

**NOTES ON THE FUEL SELECTOR SWITCH
BY JAMES MCNEELY & FLOYD PETRI**

JAMES MCNEELY

The selector switch has stencilled letters on it. As you face the fuel valve from the Inside, the "M" for "Main" is on the right, and the "R" for "Reserve" is on the left. I'm told that the middle position is off, and I have seen a Ferret or two that had an "O" in the middle. I have never seen an indicator plate before, and there is no such thing listed in the parts manual. I have a lot of Ferret books, and the ones that show the fuel valve are all stenciled, like mine.

FLOYD PETRI

The fuel switch can be traced by following the tubing leaving the switch. To the left of the switch the tubing goes to the left side of the tank. To the right of the switch the tubing goes to the right side of the tank. The left is the reserve and to the right is the main. What I do after a fill up is to use the left side of the tank for about 30 minutes of fun and then switch to the right side which is the main. Doing this keeps the reserve clean and puts fresh gas in it. I had some old video recording tapes still in the box. They had a labeling page with them that had number and letters on it for marking the tapes. I took the R and stuck it on the left side of the switch and took an M and stuck it on the right side of the switch. Works Great Later I found some 1/2 inch white with black letters at Wal-Mart (for mail boxes) and I bought an R and M and stuck them on the Ferret Hull behind the switch in the appropriate positions.

I have noticed one other thing about the gas level when starting. With a full fuel tank my Ferret starts up like a sewing machine in about 2 seconds. With only a couple of gallons left in the main I have to crank it about 30-45 seconds for it to start. I am sure that the weight of the fuel puts extra pressure on the gas line and fuel pump. Maybe an indication of a bad fuel pump maybe?? or a leaking carburetor maybe?? It does not affect the running of the engine once it is started.

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<p style="text-align: center;">FERRET FUEL PUMP PROBLEMS BY ROSS A RADZYKEWYCZ</p>
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Yesterday I did some of the preliminary work to remove my fuel pump. I removed the engine deck (not recommended as a one-man job, but possible) and the oil cooler. Today I removed the left-hand battery and box as well as the engine support. All of these steps are called for in the manual as well as removing the hull cross-tube which I was unable to do. It seems someone really tightened the bolts on mine and I couldn't move them. I found that it was not necessary to remove it, so I probably won't bother removing the hull cross-tube until I need to for a different project.

After removing all of these items the fuel pump is relatively accessible and was fairly easy to remove. There are two fuel pipes and two bolts (which hold it to the engine) which need to be disconnected or removed. I thought that the rebuild would be fairly straightforward. There are six bolts to remove and the unit comes apart. Well, all of the bolts were easy to remove except two. These bolts had gotten very stuck. It seems that they were the lower two and a bit of fuel seeped into the holes and became glue. One I managed to beat out with a hammer, which destroyed the bolt of course. The other I had to cut on both ends. It would still not budge even while using a metal punch and hammer to try to knock it loose. Whoever said that steel and aluminum don't mix sure got it right on this one. I attempted to drill the bolt out. After breaking two titanium drill bits I thought better of that idea. I will probably end up taking it to a metal shop and having them drill it on a drill press or perhaps they have a punch that will push it out. No, it is still not done. The lower portion of the pump (the part closest to the engine) is a "real work of art." (:-[) The instructions say to operate the pump mechanism after separating the main diaphragm from the body and insert a thin 3116 inch open end wrench into the opening to engage some flats on the post under the bolt. Otherwise the bolt will spin and you cannot remove the diaphragm. Well, when they say "thin" they mean sheet metal thin and flexible. I don't have a tool as flimsy as what is called for here. I suppose I will look to find one. I saw no other way to remove the bolt, so if anyone knows of a **better way**, please let me know.

The fuel pump was filled with a mixture of rust and varnish which cleaned out easily. I think I will check my fuel lines as well to make sure they are clean and I may drain the old fuel out to the tank (both sides) as well, just to make sure that I resolve the problem.

First of all, the bolt which I could not get out due to the varnish gluing it in place... I took it to a machine shop and they **tried** to push it through on a large press. It broke the punch that they were using and didn't budge. The next thing they tried was to drill it on a very heavy drill press, but the drill bits of the proper size are simply too flexible and it went around the screw to the softer aluminum. I had them drill next to the bolt and ended up spending several hours and 5 drama] tool diamond bits grinding the bolt out. I now have it through with an only slightly enlarged hole which I don't believe will be a problem.

Secondly after many attempts to insert the 3116 inch wrench (spanner) under the plates for the main diaphragm I ended up making a slot in the bolt so that I could use a wrench and a screwdriver to remove the nut I ended up grinding away the nut as well since the bolt is brass and even with a fairly deep slot, the nut would not come off without tearing up the brass. Upon disassembly I found that the correct wrench for my fuel pump is a 1/4 inch, not the 3116 Inch as stated in the manual. However, even if I had known this, I don't think I would have been able to avoid slotting the bolt anyway. As with everything I have run across with my ferret, it was put together extremely tightly.

