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# Troubleshooting

## Supply Gas Leaks

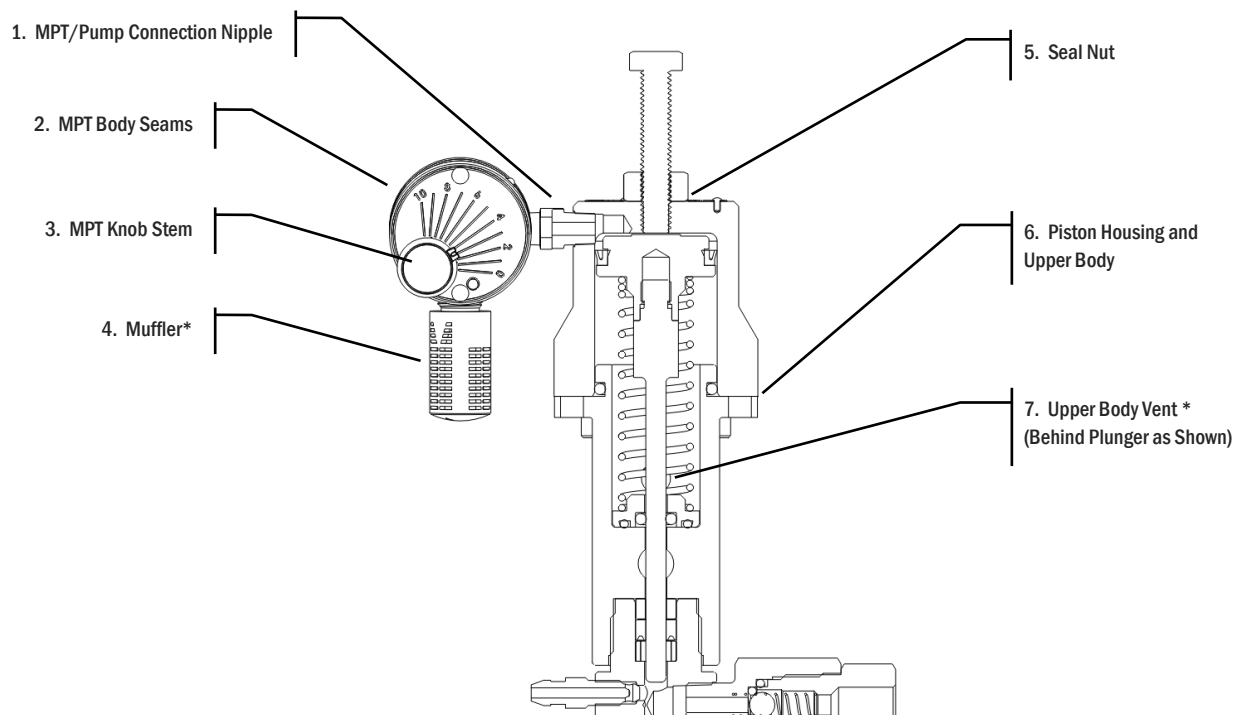


Figure 1: Supply Gas Leak Troubleshooting Location Reference

Leak Location	Probable Cause	Corrective Action
1	Threads not sealed	Apply Loctite 567 thread sealant or equivalent to threaded connections
	Connection not tightened properly	Tighten nipple fitting ~ ¼ to 1-¾ turns past hand tight or a maximum of 12 ft-lbs (16 N-m)
2	Timer body seal or diaphragm worn	Replace timer body seal and diaphragm (Included in TRK MPT)
	Timer parts not tightened properly	Tighten timer assembly screws
3	Timer stem O-ring worn	Replace timer stem O-ring (Included in TRK MPT)
4*	Timer knob opened too far	Rotate timer knob clockwise until stroke rate falls below 70 strokes/minute
	Trash in Timer Seat	Inspect and clean timer internal components
	Bad Soft Goods	Replace timer soft goods
5	Seal nut not tightened properly	Tighten seal nut
	Seal nut worn or damaged	Replace seal nut
6	Body seal O-ring worn or damaged	Review chemical compatibility and replace O-ring
7*	Damage to piston U-Cup	Replace U-cup (Included with WRK and PRK repair kits)
	U-Cup Installed Improperly	Remove and reinstall U-cup with proper orientation. U-Cup lip should face towards the stroke adjustment screw.

