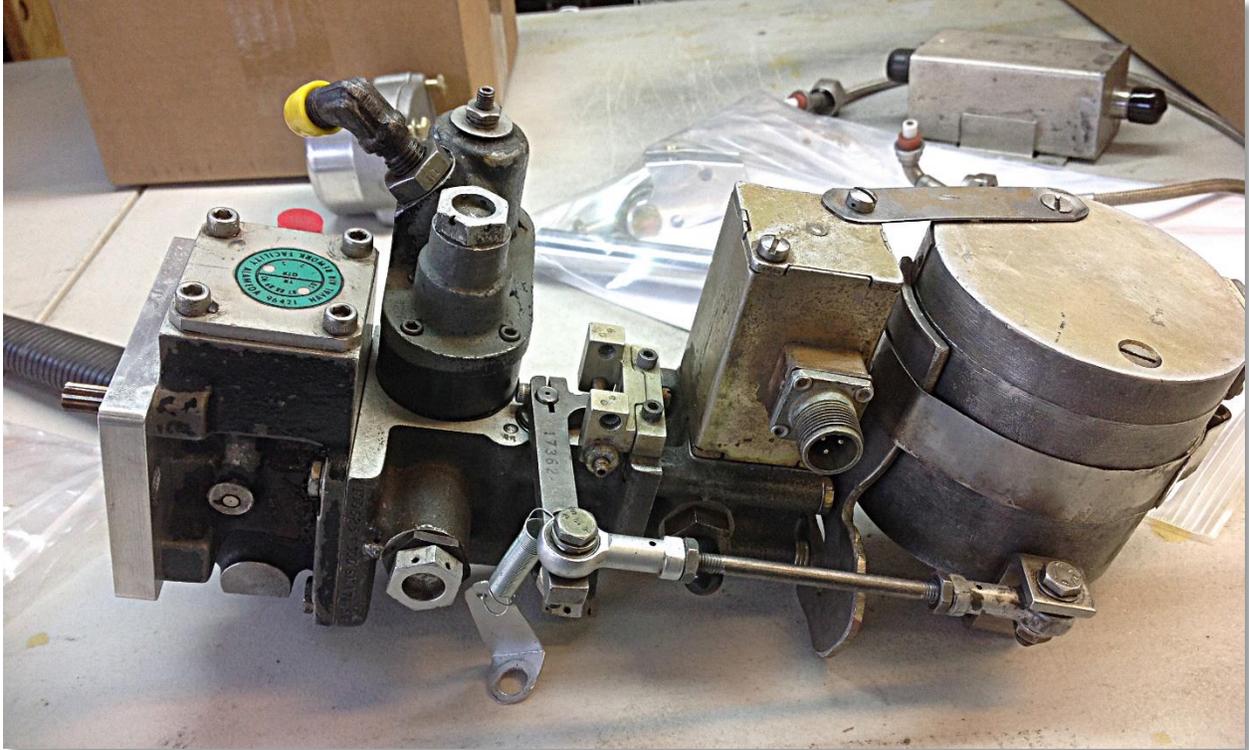
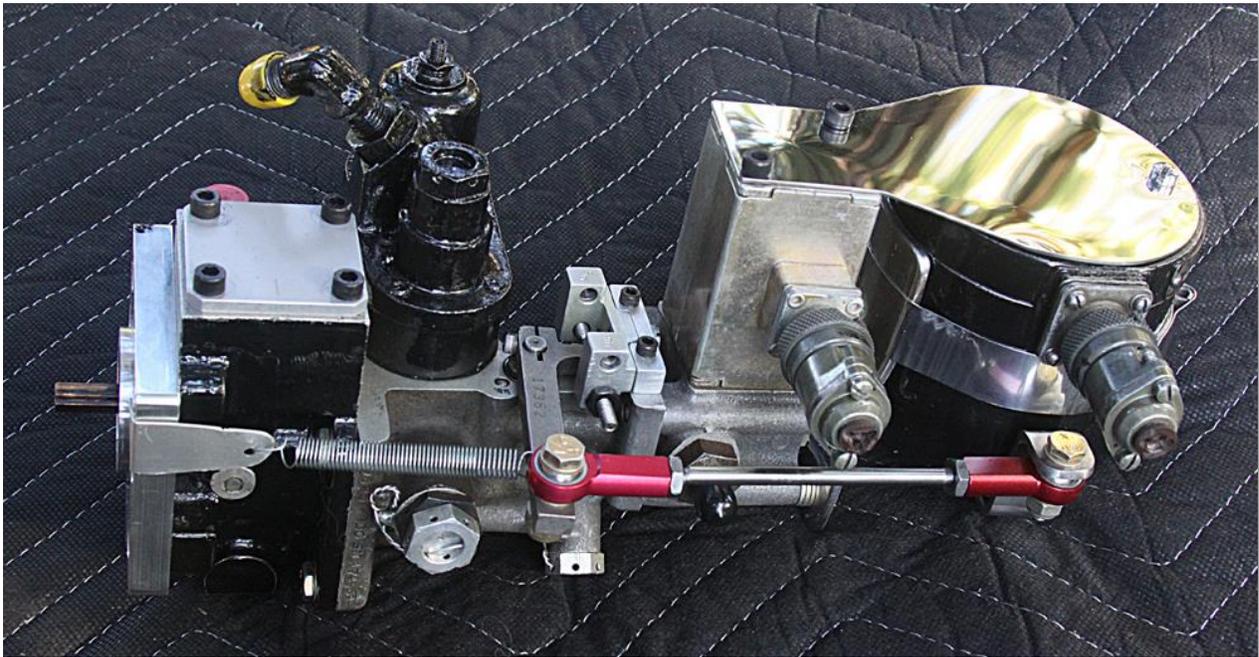


