



Planter Valve

Installation & Operation Manual

12v Electric Pump Rate Control System

NZPV-PC12-2

Thank you for purchasing a Richway Liquid Rate Control System. By following this installation, use and maintenance guide carefully, your system will provide years of reliable service.

Richway Industries Ltd. makes a continued effort to improve its products. As such, we reserve the right to make design changes without obligations to add them to systems already in the field.

The Liquid Rate Control System aids in precision fertilizer application by maintaining constant liquid flow rate per row or section, even when some rows or sections are shut off.

Please take a moment to fill out the following for future reference:

System #: _____

Date of Purchase: _____

Purchased From: _____

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SAFETY FIRST



Important

Do not operate without reading and understanding this owners manual



Caution: Agricultural chemical mist or liquid can cause permanent eye or lung damage or death. Liquid Rate controller component failure CAN OCCUR AT ANY TIME. If failure is suspected or liquid fertilizer is detected in outside of the normal application areas, STOP THE TRACTOR AT ONCE, SHUT OFF THE FERTILIZER control and follow these instructions.

During Rate Controller maintenance, wear protective clothing (gloves, goggles, etc.) according to chemical manufacturer's recommendation.

- Locate the failed component and turn off all pumps and electrical components. Replace the failed component and or hose.
- Early detection and replacement of failed or punctured hose may prevent calibration errors and maintain correct flow rates.
- Clean all components with liquid fertilizer on them, including pressure sensor and pumps using warm water if possible.
- Read and follow detailed instructions provided in this Rate Controller owners manual for preventative care and maintenance.

Additional Safety Notes

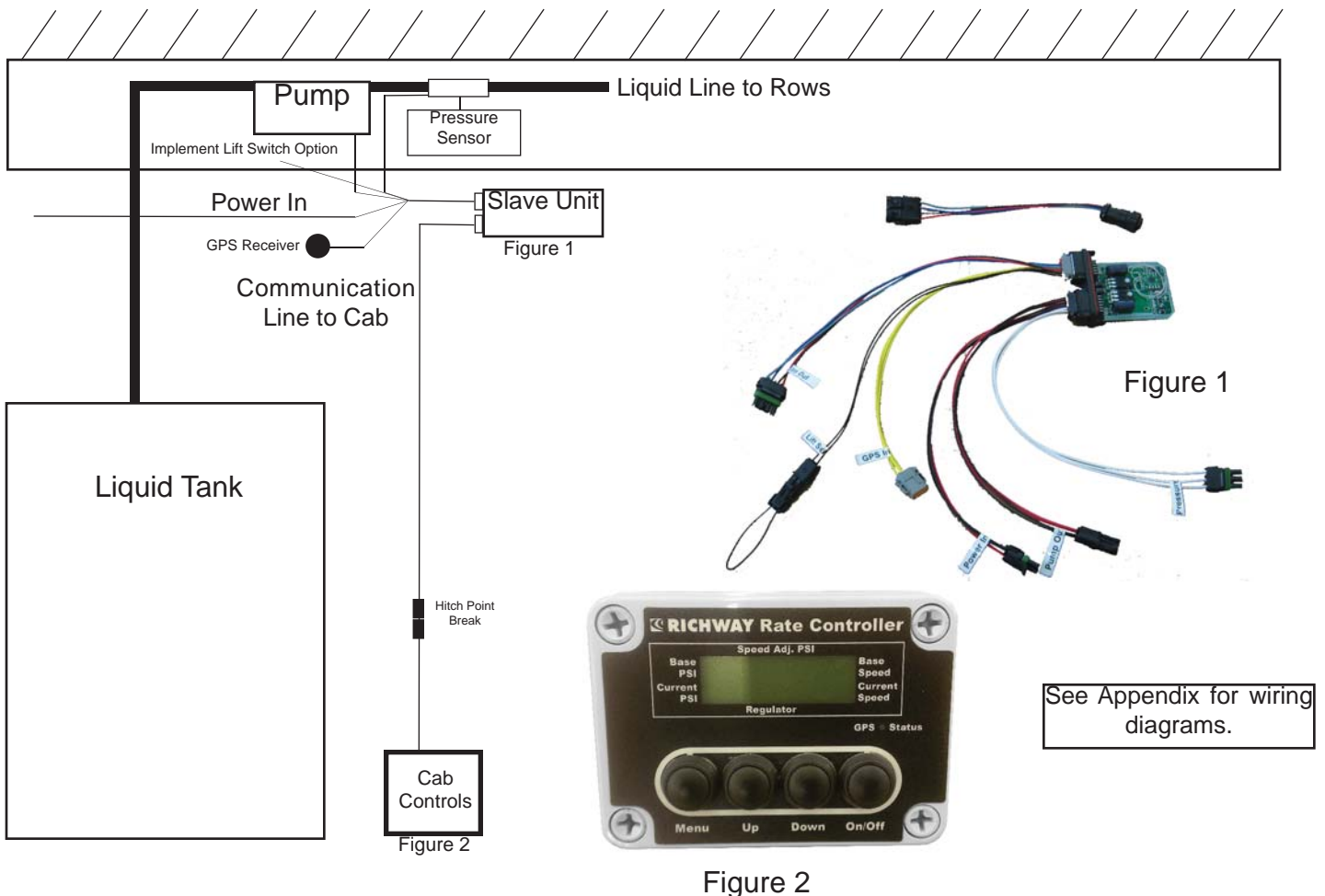
1. Shut off all main valves during stops of any length, travel, fills, or other operations.
2. Do not perform any maintenance work on the planter or liquid rate controller components before shutting off the pump and releasing all liquid pressure.
3. Do not leave fertilizer in the pump or lines for extended periods of time.
4. Do not leave the liquid fertilizer lines pressurized when not in use, this may cause additional wear and tear on both the lines and pump and cause premature failure.

