Part#; page T7)

Structure



T3

Technical Specifications

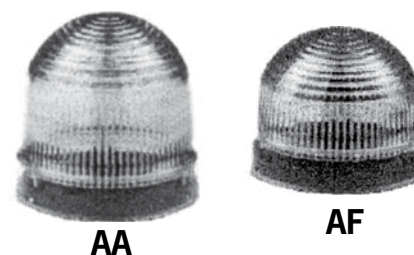
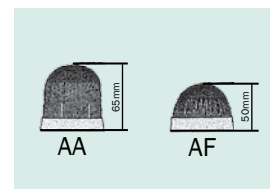
Compliance	EEC Low Voltage directive no. 73/23 and following amendments (directive no. 94/68)
Conformity to Standards	EN 60947.5.1 EN 60073 EN 60529 EN 60068.2.6 EN 457 EN 981 IEC 536
Material	Polycarbonate
Voltage	250V
Protection Degree	IP 54 - clamps IP 20 - According to EN 60529
Protection against Electrical Shock	Class II, Double Insulation. According to IEC 536
Operating Temperature	-4°F - 104°F
Resistance to Vibrations	2g min. (10-150 Hz) according to EN 60068.2.6
Color of Domes	Amber - Blue - Yellow - Red - Green - Clear; according to EN 60073
Bulb	Bayonet mounting, Type BA 15d - 5W max. with flash circuit; Xenon lamp
Connections	By means of screw clamps with binding post (gauge; max 1,5 mm ²) The wiring unit is under the light element.

SERIES 180 DOME STYLE

LED Lamps - Flashing or Constant Dome Lighting; LED

- To change the function, just move the jumper located inside.
- Available in 24V AC/DC LED only (included)

Illumination: 6 ultra bright LED's
 Duration: > 50.000 working hours
 Voltage: 24V AC/DC
 Current Consumption: 24V AC/DC - 40 mA
 Flash Frequency: approx. 1,4 Hz (84 flashes per minute) according to EN 60073

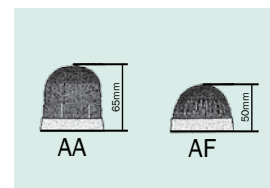


Color	Tall Dome AA 24V AC/DC	Short Dome AF 24V AC/DC	Price
Red	LAAA42BL	LAAF42BL	\$145.00
Amber	LAAA43BL	LAAF43BL	\$145.00
Yellow	LAAA44BL	LAAF44BL	\$145.00
Green	LAAA45BL	LAAF45BL	\$145.00
Blue	LAAA46BL	LAAF46BL	\$145.00
Clear	LAAA49BL	LAAF49BL	\$145.00

Constant Dome Lighting; Filament Bulb or LED

Bulb with bayonet connection type BA 15d 5W max

Voltage: 24V - 115 V - 240V (AC/DC)
 Current Consumption:
 with incandescent 5W bulbs: 24V, 210 mA / 115V, 43 mA / 240V, 22 mA
 with LED bulbs : 24V, > a 50 mA / 115V, >a 18 mA / 240V, >17 mA



Constant Light Units - Filament bulb included - Tall Dome (AA); (For Small Dome; change 4th character from "A" to "F")

Color	24V AC/DC	120V AC	240V AC	Price
Red	LAAA1224	LAAA1215	LAAA1230	\$68.00
Amber	LAAA1324	LAAA1315	LAAA1330	\$68.00
Yellow	LAAA1424	LAAA1415	LAAA1430	\$68.00
Green	LAAA1524	LAAA1515	LAAA1530	\$68.00
Blue	LAAA1624	LAAA1615	LAAA1630	\$68.00
Clear	LAAA1924	LAAA1915	LAAA1930	\$68.00

Constant Light Units - LED bulb included - Tall Dome (AA); (For Small Dome; change 4th character from "A" to "F")

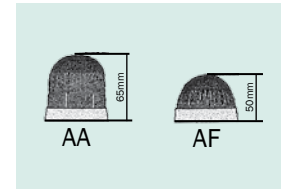
Color	24V AC/DC	Price	120V AC	240V AC	Price
Red	LAAA12424	\$130.00	LAAA12415	LAAA12430	\$178.00
Amber	LAAA13424	\$130.00	LAAA13415	LAAA13430	\$178.00
Yellow	LAAA14424	\$130.00	LAAA14415	LAAA14430	\$178.00
Green	LAAA15424	\$208.00	LAAA15415	LAAA15430	\$274.00
Blue	LAAA16424	\$208.00	LAAA16415	LAAA16430	\$274.00
Clear	LAAA19424	\$208.00	LAAA19415	LAAA19430	\$274.00

Discount Schedule SC-50

SERIES 180 DOME STYLE

Flashing or Constant Light Lamps

- To change the function, just move the jumper which is inside.
- Available with Filament or LED bulb; variety of voltages
- Bulb with bayonet connection type BA15d, 5W max



Voltage: 24V (AC/DC), 115V (AC), 240V (AC)

Current Consumption:

Flashing Light

with incandescent 5W bulbs: 24V, 145 mA / 115V, 25 mA / 240V, 15 mA

with LED bulbs: 24V, <a 50 mA / 115V, <a 18 mA / 240V, <a 17 mA

Constant Light

with incandescent 5W bulbs: 24V, 210 mA / 115V, 43 mA / 240V, 22 mA

with LED bulbs: 24V, <a 50 mA / 115V, <a 18 mA / 240V, <a 17 mA

Flash Frequency: approx. 1,4 Hz (84 flashes per minute) according to EN 60073

T5

Constant or Flashing Light Units - Filament bulb incl. - Tall Dome (AA); (For Small Dome; change 4th character from "A" to "F")

Color	24V AC/DC	120V AC	240V AC	Price
Red	LAAA2224	LA-AA2215	LAAA2230	\$94.00
Amber	LAAA2324	LA-AA2315	LAAA2330	\$94.00
Yellow	LAAA2424	LA-AA2415	LAAA2430	\$94.00
Green	LAAA2524	LA-AA2515	LAAA2530	\$94.00
Blue	LAAA2624	LA-AA2615	LAAA2630	\$94.00
Clear	LAAA2924	LA-AA2915	LAAA2930	\$94.00

Constant or Flashing Light Units - LED bulb included - Tall Dome (AA); (For Small Dome; change 4th character from "A" to "F")

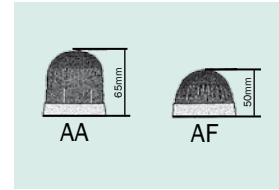
Color	24V AC/DC	Price	120V AC	240V AC	Price
Red	LAAA22424	\$156.00	LAAA22415	LAAA22430	\$211.00
Amber	LAAA23424	\$156.00	LAAA23415	LAAA23430	\$211.00
Yellow	LAAA24424	\$156.00	LAAA24415	LAAA24430	\$211.00
Green	LAAA25424	\$235.00	LAAA25415	LAAA25430	\$306.00
Blue	LAAA26424	\$235.00	LAAA26415	LAAA26430	\$306.00
Clear	LAAA29424	\$292.00	LAAA29415	LAAA29430	\$375.00

SERIES 180 DOME STYLE / HOUSINGS

LED Lamps with Audio Signal Device

- Flashing light - intermittent sound; constant light - continuous sound
- To change the function just shift the jumper located inside

Illumination: 6 ultra bright LED's
 Duration: > 50,000 working hours
 Voltage: 24V AC/DC
 Current Consumption: 24V AC/DC, 55 mA both with steady light - continuous sound and with flashing light - intermittent sound
 Flash Frequency: approx. 1,4 Hz (84 flashes per minute) according to EN 60073
 Sound Frequency: 3500 Hz
 Weighed Sound Level A at One Meter: intermittent signal 75 dB
 continual signal 72 dB



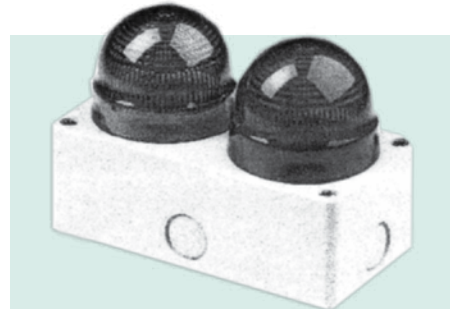
LED with Audible Signal - Tall Dome (AA); (For Small Dome; change 4th character from "A" to "F")

Color	Flash Lt/Pulse Sound	Steady Lt/Continuous Sound	Price
Red	LAAA42ABL	LAAA42ABF	\$180.00
Amber	LAAA43ABL	LAAA43ABF	\$180.00
Yellow	LAAA44ABL	LAAA44ABF	\$180.00
Green	LAAA45ABL	LAAA45ABF	\$201.00
Blue	LAAA46ABL	LAAA46ABF	\$201.00
Clear	LAAA49ABL	LAAA49ABF	\$201.00

T6

One & Two Light Housing

Dimensions
 For one indicator: 70 x 70 x 51
 For two indicators: 70 x 140 x 51
 Protection Degree: IP65
 Material: ABS (RAL 7035)
 Operating Temperature: -25°C to +70°C



Housing for 2 indicators

Description	Catalog No.	Price
Housing for 1 indicator*	LACS1001	\$32.00
Housing for 2 indicators*	LACS1002	\$52.00

*Light and base adaptor are sold separately.
See page T8 for dimensions

Discount Schedule SC-50

SERIES 180 DOME BASE FITTINGS

Fittings



Base: Ø 85mm

LA85A0	\$18.00
--------	---------



Base: Ø 85mm for audio applications

LA85AS	\$18.00
--------	---------



Thin Base: Ø 60mm

LA85B0	\$18.00
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Base: Ø 60mm, for Ø 22mm holes

LA85D0	\$21.00
--------	---------



Base: Ø 60mm, for Ø 22mm holes for audio applications

LA85DS	\$21.00
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Adapter Element

LA85C0	\$18.00
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Base: Ø 70mm, with integrated tube H 100mm

LA5410	\$24.00
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Extension Tube: Height 100 mm

LA8810	\$10.00
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Adapter Element for audio applications

LA85CS	\$18.00
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Polycarbonate Base: Ø 70mm, with extension tube for 90° fixing

LA5490	\$34.00
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Metal Base with polycarbonate tube for 90° fixing

LA54MP9	\$67.00
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Metal Base and tube for 90° fixing

LA54MM9	\$67.00
---------	---------

T7

For detailed technical dimensions see page T9 & T10

Discount Schedule SC-50

LED AND FILAMENT BULBS / DIMENSIONS

LED Bulbs - Type BA15d

Bulb: LED BA 15d - 9 LED's
 Duration: >than 50,000 working hours
 Maintenance: No maintenance or service costs
 Perfect Operation: even in case of strong vibrations and hits
 Current Consumption: 24V DC/AC, <50 mA / 115V AC, <18 mA / 240V, <17 mA

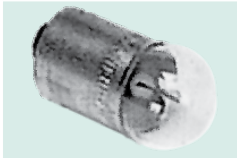


To be used with devices whose domes have the same colors as the LEDs

LED Bayonet Base 15d Bulbs. Used for "Dome" lighting; frontal & lateral light

Color	24V DC/AC	Price	115V AC	230V AC	Price
Red	LA11VB2	\$100.00	LA11VF2	LA11VG2	\$121.00
Amber	LA11VB3	\$100.00	LA11VF3	LA11VG3	\$59.00
Yellow	LA11VB4	\$100.00	LA11VF4	LA11VG4	\$121.00
Green	LA11VB5	\$195.00	LA11VF5	LA11VG5	\$217.00
Blue	LA11VB6	\$195.00	LA11VF6	LA11VG6	\$217.00
Clear	LA11VB9	\$264.00	LA11VF9	LA11VG9	\$286.00

