



2022

CM04 Basic Pump Troubleshooting

FITZSIMMONS HYDRAULICS

FHI-CM04 Systems

When to reference this manual

Use this manual when you have one of two situations:

1. Your system will not go into stroke

- a. If the electronic control does not operate the pump, first try the manual over ride needle valve. This will determine if the electronic control requires repair / replacement.
- b. Check that charge pressure is between 200 and 250 PSI. If not, then adjust as shown in system manual. This should match the high-pressure line setting when in standby mode.

2. Your system will not come out of stroke / cryo pump is spinning on its own

- a. Ensure there is no control signal to the control valve, and that the manual over ride needle valve is fully open.
- b. Check that charge pressure is between 200 and 250 PSI. If not, then adjust as shown in system manual. This should match the high-pressure line setting when in standby mode.

CM04 system control

The CM04 system is a patented hydraulic system. The TS58 valve is the only electronic portion of control for this system. This valve when powered, will determine the amount of flow that the system produces.

Should this valve fail, there is a manual override needle valve available for immediate use. To produce more flow, “screw in” the needle valve. Return to “out” position upon completion.

Pump will not go into stroke

1. Connect a test stack to the hydraulic system. If the electronic control does not operate the pump, first try the manual over ride needle valve. This will determine if the electronic control requires repair / replacement. If the manual over ride does nothing, then proceed.
2. With the PTO disengaged, disconnect the small line from the control manifold, shown here.



Figure 1: Control Manifold

3. Plug or cap the now open manifold port. This manifold port is a #6 Female O-ring boss.
4. Plug or cap the hydraulic line you just disconnected from the manifold.
5. Upon starting the PTO, the pump will immediately enter full stroke / flow.
6. If you see full output, then the control manifold is the issue. Replace components or the manifold in its entirety.
7. If you do not see full output, try the following:
 - a. Ensure the high-pressure relief valve is adjusted fully in if internal adjustment style, or with approx. 1/2" of threads if external adjustment style.
 - b. Adjust pump compensator / high pressure setting – only on a new system, as this setting will not change over time.
 - c. Cleaning the control spools, as outlined later in this manual.
 - d. Replace the control of the pump in its entirety.
 - e. Contact Fitzsimmons Hydraulics to schedule a repair of the pump.
8. Fitzsimmons also recommends to change system fluid, and filters. Filters at a minimum, as most hydraulic failures are caused by contamination.

Pump will not come out of stroke

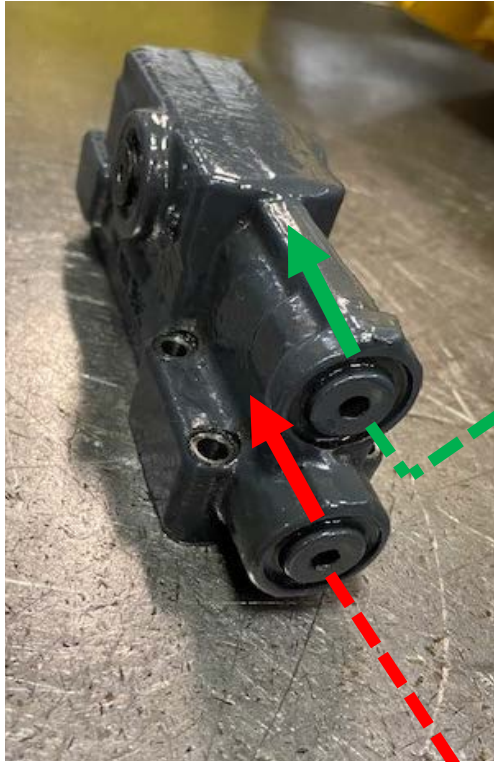
1. Connect a test stack to the hydraulic system. Ensure there is no control signal to the control valve, and that the manual over ride needle valve is fully open. If pump remains in stroke, then proceed.
2. With the PTO disengaged, disconnect the small line from the control manifold, shown here.



