# ESP-LXD Controller Troubleshooting Guide

For product manuals, instructional videos and FAQs, please visit:

**www.rainbird.com/esplxseries**

For free professional support for programming and troubleshooting, please call: **1-866-544-1406**

## *Local Rain Bird Contact Information*

Distributor Mgr:

Email:

Phone:

Area Specification Manager
Public Agency Manager:

Email:

Phone:

Contractor Account Mgr:

Email:

Phone:

Water Conservation Mgr:

Email:

Phone:

## Contents

## Useful Tools

- **Milliamp Meter**
  *Recommended Model: Armada Pro 93*
- **As-Built Drawing**
  *If you don't have it, make it using a cable locator*
- **Wire Stripper**
  *For video showing proper wire splice instructions and other installation tips, please visit:* **www.rainbird.com/landscape/products/controllers/ESP-LXD.htm**
- **LXD Troubleshooting Tools**
  *Like the one you are holding in your hands*

**Milliamp Meter**

We recommend using:

- **Rain Bird MAXI Cable as your 2-Wire communications cable.**
- **Rain Bird DBR/Y splice kits for ALL electrical wiring connections.**


**Wire Stripper**

**NOTE:** If installing or repairing communications wiring for IQ Software, do not install the communications cables in the same conduit as the 2-Wire path wiring.

**NOTE:** Rain Bird HV, DV, and JTV Series residential valves are not compatible with ESP-LXD decoders.

Use only Rain Bird commercial series valves for ESP-LXD installations:

- **PGA Series**
  **www.rainbird.com/landscape/products/valves/PGA-series.htm**
- **PEB Series**
  **www.rainbird.com/landscape/products/valves/PEB_PESBseries.htm**
- **EFB-CP Series**
  **www.rainbird.com/landscape/products/valves/EFB-CP.htm**
- **BPE Series**
  **www.rainbird.com/landscape/products/valves/BPES.htm**

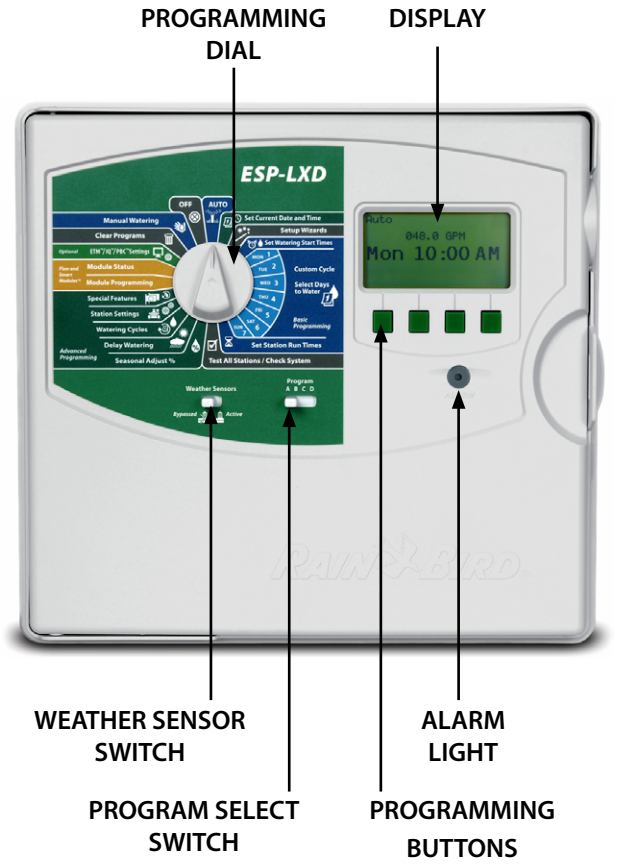
A list of ESP-LXD Controller Troubleshooting Videos can be found here:

**ESP-LXD Controller Troubleshooting**

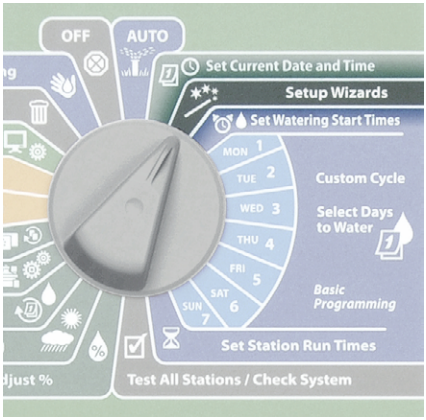
**www.youtube.com/playlist?list=PLKH-77cPRcpnuhsym3t_NbUjAqLu1G-9He**

