

# Hazardous Location Pressure Switch

Model: RC-V-Single

Variable Differential

## Installation & Operation Manual



**ROBINSON**  
CONTROLS • INC

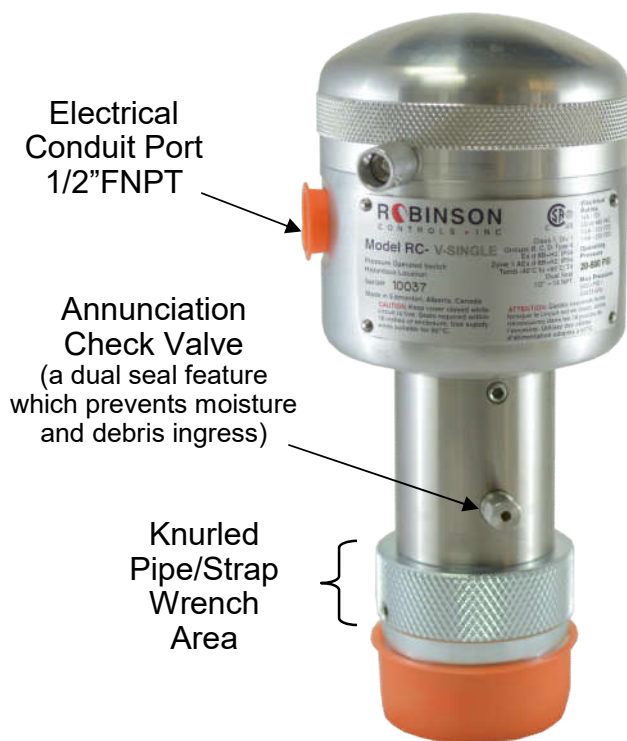
## 1 Safety

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- 1.1 Power supply must be disconnected before installation, calibration and maintenance.
- 1.2 Keep all components dry and free from damage.
- 1.3 Review applicable standards to ensure Robinson Pressure Switch model is the correct control for the application.
- 1.4 Personnel must wear appropriate safety approved apparel for working environment.
- 1.5 Only qualified personnel should install the Robinson Pressure Switch and accessories.
- 1.6 A qualified electrician is required to inspect wiring installation prior to applying electricity.
- 1.7 Ensure enclosure cover is in place prior to applying electricity

## 2 Quick Installation

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- 2.1 Inspect all threaded Process Connections for damage.
- 2.2 Screw pressure switch into place. Use a strap wrench or pipe wrench on the knurled portion of the process connection only.
- 2.3 **Warning**  
Only use the Knurled Pipe/Strap Wrench area for tightening and torquing the pressure switch into place. Damage may result if excessive force is applied to any other part of the switch.
- 2.4 Inspect the Electrical Conduit Port threads (1/2" FNPT) as well as the Electrical cable assembly fitting to ensure cleanliness and free of damage.
- 2.5 Feed wire leads through the Electrical Conduit Port and tighten the electrical cable assembly fitting. Refer to the wiring diagram on next page to attach wires to micro switch.