ELECTRIC PUMP CONTROLLER SPECIFICATIONS

Richway's Electric Pump Liquid Rate Controller is designed for maintaining constant flow rates at each nozzle when using 12 volt DC pumps. The system requires a 12 volt power supply and is capable of handling up to 20 Amps. It uses a PWM (Pulse Width Modulation) to control the pump speed and pressure output. It also utilizes a GPS signal to allow for speed compensation. It has real time in-cab control to monitor and adjust pressure on the go or set a desired liquid pressure regardless of the number or sections or nozzles that are on or off. It also includes safety features such as: Under Voltage, Over Current draw, and Over Heating protection to protect the systems from these harsh threats.

INSTALLATION

Installation of the electric pump controller is made simple with the use of Weather Pack and Deutsch connectors. The diagram below displays a general layout for both the slave unit and necessary wiring.



Note: Make sure all pumps are shut off, and main shut off valves are closed before beginning installation.

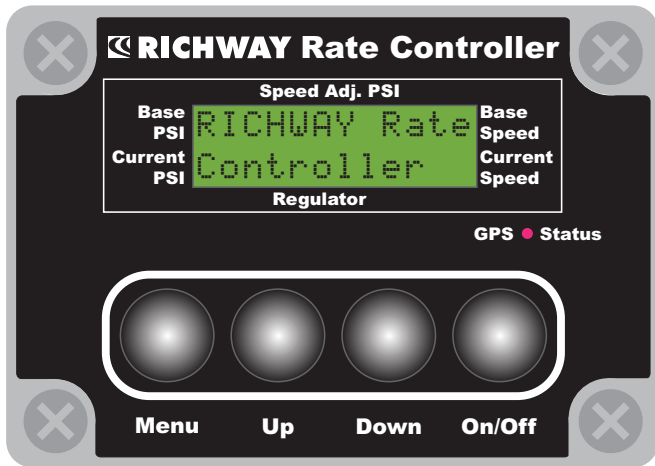
1. First step is to find a mounting place on the planter for the slave unit as close to the pump as possible. There must be a 12vdc power supply for the pump on the planter.
** Richway does not include a power supply cable for the pump.
2. The slave unit will come with two, 12 pin Deutsch plug-ins in a sealed enclosure. One will be used for the small wire harness with 5 plugs and the other will be for the communication line to the cab controller. Each of the wires and plugs will be labeled for correct connections. Power connection, pump connection, pressure sensor, GPS receiver (Only with Kit NZPV-PC12-2), and one for an implement lift switch (Not included but included in wire harness) which can be integrated to shut the pump off if desired.
3. The pressure sensor should be attached to the fertilizer delivery line **AFTER** the pump to read the pressure going to the nozzles.
4. Once all components are hooked to the slave unit, the main communication cable can be run from the slave unit to the hitch point or to the cab. Late model controllers have a hitch point break in the communication line for easy removal when disconnecting the equipment.
5. The cab controller can be mounted inside the cab and the communication cable being placed in a safe and secure location down to the hitch point. Remember to leave enough slack for turning and extra cable to make the connection. These ends use weather pack connectors that are made to endure various weather conditions and are designed to be water tight. The cab controller connects to the communication cable with a small harness and amp connector on one side. The Amp connector screws into the back of the monitor and plugs into the cable coming from the hitch point or equipment.
6. Make sure that the pump is working correctly and we highly suggest testing the flow from your nozzles to make sure you have an accurate reading and correct pressure settings. Different pressures will dictate the flow to your nozzles. Make sure you have calibrated your system before field use. Attached to this Owners Manual is a section for In Cab Controller settings and usage.