## Controller Features

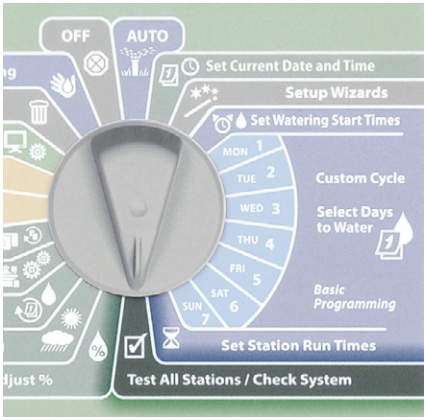
*Front Panel*



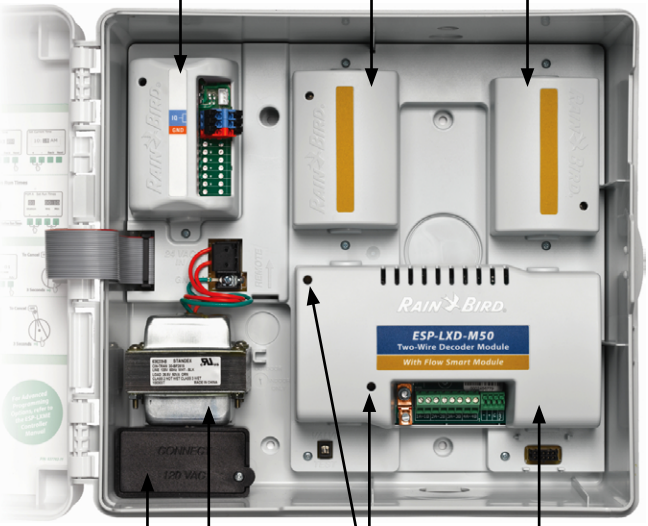
## *Setup Wizards*




## *Test All Stations/Check System*



# Cabinet Components



## Basic Programming

The ESP-LXD Controller offers Setup Wizards to help get you started and guide you through each step of the installation and hardware setup process.

It's most effective to use the Setup Wizards in the order in which they appear on the screen, as follows:

1. **Valve Types**
2. **Master Valves**
3. **Weather Sensors (if present)**
4. **Station Setup**
5. **Flow Sensors (if present).**

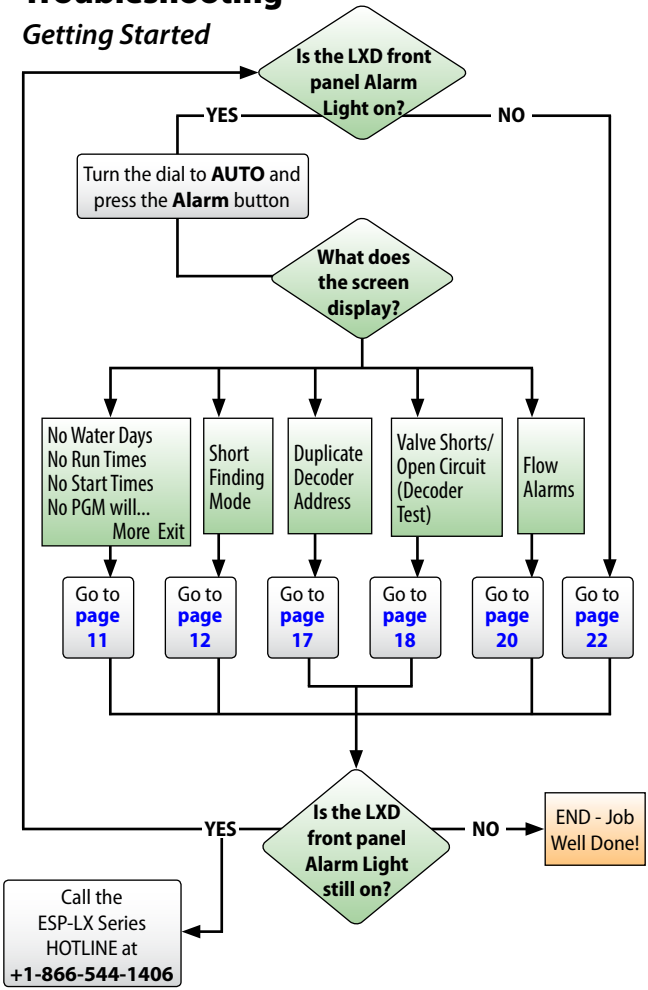
For more information see the **Installation, Programming & Operation Guide** that came with the ESP-LXD Controller.

