

An economic compact limit switch equipped with a forced contact opening mechanism and excellent environmental protection (IP67).

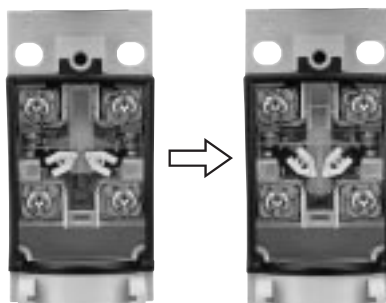
Characteristics

1. Forced contact opening mechanism

Cam operated opening mechanism forces N.C. contacts open. Contacts won't stick shut due to contact weld or spring fatigue.



(Roller arm) + (Conduit connector)

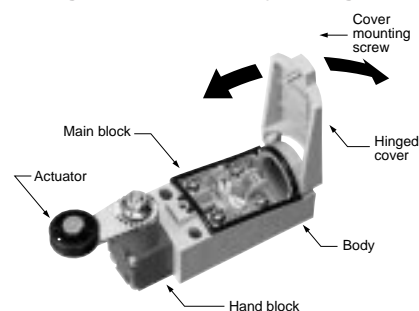


2. Conforms to EN standard (EN50047)

3. Uses a unit system

Any combination of actuator, head block, and unit block is possible. The units are also sold separately, making maintenance easy.

4. Hinged cover for easy wiring



5. Protective construction (IP67), and wide operating temperature range (-30°C to +80°C -22°F to +176°F)

TYPICAL APPLICATIONS

General plant facilities such as food processing, light machinery such as packaging machines, and assembly lines.



PRODUCT TYPE

1. Basic products (assembled switch includes actuator, head block and main block)

Actuator	Part No.	
	PF type	PG type
Roller Lever	AZD1000	AZD1050
Push Plunger	AZD1001	AZD1051
Roller Plunger	AZD1002	AZD1052
Roller Arm	AZD1004	AZD1054
Adjustable Roller Arm	AZD1008	AZD1058

Note: Type of conduit size: PF type (G1/2), PG type (PG13.5)

2. Blocks (individual units for replacement)

Product name			Part No.
Type of actuators	Roller Lever		AZD1800
	Roller Arm		AZD1804
	Adjustable Roller Arm		AZD1808
Head block			AZD1820
Main block	For plunger	PF type	AZD1001
		PG type	AZD1051
	For arm type	PF type	AZD1104
		PG type	AZD1154

