

MULTI-PORT VALVE SHAFT REPAIR KIT INSTALLATION INSTRUCTIONS

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TUK037

MULTI-PORT VALVE SHAFT REPAIR KIT

INSTALLATION INSTRUCTIONS

REQUIRED TOOLS

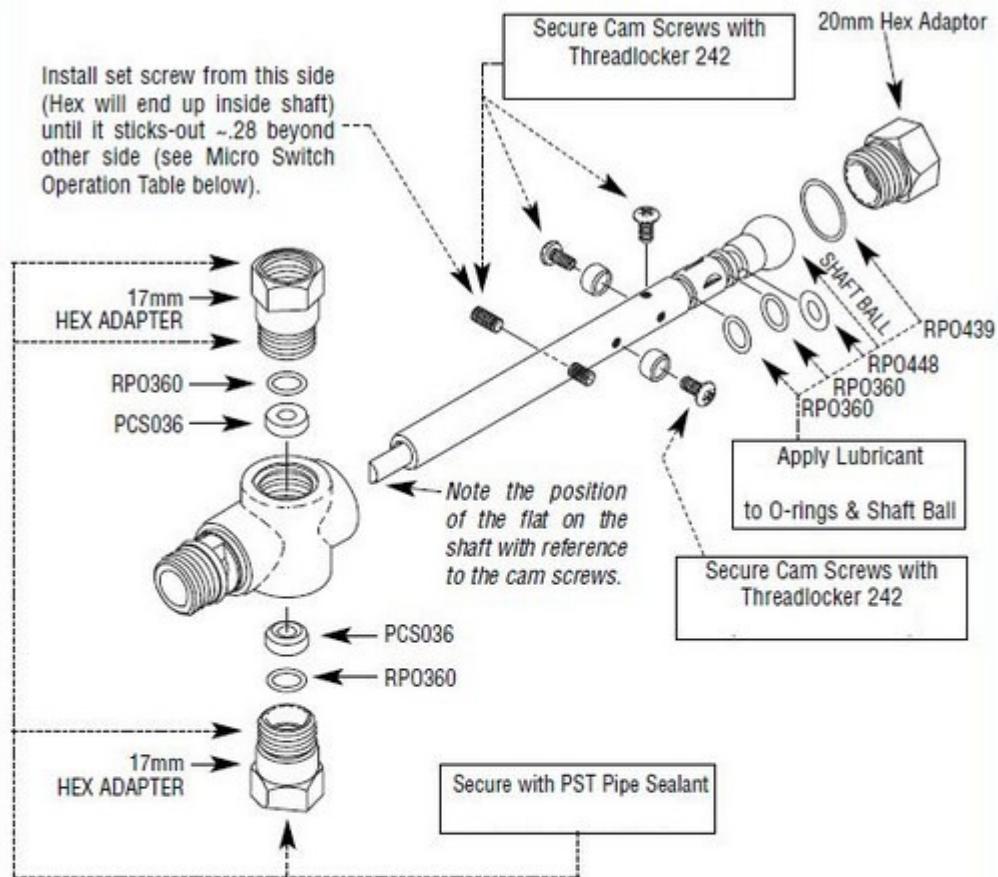
- Sets of American Standard and Metric open ended wrenches or two large adjustable wrenches
- Torque wrench adjustable to 10-15 in.-lbs.
- Small ruler or caliper
- Set of metric hex wrenches

1. Unplug the power cord from the wall circuit.
2. Remove the machine's outer cover and insulation blanket.
3. Drain the water from the water reservoir.
4. Turn the knob of the Multi-purpose Valve to "Sterilize" and note the position of the flat on the shaft with reference to the switch levers. All switches should be in the "non-depressed" or "open" position. Remove the control knob from the valve shaft.
5. Using a 7/8" or adjustable wrench, loosen the hex nut that holds the valve body to the mounting bracket. Do not loosen the nut more than 1/2 turn at this point. Be very careful to avoid bending the switch levers.
6. Unscrew and remove the three (3) copper water/steam lines that connect the reservoir and chamber to the Multi-purpose Valve.
7. Unscrew and remove the two (2) screws that secure the Multi-purpose Valve mounting bracket to the sterilizer base.
8. Remove the Multi-purpose Valve from the machine without disconnecting any of the wires connected to the switches.
9. Remove the switches and mounting bracket as an assembly from the valve body by loosening the 7/8" hex nut. Do not disconnect any of the wire connections to the switches.