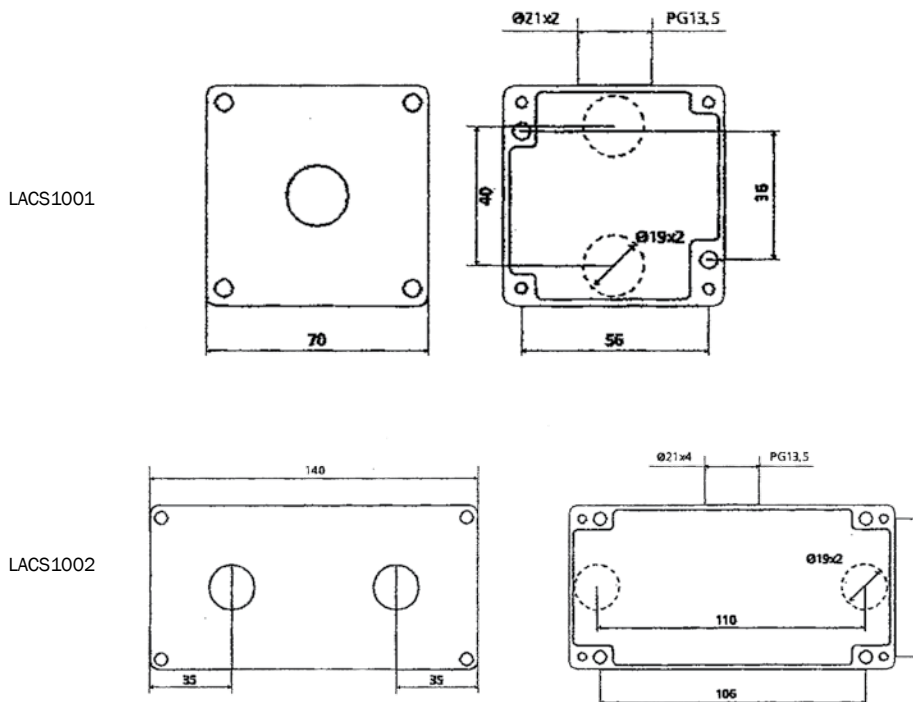
Filament Bulb



Bulb: BA 15d
 Duration: 2000 hours
 Filament: shock-proof

Description	Part#	Price
24V - 5W	LA11S24	\$7.00
115V - 5W	LA11E15	\$7.00
240V - 5W	LA11E30	\$7.00

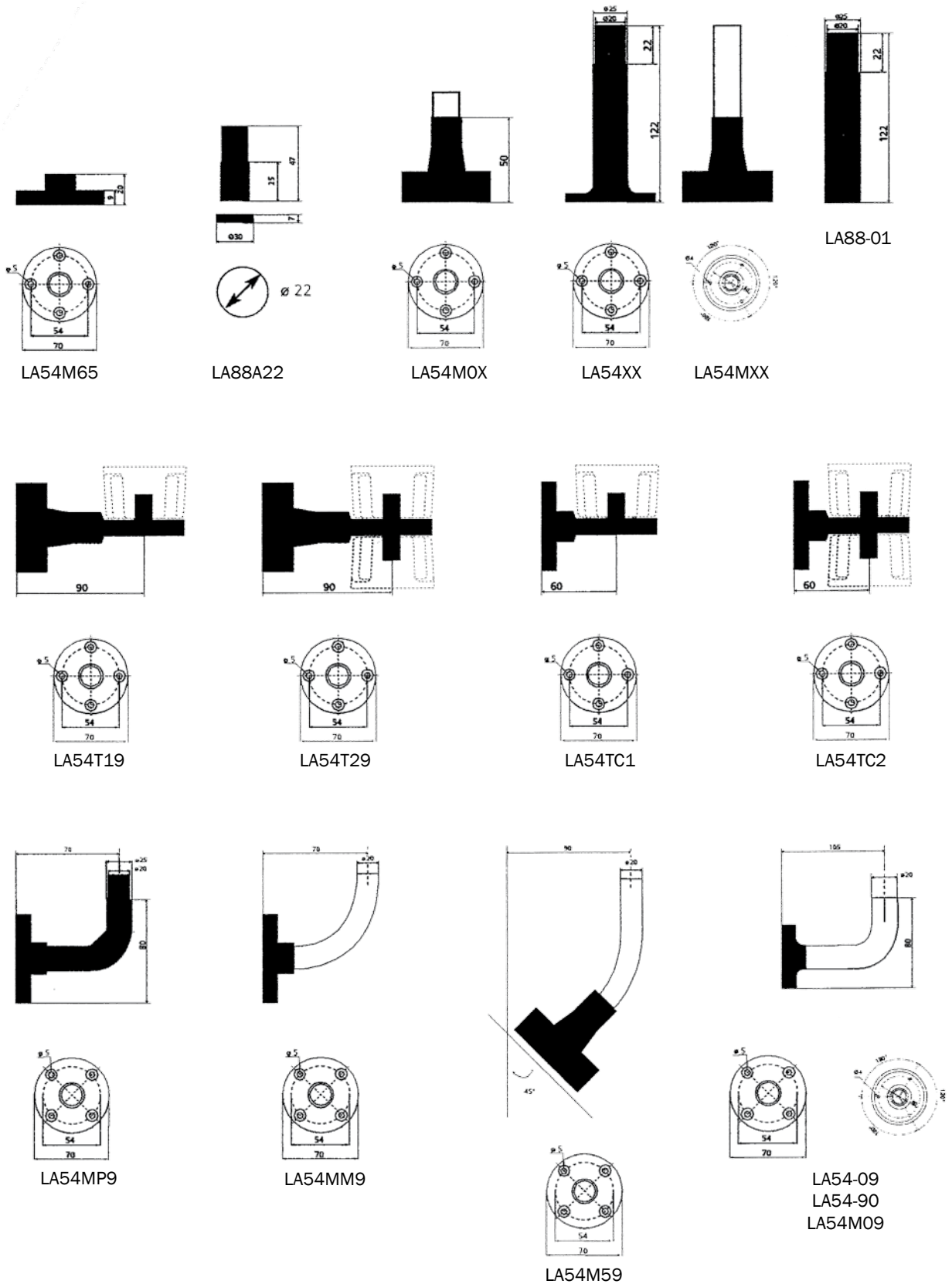
Technical Dimensions - Housings



Discount Schedule SC-50

SERIES 180 FITTINGS DIMENSIONS

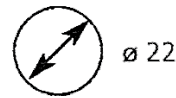
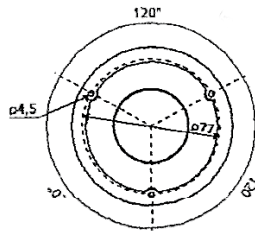
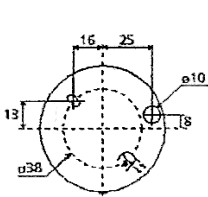
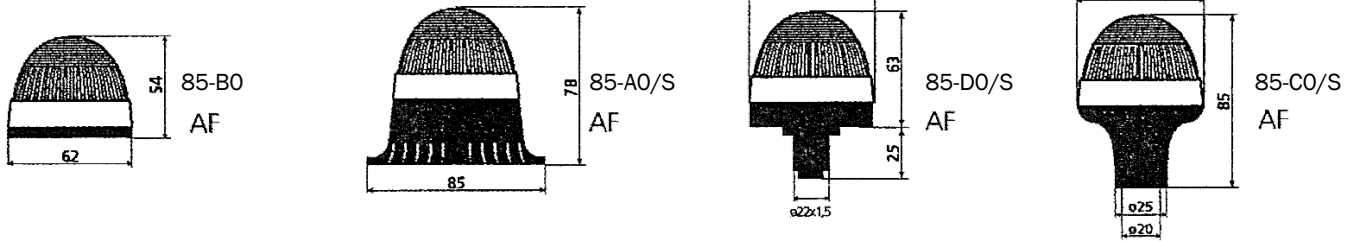
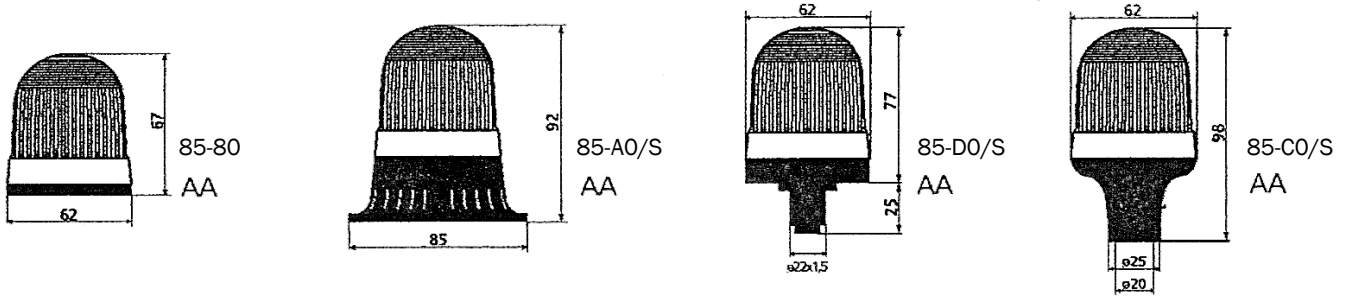
Fittings Dimensions



T9

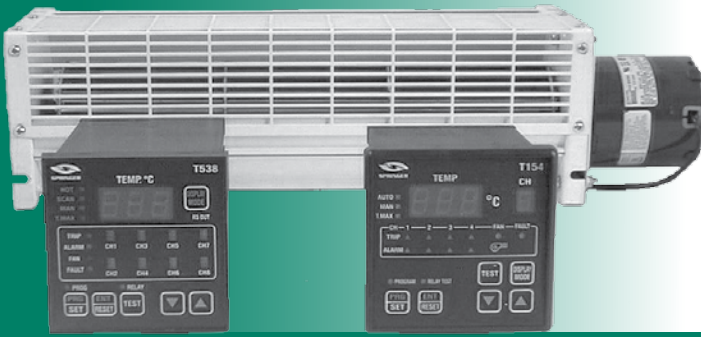
LAMP DIMENSIONS

Technical Diagrams - Lamps



T10

TEMPERATURE CONTROLLERS



Springer Controls is the U.S. distributor for the Italian based company **TECSYSTEM s.r.l.®**. **TECSYSTEM** is a world-wide leader in the market of temperature monitoring units, temperature sensors, and other items for the thermal control of motors, generators and transformers.

TEMPERATURE CONTROLLERS / FANS

Temperature Controller Model Types.....	U2
NT Series Modular Assembly.....	U3
NT-935.....	U4, U5
NT-538.....	U6, U7
NT Accessories.....	U8
NT Series Electrical Diagrams.....	U9
T-154.....	U10, U11
T-2612 Series.....	U12, U13
T-N12.....	U14, U15
Sensors.....	U16
General Accessories.....	U17
Cooling Fans.....	U18
Fan Relays.....	U19

TEMPERATURE CONTROLLER MODEL TYPES

NT Series



The NT Series consists of the NT-935 and the NT-538 temperature controller units. The NT Series is a temperature control system, up to 8 channels for electric motors and generators. The NT series has the ability to add modular components such as digital or analog converters (see page U3). The units can also be manufactured with the same features built-in to the base unit itself. (see pages U3- U8)

T-154 Series



The T-154 is a 4 channel temperature control system designed for dry transformers as well as electric motors and generators. (see pages U10 and U11)

T-2612 Series



The T-2612 series temperature control system is designed for cast resin or dry type transformers as well as electric motors and generators. The T-2612 is unique with a large front panel display (12.5" x 6.25") and 20 Amp relay outputs. It is available with digital or analog built-in converter features. (see pages U12 and U13)

T-N12 Series



The T-N12 series temperature control system is designed for economic control of oil insulated transformers, cast resin or dry type transformers as well as electric motors and generators. (see pages U14 and U15)

COMPLETE UNIT = BASE UNIT + OPTIONAL ACCESSORY MODULES



Base Unit Temperature Controller

- NT-935; 4 Inputs (page U4, U5)
- NT-538; 8 Inputs (shown) (page U6, U7)
- See Pages U4 - U7 for pricing and specifications

+ either:



Digital Signal Converter

- NT-BUSMOD/8A (page U8)
- See Page U8 for pricing and specifications
- Stand alone unit

or



Analog Signal Converter

- NT-CONV/420/4A; 4 Outputs (shown) (page U8)
- NT-CONV/420/8A; 8 Outputs (page U8)
- Range 4-20 mA; from 0° to 240° C
- Stand alone unit
- See Pages U8 for pricing and specifications

or



Multiple Relay Unit

- NT-MOD/RL4A; 4 alarm + 4 trip + 1 fault (page U8)
- NT-MOD/RL8A; 8 alarm + 8 trip + 1 fault (shown) (page U8)
- Stand alone unit
- See Pages U8 for pricing and specifications

NT-935 TEMPERATURE CONTROLLER



Temperature monitoring unit for motors and electric generators.