JUAN RIVERA HELICYCLE BUILDER LOG #2
FUEL PUMP AND FUEL CONTROL CLEANUP

My engine looks pretty clean but this fuel pump and fuel control assembly looked really nasty. I decided to partially tear them down and clean them up. This is what the assembly looked like to begin with.



And here is what it looks like now.

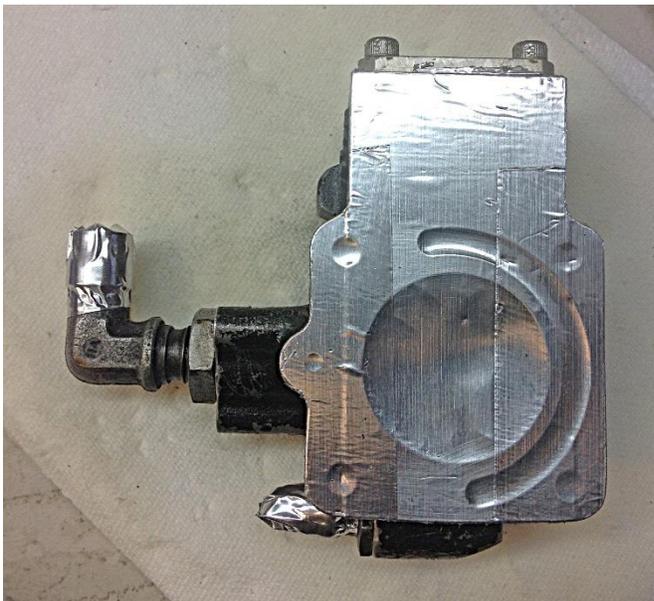


JUAN RIVERA HELICYCLE BUILDER LOG #2
FUEL PUMP AND FUEL CONTROL CLEANUP



I started with the fuel pump assembly which I removed and tore down. I pulled the mounting pad and filter cover off and polished those parts. I also replaced the hardware.

The paint was in poor shape so I decided to blast it off and repaint with POR-15. After removing the filter cover and mounting pad I carefully sealed all the openings with aluminum tape.



Here's the pump ready to blast. I used fine ground glass and I was extremely careful to seal every opening. After blasting I inspected the pump with a magnifier and cleaned out any specs I found with a Q-tip and alcohol.

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FUEL PUMP AND FUEL CONTROL CLEANUP



Here's the pump housing after blasting it with fine ground glass. The few remaining flecks of paint are solidly bonded to the aluminum.

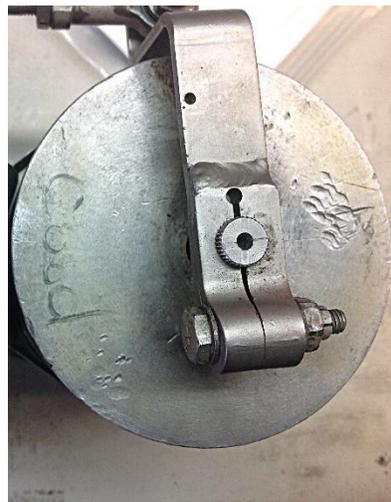
I also pulled the internal components out for a visual inspection. If you do this be very careful as there are many very small parts inside including little springs and O-rings. Also the gears and bearings are not interchangeable and must not be switched.



Here's a shot of the drive gear and the driven gear. They are sitting on their front bearings (brass.) After reassembly and painting I set the pump aside.

