

AFP® Pneumatic Rotary Actuator

User's Instructions [REV. 0.2]

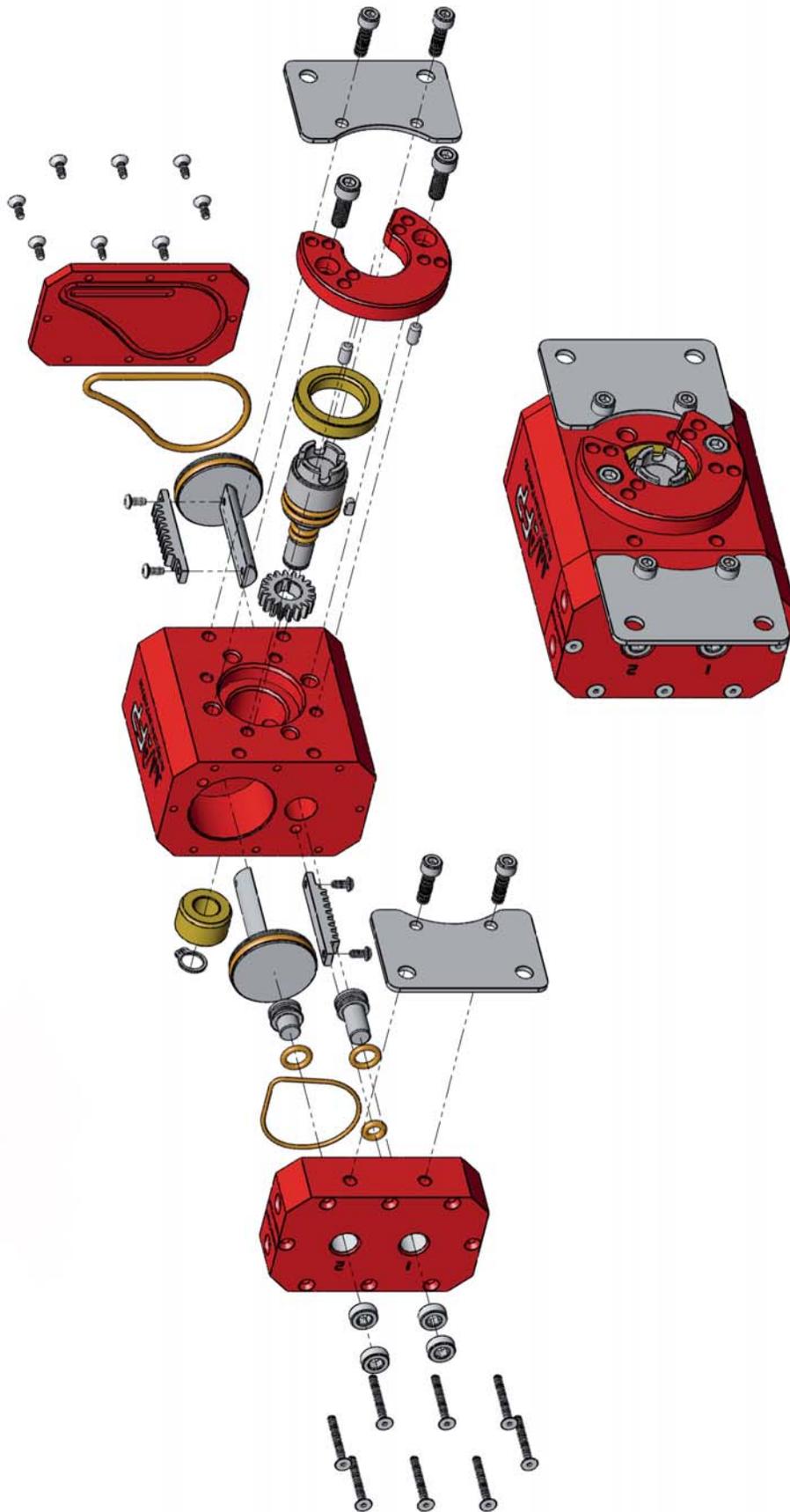
This actuator has been tested up to 5 million cycles. There are two adjustable stoppers that ensure that the valve is never overloaded. This totally eliminates any side loading on the rotor sealing material. Furthermore, two miniature proximity sensors can be fitted into the actuator. This is sometimes required to indicate the valve's position.

Different size standoffs and mounting brackets are also available. This is useful when the valve must be installed inside an oven. The valve mounting collar is designed to be used with the anti-rotation dowel pins.