The NT-935 is a state of the art temperature controller that utilizes the most advanced technology available. The NT-935 is ideal for up to 4 thermal alarm channels for the protection of electric motors and generators covering all voltage ranges.

NT-935 Features

- 4 inputs; utilizing Pt100 (RTD) 3 wire (100 ohm platinum)
- Trip and Alarm for *group* inputs
- Form C dry contacts
- Damaged RTD indication
- Select from automatic channel scan, hottest channel scan or manual scan
- 92 square mm mounting hole
- Memory recall feature; allows operator to review maximum temperature reached
- Temperature monitoring from 0° - 240°C with large 13 mm display
- Plug-in terminal boards

NT-935 Ordering Information

Model Number	Description	List Price / each
NT-935	Basic temperature monitor; 4 input channels, 2 fan control outputs, 24-240V AC/DC	\$1558.00
NT-935-ANLG	NT-935 with analog output (hottest channel)	\$1894.00
NT-935-DIG	NT-935 with digital output	\$2283.00

Additional Components: (Stand alone Units)

NT-BUSMOD/8A	Converts NT-935 temperature monitor to digital RS485 or RS232 Modbus® output, (din-rail mountable)	\$920.00
NT-CONV/420/4A	Converts NT-935 temperature monitor to analog 4-20 mA output for each individual channel. (din-rail mountable)	\$630.00
NT-MOD/RL4A	Relay Module for NT-935; 4 inputs, 24V AC/DC (din-rail mountable)	\$1050.00

Discount Schedule SC-60

Technical Specifications

Power Supply

- Universal; 24 - 240V AC/DC

Inputs

- 3 or 4 inputs Pt100 (RTD) - 3 wires
- 100/120 Ohm NI (optional)
- Removable rear terminals
- Surge protection on all input channels
- Automatic sensor cable length compensation

Outputs

- 2 alarm relay (alarm-trip)
- Contact rating; 5A - 250V AC res.

Communication

- RS 232 or 485 Modbus® RTU, 19.2K (optional)
- Profibus® (optional)
- PC Link (optional)

Tests/Performances

- CE approved, cULu approved, RINA approved
- Protection against electrical & magnetic noises
- Accuracy: $\pm 1\%$ full scale: ± 1 digit
- Ambient operating temperature: -20°C to $+60^{\circ}\text{C}$
- ABS self-extinguishing housing - NORYL 94V
- Polycarbonate face plate; IP 65 rating (waterproof)
- Data storage: 10 years minimum

Dimensions

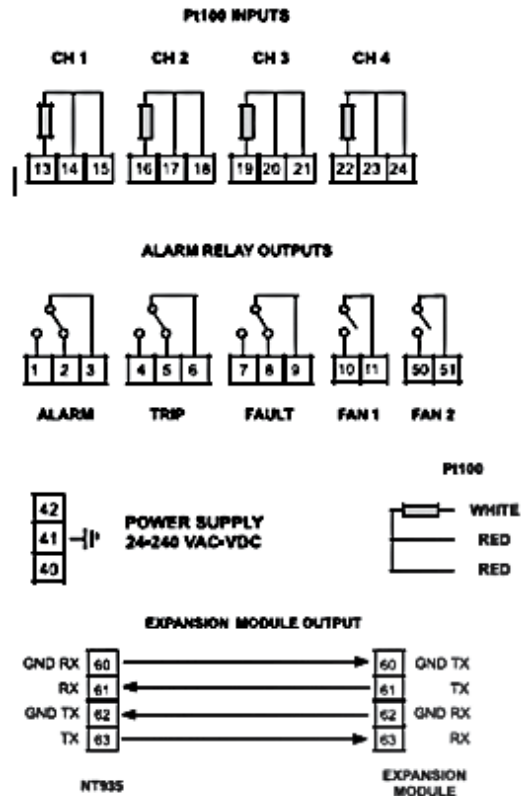
- Panel cutout; 92 x 92 mm
- Face; 96 x 96 mm
- Depth; 130 mm (with rear terminals)

Displaying & Data Management

- 13 mm high with 3 digits for displaying temperature
- LED for displaying reference channel
- LED indicating alarm or trip channel
- LED indicating fault
- LED indicating fan function
- Temperature monitoring from 0°C to 240°C
- Programmable to $^{\circ}\text{F}$ (optional)
- Easily programmable with frontal push buttons
- Select from automatic channel scan, hottest channel scan or manual scan
- Alarm RESET push button on front panel
- Maximum reached temperatures and alarm storage
- Option of setting HOLD function for alarm & trip outputs



Electrical Connections



NT-538 TEMPERATURE CONTROLLER



Temperature monitoring unit for motors and electric generators.

The NT-538 is a state of the art temperature controller that utilizes the most advanced technology available. The NT-538 is ideal for up to 8 thermal alarm channels for the protection of electric motors and generators covering all voltage ranges.

NT-538 Features

- 1-8 inputs; utilizing Pt100 (RTD) 3 wire
- Trip and Alarm for *each* input
- Form C dry contacts
- Damaged RTD indication
- Select from automatic channel scan, hottest channel scan or manual scan
- 92 square mm mounting hole
- Memory recall feature; allows operator to review maximum temperature reached
- Temperature monitoring from 0° - 240°C with large 13 mm display
- Plug-in terminal boards

NT-538 Ordering Information

Model Number	Description	List Price / each
NT-538	Basic temperature monitor; 8 input channels, 1 fan output, alarm-trip-fault outputs, 24-240V AC/DC	\$1903.00
NT-538-ANLG	NT-538 with analog output (hottest channel)	\$2540.00
NT-538-DIG	NT-538 with digital output	\$2823.00

Additional Components: (Stand alone Units)

NT-BUSMOD/8A	Converts NT-538 temperature monitor to digital RS485 or RS232 Modbus® output, (din-rail mountable)	\$920.00
NT-CONV/420/8A	Converts NT-538 temperature monitor to analog 4-20 mA output for each individual channel. (din-rail mountable)	\$700.00
NT-MOD/RL8A	Relay Module for NT-538; 4 inputs, 24V AC/DC (din-rail mountable)	\$1820.00

Discount Schedule SC-60

Technical Specifications

Power Supply

- Universal; 24 - 240V AC/DC

Inputs

- 8 inputs Pt100 (RTD) - 3 wires
- 100/120 Ohm NI (optional)
- Removable rear terminals
- Surge protection on all input channels
- Optional 10 ohm cu
- Automatic sensor cable length compensation

Outputs

- 2 alarm relay (alarm-trip)
- Contact rating; 5A - 250V AC res.

Communication

- RS 232 or 485 Modbus® RTU, 19.2K (optional)
- Profibus® (optional)
- PC Link (optional)

Tests/Performances

- CE approved, cULu approved, RINA approved
- Protection against electrical & magnetic noises
- Accuracy: $\pm 1\%$ full scale; ± 1 digit
- Ambient operating temperature: -20 °C to +60 °C
- ABS self-extinguishing housing - NORYL 94V
- Polycarbonate face plate; IP 65 rating (waterproof)
- Data storage: 10 years minimum

Dimensions

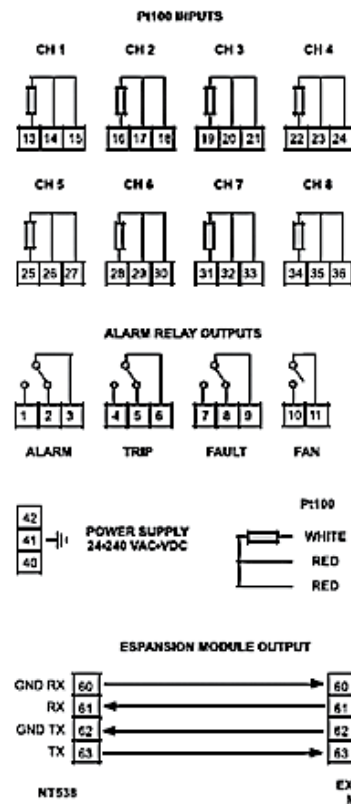
- Panel cutout; 92 x 92 mm
- Face; 96 x 96 mm
- Depth; 130 mm (with rear terminals)

Displaying & Data Management

- 13 mm high with 3 digits for displaying temperature
- LED for displaying reference channel
- LED indicating alarm or trip channel
- LED indicating fault
- LED indicating fan function
- Temperature monitoring from 0 °C to 240 °C
- Programmable to °F (optional)
- Easily programmable with frontal push buttons
- Select from automatic channel scan, hottest channel scan or manual scan
- Alarm RESET push button on front panel
- Maximum reached temperatures and alarm storage
- Option of setting HOLD function for alarm & trip outputs



Electrical Connections



NT ACCESSORY ITEMS



NT-BUSMOD/8A

Digital signal converter from protocol TecsBus to ModBus RTU;

- Power Supply; 24V AC/DC
- Usage; 2 Watt
- Dimensions; 71 x 90 x 58 mm
- Din-rail mountable
- Stand alone unit compatible with NT series controllers

Catalog No	List Price
NT-BUSMOD/8A	\$ 920.00



NT-CONV-420-4A

Analog Signal Converter;

- Power Supply; 24V AC/DC
- Outputs; 4 or 8 outputs 4-20mA
- Range; 0° - 240°C
- Usage; 3W (4A) & 5W (8A)
- Dimensions; 106 x 90 x 58 mm
- Din-rail mountable
- Stand alone unit compatible with NT series controllers

Catalog No	Outputs	List Price
NT-CONV-420-4A	4	\$630.00
NT-CONV-420-8A	8	\$700.00



NT-MOD/RL8A

Multiple Relay Unit;

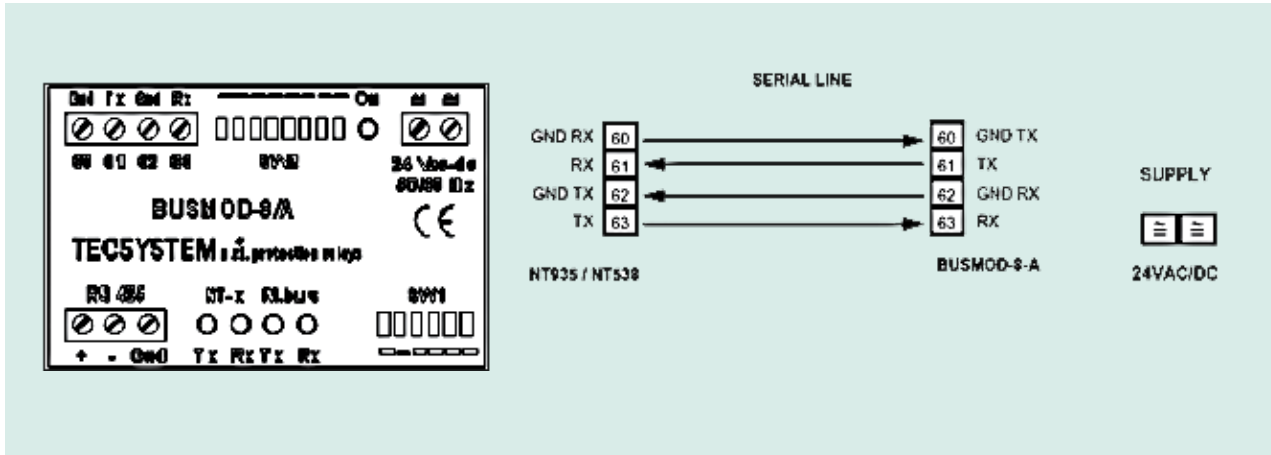
- Power Supply; 24V AC/DC
- Inputs; 2 alarm relays per input, 4 or 8 inputs
- Usage; 4W (4A) & 7W (8A)
- Dimensions; 182 x 127 x 99 mm
- Din-rail mountable

