



QF Manifold Harness Function Test

Supports L5000E / Plus / XL Versions

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Introduction

This technical reference presentation is a guide created to use when fault finding on a QF Flush Manifold. It can be used on both OPL and XL version QF Manifolds only and its aimed to teach how to test the manifold cable (harness).

The harness contains a small electronic board within the assembly, this is used to invert the flow switch logic for L5000 systems to recognise.

There are 3 methods of testing the cable, all are detailed here:

- **Test on Programmer** - Units with V3.20 firmware can be tested by just interrogating the handset (Pages 3 - 4)
- **In Situ** - The harness is tested as part of the system with a water supply (Pages 5 – 7)
- **Standalone** - The harness is removed from manifold and tested (Pages 8 – 14)

Test on Programmer (V3.20 Only)

The simplest way to check basic operation of the flush manifold is using the programmer.

L5000Plus and XL systems with the V3.20 Firmware PCB have a diagnostic mode to show the flow switch status in the Prime Screen on the Grey programmer. An installed system is needed with a connected water supply.

This test proves the basic functionality of the system. However may not factor the conditions overall, for example water flow/pressure at other times of the day.

Test on Programmer

Step 1

Confirm the dispenser is running on V3.20 Firmware. If not use the tests on subsequent pages.

In programming mode, locate the Prime Screen.



Flow Status Indicator
 - = Water Off
 + = Water On

Step 2

Safely activate the prime, by pressing the Action key. When water is running, the flow status indicator should change from “-” to “+”.

Releasing the action key stops the pump priming and after the flush cycle has complete the indicator should revert to “-”

Action Key



Conclusion

If the flow status indicator does not toggle correctly or if is stuck in one status. Then there is a fault with the system.

This could be an issue with the harness and the standalone tests should be carried out to check if the harness is the root cause.

In Situ Test

The next method shown will be in situ. This test requires the dispenser unit open and switched on, therefore should be carried out by electrically qualified personnel.

To test the cable in situ, you must ensure you have a stable water supply to the system.

A digital multi-meter with diode test capability is used to carry out the tests.

In Situ

Step 1

Turn off power to the dispenser. If the QF manifold harness is not already attached to PCB connector J10 as identified in the red circle below, then attach it.



Step 2

Turn on power to the unit. While the flush is off, carefully measure the voltage across pins 3 & 4 of the Molex connector attached to J10 as shown in the left photograph below.



Step 3 (Water Off)

The voltage should be less than 0.3 VDC.

**Water Off
< 0.3 VDC**



In Situ

Step 4 (Water On)

Use the programmer to advance to the “XprtTime” screen. Turn flush on by pressing the programmer’s ‘Action Key’ as shown below. When water is flowing measure the voltage across pins 3 & 4. The voltage should read 5.0VDC +/-0.3V



Water On
~= 5 VDC

Step 5

Turn the flush off by again pressing the programmer’s Action key.

Conclusion

If the measured voltages match those describe, then the QF manifold is operating correctly and the test is successful.

If not, then the manifold harness should be tested using the procedure described on the next slides.

Standalone Test

The next method shown will be the stand alone test. This is often the preferred test as its can be done without any power and checks all the components to ensure they are in range.

Here the harness should be completely disconnected from the dispenser and manifold, neither are needed to test. The test is to ensure that all the components inside the cable are working correctly.

There are 5 tests that need to be carried out with the multi-meter. Follow the next slides exactly as shown.

Resistance Test #1

On the crimped terminal end of the harness, set to measure resistance:

Attach the meter's RED lead to the WHITE cable crimp.

Attach the meter's BLACK lead to the RED cable crimp and measure resistance.

Value should be 75K ohms +/- 5%

Ensure test leads are connected as shown



Resistance Test #2

On the crimped terminal end of the harness, set to measure resistance:

Leave the meter's RED lead to the WHITE cable crimp.

Move the meter's BLACK lead to the BLACK cable crimp, and measure resistance. The