3. Conduit connector

Product name	Part No.
PF type conduit connector	AZD1830

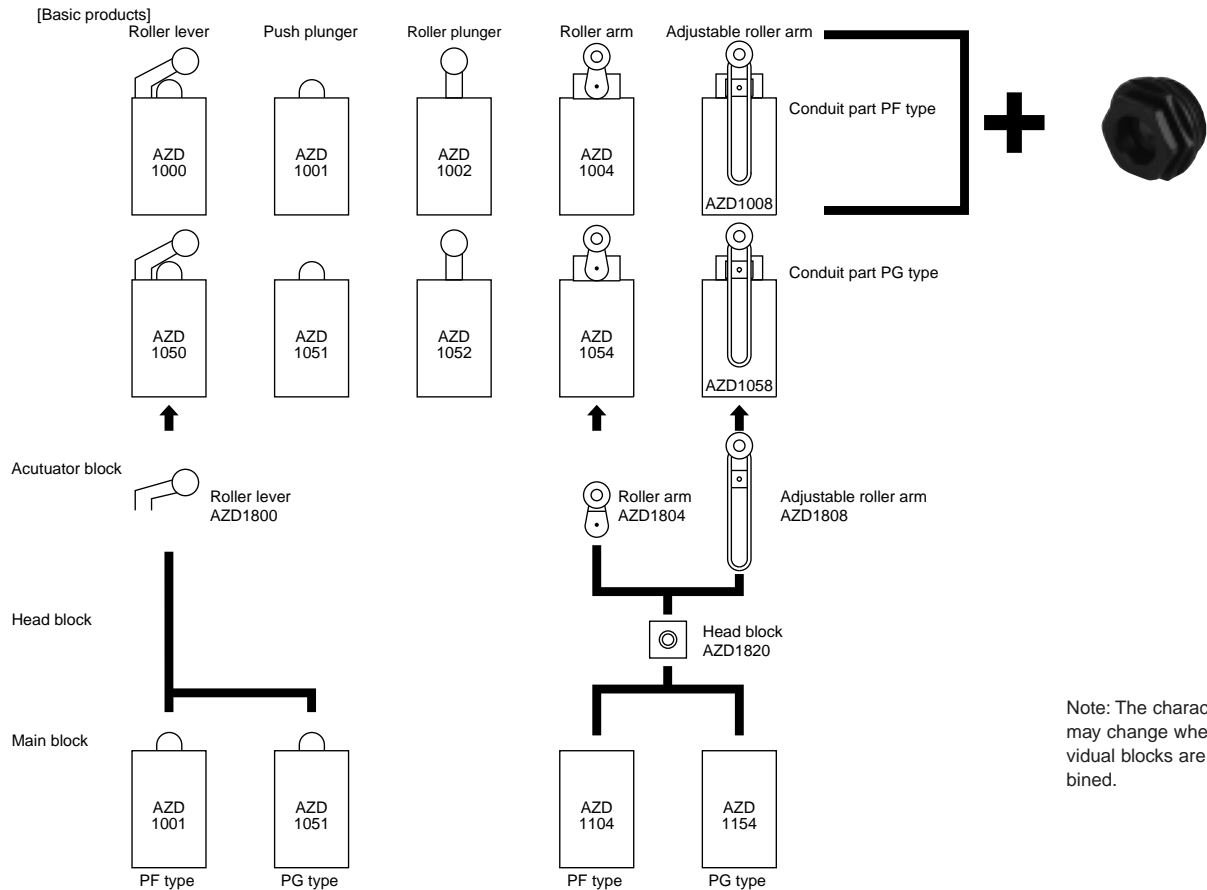
Note: The conduit connector is for cables.

Rubber seals with an inside diameter of 9 and 11 are attached.

Standards

Standards	Applicable product	Part No.
UL	File No. : E122222	Order by standard part No.
	Ratings : 6A 380V AC Pilot duty A300	
	Product type : All models	
CSA	File No. : LR55880	
	Ratings : 6A 380V AC Pilot duty A300	
	Product type : All models	
TÜV	File No. : J9551205	
	Ratings : AC-15 2A/250V upwardsC Pilot duty A300	

PRODUCT COMBINATION



SPECIFICATIONS

1. Contact Rating

Voltage \ Load		Resistive load (cos $\phi \approx 1$)	Inductive load (cos $\phi \approx 1$)
AC	125V	6A	6A
	250V	6A	6A
	380V	6A	6A
DC	24V	5A	2.5A
	60V	1.5A	1.5A
	220V	0.3A	0.3A

Note: When DC voltage is applied, the time constant is ($\tau \approx$) 0ms for resistive load, ($\tau \approx$) 100ms or less for inductive load.

3. EN60947-5-1 performance

Item	Rating
Rated insulation voltage (Ui)	250VAC Note*
Rated impulse withstand voltage (Uimp)	2.5kV Note*
Switching overvoltage	2.5kV
Rated enclosed thermal current (Ithe)	6A
Conditional short-circuit current	100A
Short-circuit protection device	10A Fuse
Protective construction	IP67
Pollution degree	3

Note) * The ratings, performance and operating characteristics are based on the basic model.

5. Protective characteristics

Protective construction	DL mini limit switches
IEC	
IP60	○
IP64	○
IP67	○

The switches are compatible with DIN EN50047.