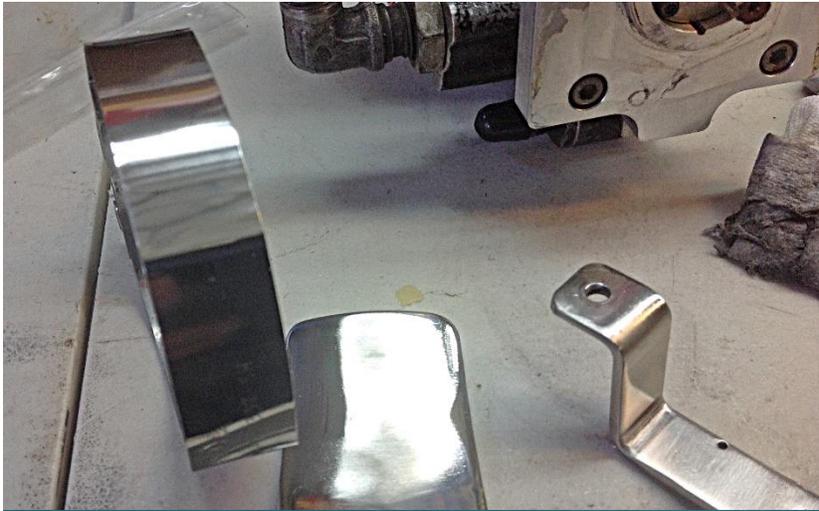


The torque motor had seen some hard times and this mounting plate looked like it had been fabricated out of some scrap. The slot and the ears served no purpose at all, so I cut the ears off and went after the plate with my deburring wheel and polisher. It's stainless and polished up nicely. I also polished the clamp which was also stainless.

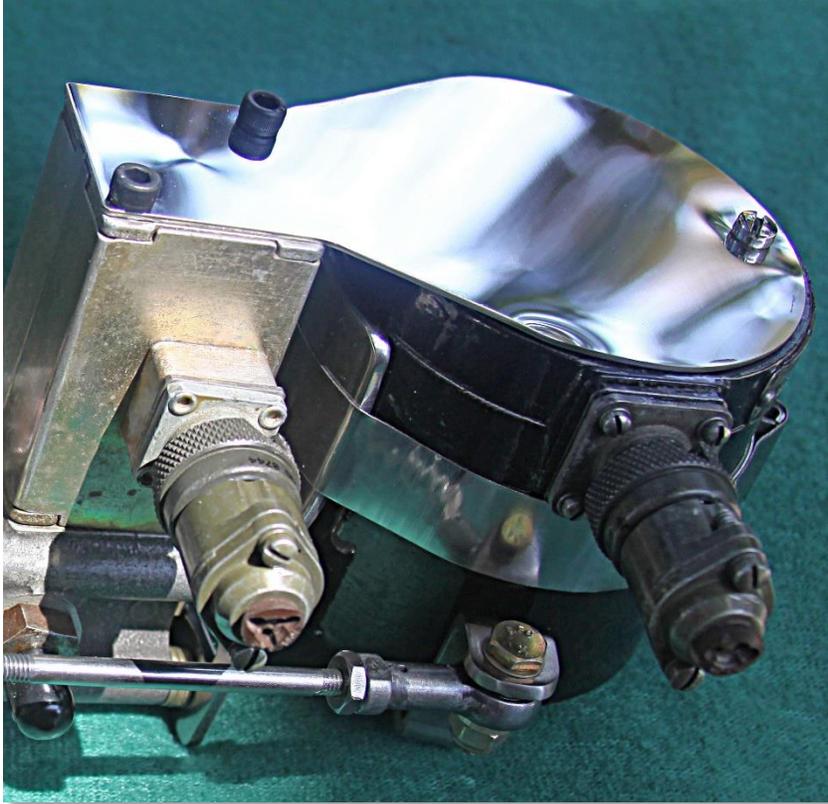


The bottom of the torque motor has a small crack and what looks like many hammer marks over the crack. There isn't much I can do about that.