Catalog No	Outputs	List Price
NT-MOD/RL4A	4	\$1050.00
NT-MOD/RL8A	8	\$1820.00

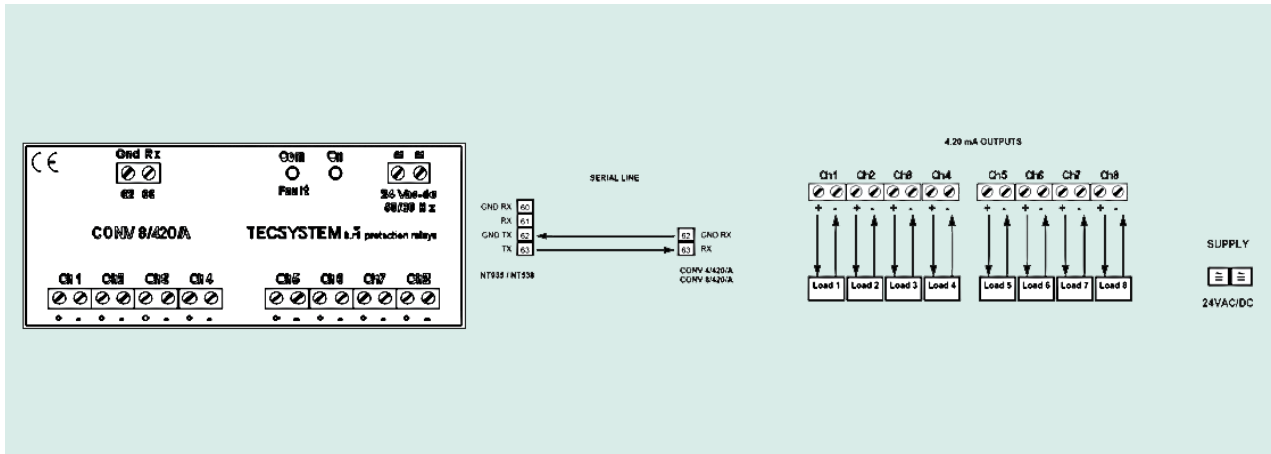
Discount Schedule SC-60

NT ACCESSORY - ELECTRICAL CONNECTIONS

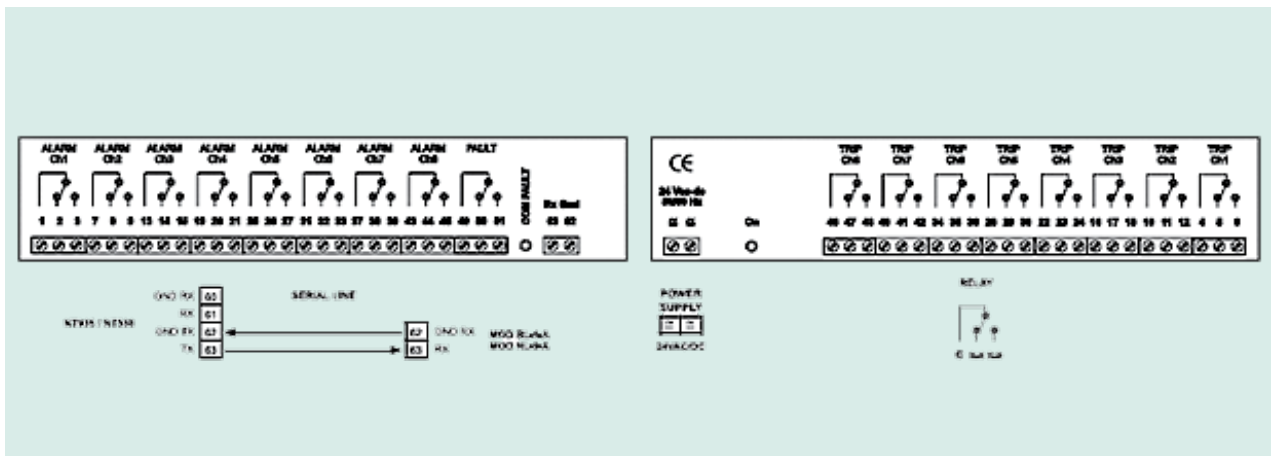
NT-BUSMOD/8A



NT-CONV-420-4A
NT-CONV-420-8A (shown)



NT-MOD/RL4A
NT-MOD/RL8A (shown)



U₉

T-154 TEMPERATURE CONTROLLER



Temperature monitoring unit for cast resin or dry-type transformers.

The T-154 is a state of the art temperature controller that utilizes the most advanced technology available. The T-154 is ideal for up to 4 thermal alarm channels for the temperature control of resin and dry-type transformers.

T-154 Features

- 4 inputs; utilizing Pt100 (RTD) 3 wire
- Trip and Alarm for *group* inputs
- Form C dry contacts
- Damaged RTD indication
- Select from automatic channel scan, hottest channel scan or manual scan
- 92 square mm mounting hole
- Memory recall feature; allows operator to review maximum temperature reached
- Temperature monitoring from 0° - 240°C with large 13 mm display
- Plug-in terminal boards

Ordering Information

Model Number	Description	List Price / each
T-154	Basic temperature monitor 4 inputs, 24 - 240V AC-DC	\$1260.00

Options*

- Tropical protection on all internal components
- 120/100 nickel ohm RTD

* Contact Springer Controls for special pricing and delivery.

Discount Schedule SC-60

Technical Specifications

Power Supply

- Universal; 24 - 240V AC/DC

Inputs

- 4 inputs Pt100 (RTD) - 3 wires
- Removable rear terminals
- Surge protection on all input channels
- Automatic sensor cable length compensation

Outputs

- 2 alarm relay (alarm-trip)
- Contact rating; 5A - 250V AC res.
- 1 alarm for fan control
- 1 alarm for fault indication
- Relay test

Tests/Performances

- CE approved, cULu approved, RINA approved
- Protection against electrical & magnetic noises
- Accuracy: $\pm 1\%$ full scale; ± 1 digit
- Ambient operating temperature: -20°C to $+60^{\circ}\text{C}$
- ABS self-extinguishing housing - NORYL 94V
- Polycarbonate face plate; IP 65 rating (waterproof)
- Data storage: 10 years minimum

Dimensions

- Panel cutout; 92 x 92 mm
- Face; 96 x 96 mm
- Depth; 140 mm (with rear terminals)

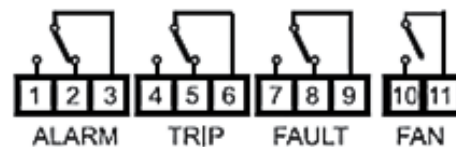
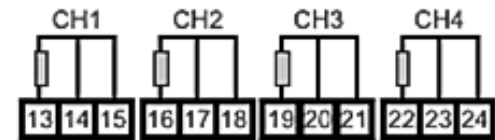
Displaying & Data Management

- 1 display, 13 mm high w/3 digits for displaying temperature
- 1 display for reference channel
- LED indicating alarm or trip channel
- LED indicating fault
- LED indicating fan function
- Temperature monitoring from 0°C to 240°C
- Programmable to $^{\circ}\text{F}$
- Easily programmable with frontal push buttons
- Select from automatic channel scan, hottest channel scan or manual scan
- Alarm RESET push button on front panel
- Maximum reached temperatures and alarm storage



U11

Electrical Connections



T-2612 TEMPERATURE CONTROLLER



Temperature monitoring unit for cast resin or dry-type transformers.

The T-2612 is a state of the art temperature controller that utilizes the most advanced technology available. The T-2612 features a large front panel display along with large 3 digit temperature display. It is ideal for up to 4 thermal alarm channels for the temperature control of resin and dry-type transformers.

T-2612 Features

- 4 inputs; utilizing Pt100 (RTD) 3 wire
- Large Housing; 12.5" (H) x 6.25" (W) x 3.0" (D)
- Large 3 digit display; 20.5mm
- Trip, Alarm, Fault relay output
- Audible Alarm Indication with mute button
- 2 Fan Outputs; 10 amps each, fuse protected
- Damaged RTD indication
- Select from automatic channel scan, hottest channel scan or manual scan
- Memory Recall feature; allows operator to review maximum temperature reached
- Temperature monitoring from 0° - 200° C with large 20.5 mm display
- Plug-in terminal boards

Ordering Information

Model Number	Fans	4 Channel	Modbus	4-20 mA	List Price / each
T-2612	Yes	Yes	Yes	No	\$1759.00
T-2612B	Yes	Yes	No	No	\$1440.00
T-2612C	Yes	Yes	No	Yes	\$1879.00
T-2612A/D	Yes	Yes	Yes	Yes	\$2093.00

Options*

- Tropical protection on all internal components
- 120/100 nickel ohm RTD

* Contact Springer Controls for special pricing and delivery.

Discount Schedule SC-60

Technical Specifications

Power Supply

- 120 - 240V AC selectable

Inputs

- 4 inputs Pt100 (RTD) - 3 wires
- Removable rear terminals
- Surge protection on all input channels
- Sensor cable length up to 500 m

Outputs

- 3 alarm relays (alarm-trip-fault)
- Contact rating; 5A - 250V AC res.
- Fan 1 & 2 outputs protected by separate 10a slow fuses (max. 16a)
- Output contacts capacity of fan relays: 20a-220Vac, 10a - 110Vac

Tests/Performances

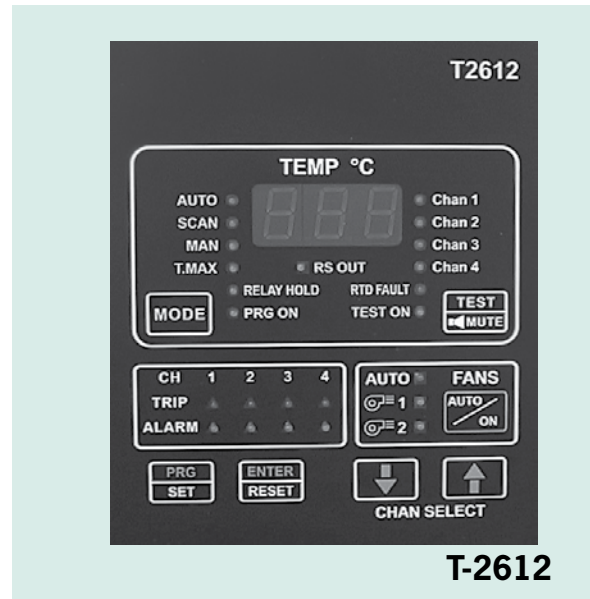
- CE approved, cULu approved
- Protection against electrical & magnetic noises
- Accuracy: $\pm 1\%$ full scale: ± 1 digit
- Ambient operating temperature: -20°C to $+60^{\circ}\text{C}$
- Housing - painted steel panel; frontal part is IP 65 rated (waterproof)
- Fan cycle test program

Dimensions

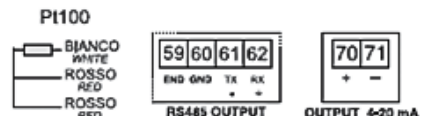
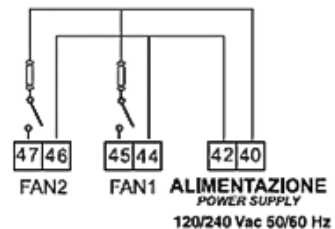
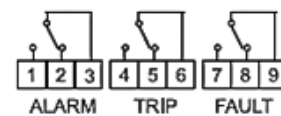
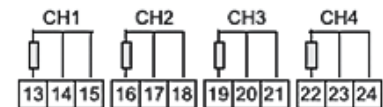
- 320 mm (12.5") x 210 mm (6.25")
- Depth; 90 mm (with rear terminals)

Displaying & Data Management

- 1 display, 20.5 mm high w/3 digits for displaying temperature
- 1 display for reference channel
- LED indicating alarm or trip channel
- LED indicating fault
- LED indicating fan function
- Temperature monitoring from 0°C to 240°C
- Programmable to $^{\circ}\text{F}$
- Easily programmable with frontal push buttons
- Select from automatic channel scan, hottest channel scan or manual scan
- Alarm RESET push button on front panel
- Maximum reached temperatures and alarm storage
- Audible alarm buzzer



Electrical Connections



T-N12 SERIES



Temperature monitoring unit for Oil insulated type transformers.

The T-N12 series of temperature controllers are available in 3 different models. Each model is designed for a specific application. The T-N12 series is ideal for up to 3 thermal alarm channels for the temperature control of cast resin transformers, electric motors and generators, and also oil insulated type transformers..

T-N12 Models and Application

T-112: Designed for economic temperature control of cast resin transformers and electric motors.

T-412: Designed to monitor temperature of electrical motors through one single channel.

T-912: Designed for the temperature control of oil insulated transformers.