2. Contact Characteristics

Contact arrangement		1 Form Z
Initial contact resistance, max.		25m Ω (By voltage drop of 5 to 6 V DC 1A)
Contact material		Silver alloy
Initial insulation resistance (At 500V DC)		Min. 100M Ω
Initial breakdown voltage		1,000Vrms for 1 min Between non-consecutive terminals 2,500Vrms for 1 min Between dead metal parts and each terminal 2,500Vrms for 1 min Between ground and each terminal
Shock resistance	Functional	300 m/s ² (equivalent 30G)
	Destructive	1,000 m/s ² (equivalent 100G)
Vibration resistance		10 to 55Hz, double amplitude of 1.5mm
Expected life (min. operations)	Mechanical	10 ⁷ (at 120 cpm)
	Electrical	1.5 $\times 10^5$ (at 20 cpm, 6A 380V AC resistive load)
Ambient temperature		-30 to +80°C -22°F to +176°F
Ambient humidity		Max. 95%R.H.
Max. operating speed		120 cpm

Note) The ratings, performance and operating characteristics are based on the basic model.

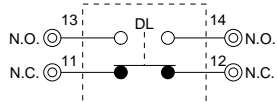
4. Operating characteristics

Characteristics	O.F. (N {gf}) max.	R.F. (N {gf}) min.	Pretravel (P.T.), max. mm inch	Movement Differential (M.D.), max. mm inch	Overtravel (O.T.), min. mm inch	Operating Position (O.P.), mm inch
Actuator						
Push plunger	6.37 {650}	1.47 {150}	2 .079	1.2 .047	4 .157	18 \pm 0.5 .708 \pm .020
Roller plunger	6.37 {650}	1.47 {150}	2 .079	1.2 .047	4 .157	28 \pm 1 1.102 \pm .03
Roller arm	4.90 {500}	0.49 {50}	20° to 26°	14°	30°	—
Roller lever	3.92 {400}	0.78 {80}	4 .157	1.6 .063	5 .197	—
Adjustable roller arm	4.90 {500}	0.49 {50}	20° to 26°	14°	30°	—

Note: The above values of adjustable roller arm shows the values when roller length is set at 26mm same as roller type.

