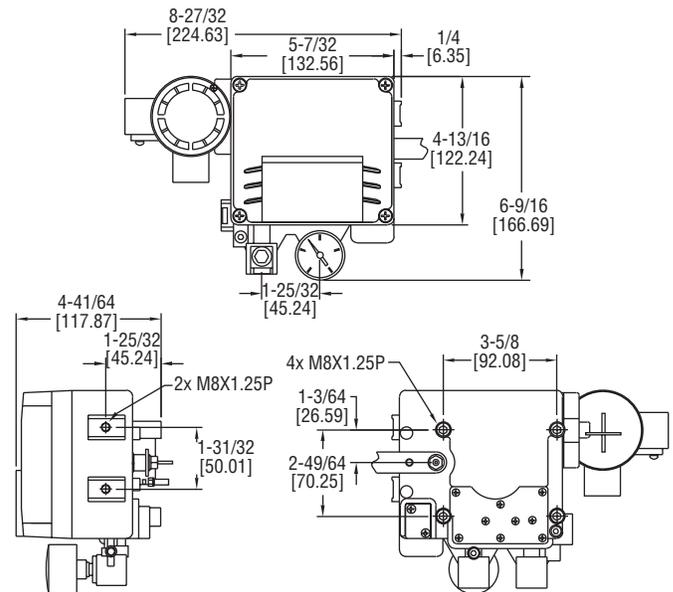




Series 165NL PRECISOR® II Pneumatic Linear Positioner

Specifications - Installation and Operating Instructions



The **Series 165NL PRECISOR® Pneumatic Positioner**, is used for pneumatic valve actuators by means of pneumatic controller or control systems with an output signal of 3 to 15 psi or split ranges.

FEATURES

- Perform 1/2 Split Control without any other substitutes.
- Easy to adjust zero and span.
- Easy to convert from Reverse Action to Direct Action or vice versa.
- Easy to protect from hunting effect by using output orifice in small size actuator.
- Easy Feedback Connection.
- Fast and accurate response.
- Low air consumption.
- Easy installation.
- Designed as block build structure for maintenance and repair.
- Proved the reliability through over 500,000 times of Repeat Test and Vibration Test.
- Superior anti-corrosion by special surface treating.

OPERATING PRINCIPLES

Increase the input signal to change lift position of valve. Force exerted by (1) Torque Motor reduces Nozzle Back Pressure with increase in gap between (2) Flapper and (3) Nozzle. Then (5) Spool moves upward and the seat opens simultaneously. Air pressure of OUT1 pipe is discharged to (10) Actuator. As pressure in the actuator chamber goes up, (12) Actuator Stem start to move. The movement of (12) Actuator Stem exerted force to the (a) Feedback Spring through Feedback Shaft connections. Then (10) Actuator will stop at the point of force balance exerted by the input current signal and the feedback spring.

SPECIFICATIONS

Input Signal: 3 to 15 psi (0.2 to 1 bar).

Material: Aluminum diecasting.

Air Supply: 20 to 100 psig (1.4 to 6.9 bar).

Air Supply Connection: 1/4" NPT.

Gage Connection: 1/8" NPT.

Linearity: ±0.2% of F.S.

Hysteresis: 1% of F.S.

Sensitivity: ±0.2% of F.S.

Repeatability: ±0.5% of F.S.

Air Consumption: 0.10 scfm (3 LPM) at 20 psig (1.4 bar) supply.

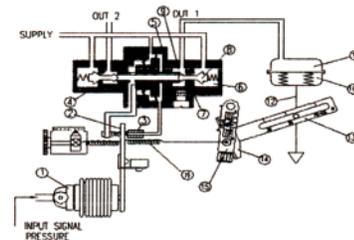
Flow Capacity: 28 scfm (80 LPM) at 20 psig (1.4 bar) supply.

Stroke: 0.5 to 6" (10 to 150 mm).

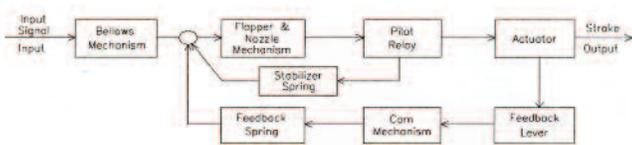
Enclosure Rating: IP66.

Operating Temperature: -4 to 158°F (-20 to 70°C).

Weight: 3.1 lb (1.7 kg).

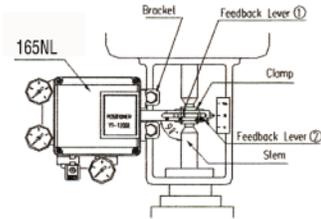


BLOCK DIAGRAM

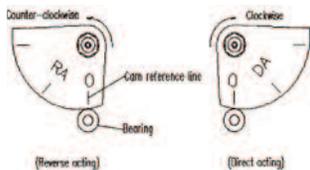


INSTALLATION

Attach in the position that the valve stem and lever form a right angle when the input signal is 50%. Attach to the position that the runout angle is within the range of 10 to 30°.