Or else download the Programming Guide at:

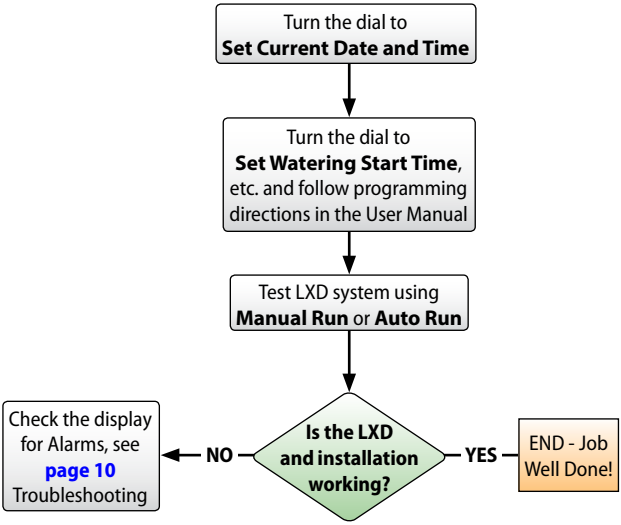
**www.rainbird.com/esplxseries**

# Troubleshooting

## *Getting Started*



# Alarm: No Water Days, No Run Times, ...



# Short Finding Mode

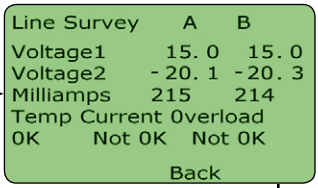
The controller has automatically entered Short Finding Mode to protect itself against a short on the 2-wire path

Turn the dial to **Test All Stations / Check Systems**

Press the **Down Arrow** button to select **2-wire Diagnostic**, then press **Next**

Press the **Down Arrow** button to select **Line Survey**, then press **Next**

The Line Survey screen is displayed




**NOTE:** The Voltage1 reading for a normal healthy system is typically in the +14.0 to +16.0 range for both A and B. The Voltage 2 reading is typically in the -20.0 to -21.0 range for both A and B. The Voltage1 and Voltage2 readings should be approx. equal for A and B. Milliamperage (mA) varies with the number of decoders installed and should be approx. equal to the amperage calculations detailed on **page 16.**

The display reads Temp OK, Current Not OK and Overload Not OK. This indicates a dead short in the 2-wire path. Temp could also show Not OK.

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# Short Finding Mode cont.

Open the front panel and check the two inidicator lights on the ESP-LXD-M50 module. The top indicator light should be green and the bottom indicator light should be dark. This indicates that the controller put the module in Short Finding Mode

If there are more than one 2-wire paths connected, disconnect the first 2-wire path

Disconnect the second/ third/fourth 2-wire path

**Did the controller exit Short Finding Mode and are both Indicator Lights illuminated?**

NO

YES

**NOTE:** In "looped" systems, cut the loop in the middle to create two independent paths.

Reconnect the Maxi-Cable to verify the controller goes back into Short Finding Mode

