M200
Rev. B
LP Gas Flowmeters
Troubleshooting Guide

RED SEAL
MEASUREMENT

Troubleshooting Guide For neptune® LP Gas Flowmeters

SYMPTOM: REGISTER DOES NOT RUN WHEN FLOWMETER IS IN OPERATION

1. Loosen the two square-head clamp screws at the front base of the register.
2. Remove the register and look into the bottom at the change gears.
   Each change gear has a shear strip in the center hub. If broken, replace the complete gear with another gear that has the same number of teeth. The number of teeth is stamped on each gear. (Refer to TSG-310 for your exact part number)
3. While the register is removed from the flowmeter, check the star drive gear on the flowmeter to make sure it is not slipping on the gear train shaft. If the star drive gear is loose, tighten the allen set screw.
4. Check the gear train by rotating the star gear with your fingers. You should not be able to turn the star gear a full revolution. If you are able to turn the star gear a full revolution, the gear train is broken and requires replacement.

SYMPTOM: FLOWMETER FLOW RATE DECREASES OR COMPLETELY STOPS

A. Insufficient Differential Pressure

Insufficient differential pressure may be caused by the following:

- Worn pump (indicated by fluctuating needle on the pressure gauge;
- Incorrect pump size;
- Pump bypass not set properly;
- Restrictions in the suction or supply lines.

The Differential Valve on the discharge side of the flowmeter requires at least 18 pounds more pressure on the inlet side of the flowmeter than the discharge side. This "Differential Pressure" must be present for the flowmeter to operate properly. Check by installing pressure gauges on both sides of the flowmeter and comparing the readings.

CAUTION

Before opening any part of the flowmeter, close valve between supply tank and flowmeter. Disconnect coupling in vent line at vapor release cover.

Perform the following outdoors, away from buildings or sources of ignition:

1. ***Open valve slowly at the end of delivery hose or other outlet piping.***
2. ***After pressure is dissipated:***
   a. ***Locate the vent valve hex nut on top of the Vapor Release.***
   b. ***Slowly unscrew the vent valve hex nut (maximum 3 turns) to depressurize product in the flowmeter.***

B. A Defective Float or Main Valve in the Vapor Release; Ruptured Diaphragm in the Differential Valve (1¼", 1½" & 2" Only)

To check for these occurrences:

1. Engage the pump as if to make a delivery.
2. Shut off vapor line to storage. This can be done by disconnecting the backcheck coupling on top of the vapor release or by manual shutoff valve (if one is installed in the line).
3. Disconnect the tubing that connects the top of the differential valve to the top of the vapor release. After the trapped LPG in this line has been expelled, ***there should be no evidence of LPG.***

If LPG continues to escape ***from the differential side,*** the diaphragm in the differential is ruptured and needs replacement. If LPG continues to escape ***from the vapor release side,*** the rubber seat of the main valve is worn or has trash on it and needs replacing ***OR*** the float ball could have collapsed from shock pressure or filled with liquid and needs replacing.

C. Clogged Strainer in the Vapor Release

A clogged strainer in the vapor release may cause excessive vaporization of the LPG which would prevent the vapor release from closing. Cleaning or replacing the strainer will correct this problem.

NOTE: Do not operate the flowmeter without the strainer in place.

D. Improper Vapor Return Line Routing

The vapor line should be connected only to the vapor space of the supply tank. Connection with other vapor lines should be done as close to supply tank as possible. ***NOTE: Never connect the vapor return line to the pump bypass.*** Connecting the vapor return line to the pump bypass can cause erratic flowmeter performance.

SYMPTOM: CONTINUED ERRATIC PERFORMANCE

If none of the previous checks correct the flow rate decrease or stoppage, the measuring chamber may need repair. To service the measuring chamber, perform the following:

1. Check the measuring chamber in the flowmeter for foreign material that may cause sticking or jamming of the piston.
2. Clean out all foreign material.
3. Using a 3-sided machinist scraper, smooth any score marks on the piston and measuring chamber housing. Lightly polish both assemblies with very fine emory cloth.
4. Check the center control roller, the diaphragm, and the seal pin for wear. Replace parts as needed. Refer to the Flowmeter Parts List.
5. Reassemble the measuring chamber and rotate the piston to assure there are no sticking points remaining.

CAUTION: To prevent damage when placing the measuring chamber back in the flowmeter housing, align the locating pin in the housing with the locating slot on the bottom of the measuring chamber.

SYMPTOM: REGISTER CREEPING

If the flowmeter creeps a few tenths when the pump is engaged, it is probably due to a worn out or metal-seat inlet check valve. This assembly is located at the point where the supply piping enters the vapor release unit. Replace the old assembly with a new rubber seat assembly. This will create a positive seal and prevent bleed back of LPG from the flowmeter.

If the problem exists after replacing the inlet, check the valve assembly, the delivery hose and the nozzle for leaks.

If the flowmeter continuously creeps when the pump is engaged and the delivery nozzle is closed, the diaphragm (U-Cups on ¾" and 1") in the differential valve probably has a hole in it and needs replacing. This hole will allow LPG to circulate through the flowmeter and back to storage through the connector and vapor return line.

NOTE: Reuse of old gaskets is NOT recommended.

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