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Installation and Operating Instructions
Bulletin 440P Small Metal Safety Position Switches

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.
This publication does not include all specifications, dimensions, or any special installation considerations. Refer to the product catalog pages for additional information.

ATTENTION To avoid electrical shock and unintended operation of equipment, disconnect all power to the limit switch and the controlled equipment before proceeding with any repair or adjustment of the limit switch.

Improper selection or installation of the devices affect the integrity of the safety systems.

Personnel injury or death, property damage or economic loss can result.

Comply with ISO 14119 including selection, accessibility to the installation, arrangement and fastening, possible substitute actuation, access to the escape release, motivation to defeat, and actuation mode.

Management controls, working procedures, training, and additional protective measures should be used to minimize the motivation to defeat and to manage the use and availability of spare actuators.

Comply with ISO 13857 and ISO 13855 for guard openings and minimum (safe) distances.

Comply with IEC 62061 or ISO 13849-1 and ISO 13849-2 for functional safety.

General Data

- Safety contacts: 1 N.C.
- Auxiliary contacts: 1 N.O.
- Enclosure rating:
- NEMA 1
- IP66, IP67, IP69K
- Rugged die cast housing
- 2 m prewired cable
- Compact profile for access limited installation

Principles, Standards, and Implementation

Before installation in a safety application, perform a risk assessment to determine whether the specifications of this device are suitable for foreseeable operational and environmental characteristics of the machine which is to be controlled. Only the normally closed set of contacts are considered safety contacts. When deploying these limit switches in a safety system application, all applicable standards for application should be followed. Operating specifications must be followed. The actuator must be placed beyond the point where Direct Opening Action occurs. Do not use these devices to directly control a motor.

Specifications

Safety Ratings	
Standards	EN 13849-1, EN ISO 14119, EN 60204-1, NFPA 79, ISO 14119, EN 60947-5-1, ANSI B11.19 AS 4024.1
Safety Classification	Cat. 1 Device per ISO 13849-1 Dual channel limit switch suitable for Cat. 3 or 4 systems
Certifications	cULus Listed, TÜV and CE Marked for all applicable directives
Functional Safety Data	B10d: $2x10^6$ operations

IMPORTANT Installation of Allen-Bradley Guardmaster products should be in accordance with local and/or national codes. Servicing energized industrial control equipment can be hazardous if not in accordance with recommended safety procedures.

EN ISO 14119 replaces EN 1088 as the harmonized standard for interlocking devices associated with guards.

Functional safety information: *http://literature.rockwellautomation.com/idc/groups/literature/documents/sr/safety-sr001_-en-e.pdf*

Outputs	
Safety Contacts	1 N.C. snap acting
Auxiliary Contacts	1 N.O. snap acting
Thermal Current ($/_{Ith}$)	10 A
Rated Insulation Voltage (ui)	300 AC
Short Circuit Protection	10 A max. fast acting fuse IEC 269 type gG or equivalent

Contact Ratings

Maximum AC Contact Rating Per Pole (50/60 hz) Same Polarity						
NEMA Rating Designation	**Max. Voltage**	**Amperes**		**Continuous Carrying Current (Amp.)**	**Voltamperes**	
		Make	**Break**		**Make**	**Break**
AC15/ B300	120	30	3	5	3600	360
AC15/ B300	240	15	1.5	5	3600	360
Maximum AC Contact Rating Per Pole (50/60 hz) Same Polarity						
DC13/ Q300	240	0.27	0.27	2.5	69	69

Operating Characteristics	
Actuation Speed, Max.	250 mm/s
Actuation Speed, Min.	100 mm/min
Actuation Frequency, Max.	6000 ops/hr
Mechanical Life	1 x 10^7 operations at room temperature
Environmental	
Enclosure Type Rating	NEMA 1, IP66/IP67/IP69K
Operating Temperature [C (F)]	2…70 ° (35.6…158 °)
Pollution Degree	3
Physical Characteristics	
Housing Material	Die cast alloy
Actuator Material	Various polymers and metals
Mounting	2 x M4, any position
Vibration	IEC 60068-2-6 (10…55 Hz, 0.35 mm amplitude)
Shock	IEC 60068-2-7 (30 Gn 3 pulses per axis)
Connection	2 m (6.5 ft) cable
Enclosure Color	Red body/black head

Electrical life is dependent on load, therefore, operations are not applicable and withdrawn.