\*Muffler and Upper Body Vent will exhaust gas during pump operation. Troubleshooting is only required if there is a constant, steady leak from either port.

## Fluid Leaks

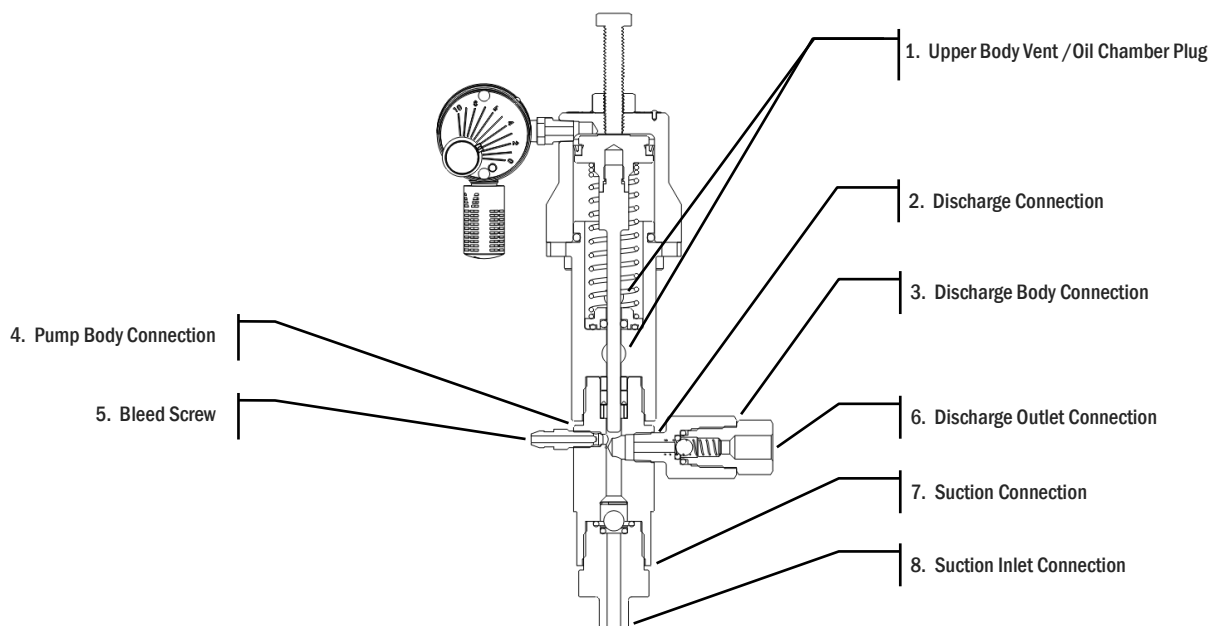


Figure 2: Fluid Leak Troubleshooting Location Reference

Leak Location	Probable Cause	Corrective Action
1	Seal Failure	Replace pump fluid end seal
2	Threads not sealed	Wrap threads with 2-3 layers of Teflon tape or equivalent
	Check not tightened properly	Tighten discharge check $\frac{3}{4}$ to $1-\frac{3}{4}$ of a turn past hand tight or a maximum of 25 ft-lbs (34 N-m)
3	Discharge check seal O-ring failure	Replace discharge check soft goods
	Discharge check body not tightened properly	Tighten check body until the pieces bottom out (straight thread connection)
4	Seal Failure	Replace pump fluid end seal
5	Bleed screw not tightened	Tighten bleed screw ~ $\frac{1}{8}$ to $\frac{1}{4}$ of a turn past hand tight until flow stops
	Bleed screw/pump body damaged	Replace bleed screw or pump body. Ensure that bleed screw is not over tightened
6	Connection not sealed	Wrap threads with 2-3 layers of Teflon tape or equivalent
	Connection not tightened properly	Tighten connection $\frac{3}{4}$ to $1-\frac{3}{4}$ of a turn past hand tight or a maximum of 25 ft-lbs (34 N-m)
7	Suction check seal O-ring failure	Check chemical compatibility of soft goods. Replace suction check seal O-ring
	Suction check not tightened properly	Tighten suction screw ~ $\frac{1}{8}$ to $\frac{1}{4}$ of a turn past hand tight if seal O-ring was just replaced. Otherwise, tighten connection to hand tight and apply light torque (10-15 ft-lbs) to tighten
8	Connection not sealed	Wrap threads with 2-3 layers of Teflon tape or equivalent
	Connection not tightened properly	Tighten connection $\frac{3}{4}$ to $1-\frac{3}{4}$ of a turn past hand tight or a maximum of 25 ft-lbs (34 N-m)