Be very careful to avoid bending the switch levers. Remove the valve body to a workbench.

10. Using two wrenches of the appropriate size, remove the two (2) elbow fittings from the 17mm hex adapters.
11. Unscrew and remove the two (2) 17mm hex adapters that house the Teflon® seals and O-rings. Remove and discard the Teflon seals and the O-rings.
12. Unscrew and remove the 20mm hex adapter with O-ring. Remove and discard the O-ring.
13. Remove all screws and spacers from the shaft in order to remove the hex nut and spring clip spacer.
14. Once all hardware has been removed from the shaft, take a small flat blade screwdriver and gently remove the spring clip from the shaft.

FIGURE 1



TORQUE CONVERSIONS

10 in.-lbs. = .85 ft.-lbs. = 1.15 Nm
 15 in.-lbs. = 1.25 ft.-lbs. = 1.70 Nm

MICRO SWITCH OPERATION TABLE

VALVE POSITION	SWITCH OPERATION		
	SWITCH CLOSED	SWITCH OPEN	SWITCH OPEN
0	SWITCH CLOSED	SWITCH OPEN	SWITCH OPEN
FILL	SWITCH CLOSED	SWITCH OPEN	SWITCH OPEN
STE	SWITCH OPEN	SWITCH OPEN	SWITCH OPEN
EXH-DRY	SWITCH OPEN	SWITCH CLOSED	SWITCH CLOSED
MICRO-SWITCH	MSW1	MSW2	MSW3
SWITCH CLOSED = SWITCH ACTIVATED • SWITCH OPEN = SWITCH NOT ACTIVATED			

15. With the spring clip removed, the shaft should easily press through the valve body. Remove all O-rings from the shaft and discard them. If there is access to an ultrasonic cleaner, use it to clean the valve body, fittings and shaft.

If an ultrasonic cleaner is not available, simply clean the valve, fittings and shaft with a non-abrasive cleaner.

When cleaning the two (2) 17mm hex adapters, the two (2) elbow fittings and the

valve body, be sure that all old sealant has been thoroughly removed from the internal and external threads (a Dremel® motortool or a dental slow speed handpiece with a small wire brush works well for this).

16. Replace O-rings, (2) Part #RPO360 and (1) Part #RPO448, on the shaft and lubricate with the enclosed packet of Lubricant (Part #RPL090) – See Figure 1.
17. Insert the shaft back into the cleaned and dried valve body and replace the spring clip.

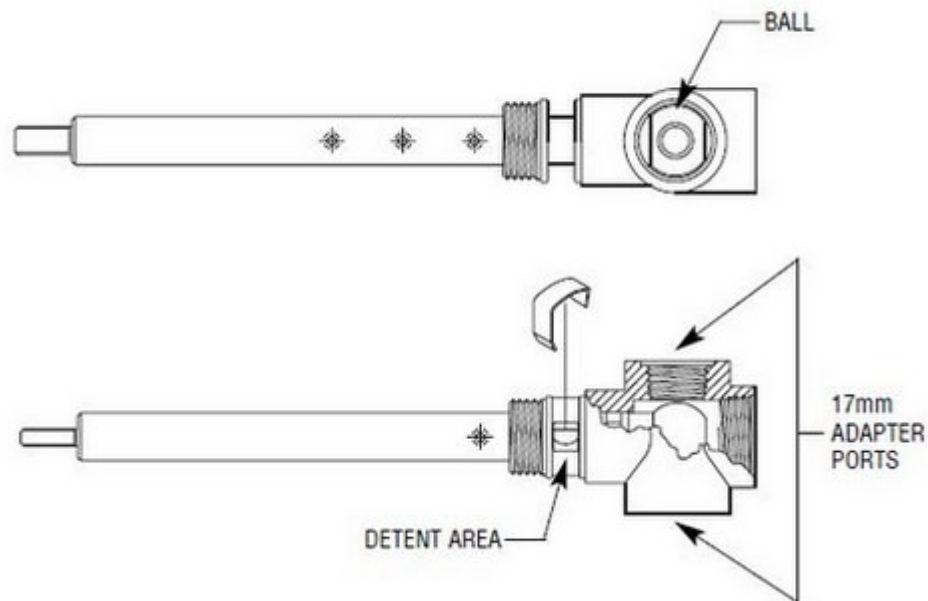
Note: When you insert the shaft into the valve body, look into one of the side orifices where the 17mm adapter fits and stop pushing on the shaft when you can see the ball in the center of the orifice (see Figure 2).

