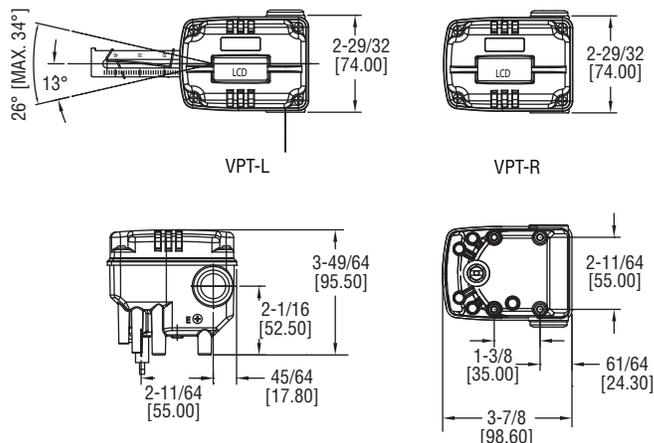




Series VPT Positioner Transmitter

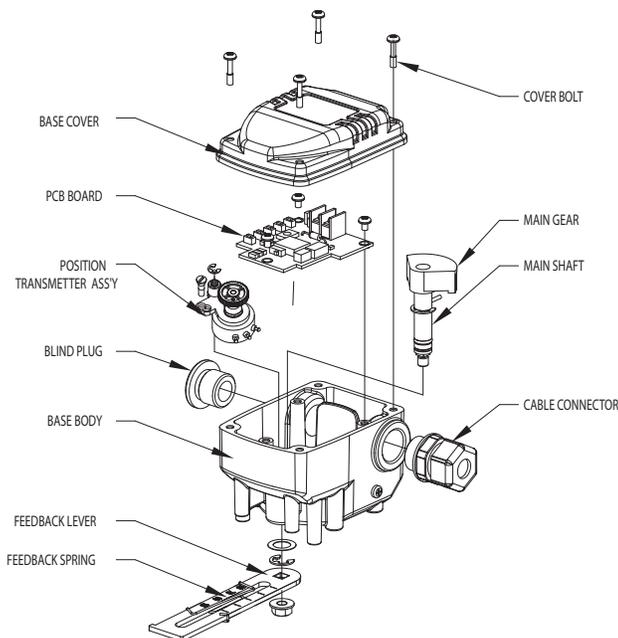
Specifications - Installation and Operating Instructions



The Series VPT Valve Position Transmitter is an ideal way to track position of valve. With both linear and rotary motion monitoring available, this Valve Position Transmitter can suit a wide variety of applications. Using a resistance gear in conjunction with a potentiometer, the change in resistance outputs a proportional current signal which is sent to the controller. The standard LCD display allows operator to monitor the precise position of valve.

Series VPT Parts and Assembly

Below is the assembly for the VPT-LA1 and VPT-RA1, with the only difference being the feedback lever.



SPECIFICATIONS

Input Signal: 0 to 30°(LA1); 0 to 90°(RA1).

Output Signal: 4 to 20 mA DC.

Supply Voltage: 9 to 28 VDC.

Enclosure: Aluminum.

Electrical Connection: M20 cable gland.

Linearity: ±1% FS.

Hysteresis: ±0.2% FS.

Sensitivity: ±0.2% FS.

Enclosure Rating: IP67.

Operating Temperature: -22 to 185°F (- 30 to 85°C).

Weight: 1.3 lb (0.6 kg).

Installation

NOTICE

Before installation, be sure to be aware of the following:

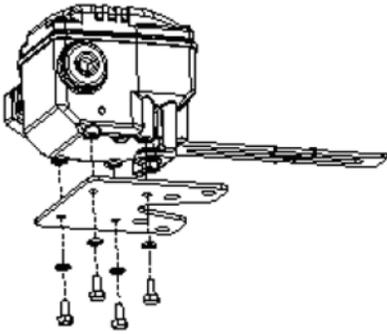
- Always wear safety equipment and follow safety procedures.
- As a safety precaution during installation, it is advised to shut down valve and actuator temporarily.
- In order to prevent total shut down of system, please utilize by-pass valve or other similar device and disassemble the valve on which the position transmitter will be installed.
- In explosive area, please make sure no explosive gases are present at time of installation.