OPERATION

Pump controller requires a minimum of 12vdc to work. The cab controller has multiple functions that include PSI settings, Start/Stop, and the Mode function which will let you set your desired pressure and or monitor the percentage of the pump being used, as well as seeing the actual speed. This function will help give you an indication that all nozzles are working properly or if the pump percentage is increased from the norm, you might have a plugged unit. All settings with the monitor need to use the 'Save' button to keep them in the memory. Not doing so will not save the presets in the controller.

NOTE: Maximum current draw is not to exceed 20 AMPS.

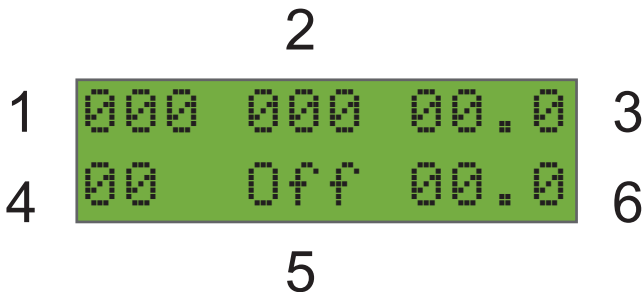
ELECTRIC PUMP RATE CONTROLLER SET UP AND OPERATION



GPS Status LED Indicator

- Off = GPS feature disabled
- Red = No GPS receiver detected
- Orange = GPS receiver detected and waiting for a good GPS signal
- Green = GPS receiver detected and receiving a good GPS signal

This is the Control box with all of the controls labeled. This section will define each control and their functions in relation to the Richway Rate Controller.



Menu - Used to cycle through the different menus.

Up - Press to make upward adjustments in the menus.

Down - Press to make downward adjustments in the menus.

On/Off - Disables the controller and stops the pump from operating.

Above is the general layout of the LCD screen during normal operation with GPS Enabled.

The LCD is numbered above and corresponds to a setting or read out from your system.

- 1 - Displays the base system pressure set in the 'Set Pressure' menu.
- 2 - Displays the speed compensated pressure the system will regulate to in relation to GPS speed and your base PSI setting. It will read "---" if waiting for a good GPS signal.
- 3 - Displays the base speed set in the 'Set Speed' menu. This speed should be selected as a base line average speed while running the rate controller. This should be set prior to running the rate controller.
- 4 - Displays the current pressure of your system in real time. Pressure will vary with speed changes and may be higher or lower than your original set base PSI due to regulating to the desired set speed.
- 5 - Displays the current pump speed as a percentage. This location will also show Off when the pump is stopped or L/S when the system is disabled due to the lift switch input.
- 6 - Displays the GPS detected speed. If no GPS fix (LED Orange) it will read "--.-" If blank there is no GPS attached or the GPS feature has been disabled.

SET PRESSURE MENU

Here is the menu to adjust the desired system operating pressure. Use the Up and Down buttons to make adjustments. The Pressure can be adjusted from 0 to 50 PSI.



```
Set Pressure
040 PSI
```

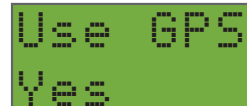
GPS MENUS AND MESSAGES

Here is the menu to enter the base speed that will be used for the GPS controlled speed compensation. Use the Up and Down buttons to make adjustments. The speed can be adjusted from 2 to 20 mph.



```
Set Speed
02.0 MPH
```

Here is the menu for enabling and disabling the GPS speed compensation feature. Use the Up and Down buttons to enable or disable.



```
Use GPS
Yes
```

This message indicates that a GPS receiver is connected to the system. (Additional readings for LCD positions 2, 3, and 6 are only available when GPS receiver is connected and Use GPS is enabled.)



```
GPS Link
Found
```

This message indicates that the GPS is connected and has acquired a reliable satellite connection. (GPS speed compensation will be available once this fix is obtained)



```
GPS FIX
Acquired
```

OTHER DISPLAY FEATURES AND MESSAGES

This error message is displayed when there is a wiring problem between the cab controller and the rear controller. It can also appear if there is a hardware problem with the rear controller.