Please read and understand the instructions related to this product. These are User's Instructions and the AN-05 application notes.

Failure to do so may result in human injury, death and equipment damage or malfunction.



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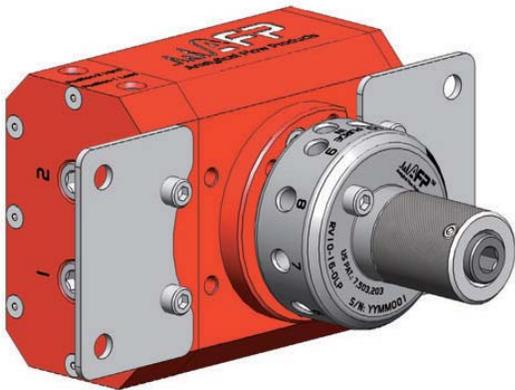
ACTUATION MECHANISM

Our pneumatic actuator family makes sure that there is only rotational force transferred to the valve, no radial nor side load effects. Furthermore, the stroke limiting mechanism makes sure that the valve never becomes overloaded.

Most other actuators don't do that and valve stoppers and/or driver pins will become engraved by the overloading action of these commercial actuators. So, the use of our actuator is strongly recommended in order to get the specified performance.

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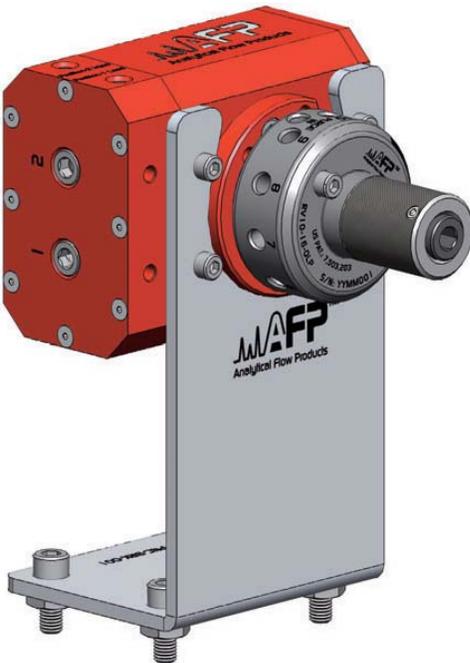
MOUNTING BRACKET



