# Grip Switches

## *Description*

The three position enabling switch can be used as part of the conditions required to allow safe working inside a machine guard, e.g., set-up, maintenance, or troubleshooting. It is lightweight and ergonomically designed for easy use. The standard model includes two independent three-position switches which are actuated by squeezing the trigger. Additional models are available with an optional jog button or dual channel e-stop button.

The trigger switch has three positions. The mid-position is the “enabled” position.

Position 1—there is no pressure on the trigger switch, and the safety contacts are open.

Position 2—the trigger switch is squeezed to the mid-position, and the safety contacts are closed. This mid-position is the “enabled” position.

Position 3—the trigger switch is fully pressed and the safety contacts are open.

When the trigger switch is released from position three back to position one, the safety contacts remain open, as it passes through position two.

## *Features*

- Dual three position enabling switches
- Lightweight and ergonomic
- Optional jog and e-stop functions

## *Specifications*

| | | | | |
|---|---|---|---|---|
| **Safety Ratings** | | | | |
| Standards | | IEC/EN60947-5-8, IEC/EN 60947-5-1, IEC/EN 60204-1, NFPA 79, ANSI B11.19, ANSIR15.06, ISO 10218, ISO 11161 | | |
| Safety Classification | | Cat. 1 Device per EN954-1; Dual channel suitable for Cat. 3 or 4 systems | | |
| Certifications | | CE Marked for all applicable directives, cULus Listed, BG | | |
| **Outputs** | | | | |
| Safety Contacts ‡ | | 2 N.C. direct opening action | | |
| Auxiliary Contacts | | 1 N.C. | | |
| Jog Contact | | 1 N.O. | | |
| E-Stop | | 2 N.C. Direct-Opening Action | | |
| Thermal Current/$_{Ith}$ | | 3 A | | |
| Rated Insulation Voltage | | (Ui) 250V (jog button 125V) | | |
| Switching Current @ Voltage, Min. | | 5 mA @ 3V AC/DC | | |
| **Utilization Category** | | 30V DC | 125V AC | 250V AC |
| 3-Position Switch Terminals 1-2 and 3-4 | DC-12 or AC-12 Resistive | 2 A | 3 A | 0.5 A |
| | DC-13 or AC-15 Inductive | 1 A | 1.5 A | 0.5 A |
| Monitor Switch Terminals 5-6 | DC-12 or AC-12 Resistive | 2 A | 2 A | 1 A |
| | DC-13 or AC-15 Inductive | 1 A | 1 A | 0.5 A |
| E-Stop Switch Terminals 5-6 and 7-8 | DC-12 or AC-12 Resistive | | | |
| | DC-13 or AC-15 Inductive | | | 0.5 A |
| **Operating Characteristics** | | | | |
| Operating Force, Min. | | Position 2: 15 N (3.37 lbf) approx.<br>Position 3: 50 N (11.2 lbf) max. | | |
| Direct Opening Force | | 90 N (20 lbf) | | |
| Actuation Frequency, Max. | | 1200 operations per hour | | |
| **Environmental** | | | | |
| Enclosure Type Rating | | IP66 Standard Switch (NEMA 6)<br>IP65 Jog Button and E-Stop Switches | | |
| Relative Humidity | | 45...85% | | |
| Operating Temperature [C (F)] | | -10...+60° (14...140°) | | |
| Vibration | | 5...55 Hz, 0.5 mm | | |
| Shock | | 10 g | | |
| **Physical Characteristics** | | | | |
| Wire Size | | 0.14...1.5 mm2 (24...14 AWG) | | |
| Cable Size | | 7...13 mm (0.27... 0.51 in.) | | |
| Terminal Screw Torque | | 0.5...0.6 N•m (4.4...5.3 ibf•in) | | |
| Conduit Type | | M20 | | |
| Material | | Polyamide (Nylon) PA66 | | |
| Boot Material | | NBR/PVC Nitrile Blended with PVC | | |
| Weight [g (lb)] | | 250 (0.55) with E-stop<br>210 (0.46) standard and jog | | |
| Color | | Black/grey | | |

‡ The safety contacts are described as normally closed (N.C.) i.e., with the guard closed, actuator in place (where relevant) and the machine able to be started.

