

Installation & Maintenance Instructions

Rotary Valve Position Indicator

Aluminum Based Construction

ROTARY VALVE
POSITION INDICATOR

I&M No.V7488R7—Sec. 1
(Section 1 of 2)

Notice: These instructions are divided in to two sections. Be sure to read, understand and follow all instructions on I&M No. V7488R7—Section 1 and 2.

DESCRIPTION

These visual and electrical rotary valve position indicators are used for quarter turn rotary actuators operating between 0 and 90 degrees. The valve position indicator provides visual indication of the actuators **OPEN/CLOSED** position by means of a rotating cylinder. The cylinder will show all **BLACK** for the **OPEN** position and **YELLOW** for the **CLOSED** position. Additional color patterns are available for the rotating cylinder. Electrical indication is provided by independent SPDT or DPDT switches having a wide range of ratings and constructions to meet customer requirements. The indicator is factory set for counterclockwise actuator rotation indicating closed position. However, the position indicator can be readjusted to clockwise actuator rotation by disengaging and flipping over the visual indicator assembly. Refer to *Visual Indicator Adjustment (Setting)*.

The rotary valve position indicator enclosure is designed to meet Types 4 and 4X – Watertight, Type 7 (C & D) – Explosionproof Class I, Division 1, Groups B,C & D and Type 9 (E, F & G) – Dust–Ignitionproof Class II, Division 1, Groups E, F & G, Class I, Division 2, Groups A & B.

INSTALLATION

Check nameplate for correct catalog number and electrical rating of switches. Never exceed electrical rating of switches. Installation and maintenance to be performed by qualified personnel.

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power and depressurize valve or actuator before installation, inspection or service.

Temperature Limitations

Ambient temperature range: –20°F to 180°F (–29°C to 82°C)

Positioning

Position indicator may be mounted in any position.

Mounting

Mount valve position indicator to actuator or valve using the appropriate mounting bracket. Tighten all mounting screws securely. Check output shaft to be sure of proper alignment. After mounting, refer to *Visual Indicator Adjustment (Setting)* first. Then refer to *Switch Adjustment (Setting)* and *Wiring* section to complete installation.

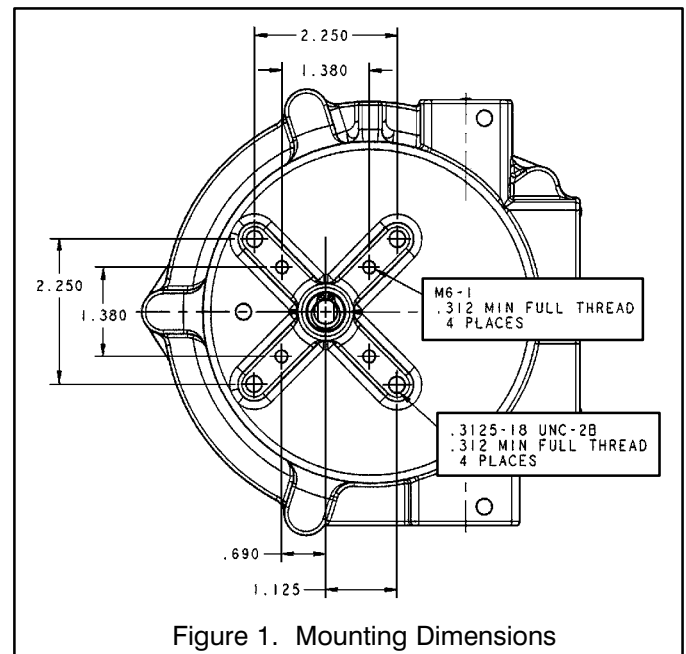


Figure 1. Mounting Dimensions

Wiring

Wiring must comply with local codes and National Electric Code. The position indicator enclosure is provided with two 3/4" NPT conduit connections. For the explosionproof enclosure, electrical fittings must be approved for use in hazardous locations. Wiring methods for Class I, Division 2 shall follow Class I, Division 1 locations.

For SPDT & DPDT Snap Switches

⚠ WARNING: Explosion and fire hazards. To prevent the possibility of death, serious injury or property damage, use only conduit runs 3/4 inch in size. A sealing fitting connected within 18 inches of enclosure is required for Class I, Division 1 installations.

To make electrical connections to terminal block, loosen bonnet screws and remove bonnet. Follow wiring diagrams inside housing cover. A grounding screw (green) and extra terminal block are provided. For electrical connections use solid or stranded copper wire from 22 AWG to 14 AWG. Strip wire 1/4" and tighten terminal screws securely. Before operation, replace bonnet and torque bonnet screws evenly in a crisscross manner to 180 ± 5 in–lbs [20 ± 0,6 Nm] to ensure proper gasket compression.