General Features

- 1 input from various input devices
- Trip and alarm for *group* inputs
- Form C dry contacts
- Damaged RTD indication
- Memory recall feature; allows operator to review maximum temperature reached
- Temperature monitoring from 0° - 200 °C
- Plug-in terminal boards

Ordering Information

T-N12 Model Number	°C	Sensors	Fan	List Price / each
T-112	X	Pt100	x	\$1294.00
T-412 Pt	X	Pt100		\$1180.00
T-412 Tc	X	TcK		\$1050.00
T-912	X	Pt100	x	\$1294.00

Discount Schedule SC-60

Technical Specifications

Power Supply

- 120 - 240V AC selectable

Inputs

- T-112
 - 1 input Pt100 (RTD)
 - 2 inputs for Ptc series
- T-412
 - 1 input Pt100 (RTD) or thermocouple (TcK)
- T-912
 - 1 input Pt100 (RTD)
 - 2 NO contact inputs
- Removable rear terminals
- Surge protection on all input channels
- Automatic sensor cable length compensation

Outputs

- 2 alarm relays (alarm-trip)
- Contact rating; 5A - 250V AC res.

Tests/Performances

- CE approved
- Protection against electrical & magnetic noises
- Accuracy: $\pm 1\%$ full scale; ± 1 digit
- Ambient operating temperature: -20°C to $+60^{\circ}\text{C}$
- ABS self-extinguishing housing NORYL 94V
- Polycarbonate face plate; IP 65 rating (waterproof)
- Data storage; 10 years minimum

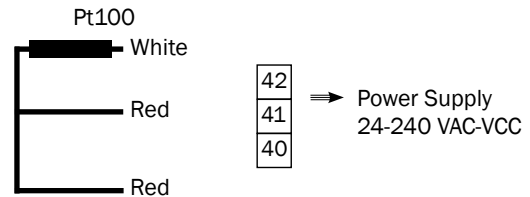
Dimensions

- Panel cutout; 44 x 92 mm. Face; 48 x 96 mm
- Depth; 160 mm (with rear terminals)

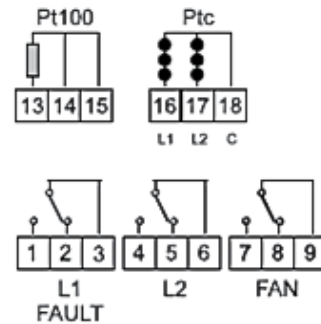
Displaying & Data Management

- 1 display, 7 mm high w/3 digits for displaying temp.
- LED indicating alarm or trip channel
- LED indicating fault
- Temperature monitoring from 0°C to 200°C
- Easily programmable with frontal push buttons
- Maximum reached temperatures and alarm storage
- Alarm RESET push button on front panel
- Option of setting HOLD function for outputs

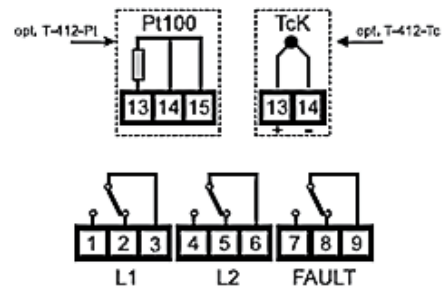
Electrical Connections



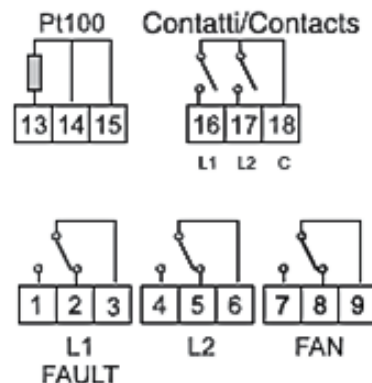
T-112



T-412

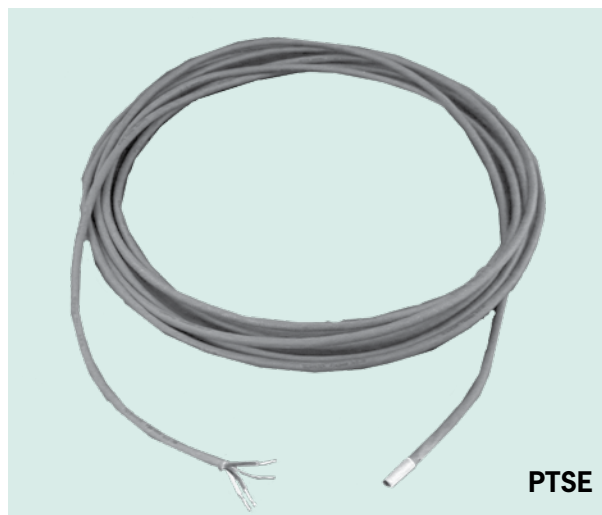


T-912



SENSORS

A full line of temperature sensors are available. Standard length cable is 2.5 meters (8.2 ft.), however, custom length cable is available. Each sensor is designed to fit a particular application, such as a transformer, motor windings, or oil filled housings.



U16

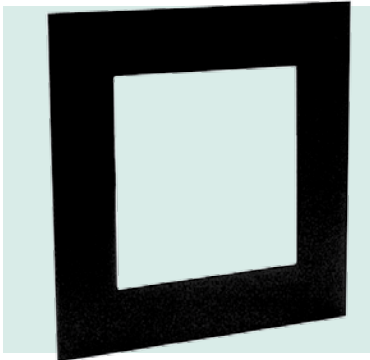
Ordering Information

Model Number	Type Unit	Cable Type	Cable Length	Sensor Diameter	Temperature Range	List Price
PTSE - 2.5 PTSE - 5.0	RTD Pt100	3 x 22 AWG	2.5 meters 5.0 meters	6mm (Ø) x 55mm	Max. 220 °C Max. 428 °F	\$86.00 \$120.00
PTSP	RTD Pt100	CTSPT	2.5 meters	Flat: 3 x 10 x 60mm	Max. 200 °C Max. 392 °F	\$123.00
PTST (7.2 Kv)	RTD Pt100	3 x 22 AWG	2.5 meters	6mm (Ø) x 70mm	Max. 200 °C Max. 392 °F	\$536.00
PTSN	RTD Pt100	3 x 22 AWG	2.5 meters	3.5mm (Ø) x 40mm	Max. 180 °C Max. 356 °F	\$123.00
TcK	Thermocouple	TTS	2.5 meters	6mm (Ø) x 65mm	Max. 750 °C Max. 1382 °F	\$369.00

Discount Schedule SC-60

GENERAL ACCESSORIES

The following accessories are available for all temperature controllers to assist installation and operation.



T-92 Adaptor

A metal adaptor plate to convert a U.S. standard 4" square opening to accept the 92 mm square controller (replaces TB2 and TS-3).

Catalog No	List Price
T-92	\$35.00



SIM Pt100 Simulator

A test simulator for the units to simulate sensor inputs with a variable potentiometer. 4 channels can be simulated at one time.

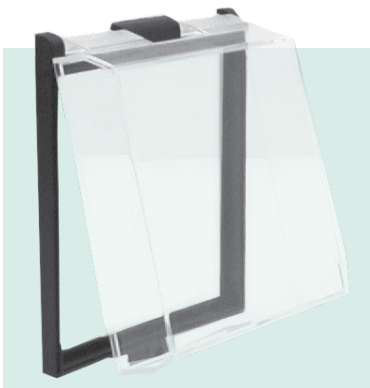
Catalog No	List Price
SIM Pt100	\$457.00



AU 4-20

Universal power supply for 4-20 mA power supply. Input 24-240V AC/DC. Output 24V DC. 100 mA maximum load.

Catalog No	List Price
AU4-20	\$685.00



PRT96

Frontal plastic protection; a lockable front hinge cover that provides NEMA 12 protection of the controller front panel. A secure means of input protection. (For T-538 and MM-286 units only)

Catalog No	List Price
PRT96	\$60.00

COOLING FANS

The cooling fans for transformers have been specifically designed for high efficiency in small space. Three major designs; **BARRA 1200**, **BARRA 1800**, and **BARRA 3600** are available.

BARRA 1200



BARRA 1800



BARRA 3600



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Ordering Information

Model Number	Air Flow (CF/min)	Impellar Dia.	Impellar Material	Power (VA)	Working Temp (°F)	Housing Material	Insulation Class	List Price
BARRA 1200	706 cfm	60 mm (2.4")	Aluminum	90W @ 220 Vac	-22 TO 266°F	Zinc plated metal	F	\$3510.00
BARRA 1800	10458 cfm	60 mm (2.4")	Aluminum	135W @ 220 Vac	-22 TO 266°F	Zinc plated metal	F	\$3615.00
BARRA 3600	2119 cfm	80 mm (3.2")	Aluminum	315W @ 220 Vac	-22 TO 266°F	Extruded Aluminium	F	\$3720.00

*Consult factory for specific dimensions & sizing.

Discount Schedule SC-60

VXT-20



The VXT-20 Fan Relay controls 2 fan banks. The input from a normally open contact signals the operation of the unit. Each control will carry a 1000 VA load.

Catalog No	List Price
VXT-20	\$723.00

U19

VRT Series



The 3 models of the **VRT series** of fan relays has a full micro-processor controller for 2-motor, 3-motor, 4-motor and 6 motor groups. Programmable with delay start and delay trip, the VRT series offers complete parameter settings of fan motors with indication and thermal protection.

Catalog No	List Price
VRT-200	\$822.00
VRT-300	\$1522.00
VRT-400	\$1827.00
VRT-600	\$2128.00

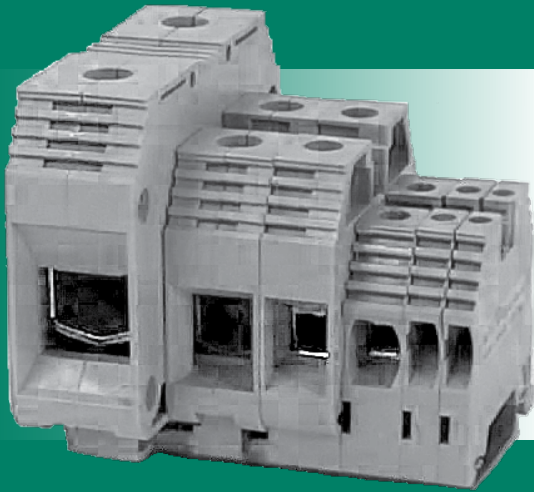
Discount Schedule SC-60



NOTES

U20

TERMINAL BLOCKS



SPRINGER
controls company

Springer Control Company carries a complete line of Klemmsan terminal blocks and accessories. The terminal blocks are rated from 18 to 175 amps. All styles are available, including screw terminals, spring clamp terminals, ground terminals, fuse holders and more.

TERMINAL BLOCKS & ACCESSORIES

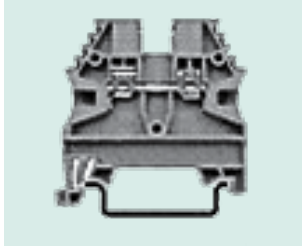
AVK Series	V2 - V4
<ul style="list-style-type: none">• Screw Terminals; 20 amp to 175 amp• Ground Terminals• Full Accessories	
PEK Series	V5 - V7
<ul style="list-style-type: none">• Screw Terminals; 18amp to 155 amp• Ground Terminals• Full Accessories	
YBK Series	V8, V9
<ul style="list-style-type: none">• Tension Clamp Terminals; 20 amp to 55 amp• Ground Terminals• Full Accessories	
ASK Series	V10 - V12
<ul style="list-style-type: none">• Disconnect Terminals• Fuse Type Terminals• Full Accessories	
Marking Tags	V13

Index



AVK SERIES: FEED-THROUGH SCREW TERMINALS

AVK type terminals are manufactured from thermoplastic raw material. Grey being the main stock color, five different colors give users additional choices for visual separation of control circuits and/or voltage levels. Terminal blocks are manufactured with one open end allowing side by side placement. An end plate is necessary for the last terminal block to enable full enclosure. Partitions can be added to allow separation of circuits. See full accessories on page V4.



