



replacement parts industries, inc.

CALL 800-221-9723 or 818-882-8611 • FAX 818-882-7028
E-MAIL: techsupport@rpiiparts.com • WEBSITE: www.rpiiparts.com

TUK037 & TUK099 MULTI-PURPOSE VALVE REPAIR KIT INSTALLATION INSTRUCTIONS

REQUIRED TOOLS

- A torque wrench may be required depending on the Valve Body. The Valve Body (with the RPI logo) was designed to allow the adapters to be fully seated without the use of a torque wrench. However, the older style Valve Body (without the RPI logo) does require the use of a torque wrench to fully seat the adapters.
- Sets of American Standard and Metric open ended wrenches or two adjustable wrenches
- Set of metric hex wrenches
- Small flat blade screwdriver
- Phillips screwdriver
- Small ruler or caliper

- 1) Unplug the power cord from the wall circuit.
- 2) Remove the machine's outer cover.
- 3) Drain the water from the water reservoir.
- 4) Turn the knob of the Multi-Purpose Valve to "Sterilize -STE". Remove the control knob from the valve shaft 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. Refer to the "Microswitch Operation" table in **Figure 5, on the reverse side of this page.**

REMOVAL OF THE MULTI-PURPOSE VALVE

- 5) Using a 7/8" or adjustable wrench, loosen the hex panel 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) hex bolts and nuts 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 (do not remove) the 7/8" hex panel nut. Do not disconnect any of the wire connections to the switches. Be careful to avoid bending the switch levers. Remove the valve body and set up on a workbench.

DISASSEMBLY OF THE MULTI-PURPOSE VALVE

- 10) Using two wrenches of the appropriate size, remove the two (2) compression fittings from the 17mm hex adapters and the compression fitting from the 20mm hex adapter.
- 11) Unscrew and remove the two (2) 17mm hex adapters that house the Teflon® seats and O-rings. Remove and discard the Teflon® seats and all 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 panel nut and spring clip sleeve. Discard screws and spacers. Retain hex panel nut and spring clip sleeve.
- 14) Once all hardware has been removed from the shaft, take a small flat blade screwdriver and gently remove the spring clip.
- 15) With the spring clip removed, the shaft should easily press through the valve body. Discard shaft and O-rings. If there is access to an ultrasonic cleaner, use it to clean the valve body, hex adapters, and fittings. If an ultrasonic cleaner is not available, simply clean the valve body, hex adapters, and compression fittings with a non-abrasive cleaner. When cleaning the three (3) hex adapters, compression fittings and the valve body, be sure that all old sealant has been thoroughly removed from the internal and external threads (a Dremel® motor tool or a slow speed dental handpiece with a small wire brush works well for this).

REASSEMBLY OF THE MULTI-PURPOSE VALVE

- 16) Install O-rings, (2) RPI Part #RPO360 and (1) RPI Part #RPO448, on the new shaft and lightly lubricate with the enclosed packet of High Temp Lubricant (RPI Part #RPL090) – **See Figures 1 and 2.**
- 17) Insert the shaft into the cleaned and dried valve body and install the new 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 4, on the reverse side of this page.** This positions the shaft so the detent for the spring clip is in its proper position.)
- 18) Replace the spring clip, sleeve and hex panel nut. Do not tighten the hex panel nut at this time.
- 19) The 17mm hex adapters should now be clean, dry and ready to repack. Take the O-rings (RPI Part #RPO439) provided in the Kit and install one on each of the 17mm hex adapters – **see Figures 1 and 3.** Then take the Teflon® valve seats and seat O-rings (packaged together) provided in the Kit and press them into the adapters – **see Figures 1 and 3.** Do not lubricate the O-rings. (Note: Dished surface of seat must ride against ball on shaft when assembled.)