Installing VPT-LA1 with Bracket

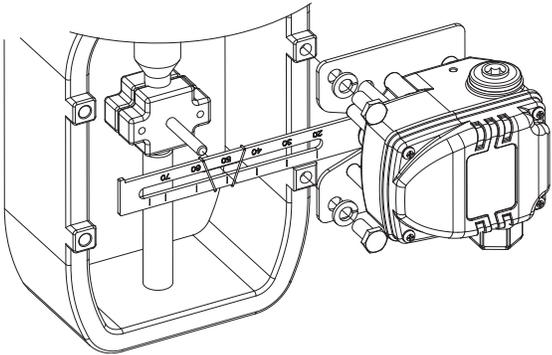
1. It is necessary to make a proper bracket to attach on the actuator yoke. Please refer to actuator and VPT dimensions to make proper bracket size.

The most important considerations in the design of the bracket are as follows:

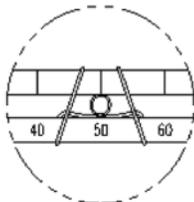
- VPT-LA1 feedback lever should be at 50% of valve stroke.
- Feedback level connection bar of actuator clamp should be connected in the position so that the valve stroke and the numbers carved on feedback lever are fitted. If the bracket meets the above conditions, the VPT-LA1 can be installed very easily.



2. Assemble VPT-LA1 and bracket with bolts. Use standard bolts in bolt holes on the backside of the unit.
3. After assembling VPT-LA1 and bracket with bolts, attach it using bolt holes of actuator yoke. Do not tighten completely. There must be some space.
4. Connect VPT-LA1 feedback lever to the actuator clamp. The slot length on the VPT-LA1 feedback lever is .26" (6.5 mm), so the diameter of the connection bar should be less than .24" (6.3 mm).



5. Connect the air filter regulator with the actuator temporarily. Set the supply pressure of the air filter so that the actuator clamp is at 50% of valve stroke.



6. Insert the connection bar attached to the actuator clamp into the slot of the VPT-LA1's feedback lever. In order to reduce hysteresis, it should appear as shown in step 5.

7. Check that the VPT-LA1's feedback lever is level at 50% of valve stroke. If not, move bracket or feedback link until it is level.

NOTICE

After installing the VPT-LA1, operate the valve stroke from 0 to 100% by using the air filter regulator on the actuator. At both 0 and 100%, check to see if the feedback lever is touching the lever stopper (located on the backside of VPT-LA1). If touching, the VPT-LA1 should be installed further away from the center of the actuator yoke.

8. Once the VPT-RA1 is installed according to the above procedures, tighten the bolts and nuts of the bracket and feedback lever connection bar completely.

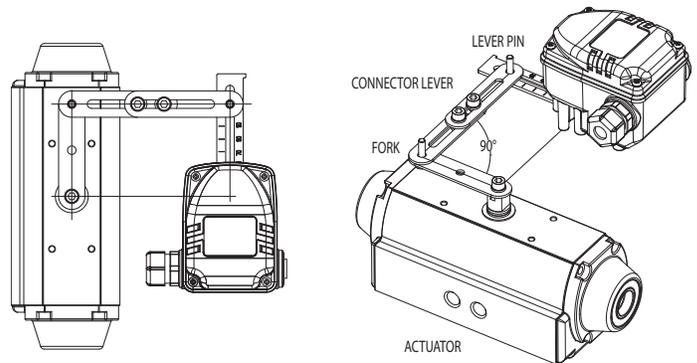
Installing VPT-RA1 with Bracket

The VPT-RA1 is designed for rotary motion valves such as Dwyer Instruments' ball and butterfly valves using rack and pinion, scotch yoke or complex type actuators whose stem is rotated 90°.

1. Before installing the VPT-RA1, please set the actuator to the default position. For single action type valves, the actuator will automatically default itself when the air pressure shuts down. For double action type valves, the default position must be set manually according to the actuator's specifications.

2. Please refer to the actuator and VPT-RA1's dimensions in order to make the proper bracket. See below diagram for installation with bracket.

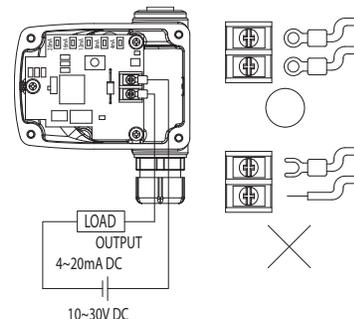
3. After the appropriate bracket is made, install the VPT-RA1 on the actuator and fasten all bolts and nuts completely.