WIRING DIAGRAM

Internal circuit



Terminals



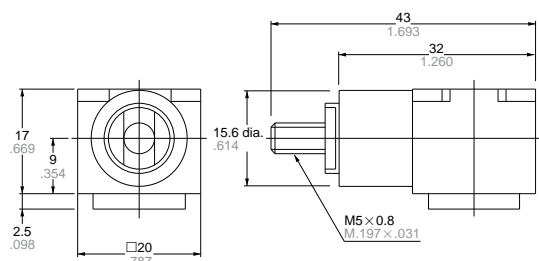
DIMENSIONS

mm inch

• Head block

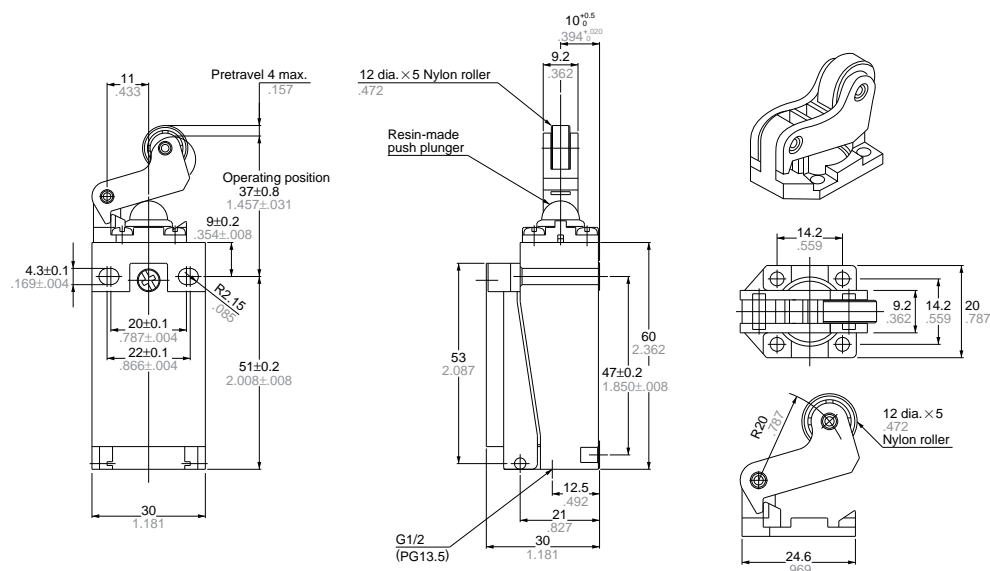


AZD1820

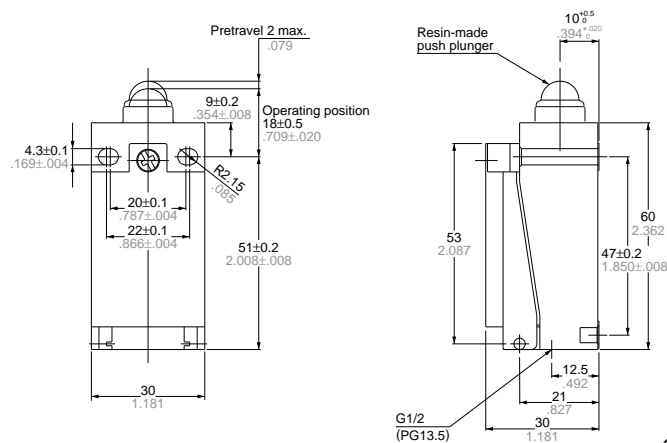
General tolerance: $\pm 0.4 \pm .016$

• Roller lever type

mm inch

AZD1000
AZD1050General tolerance: $\pm 0.4 \pm .016$

• Push plunger type

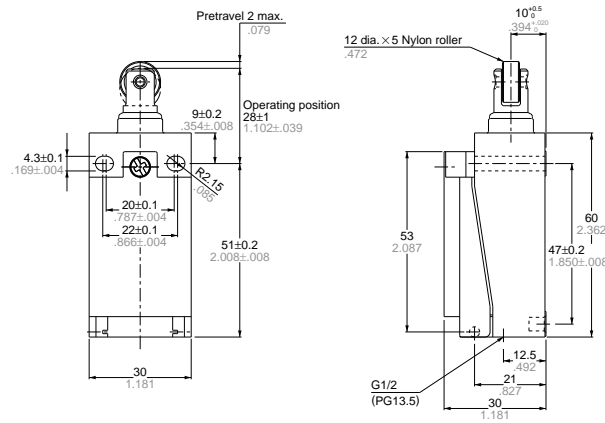
AZD1001
AZD1051General tolerance: $\pm 0.4 \pm .016$

DL (AZD1)

