# TRUELINE LEVELING SYSTEM

## Diagnostics

### Air/Hydraulic

FIRMWARE VERSIONS:
CONTROLLER 2.18
FRONT SENSOR 2.6
REAR SENSOR 2.9
PNEUMATIC I/O MODULE 2.4

Valid Manufacturing Ltd.
*Advanced Technologies… Simple Solutions*

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# DIAGNOSTIC FUNCTIONS

The Trueline Leveling System has a number of diagnostic features that provide information on the functioning of the system.

There are two types of diagnostic functions:

- Test diagnostics – these allow you to test the system for normal functionality.
- Fault diagnostics – these alert you to problems detected in the system.

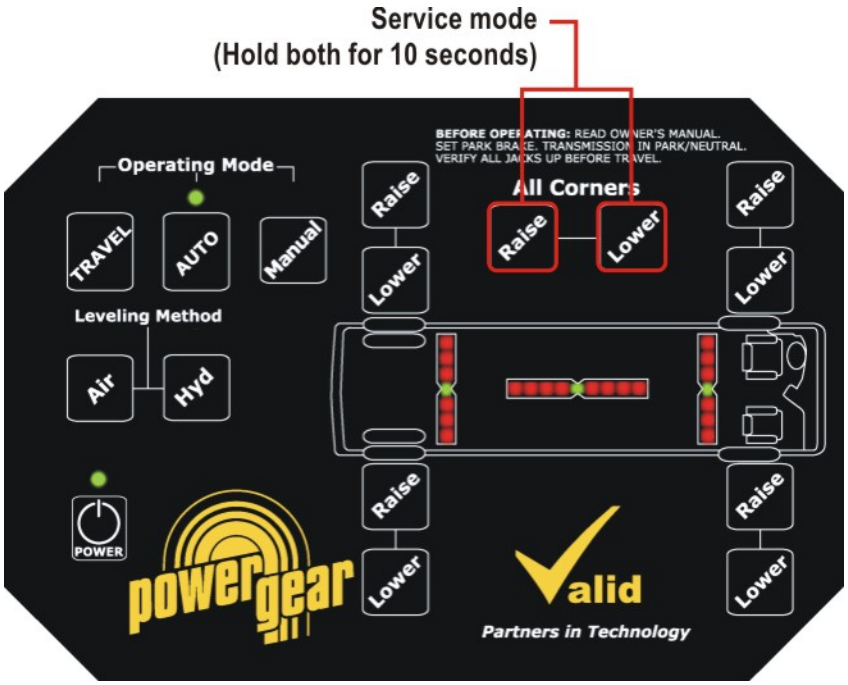
## Test Diagnostics

There are two test diagnostics available, to check the functionality of the indicator lamps and the GP outputs. Both tests require the system to be in service mode.

**To place the unit into service mode:**

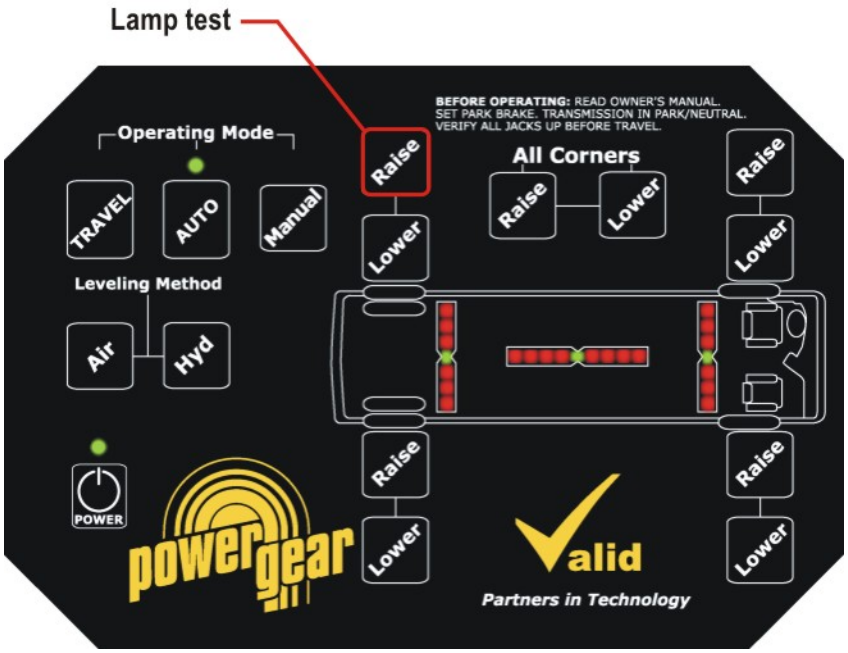
1. Ensure the system is powered off.
2. Press **POWER** to turn the system on.
3. Press and hold **ALL CORNERS RAISE** and **ALL CORNERS LOWER** simultaneously for approximately 10 seconds until the **AUTO** and **MANUAL** indicators flash alternately and an alternating tone is sounded.
4. Release **ALL CORNERS RAISE** and **ALL CORNERS LOWER**. You are now ready to proceed with one of the test diagnostics.