FIGURE 1

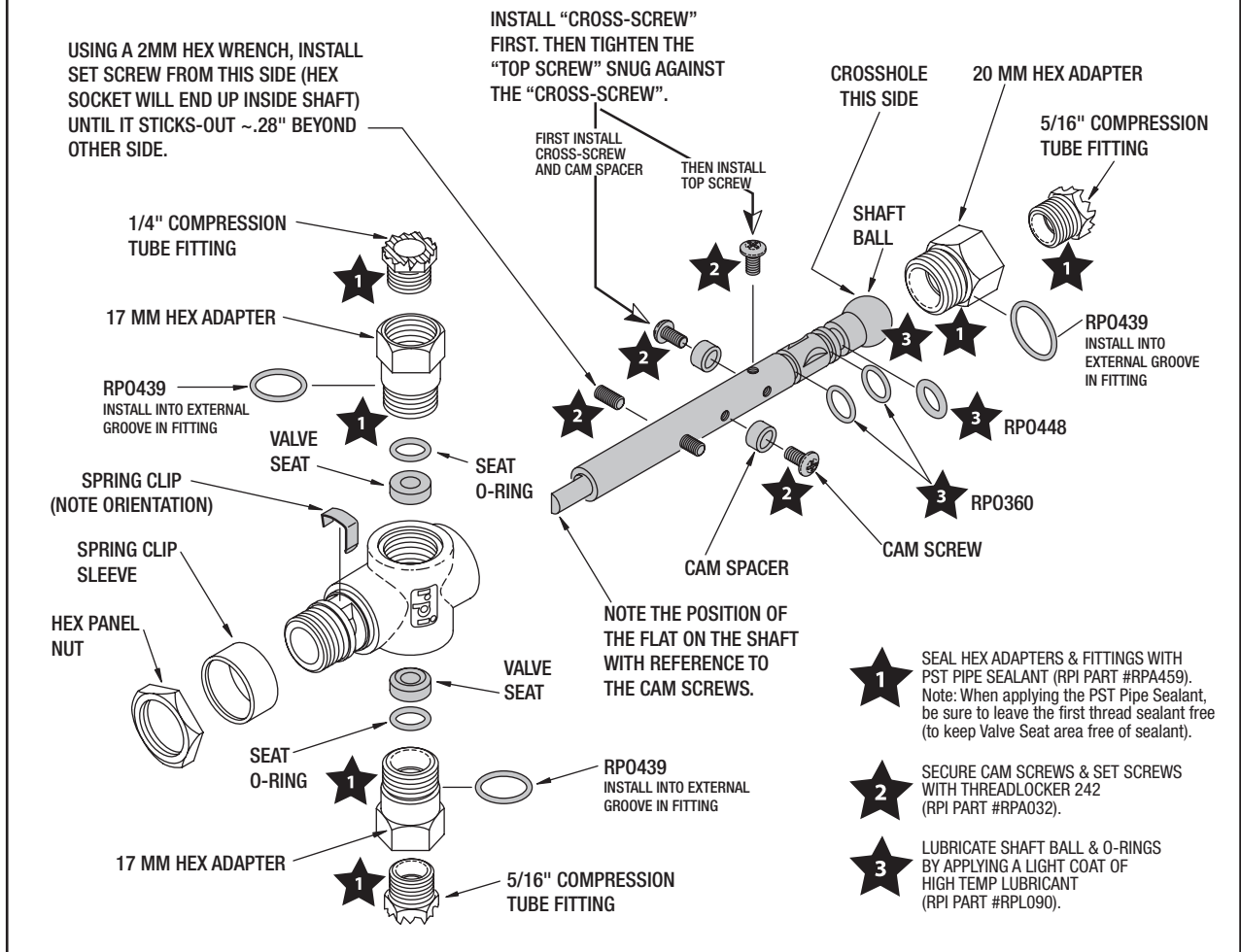
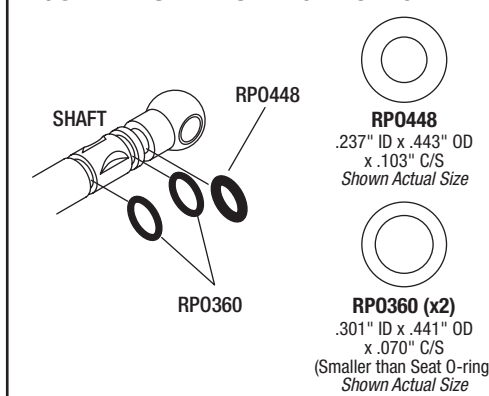
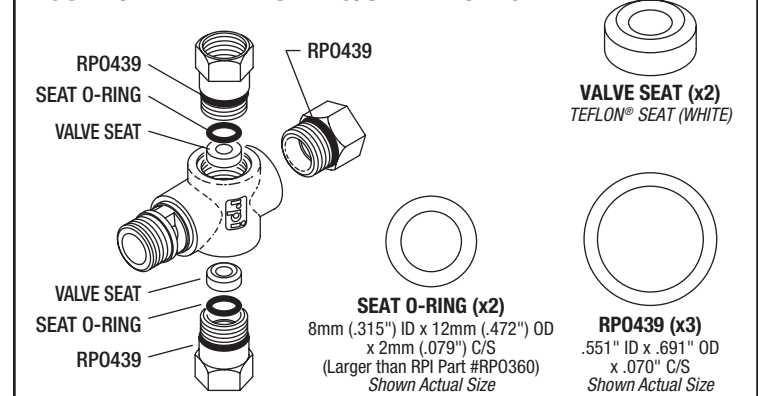


