

How To Check/Inspect Fuel O-Rings

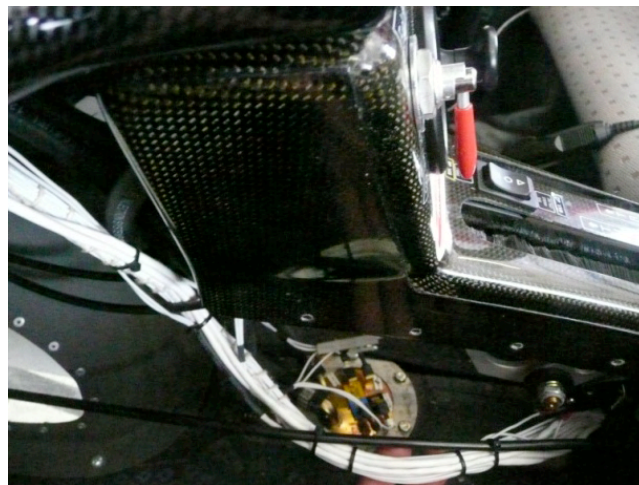
Due to lack of use, the O-rings in the fuel shut off valve can become stiff and lose flexibility. The quick activation of the fuel shutoff lever of an aircraft that has not been flown in some time may dislodge the O-ring from its seat possibly reducing full fuel flow. In response to the TL service bulletin TL092009 we have prepared this “how-to” displaying what we think will clarify the inspection process. This is our solution; good practice may require other actions. This is not a TL factory instruction document.

To ensure the valve is clear and fully open when ON (open), remove the valve from the panel, disconnect the fuel line hoses, inspect the valve, lube the valve and reinstall it in the ON position.

To gain access to the hoses and valve, first remove the side panel under the throttle quadrant on the Pilot side. The panel is attached with four small Phillips head screws at the top.



View of panel attached.

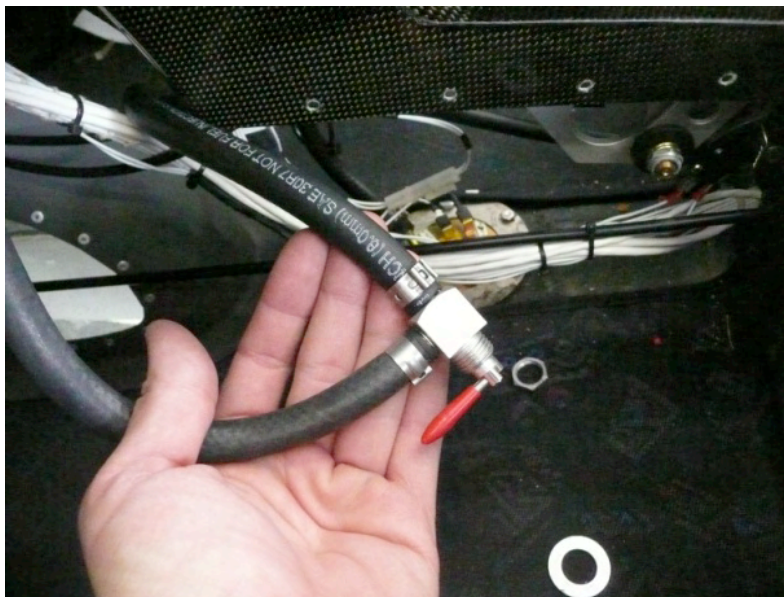


View with panel removed.

Now remove the valve from the panel using an 11/16 open end wrench. Pull the complete assembly out from behind the throttle quadrant panel for removal.



