# Series ZS441

CE

**P→SITIVE-BREAK®**

## Typical Applications

ZS441 emergency cable-pull switches are ideal for replacing multiple, discrete E-stop pushbuttons or achieving a continuous, immediately accessible emergency stop. Typical applications include conveyor lines, textile machinery, packaging machinery, turret lathes, power plants, gravel processing and transfer lines.

## Features & Benefits

- **Rugged, corrosion-resistant, die-cast aluminum housing …** tolerates the most hostile environments.
- **"Positive-break" NC contacts …** assure circuit interruption upon pulling of trip wire.
- **Watertight design …** meets IP65 requirements.
- **Continuous E-stop protection …** for trip-wire spans up to 82 feet (25m).
- **Meets rigid safety agency standards …** EN 418
- **Available in three reset styles …** pushbutton, key and non-reset.
- **Available in three operating force models … f**or application compatibility.
- **Mounting accessories …** ease and extend installation.
- **Built-in vibration tolerance …** eliminates nuisance tripping.
- **Push/pull operation …** actuates if trip-wire is pulled or goes slack.

## Description

The ZS441 Series is designed to provide a continuous emergency stop along exposed areas of machinery and conveyors which present hazards to operators/maintenance personnel. Unlike E-stop pushbuttons, emergency stop cable-pull systems can be actuated at any point along the "trip-wire."

The units feature positive-opening NC contacts which are forced open when the trip-wire is pulled. This design also assures machine stoppage if an operator falls into, leans on, or is pulled against the trip wire.

In addition the switch is designed to operate if the trip wire is cut or goes slack. To comply with OSHA and other safety regulations, the ZS441 features a manual mechanical reset which must be actuated before the controlled equipment can be restarted.

Their rugged metal housing and watertight design (IP65) make them ideal for achieving a higher degree of E-stop safety in industrial and hostile environments.

## Operation

The ZS441 features an axial actuating shaft and a double-pole contact block with 1 NO/1 NC or 2 NC contacts (with trip-wire attached). When installed, the trip-wire is pre-tensioned until the actuating shaft is pulled out 6 mm, closing the open contact.

When the trip-wire is pulled, the positive-break NC contact is forced open via a direct mechanical linkage with the actuating shaft. If the trip-wire goes slack (e.g. breaks or is cut) the NO contact, closed during pre-tensioning, opens – resulting in equipment stoppage.

Manual (key or pushbutton) reset mechanisms assure the equipment cannot be restarted until the reset is actuated.

### AVAILABLE ACCESSORIES

| Part Number | Description |
|---|---|
| PL-M20-24V | 24V Pilot light kit |
| PL-M20-120V | 120V Pilot light kit |
| STQ441-SC | 5mm diameter steel cable, PVC coated |
| STQ441-EB | M10 eye bolt & hex nut |
| STQ441-CC | Cable clamp |
| STQ441-TB | Turnbuckle |
| STQ441-TH | Thimble |
| STQ441-PU | Pulley assembly (for cable "cornering") |