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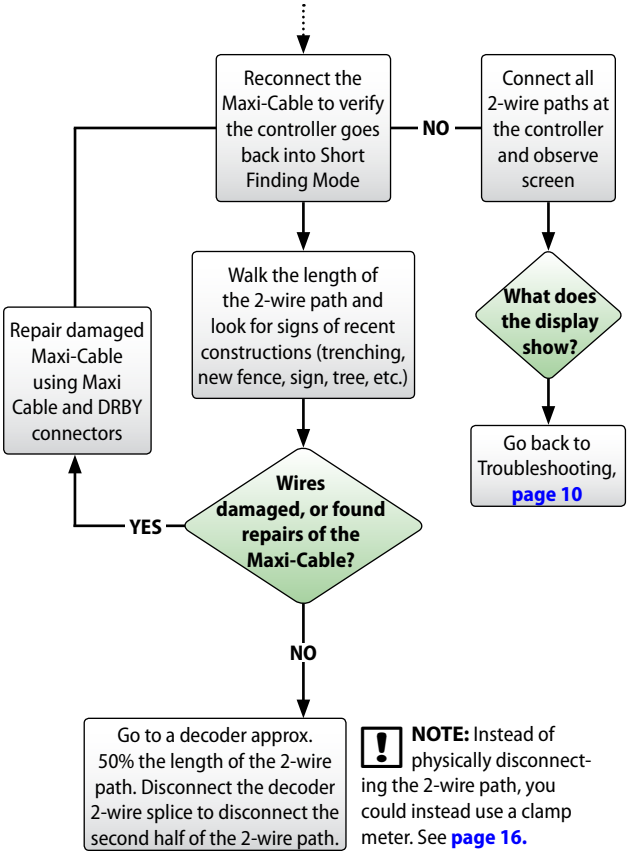
# Short Finding Mode cont.




**NOTE:** Instead of physically disconnecting the 2-wire path, you could instead use a clamp meter. See page 16.

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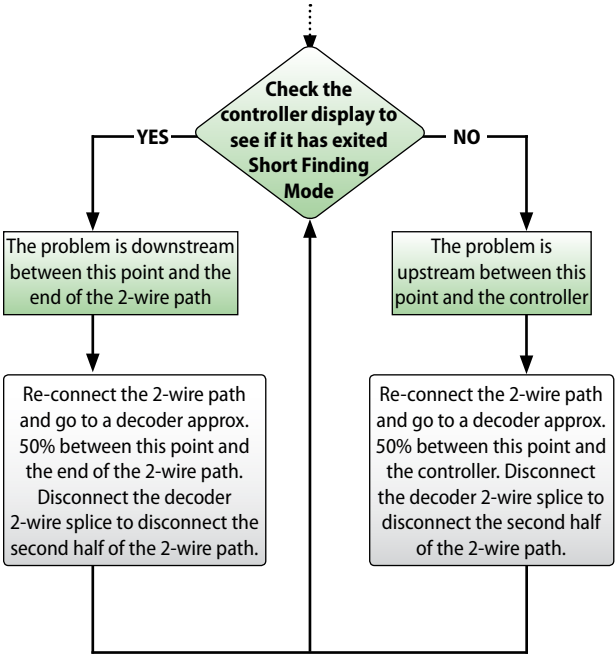
# Short Finding Mode cont.




For video instructions on **Automatic Short Finding Mode**, please visit:
**https://youtu.be/khFodRFUOXs**

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# Short Finding Mode cont.

