

Valve Positioners

Attaching Top-Mounted SRD-991 Positioners to 1/4 in. and 1/2 in. Actuators

DESCRIPTION

This document explains how to attach the Badger Meter® SRD-991 top-mounted positioners to 1/4 in. and 1/2 in. ATO actuators without range spring.

TOOLS REQUIRED

- 3/8 in. hex socket
- 3/32 in. hex wrench
- 3/16 in. hex wrench
- Torque wrench
- Small screwdriver (optional)

PROCEDURE

Positioner Arm Assembly

1. Inspect the positioner and actuator for visual damage. Confirm that all parts are present within the assemblies and mounting kit.
2. Remove the 10-32 locknut and flat washer from the upper portion of the topworks sub-assembly.



Figure 1: Actuator with locknut and washer removed

3. Place the shell component onto the actuator stem and secure it with the flat washer and locknut that was previously remove. See [Figure 2](#). Use a 3/8 in. hex socket to apply 15...20 lb-in of torque.
4. Thread the aluminum stop onto the shell with the rim holes facing toward the top of the actuator. It may be easier to partially thread the stop onto the shell prior to securing it to the stem See [Figure 3](#).

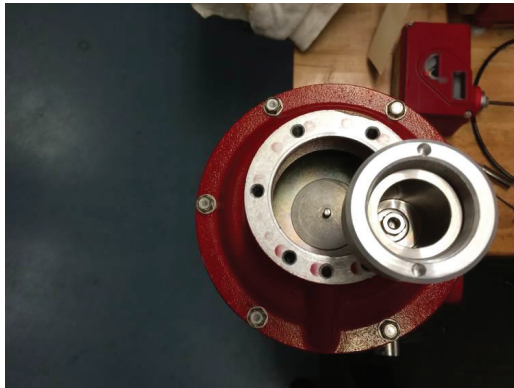


Figure 2: Shell and stop threaded together

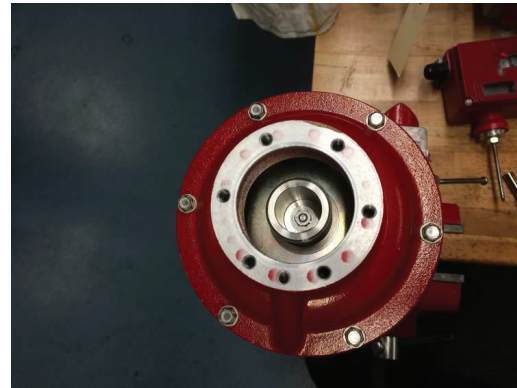


Figure 3: Actuator with shell only in place

5. Leave approximately 9/16 in. (for 1/2 in. actuator) or 7/16 in. (for 1/4 in. actuator) between the top of the stop and the machined surface of the adapter casting. See [Figure 4](#).

NOTE: The distance of the actuator travel is set by the interference of the stop to the underside of the adapter ring, which is attached to the adapter casting.

6. Install the gasket onto the adapter casting, being sure to align the orifice hole to the correct location. See [Figure 5](#).



Figure 4: Actuator with shell and stop installed



Figure 5: Gasket installation

7. Install the adapter ring onto the gasket and adapter casting, being careful to align the orifice holes. See [Figure 6](#).



Figure 6: Adapter ring installation

8. Secure the adapter ring with 1 × 1/4-20 socket head cap screws. Use a 3/16 in. hex key to apply 60...70 lb-in. of torque to each screw. Tighten the cap screws in an alternating fashion to maintain consistent and even compression of the gasket.

9. Set the actuator travel to 9/16 in. (for 1/2 in. actuator) or 7/16 in. (for 1/4 in. actuator) by applying low pressure compressed air to the motive air connection of the adapter ring, or by moving the actuator stem mechanically. See [Figure 7](#) and [Figure 8](#).



Figure 7: Setting the actuator travel

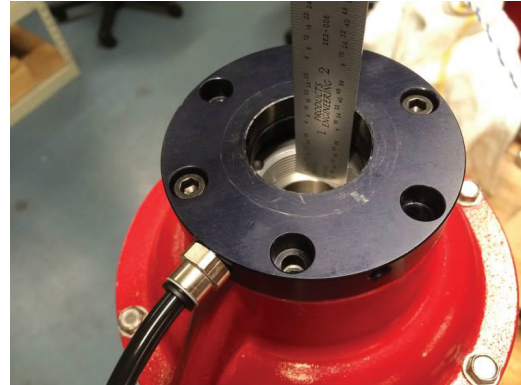


Figure 8: Measuring the actuator travel

- To adjust maximum travel, rotate the stop relative to the shell. Use one or two small screwdrivers (or hex keys) to advance or retract the stop.
 - Use a depth micrometer or alternate means to confirm maximum travel.
10. Lower the top-mount positioner onto the actuator subassembly. See [Figure 11 on page 3](#). The spring-loaded shaft and endcap should go into the adapter casting and stop against the actuator stem and/or locknut./
 11. Carefully rotate the positioner into the desired location/orientation.
 12. Secure the position in place by installing the 3 × 10-32 cone-point set screws into the radial holes of the adapter ring. The cone point of the set screws fits into a machined groove of the positioner locating hub. See [Figure 9](#) and [Figure 10](#).



Figure 9: Positioner plunger and groove



Figure 10: Set screws (shown advanced for clarification)

13. Carefully tighten the set screws in an alternating fashion to maintain proper centering of the position onto the actuator. Use a 3/32 in. hex key and tighten to approximately 12...15 lb-in torque.
14. Complete the assembly by installing appropriate tube fittings and tube sections between the positioner and the actuator.



Figure 11: Positioner in place



Figure 12: Completed assembly (for reference only)

Resetting the Travel Stop

When the actuator/positioner is installed onto a valve, the travel stop may need to be reset, due to the preload setting of the actuator or valve stem position.

1. Remove the positioner by loosening the 3 × 10-32 cone-point set screws and pull the positioner off of the actuator.
2. Repeat [Step 9 on page 3](#).
3. Apply a small amount of Locktite (about 1/3 of the circumference) to the interface of the stop to the shell to prevent unwanted movement.
4. Repeat [Steps 10 through 14 on page 3](#).

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