

# MANUAL MOTOR STARTERS



**SPRINGER**  
controls company

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**C**

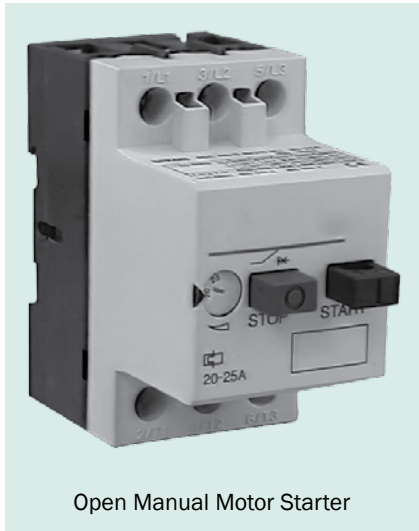
**Springer Controls** manual motor starters are 3-pole horsepower rated switches that combine motor thermal overload protection and magnetic short circuit protection in one compact unit. The switches offer motor protection circuit breaker up to 32 amps.

## MANUAL MOTOR STARTERS;

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## DESCRIPTION / FEATURES

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Open Manual Motor Starter



Surface Mount Starter (IP55)



Flush Mount Starter (IP55)

### 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.

### 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.

## GMK MANUAL MOTOR STARTER

### 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



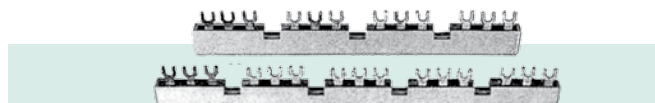
- Made in thermoplastic material.
- Equipped with four cable entries (PG16) and one neutral connection.

			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

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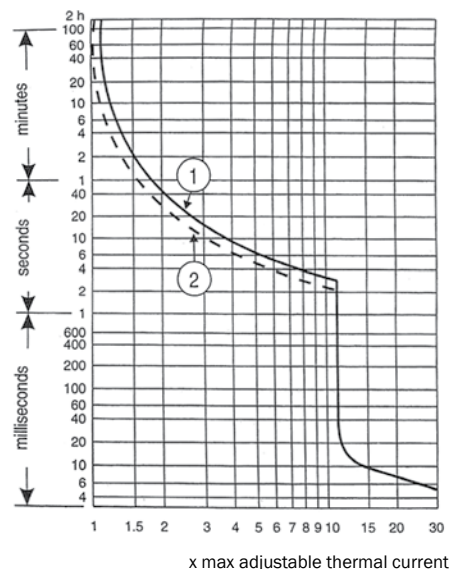
### General

Conformity to Standards			IEC 947-2, IEC 947-4-1, VDE 0660
Approvals			US, CSA
Rated Thermal Current (I <sub>th</sub> ) at 40 °C			25A
Rated Insulation Voltage (U <sub>i</sub> )			690V
Rated Operational Voltage (U <sub>e</sub> )			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 <sup>2</sup>
		max.	2 wires of 6 mm <sup>2</sup>
	Flexible Wire	min.	2 wires of 0.75 mm <sup>2</sup>
		max.	2 wires of 4 mm <sup>2</sup>

### Main Circuit

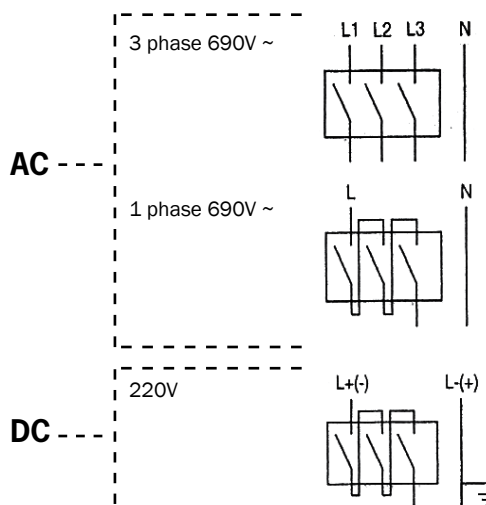
Category		AC3, DC4
Operational Frequency Limits		40 to 60Hz
Opening Time		aprox. 7ms
Mechanical Endurance		10 <sup>5</sup> operations
Electrical Endurance Category AC3		10 <sup>5</sup> operations
Maximum Operating Rate		40 operations/hour
Total Dissipated power at Rated Thermal Current and Hot State		6W
<b>Tripping Characteristics</b>		
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 <sub>e</sub> (I <sub>e</sub> = max. thermal setting value)
Stunt Release	Operating voltage limits	0.7 - 1.2 U <sub>e</sub> 100% ED
	Consumption AC	2.2 VA
	DC	1W
Undervoltage Release	Operational Voltages Limits	0.85 - 1.1 U <sub>e</sub> 100% ED
	Breaking Voltage Limits	0.75 - 0.35 U <sub>e</sub>
	Consumption	2.2 VA 1W

