1520 **Top Mounted Flow Switch**

General Instructions

The SOR® 1520 Flow Switch must be mounted in a vertical position (horizontal pipe run). Electric switching is caused by the liquid flow moving the vane and magnet into the field of a hermetically sealed reed switch capsule. Flow switching takes place at approximately 1 ft./sec. velocity.

Two separate cavities make up the body — one for the magnetic/vane arm, one for the switch.

Before Installing the Level Switch

- Inspect the unit for any shipment damage.
- Check for mechanical clearance of the vane. The vane must move freely without binding throughout its stroke.
- Use an acceptable thread compound when installing unit to ensure a leak-free fit and to avoid thread galling.
- When installed, the direction of flow should match the direction of the arrow on the unit.

NOTE: If you suspect that a product is defective, contact the factory or the SOR Representative in your area for a return authorization number (RMA). This product should only be installed by trained and competent personnel.

Design and specifications are subject to change without notice.

For latest revision, go to ***SORInc.com***

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Installation

The unit may be mounted in any of the following installation arrangements:

a. 1-1/2 NPT half coupling (No full coupling.)
b. 2 NPT full coupling (Use in conjunction with 2 x 1-1/2" NPT bushing as required.)
c. 2 NPT pipe tee (Use in conjunction with 2 x 1-1/2" NPT bushing as required.)
d. Optional flanged mounting

Safety Integrity Level (SIL) Installation Requirements

The SOR pressure switches have been evaluated as Type-A safety related hardware. To meet the necessary installation requirements for the SIL system, the following information must be utilized:

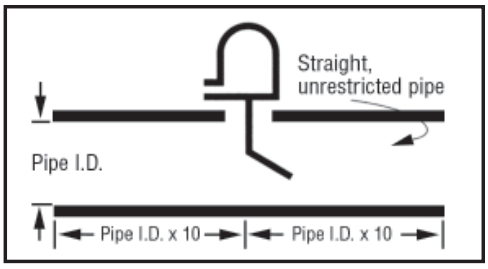
- Proof Test Interval shall be one year.
- Units may only be installed for use in Low Demand Mode.
- Products have a HFT (Hardware Fault Tolerance) of 0, and were evaluated in a 1oo1 (one out of one) configuration.

Process Connection

Integrally mounted controls should be mounted with the vessel flange or nozzle within 3° of the vertical or horizontal centerline of the vessel, as applicable.

Control should be mounted with ten diameters (pipe ID x 10) length straight, unrestricted pipe on both sides.

Insulation of the control is not recommended.



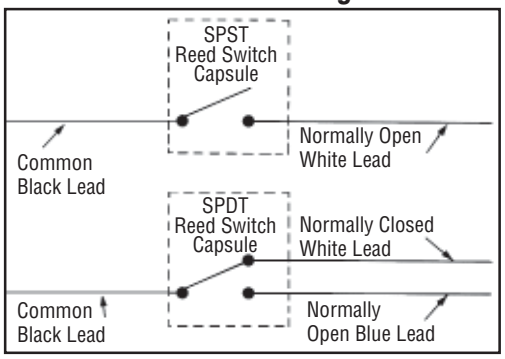
Electrical Connection

Ensure that wiring conforms to all applicable local and national electrical codes and install unit(s) according to relevant national and local safety codes.

Electrical connection is free wire leads with a 1/2" NPT(F) conduit connection. Use two wrenches – one to hold hex conduit connection, the other to tighten conduit fitting. Switching element is a hermetically sealed reed switch.

Do not exceed catalog stated electrical ratings. Improper current input to switch will cause permanent damage to contacts.