• Roller plunger type



AZD1002
AZD1052

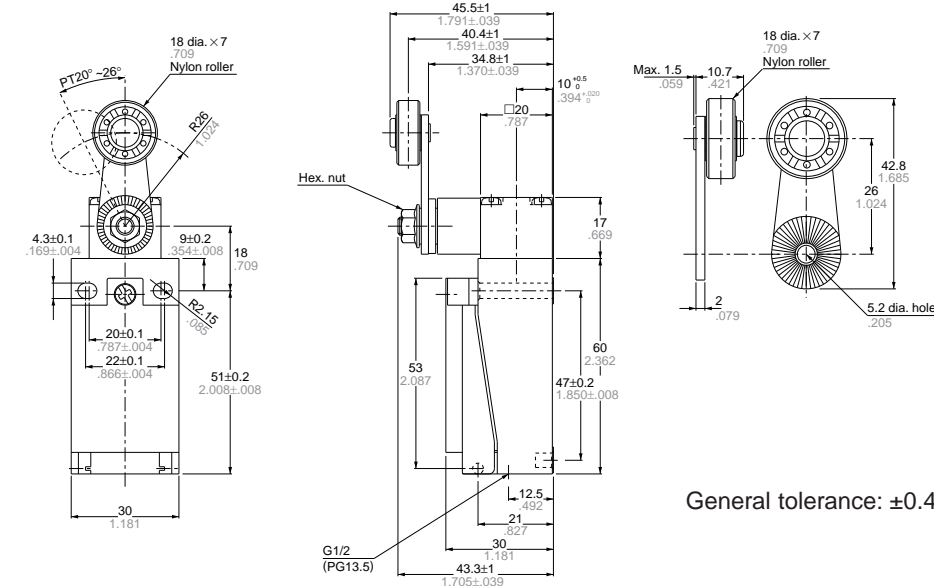


General tolerance: $\pm 0.4 \pm .016$

• Roller arm type



AZD1004
AZD1054

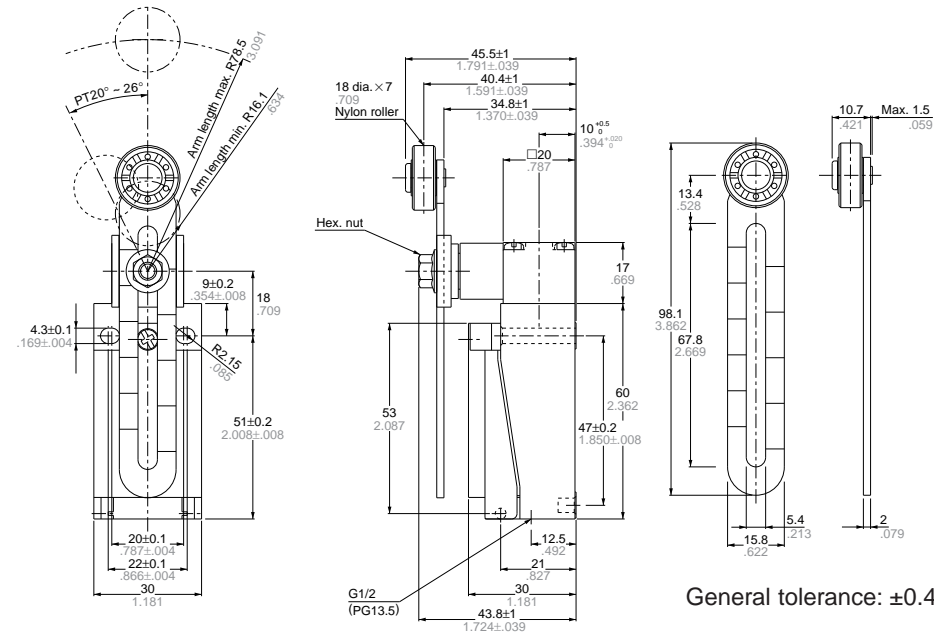


General tolerance: $\pm 0.4 \pm .016$

• Adjustable roller arm type



AZD1008
AZD1058

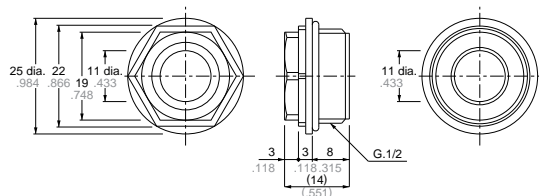


General tolerance: $\pm 0.4 \pm .016$

• Conduit connector (PF type)



AZD1830



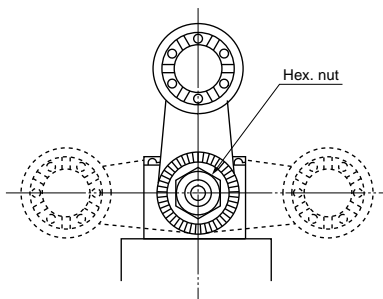
Rubber seal inside diameter	Adaptable cable outer diameter	
	Min.	Max.
9 dia. (.354)	7.5 dia. (.295)	9.5 dia. (.374)
11 dia. (.433)	9 dia. (.354)	11 dia. (.433)

General tolerance: $\pm 0.5 \pm .020$

Arm Setting Position

The roller arm of the arm types (AZD1004, AZD1008, AZD1054 and AZD1058) can be set in any position at 15° intervals.