FIGURE 2 – SHAFT O-RING PACKAGE



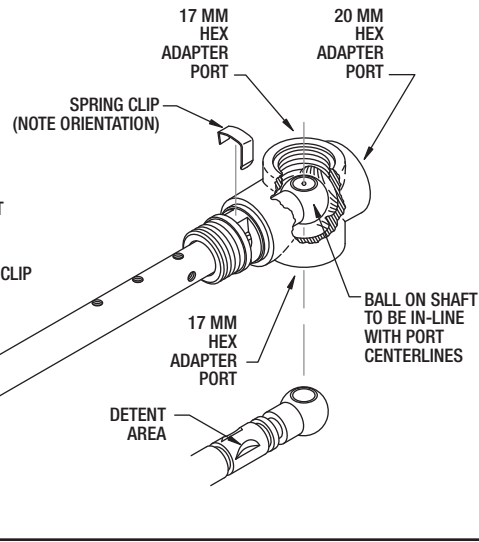
Note: Lubricate These O-Rings

FIGURE 3 – ADAPTER O-RING/SEAT PACKAGE



Note: Do Not Lubricate These O-Rings

FIGURE 4



- 20) Apply PST Pipe Sealant (RPI 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 to keep the valve seat area free of sealant, 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 hex adapter.) **Note:** RPI's valve body has been redesigned to allow 17mm adapters to be fully seated without the use of a torque wrench (do not overtighten). Our new body has the RPI logo cast into it. If you have the old style valve body (without the RPI logo), the 17mm adapters should be torqued to 10-15 in. lbs. ensuring uniform pressure on both adapters.
- 21) Use the knob to turn the shaft and test to make sure the shaft easily rotates in the clockwise direction only. When installed properly, the spring clip will not allow the shaft to rotate in a counter-clockwise direction.
- 22) Apply PST Pipe Sealant (RPI Part #RPA459) to the pipe threads of the 5/16" and 1/4" compression fittings. (Note: When applying the PST Pipe Sealant, be sure to leave the first thread sealant free (to keep valve seat area free of sealant), then use a sufficient quantity to fill all remaining threads.) Use two wrenches to install the two (2) compression fittings. (Note: The orientation of the compression fittings must be properly re-positioned to allow water/steam lines to mate correctly with fittings. Reference the view in **Figure 6**.)
- 23) The 20mm hex adapter should now be clean, dry and ready to repack. Take the O-ring (RPI Part #RPO439) provided in the Kit and install on the 20mm hex adapter – **see Figure 3**. Apply PST Pipe Sealant (RPI Part #RPA459) to the threads of the 20mm hex adapter. (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. There is no need to apply sealant to the O-ring that is located on the hex adapter.) Install adapter back into the valve body. Tighten until fully seated. Do not overtighten.