Wiring Schematic



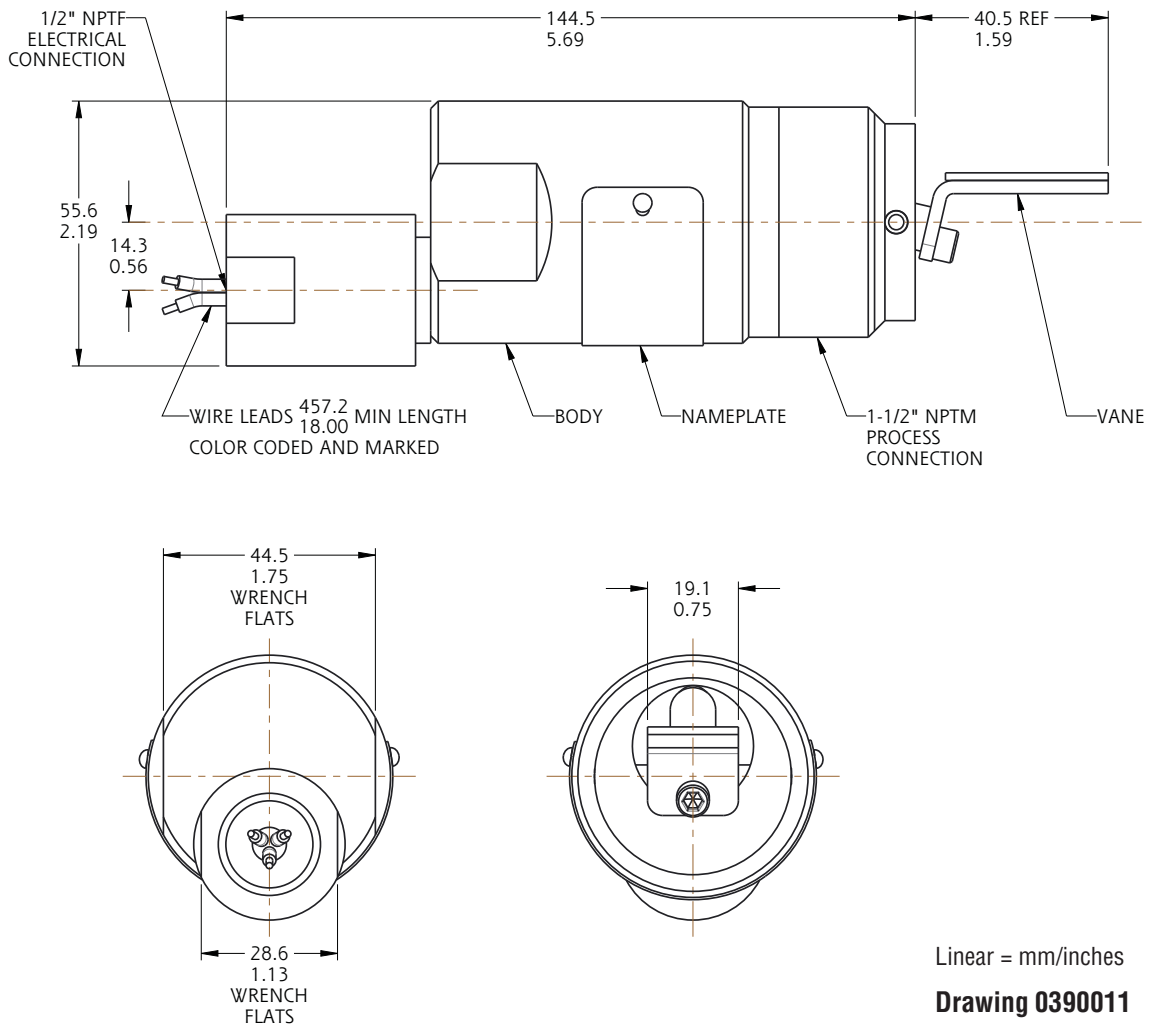
Special Conditions for Safe Use

This apparatus may have a combined nameplate which carries multiple approvals (intrinsically safe and flameproof). The equipment should be marked as to which protection method it is installed as and shall not be changed or utilized in any other means than was originally marked by the end user.

