**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

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

<table>
<thead>
<tr>
<th>Motor Full Load Current Range</th>
<th>Maximum Single Phase Horsepower</th>
<th>Maximum Three Phase Horsepower</th>
<th>Magnetic Tripping Current Ampere</th>
<th>UL Requirements</th>
<th>Catalog No.</th>
<th>Price</th>
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<tbody>
<tr>
<td>0.1 0.16</td>
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<td>--- --- ---</td>
<td>1.9</td>
<td>15</td>
<td>100</td>
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<tr>
<td>0.63 1.0</td>
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<td>1/2 1/2</td>
<td>12</td>
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<tr>
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<td>15</td>
<td>100</td>
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<td>15</td>
<td>100</td>
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<td>3 5</td>
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<td>35</td>
<td>80</td>
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<tr>
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<td>7½ 15</td>
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<td>90</td>
<td>—</td>
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<td>2 5</td>
<td>10 25</td>
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<td></td>
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</table>

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

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMS04</td>
<td>$49.00</td>
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<tr>
<td>GMS05</td>
<td>$73.00</td>
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</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>GME04</td>
<td>$49.00</td>
</tr>
<tr>
<td>GME05</td>
<td>$73.00</td>
</tr>
</tbody>
</table>

### Three Phase Busbar Block
- 4 units Ui 660V le 80A - length 207mm
- 5 units Ui 660V le 80A - length 261mm
- Plastic cover for unused 3 terminals

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Price</th>
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<tbody>
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<td>GMVE4</td>
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<tr>
<td>GMVE5</td>
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<tr>
<td>GMVEP</td>
<td>consult factory</td>
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</table>

Discount Schedule SC-70
**ENGINEERING DATA**

### General

**Conformity to Standards**
- IEC 947-2, IEC 947-4-1, VDE 0660

**Approvals**
- US, CSA

**Rated Thermal Current (Ith) 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 mm², max. 2 wires of 6 mm²
- **Flexible Wire**: min. 2 wires of 0.75 mm², max. 2 wires of 4 mm²

### Main Circuit

**Category**
- AC3, DC4

**Operational Frequency Limits**
- 40 to 60Hz

**Opening Time**
- approx. 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**

<table>
<thead>
<tr>
<th>Thermal</th>
<th>Symmetrical Overloads</th>
<th>Class 10 (see curve 1, tripping curve)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Asymmetrical Overloads (phase failure)</td>
<td>To IEC 947-4-1 (see curve 2, tripping curve)</td>
</tr>
<tr>
<td>Temperature Compensation</td>
<td>-5 to +40°C</td>
<td></td>
</tr>
</tbody>
</table>

**Magnetic**
- \(12 \times \text{l_e}\) (\(\text{l_e} = \text{max. thermal setting value}\))

**Stunt Release**
- Operating voltage limits: 0.7 - 1.2 Ue, 100% ED
- Consumption: AC 2.2 VA, DC 1W

**Undervoltage Release**
- Operational Voltages Limits: 0.85 - 1.1 Ue, 100% ED
- Breaking Voltage Limits: 0.75 - 0.35 Ue
- Consumption: AC 2.2 VA, DC 1W

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**Tripping Curve**

- ![Tripping Curve Diagram](image)

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

**Wiring Diagram**

- 3 phase 690V ~
- 1 phase 690V ~ 220V
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

Branch Circuit
Circuit Breaker or Fuses and Disconnect as Outlined by Section 430-53 of The National Electric Code.

Typical Schematic Diagram; Group Installation of Manual Motor Controller
DIMENSIONS

Motor Protection Circuit Breaker

Auxiliary Contact Block

Surface Mounting Enclosure (GMS0_ )

Flush Mounting Enclosure (GME0_ )