

Quick Troubleshooting Guide

NOTICE

- Veeder-Root makes no representation or warranty about the information in this publication. A qualified professional is required for service of the components addressed in this publication.
- The information in this publication cannot be used as a substitution for the knowledge and experience of a qualified professional.
- The information contained in this publication is merely for the consideration of a qualified professional, which should make their own determination of how to address any issues based on the situation.
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- Contact TLS Systems Technical Support for additional troubleshooting information at 800-323-1799.

Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will troubleshoot the equipment discussed in this manual:

Installer Certification: Contractors holding valid Installer Certification are approved to perform wiring and conduit routing, equipment mounting, probe and sensor installation, tank and line preparation, and line leak detector installation.

Safety Warnings

FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD RESULT IN SERIOUS INJURY OR DEATH, AND COULD CAUSE DAMAGE TO PROPERTY AND THE ENVIRONMENT.

EXPLOSIVE: Fuels and their vapors are extremely explosive if ignited.

FLAMMABLE: Fuels and their vapors are extremely flammable.

ELECTRICITY: High voltage exists in, and is supplied to, the device. A potential shock hazard exists.

TURN POWER OFF: Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.

WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

READ ALL RELATED MANUALS: Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.

This system operates near highly combustible fuel storage tanks.










To ensure proper installation, operation, and continued safe use of this product:

1. Read and follow all instructions in this manual, including all safety warnings.
2. Have equipment installed by a contractor trained in its proper installation and in compliance with all applicable codes including: National Electrical Codes 70 and 30A; federal, state, and local codes; and other applicable safety codes.
3. Before installing pipe threads apply an adequate amount of fresh, UL classified for petroleum, non-setting thread sealant. For E85AG applications, Loctite 564 is recommended for all field serviceable pipe threads.
4. When servicing unit, use non-sparking tools and use caution when removing or installing equipment to avoid generating a spark.
5. Substitution of components may impair intrinsic safety.
6. Do not modify or use service parts other than those provided by Veeder-Root.

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Safety Precautions

The following safety symbols are used throughout this manual to alert you to important safety hazards and precautions.

| | |
|--|--|
|  <p>EXPLOSIVE Fuels and their vapors are extremely explosive if ignited.</p> |  <p>FLAMMABLE Fuels and their vapors are extremely flammable.</p> |
|  <p>ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p> |  <p>TURN POWER OFF Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.</p> |
|  <p>WARNING Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p> |  <p>WEAR EYE PROTECTION Wear eye protection when working with pressurized fuel lines to avoid possible eye injury.</p> |
|  <p>USE SAFETY BARRICADES Unauthorized people or vehicles in the work area are dangerous. Always use safety cones or barricades, safety tape, and your vehicle to block the work area.</p> |  <p>APPROVED CONTAINERS Use nonbreakable, clearly marked containers, suitable for collecting and transporting hazardous fuels during service.</p> |
|  <p>READ ALL RELATED MANUALS Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.</p> | |

Reference Documents: This procedure references the following manuals 577014-053, 051-272, 577013-830, 042-153, 051-329, 051-330, 577014-340.

Tools Required: Multi Meter / Amp Meter, Pressure Gauge

On-Site Information: Verify exact problem with store personnel: No Flow / Slow Flow / Intermittent.

| INTERMITTENT FLOW | NO FLOW | SLOW FLOW |
|----------------------------|--|--------------------------|
| Hot fuel | No fuel in the tank / run dry | Mechanical leak detector |
| POS issue | Hot fuel | Bad capacitor |
| Over & under voltage | POS issue | Restricted inlet |
| STP circuit breaker | Circuit breaker off/tripped | Discharge head gasket |
| Over current | Tank Gauge power | SwiftCheck clogged |
| Plugged inlet | Electronic Line Leak | Dispenser filters |
| Bad capacitor | TLS pump control relay | Clogged RJ Trapper |
| STP Control relay | E-Stop | Broken nozzles |
| Electronic Line Leak alarm | STP control relay | Bad UMP |
| Bad UMP | Tripped shear valve – if individual fueling position | |
| | Plugged inlet | |
| | Dead capacitor | |
| | Bad wiring (field or pigtail) | |
| | Bad UMP | |

What is the exact problem (what is happening): Is the tank gauge showing any line leak alarms? Is there fuel in the tank and what is the fuel temp?

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Problem - No Fuel Pumping, No Flow

Troubleshooting Steps:

1. Is there fuel in the tank?
2. Is the site utilizing Electronic Line Leak.
 - a. Yes - are there any line leak alarms disabling STP operations?
 - b. No - go to Step 3.
3. Check relay
 - a. Do you have power on L1 and L2?
 - i. No - Check circuit breaker
 - ii. Yes - go to Step 'b'
 - b. Is hook signal present from ALL dispensers?
 - i. No – repair dispenser switch board.
 - ii. Yes - go to Step 'c'.
 - c. Check voltage on output side of the control box relay (M1, M2 connection) 200-250 Vac.
 - i. No – repair control box.
 - ii. Yes - go to Step 'd'.
 - d. Check current on one leg of output to STP (reference 577014-053 tables 2&3 – Electrical Service Information for proper current readings depending on STP size).
 - i. Normal current – go to Step 'e'.
 - ii. No current – de-energize relay and measure M1, M2 and check resistance between black and orange wires (to STP). Refer to 577014-053 Tables 2&3 – Electrical Service Information for proper resistance readings.
 1. If correct, overload may have reset so reconnect and test current again. Then let it run and see if it trips again.
 2. If infinite the overload has tripped or you have an open circuit.
 - a. Attach leads together, inside or out, and move to sump to ohm out.
 - i. If wire tests okay from contractor's box back to building, field wire is okay. Move to Step 'ii'.
 - ii. If resistance from contractor's box to motor is still infinite then either bad pig tail, bad capacitor or bad UMP.
 1. Test capacitor and verify wiring is correct.
 - a. If bad replace & retest.
 - b. If wiring is incorrect fix and retest.
 2. Pull Motor
 - a. Test pigtail – if fails replace pigtail.
 - b. Test windings.
 - c. Test pump shaft
 - i. Should spin freely.
 - ii. Loose bearings?
 3. If 'b' or 'c' fails then replace the UMP.
 3. If low resistance could be a short circuit OR a defective UMP.
 - iii. Incorrect current reading – Reference 577014-053 Tables 2&3 – Electrical Service Information for proper current readings depending on STP size.
 1. Verify All wires in control box are tight.
 2. Repeat Steps 2a and 3 above.

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- e. Is the ball valve open?
 - i. Open valve and retest.
- f. If current and voltage are good and ball valve is open, pull motor.
 - i. Ensure inlet isn't clogged.
 - ii. Test windings.
 - iii. Test pump shaft.
 1. Should spin freely.
 2. Loose bearings?
 - iv. If no sign of debris, replace UMP.

Problem - Slow Flow

Troubleshooting Steps:

1. Is the site using mechanical leak detectors?
 - a. YES – troubleshoot MLD (refer to 577014-340 for FX Leak Detector troubleshooting).
 - b. NO - go to Step '2'.
2. Is the site using Veeder-Root Electronic Line Leak Detection with SwiftCheck Valve?
 - a. YES – is SwiftCheck clogged? If so clean check valve and retest.
 - b. NO – standard V-R check valve or other tank gauge electronic line leak.
3. Install pressure gauge in line port and verify line pressure.
4. When was the last time site filters were changed on dispensers?
5. Test STP capacitor and verify wiring is correct.
 - a. Wiring incorrect - fix and retest.
 - b. Capacitor bad - replace.
 - c. Capacitor good - go to Step '6'.
6. Pull pump for further troubleshooting.
 - a. Is debris clogging inlet? Verify there is nothing on the bottom of tank that can be sucked up against inlet.
 - b. Verify the locking nut for adjustable column pipe is not loose.
 - c. Verify that the UMP is installed correctly and bolts are tight on the discharge head flange.
 - i. If not the gasket could be damaged causing slow flow.
 - d. If the previous steps are okay, Replace UMP.

Problem - Intermittent Flow

Troubleshooting Steps:

1. Check relay.
 - a. Is hook signal coming in consistently from ALL dispensers (try several times from each)?
 - i. NO - repair dispenser switch board.
 - ii. YES - go to Step 'b'.
 - b. Check voltage on output side of the control box relay (M1, M2 connection) 200-250VAC.
 - i. NO - repair control box.
 - ii. YES - go to Step 'd'.

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- c. Check current on one leg of output to STP (reference 577014-053 tables 2&3 – Electrical Service Information for proper current readings depending on STP size).
 - i. Normal current – go to Step 'e'.
 - ii. No current – de-energize relay and measure M1, M2 and check resistance between black and orange wires (to STP). Refer to 577014-053 Tables 2&3 – Electrical Service Information for proper resistance readings.
 1. If correct, overload may have reset so reconnect and test current again. Then let it run and see if it trips again.
 2. If infinite the overload has tripped or you have an open circuit.
 - a. Attach leads together, inside or out, and move to sump to ohm out.
 - i. If wire tests okay from contractor's box back to building, field wire is okay. Move to Step 'ii'.
 - ii. If resistance from contractor's box to motor is still infinite then either bad pig tail, bad capacitor or bad UMP.
 1. Test capacitor and verify wiring.
 - a. If bad replace & retest.
 - b. If wiring is incorrect fix and retest.
 2. Pull motor.
 - a. Test pigtail – if fails replace pigtail.
 - b. Test windings.
 - c. Test pump shaft.
 - i. Should spin freely.
 - ii. Loose bearings?
 3. If 'b' or 'c' fails then replace the UMP.
 3. If low resistance could be a short circuit OR a defective UMP.
 - iii. Incorrect current reading – Reference 577014-053 Tables 2&3 – Electrical Service Information for proper current readings depending on STP size.
 1. Verify all wires in control box are tight.
 2. Repeat Steps 2a and 3 above.
 - d. Is the ball valve open? Open valve and retest.
 - e. If current and voltage are good and ball valve is open, pull motor.
 - i. Ensure inlet isn't clogged or picking up debris.
 - ii. Test windings.
 - iii. Test pump shaft.
 1. Should spin freely.
 2. Loose bearings?
 - iv. If no sign of debris, Replace UMP.