## *Product Selection*

| Description | Cat. No. |
|---|---|
| | **M20 Conduit with Cable Strain Relief** |
| Standard Switch (No additional buttons) | 440J-N21TNPM |
| Switch with Jog Button | 440J-N21TNPM-NP |
| Switch with Emergency Stop Button | 440J-N2NTNPM-NE |

**Note:** Base plate included with all switches.

## *Recommended Logic Interfaces*

| Description | Safety Outputs | Auxiliary Outputs | Terminals | Reset Type | Power Supply | Cat. Page No. | Cat. No. |
|---|---|---|---|---|---|---|---|
| **Single-Function Safety Relays for 2 N.C. Contact Switch** | | | | | | | |
| MSR127RP | 3 N.O. | 1 N.C. | Removable (Screw) | Monitored Manual | 24V AC/DC | MSR127RP/TP | 440R-N23135 |
| MSR127TP | 3 N.O. | 1 N.C. | Removable (Screw) | Auto./Manual | 24V AC/DC | MSR127RP/TP | 440R-N23132 |
| **Modular Safety Relays** | | | | | | | |
| MSR210P Base 2 N.C. only | 2 N.O. | 1 N.C. and 2 PNP Solid State | Removable | Auto./Manual or Monitored Manual | 24V DC from the base unit | MSR210P | 440R-H23176 |
| MSR220P Input Module | – | – | Removable | – | 24V DC | MSR220P | 440R-H23178 |
| MSR310P Base | MSR300 Series Output Modules | 3 PNP Solid State | Removable | Auto./Manual Monitored Manual | 24V DC | MSR310P | 440R-W23219 |
| MSR320P Input Module | – | 2 PNP Solid State | Removable | – | 24V DC from the base unit | MSR320P | 440R-W23218 |

**Note:** For additional Safety Relays connectivity, see Safety Relays.
For additional Safety I/O and Safety PLC connectivity, see Programmable Safety Solutions.
For application and wiring diagrams, see Safety Applications and Wiring Diagrams.

## *Connection Systems*

| Description | Cat. No. | | |
|---|---|---|---|
| | 4-Pin Micro (M12) Quick Disconnect | 5-Pin Micro (M12) Quick Disconnect§ | 8-Pin Micro (M12) Quick Disconnect |
| Cordset | 889D-F4AC-Δ | 889D-F5AC-Δ | 889D-F8AB-Δ |
| Patchcord | 889D-F4ACDM-♣ | 889D-F5ACDM-♣ | 889D-F8ABDM-♣ |

Δ Replace symbol with 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
♣ Replace symbol with 1 (1 m), 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths.
§ To connect to ArmorBlock Guard I/O.