### Tripping Curve



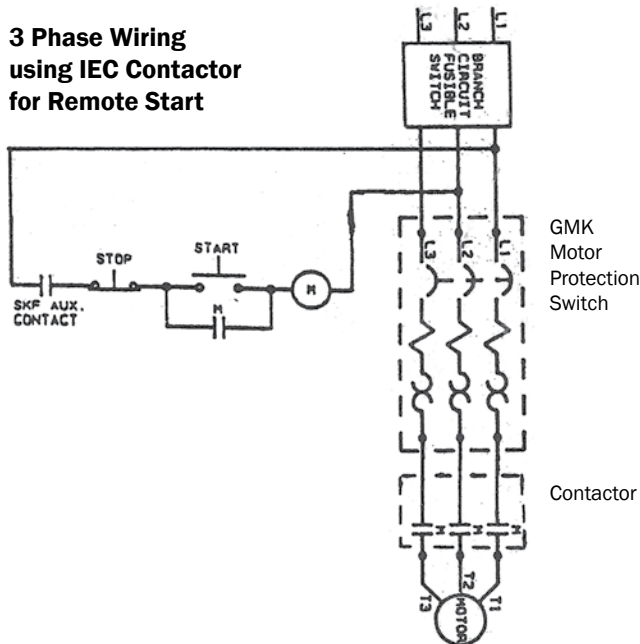
- ① Thermal trip, operating with 3-phases
- ② Thermal-differential trip (from cold) operating with 2-phases

### Wiring Diagram

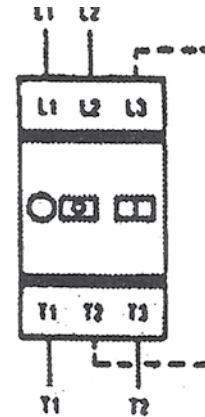


It is recommended to include auxiliary contact number GMAL11N in the control circuit, when using motor protection switches along with a magnetic contactor. It will ensure that the contactor coil is disconnected when the motor protection switch is off. This contact can be wired as shown in the diagram.