**Alternatively, if you have a clamp meter you can also measure the amperage:**

**NOTE:** Before measuring the amperage, calculate the approximate current that the 2-wire path is consuming.

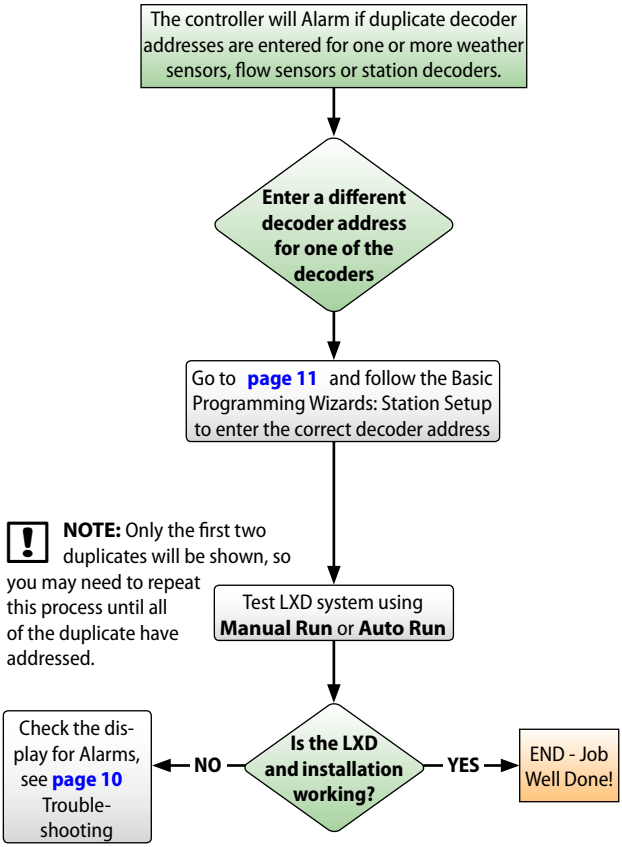
| *System Amperage Calculation* | | | |
|---|---|---|---|
| | Quantity of single address station decoders | **X** | 0.5 mA |
| **+** | Quantity of multiple address decoders | **X** | 1.0 mA |
| **+** | Quantity of active decoders | **X** | 17.5 mA |
| **+** | Quantity of other SD210 decoders | **X** | 8.0 mA |
| **=** | Approximate total system amperage in mA | | |

* Single address station decoders include the FD-101 and FD-102 decoders

** Multiple address station decoders include the FD-202, FD-401 and FD-601 decoders

For video instructions on **Locating a Short on the Two-Wire Path**, please visit: **https://youtu.be/6qDx-0K0aC0**

# Duplicate Decoder Address



# Manual Short Finding Mode

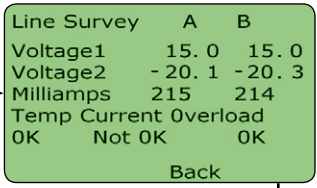
If you think a station is shorted:

Turn the dial to **Test All Stations / Check Systems**

Press the **Down Arrow** button to select **2-wire Diagnostic**, then press **Next**

Press the **Down Arrow** button to select **Line Survey**, then press **Next**

The Line Survey screen is displayed




**NOTE:** The Voltage1 reading for a normal healthy system is typically in the +14.0 to +16.0 range for both A and B. The Voltage 2 reading is typically in the -20.0 to -21.0 range for both A and B. The Voltage1 and Voltage2 readings should be approx. equal for A and B. Milliamperage (mA) varies with the number of decoders installed and should be approx. equal to the amperage calculations detailed on **page 16.**

The display reads Temp OK, Current Not OK and Overload OK. This indicates a possible short in the 2-wire path or one or more misconfigured decoders. A Not OK Overload flag can be caused by a dead short.

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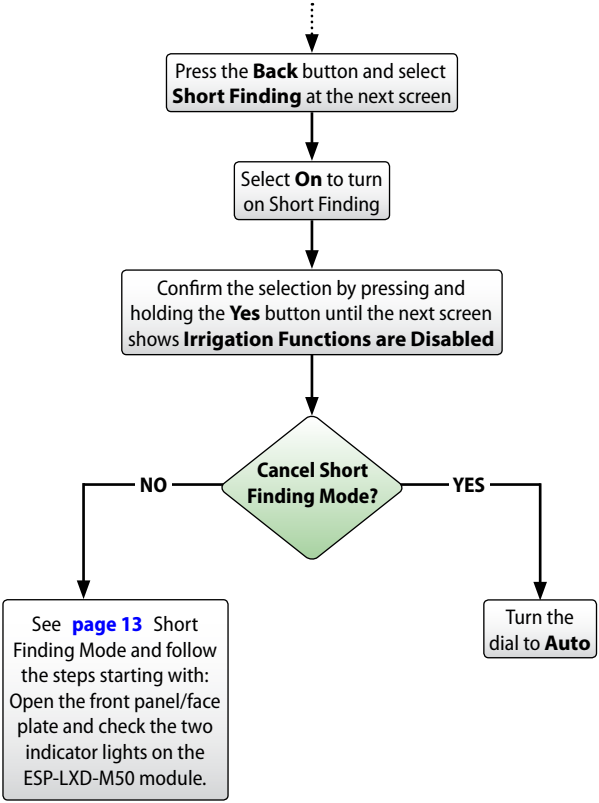
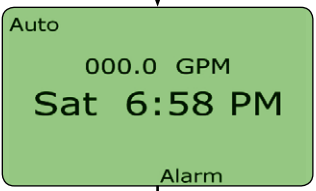
# Manual Short Finding Mode cont.



