



Centre for
Assessment Ltd.

ALPHA[®]
CONTROLS
ALPHA CONTROLS LTD



ALS Series

Exd Limit Switch Box

Installation Operating &
Maintenance Instructions



Alpha Controls Ltd







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◆ Instruction

ALS series Exd limit switch boxes include ALS400, ALS500 and ALS600 which are a primary rotary position indication device both for local and remote indication in hazard area. The ALS products were designed to integrate valve and NAMUR rotary pneumatic actuator with a variety of mounting options, internal switches or sensors and/or feedback configurations. This kind of limit switch box was designed through advance and state-of-the-art engineering technology which have the product to be solid, beautiful and with high-level quality. The product also fully meets Exd explosion proof specifications and the bracket is designed in light of ISO5211 and NAMUR standard.

◆ Specification

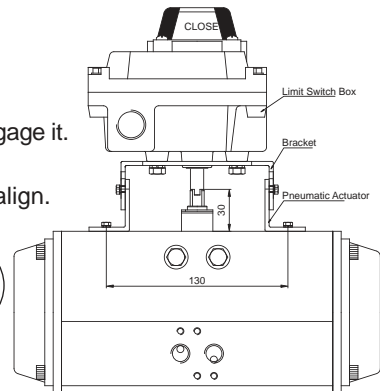
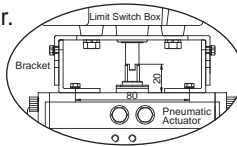
Model No.	<input type="checkbox"/> ALS400-	<input type="checkbox"/> ALS500-	<input type="checkbox"/> ALS600-
Photo			
Enclosure	Die-cast Aluminum with polyester powder coated, O-ring sealed		<input type="checkbox"/> SS304 O-ring sealed <input type="checkbox"/> SS316 O-ring sealed
Explosion Proof	 Ex d IIC T6, IP66	  Ex II 2G Ex d IIB T6, IP66	
Temperature Range	-20°C~85°C		
Cable Entry	<input type="checkbox"/> 2 x 3/4G(BSPP), <input type="checkbox"/> 2 x 3/4NPT		
Terminal Strips	8~12	8~10	
Position Indicator	<input type="checkbox"/> 90° Yellow Open, Red Closed <input type="checkbox"/> 90° Green OPEN, Red Closed <input type="checkbox"/> Other		
Mechanical Switches	Crouzet Max15A125-250VAC <input type="checkbox"/> M2:2SPDT <input type="checkbox"/> M3:3SPDT <input type="checkbox"/> M4:4SPDT <input type="checkbox"/> M5:2DPDT <input type="checkbox"/> ML2:2SPDT Low Temp: -40°C <input type="checkbox"/> MG2:2SPDT Gold contacts		
Proximity Sensors	<input type="checkbox"/> PP: p+f Proximity Sensors NCB2-V3-NO, NAMUR Intrinsic safe(Ex ia II CT6), 8VDC, <=1mA <input type="checkbox"/> PA: ALPS Proximity Sensors 24VDC, <=150mA(2or3 wire)		
Magnet Sensors	<input type="checkbox"/> QA2: ALMS Magnet Sensor 2SPST, 5~240VAC/DC, <=300mA, 2 wire <input type="checkbox"/> QA3: ALMS Magnet Sensor 2SPDT, 5~240VAC/DC, <=300mA, 3 wire		
Analog Output	<input type="checkbox"/> F: position transmitter Analog output 4-20mA	—	
Bracket	<input type="checkbox"/> MB3.3:30x80-130H:20-30(carbon steel with polyester powder coated) <input type="checkbox"/> MB3.3:30x80-130H:20-30(stainless steel SS304)		

◆ Installation

1. Attach proper mounting bracket to the limit switch box housing using four aniseed cap screws provided.
2. Align limit switch box shaft to top of actuator shaft and engage it.
3. Attach bracket to actuator using hardware provided.
4. By actuating package the switch and actuator will self-align.
5. Tighten bracket to top of actuator.

INSTRUCTION

- Do not open when energized in hazardous atmospheres
- Use only wet cloth when cleaning the indicator.

