radius™

Pneumatic positioner RX- 500 Series

INSTRUCTION MANUAL

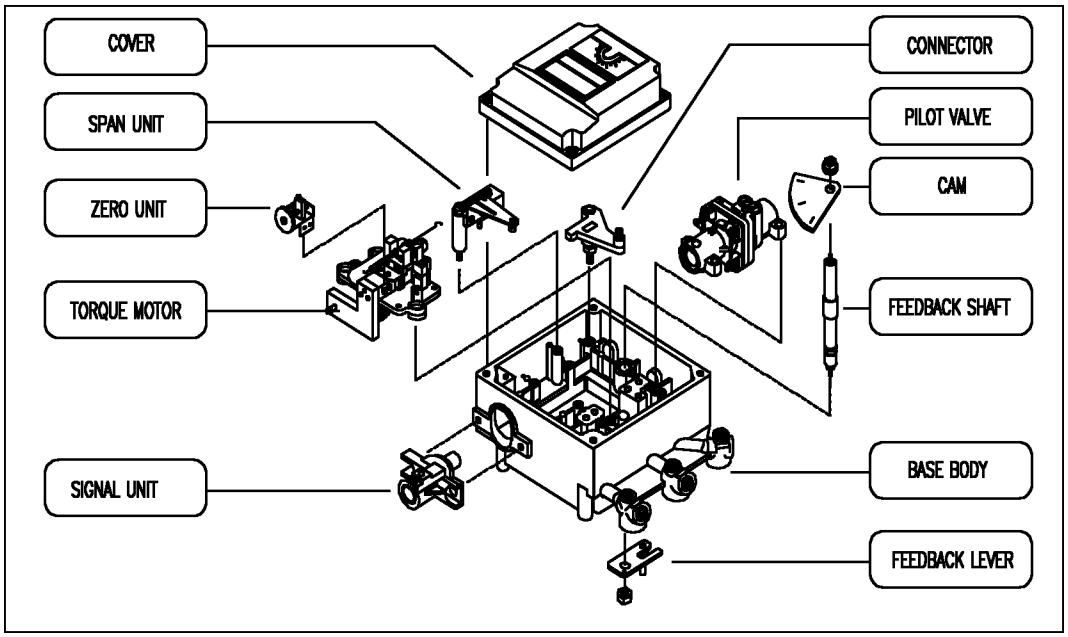
1. GENERAL

The pneumatic positioner RX-500 is used for rotary operation of pneumatic rotary valve actuators by means of pneumatic control systems with an output signal of 3-15psi or split ranges.

2. FEATURES

- There is no resonance in the range of 5(200Hz.
- Performing 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.
- Fast and accurate response
- Low air consumption
- Easy to protect from hunting effect by using output orifice in small size of actuator.
- Designed as Multi-port type of for air tubing
- Easy to install air tubing connection in any direction
- Designed as modular structure for maintenance and repair

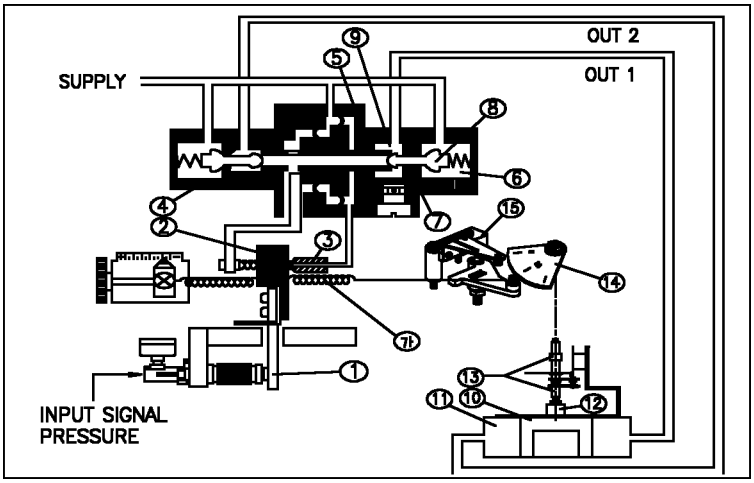
MAIN PARTS LIST



3. Specifications

	RX-500	
	Single Acting	Double Acting
Input Signal	3-15 psi	
Supply Pressure	20-110 psi	
Stroke	0 ~ 90°	
Air Connection	PT(NPT) _	
Gauge Connection	PT(NPT)_	
Conduit	PF_	
Degree of Protection	IP 66 Dust and Weather tight.	
Ambient Temperature	-4°~ 158°f	
Linearity	±2% F.S.	
Hysteresis	1% F.S.	
Sensitivity	±0.5% F.S.	
Repeatability	±0.5% F.S.	
Air Consumption	.17scfm	
Flow Capacity	2.8scfm	
Material	Aluminum Die casting	
Weight	Approx. 4 lbs.	