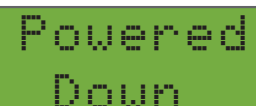
```
CAN-Link
Signal Error
```

Displayed when the lift switch input detects an open signal. This is an optional feature that allows you to use an implement switch and connect it to the controller to stop the pump when the boom is lifted.



```
Lift Switch
Engaged
```

Pressing the On/Off button while on the main screen will stop the system from regulating and display this message until regulation is resumed by again pressing the On/Off button. Pump will shutdown.



```
Powered
Down
```


Inspect components daily, before, during and after planter operation for evidence of fertilizer liquid. Check all fittings and make sure all wire connections are tight.

Storage

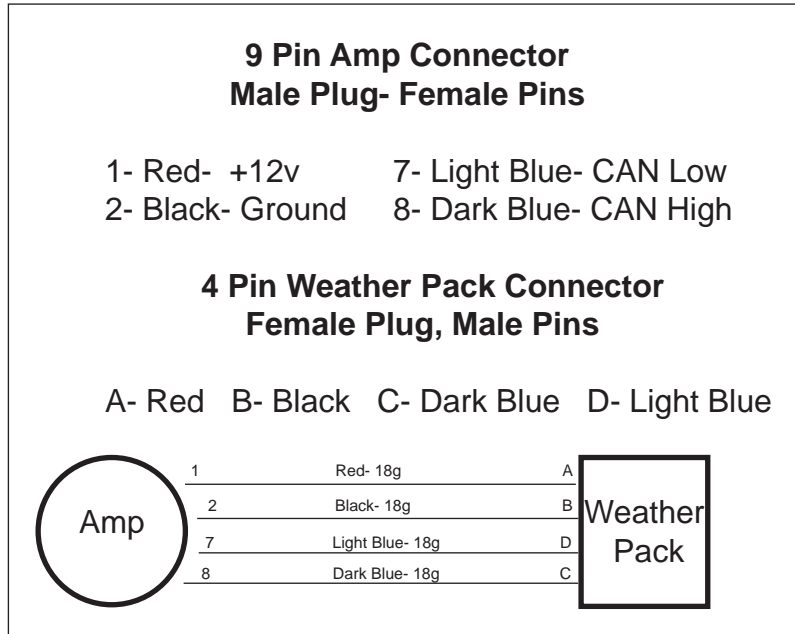
Storage of the electrical components should be in a dry environment. There is little to no maintenance for the system except general cleaning after use with liquid fertilizer. The pump and pressure sensor should be washed with water and anti freeze run through the pump for winter storage. Wire connections should be up and away from the ground to reduce the chance of getting caught or smashed. When disconnecting the communication cable at the hitch point be use to tie it in a safe and secure location to minimize risk of drag and breaking.