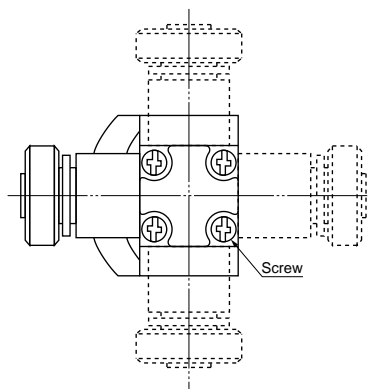
Loosen the arm fastening hex. nut, reposition the arm, and retighten the



Head Direction

The head of the arm types (AZD1004, AZD1008, AZD1054 and AZD1058) can be set in any of four directions at 90° intervals, but not in any other intermediate directions.

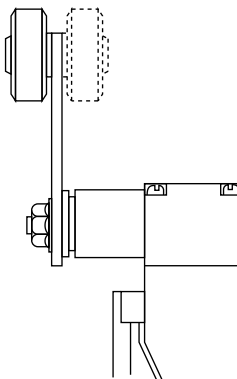
Loosen four screws on the upper side of the head, and set the head in a desired direction, and retighten them at a torque of 2 to 4 kg-cm.



Roller Direction

The roller of the arm types (AZD1004, AZD1008, AZD1054 and AZD1058) can be mounted on the front and rear (dotted line in the figure) sides of the switch, as shown below. (Positioned on the front side at delivery.)

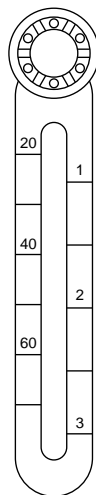
To set the roller on the rear side, remove the arm fastening hex. nut, and reinsert the arm so as to face the roller in the rear direction. Then, retighten the hex. nut.



Adjustable Arm Length

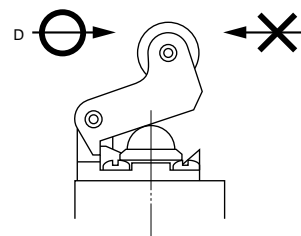
To adjust the length of the adjustable arm of AZD1008 and AZD1058, slightly loosen the arm fastening hex. nut, and adjust the length.

The adjustable arm is graduated in two kinds of length units. Use these indications as the reference during adjustment.

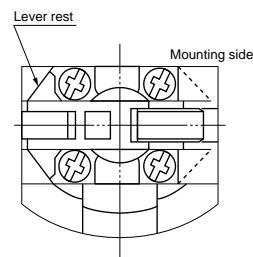


Roller Lever Direction

Move a target object in the D direction as shown below. Be sure not to move the object in the opposite direction. If the opposite direction is required, change the direction of the lever.



The roller lever can be set in two directions at 180° intervals. (It can also be set in the 90° direction, but the mounting surface will project. This is not recommended) Remove the four lever base fastening screws, turn the lever together with the lever base in 180°, and retighten the four screws at a torque of 2 to 4 kg-cm.

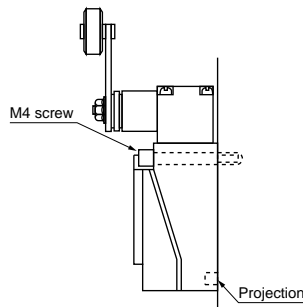


Open and close the cover

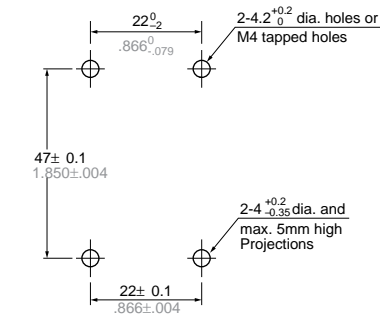
For the adjustable roller arm type, the cover will not open and close since it contacts the adjustable arm. Either extend the arm fully or remove the arm, then open or close the cover.