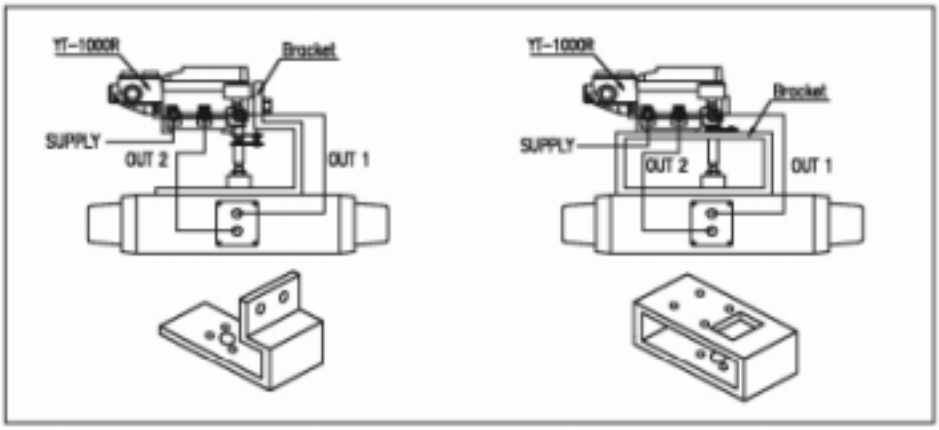
4. OPERATING PRINCIPLES



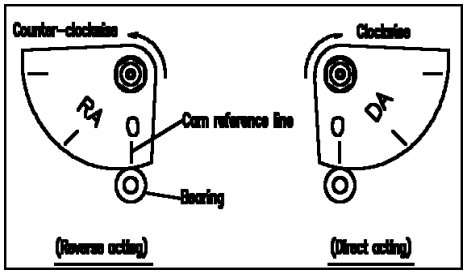
Increase the input signal to change in lift position of valve.
Force exerted by Torque Motor reduces Nozzle Back Pressure with increase in gap between Flapper and Nozzle. Then Spool moves upward and the Seat opens simultaneously. Air pressure of OUT1 pipe is discharged to Actuator. As pressure in the actuator chamber goes up, Actuator stem start to move.

The movement of Actuator stem exerted force to the Feedback Spring through Feedback Shaft connections. Then Actuator will stop at the point of force balance exerted by the input current signal and the feedback spring.

5. INSTALLATION

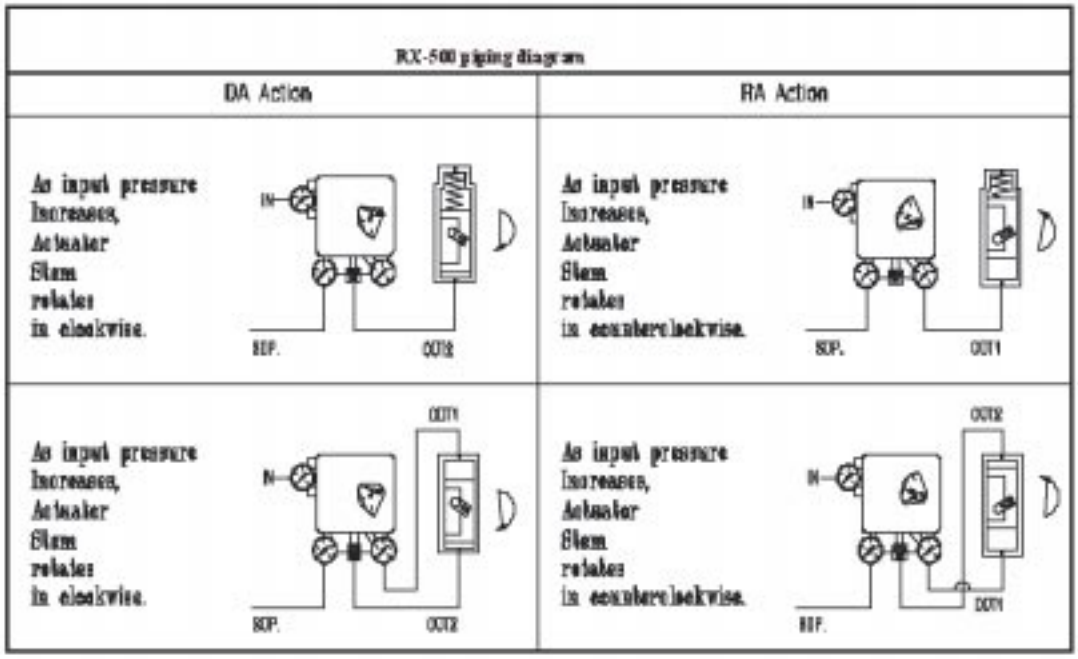


1 Example of attaching to actuator
Radius provides a stamped stainless steel bracket (above right) for mounting to the bottom of the positioner. However the RX-1000 is drilled and tapped on the side for side mounting of a custom fabricated bracket (above left).
5-2 Connection with feedback shaft.
All Radius brand positioners come with the standard NAMUR type spaded shaft for direct interface to all Radius actuators and most all other brands of rack and pinion actuators manufactured with the NAMUR type slotted top shaft. Because all Radius positioners are supplied with a stainless steel mounting bracket, attachment to these types of actuators is very simple.