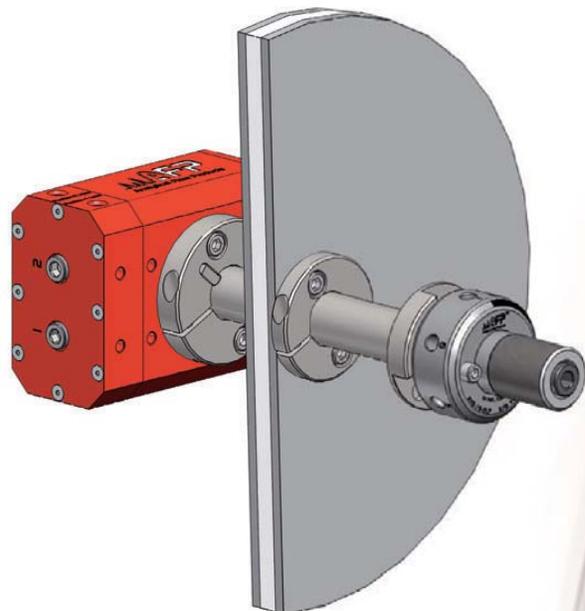
BRK-03
Flange Type Mounting Bracket



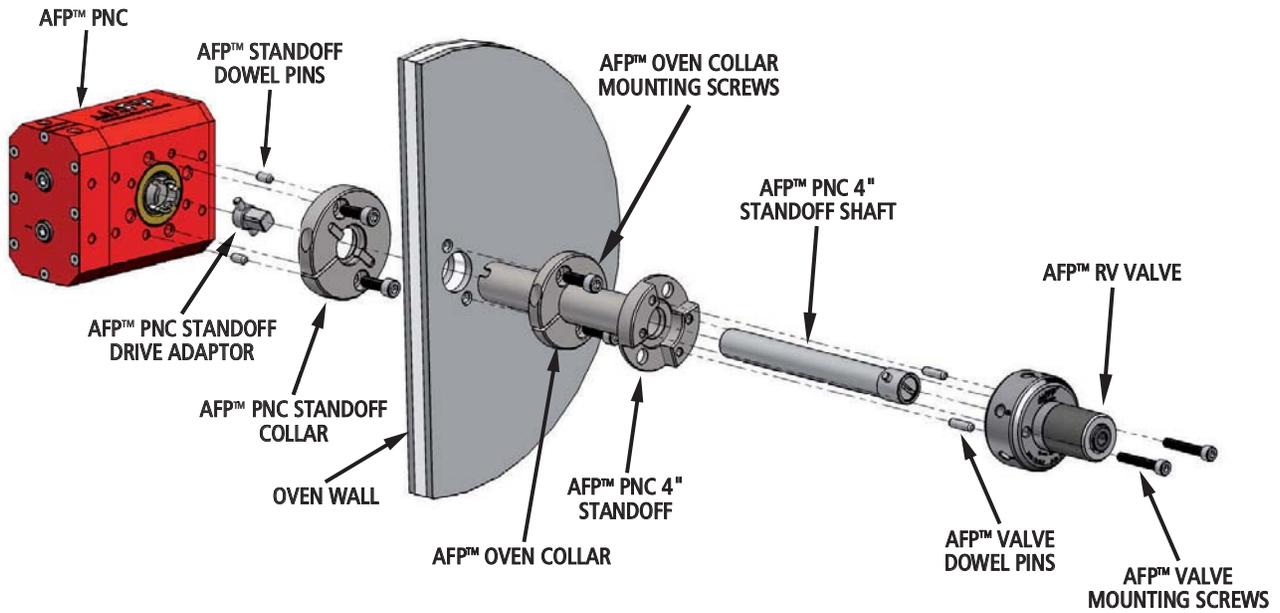
BRK-02
Short Mounting Bracket



BRK-01
Long Mounting Bracket



Standoff Mounting available
in 2, 4 and 6 in length



INSTALLING A VALVE ON AN AFP® PNEUMATIC ROTARY ACTUATOR

- 1 If there is an AFP® RV Mounting Collar on your valve, unscrew both AFP® valve mounting screws with a 7/64" Allen key; then remove the collar.
- 2 Make sure both $\text{Ø}1/8" \times 3/8"$ dowel pins have been removed from the valve body.
- 3 Before installing a valve on an AFP®. Pneumatic Rotary Actuator, make sure that the valve is in the CounterClockWise (CCW) position.

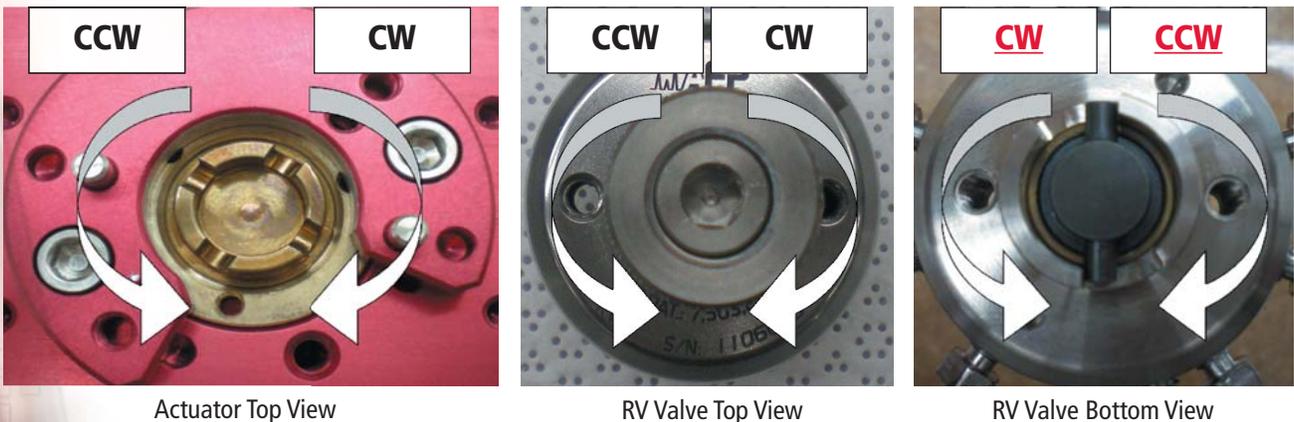
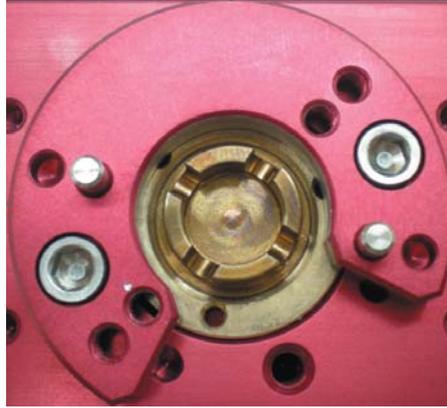