## Low or No Flow from Pump

Issue	Probable Cause	Corrective Action
Timer not Cycling	No Supply Gas	Check supply gas connections
	Timer Stroke Rate too Low	Turn timer stroke rate adjustment knob counter-clockwise
	Timer Soft Goods Failure	Check soft goods and replace if necessary
No Chemical Movement in Sight Glass	Discharge Blockage	Check for any closed valves or blockage on discharge line which could dead-head pump
	Insufficient Supply Pressure	Verify required supply pressure; increase supply pressure to check that expected discharge pressure is correct
	Air in Pump Chamber	Open bleed screw until flow is laminar (no bubbles are present) and re-tighten
	Suction Blockage or Insufficient Suction Supply Pressure	Check for any closed valves or blockage on suction supply line. Verify that pump suction check is at least 6" below the chemical supply  If no chemical is present when bleed screw is opened, this is indicative of a suction supply issue.
Chemical "Bounces" in Sight Glass	Suction Check not Sealing Properly	Caused by chemical entering pump body and exiting back through suction check. Inspect suction check soft goods and replace if necessary. Initial replacement of suction check O-Ring may require seating of ball to help with sealing.
Low Flow Rate	Timer not Cycling Fast Enough	Turn timer stroke rate knob counter-clockwise to increase stroke rate.  If knob hits dowel pin before advertised maximum stroke rate, the knob set screw may be removed to reposition the knob to allow for further travel.
	Timer Cycling too Fast	Too high of stroke rate may reduce the amount of chemical per stroke as the plunger does not complete its full stroke length travel. To check this: <ul style="list-style-type: none"> <li>Note amount of flow/stroke at set stroke rate</li> <li>Reduce stroke rate to 10-20 strokes per minute and note flow/stroke</li> </ul> <p>If the plunger is short stroking at the desired speed, this may be caused by one of the following:</p> <ul style="list-style-type: none"> <li>Supply pressure is too low causing a slow travel speed on the discharge stroke</li> <li>Supply pressure is too high which requires increased time to exhaust on the suction stroke</li> </ul> <p>Adjusting the exact amount of supply pressure for the application may be necessary to optimize output.</p>
	Insufficient Supply Volume	Verify that the supply gas volume is sufficient to run the pump.  This may be field-checked by installing a pressure gauge on the supply line. If the pressure gauge sees a sudden drop in pressure on the discharge stroke and does not recover to the set supply pressure before the next stroke then the supply volume available should be increased.
	Broken Return Spring	Replace return spring. Check for excessive wear on internal concentric parts which guide alignment. If excessive wear is found, contact manufacturer.