# ZS441 AVAILABLE MODELS AND ACCESSORIES

## AVAILABLE STANDARD MODELS

| Part Number | Contact Configuration | Type Reset | Pre-Tensioned Force | Typical Actuating Force (F) | Recommended Cable Length (Minimum & Maximum) |
|---|---|---|---|---|---|
| ZS441-10/1S-60N | 1 NO & 1 NC | Non-Reset | 13.5 lbs (60N) | 1.3 lbs (6N) | 0-16.5 ft (0-5m) |
| ZS441-10/1S-150N | 1 NO & 1 NC | Non-Reset | 34 lbs (150N) | 3.1 lbs (14N) | 16.5-50 ft (5-15m) |
| ZS441-10/1S | 1 NO & 1 NC | Non-Reset | 50 lbs (220N) | 5.2 lbs (23N) | 50-80 ft (15-25m) |
| ZS441-10/1SVD-60N | 1 NO & 1 NC | Pushbutton | 13.5 lbs (60N) | 1.3 lbs (6N) | 0-16.5 ft (0-5m) |
| ZS441-10/1SVD-150N | 1 NO & 1 NC | Pushbutton | 34 lbs (150N) | 3.1 lbs (14N) | 16.5-50 ft (5-15m) |
| ZS441-10/1SVD | 1 NO & 1 NC | Pushbutton | 50 lbs (220N) | 5.2 lbs (23N) | 50-80 ft (15-25m) |
| ZS441-10/1SVS-60N | 1 NO & 1 NC | Key | 13.5 lbs (60N) | 1.3 lbs (6N) | 0-16.5 ft (0-5m) |
| ZS441-10/1SVS-150N | 1 NO & 1 NC | Key | 34 lbs (150N) | 3.1 lbs (14N) | 16.5-50 ft (5-15m) |
| ZS441-10/1SVS | 1 NO & 1 NC | Key | 50 lbs (220N) | 5.2 lbs (23N) | 50-80 ft (15-25m) |
| ZS441-20-60N | 2 NC | Non-Reset | 13.5 lbs (60N) | 1.3 lbs (6N) | 0-16.5 ft (0-5m) |
| ZS441-20-150N | 2 NC | Non-Reset | 34 lbs (150N) | 3.1 lbs (14N) | 16.5-50 ft (5-15m) |
| ZS441-20 | 2 NC | Non-Reset | 50 lbs (220N) | 5.2 lbs (23N) | 50-80 ft (15-25m) |
| ZS441-20VD-60N | 2 NC | Pushbutton | 13.5 lbs (60N) | 1.3 lbs (6N) | 0-16.5 ft (0-5m) |
| ZS441-20VD-150N | 2 NC | Pushbutton | 34 lbs (150N) | 3.1 lbs (14N) | 16.5-50 ft (5-15m) |
| ZS441-20VD | 2 NC | Pushbutton | 50 lbs (220N) | 5.2 lbs (23N) | 50-80 ft (15-25m) |
| ZS441-20VS-60N | 2 NC | Key | 13.5 lbs (60N) | 1.3 lbs (6N) | 0-16.5 ft (0-5m) |
| ZS441-20VS-150N | 2 NC | Key | 34 lbs (150N) | 3.1 lbs (14N) | 16.5-50 ft (5-15m) |
| ZS441-20VS | 2 NC | Key | 50 lbs (220N) | 5.2 lbs (23N) | 50-80 ft (15-25m) |

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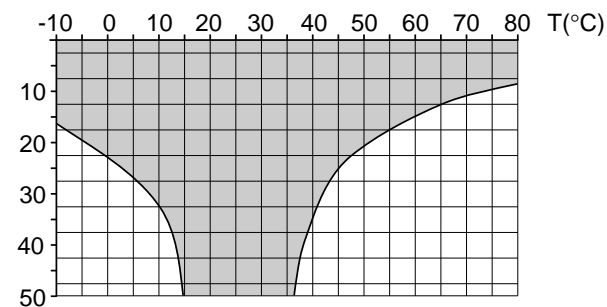


l (m)  **Cable length vs. temperature range**
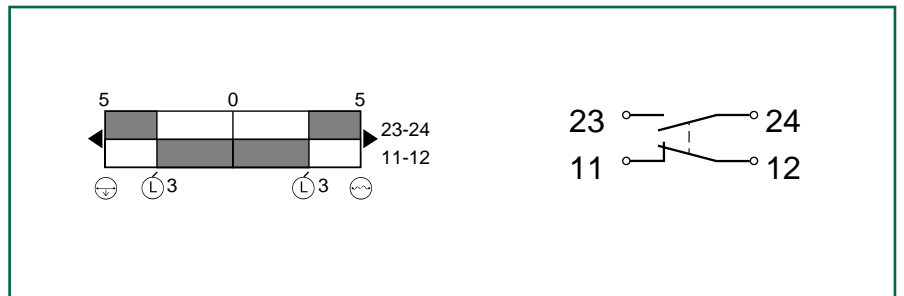
# ZS441 TECHNICAL DATA

## MECHANICAL SPECIFICATIONS

| | |
|---|---|
| **Housing (Standard)** | Die-cast aluminum with baked enamel finish |
| **Housing (Optional)** | Cast iron |
| **Degree of Protection** | IP65 |
| **Maximum Supported Span** | 80 feet (25m) |
| **Typical Deflection (S) Required for Operation** | 4" (10cm) |
| **Operating Temperature** | −22°F to +195°F |
| **Mechanical Life** | $3 \times 10^4$ operations |
| **Conformity to Standards** | IEC 947-5-1　　　　UL<br>EN60947-5-1　　　CSA<br>EN418<br>DIN VDE 0660-200 |