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FUEL PUMP AND FUEL CONTROL CLEANUP

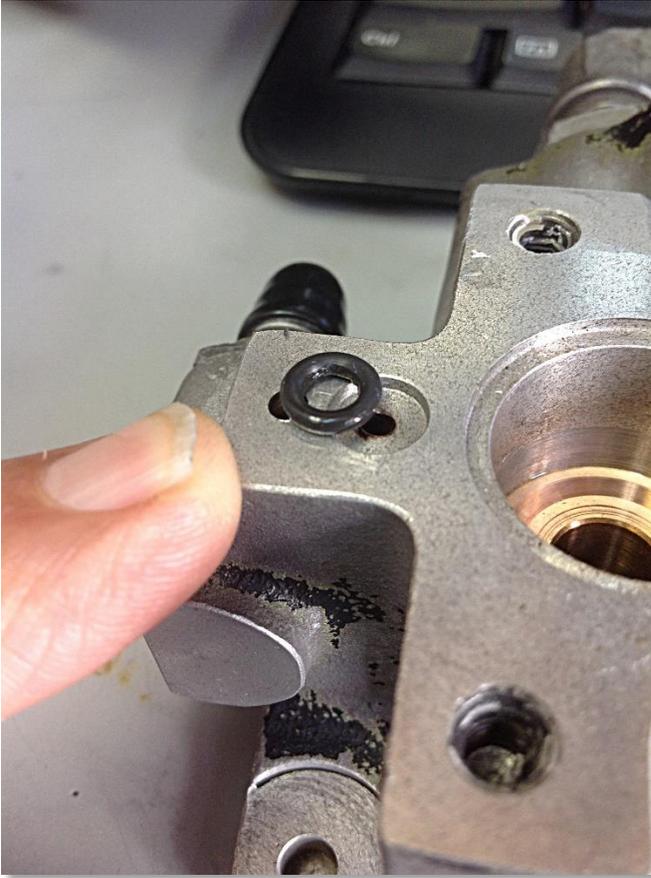


Here's that torque motor clamp, mounting plate, and the actuator arm after polishing.

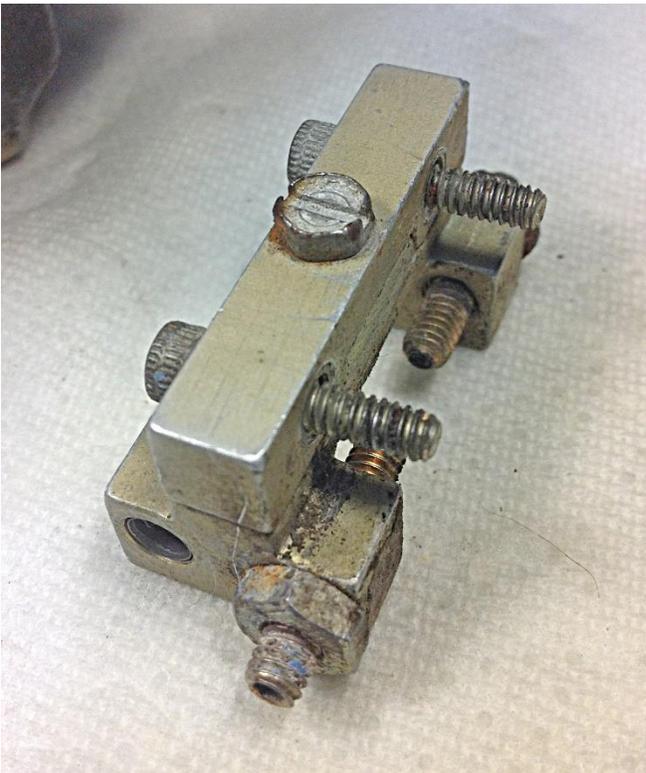


Here's the painted torque motor and new stainless top plate I made for it. I took the opportunity to rotate the motor ninety degrees so that the connector comes out parallel with the start fuel solenoid's connector. That will make for a cleaner-looking cable harness. The torque motor has a slightly wider range of motion than is required to move the throttle linkage from stop to stop, so all that is required is to insure that the actuator arm is installed in the middle of that range when the linkage is also in the middle of its range.

JUAN RIVERA HELICYCLE BUILDER LOG #2
FUEL PUMP AND FUEL CONTROL CLEANUP



I took many pictures at every step as I disassembled the various components and pointed out every small item I found so I would remember to put it back later. I used a lot of small baggies to keep the various components separated by subassembly and free of contamination.