⚠ CAUTION: Electrical load must be within range stated on nameplate. Failure to stay within electrical range of the switches may result in damage to or premature failure of electrical switches.

Switch Rating	Wiring Diagram	Switch Rating	Wiring Diagram
VIPER Sensor (SPDT) 1 Amp at 24 VAC, VDC	Figure 2	VIPER Sensor, High Current (SPDT) 3 Amps at 120 VAC 2 Amps at 24 VDC	Figure 2
Snap Switch, Silver Contacts (SPDT) 15 Amps at 125, 250 VAC 0.5 Amp at 250 VDC	Figure 2	Snap Switch (DPDT) 10 Amps at 125, 250 VAC 10 Amp at 28 VDC	Figure 3

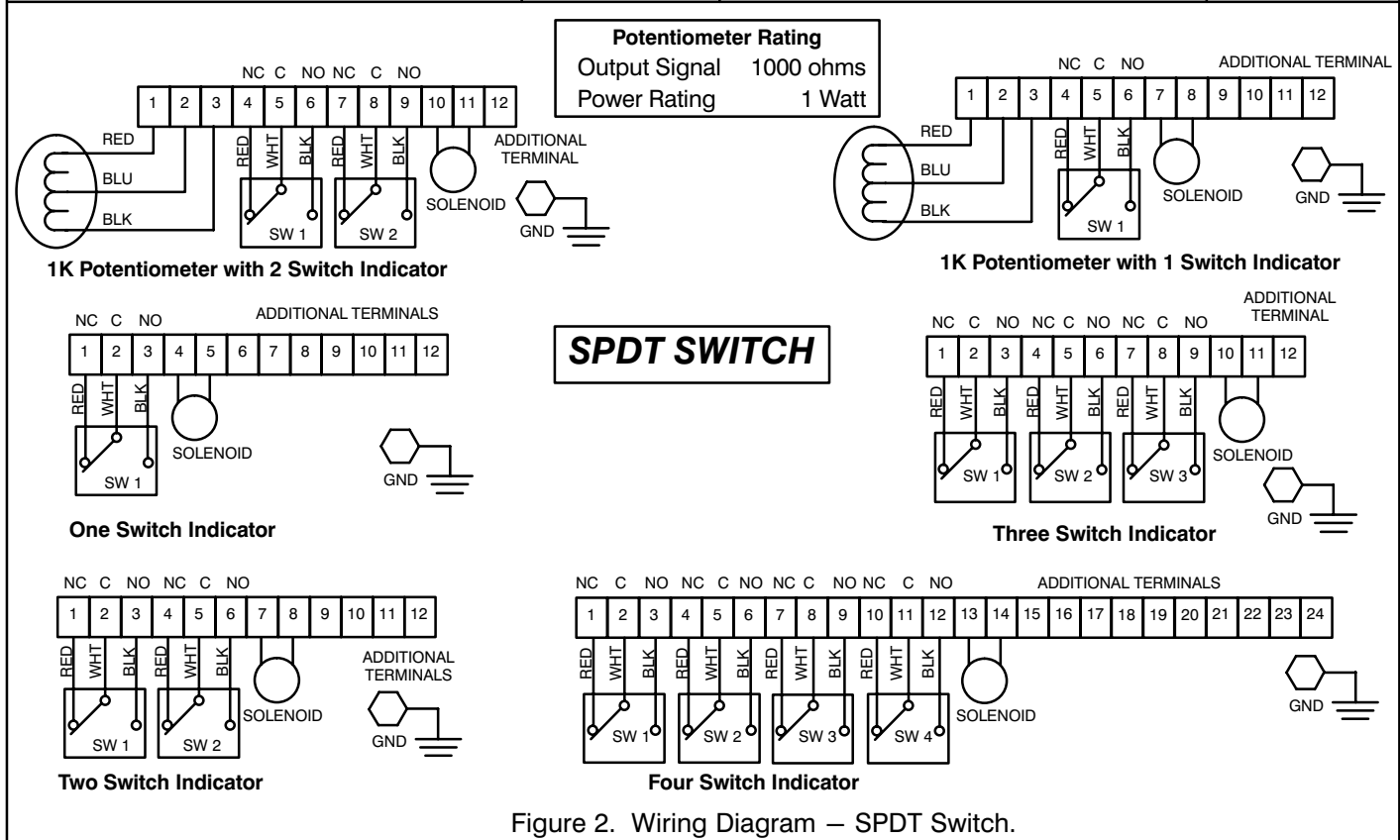


Figure 2. Wiring Diagram – SPDT Switch.