This positions the shaft so the detent for the spring clip is in its proper position.

18. Replace the spring clip spacer and hex nut. Do not tighten the hex nut at this time.
19. Load all hardware back onto the shaft (See Figure 1). Install set screw from the side indicated in Figure 1 (Note: Hex will end up inside shaft) until it sticks out ~.28 beyond other side – refer to Micro Switch Operation Table in Figure 1).

Secure all screws with Threadlocker 242 (Part #RPA032).

FIGURE 2



STOP!

- **IF SERVICING THE OEM MULTI-PURPOSE VALVE, PROCEED TO STEPS #20-21.**
- **IF SERVICING THE RPI MULTI-PURPOSE VALVE (PART #TUV025), SKIP TO STEPS #20A-21A.**

20. The 17mm adapters should now be clean and ready to repack. Take the Teflon seals (Part #PCS036) and O-rings (Part #RPO360) provided in the Kit and press them into the adapters (See Figure 1).

Do not lubricate the O-rings. (Note: Dished surface of seat must ride against ball on shaft when assembled.)

21. Apply PST Pipe Sealant (Part #RPA459) to the threads of the 17mm hex adapters (Note: When applying the PST Pipe Sealant be sure to leave the first thread sealant free, then use a sufficient quantity to fill all remaining threads).

Install adapters back into the valve body. Torque the hex adapters to 10-15 in.-lbs ensuring uniform pressure on both adapters. (see “Torque Conversions” chart in Figure 1 for further information).

(Note: Do not over tighten the 17mm hex adapter. Over tightening these fittings will deform the Teflon® seals and cause their premature failure.) Proceed to Step #22.

PROCEED WITH STEPS #20A-21A ONLY IF SERVICING THE RPI MULTI-PURPOSE VALVE (PART #TUV025).

20A) The 17mm adapters should now be clean and ready to repack. Take the O-rings (Part #RPO395) provided in the O-ring Installation Kit and install one on each of the 17mm hex adapters (See Figure 3).

Then take the Teflon seals (Part #PCS036) and O-rings (Part #RPO360) provided in the original Kit and press them into the adapters (See Figure 3).

Do not lubricate the O-rings. (Note: Dished surface of seat must ride against ball on shaft when assembled.)

21A) Apply PST Pipe Sealant (Part #RPA459) to the threads of the 17mm hex adapters. (Notes: When applying the PST Pipe Sealant be sure to leave the first thread sealant free, then use a sufficient quantity to fill all remaining threads.

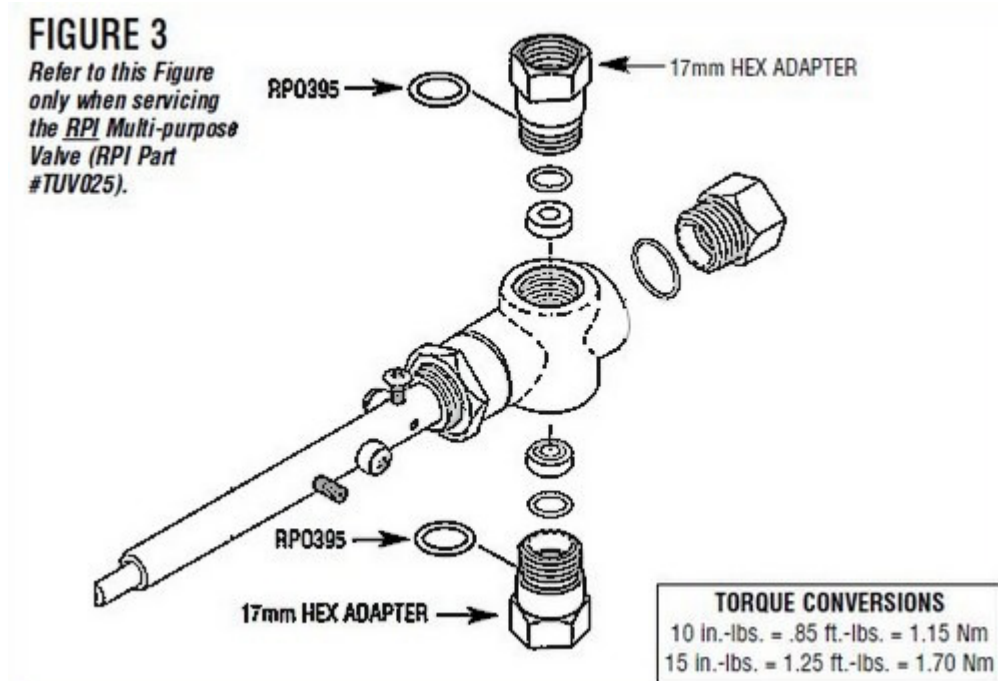
There is no need to apply sealant to the O-ring that is located on the external threads of the hex adapter.) Install adapters back into the valve body. Torque the hex adapters to 10-15 in.-lbs ensuring uniform pressure on both adapters. (see “Torque Conversions” chart in Figure 3 for further information).