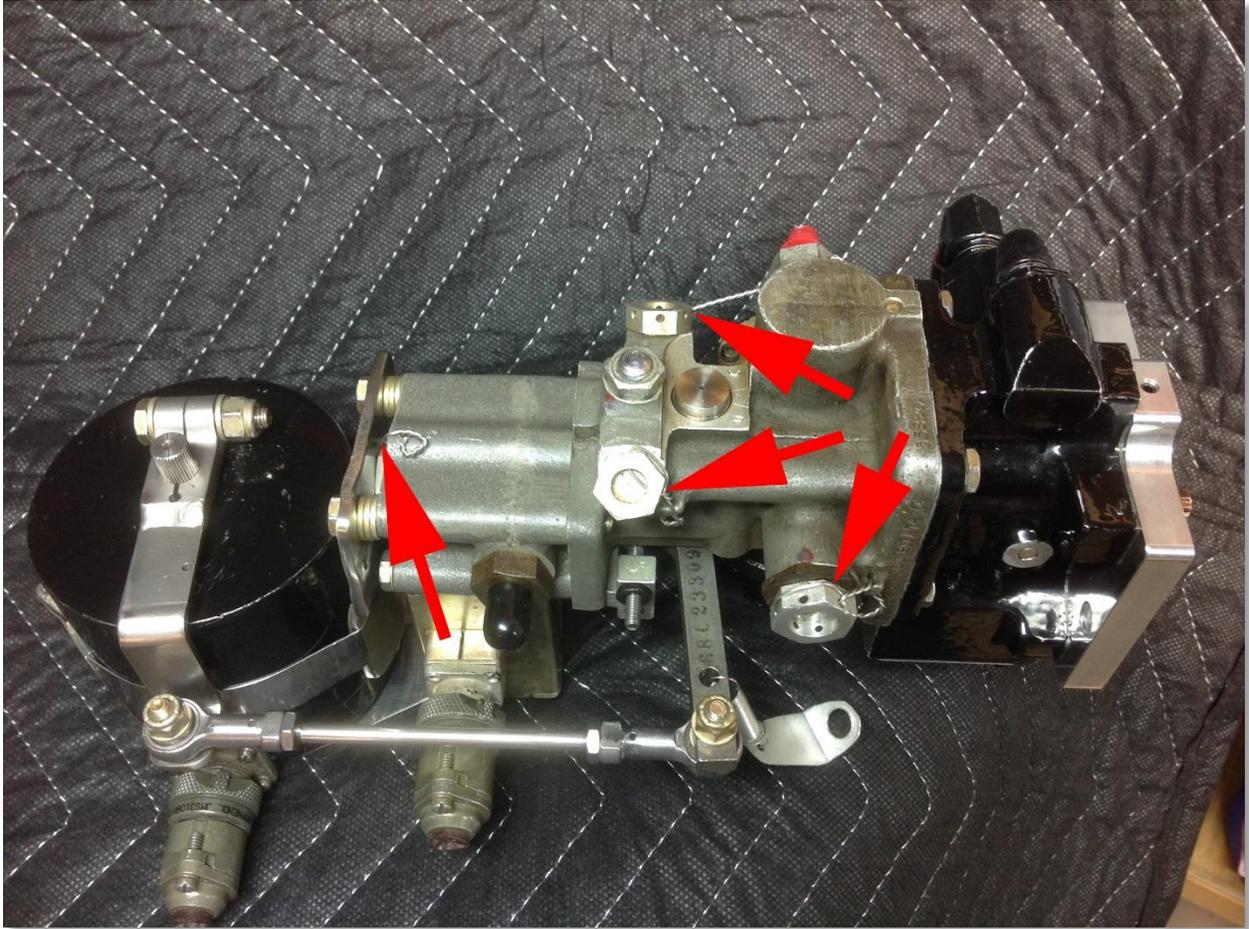


The throttle stop assembly was typical of the controller as a whole. There was a lot of dirt and corrosion everywhere. I replaced all the hardware with black stainless steel and the throttle stop set screws now have Nylon tips. Not necessary of course, but why not?

I may replace the small Heim rod ends on the throttle linkage later since they feel sticky to me.

I stayed out of the more critical areas of the fuel control assembly so I think it should function as well as when I received it. Only time will tell.

JUAN RIVERA HELICYCLE BUILDER LOG #2
FUEL PUMP AND FUEL CONTROL CLEANUP



Here's a view of the bottom of the assembly after the work was completed. I safety wired the four caps and in the process I noticed that the throttle linkage rod was too short and the fuel control lever and the torque lever were not lined up very well. I wanted the two levers to be parallel as you see here so I fabricated another rod out of stainless and polished it. Now the torque motor is operating in the middle of its range and the two levers track nicely.

JUAN RIVERA HELICYCLE BUILDER LOG #2
FUEL PUMP AND FUEL CONTROL CLEANUP



I replaced the old stiff Heim joints with new anodized aluminum ones and also adjusted the torque motor lever's height on the splined shaft so that the rod ran parallel to the direction of motion.

That completes this job. As soon as I receive my transmission I'll be able to paint the engine, transmission, and tail rotor gearbox and start to reassemble the engine components...