When marked and installed as Ex i equipment, the permanently attached leads must be suitably protected against mechanical damage and terminated in a suitable junction box or terminal facility having a degree of protection at least IP20.

When marked and installed as Ex d equipment, the permanently attached leads must be suitably protected against mechanical damage and terminated in a suitable junction box or terminal facility.

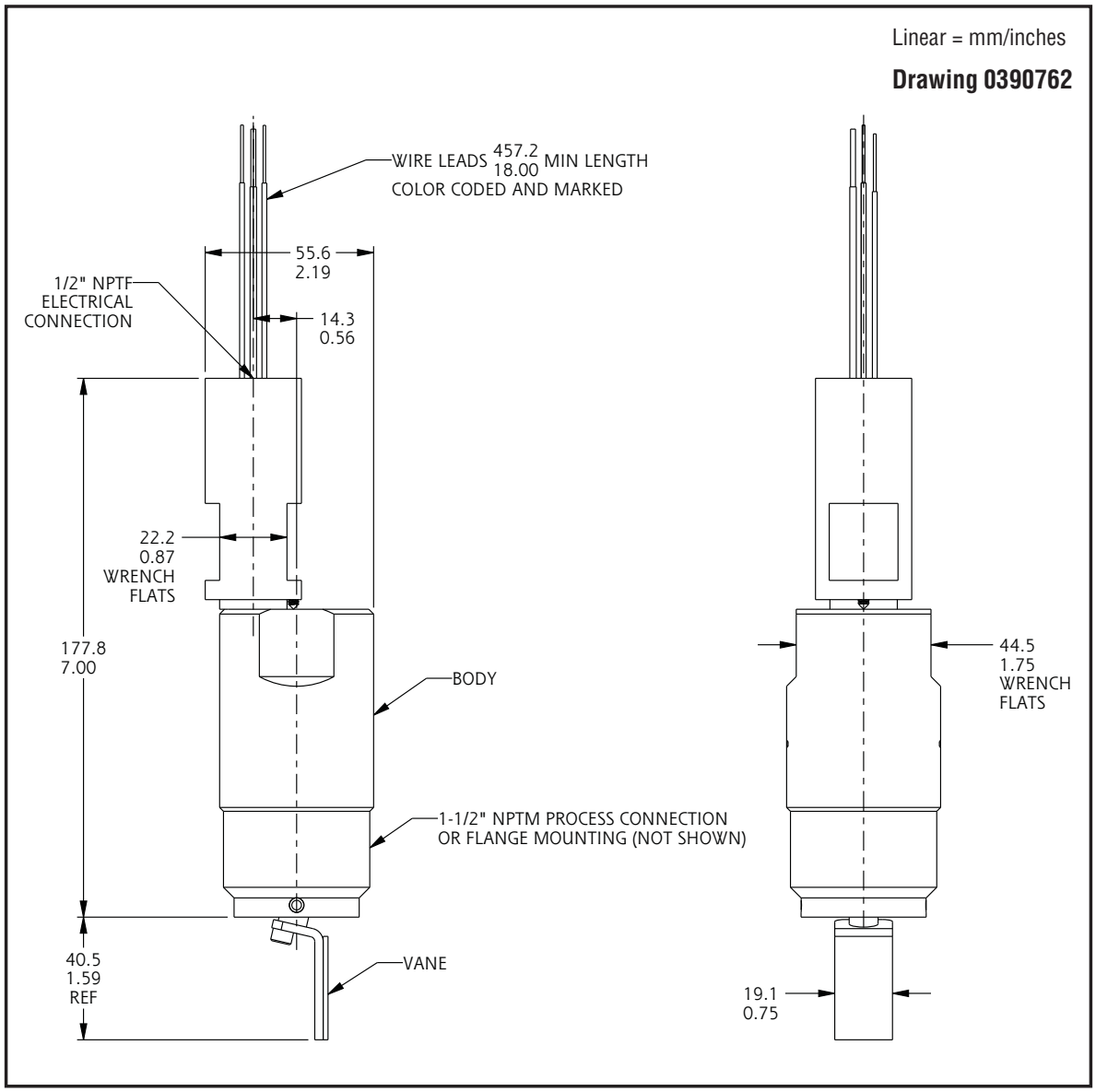
Dimensions



Linear = mm/inches

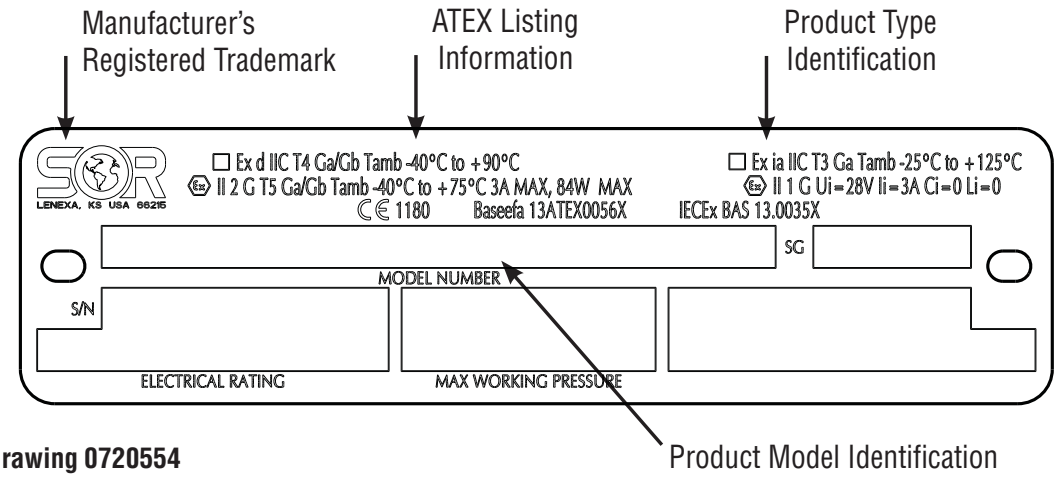
Drawing 0390011

With CK Accessory – ATEX and IECEx dual approved:



ATEX and IECEx Marking Details

For ATEX and IECEx Certified Models



Drawing 0720554

Standards Assessed To

ATEX Certification: EN 60079-0: 2009 & EN 60079-11: 2007
EN 60079-0: 2012, EN 60079-1: 2007,
EN 60079-11: 2012 & EN 60079-26: 2007

IECEx Certification: IEC 60079-0: 2011, IEC 60079-1: 2007-04,
IEC 60079-11: 2011 & IEC 60079-25: 2010-02
IEC 60079-0: 2004 & IEC 60079-11: 1999

Declaration of Conformity

For ATEX/IECEx
Certified Models

EC Declaration of Conformity

CE

Product	**Type 1500 Electric Switches**
Manufacturer	SOR Inc., 14685 West 105th Street, Lenexa, Kansas 66215-2003 United States of America