Value should be 19K ohms +/- 5%

Ensure test leads are connected as shown



Transistor Collector-Base Test #3

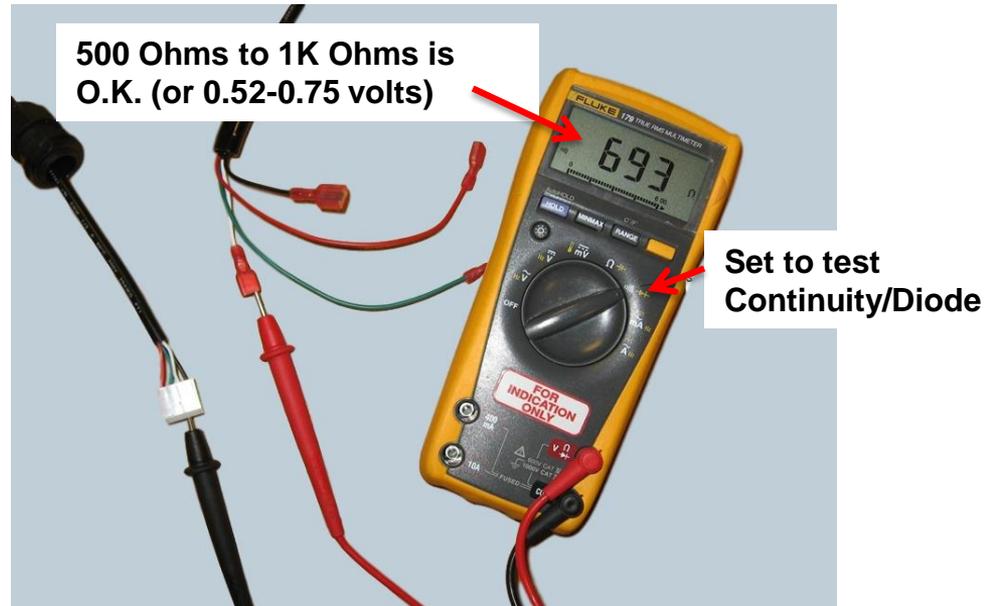
Now set the meter to continuity / diode test:

Leave the meter's RED lead on the WHITE cable crimp.

Move the meter's BLACK lead to the Molex Connectors WHITE cable and read either the Resistance or Voltage depending on meter type.

**Value should be 500 to 1K ohms
Or 0.52 to 0.75 Volts.**

Ensure test leads are connected as shown



Transistor Emitter-Base Test #4

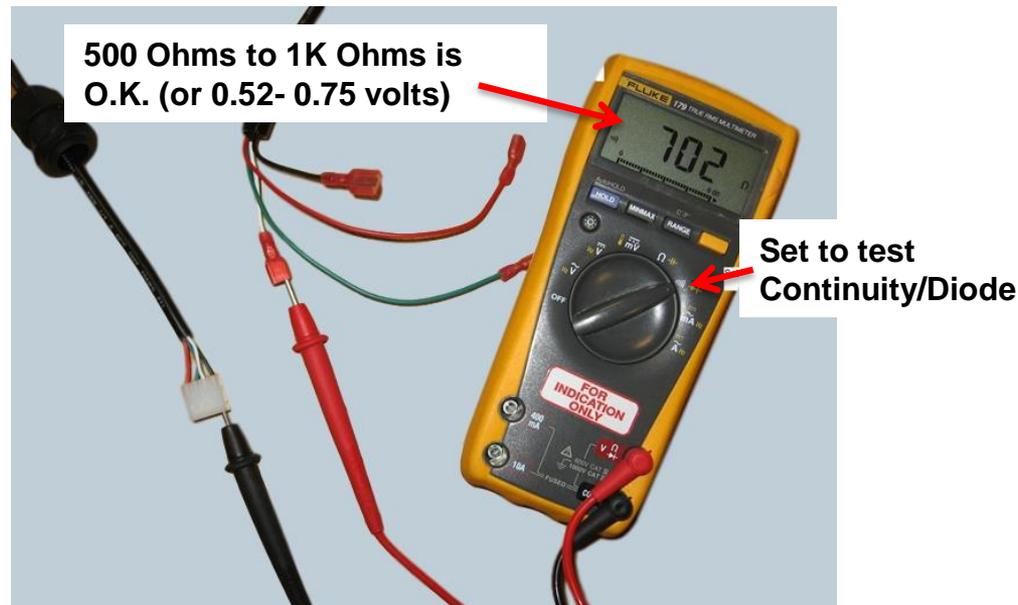
Leave the meter set to continuity / diode test:

Leave the meter's RED lead on the WHITE cable crimp.

Move the meter's BLACK lead to the Molex Connectors BLACK cable and read either the Resistance or Voltage depending on meter type.

**Value should be 500 to 1K ohms
Or 0.52 to 0.75 Volts.**

Ensure test leads are connected as shown



Transistor Emitter-Collector Test #5

Leave the meter set to continuity / diode test:

Leave the meter's BLACK lead on the Molex Connectors BLACK cable.

Move the meter's RED lead to the Molex Connectors WHITE cable and read either the Resistance or Voltage depending on meter type.

Value should read "OL" for open circuit. This is correct.

Ensure test leads are connected as shown



Conclusion

If in the “Standalone Test” any of the values read do not correspond to expected values or give values out of range, then the cable can be deemed faulty and must be replaced.

There is supporting information and Video’s available on the Equipment Website on manifold tests that can be performed. This can be found at www.solutionsdeliverysystems.com

For any other technical information or support contact the Equipment Applications Team