(Note: Do not over tighten the 17mm hex adapter. Over tightening these fittings will deform the Teflon® seals and cause their premature failure.) Proceed to Step #22.

22. Apply PST Pipe Sealant (Part #RPA459) to the threads of the 5/16" and 1/4" elbow fittings (Note: When applying the PST Pipe Sealant be sure to leave the first thread sealant free, then use a sufficient quantity to fill all remaining threads).

To avoid changing the torque on the 17mm hex adapters, using two wrenches to install the two (2) elbow fittings (See Figure 4).

(NOTE: The 1/4" elbow fitting is set at a 60°/65° angle relative to the stem of the valve body. This is important because the water/steam lines must mate with the correct fittings.)



23. Lubricate the new O-ring (Part #RPO439) with the enclosed packet of Lubricant (Part #RPL090) and install it onto the 20mm hex adapter before reinstalling the hex adaptor back into the valve body. Tighten to seat the O-ring.

24. Before reinstalling the valve body onto the switch and mounting bracket assembly, use the knob (Part #TUK049) to turn the shaft and test to make sure the shaft rotates without any problems.

The shaft should rotate in only one direction. The spring clip will not allow the shaft to rotate backwards. Return the shaft to the "sterilize" position determined in Step #4 above. Reference the view in Figure 4.

25. Now that the valve is completely rebuilt, reinstall the valve body onto the switch and mounting bracket assembly.

Be sure the valve body is fully seated into the U shaped opening in the bracket and carefully tighten the hex nut ensuring that the valve body is installed perpendicular to the bracket.

Be very careful to avoid bending the switch levers when tightening the hex nut.

26. Reinstall the Multi-purpose Valve assembly back into the machine by reinstalling the two (2) screws that secure the bracket to the sterilizer base.

Ensure that none of the wires have become disconnected or crimped by any of the brackets or components in the sterilizer. Do not fully tighten the bolts at this time.

27. Attach the three (3) copper water/steam lines that connect the reservoir and chamber to the Multi-purpose Valve. Tighten the compression fitting to ensure the integrity of the connections to the water/steam lines.

28. Tighten down the two (2) screws that secure the Multi-purpose Valve assembly to the sterilizer base. For best results allow the valve assembly to sit installed overnight to let the thread sealer dry before exposing to steam or water.

29. Replace the knob (Part #TUK049).

30. Fill the water reservoir with water and make sure that the three (3) copper water/steam lines do not leak.

If leaks are detected, verify the integrity of the connection and, if necessary, replace fittings using 5/16" Sleeves (Part #RPF217) and 5/16" Compression Nuts (Part #RPF221) or 1/4" Sleeves (Part #RPF216) and 1/4" Compression Nuts (Part #RPF220) as required.

31. Once the Multi-purpose Valve is secure and no leaks are detected, reinstall the insulation blanket. Plug the power cord back into the wall circuit. Run the machine through a normal cycle.

Do a final check to insure that all connections to the micro switches are still intact. Unplug the power cord from the wall circuit.

32. Reinstall the outer cover to the machine and plug the power cord into the wall circuit.

FIGURE 4