Product	**Intended Use**
440P	Cam actuated

ISO 14119 defines types of interlocking devices and coding:

Product	**Type**	**Coding**
440P	1	Uncoded

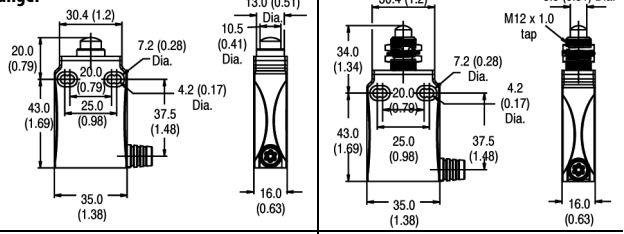
CE The products shown on this document conform with the Essential Health and Safety Requirements (EHSRs) of the European Machinery Directive. They are third party certified to EN 60947-5-1 and EN ISO 14119.

Declaration of Conformity and certification: *www.rockwellautomation.com/certification/ce.page*

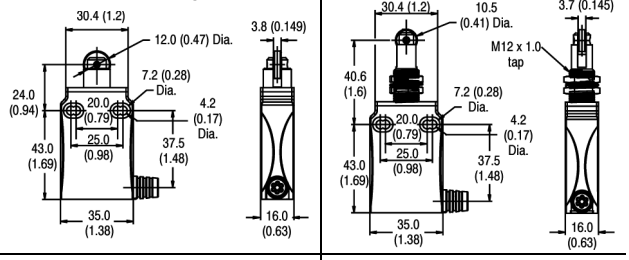
Mounting Dimensions [mm]

Nonpanel Mount | **Panel Mount**

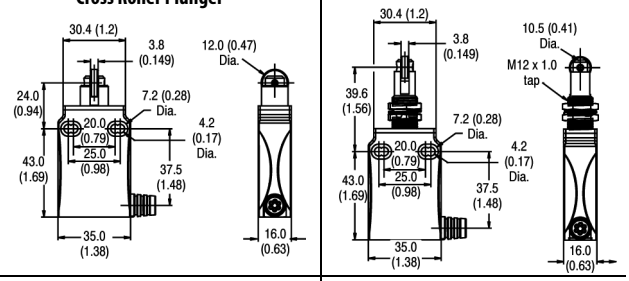
Dome Plunger



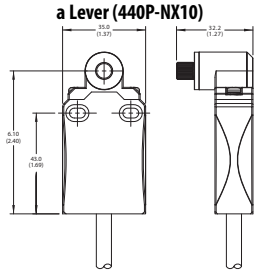
Roller Plunger



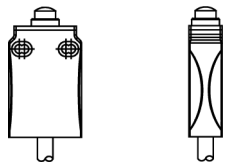
Cross Roller Plunger



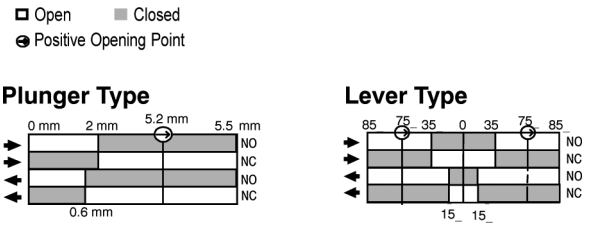
Replacement Switch, without a Lever (440P-NX10)



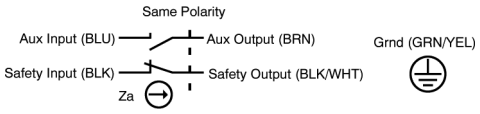
Bottom Cable Style



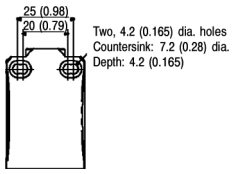
Contact Opening Characteristics



Wiring Diagram



Countersink Hole



- Panel mount clearance hole = 13 mm (0.51 in.) max.

ATTENTION

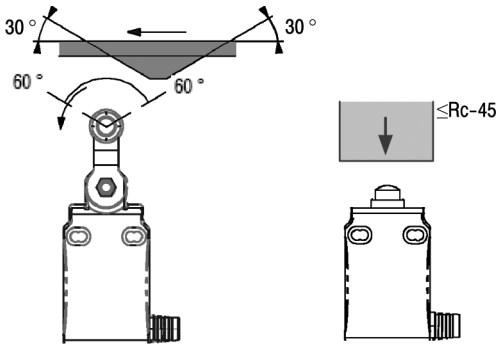
Under no circumstances must the switch be actuated beyond the mechanical travel specified. Serious damage to the device and property could result.

Maintenance

These devices require little maintenance, but routine visual inspection is recommended to keep foreign debris from collecting on the exterior actuators and rollers. Removing the operator head is not recommended as loose internal components may be lost or improperly re-installed.

Actuation Guidelines

The method of actuation and over travel has significant influence on the service life of the limit switch. To maximize the service life, it is recommended to provide an actuator with a 30° pressure angle and a surface hardness of Rc-45 max.