**Note:** If you do not select a function within 5 seconds after the tone is heard, the system will exit service mode.




### Lamp Test

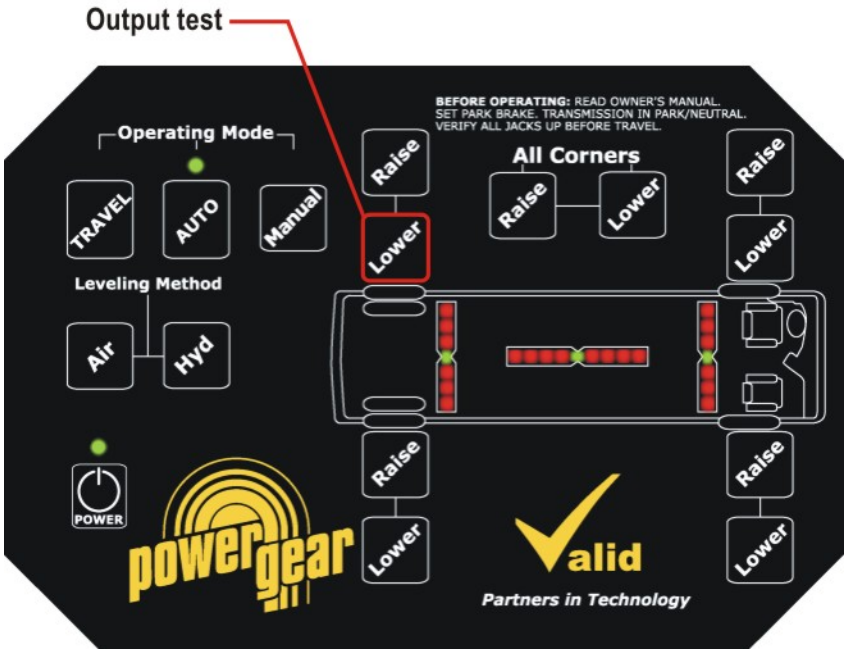
Enter service mode and press the 'Lamp Test' function button (Rear Left **RAISE**). The system will then cycle through all of the indicators, illuminating them one at a time. Visually verify that each of the indicators illuminates.



### Output Test

Enter service mode and press the 'Output Test' function button (Rear Left **LOWER**). The system will then cycle the two GP (general purpose) outputs for a few seconds. Electrically verify that each of the outputs activates.

**Warning:** Do not perform this function while the unit is being installed, since this will activate the GP outputs.



## Fault Diagnostics

Fault diagnostics provide information about problems detected in the leveling system; such as a loss of communication, or a short or open circuit.

If there is a fault in the system, the **FAULT** indicator light will illuminate, along with one or more LEDs in the level indication displays.