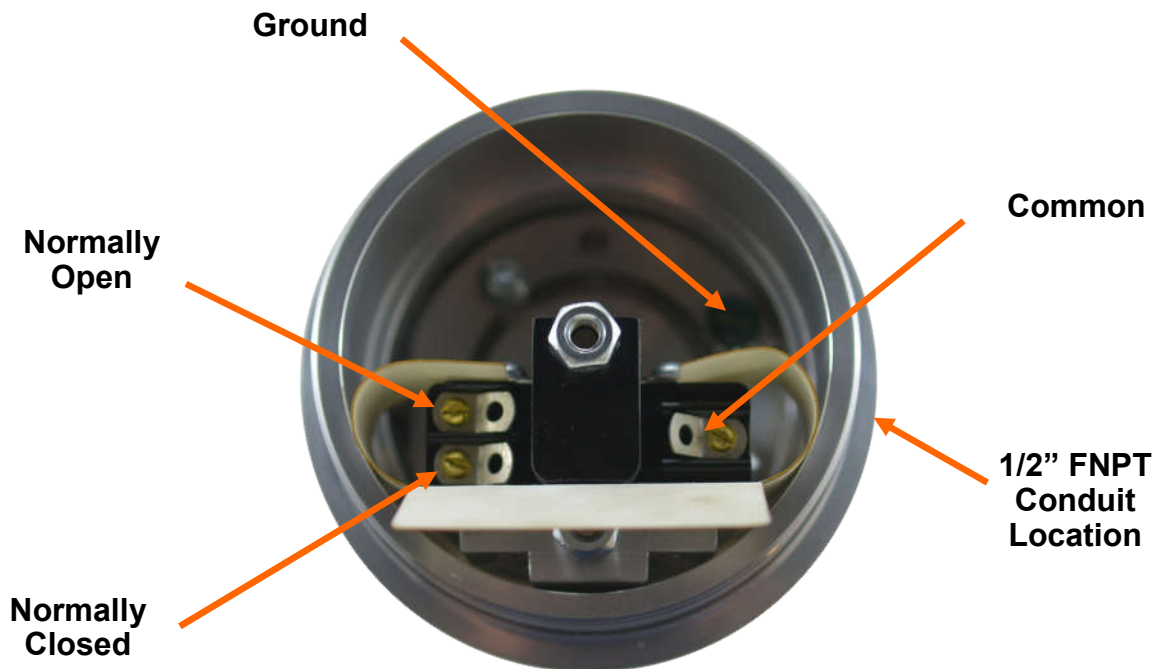
### 3 Wiring

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- 3.1 Use a 3/16" hex key to loosen the cap screw located on the Enclosure Cover.
- 3.2 Use a spanner wrench (1/4" pin, 2-4 3/4" span) to break loose the Enclosure Cover and complete removal by hand.
- 3.3 Connect wires to micro switch as required.
- 3.4 Thread electrical cable union into the Electrical Port, 5 plus turns.
- 3.5 Reinstall the Cover back onto the Electrical Enclosure and ensure it is properly seated prior to applying electricity.

#### Notes Regarding Wiring

Ensure wire insulation is not damaged.  
 Connect Wires Firmly to micro switch terminals (torque to 4 inch lbs.).  
 Wiring must meet or exceed circuitry requirements.



Single Pole Double Throw  
 15A—125, 250 or 480 VAC  
 1/4 HP—125 VAC, 1/2 HP— 250 VAC  
 1/2A—125 VDC, 1/4A—250 VDC

## 4 Setting & Verifying Set Point

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**Note: pressure gauge and pressure source required to verify settings**

Tool required 3/8" wrench or socket.

### 4.1 Set Point Adjustment

Turn adjustment nut **outward to increase** the pressure set point and **inward to decrease** the set point.

### 4.2 Differential (Deadband) Adjustment

Turn the Differential Adjustment nut **out to increase** the differential and **inward to decrease** the differential.

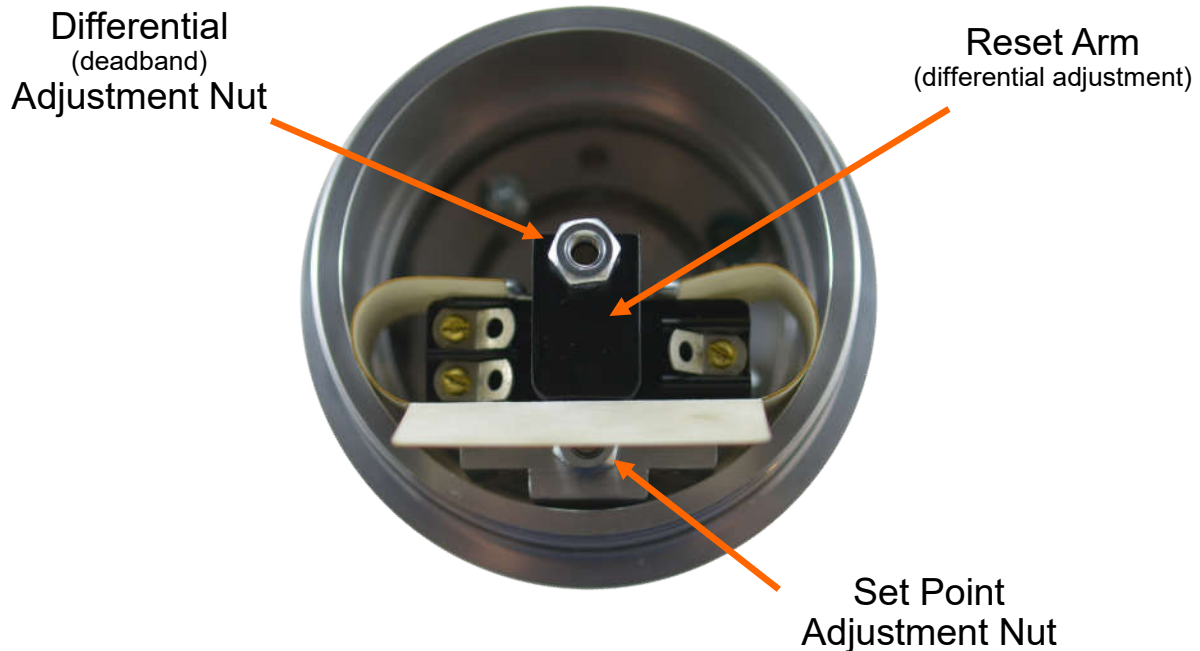
### 4.3 Verify Trip Pressure (After switches have been wired)

4.3.1 Relieve the pressure acting on the pressure switch, then bring it back up until the micro switch trips off and note the resulting gauge pressure.