TROUBLE-SHOOTING

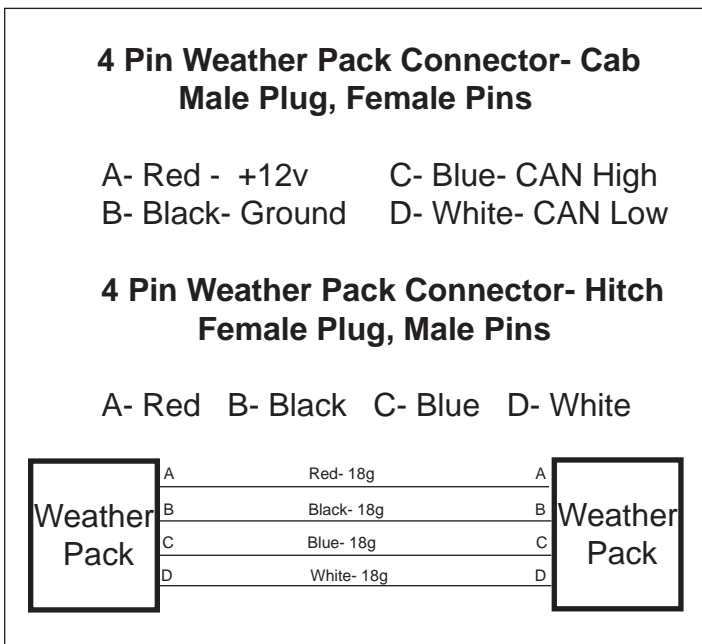
Problem	Solution
Not reading correct pressure	<ul style="list-style-type: none"> • Make sure sensor is on same line side as nozzles • Make sure sensor is not plugged • Check for plugged Nozzles
Controller Reads Error	<ul style="list-style-type: none"> • Check wiring between cab and rear controller • Ensure rear controller is in working order • Connected cab controller directly to rear controller to test
No read out on controller	<ul style="list-style-type: none"> • Check all connections • Make sure you have power to the planter • Check hitch point connection • Make sure communication cable on controller is tight
Cut or stripped wires	<ul style="list-style-type: none"> • Repair bare wire with heat shrink or electrical tape • Use an insulated butt connector to repair • If wire is pulled out from connector please call Richway Industries for pin locations if multiples are disconnected • Check wire lengths to make sure correct length is being used for your application

Appendix 1

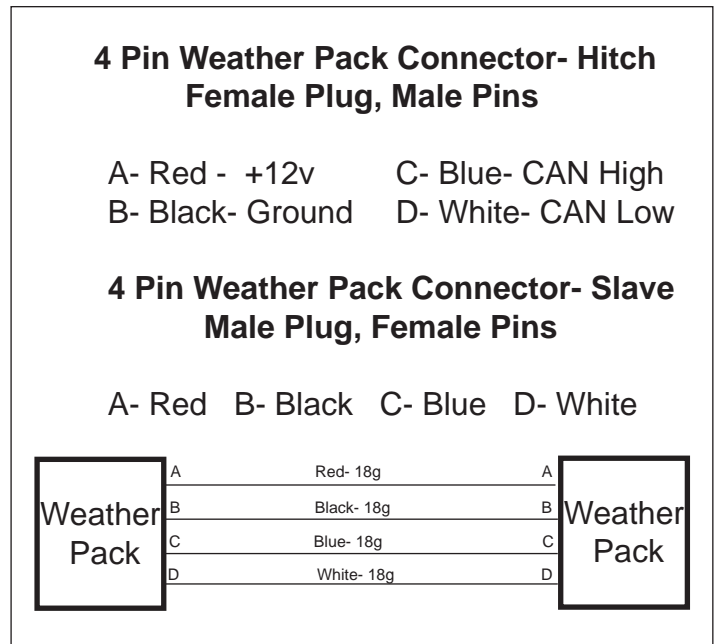
**Figure 1- In-Cab Harness
4 Wires - 12" Long
18ga Wire**