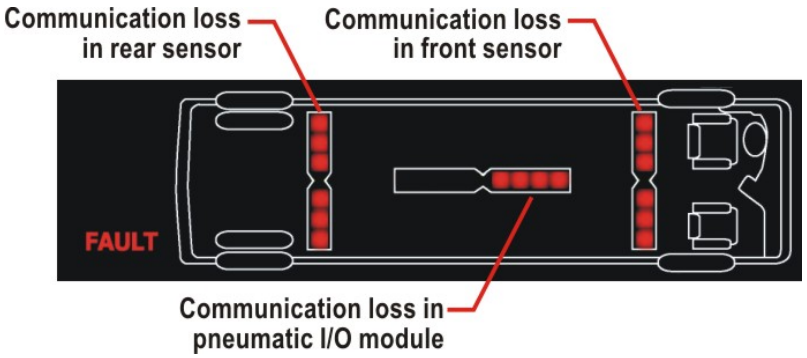
The following table describes the various fault LED configurations and what they mean.

| If you see: | The problem is: | See diagram below |
|---|---|---|
| Fault indicator + front axle lit up (all red, not the green LED). | A loss of communication in the front sensor. | A |
| Fault indicator + rear axle lit up (all red, not the green LED). | A loss of communication in the rear sensor. | A |
| Fault indicator + front half of longitudinal bar lit up. | Loss of communication in the pneumatic I/O module. | A |
| Fault indicator + lowest LED on right/left side in front/rear axle.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the Travel valve for the right/left side on the front/rear axle. | B |
| Fault indicator + middle LED on right/left side in front/rear axle.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the Lower valve for the right/left side on the front/rear axle. | B |
| Fault indicator + upper LED on right/left side in front/rear axle.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the Raise valve for the right/left side on the front/rear axle. | B |
| Fault indicator + 2nd LED from left on longitudinal bar.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the front curbside hydraulic valve. | C |
| Fault indicator + 3rd LED from left on longitudinal bar.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the front roadside hydraulic valve. | C |
| Fault indicator + 4th LED from left on longitudinal bar.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the rear curbside hydraulic valve. | C |

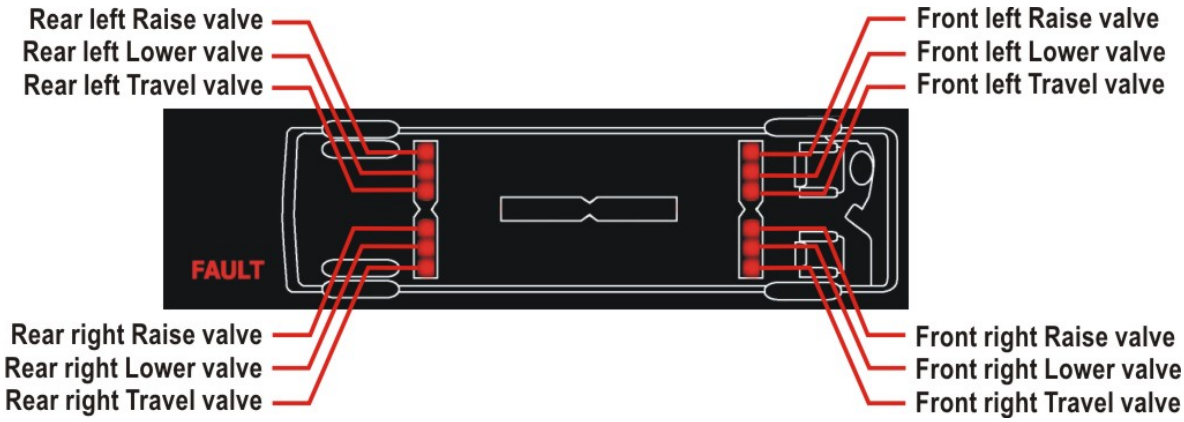
| If you see: | The problem is: | See diagram below |
|---|---|---|
| Fault indicator + 4th LED from right on longitudinal bar.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the rear roadside hydraulic valve. | C |
| Fault indicator + 3rd LED from right on longitudinal bar.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the pump solenoid. | C |
| Fault indicator + 2nd LED from right on longitudinal bar.<br>Flashing LED = open circuit<br>Solid LED = short circuit | A short/open circuit in the hydraulic extend valve. | C |
| Fault indicator + 1st LED on left on longitudinal bar. | Flashing LED = rear sensor accelerometer failure.<br>The accelerometer is not producing output data.<br><br>Solid LED = excess pressure switch transitions.<br>The pressure switch cycled on and off more than 4 times within 60 seconds. | D |
| Fault indicator + 1st LED on right on longitudinal bar. | Flashing LED = front sensor accelerometer failure.<br>The accelerometer is not producing output data.<br><br>Solid LED = hydraulic pump timeout.<br>While in travel mode, the pump was operating for more than 90 seconds. | D |