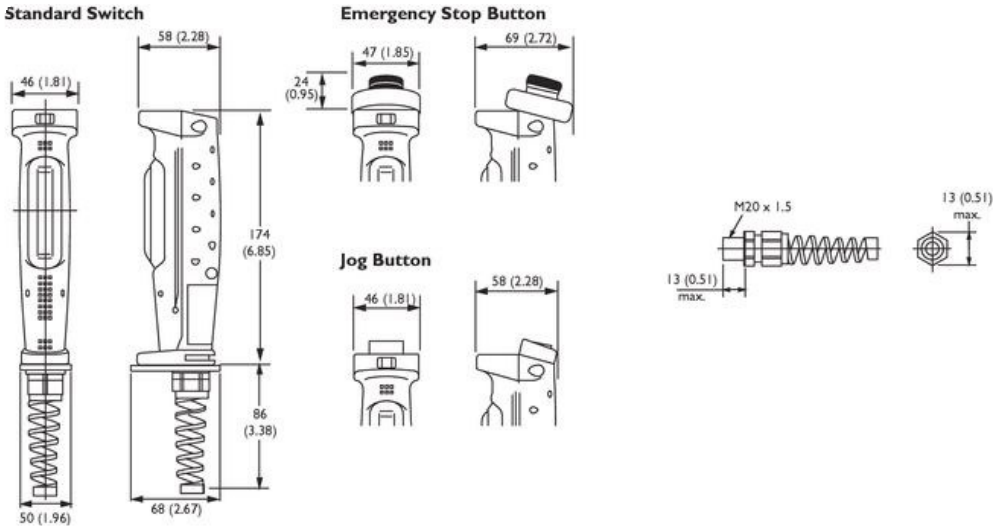
## *Accessories*

| Description | | Cat. No. |
|---|---|---|
|  | Mounting bracket suitable for single enabling switch⋆ | 440J-A00N |
|  | Mounting bracket suitable for one actuator mounted onto switch⋆<br>Includes four flat head screws and one Resistorx bit. | 440J-A01N |
|  | Mounting bracket suitable for single enabling switch and single safety switch⋆ | 440J-A02N |
|  | Mounting bracket suitable for two actuators mounted onto switch⋆<br>Includes six flat head screws and one Resistorx bit. | 440J-A03N |
|  | Mounting bracket suitable for single enabling switch and two safety switches⋆ | 440J-A04N |
|  | NBR/PVC (silicone free) rubber boot kit | 440J-A10N |

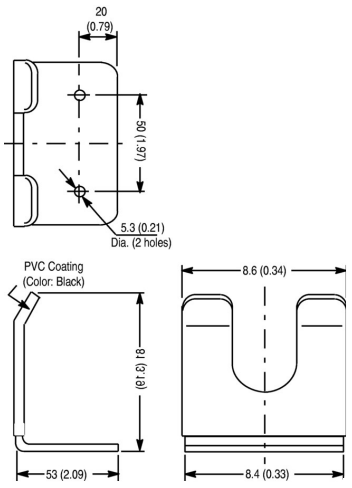
⋆ The bracket has predrilled holes suitable for mounting either the MT-GD2, Trojan 5, or Trojan 6. Please note that the enabling switch, safety switch, and actuator are not supplied with the mounting bracket and are available separately.

## *Approximate Dimensions*

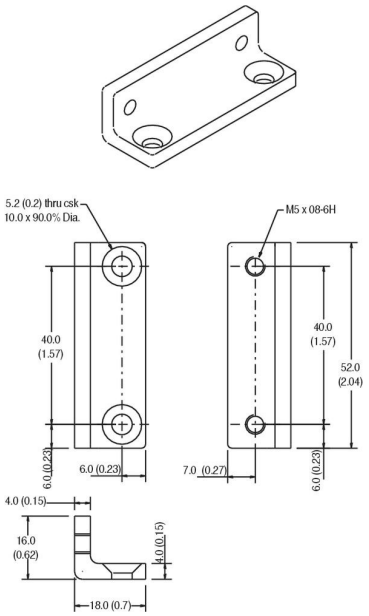
Dimensions are shown in mm (in.). Dimensions are not intended to be used for installation purposes.



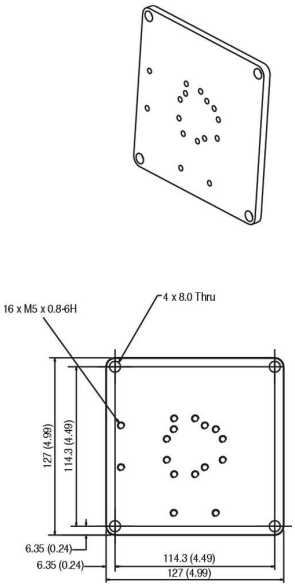

A range of brackets are available to allow the enabling switch to be mounted alone, or with one or two safety switches. A small bracket has already been fitted to the enabling switch onto which the actuator bracket is mounted. An Application Note on the use of the enabling switch in conjunction with a safety switch is available.