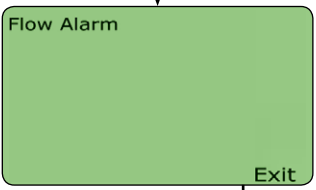

For video instructions on **Manually Putting ESP-LXD Into Short Finding Mode**, please visit: **https://youtu.be/BT8UgNxhSCU**

# Flow Alarms

The display shows the following:




Press the **Alarm** button




Press the **Exit** button

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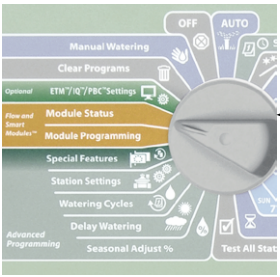
Turn the dial to **Module Status**

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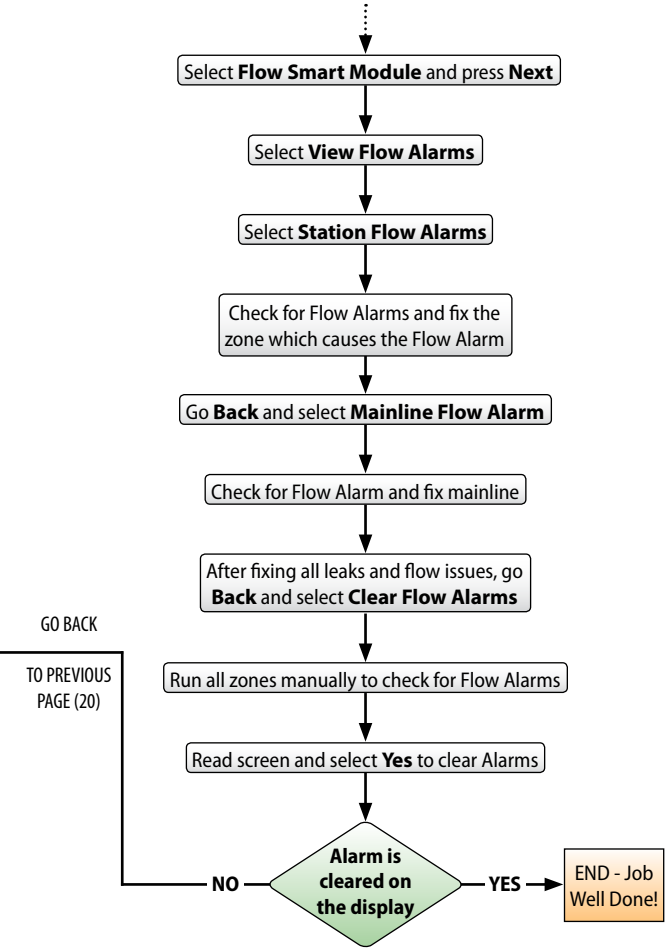
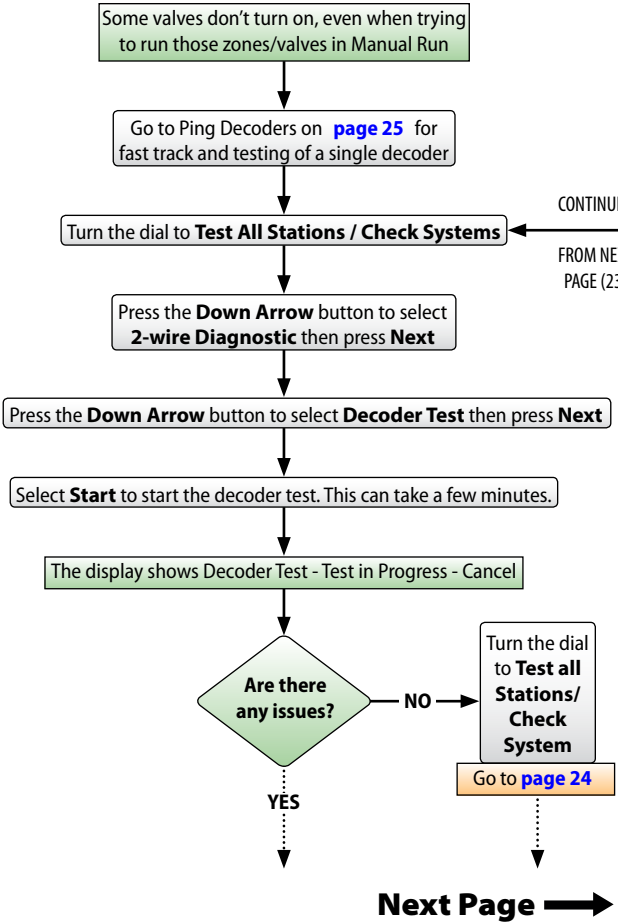
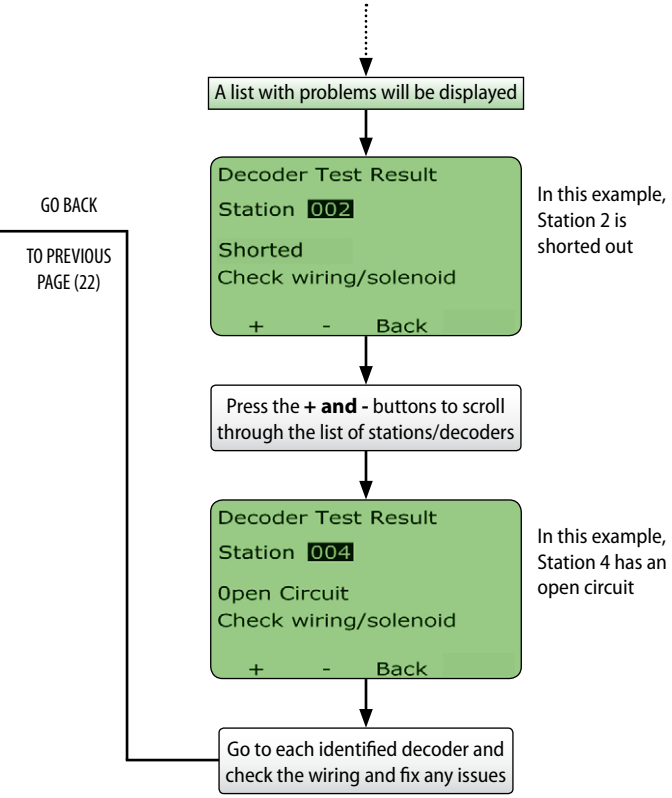
# Flow Alarms cont.