**Figure 2- Cab to Hitch Harness
4 Wires - 12' Long**

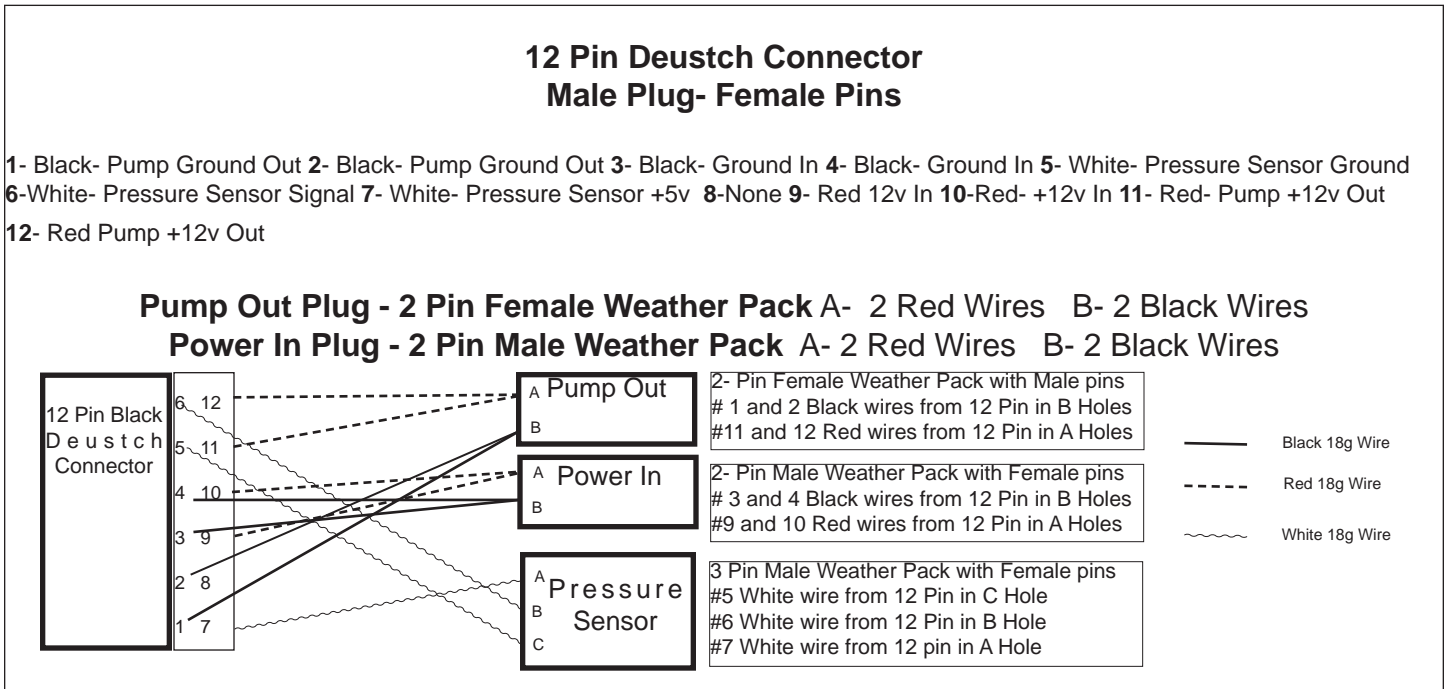


**Figure 3- Hitch to Slave Unit Harness
4 Wires - 60' Long**

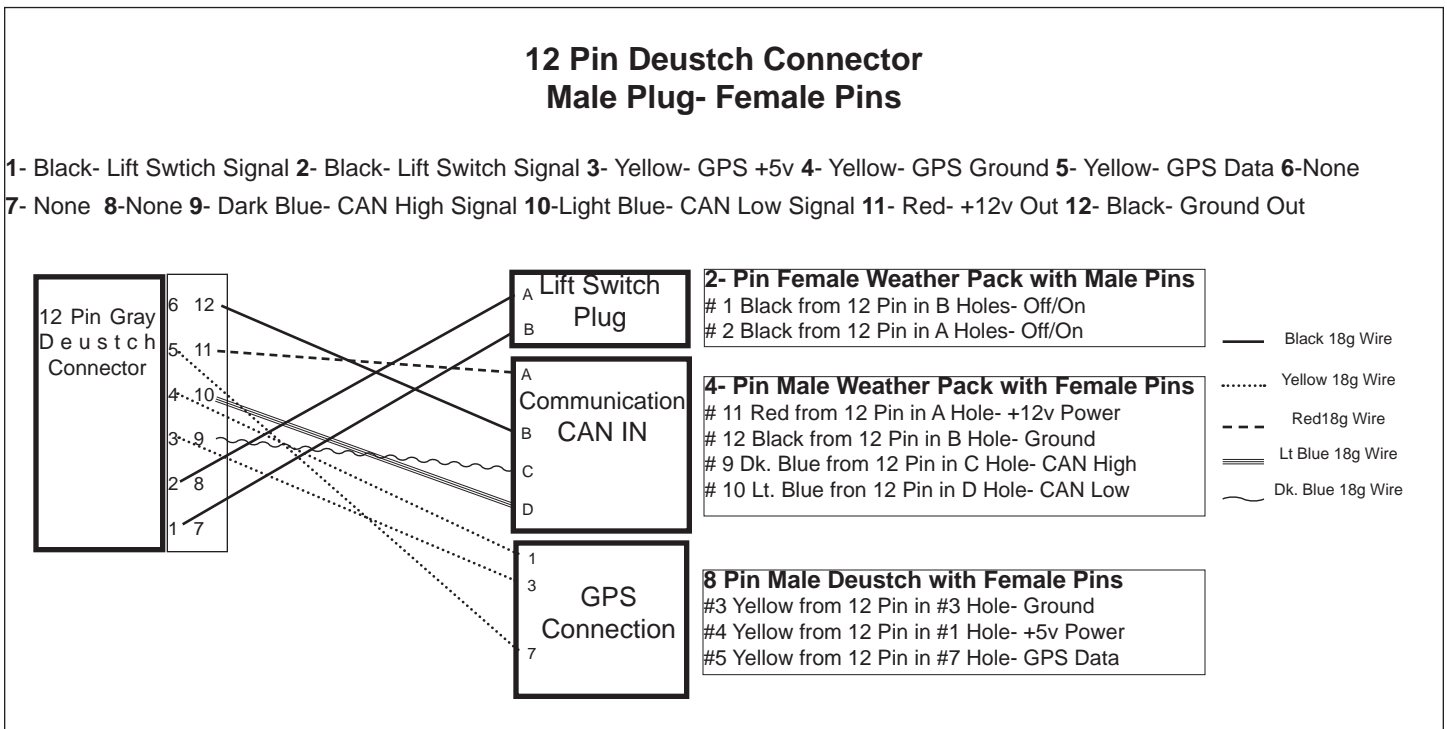


Appendix 2

**Figure 1- Slave Harness
11 Wires - 12" Long
18g- Red, Black, and White (Black 12 Pin Connector)**

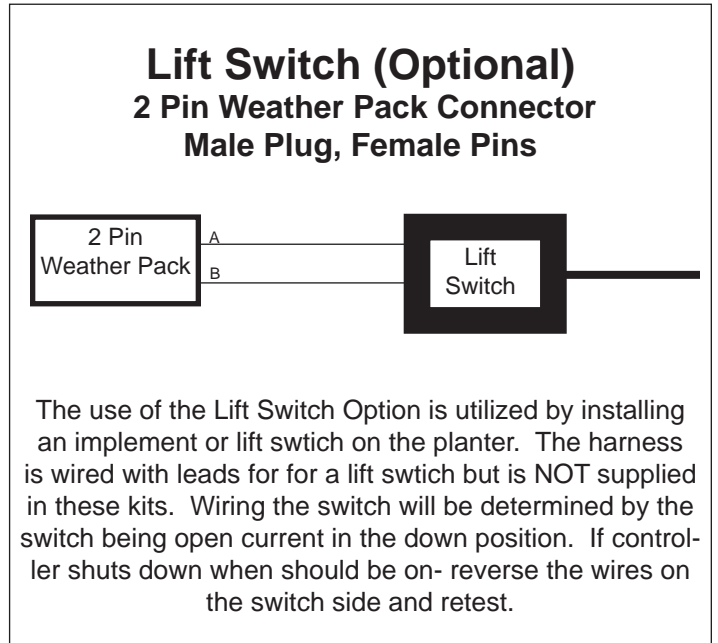
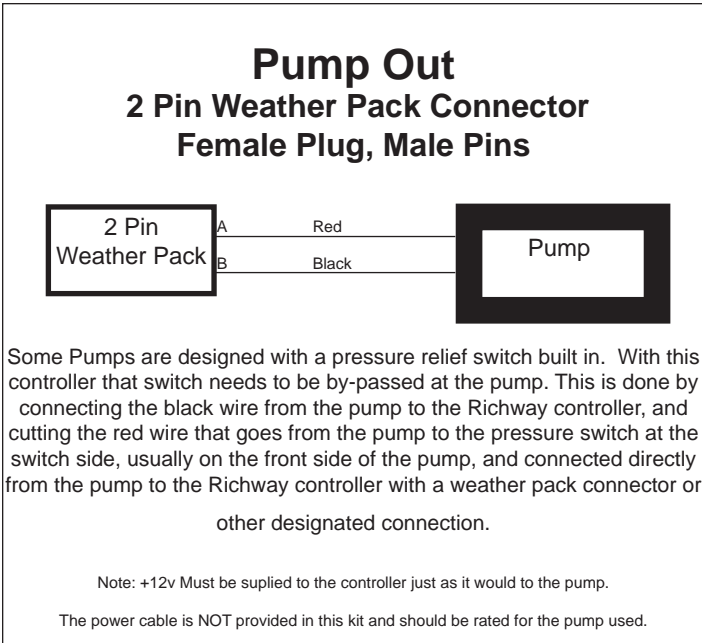
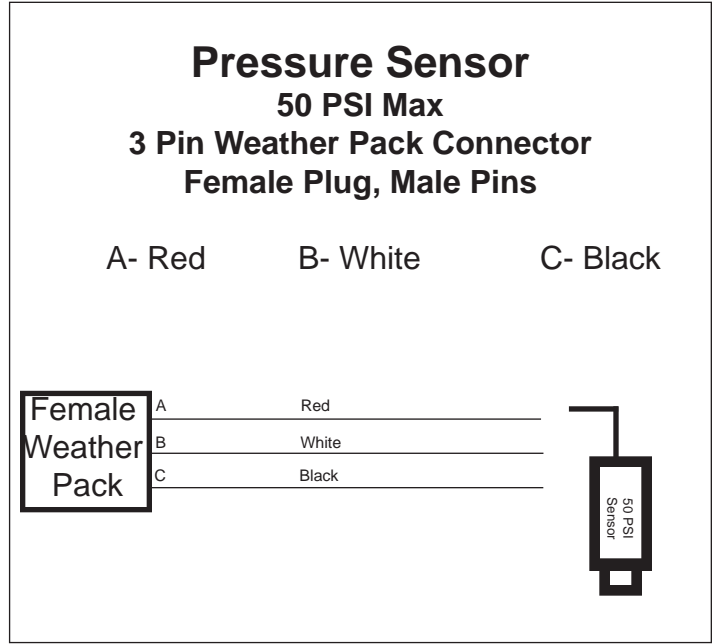
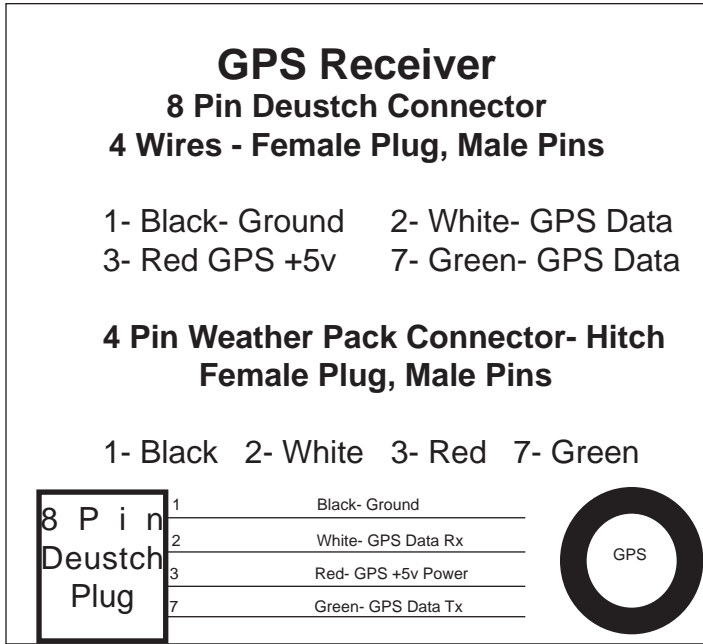


**Figure 1- Slave Harness
11 Wires - 12" Long
18g- Red, Black, and White (Black 12 Pin Connector)**



Appendix 3

Figure 1- Accessory Diagram GPS, Pressure Sensor, Pump Out, and Lift Switch



WARRANTY INFORMATION

Limited Warranty

Richway Industries, Ltd., Planter Valves and components are warranted against defects in materials and workmanship for a period of 180 days from date of shipment.

During this warranty period, Richway will repair or replace at no charge, those parts or components which upon receipt by Richway, following warranty analysis, proven to be defective.

Further, this warranty does not cover part or component failures or damage due to misapplication, misuse, abuse, breakage, or improper installation, storage or handling, abnormal conditions of temperature, water, dirt, corrosive or other contaminants.

Products covered by this warranty must be used in compliance with all federal, state, and local regulations.

Disclaimer of Other Warranties

The foregoing limited warranty is in lieu of all other warranties, expressed or implied, including merchantability or fitness for a particular purpose. In no event shall Richway Industries, Ltd., be liable for indirect, consequential or special damages of any nature, whatsoever.

COMPANY INFORMATION

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