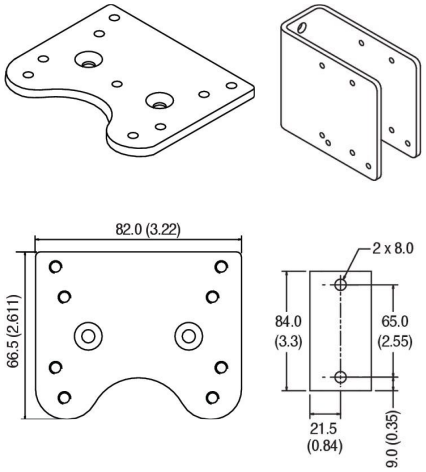

*440J-A00N*
*Enabling Switch Mounting Bracket*



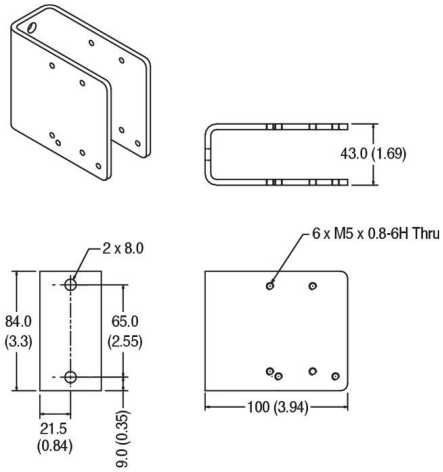

*440J-A01N*
*Single Actuator Bracket*




*440J-A02N*
*Single Safety Switch Plate*

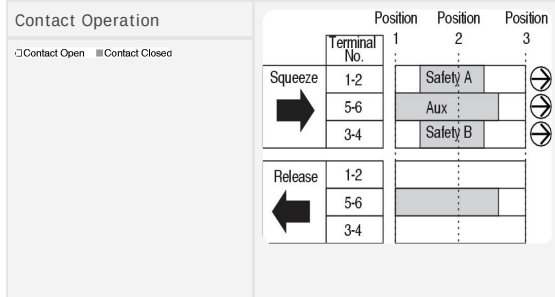
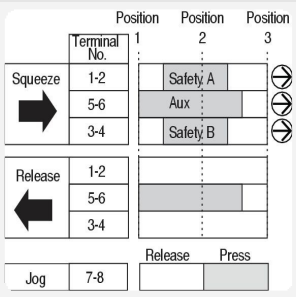
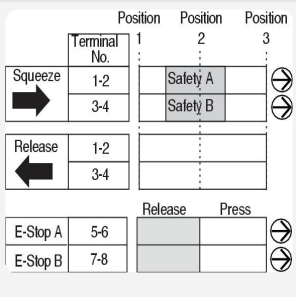
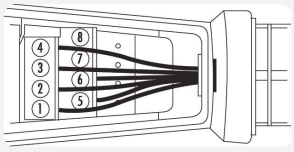
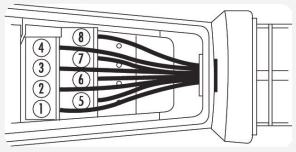
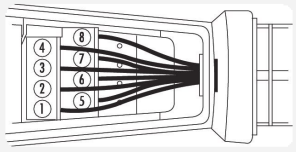
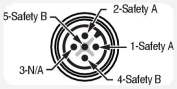



440J-A03N
Double Actuator Plate




440J-A04N
Double Safety Switch Bracket

## *Typical Wiring Diagram*

| | Standard | | With Jog Button | | With E-Stop Button | |
|---|---|---|---|---|---|---|
| Contact Operation |  | |  |  | |
| Cable Termination |  | |  | |  | |
| Quick Disconnect Termination |  |  |  | |  | |
| Mating Cordsets | 889D-F4AC-* | | 889D-F5AC-* | | 889D-F8AB-* | | 889D-F8AB-* | |
| | 1 Brown | Safety A | 1 Brown | Safety A | 1 White | Safety A | 1 White | Safety A |
| | 2 White | | 2 White | | 2 Brown | | 2 Brown | |
| | – | | 3 Blue | NA | 3 Green | Safety B | 3 Green | Safety B |
| | | | | | 4 Yellow | | 4 Yellow | |
| | 3 Blue | Safety B | 4 Black | Safety B | 5 Grey | Aux | 5 Grey | E-Stop A |
| | 4 Black | | 5 Grey | | 6 Pink | | 6 Pink | |
| | | | | | 7 Blue | Jog | 7 Blue | E-Stop B |
| | | | | | 8 Red | | 8 Red | |