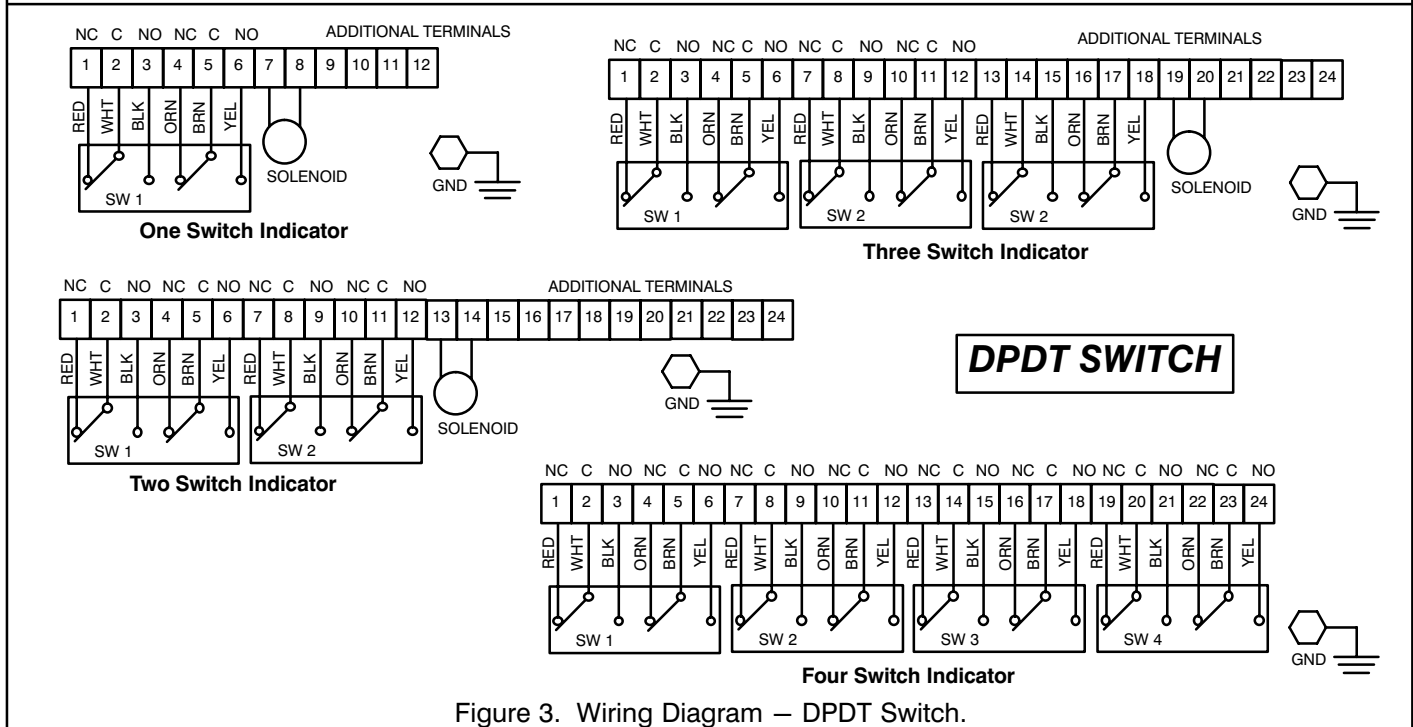


Figure 3. Wiring Diagram – DPDT Switch.

Visual Indicator Adjustment (Setting)

1. Mount rotary valve position indicator to the valve or actuator by using the appropriate mounting bracket. Be sure output shaft is properly aligned.
2. Operate valve or actuator to determine the true position of the valve and compare it to the position of the visual indicator. If the visual indicator display is correct, cycle the valve or actuator to verify correct *Visual Indication (Open or Closed)*. Then proceed to *Switch Adjustment (Setting)*.
3. If the true valve position and the position of the position indicator are not synchronized, loosen cover screws and remove clear cover with gasket and screws. Refer to Figure 4.

NOTE: Visual indicator is factory supplied for counterclockwise rotation. For clockwise rotation, flip over visual indicator assembly.