Reference Images

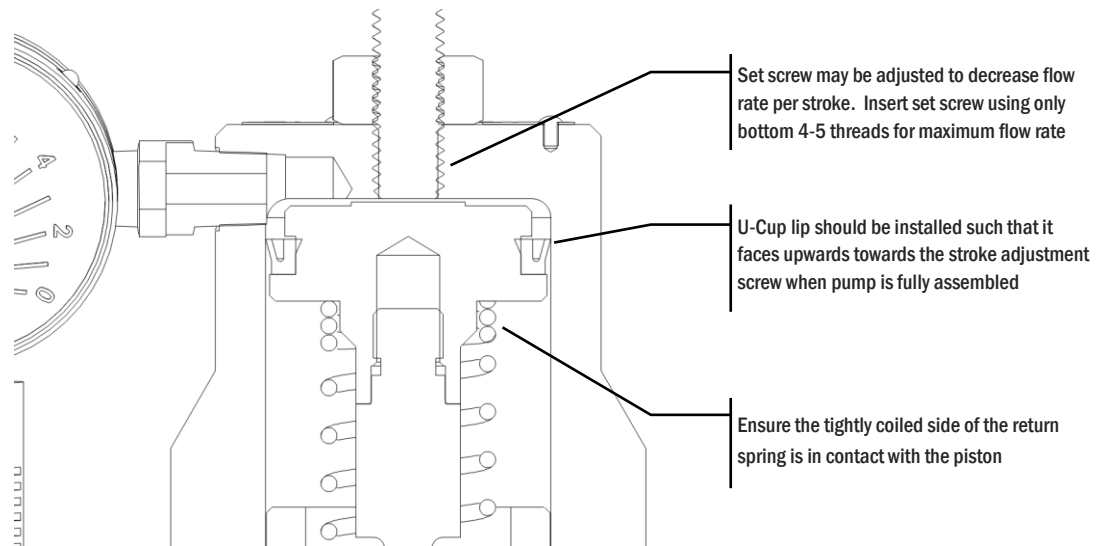


Figure 3: Stroke Adjustment Screw, U-Cup and Return Spring Assembly

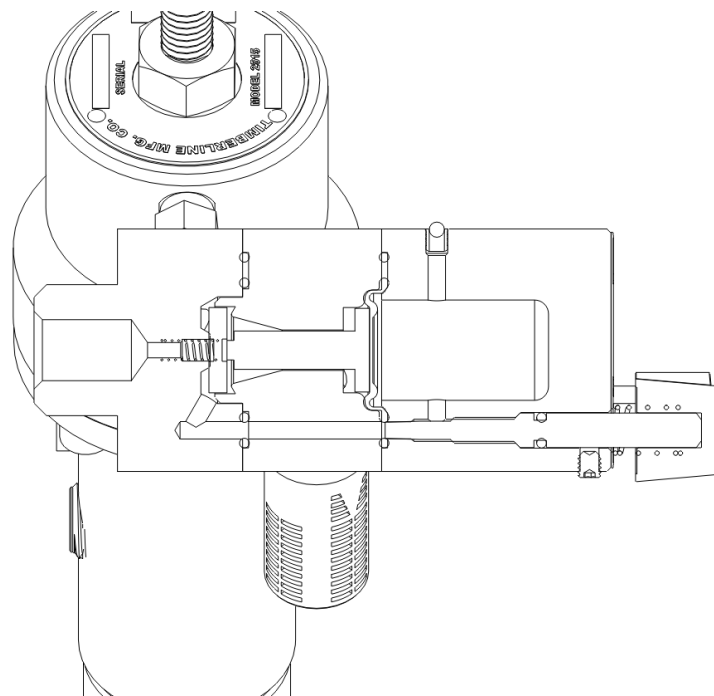


Figure 4: Timer Internal Layout

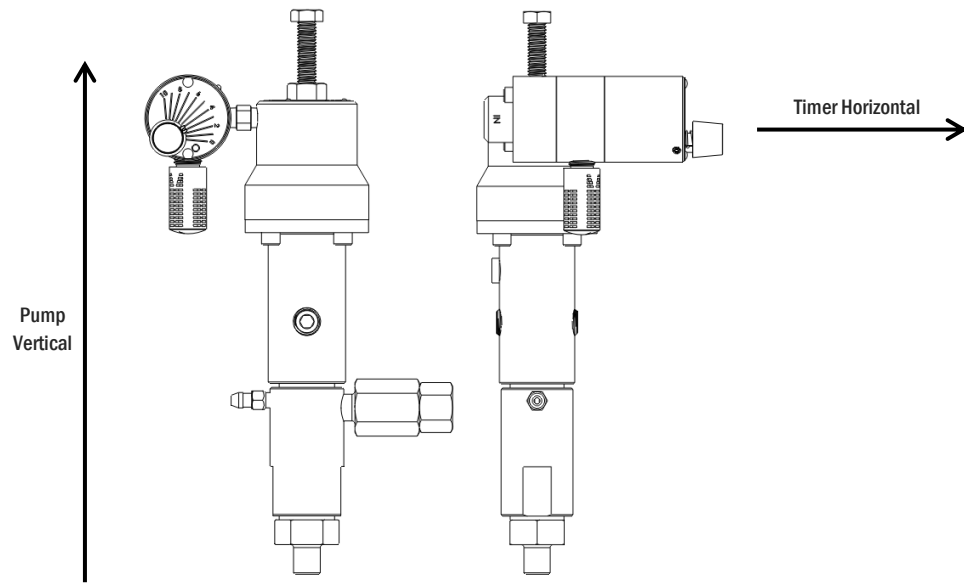


Figure 5: Pump and Timer Orientation