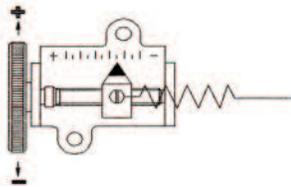


Cam Attaching Procedure - Use the DA face of cam to turn the actuator main shaft clockwise (viewed from the positioner front cover side) at the time of input use the RA face to turn it counterclockwise (reverse action). Correctly attach the cam to the flange part of feedback shaft. Attach the cam in the procedure of loosening the hexagonal nut with flange first, setting the using actuator to the starting position and then setting the cam reference line and the bearing contact point of span adjusting arm unit to the matching position. Do not apply the supply pressure when attaching the cam as otherwise it is very dangerous. When the positioner is shipped out, the cam is tentatively tightened to the shaft. Be sure to firmly lock the cam to the lock nut [tightening torque 2.0 to 2.5 Nm (20 to 25 kgfcm)].

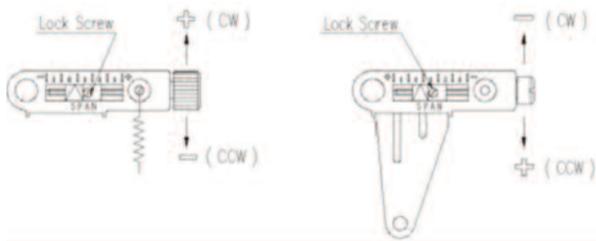


ADJUSTMENT PROCEDURE

Zero Adjustment - Set input signal to the Stroke starting signal (3 psi) then turn the zero adjuster clockwise or counterclockwise. In case of spring actuator, check if it is set to standard pressure in zero point. If not, repeat zero adjustment.

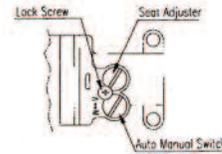


Span Adjustment - Turn and adjust span adjustment screw so that indicator reaches at final stroke point by final input signal. Check zero point and repeat zero span adjustment. 1/2 split range can be used by zero and span adjustment. After setting, tighten up lock screw of span adjustment.



Auto/Manual Switch - This is a switch for changing auto and manual. Shipped products are set for auto. To use manual operation, turn A/M switch counterclockwise. In manual operation, the pressure of a Series AFR Air Filter Regulator connects to actuator. After using, return switch to "A".

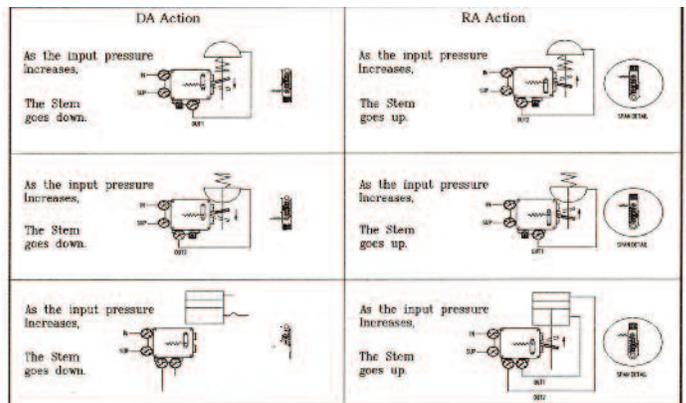
Seat Adjuster - No need to adjust in the field because seat adjuster is to be adjusted before shipment for balanced pressure point of output pressure. Seat adjuster is always used for double-acting. If need to change balanced pressure point of output pressure, use seat adjuster. If the sensitivity is poor because of the actuator type of load condition, turn the seat adjuster screw clockwise. (The amount of turning varies by actuators. Do not loosen the stopper screw at this time since it is set to avoid the screw coming off.)



AIR PIPING CONDITIONS

Fully purge the pipe to remove foreign matter. Use a clean air supply fully removed of humidity and dust. Use a Series AFR filter regulator to keep supply air pressure constant.

AIR PIPING DIAGRAM



MAINTENANCE

If the supply air is fouled, the positioner may not operate normally. Periodically check the compressed air cleaning system and make sure that clean air is always supplied. When disassembling the pilot valve, coat grease to the O-ring of the sliding section. When the fixed orifice is clogged with the carbon particles or others, remove the pilot valve auto/manual changeover screw (built-in fixed aperture) and clean it by inserting a 0.2 mm wire into the aperture. If it must be replaced with a new one, stop the supply pressure and remove the stopper screw of the pilot valve. Check the positioner once a year. Treatment at an early stage is especially important if the positioner is used in severe environments, like coastal areas. In the unlikely event the 165NL Series Positioner should fail, the unit can be returned to the factory for warranty repair if the warranty period has not expired. Contact our customer service department for a return goods authorization (RGA) number and to setup the return.

WARNING: Do not apply large vibration or impact to the positioner. The positioner must be handled very carefully during transportation and operation. If the positioner is used at temperatures outside of the specification, the sealing materials deteriorate quickly and also the positioner may not operate normally. Use clean supply air fully removed of humidity and dust. Do not remove the terminal cover at a dangerous position during power conduction. Be sure that the terminal cover and body cover are installed during the operation. If you leave the positioner at the operation site for a long time without using it, put the cover on it so that rain water does not enter the positioner. If the atmosphere is of high temperature or high humidity, take measures to avoid condensation inside. The condensation control measures must be taken thoroughly for export shipment.