4. Remove the visual indicator assembly by lifting it upward off the output shaft and index pin.
5. Carefully adjust visual indicator assembly to the correct *Visual Indication (Open or Closed)* according to the position of the output shaft. Then reinstall visual indicator assembly on output shaft and index pin.
6. Install clear cover with gasket and cover screws. Torque cover screws in a crisscross manner to 22 ± 3 in-lbs [$2,5 \pm 0,3$ Nm].
7. Cycle valve or actuator to verify correct visual indication.
8. If visual indication is correct, refer to *Switch Adjustment (Setting)* section next.

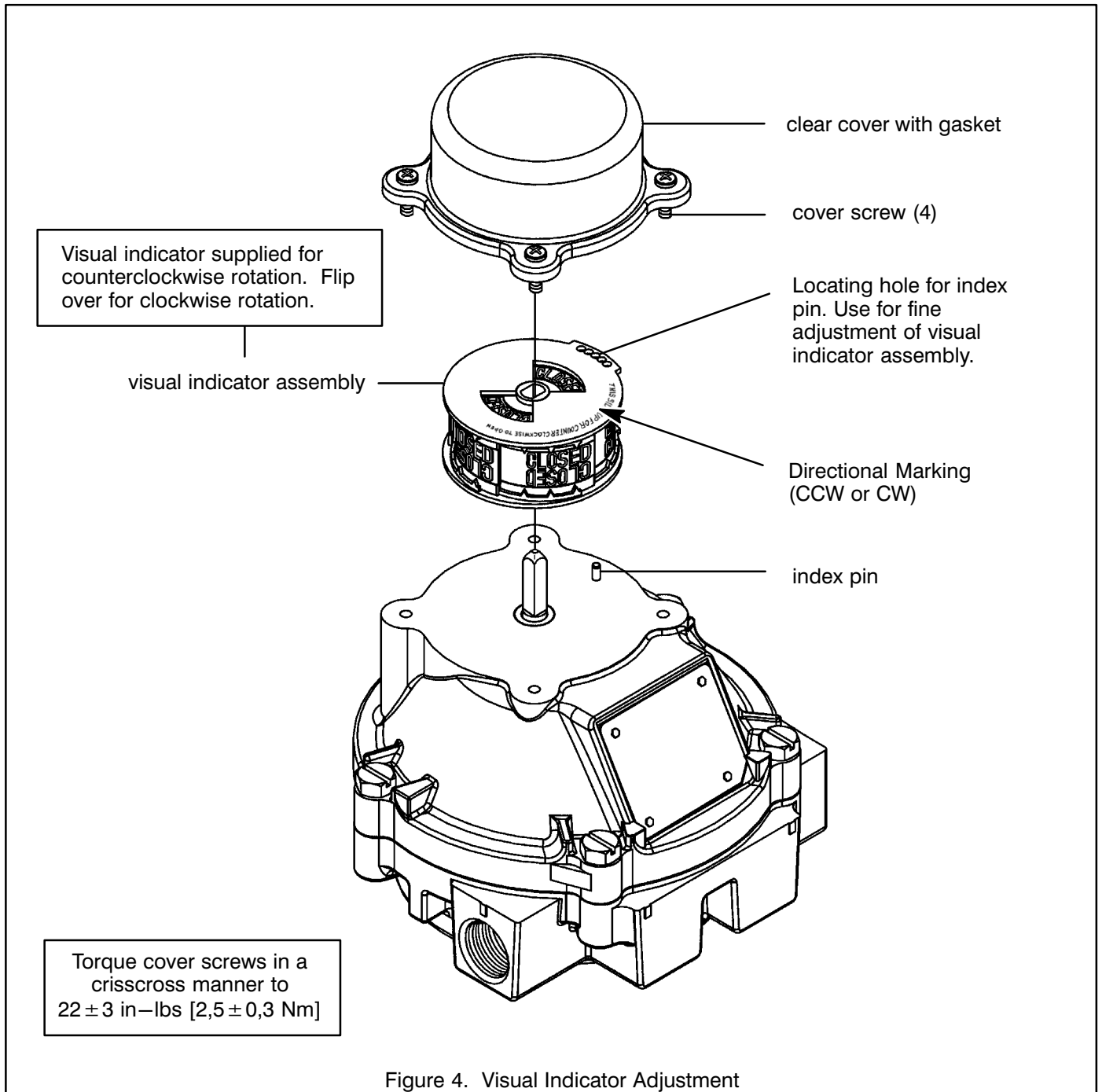


Figure 4. Visual Indicator Adjustment

Switch Adjustment (Setting)

If electrical connection to the line of final application is not desirable, a battery powered test lamp or ohm meter may be used for switch adjustment (settings).