CAUTIONS

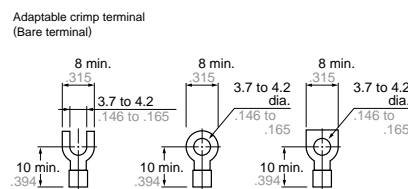
- 1) This model uses silver terminals. Therefore, if used at relatively low frequencies for long periods of time, or if used with very small loads, the oxidation that forms on the contact surfaces will not wear away and eventually cause improper contact. For such applications, use limit switches with gold/metal contacts (e.g. VL limit switches) or ones meant for small loads (e.g. HL limit switches).
- 2) This switch is not designed for under-water use. Do not use the unit under-water.
- 3) Do not use the switch where it may come in direct contact with organic solvents, strong acids, strong alkaline liquids or stream, or in atmospheres containing flammable or corrosive gases.
- 4) For the arm type (roller arm type, adjustable roller arm type), the arm can only be set at 15° interval.
- 5) To improve reliability during actual use, it is recommended that the operation be checked under installation conditions.
- 6) When mounting, use washers (to prevent loosening) and tighten at a torque of 5 to 7 kg-cm.
- 7) To securely mount the switch, fasten the main switch body with two mounting screws. Also provide two (4- $\frac{0.2}{0.35}$ mm dia. and max. 5mm high) projections on the bottom of the main switch body.
- 8) When wiring, do not connect the lead wires directly to the terminals, but use the crimp terminals and tighten them to a torque of 4 to 6 kg-cm.



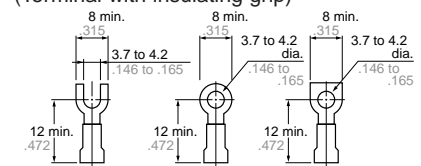
• Mounting dimensions



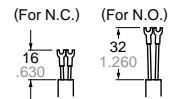
Adaptable crimp terminal (Bare terminal)



(Terminal with insulating grip) mm inch



When crimp terminals are used.



9) After wiring, when attaching the cover to switch body, be careful that the cover seal rubber is set normally on it and tighten the screw to a torque of 2 to 4 kg-cm. Do not over tighten or threads will be damaged.

10) A safety mechanism is used which provides a positive break of the N.C. contacts under such abnormal conditions as contact welding, spring break, etc. For proper use of the safety mechanism follow the guidelines shown below.

(The value for the adjustable roller arm type, is for an arm length equal to that of the roller arm type.)

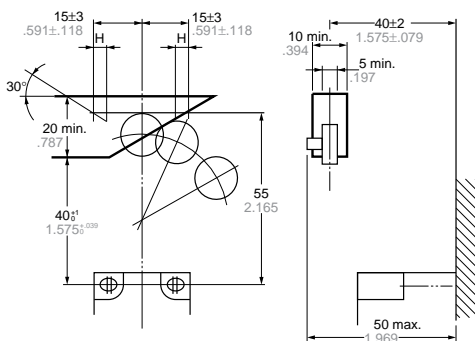
	Actuator movement	Required force
Push plunger type	Approx. 3.5mm	Approx. 3 kg
Roller plunger type	.138 inch	
Roller arm type (Adjustable roller arm type)	Approx. 4.5 mm	Approx. 1 kg
Roller lever type	Approx. 7 mm	Approx. 2 kg
	.276 inch	

mm inch

Design of Operating Dog

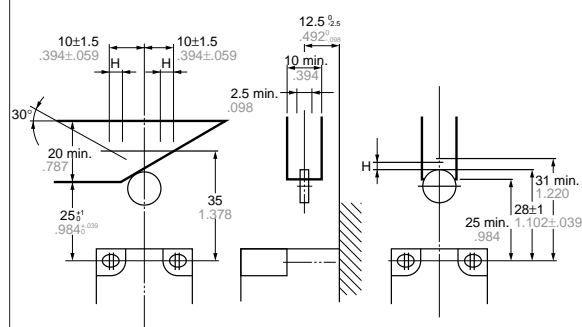
Roller arm type

(H: Hysteresis)



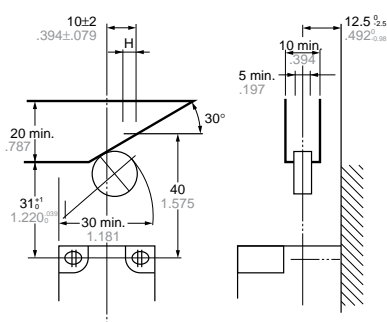
Roller plunger type

(H: Hysteresis)



Roller lever type

(H: Hysteresis)



Push plunger type

(H: Hysteresis)