# Decoder Test



# Decoder Test cont.

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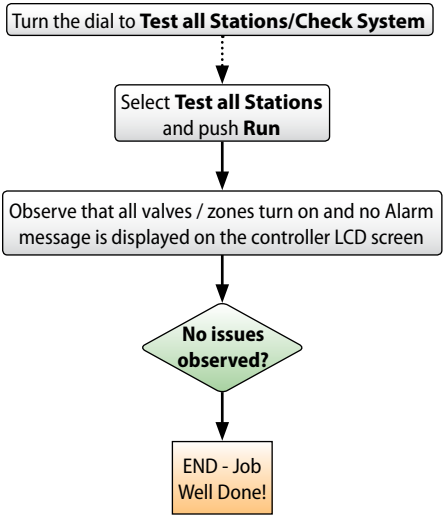
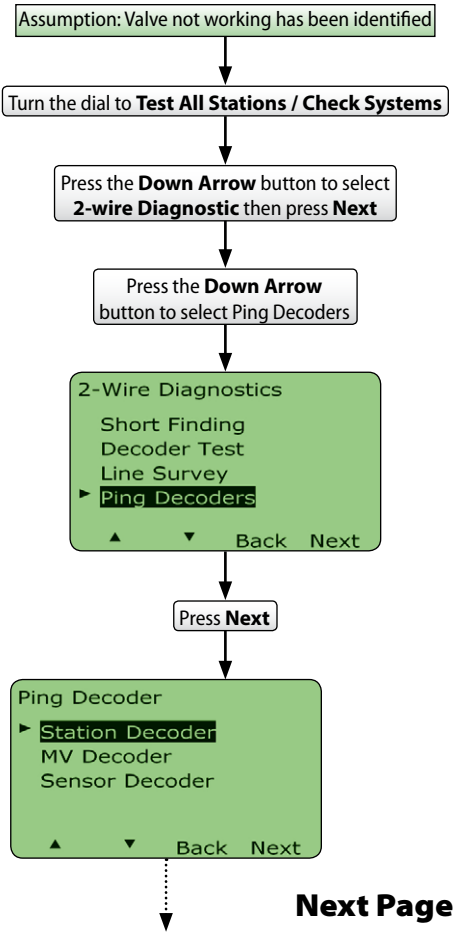
# Decoder Test cont.