Putting in the new, main diaphragms (there were three installed and that is how many were in the rebuild kit, so I put all three in.) was relatively straight forward. The threads of the bolt were relatively tight on the new nut, so I don't believe I will have a problem with the nut coming loose.

I still need to sand the surface around the area that I drilled to take out a few scratches that I made, but I anticipate the rest of the job to be simple.

Today I replaced the fuel pump in my ferret. After mounting it to the engine I connected the input pipe and moved the priming lever to check to see if fuel would come out the outlet (as called for in the instructions). Well, to make a long story short... no fuel. I had only 114 tank and had the selector lever on the reserve tank and could not get the fuel to pump through. Knowing that many people have had problems with the reserve side of the tank, I removed the fuel pipe between the left side of the fuel tank and the selector switch. Of course this also drained my fuel which proved to be quite dirty. The fuel pipe was plugged with tar (varnish?) for about the bottom 5 inches. After much work with a wire I managed to clean it out.

Here is the lesson I learned (especially combined **with the experiences** of others). It may be a VERY good idea to run your ferret on the reserve side every once in a while to keep the fuel and dirt from settling in the fuel pipe and blocking it. Running fuel through should keep it clean. After seeing all of the dirt that came out

of mine, I say watch your fuel gauge and rotate your tanks on a regular basis. I'm guessing that while in service the ferrets were kept full and rarely or never used the reserve tank which means you may have 45-year-old fuel in your pipe just sitting there. It makes sense that both aides of the "horse shoe" in the fuel tank could be used as a reserve but, only the aide on the left (facing forwards) has the fuel gauge. Thus you have a choice to have your fuel gauge register total fuel or just fuel in the main tank by choosing which side you select for your reserve. A thought to consider when you are labeling them.

Doug Greville suggests that before you reinstall the pump, you make up an extension for the manual lever and bring it up high enough so that you can easily reach it over the petrol tank? In his experience Ferret carbs go dry if left aft too long and the prolonged cranking to refill them (say after a winter lay up) is what kills starter motors. Rolls Royce were kind enough to provide a manual lever on the petrol pump but didn't provide an extension handle for the Ferret installation. I suggest you use heavy gauge fencing wire or similar, the biggest problem will be to secure it so that it doesn't slip into a mechanically useless position on the pump lever.

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CLEANING THE FUEL TANK
BY ROSS A RADZYKEWYCZ



The fuel tank is raised in the middle which allows fuel to be "reervoired" in either side. There are two pipes, one from each side of the fuel tank, which go to the fuel selector switch. The selector switch "chooses" which of the two pipes is transferred to the fuel filter end then on to the fuel pump, end then to the carburetor. By running exclusively from either side, the non used side has the potential to become blocked with sediment or the old fuel can create all sorts of new substances as it changes chemically. You may need to drain and clean it, but the easy way to tell is by switching the selector and seeing if you get fuel. If you are fairly certain that you have a problem, then it may be necessary to drain the tank and clean the pipe. The reserve side is just under the cap **where** you fill the tank. The easy way to get to this is to remove the left-side (from drivers seat looking forward) battery and box, and the engine mount (may to do). I suggest you open the left-side escape hatch, so you have more room and you can remove the battery and box without it being overhead.

MAKE ABSOLUTELY CERTAIN THAT THERE ARE NO SPARKS, THAT NOTHING AROUND CAN SPARK, AND THERE ARE NO OPEN FLAMES BEFORE PROCEEDING. FUMES FROM GASOLINE/PETROL WILL EXPLODE IF EXPOSED TO FIRE OR SPARKS.

And there will be lots of fumes, so open up your hatches too.



From there you can disconnect the fuel pipe at the fuel selector and then undo it from the bottom of the tank. This action **will** cause all of the fuel in the reserve side to drain, so you may wish to pump the fuel out first although letting the fuel drain from the opening **will** help clean it. (Big, smelly mess on ferret floor) Once you disconnect the pipe from the tank, you can remove it and clean it. I used a piece of wire to loosen the dirt and then I tapped it lightly to knock the dirt out After several loosening-knocking actions I was able to blow a lot of the dirt out, but it all depends on how blocked the pipe has become. Once you have cleaned the **pipe** you can reinstall it and add fuel. You then have the option of removing the fuel filter canister and manipulating the manual primer lever on the fuel pump (reached through the opening which was previously blocked by the engine mount) to see if you have a clear passage for fuel coming out of the pipe to the fuel filter. If you choose to do this, make sure you do it with the fuel selector switch in both positions to check both pipes/sides. Once you are satisfied that the problem is alleviated, you simply put it all back together. Tony Knott suggests that you should try and keep the tank full as this **will** reduce condensation in the tank therefor less chance of rust!!

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