4.3.2 Make fine adjustments (+/-) to the pressure setting by turning the Set Point Adjustment Nut **inward to decrease** or **outward to increase** the set point.

Please note that any adjustments made to change the set point will result in a change in differential which will require step 4.3 to be repeated.

4.3.3 Repeat step 4.3.1 to verify final pressure setting.



## 5 Specifications

### Model: RC-V-Single (Variable Differential)

- 5.1 **Pressure Range:**  
20 to 500 psi (138 kPa to 3447 kPa)  
Custom pressure ranges are available
- 5.2 **Max Safety Pressure**  
5000psi (34,473 kPa), all models.
- 5.3 **Temperature Range**  
Process temperature  $-45^{\circ}\text{C}$  to  $120^{\circ}\text{C}$   
Ambient Temperature  $-40^{\circ}\text{C}$  to  $40^{\circ}\text{C}$
- 5.4 **Certification Markings**  
Class I, Division 1, Groups B, C and D;  
Type 4 Ex d IIB+H2; IP54 Zone 1 AEx d  
IIB+H2; IP54  
Tamb  $-40^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ ; T4  
Use Supply Wires suitable for  $96^{\circ}\text{C}$
- 5.5 **Process Connection**  
2" MNPT Threaded Connection  
SA-193-B7  
Retaining Ring 316 SS  
CRN: 0F10666.2  
NACE MR0175-2003  
Diaphragm  
HNBR material  
NACE TM-0187
- 5.6 **Input Ratings**  
Refer to "Wiring Section" of this manual  
  
Single Pole Double Throw  
15A—125, 250 or 480 VAC  
1/4 HP—125 VAC, 1/2 HP— 250 VAC  
1/2A—125 VDC, 1/4A—250 VDC

#### IMPORTANT INFORMATION Process Temperature Testing

Pressure Switches with the **minimum Class 1 Div 1** name plate markings **do not meet** CSA C22.2 No E60079-0:2007 which requires a maximum process temperature to be applied for explosion proof testing.

All Robinson Pressure Switches in addition to meeting the minimum Class 1 Div 1 have also been temperature tested to CSA C22.2 No E60079-0:2007 and are legally allowed to have the additional markings of  
Ex d IIB+H2; IP54  
Zone 1 AEx d IIB+H2; IP54  
Tamb  $-40^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ ; T4 .



## 6 Recommend Service

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- 6.1 **3 month interval** - Verify operation by pressure testing, most importantly prior to cold weather season.
- 6.2 Ensure Annunciation Check Valve is not showing any signs of process leakage.
- 6.3 Any amount of leakage no mater how slight indicates a primary seal failure and the switch needs to be removed from service and rebuilt.

## 7 Features

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FEATURE	COMMENTS
One Micro Switch with a Variable Differential	When a fixed differential is too narrow for a specific application choose the RC-V-Single which allows the differential to be varied from 25% to 96% of the desired set point.
Dual Seal Certification	Meets ANSI/ISA-12.27.01-2003 dual seal certification
Annunciation Check Valve (a dual seal feature)	Visually indicates a primary seal failure. Unlike open holes found on competitive models the Robinson check valve prevents moisture and debris from contaminating internal components.
Certification Areas	Class 1 - Flammable Gas or Vapor, Division 1 - Intermittent Hazard
Gas Groups B, C, D	Ensures safety for Hydrogen, Ethylene and Propane in environment
IEC	Robinson Pressure Switch has been tested to international standards
Security/Lockout	To prevent tampering or unauthorized use of the Pressure Switch a Car Seal lockout devise can be installed on electrical enclosure cover.
Process Connection NACE (for sour service)	Process Connection Materials are chosen in accordance to NACE MR0175-2003 and MACE TM 0187
Piston Orientation	Eliminate the need for pulsation dampening
Field Service	Micro Switch replaceable, no need to disassemble Pressure Switch.
Diaphragm Servicing	Diaphragm can be replaced without disassembling Pressure Switch , Pin socket available for Diaphragm Nut, contact Robinson Pressure Controls.
Low Ownership Costs	Maintenance kits are available to renew pressure switch for service.

### Important information

Robinson Controls Inc. has established industry leadership in the design and manufacture of its products. When properly selected, this Robinson product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Robinson products should be aware that Robinson products might be used in numerous applications under a wide variety of industrial service conditions. Although Robinson can provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Robinson products. The purchaser/user should read and understand the Installation Instructions included with the product, and train its employees and contractors in the safe use of Robinson products in connection with the specific application.

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