For video instructions on **Using Decoder Test** & **Ping Decoders to Troubleshoot Valves**, please visit: **https://youtu.be/wkZBaBo08W0**

# Decoder Ping Test

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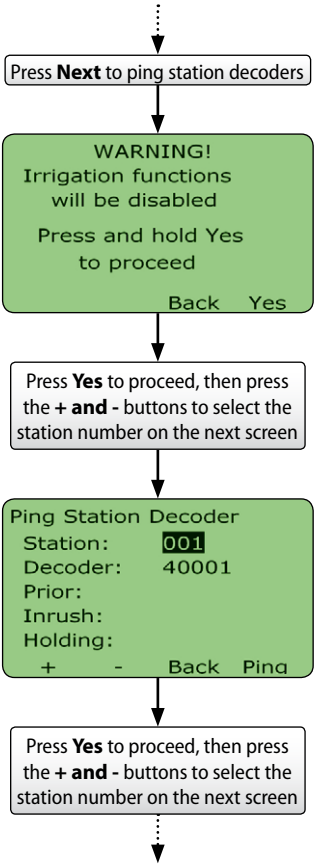
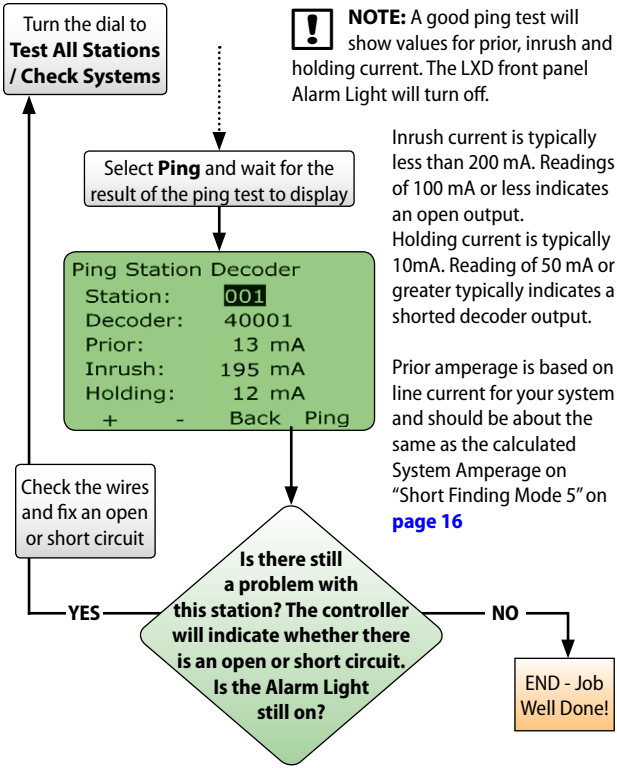
# Decoder Ping Test cont.



# Decoder Ping Test cont.




**NOTE:** A good ping test will show values for prior, inrush and holding current. The LXD front panel Alarm Light will turn off.

Inrush current is typically less than 200 mA. Readings of 100 mA or less indicates an open output.
Holding current is typically 10mA. Reading of 50 mA or greater typically indicates a shorted decoder output.

Prior amperage is based on line current for your system and should be about the same as the calculated System Amperage on "Short Finding Mode 5" on **page 16**

For video instructions on **Using Decoder Test** & **Ping Decoders to Troubleshoot Valves**, please visit:
**https://youtu.be/wkZBaBo08W0**

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