

ALS Switch

⚠ CAUTION! The ALS Switch is not designed for use with non-ferrous tubes.

Switch Operation

The switch detects a change in polarity of the magnetic field as a piston with magnet moves through the cylinder.

Formatting

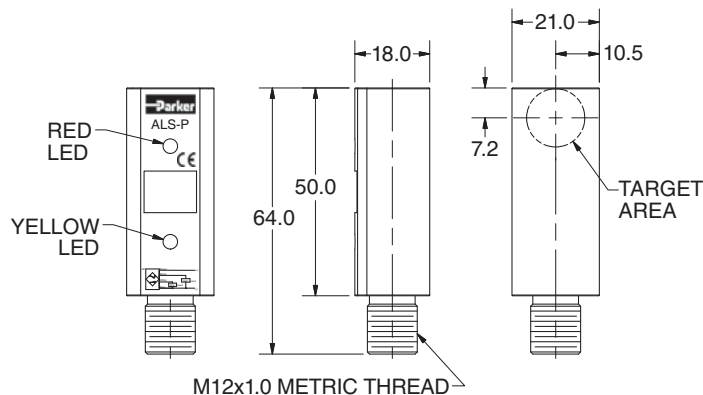
Before the switch is used for the first time, the piston with magnet should be run in and out of the cylinder to format the cylinder tube. The switch will detect the polarity of the residual magnetic field created by the movement of the magnetic piston during formatting.

Field Direction with Magnetic Piston

Single rod end cylinders are assembled with the piston magnet's North Pole facing the rod end. As the magnetic piston moves through the cylinder, it creates a stronger field opposite in polarity to the residual magnetism in the cylinder tube. As it moves under the switch, the change in polarity of the magnetic field in the cylinder tube is detected.

Switch Zone

Switch actuation occurs as the piston enters a switching 'zone'. The switching point is highly repeatable, in either direction, under conditions of constant piston speed and operating temperature.



ALS Switch output states may be influenced by an external magnetic field. Care must be taken to avoid external magnetic field exposure.

ALS Switch Part Numbers

Part Number		Switch Bracket Usage
PNP	NPN	
ALS-PL	ALS-NL	Series 3L & 2A 1.50 – 4.00 Bore
ALS-PH	ALS-NH	Series 2H 1.50 – 4.00 Bore
ALS-PHA	ALS-NHA	Series 2H 5.00 – 6.00 Bore

Minimum Stroke for ALS Switch

Bore Ø	3L & 2A	2H
1.50	3.13	3.00
2.00	3.13	3.00
2.50	3.13	2.88
3.25	3.13	2.75
4.00	3.13	2.63
5.00	N/A	2.38
6.00	N/A	2.19

The switching zone may be up to 50mm wide depending on tube wall thickness and piston speed.

LED Indicators

There are two LED's (yellow and red) to indicate that the piston is inside or outside the switching zone. The sequence of the LED's is determined by the orientation of the north pole of the magnet system (rod end side of single rod end cylinders) to the connector.

When the ALS switch connector faces the rod side of single rod end cylinders, the red LED turns ON when the piston is within the switching zone. The yellow LED is ON otherwise.

When the ALS switch connector faces the cap side of single rod end cylinders, the yellow LED turns ON when the piston is within the switching zone. The red LED is ON otherwise.

Performance

ALS Switches have been designed to operate at a maximum piston speed of 0.5m/s, and a maximum cylinder operating temperature of 85°C.

Specifications

Switching Output:	PNP or NPN
Hysteresis¹:	5mm
Repeatability¹:	0.5mm
Load Current:	100mA
Leakage Current:	≤ 10µA
Voltage Drop:	≤ 1.5 VDC
Short Circuit and Overload Protection:	Yes
Reverse Polarity Protection:	Yes
Supply Voltage:	10 - 30 VDC
LED(s):	Yes (2)
Current Consumption:	≤ 30 mA
Operating Temperature Range:	-25°C to +85°C (-13°F to +185°F)
Housing Material:	Black Polyamide (PA)
Enclosure Rating:	IP67

¹Hysteresis, and repeatability based on measurements with a cylinder outer diameter of 46mm, wall thickness of 3mm and piston speed of 0.5m/s.