AVK 2.5 (width 5mm)

Electrical Rating:

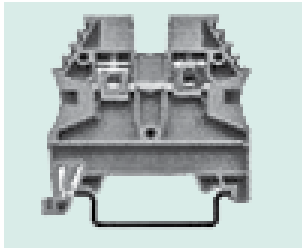
UL / CSA (Voltage/Current/Cross Section): 600V~ / **20 A** / AWG 26-12
 Insulation Stripping Length: 10mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 4 mm²
 Fine Strand, Screw Connection: 1.5 - 2.5 mm²
 AWG Conductor: 26 -12 (Torque 0.4 NM)

Material: Polyamide 6.6

	Grey (stock)	Blue	Green	Yellow	Red	Beige	Price/each
Terminals AVK 2.5	304 120	304 121	304 122	304 123	304 124	304 129	\$1.00
End Plate NPP	444 120	444 121	444 122	444 123	444 124	444 129	\$0.50
Partition APP	462 120	462 121	462 122	462 123	462 124	462 129	\$0.50



AVK 4 (width 6mm)

Electrical Rating:

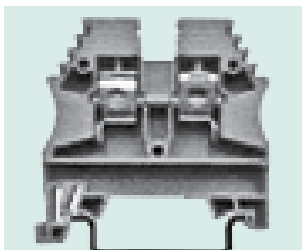
UL / CSA (Voltage/Current/Cross Section): 600V~ / **30 A** / AWG 26-10
 Insulation Stripping Length: 10mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 6 mm²
 Fine Strand, Screw Connection: 1.5 - 4 mm²
 AWG Conductor: 26 -10 (Torque 0.5 NM)

Material: Polyamide 6.6

	Grey (stock)	Blue	Green	Yellow	Red	Beige	Price/each
Terminals AVK 4	304 130	304 131	304 132	304 133	304 134	304 139	\$1.50
End Plate NPP	444 120	444 121	444 122	444 123	444 124	444 129	\$0.50
Partition APP	462 120	462 121	462 122	462 123	462 124	462 129	\$0.50



AVK 6 (width 8mm)

Electrical Rating:

UL / CSA (Voltage/Current/Cross Section): 600V~ / **50 A** / AWG 26-8
 Insulation Stripping Length: 12mm

Connection Data:

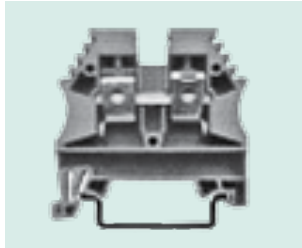
Solid Stand, Screw Connection: 0.5 - 10 mm²
 Fine Strand, Screw Connection: 1.5 - 6 mm²
 AWG Conductor: 26 -8 (Torque 0.8 NM)

Material: Polyamide 6.6

	Grey (stock)	Blue	Green	Yellow	Red	Beige	Price/each
Terminals AVK 6	304 140	304 141	304 142	304 143	304 144	304 149	\$1.75
End Plate NPP	444 120	444 121	444 122	444 123	444 124	444 129	\$0.50
Partition APP	462 120	462 121	462 122	462 123	462 124	462 129	\$0.50

Discount Schedule SC-65

AVK SERIES: FEED-THROUGH SCREW TERMINALS



AVK 10 (width 10mm)

Electrical Rating:

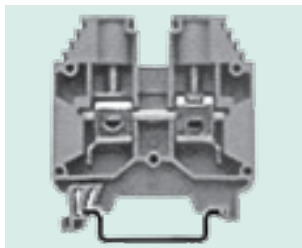
UL / CSA (Voltage/Current/Cross Section): 600V~ / **65 A** / AWG 16-6
 Insulation Stripping Length: 12mm

Connection Data:

Solid Stand, Screw Connection: 1.5 - 16 mm²
 Fine Strand, Screw Connection: 1.5 - 10 mm²
 AWG Conductor: 16 -6 (Torque 1.2 NM)

Material: Polyamide 6.6

	Grey (stock)	Blue	Green	Yellow	Red	Beige	Price/each
Terminals AVK 10	304 150	304 151	304 152	304 153	304 154	304 159	\$2.25
End Plate NPP	444 120	444 121	444 122	444 123	444 124	444 129	\$0.50
Partition APP	462 120	462 121	462 122	462 123	462 124	462 129	\$0.50



AVK 16 (width 12mm)

Electrical Rating:

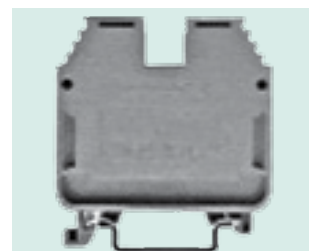
UL / CSA (Voltage/Current/Cross Section): 600V~ / **85 A** / AWG 12-4
 Insulation Stripping Length: 16mm

Connection Data:

Solid Stand, Screw Connection: 1.5 - 16 mm²
 Fine Strand, Screw Connection: 1.5 - 16 mm²
 AWG Conductor: 14 -4 (Torque 1.2 NM)

Material: Polyamide 6.6

	Grey (stock)	Blue	Green	Yellow	Red	Beige	Price/each
Terminals AVK 16	304 160	304 161	304 162	304 163	304 164	304 169	\$3.50
End Plate NPP	444 120	444 121	444 122	444 123	444 124	444 129	\$0.50
Partition APP	462 120	462 121	462 122	462 123	462 124	462 129	\$0.50



AVK 35 (width 16mm)

Electrical Rating:

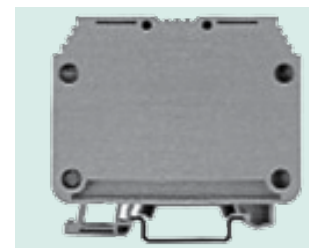
UL / CSA (Voltage/Current/Cross Section): 600V~ / **115 A** / AWG 10-2
 Insulation Stripping Length: 18mm

Connection Data:

Solid Stand, Screw Connection: 1.5 - 16 mm²
 Fine Strand, Screw Connection: 1.5 - 35 mm²
 AWG Conductor: 8 - 1 (Torque 1.2 NM)

Material: Polyamide 6.6

	Grey (stock)	Blue	Green	Yellow	Red	Beige	Price/each
Terminals AVK 35	304 170	304 171	304 172	304 173	304 174	304 179	\$9.25



AVK 70 (width 22mm)

Electrical Rating:

UL / CSA (Voltage/Current/Cross Section): 600V~ / **175 A** / AWG 6-2/0
 Insulation Stripping Length: 20mm

Connection Data:

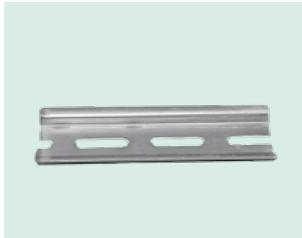
Solid Stand, Screw Connection: 10 - 16 mm²
 Fine Strand, Screw Connection: 10 - 70 mm²
 AWG Conductor: 6 - 2/0 (Torque 6 NM)

Material: Polyamide 6.6

	Grey (stock)	Blue	Green	Yellow	Red	Beige	Price/each
Terminals AVK 70	304 190	304 191	304 192	304 193	304 194	304 199	\$34.00

Discount Schedule SC-65

AVK SERIES: TERMINAL ACCESSORIES



Mounting Rail (Din Rail)

- TS 35 x 7.5 Slotted
- 1 meter length
- 25mm on 36mm Center
- 5.2mm slot width

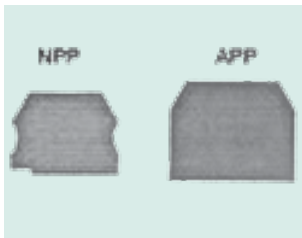
Catalog No.	Price/each
TS3575SL1	\$15.00



End Bracket

- Prevents terminal blocks from falling off the Din Rail.
- Thickness; 8mm
- Color; Grey
- Type; KD3

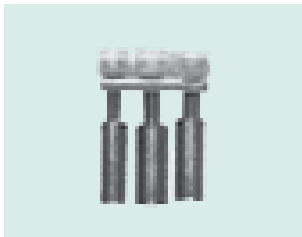
Catalog No.	Price/each
495 049	\$1.00



End Plate - Partition

- Allows separation of circuits, prevents cross-connection.
- Thickness; 1.5mm
- Color; Grey (stock), Blue, Green, Yellow, Red, Beige
- Polyamide 6.6

Catalog No.	Price/each (AVK2.5 - AVK10)
see AVK series (pg. V2 or V3)	\$0.50

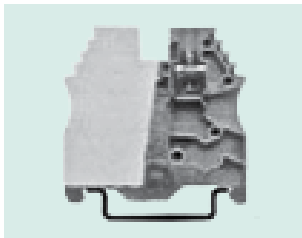


Cross Connection

- Distributes potentials within an assembly

Type	Catalog No. AVK2.5	Catalog No. AVK4	Catalog No. AVK6	Catalog No. AVK10	Catalog No. AVK16	Catalog No. AVK35
2 pole *	474 122	474 132	474 142	474 152	474 162	474 172
3 pole *	474 123	474 133	474 143	474 153	474 163	474 173
4 pole *	474 124	474 134	474 144	474 154	474 164	474 174
10 pole *	474 129	474 139	474 149	474 159	474 169	474 179

* Consult Factory for pricing.



Ground Terminals

- Green / yellow color

AWG Conductor	Catalog No.	Price/each
26 - 10	334 120	\$4.75
16 - 6	334 140	\$5.00
8 - 1	334 160	\$14.00



Warning Label

Type	Catalog No.	Price/pack 25
IP 2 S (with symbol)	498 130	\$1.00
IP 2 (no symbol)	498 140	\$1.00



Group Marking

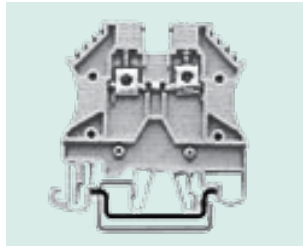
Type	Catalog No.	Price
GE	496 119	\$2.50 / pack 50
GE2	496 250	\$1.25 / pack 25

Discount Schedule SC-65

V4

PEK SERIES: FEED-THROUGH SCREW TERMINALS

PEK Type Terminals are manufactured from a thermoplastic material and are mountable on TS35 and TS32 DIN Rails. Five different colors give users the ability to group control systems, current and/or voltage levels. Terminal blocks are manufactured with one open end allowing side by side placement. An end plate is necessary for the last terminal block to enable full enclosure. Partitions can be added to allow separation of circuits. See full accessories on page V7.



PEK 2.5 (width 6mm)

Electrical Rating:

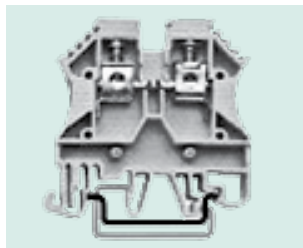
UL (Voltage/Current/Cross Section): 600V~ / **18 A** / AWG 26-12
 Insulation Stripping Length: 10mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 2.5 mm²
 Fine Strand, Screw Connection: 1.5 - 2.5 mm²
 AWG Conductor: 26 -12

Material: Polyamide 6.6

	Beige (stock)	Blue	Green	Yellow	Red	Black	Price/each
Terminals PEK 2.5	305 120	305 121	305 122	305 123	305 124	305 125	\$1.00
End Plate NPP	445 150	445 151	445 152	445 153	445 154	445 155	\$0.50
Partition App.	463 150	463 151	463 152	463 153	463 154	463 155	\$1.50



PEK 4 (width 6.5mm)

Electrical Rating:

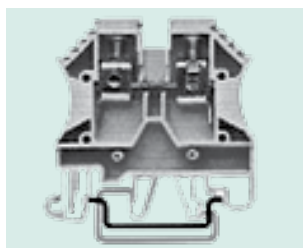
UL (Voltage/Current/Cross Section): 600V~ / **34 A** / AWG 26-10
 Insulation Stripping Length: 10mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 6 mm²
 Fine Strand, Screw Connection: 1.5 - 4 mm²
 AWG Conductor: 26 -10

Material: Polyamide 6.6

	Beige (stock)	Blue	Green	Yellow	Red	Black	Price/each
Terminals PEK 4	305 130	305 131	305 132	305 133	305 134	305 135	\$1.25
End Plate NPP	445 150	445 151	445 152	445 153	445 154	445 155	\$0.50
Partition App.	463 150	463 151	463 152	463 153	463 154	463 155	\$1.50



PEK 6 (width 8mm)

Electrical Rating:

UL (Voltage/Current/Cross Section): 600V~ / **44 A** / AWG 26-8
 Insulation Stripping Length: 12mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 10 mm²
 Fine Strand, Screw Connection: 1.5 - 6 mm²
 AWG Conductor: 26 -8