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Contacts** | Fine silver |
| **Contact Configuration** | Double-pole, double-break with electrically-separated contact bridges |
| **Contact Rating** | 6A (Slow-blow) |
| **Switching Action** | Slow-action, positive-break NC contacts (with wire pulling) |
| **Short Circuit Protection** | Fuse 25A (time-delay) |
| **Rated Insulation Voltage** | 400VAC |
| **Type Terminals** | Screw terminals with self-lifting clamps for up to 13 AWG flexible stranded wire (2.5 mm$^2$) |

## SWITCHING DIAGRAMS & CONTACT SCHEMATICS



## DIMENSIONS



**Non-Reset**

**Pushbutton Reset**

**Key Reset**

mm
inch
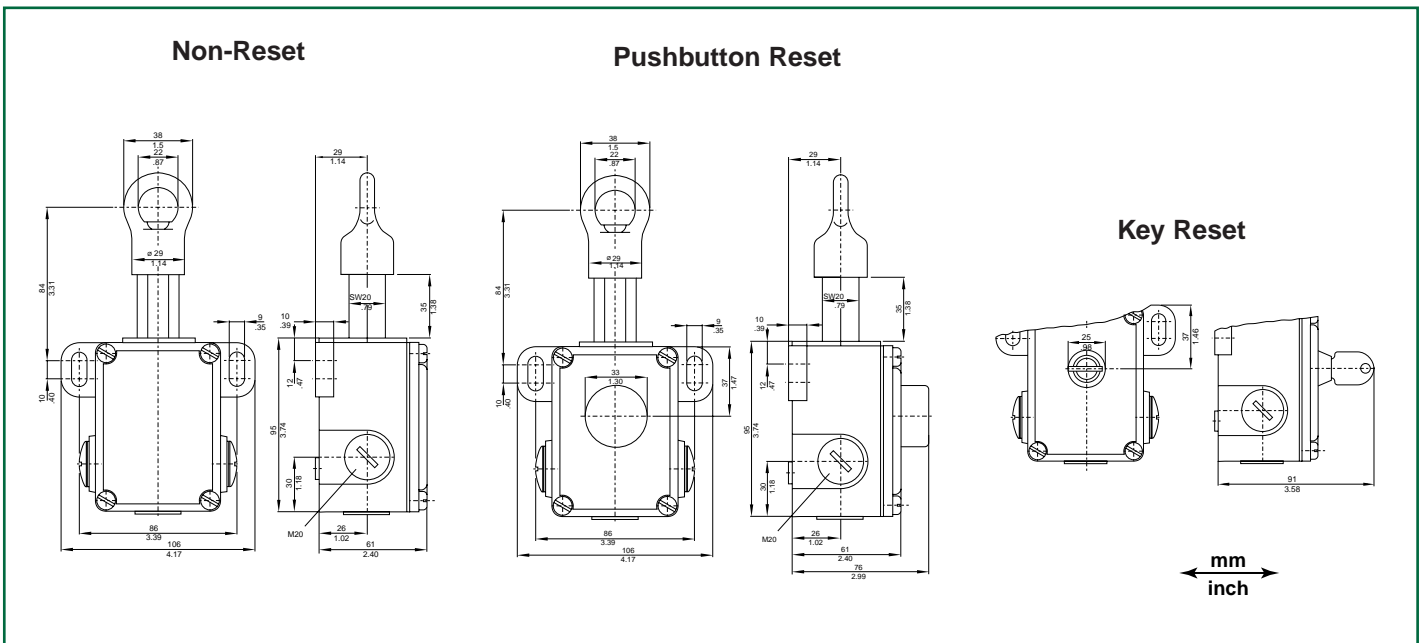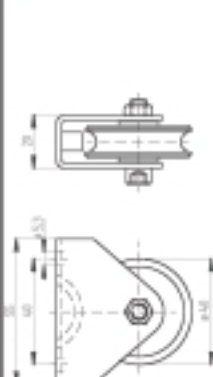
# ZS441 TECHNICAL DATA

**Recommended Emergency Cable-Pull Switch Installation Instructions (For ZS71, ZS73, ZS75 and ZS441 models)**