# Fault Diagrams

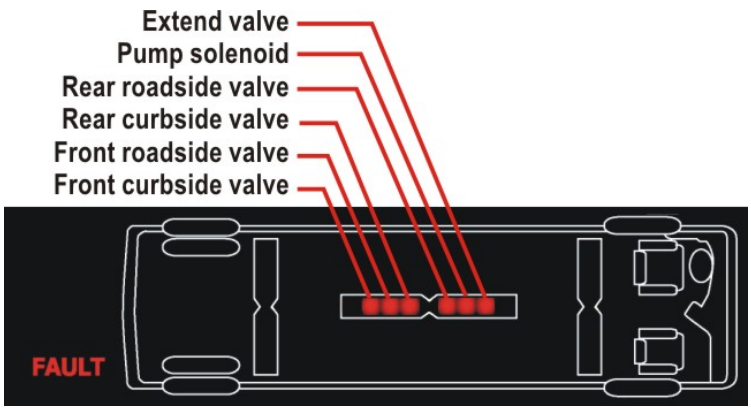
**A. Communication loss:**



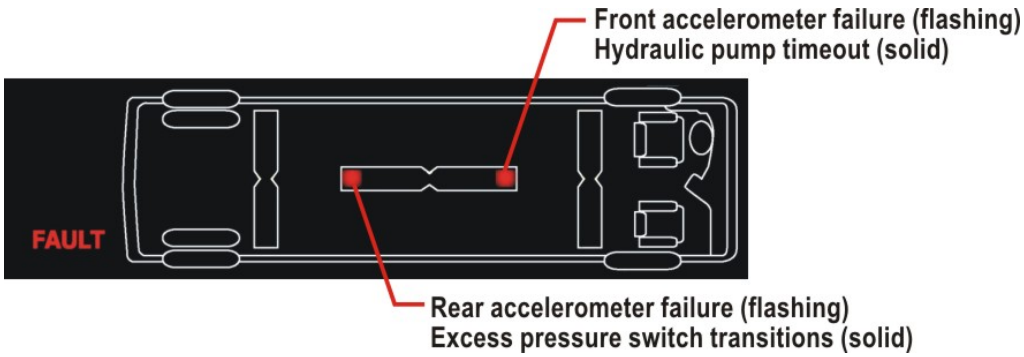

**B. Short/open circuits in pneumatic valves (flashing = open circuit, solid = short circuit)**



**C. Short/open circuits in hydraulic valves (flashing = open circuit, solid = short circuit)**




**D. Accelerometer failure/misc.**



# EMERGENCY OVERRIDE PROCEDURES

If there is a problem with your Trueline Leveling System, there are procedures that can be followed to minimize potential damage until you can reach a service depot. These include initiating a travel override, forcing valves on or off, and resetting the system.

**Warning:** These procedures must only be used under the direction of qualified service personnel. Do not attempt to use them on your own.

## Travel Override

**To initiate a travel override if a loss of communication is detected:**

If the leveling controller experiences a loss of communication from one of the sensors, you may initiate a travel override procedure.

1. Ensure that the ignition is on.
2. Cycle the power to the affected sensor (for example, by pulling out and reinserting the fuse).

Once the power has been interrupted and restored, the leveling system will check for communication for 30 seconds. If no communication is detected after 30 seconds, the system then activates the Travel valve for whatever end had lost communication.

**Warning:** Travel in this condition only in an emergency, and have the communication loss fixed by qualified service personnel as soon as possible.

## Forcing Pneumatic Leveling Valves

It is possible to put the leveling system into a 'forced' condition, where you can force one or more pneumatic valves on. When valves have been forced on, you may not use the system in any other mode.