Lever Positioning

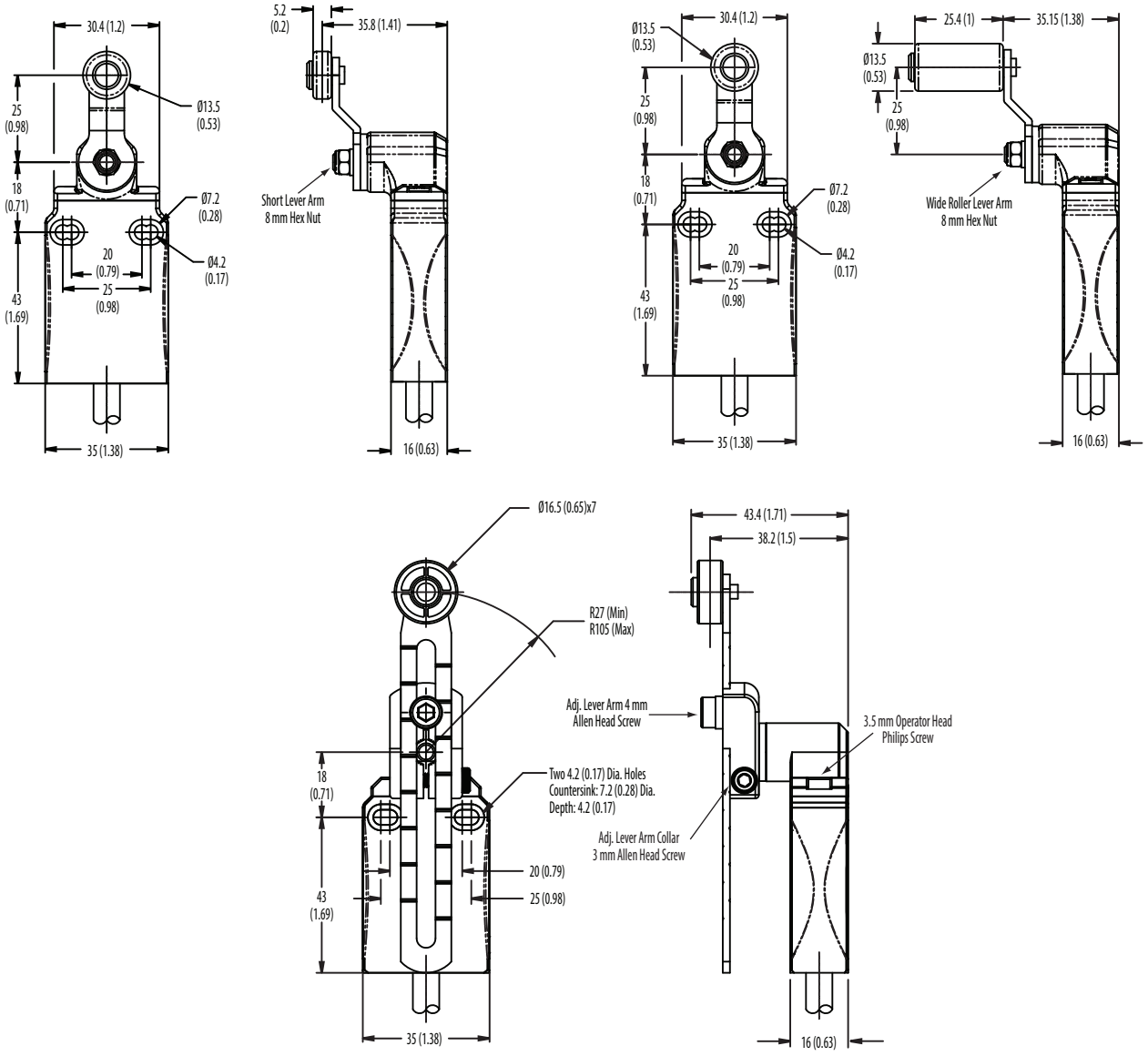
Some rotary switches are supplied with levers that are mechanically coupled to the actuating shaft. The lever may be removed and re-installed to adjust cam tracking. See table below for torque recommendations.

Torque Specifications

Location	Torque
3.5 mm Operator Head Phillips Screws	0.8 N•m (7.1 lb•in)
Short and Wide Roller Lever A rm 8 mm Hex Nut	1.0 N•m (8.85 lb•in)
Adjustable Lever Arm 4 mm Allen Head Screw	1.8…2.8 N•m (15.93…24.78 lb•in)
Adjustable Lever Arm Collar 3 mm Allen Head Screw	3.2 N•m (28.32 lb•in)
12 mm Panel Mount Nut	1.5 N•m (13.28 lb•in)

Mounting Dimensions [mm (in.)]

Note: Lever arm versions are nonpanel mount only.



IMPORTANT	Operator heads with adjustable actuators should NOT be used for safety applications.

Rockwell Automation maintains current product environmental information on its website at
http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page.

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