Power Connection

CAUTION

1. Before connecting terminal, power must be shut off.
2. Use ring type terminal against oscillation, impact, etc.
3. In order to protect Position Transmitter, the ground terminals should be grounded.
4. Use twisted cable with conductor sectional area at least 0.0019 in² (1.25 mm²), and suitable for 600V as on conductor table of NEC Article 310. Outer diameter of cable should be .25 to .39" (6.35 to 10 mm). Use shielded wire against electromagnetic waves and noise.
5. Do not install the cable near equipment such as a high-capacity transformer or motor.



Adjustment of Potentiometer

The potentiometer is designed to output a 12 mA signal when the feedback lever is at 50%. In case of dislocation of the potentiometer, please note the following before re-setting the potentiometer:

- Power must be turned off before adjusting the potentiometer.
 - Be sure there is no remaining current on the PCB.
 - Excessive force is unnecessary when disconnecting the potentiometer from the PCB. Excessive force may cause damage to the transmitter.
1. Locate the potentiometer under the PCB and disconnect. Do not use excessive force.
 2. Unfasten the lock screw which locks the potentiometer gear and remove potentiometer body from the lag-gear.
 3. Fix the feedback lever at 50% and measure the resistance.
 4. Rotate the pinion gear until resistance value reaches approximately 5K ohms.
 5. After setting the resistance value, rotate the stopper to the normal position and fasten the lock screw.
 6. Reconnect the potentiometer to the PCB and reinstall the PCM onto the Position Transmitter's body.

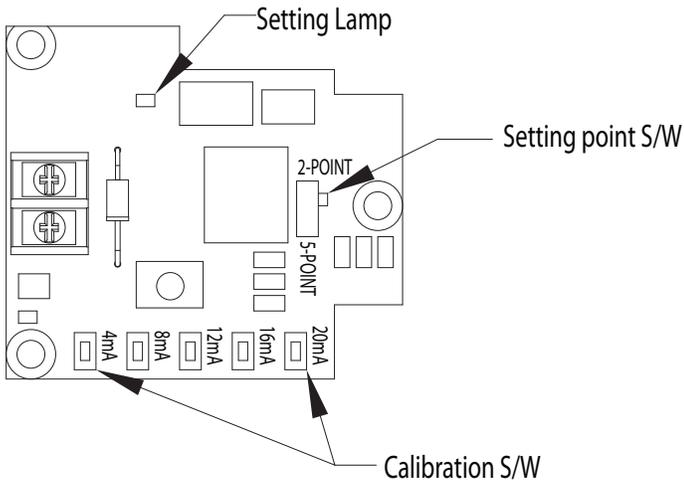
Adjustment of Setting Points

The Series VPT Position Transmitter can be calibrated by either of the following options.

1. 2 Point Setting: By setting the minimum and maximum points 0 and 100%, the values between the outputs are calculated and calibrated automatically.
2. 5 Point Setting: By setting 5 points 0, 25, 50, 75, and 100%, the outputs can be set accordingly. In general, a 5 point setting is much more accurate.

Adjustment of Calibration

1. Input a 4 mA signal to the positioner in order to move the valve stroke to its default position.
2. After the valve stroke reaches its default position, press the "4 mA" button for approximately 3 to 4 seconds. The indicator light will light up, indicating that the 4 mA position has been calibrated.
3. Please repeat the above steps for 8, 12, 16, and 20 mA settings for the 5 point setting. For the 2 point setting, repeat the above steps only for 20 mA.



Troubleshooting

1. VPT has no output signal

- A. Check the input signal to the VPT.
- B. Check power connection and polarity of terminals.

2. Input and output signals for the positioner differ greatly.

- A. Check the input signal value and voltage. Insufficient voltage can affect the input signal value.
- B. Check the installation of the positioner. If the positioner is not properly installed, reinstall properly using the positioner's manual.
- C. Reset positioner's zero and span values. Inaccurate zero and span settings can lower accuracy and linearity.
- D. Check the installation of the VPT. If it is installed improperly, refer back to installation section of manual.

3. Sudden change in VPT's output signal value.

- A. Make sure the VPT's lever is placed at 50%. If not, the VPT needs to be re-installed and adjusted to place lever at 50%.
- B. Adjust the potentiometer. The potentiometer's resistance should be at approximately 10K ohms at the 50% point.

MAINTENANCE/REPAIR

Upon final installation of the Series VPT, no routine maintenance is required. The Series VPT is not field serviceable and should be returned if repair is needed. Field repair should not be attempted and may void warranty.

WARRANTY/RETURN

Refer to "Terms and Conditions of Sales" in our catalog and on our website. Contact customer service to receive a Return Goods Authorization number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.