Date of Issue	**April 20, 2016**
We declare that the above products conform to the following specifications and directives	ATEX Directive (2014/34/EU) Equipment Intended for use in Potentially Explosive Atmospheres EN 60079-0: 2012 & EN 60079-11: 2012 IEC 60079-0: 2007 & IEC 60079-11: 2006 EN 60079-0: 2012, EN 60079-1: 2007, EN 60079-11: 2012 & EN 60079-26: 2007 IEC 60079-0: 2011, IEC 60079-1: 2007, IEC 60079-11: 2011 & IEC 60079-25: 2010
Carries the Marking	ATEX Marking Ex **II 1 G Ex ia IIC Ga** T3 (-40°C ≤ Ta ≤ +125°C) or T3 (-25°C ≤ Ta ≤ +125°C) Ex **II 2 G Ex d IIC Ga/Gb** T4 (-40°C ≤ Ta ≤ +90°C) or T5 (-40°C ≤ Ta ≤ +75°C) IECEx Marking **Ex ia IIC Ga** T3 (-40°C ≤ Ta ≤ +125°C) or T3 (-25°C ≤ Ta ≤ +125°C) **Ex d IIC Ga/Gb** T4 (-40°C ≤ Ta ≤ +90°C) or T5 (-40°C ≤ Ta ≤ +75°C)
Reference Documents	**EC-Type Examination Certificate** **Baseefa06ATEX0271X, IECEx BAS06.0063X** Issued January 12, 2007 **Baseefa13ATEX0056X, IECEx BAS13.0035X** Issued July 26, 2013
ATEX Notified Body	**SGS Baseefa Ltd.** (Notified Body No. 1180) Rockhead Business Park, Staden Lane, Buxton, Derbyshire SK17 9RZ, United Kingdom Baseefa Customer Reference No. 1021
Person Responsible	Michael J. Bequette (VP of Engineering)