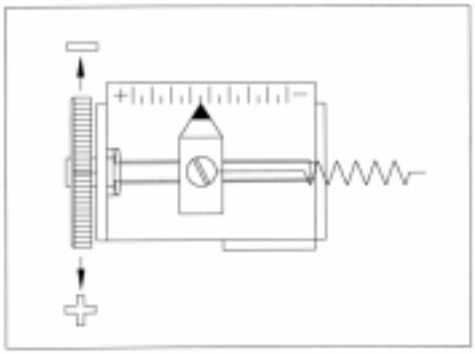
2) Cam attaching procedure
(1) Use the DA face of cam to turn the actuator main shaft clockwise (viewed from the positioner front cover side) at the time of input feedback shaft. Use the RA face to turn it counterclockwise (reverse action). Correctly attach the cam to the flange part of feedback shaft.
(2) 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.
(3) Do not apply the supply pressure when attaching the cam as otherwise it is very dangerous.
(4) When the positioner is shipped out of our plant, the cam is tentatively tighened to the shaft. Be sure to firmly lock the cam the lock nut [tightening torque 2.0~2.5Nm(20~25kgfcm)].

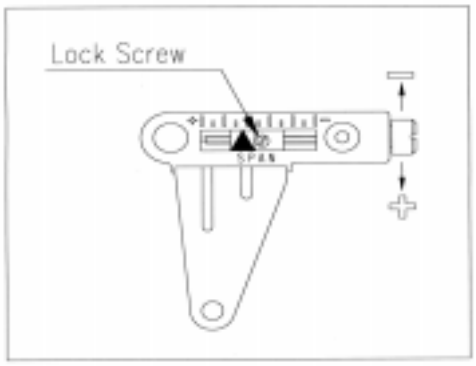
6. AIR PIPING DIAGRAM

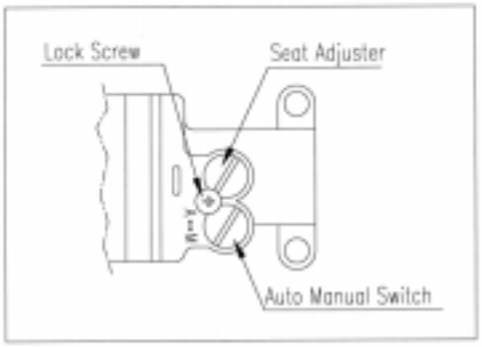


8. AIR PIPING CONDITIONS

• Fully purge the pipe to remove foreign matter.
• Use a clean supply air fully removed humidity ad dust.
• Use YT-200 filter regulator to keep supply air pressure constantly.
• When using the double acting type as the single acting type, blind either OUT1 or **OUT2 and also remove the pressure gauge to close its connection**







7. ADJUSTMENT PROCEDURE

1) Zero Adjustment

• Set an signal to the Stroke starting signal(0.2kgt/_) then turn the Zero Adjuster clockwise or counter-clockwise.

• In case of Spring Actuator, check if it is set to standard pressure in Zero Point. If not, repeat Zero adjustment.

2) 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.

3) Auto/Manual Switch

• This is a Switch for changing Auto and Manual.

• Shipped products is set for Auto. To use Manual operation, turns A/M Switch counterclockwise.

• In manual operation, the pressure of YT-200 air filter regulator connects to Actuator. After using, return switch to “A”.

• Not available for Single Acting-OUT2 and Double Acting.

4) Seat Adjuster

• No need to adjust at 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

9. MAINTENANCE AND CHECK

• 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 you disassemble the pilot valve, coat grease to the O-ring of the sliding section.

• When the fixed orifice is clogged with carbon particles or others, remove the pilot valve Auto/Manual changeover screw(built-in fixed aperture) and clean it by inserting a Ø0.2 wire into the aperture. If it must be replaced with new one, stop the supply pressure and remove the stopper screw of the pilot valve.

• Check the positioner once a year. When you find excessively worn diaphragm, O-ring and other packing or any unit, it should be changed with new one. Treatment at an early stage is especially import if the positioner is used in a place of **severe environment like coastal area.**

10. WARNING

• Do not apply large vibration or impact to the positioner. It causes trouble. The positioner must be handled very carefully during transportation and operation.

• If the positioner is used under temperature outside of the specification, the sealing materials deteriorate quickly and also the positioner may not operate normally.

• Use clean supply air fully removed humidity and dust.

• If you leave the positioner at the operation site for a long time without using it, put the cover on it so that the 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.