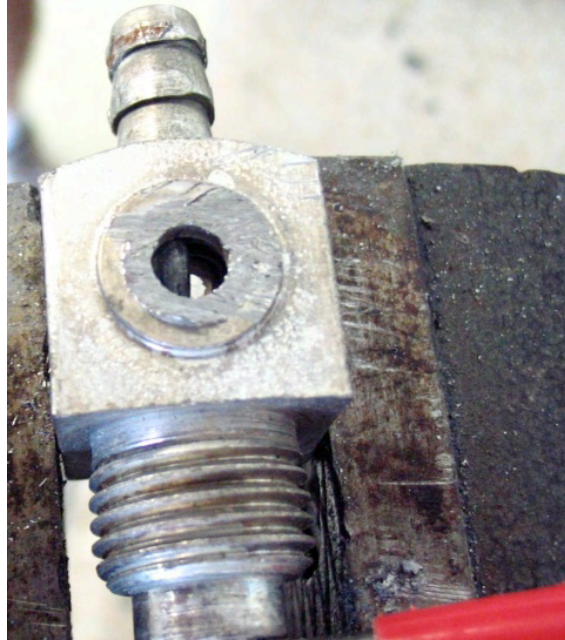
Valve removed from panel



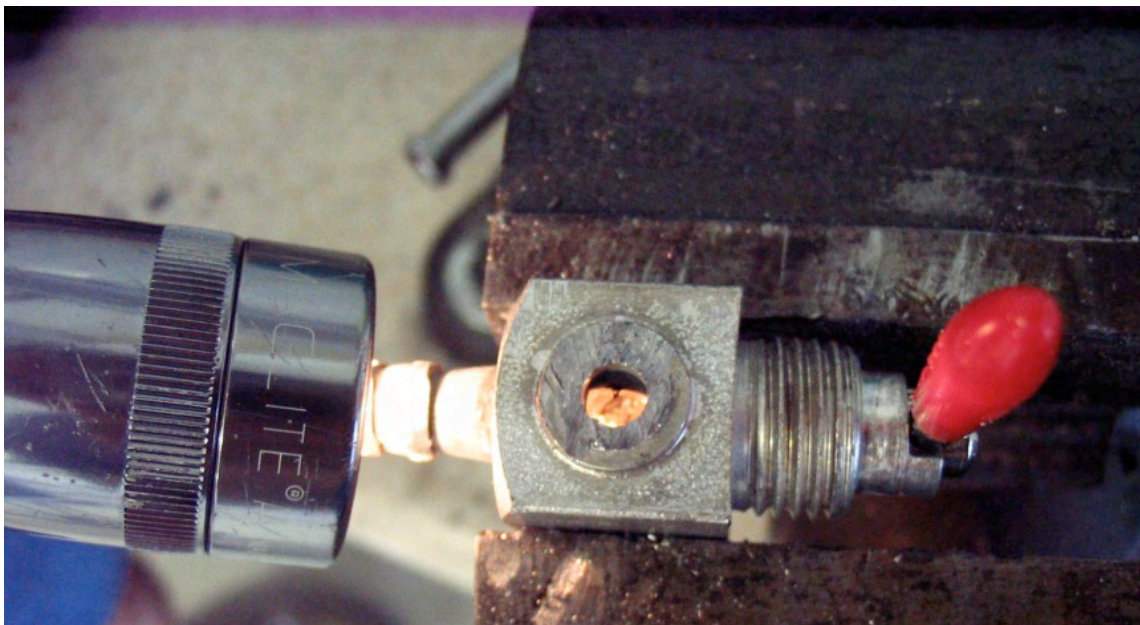
Valve with hoses attached

Remove the two clamps on the valve in and out orifices by using a small flat blade screwdriver. Twist under the clamp connection and it will pop loose. There may be fuel in the lines so be prepared with towels to prevent fuel on the cockpit carpet. Remove the fuel lines from the valve for inspection.

This is a picture of an O-ring dislodged in the valve closed position. The O-ring may remain in this position when the valve is re-opened. (The valve in this photo was cut open to reveal the O-ring)



O-ring exposed and dislodged



With a small flashlight for assistance you can see that even though the valve lever has been moved to ON (open) position the O-ring remains out of its detent groove. This may impede the flow of fuel

resulting in lower fuel pressure indication. Also any debris in the fuel flow might hang on the O-ring and further restrict the fuel flow rate to the engine pump.

After removal of the valve inspect the interior carefully. There are two O-rings to inspect, one at each opening. The O-rings function as seals for the valve 'ball' as it rotates. These O-rings are washed with ethanol in the fuel and if allowed to remain in the OFF (closed) position for extended periods may 'adhere' to the valve ball when it is rotated to the ON (open) position. If this occurs there may be no indication on the engine monitor system.



O-ring in proper symmetrical position (This valve has been cut open for better view.)

Check that the O-rings are not dislodged and the valve is fully open to minimize fuel flow resistance. Add a drop of clean engine oil to each opening and slowly rotate the valve handle to re-lubricate the o-rings. Check that the O-rings in both openings are seated and leave the valve in the ON position after inspection. Confirm full flow through the valve with the lever in the ON position.

If either O-ring is not seated or protrudes in a non symmetrical position, replace the entire valve and ensure the new valve is similarly inspected prior to installation.

Reattach the hoses to the valve openings and secure the clamps.

Assure the valve is correctly orientated. The opening pointed down is supply from the tank. The opening pointed forward is the outlet to the engine.

Place the valve back into the panel and ensure the valve remains ON in the process.

Activate the Aux Fuel Pump and confirm full fuel pressure is available.

Check for fuel leaks at all fittings.

Tighten the valve nut and reinstall the side panel.

Note this inspection in the aircraft log.