There are two valve manifolds in the vehicle – one at the front and one at the back, corresponding to the two mounted sensors. Within each manifold, there are two valves for raising, two for lowering, and two for travel mode. Each valve within the pairs relates to one side of the vehicle. Thus, each

**Valve manifold**

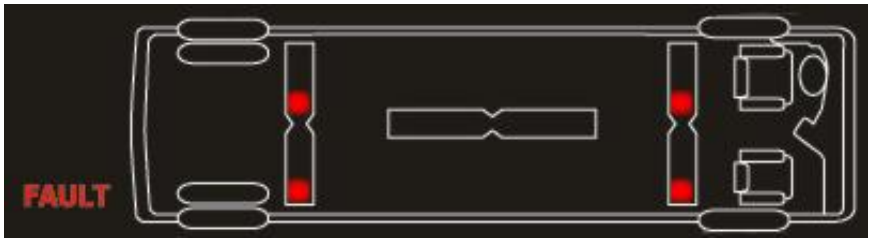
manifold has a right raise valve, left raise valve, right lower valve, left lower valve, right travel valve, and left travel valve.

Any of these valves can be forced on using the procedure described below.

**To go into forced mode and force a valve on:**

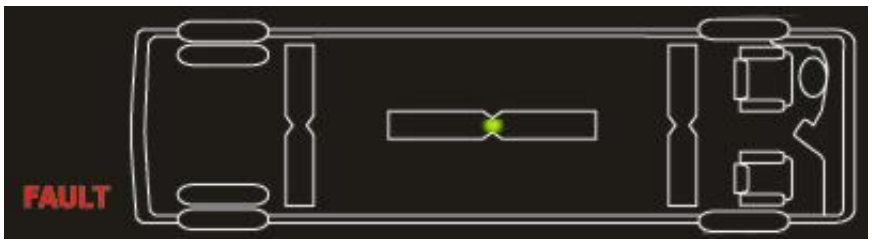
1. Press **POWER** to turn the leveling controller on.
2. Press and hold **ALL CORNERS RAISE** and **ALL CORNERS LOWER** simultaneously for approximately 10 seconds until the **AUTO** and **MANUAL** indicators flash alternately and an alternating tone is sounded.
3. Release **ALL CORNERS RAISE** and **ALL CORNERS LOWER**.
4. Press the rear right **LOWER** button. The **FAULT** light will begin to flash.
5. Press the **RAISE** or **LOWER** button for any corner that you wish to force the valve on. The LED corresponding to your choice will illuminate.
   *For example, to force on the rear right Lower valve, press the rear right **LOWER** button.*
   **OR**
   To force Travel mode, press the **TRAVEL** button. All four Travel LEDs will illuminate, as shown in the figure below.

**Note:** Once one valve has been forced on, all other valves are forced off. However, you may force on additional valves.




**Forced travel mode**

To force all valves to the off state, press the **ALL CORNERS RAISE** button. This will illuminate the green LED in the centre of the display.




**All valves forced off**

In forced mode, you may force valves on or off. If **at least one** valve is forced, the system is in forced mode. If **no** valves are forced, the system will exit forced mode.

**To 'unforce' valves while in the forced condition, and/or exit the forced condition:**

Press the appropriate **RAISE** or **LOWER** button to force off individual valves. Valves can be forced on and off by simply toggling the associated **RAISE** and **LOWER** buttons.

*For example: If you have forced on the front right Lower valve, press Front Right **LOWER** again to force off that valve. If that is the **only** valve that was forced on, turning it off will cause the system to exit the forced condition and return to its standard operating mode.*

If you have forced on several valves and wish to 'unforce' them all and exit the forced condition, press the **ALL CORNERS LOWER** button.

**Note:** The leveling system cannot be used in any other mode until all forced valves have been unforced.

## Resetting the Leveling System

In rare cases, you may be required to perform a full reset of your leveling system. Note that this will not reset any forced valves. Please do not reset your system unless directed by qualified service personnel.

**To reset the leveling system:**

1. Press **POWER** to turn on the leveling controller.
2. Press and hold **POWER** until an alternating tone is heard. The system will turn itself off after this.