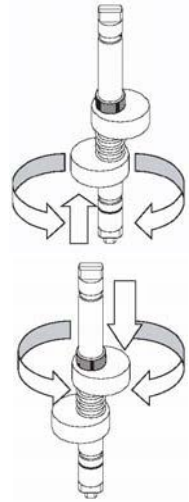


Limit Switch Adjustment

1. Loosen limit switch box cover screws and remove cover.
2. Rotate actuator to full counterclockwise position. Valve is on fully open or closed position.
3. Lift up bottom cam and turn until switch is activated and then release. Engage cam back onto the splined retainer. Spring will maintain cam engagement.
4. Rotate actuator to full clockwise position. Valve is on fully closed or open position.
5. Push down top cam and turn until switch is activated and then release. Engage cam back onto the splined retainer. Spring will maintain cam engagement.
6. Place cover on limit switch box and tighten.

INSTRUCTION

- Take care to ensure that housing O-ring is properly located in seal groove.
- Keep the box tight while circuits are alive.
- Disconnect supply circuit before opening.
- Ensure the flameproof surface have not any paint and scratch in the process of adjustment.



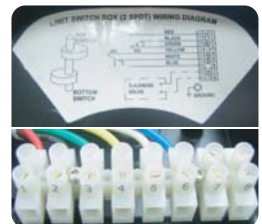
Electrical Wiring

INSTALLATION

1. Remove limit switch box cover(Disconnect supply circuit before opening).
2. Remove protection plugs from conduit entries and install conduit or plugs suitable for type of protection required.
3. Engage wires in terminal strip using a small screwdriver.

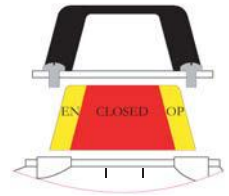
INSTRUCTION

- Ensure the flameproof surface have not any paint and scratch in the process of adjustment.
- All user connections are made at a numbered terminal strip. A wiring diagram is located inside the cover and indicated which terminal numbers correspond to switch contacts: normally open, normally closed common, etc. Simply follow the wiring diagram and electric code to connect switches to your system.
- Solenoids may also be wired through the switch box. At least two auxiliary terminals are included as an option. A ground screw is also included. Simply wire the solenoid to auxiliary terminals, and then connect power leads to the opposite terminal side.
- Be sure to properly ground the solenoid at provided ground terminal.
- ALS series Exd switch boxes include two 3/4" BSSP conduit entries. Be sure to follow the National Electric Code regulations for rigid conduit, flexible conduit or cable systems as applicable.



Indicator Setting

1. Remove four screws and remove indicator cover.
2. Lift up indicator from the cover.
3. Set indicator on cover according to valve position.
4. Replace indicator cover and fasten with cover screws. Check to ensure that position indicator O-ring is properly located in seal groove.



INSTRUCTION

- Use only wet cloth when cleaning the indicator.
- Indicators are easily adjusted to match the dome's clear windows or the special rotor angle indicator, such as 45°, 60° or 3 way indicator. Simply loosen the four screws to adjust the indicator. Make sure dome window line up with rotor quadrants. Finally, tighten the screws to insure a good seal.



Inspection and Maintenance

Inspect the components of the limit switch box for wear or damage and replace where necessary.

- RECOMMENDED REPLACEMENT PARTS:

1. Limit switch.
2. Position indicator O-ring.
3. Housing O-ring.
4. Shaft O-rings(top and bottom)

Storage

To store ALS series Exd limit switch box, the following cautions are recommended:

- Ensure the flameproof surface have not any paint and scratch.
- Ensure the limit switch box is completely dry and water free.
- Maintain the entrances of cable by fitting the original or replacement plastic corks.
- Protect from dust, dirt and damage by packing in box or plastic bag.

Special Conditions for Safe Use

Repairs of the flameproof joints must be made in compliance with the structural specifications provided by the manufacturer. Repairs must not be made on the basis of values specified in tables 1 and 2 of EN/IEC 60079-1.

Important Notice

- * ALL ALS LIMIT SWITCH BOX HAVE BEEN 100% FACTORY TESTED IN OPERATION , WATERTIGHTNESS AND PRESSURE TESTED WITH 15BAR WITH 60 SECONDS.
- * REPAIRS OF FLAMEPROOF JOINTS MUST BE MADE IN COMPLIANCE WITH THE STRUCTURAL SPECIFICATIONS PROVIDED BY THE MANUFACTURER.
- * INFORMATION HEREIN INCLUDING PRODUCT SPECIFICATION CHANGE WITHOUT NOTICE.