Michael J. Bequette

Engineered to Order with Off-the-Shelf Speed

14685 West 105th Street, Lenexa, KS 66215-2003
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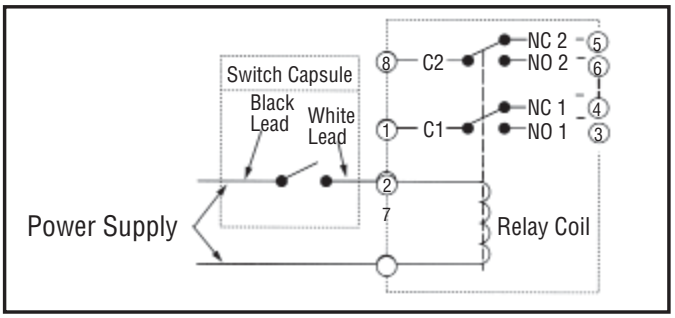
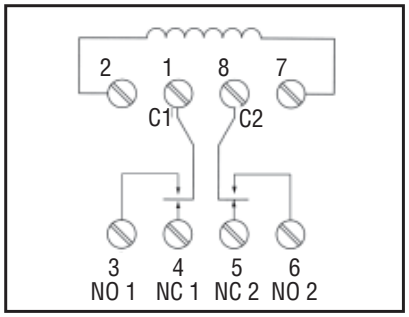
Form 1385 (04.16) SOR Inc.

Troubleshooting

DPDT Relay Schematic





For Type 1520 Flow Switches equipped with DPDT relays, a wiring schematic and pin position schematic is shown on page 2. When the 1520 is actuated, the coil will energize and "make" both NO1 and NO2 while it will "break" NC1 and NC2. This provides a DPDT circuit.

Symptom	Probable Cause(s)
Vane in actuated position but no output signal	a. No power supply. b. Switch damaged. (Replace)
Vane in de-actuated position but still receiving an output signal.	a. Switch damaged. (Replace)
Control will not function when installed but operates when removed from process connection.	a. Inadequate vane travel. Vane travel restricted by mounting nozzle. See Mounting Requirements.
Flow in pipe at the actuation rate but unit does not respond.	a. Damaged vane. (Replace) b. Flow rate too low. c. Vane bound up or dirty. (Clean)

Replacement Parts

Part Number	Description
3130-091	W9 - SPST Hermetically Sealed Switch Capsule
3130-245	W1 - SPDT Hermetically Sealed Switch Capsule
3130-259	W1 - SPDT Switch/Conduit Connection Assembly (CK Option Only)
3130-107	L9 - SPST Hermetically Sealed Switch Capsule
3130-244	L1 - SPDT Hermetically Sealed Switch Capsule
3130-260	L1 - SPDT Switch/Conduit Connection Assembly (CK Option Only)
3130-118	316SS Vane Assembly
3130-403	Actuator Arm Replacement Kit (1-1/2" NPT body size)
3130-404	Actuator Arm Replacement Kit (2" NPT body size)

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