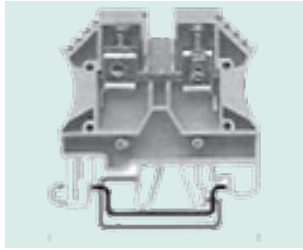
Material: Polyamide 6.6

	Beige (stock)	Blue	Green	Yellow	Red	Black	Price/each
Terminals PEK 6	305 140	305 141	305 142	305 143	305 144	305 145	\$1.75
End Plate NPP	445 150	445 151	445 152	445 153	445 154	445 155	\$0.50
Partition App.	463 150	463 151	463 152	463 153	463 154	463 155	\$1.50

V5

Discount Schedule SC-65

PEK SERIES: FEED-THROUGH SCREW TERMINALS



PEK 10 (width 10mm)

Electrical Rating:

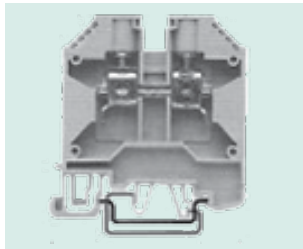
UL (Voltage/Current/Cross Section): 600V~ / **50 A** / AWG 16-8
 Insulation Stripping Length: 12mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 16 mm²
 Fine Strand, Screw Connection: 1.5 - 10 mm²
 AWG Conductor: 16 - 6

Material: Polyamide 6.6

	Beige (stock)	Blue	Green	Yellow	Red	Black	Price/each
Terminals PEK 10	305 150	305 151	305 152	305 153	305 154	305 155	\$2.25
End Plate NPP	445 150	445 151	445 152	445 153	445 154	445 155	\$0.50
Partition APP	463 150	463 151	463 152	463 153	463 154	463 155	\$1.50



PEK 16 (width 12mm)

Electrical Rating:

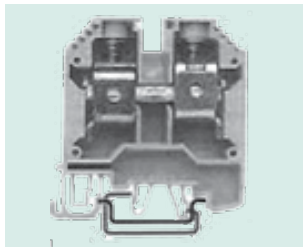
UL (Voltage/Current/Cross Section): 600V~ / **65 A** / AWG 14-6
 Insulation Stripping Length: 16mm

Connection Data:

Solid Stand, Screw Connection: 1.5 - 16 mm²
 Fine Strand, Screw Connection: 1.5 - 16 mm²
 AWG Conductor: 14 - 4

Material: Polyamide 6.6

	Beige (stock)	Blue	Green	Yellow	Red	Black	Price/each
Terminals PEK 16	305 160	305 161	305 162	305 163	305 164	305 165	\$3.50
End Plate NPP	445 170	445 171	445 172	445 173	445 174	445 175	\$1.00
Partition APP	463 170	463 171	463 172	463 173	463 174	463 175	\$1.75



PEK 35 (width 16mm)

Electrical Rating:

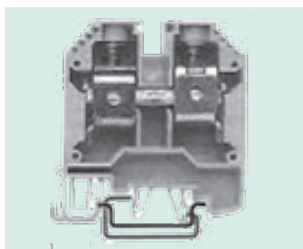
UL (Voltage/Current/Cross Section): 600V~ / **115 A** / AWG 10-2
 Insulation Stripping Length: 18mm

Connection Data:

Solid Stand, Screw Connection: 6 - 16 mm²
 Fine Strand, Screw Connection: 6 - 35 mm²
 AWG Conductor: 10 - 1

Material: Polyamide 6.6

	Beige (stock)	Blue	Green	Yellow	Red	Black	Price/each
Terminals PEK 35	305 170	305 171	305 172	305 173	305 174	305 175	\$9.25
End Plate NPP	445 170	445 171	445 172	445 173	445 174	445 175	\$1.00
Partition APP	463 170	463 171	463 172	463 173	463 174	463 175	\$1.75



PEK 35 I (width 16mm)

Electrical Rating:

UL (Voltage/Current/Cross Section): 600V~ / **115 A** / AWG 10-2
 Insulation Stripping Length: 18mm

Connection Data:

Solid Stand, Screw Connection: 6 - 16 mm²
 Fine Strand, Screw Connection: 6 - 35 mm²
 AWG Conductor: 10 - 1

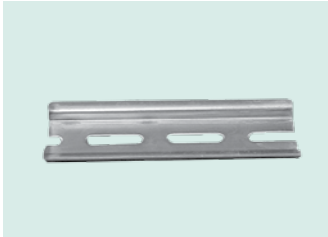
Material: Polyamide 6.6

	Beige (stock)	Blue	Green	Yellow	Red	Black	Price/each
Terminals PEK 35 I	305 180	305 181	305 182	305 183	305 184	305 185	\$10.75
End Plate NPP	445 170	445 171	445 172	445 173	445 174	445 175	\$1.00
Partition APP	463 170	463 171	463 172	463 173	463 174	463 175	\$1.75

Discount Schedule SC-65

V6

PEK SERIES: ACCESSORIES



Mounting Rails

- TS 35 x 7.5 Slotted
- 1 meter length
- 25mm on 36mm Center
- 5.2mm slot width

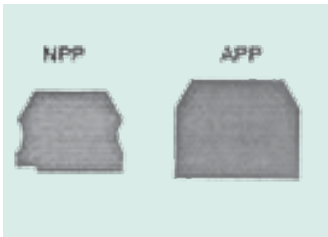
Catalog No.	Price/each
TS3575SL1	\$15.00



End Bracket

- Prevents terminal blocks from falling off the DIN-RAIL.
- Thickness; 8mm
- Color; Beige
- Type; KD3

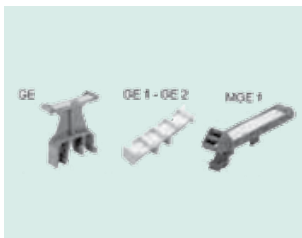
Catalog No.	Price/each
495 040	\$1.00



End Plate - Partition

- Allows separation of circuits, prevents cross-connection
- Thickness; 1.5mm
- Color; Beige (stock), Blue, Green, Yellow, Red, Black
- Polyamide 6.6

Catalog No.	Price/each
see pages V5 and V6	see page V5 and V6



Group Marking

Type	Catalog No.	Price
GE	496 110	\$2.50 / pack 50
GE2	496 250	\$1.25 / pack 25
GE3 (for PK16, 35 & 35I)	496 255	* / pack 10

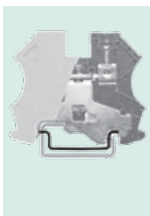
* Consult factory for pricing



Cross Connection

Type	for PEK 2.5	For PEK 4	For PEK 6	For PEK 10	For PEK 16	For PEK 35 & 35 I
2-pole *	475 122	475 132	475 142	475 152	475 162	475 172
3-pole *	475 123	475 133	475 143	475 153	475 163	475 173
4-pole *	475 124	475 134	475 144	475 154	475 164	475 174
10-pole *	475 129	475 139	475 149	475 159	475 169	475 179

*Consult factory for pricing.



Ground Terminal

for PEK 2.5	Price	for PEK 4	Price	For PEK 6	Price	For PEK 10	Price
331 120	\$4.25	331 130	\$4.75	331 140	\$5.00	331 150	\$5.50



Warning Labels

	for PEK 2.5, PEK4, PEK6, PEK10	Price/25	For PEK 16, PEK 35, PEK 35I	Price/25
IP 1S (with symbol)	498 130	\$1.00	498 143	\$1.00
IP 1 (no symbol)	498 140	\$1.00	498 145	\$1.00

*See pages V5 and V6 for more details

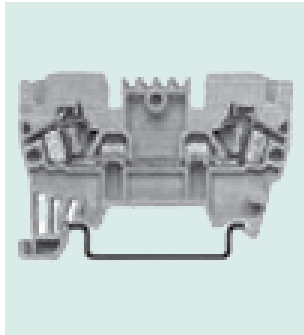
Discount Schedule SC-65

YBK SERIES: TENSION CLAMP TERMINALS

Tension clamp terminals provide a faster method of terminating wires as compared to screw clamp systems. Approved by UL, they are just as reliable in field applications.

The tension clamp is opened with a small screwdriver inserted to the side of the clamp next to the wire entry way. When the field wiring is in place, the screwdriver can be removed and a reliable, secure connection is maintained. Tension clamp terminals are available in beige and grey.

Terminal blocks are manufactured with one open end allowing side by side placement. An endplate is necessary for the last terminal block to enable full enclosure. See accessories on Page V9.



YBK 2.5 (width 5mm)

Electrical Rating:

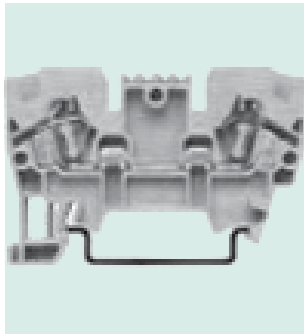
UL (Voltage/Current/Cross Section): 600V~ / **20 A** / AWG 22-12
Insulation Stripping Length: 10mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 2.5 mm²
Fine Strand, Screw Connection: 0.5 - 2.5 mm²
AWG Conductor: 22 - 12

Material: Polyamide 6.6

Model	Beige	Grey	Price/each
YBK 2.5	306 220	306 229	\$1.50



YBK 4 (width 6mm)

Electrical Rating:

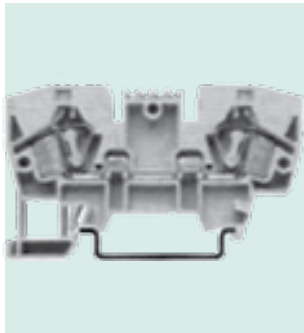
UL (Voltage/Current/Cross Section): 600V~ / **26 A** / AWG 22-10
Insulation Stripping Length: 12mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 4 mm²
Fine Strand, Screw Connection: 0.5 - 4 mm²
AWG Conductor: 22 - 10

Material: Polyamide 6.6

Model	Beige	Grey	Price/each
YBK 4	306 230	306 239	\$2.00



YBK 6 (width 8mm)

Electrical Rating:

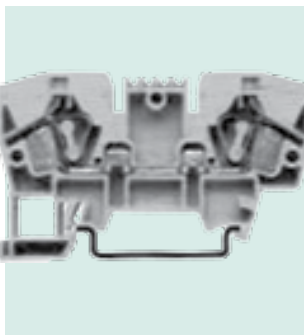
UL (Voltage/Current/Cross Section): 600V~ / **35 A** / AWG 22-8
Insulation Stripping Length: 12mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 6 mm²
Fine Strand, Screw Connection: 0.5 - 6 mm²
AWG Conductor: 22 - 8

Material: Polyamide 6.6

Model	Beige	Grey	Price/each
YBK 6	306 240	306 249	\$2.50



YBK 10 (width 10mm)

Electrical Rating:

UL (Voltage/Current/Cross Section): 600V~ / **55 A** / AWG 20-6
Insulation Stripping Length: 12mm

Connection Data:

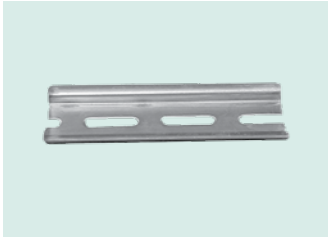
Solid Stand, Screw Connection: 0.5 - 10 mm²
Fine Strand, Screw Connection: 0.5 - 10 mm²
AWG Conductor: 20 - 6

Material: Polyamide 6.6

Model	Beige	Grey	Price/each
YBK 10	306 250	306 259	\$3.75

Discount Schedule SC-65

YBK SERIES: TERMINAL ACCESSORIES



Mounting Rail (DIN-RAIL)

- TS 35 x 7.5 Slotted
- 1 meter length
- 25mm on 36mm Center
- 5.2mm slot width

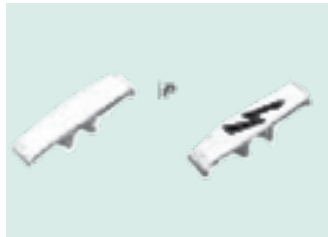
Catalog No.	Price/each
TS3575SL1	\$15.00



End Bracket - KD3

- Prevents terminal blocks from falling off DIN-RAIL.
- Thickness; 8 mm

Color	Catalog No.	Price/each
Beige	495 040	\$1.00
Grey	495 049	\$1.00



Warning Labels

Type	Catalog No.	Price/25
IP 4 S (with symbol)	498 160	\$1.00
IP 4 (without symbol)	498 170	\$1.00