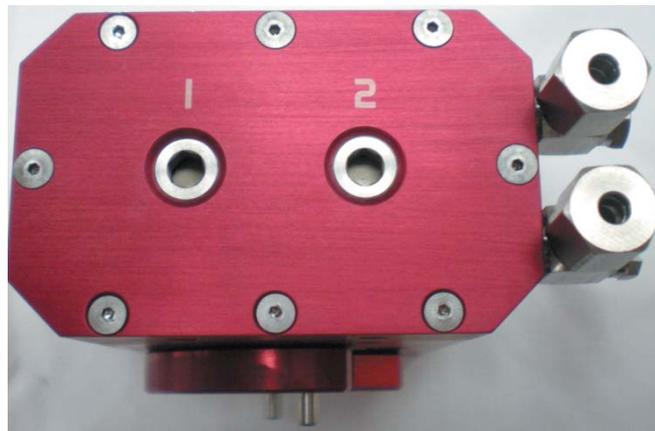
Figure 5.1: Rotation correspondence of valve and actuator.

- 4 You can rotate the AFP® PNC Collar to ease the view of the AFP® drive adaptor once the actuator has been installed in the unit. This is very important to efficiently tune the actuator. To do so, unscrew both #8-32 socket head cap screws with a 9/64" Allen key and lift the collar. Be careful to keep both Ø1/8" x 1/4" dowel pins in corresponding holes under the collar. Place the collar so you can easily view the actuator shaft through the opening of the collar, and then firmly screw back both screws with the 9/64" Allen key.
- 5 Make sure both Ø1/8" x 5/16" dowel pins are in place in the inside dowel pin holes on the AFP® PNC Collar.



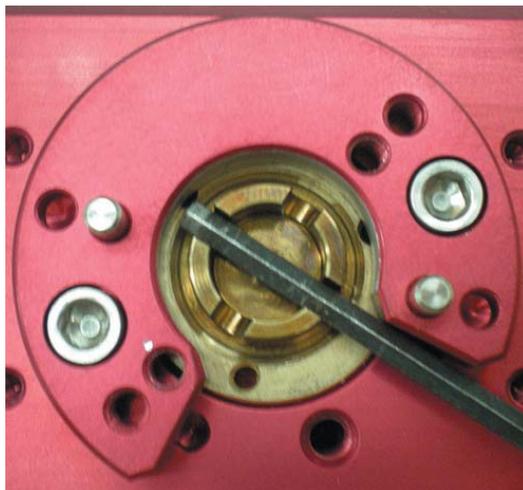
■ Figure 5.2: Dowel pins in inside dowel pin holes.

- 6 Using Ø1/8" tubing and supplied 90° elbow fittings (or other adequate fittings); connect both actuation ports with the actuation solenoid(s) or other device(s).



■ Figure 5.3: Actuator Side View; position of the actuation fittings and adjustment setscrews. (Port#1 is CW Port; Port#2 is CCW Port).

- 7 Remove the 2 plastic washers and 4 adjustment set screws using a 5/32" Allen key. There are two set screws and a washer in both threaded holes, located on the side face of the actuator, on the same part as the actuation fitting holes.
- 8 With 60 to 100 psig of industrial air or inert gas, actuate CounterClockWise (CCW) port, so that the actuator reaches CounterClockWise (CCW) position, and then release pressure.
- 9 While aligning the dowel pin holes of the valve assembly with the dowel pins of the AFP® PNC Collar, smoothly slide in the valve assembly on the actuator. If the dowel pin of the drive adaptor doesn't slide in smoothly in one of the slots of the actuator shaft, slightly rotate using the 7/64" Allen key, and then slide in the valve assembly.



■ Figure 5.4: Using an Allen key to rotate actuator shaft.

- 10 Finally, firmly screw back both AFP® valve mounting screws with the 7/64" Allen key to secure the valve on the actuator (see Figure 5.2).