### 3 Phase Wiring using IEC Contactor for Remote Start

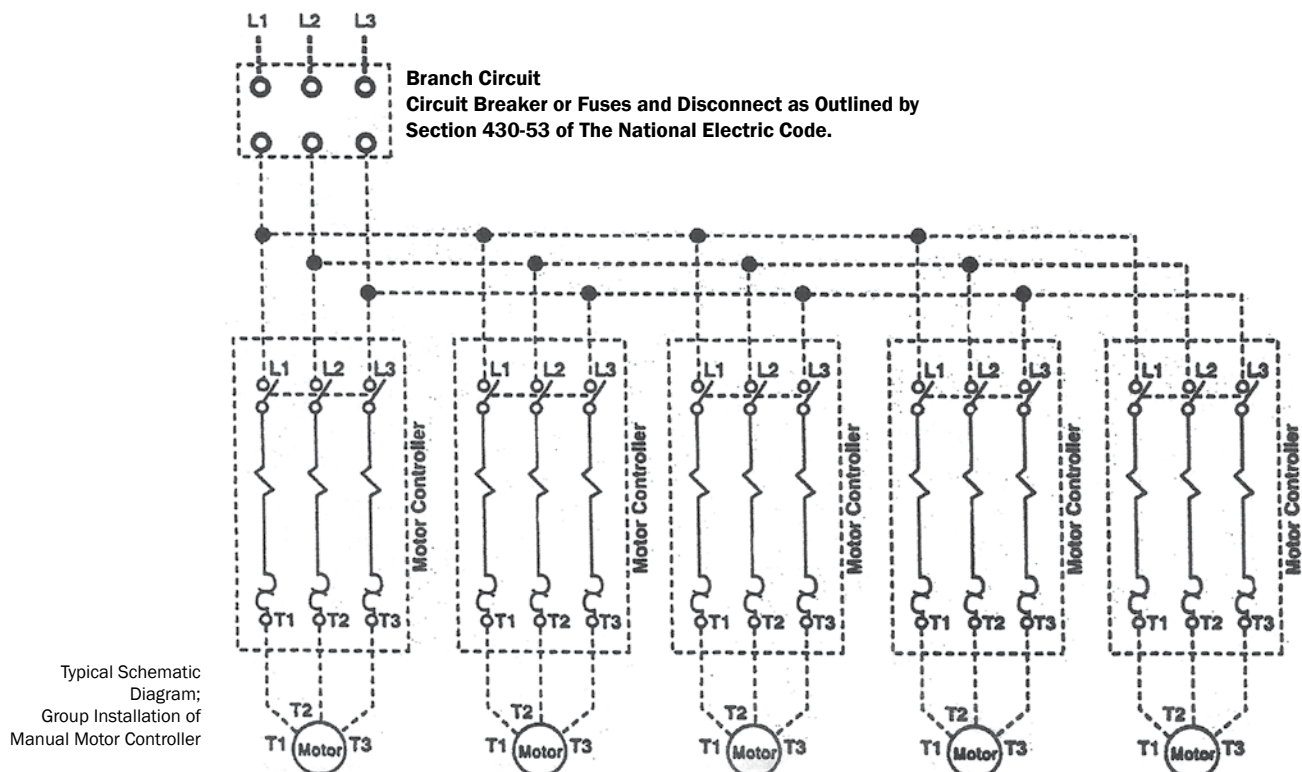


### Single Phase Wiring



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.

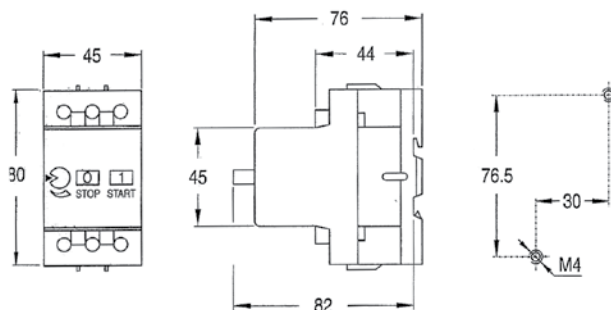
### Group Fusing Application



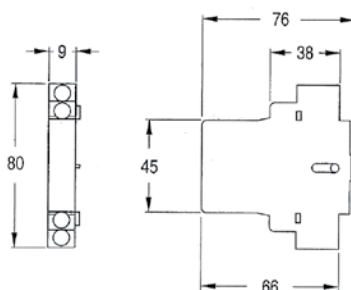
## DIMENSIONS

### Motor Protection Circuit Breaker

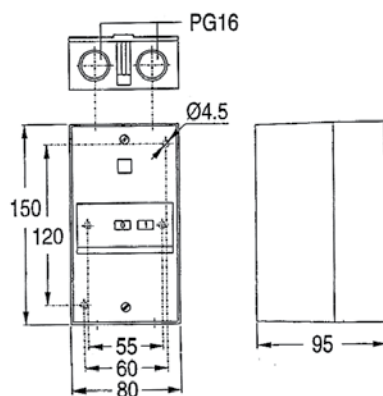
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### Auxiliary Contact Block



### Surface Mounting Enclosure (GMS0\_)



### Flush Mounting Enclosure (GME0\_)

