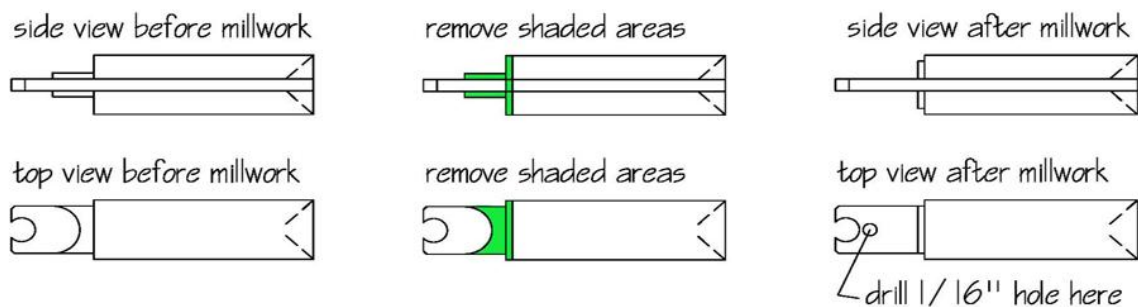


MAIN FUEL SOLENOID MODIFICATION TO NORMALLY OPEN

(THIS MODIFICATION WILL REQUIRE THE USE OF A MILL AND A LATHE)

1. Remove the valve and **work over white paper on the workbench; there are many small pieces.** Remove the hex fittings from the inlet and outlet of the valve.
2. Be careful on the next few steps and account for all parts; Put a wire tie around the body of the electrical coil to hold it together. Remove the safety wire and the 2 screws that hold the coil to the valve body. Slowly, remove the coil straight up off the valve body, **trying to leave the plunger in place.**
3. **Proceed with caution here. Be very careful on step 4.**
4. Slowly remove the plunger. The plunger end that goes in the valve body is like the gate of a gate valve. On its end, there are two tiny 1/8" diameter black carbon cups that are spring loaded (**with a very tiny spring**) outward against the removable seats in the valve body. There is also another long spring inside the plunger. All these parts will fly! Remove and stow them carefully.
5. Next remove the downstream valve seat by removing the white Teflon gasket and o-ring seal that are around the plunger under the coil/tube and then pull the retaining pin under the o-ring. The seat will slide out downstream.
6. Now to the machining of the plunger: Mill off the shaded areas as shown in drawing. Then with the plunger in your lathe, cut back the large part of the plunger 1/32" leaving a small shoulder. This allows the plunger to extend deeper into the valve body in the normal state. The long spring will have to be stretched slightly to hold the plunger fully extended.



7. Drill a 1/16" diameter hole where shown in drawing. This new hole will be aligned with the seat ports in normal open. The best way to do this is after you machine off the unwanted metal, re-assemble the valve and take a scribe and insert it into the small opening in side of the body where the fuel flows, with the valve seats in place, and scribe a circle on the plunger. Disassemble and drill where you marked it.

8. It should look like this when complete.



9. A plunger travel limiting band will have to be made and placed all the way inside the coil tube, toward the Cannon fitting. This is the stop that will limit the inward travel of the plunger when the valve is energized. Once in place and the valve is energized it will center the black carbon disks on the fuel hole in seat ports and block the fuel flow. The band can be easily made from a piece of hobbyist's 3/8" brass tubing that can be bought at any hobby store. This band will need to be cut to +/- .100" in length. See photo.



10. Re-assemble the unit. Leave the seat out. Use grease to hold the seals and small spring onto the plunger end. Insert the plunger. Carefully put the seat in and compress the seals. Insert the seat retaining pin, o-ring, and Teflon gasket. The coil/tube and fittings are next.
11. Confirm operation. At rest (non-energized) the ports should pass light. This is now the normally open position. Energize with 12VDC and you should see the black disks cover the ports and block light. (i.e. block fuel)
12. Modify control wiring to the N.O. positions.