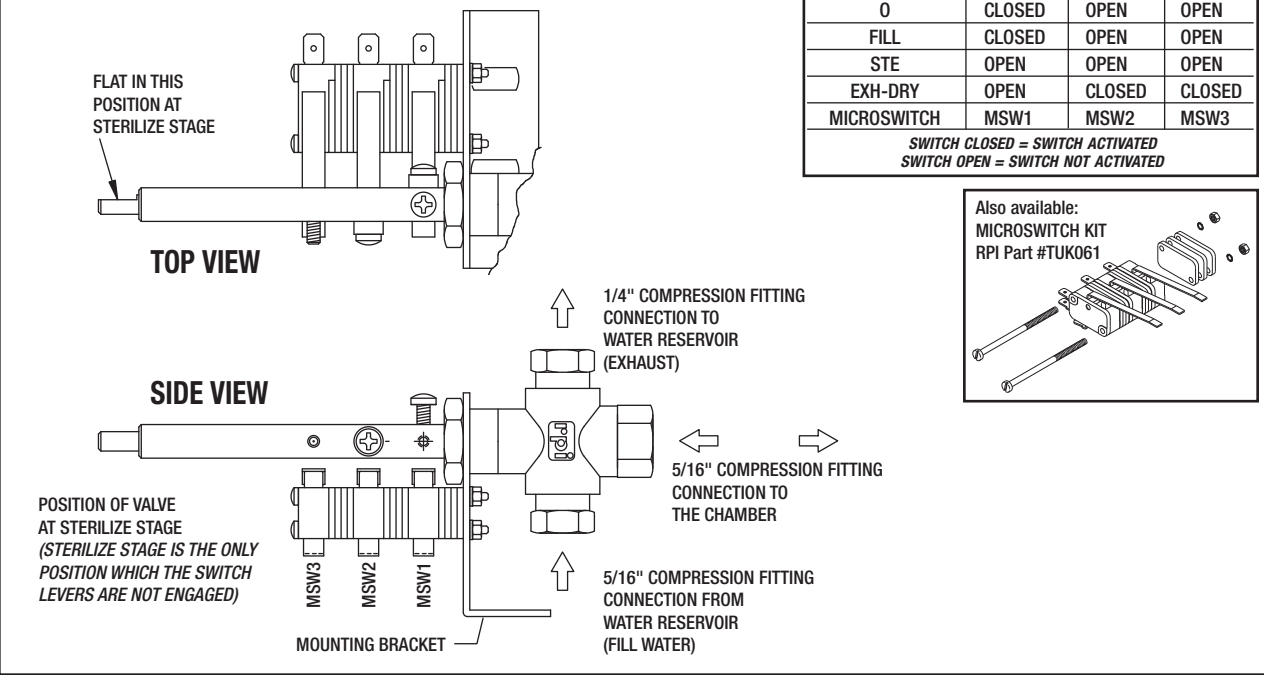
- 24) Load all new hardware onto the shaft (**Important Note:** Ensure the cam spacers and screws are properly installed with respect to flat on the shaft as shown) – **see Figure 1**.

CAUTION: The cross-screw and cam spacer must be installed first, then the top screw is installed snugly against the previously installed cross-screw and cam spacer. Install set screw from the side indicated in **Figure 1** until it sticks out ~.28" beyond other side. (Note: Hex socket will end up inside shaft.) Secure all screws with Threadlocker 242 (RPI Part #RPA032).