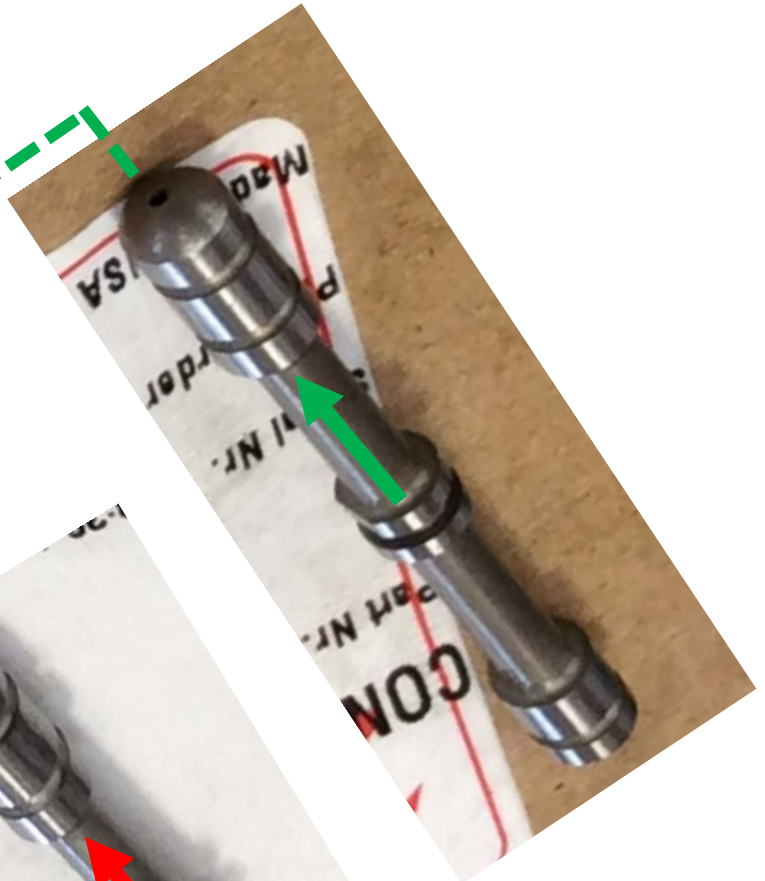
Figure 2: Control Manifold

3. Plug or cap the new open manifold port. This manifold port is a #6 Female O-ring boss.
4. Place the hydraulic line you just disconnected from the manifold into a minimum 1-gallon container.
5. Upon starting the PTO, the pump will default to standby pressure. Expect approximately 1 gallon per minute from disconnected line. **Do not operate for extended periods (30+ seconds)**, this will drain the reservoir and permanently damage the system. Do not allow fluid to drop below the sight gauge.
6. If pump returns to neutral / standby, then the control manifold is the issue. Replace components or the manifold in its entirety.
7. If pump remains in stroke, try the following:
 - a. Cleaning the control spools, as outlined later in this manual.
 - b. Replace the control of the pump in its entirety.
 - c. Contact Fitzsimmons Hydraulics to schedule a repair of the pump.
8. Fitzsimmons also recommends to change system fluid, and filters. Filters at a minimum, as most hydraulic failures are caused by contamination.

Spool positioning and orientation



Spool with nose port,
goes in as shown



Spool without nose
port, goes in as shown



Contamination removal

By following the below steps, readjustment of the control will not be necessary.

Tools needed:

- 3/16" Hex bit socket
- Ratcheting wrench
- Torque wrench
- Magnetic pickup tool

1. Ensure PTO is disengaged, the Truck is OFF, and ensure others will not attempt to use the Truck for any reason while this procedure is being performed.

2. Using a cleaner which is non harmful to the paint or surrounding area, clean the pump control and surrounding area as necessary to ensure no additional contaminants enter the system during disassembly. **See Figure 2 Remote Pressure Control.**



Figure 2: Remote Pressure Control

3. Place a catch pan and/or absorbent materials under the pump to catch any residual fluid which may come from the control.

4. Using a 3/16" Hex bit socket and accompanying ratcheting wrench, remove the outermost plug. **See Figure 3 Outer Plug Removal.** Use caution to not introduce any contaminants into the cavity. Fluid will leak from the port.



Figure 3: Outer Plug Removal

- Using a magnetic pickup tool, remove the spool from the valve body. See **Figure 4 Outer Spool Removal**.



Figure 4: Outer Spool Removal

- Inspect the spool. This spool will have a port in the “nose” of the spool. Use a cleaning agent to ensure all grooves and ports of the spool are free from contamination. Ensure there are no gouges or “rough spots” caused by contamination. See **Figure 5 Outer Spool**.



Figure 5: Outer Spool

RPC Contamination Removal

7. Reinstall the outer most spool into the valve body. Insert the “nose” of the spool first. *Gently* push the spool back into its prior position.
8. Using the 3/16” Hex bit socket and a torque wrench, reinstall the plug to a torque of 12N*m (9lbf*ft). Careful not to roll the O-ring into the threads, or cross thread the plug in the valve body.
9. Using a 3/16” Hex bit socket and accompanying ratcheting wrench, remove the inner plug. See **Figure 6 Inner Plug Removal**. Use caution to not introduce any contaminants into the cavity. Fluid will leak from the port.
10. Using a magnetic pickup tool, remove the spool from the valve body.
11. Inspect the spool. This spool will have a solid “nose”. Use a cleaning agent to ensure all grooves and ports of the spool are free from contamination. Ensure there are no gouges or “rough spots” caused by contamination. See **Figure 7 Inner Spool**.



Figure 6: Inner Plug Removal



Figure 7: Inner Spool

RPC Contamination Removal

12. Reinstall the inner most spool into the valve body. Insert the “nose” of the spool first. *Gently* push the spool back into its prior position.
13. Using the 3/16” Hex bit socket and a torque wrench, reinstall the plug to a torque of 12N*m (9lbf*ft). Careful not to roll the O-ring into the threads, or cross thread the plug in the valve body.
14. Upon reassembly, remove all oil and pan from beneath the truck.
15. Operate / Test the system.

Should your pump require setting adjustments, please reference the manual for your system. If this is unavailable, call Fitzsimmons Hydraulics at (716) 759-8389 for required settings and walkthrough.