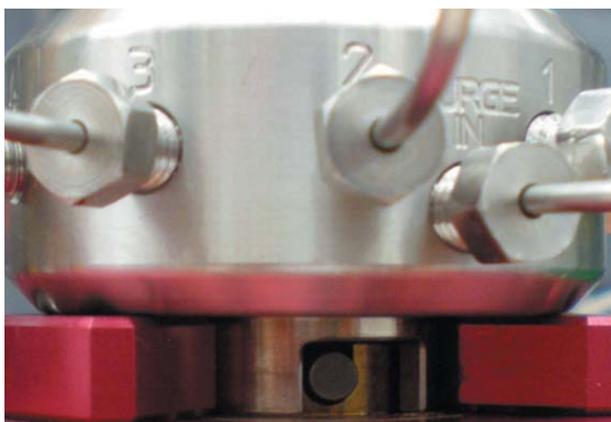
You are now ready to tune the two adjustable stoppers of the actuator-valve assembly.

6 Tuning an AFP® Pneumatic Rotary Actuator

- 1 If not already done, remove the 2 washers and the 4 adjustment set screws using a 5/32" Allen key. There are two set screws and a washer in both threaded holes, located on the side face of the actuator, on the same part as the actuation fitting holes.

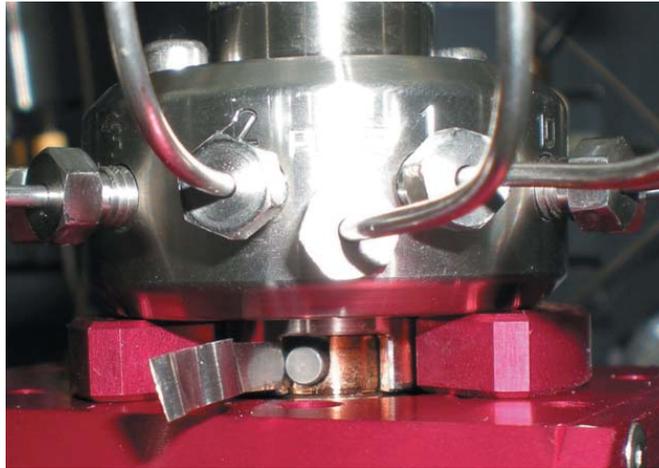
Tuning Load Port Adjustable Stopper

- 2 Using 60 to 100 psig, actuate ClockWise Port. Keeping the pressure on ClockWise Port and using the 5/32" Allen key, screw in a set screw in its corresponding hole (#CW). While looking through the collar opening, stop screwing when you see a side gap between the valve's stopper and the drive adaptor dowel pin.



■ Figure 6.1: Gap between the valve's stopper and the drive adaptor dowel pin.

- 3 Release ClockWise Port pressure. Pressurize CounterClockWise Port so that the drive adaptor starts rotating. Release CounterClockWise Port pressure and repressurize ClockWise Port.
- 4 Keeping the pressure on ClockWise Port and using the 5/32" Allen key, screw counter clockwise the corresponding set screw (#CW). Place a 0.003" shim or filler gage between the side of the drive adaptor dowel pin and the valve's stopper. Stop unscrewing when the shim starts getting jammed between the drive adaptor dowel pin and the valve's stopper. At this point, you should still be able to slide in the shim. If not, you went too far, repeat steps 2 to 4.



■ Figure 6.2: Shim slightly jammed between the drive adaptor dowel pin and the valve's stopper.

- 5 Once properly set, insert one of the previously removed washers and screw in a second set screw in corresponding hole (#CW) until it reaches the washer to secure ClockWise Port tuning. Release ClockWise Port pressure.