Group Marking - GE

Color	Catalog No.	Price/50
Beige	496 110	\$2.50
Grey	496 119	\$2.50



End Plate - NPP

- Thickness; 1.2mm
- Polyamide 6.6

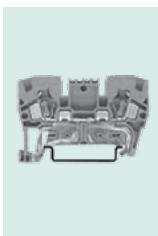
Color	for YBK 2.5	Price	for YBK 4	Price	For YBK 6	Price	For YBK 10	Price
Beige	446 320	\$0.50	446 330	\$0.50	446 340	\$0.50	446 350	\$0.50
Grey	446 329	\$0.50	446 339	\$0.50	446 349	\$0.50	446 359	\$0.50



Cross Connection

Type	for YBK 2.5	for YBK 4	For YBK 6	For YBK 10
2 *	476 222	476 232	476 242	476 252
3 *	476 223	476 233	476 243	476 253
4 *	476 224	476 234	476 244	476 254
10 *	476 229	476 239	476 249	---

* Call factory for pricing



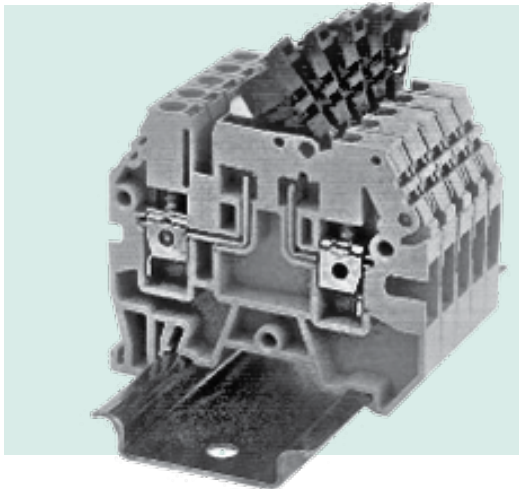
Ground Terminals

for YBK 2.5	Price	for YBK 4	Price	For YBK 6	Price	For YBK 10	Price
336 220	\$3.25	336 230	\$4.25	336 240	\$5.00	336 250	\$7.50

Discount Schedule SC-65

V9

ASK DISCONNECT TERMINALS



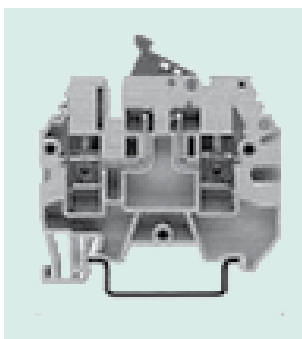
The main advantage with ASK disconnect terminals is that they allow a circuit to be “opened” without removing the wire from the screw connections - saving time.

An analog circuit such as 4-20 mA signals, the user can open the circuit (ASK 2B) and place a multi-meter on the exposed internal terminals and read the input or output currents very easily.

Standard 5 x 20 mm and 5 x 25 mm fuses can be used with the terminals. The standard lever action fuse terminal is the ASK 2S.

If you wish to have fuse blown indication for your control circuit in order to enhance trouble shooting, then the ASL LD is a good device. The fuse holder portions can be completely removed with the ASK 3F and it also holds a spare fuse (see page V12 for accessories.)

V10



ASK 3A (width 6mm)

Electrical Rating:

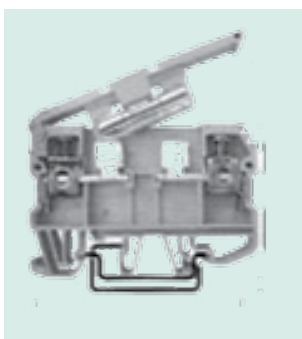
UL (Voltage/Current/Cross Section): 600V~ / **16 A** / AWG 26-10
 Insulation Stripping Length: 10mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 6 mm²
 Fine Strand, Screw Connection: 1.5 - 4 mm²
 AWG Conductor: 26 -10

Material: Polyamide 6.6

Model	Beige	Grey	Price/each
ASK 3A	353 100	353 109	\$5.25



ASK 2B (width 8mm)

Electrical Rating:

UL (Voltage/Current/Cross Section): 300V~ / **6.3 A** / AWG 26-8
 Insulation Stripping Length: 12mm

Connection Data:

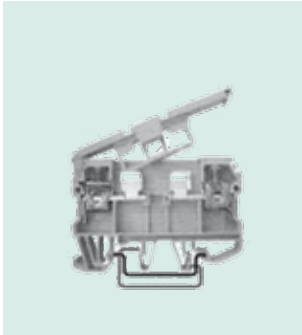
Solid Stand, Screw Connection: 0.5 - 10 mm²
 Fine Strand, Screw Connection: 1.5 - 10 mm²
 AWG Conductor: 26 -8

Material: Polyamide 6.6

Model	Beige	Grey	Price/each
ASK 2B	360 110	360 119	\$6.00

Discount Schedule SC-65

ASK SCREW-TYPE FUSE TERMINALS



ASK 2S (width 8mm)

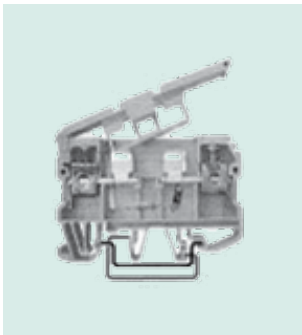
Electrical Rating:

UL (Voltage/Current/Cross Section): 300V~ / **6.3 A** / AWG 26-8
 Fuse Size: 5 x 20 mm, 5 x 25 mm
 Insulation Stripping Length: 12mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 10 mm²
 Fine Strand, Screw Connection: 1.5 - 10 mm²
 AWG Conductor: 26 -8

Model	Beige (Polyamide 6.6)	Grey (Polyamide 6.6)	Price/each
ASK 2S	351 100	351 109	\$5.25



ASK 2LD (width 8mm)

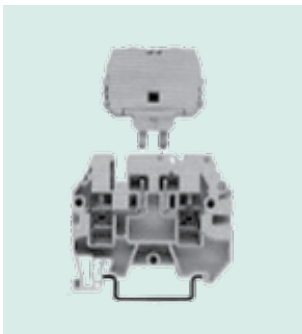
Electrical Rating:

UL (Voltage/Current/Cross Section): --V~ / **6.3 A** / AWG 26-8
 Fuse Size: 5 x 20 mm, 5 x 25 mm
 Insulation Stripping Length: 12mm

Connection Data:

Solid Stand, Screw Connection: 0.5 - 10 mm²
 Fine Strand, Screw Connection: 1.5 - 10 mm²
 AWG Conductor: 26 -8

Model	Beige (Polyamide 6.6)	Grey (Polyamide 6.6)	Price/each
ASK 2LD (24V DC)	351 220	351 229	\$7.00
ASK 2LD (48V AC)	351 310	351 319	\$7.50
ASK 2LD (48V DC)	351 320	351 319	\$7.50
ASK 2LD (110V AC)	351 510	351 519	\$7.50



ASK 3F (width 6mm)

Electrical Rating:

UL (Voltage/Current/Cross Section): 600V~ / **10 A** / AWG 26-10
 Fuse Size: 5 x 20 mm, 5 x 25 mm
 Insulation Stripping Length: 12mm

Connection Data:

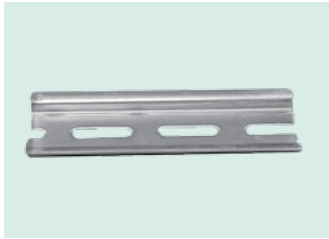
Solid Stand, Screw Connection: 0.5 - 6 mm²
 Fine Strand, Screw Connection: 1.5 - 4 mm²
 AWG Conductor: 26 -10

Model	Beige (Polyamide 6.6)	Grey (Polyamide 6.6)	Price/each
ASK 2S	354 100	354 109	\$5.00

V11

Discount Schedule SC-65

ASK SERIES ACCESSORIES



Mounting Rail (DIN-RAIL)

- TS 35 x 7.5 Slotted
- Steel Slot Dim.
- 25mm on 36mm Center
- 5.2mm slot width
- 1 meter length

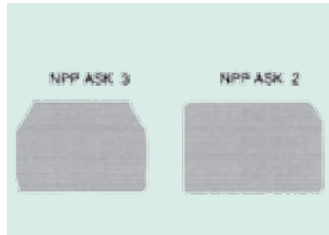
Catalog No.	Price/each
TS3575SL1	\$15.00



End Bracket - KD3

- Prevents terminal blocks from falling off DIN-RAIL.
- Thickness: 8 mm

Color	Catalog No.	Price/each
Beige	495 040	\$1.00
Grey	495 049	\$1.00

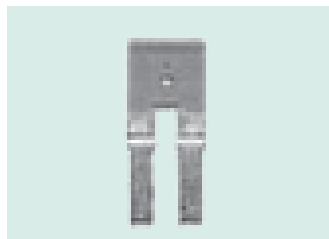


End Plate - NPP

- Thickness; 1.5mm
- Polyamide 6.6

Color	NPP - ASK 3	Price	NPP - ASK 2	Price
Beige	450 050	\$0.50	450 040	\$0.50
Grey	450 059	\$0.50	450 049	\$0.50

V12



Cross Connection

Type	for ASK 3A & ASK 3F
2 *	476 232
3 *	476 233
4 *	476 234
10 *	476 239

* Consult factory for pricing



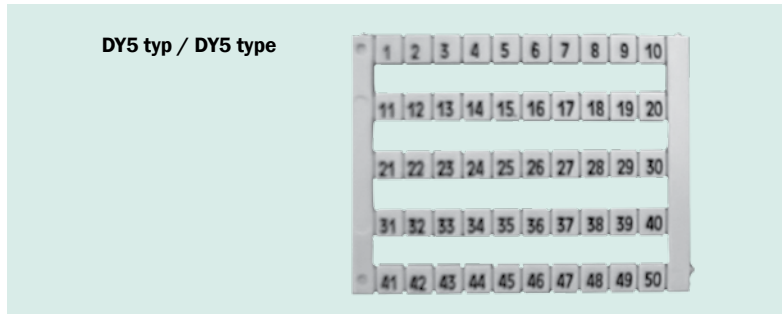
Group Marking - GE

Color	Catalog No.	Price/50
Beige	496 110	\$2.50
Grey	496 119	\$2.50

Discount Schedule SC-65

TERMINAL BLOCK MARKING TAGS

Marking Tags



Type	Description	Catalog No.	Price/50	Price/500
DY 5	0	505 000	\$3.00	\$30.00
	1	505 001		
	2	505 002		
	3	505 003		
	4	505 004		
	5	505 005		
	6	505 006		
	7	505 007		
	8	505 008		
	9	505 009		
	10	505 010		
DY 5	1 - 10	505 020	\$3.00	\$30.00
	11 - 20	505 021		
	21 - 30	505 022		
	31 - 40	505 023		
	41 - 50	505 024		
DY 5	1 - 50	505 040	\$3.00	\$30.00
	51 - 100	505 041		
	101 - 150	505 042		
	151 - 200	505 043		
	201 - 250	505 044		
	251 - 300	505 045		
	301 - 350	505 046		
	351 - 400	505 047		
	401 - 450	505 048		
	451 - 500	505 049		
	501 - 550	505 050		
	551 - 600	505 051		
	601 - 650	505 052		
	651 - 700	505 053		
	701 - 750	505 054		
	751 - 800	505 055		
	801 - 850	505 056		
	851 - 900	505 057		
	901 - 950	505 058		
951 - 999	505 059			

Type	Description	Catalog No.	Price/50	Price/500
DY 5	A	505 060	\$3.00	\$30.00
	B	505 061		
	C	505 062		
	D	505 063		
	E	505 064		
	F	505 065		
	G	505 066		
	H	505 067		
	I	505 068		
	J	505 069		
	K	505 070		
	L	505 071		
	M	505 072		
	N	505 073		
	O	505 074		
	P	505 075		
	Q	505 076		
	R	505 077		
	S	505 078		
	T	505 079		
	U	505 080		
	V	505 081		
	W	505 082		
	X	505 083		
	Y	505 084		
	Z	505 085		
DY 5	L1	505 090	\$3.00	\$30.00
	L2	505 091		
	L3	505 092		
	RSTN ↓	505 093		
	MP	505 094		
	+	505 095		
	-	505 096		
⊕	505 097			

V13

Discount Schedule SC-65

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V14

NOTES

V15

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