REINSTALL THE MULTI-PURPOSE VALVE

- 25) Now that the valve is completely rebuilt, orient valve with 5/16" tubing elbow fitting at the bottom (Note: The shaft should be set to the "Sterilize" position to avoid interference of cams to switch levers) – **see Figure 5**. Reinstall the valve body onto the levers and mounting bracket assembly. Be sure the valve body is fully seated into the U shaped opening in the bracket. Carefully tighten the hex panel 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 panel nut.
- 26) Reinstall the Multi-Purpose Valve Assembly back into the machine by reinstalling the two (2) hex bolts and nuts 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 the two (2) hex bolts and nuts that secure the Multi-Purpose Valve Assembly to the sterilizer base. For best results, allow the valve assembly to sit installed overnight to allow the thread sealer to dry before exposing to steam or water.
- 29) Reinstall the knob. (Note: The Knob is available separately, ask for RPI Part #TUK049.)

FIGURE 5



VALVE POSITION	MICROSWITCH OPERATION		
0	CLOSED	OPEN	OPEN
FILL	CLOSED	OPEN	OPEN
STE	OPEN	OPEN	OPEN
EXH-DRY	OPEN	CLOSED	CLOSED
MICROSWITCH	MSW1	MSW2	MSW3

SWITCH CLOSED = SWITCH ACTIVATED
SWITCH OPEN = SWITCH NOT ACTIVATED

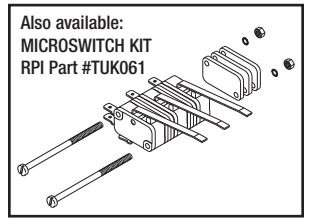
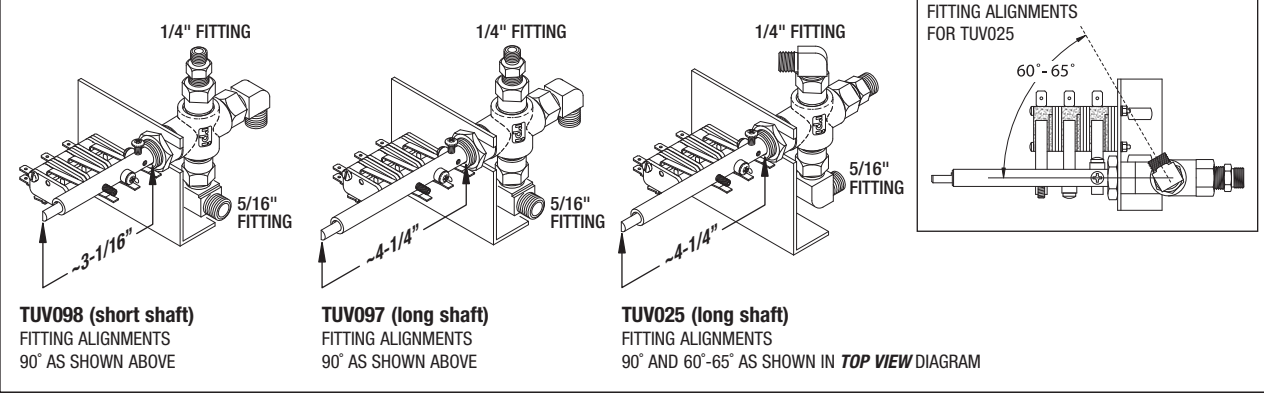


FIGURE 6 (SHAFTS ARE SHOWN IN "STERILIZE" POSITION)



TESTING

- 30) Fill the water reservoir. Plug the power cord into the wall circuit and run the machine through a normal cycle looking for leaks at all fittings and connections.
- If no leaks are detected**, proceed to Step #31.
- If leaks are detected**, unplug the sterilizer and pull the Safety Relief Valve to release the pressure in the chamber. Verify the integrity of the connection and, if necessary, replace fittings using 5/16" Sleeves (RPI Part #RPF217) and

5/16" Compression Nuts (RPI Part #RPF221) or 1/4" Sleeves (RPI Part #RPF216) and 1/4" Compression Nuts (RPI Part #RPF220) as required. Do a final check to insure that all connections to the microswitches are still intact. Plug the power cord into the wall circuit. Run complete cycles to insure that all plumbing connections are leak free.

- 31) Unplug the power cord. Replace the machine's outer cover. Plug the power cord into the wall circuit. Run the machine through at least one more complete cycle.