Tuning Inject Port Adjustable Stopper

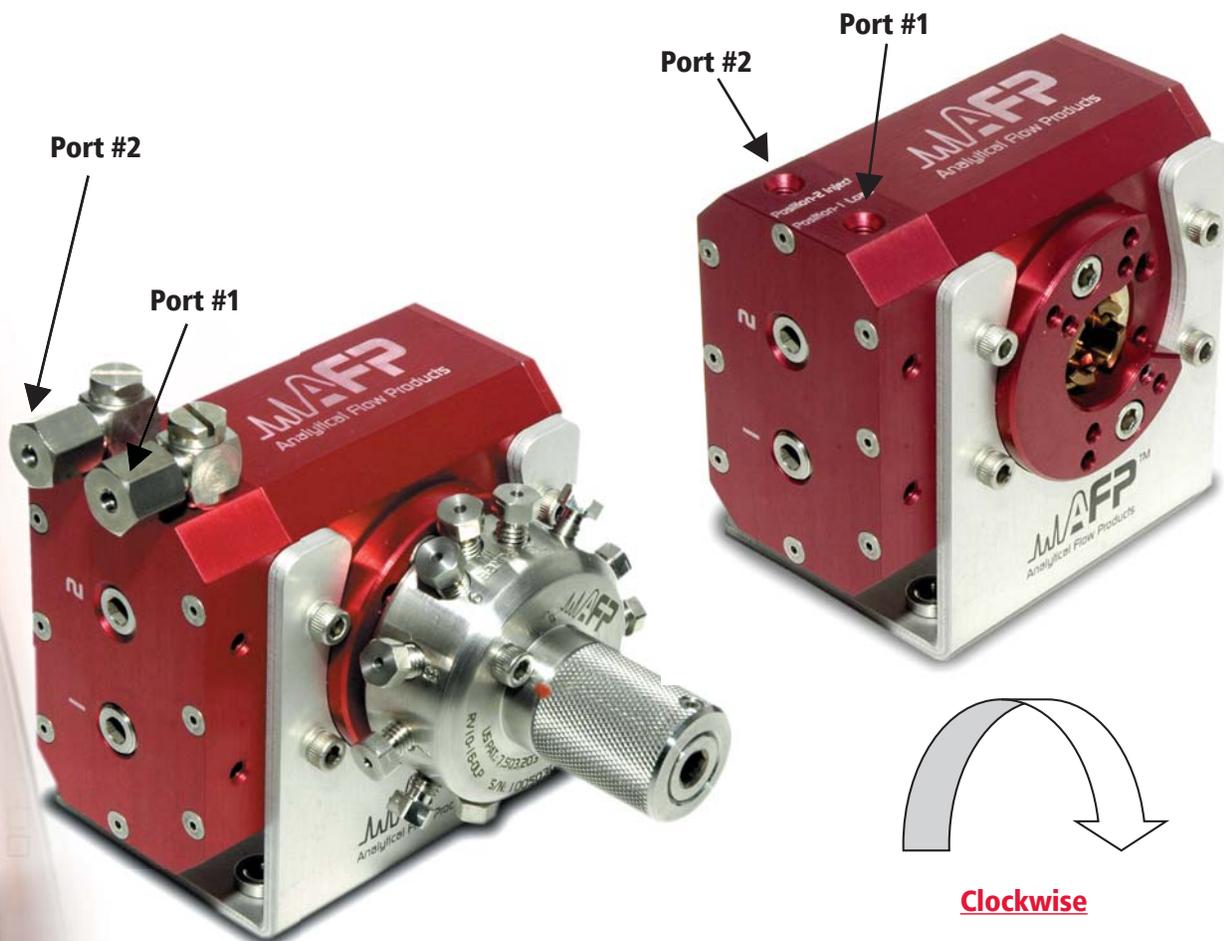
- 6 Using 60 to 100 psig, actuate CounterClockWise Port. Keeping the pressure on CounterClockWise Port and using the 5/32" Allen key, screw in a set screw in corresponding hole (#CCW). While looking through the collar opening, stop screwing when you see a side gap between the valve's stopper and the drive adaptor dowel pin.
- 7 Release CounterClockWise Port pressure. Pressurize ClockWise Port so that the drive adaptor starts rotating. Release ClockWise Port pressure and repressurize CounterClockWise Port.
- 8 Keeping the pressure on CounterClockWise Port and using the 5/32" Allen key, screw counter clockwise the corresponding set screw (#CCW). Place a 0.003" shim or filler gage between the side of the drive adaptor dowel pin and the valve's stopper. Stop unscrewing when the shim starts getting jammed between the drive adaptor dowel pin and the valve's stopper. At this point, you should still be able to slide in the shim. If not, you went too far, repeat steps 6 to 8.
- 9 Once properly set, insert the last of the previously removed washers and screw in a second set screw in corresponding hole (#CCW) until it reaches the washer to secure CounterClockWise Port tuning. Release CounterClockWise Port pressure.

The actuator is now properly tuned for the valve you are using.

7

How to properly actuate the PNC actuator

- 1 To have a faster actuation time you should always bring your actuation gas with a 1/8" tubing and use the proper solenoid for it.
- 2 A pressure of 60 Psig is enough to actuate this actuator properly.
- 3 To actuate your PNC **clockwise** you need to put some pressure on **port #1** of your PNC actuator.
- 4 To actuate your PNC **counterclockwise** you need to put some pressure on **port #2** of your PNC actuator.
- 5 Make sure that the solenoid valve you are using will relieve the pressure on the unused port. Failure to do so will result in a non-rotation of your actuator.
- 6 This actuator can be used at a maximum temperature of 200°C.



Clockwise