1. Loosen bonnet screw and remove valve position indicator bonnet with visual indicator attached.
2. Move the valve or actuator assembly to a position where one or more of the switches will be required to operate noting the direction of the shaft rotation.
3. Determine which switch is to be set and lift or depress the corresponding cam as required (refer to Figure 5). Rotate the cam in the opposite direction of shaft rotation until the cam activates the switch and closes the normally open contact for SPDT or DPDT switches. Check that the normally open contact is now close by using an ohm meter or battery power test light.
4. Repeat steps 2 and 3 until all switches are set.
5. Replace valve position indicator bonnet with visual indicator. Torque bonnet screws (5) evenly in a crisscross manner to 180 ± 5 in-lbs [$20 \pm 0,6$ Nm].

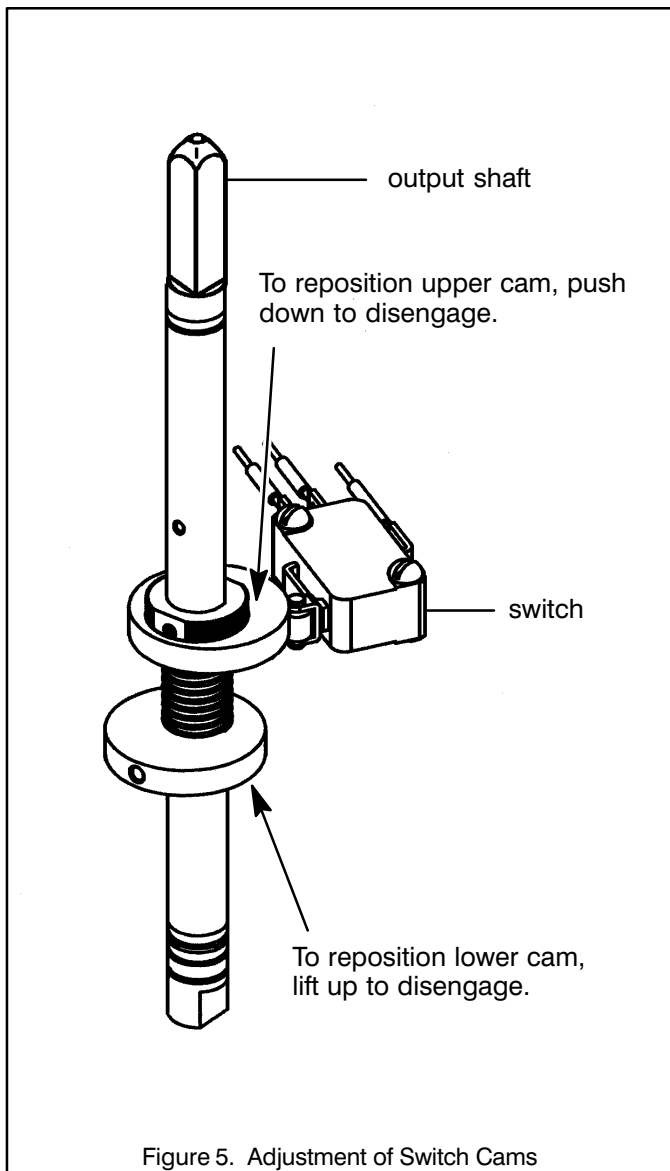


Figure 5. Adjustment of Switch Cams

MAINTENANCE

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power and depressurize valve or actuator before inspection or service.

Preventive Maintenance

- While in service, cycle rotary valve position indicator periodically to ensure proper visual and electrical indications. Be sure indicator can be test operated (cycled) without affecting other equipment.
- Periodic inspection of the rotary valve position indicator, external surfaces only, should be carried out. Indicator should be kept clean and free from paint and foreign matter.

Causes of Improper Operation

- **Incorrect Electrical Connections:** Check supply lead wires to terminal connections. Be sure they are properly connected. Switches are marked *NO* for normally open, *NC* for normally closed, and *C* for common which correspond to numbered terminals. See *Wiring* section.
- **Faulty Control Circuit:** Check the electrical power supply to switch. Check for loose or blown fuses, open-circuited or grounded wires, loose connections at switch. See nameplate for electrical rating and range.
- **Incorrect Visual Indication:** Check adjustment of visual position indicator by following steps in section on *Visual Indicator Adjustment (Setting)*.
- **Incorrect Electrical Indication:** Check adjustment of switches to cams on shaft. See section on *Switch Adjustment (Setting)*.

FOR INFORMATION OR INDICATOR REPLACEMENT

Consult Factory or Authorized Factory

Representative or Distributor