RICHWAY

Planter Valve

Installation & Operation Manual

Electronic By-Pass Rate Control System

NZPV-BPC-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 teh 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 puncutered 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 maintance.

Additional Safety Notes

1. Shut off all main valves durings stops of any length, travel, fills, or other operations.
2. Do not perform any maintenance work on the planter or liquid rate controlller 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 pressureized when not in use, this may cause additional wear and tear on both the lines and pump and cause premature failure.

BY-PASS RATE CONTROLLER SPECIFICATIONS

Richway's Computer Controlled By-Pass Rate Controller uses the same computer board as our Versa-Trac Foam Marker with different programming to control the fertilizer line pressure with an in-line pressure sensor and motor operated ball valve. The system uses the pressure sensor and GPS speed sensor to feed data in real time into the controller, which adjusts the by-pass valve allowing excess fertilizer to return to the tank to maintain a constant pressure across the field and when rows or sections are shut off. The controller allows for rate changes on the go and is controlled from in tractor cab. The system operates on a 12v power source in the cab and includes the necessary components to install including: Master Controller for in cab control, Power cable to power the system, in-line pressure sensor and GPS receiver, cables to connect the controller to the control valve, and the motor operated ball valve used to redirect the flow from the feed line and return to the tank.

INSTALLATION

Installation of the By-Pass Rate Controller is made simple with the use of Weather Pack and Deutsch connectors.The diagram below displays a general layout for by-pass system plumbing and neccesary wiring.

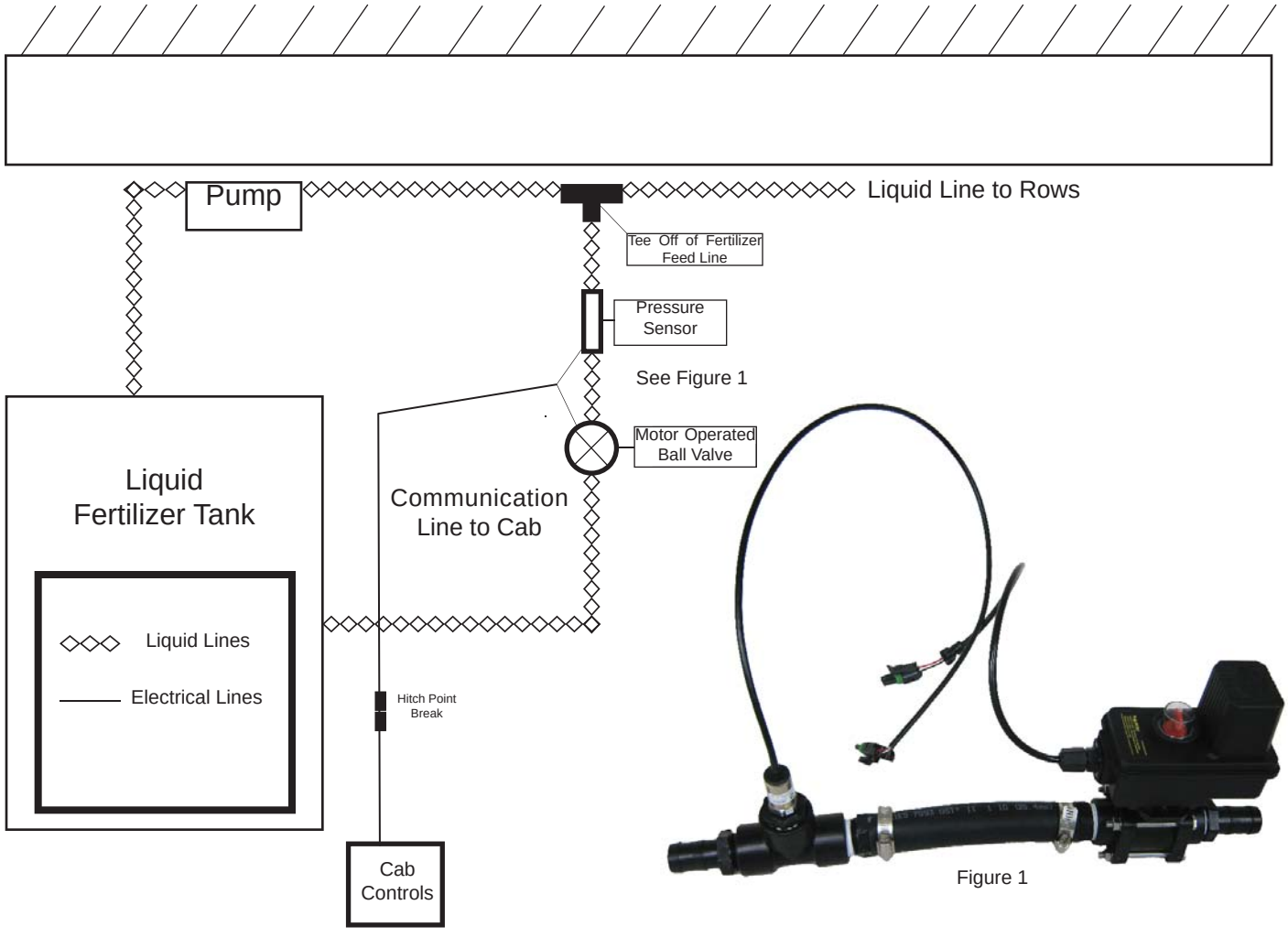


Figure 1

Note:

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

1. First step is to find an appropriate place to tie into the fertilizer feed line after the pump. A tee fitting should be installed and hose ran to the pressure sensor and by-pass valve.
   ** The pressure sensor and by-pass valve come with 1'' Hose Barb connections

2. The next set is to mount or place the pressure sensor and by-pass valve in a sturdy location on the planter and run a return line for the fertilizer back to the suply tank. In some applica tions the return line may need to be returned to the back side of the pump inlet hose.

3. The pressure sensor should be faced towards the fertilizer feed line going to the rows with the by-pass valve being on the line side towards the return to the tank.

4. Once all components are in place and the plumbing portion of the installation is complete, the communication line can be ran from the pressure sensor and by-pass valve to the hitch break point where it will joint the remainder of the communication line from that point into the cab.

5. The cab controller can the be mounted inside the cab with the 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.

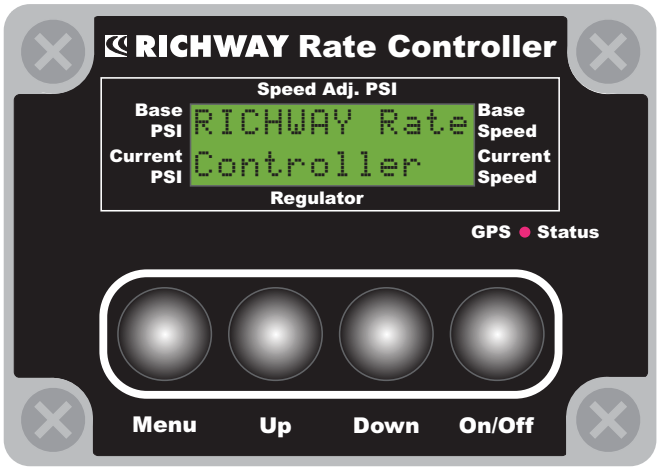
6. Make sure that the pump is working correctly and we highly suggest testing the flow from your nozzles to make sure you have an accurate reading and correct pressure settings. different pressures will dictate the flow to your nozzles. Make sure you have calibarated your system before field use. Attachd to this Owners Manual is a section for In Cab Controller settings and usage.

Note: If using a ground driven positive displacement pump, the pump will need to be calibrated above the actual flow needed to ensure the by-pass system works properly.

OPERATION

The Rate Controller requires a minimum of 12vdc to work. It is normally suplied with a wire harness to tie into the tractors cab power strips. 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 location of the ball valve, as well as seeing the actual speed. The system will give you the ability to set a desired fertilizer liquid pressure from 0-50 psi.

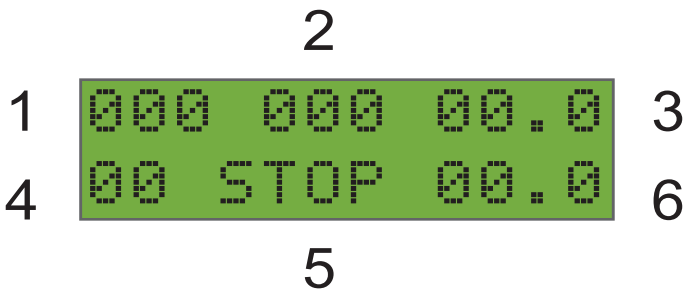
ELECTRONIC BY-PASS RATE CONTROLLER SET UP AND OPERATION



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.



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

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 by-pass valve from operating.

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 by-pass valve status. It will read '<HI<', '<LO<', 'Stop', '>LO>', '>HI>' indicating the direction and speed the by-pass valve is currently operating in order to regulate the system pressure.

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 and be adjusted from 0 to 50 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.

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

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

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

PUMP TYPE MENU

This menu lets you select your pump type, either Piston pump or Other. The selection is made using the Up and Down buttons.

Piston Pump setting uses averages to try and help smooth out the pulsations introduced by this style of pump.

The Other Pump setting can be used for all other pumps including, but not limited to: Electric pumps, Hydraulic Pumps, Squeeze Pumps, and Centrifugul Pumps.

OTHER DISPLAY FEATURES AND MESSAGES

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.

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 enviroment. There is little to no maintenace for the system except general cleaning after use with liquid fertilizer. The pump and pressure sensor should be washed with water and Richway suggests anti freeze run through the pump for winter storage. DO NOT USE A PETROLUM BASED WINTERIZER. Petrolum based products such as diesel fuel will attack the rubber in the Richway Fertilizer Valve and cause premature wear and chemical reaction. Wire connections should be up and away from the ground to reduce the chance of getting caught or smashed. The controller also should be kept in a dry moisture free enviroment during off month storage.

TROUBLE-SHOOTING

Problem	Solution
Not reading correct pressure	• Make sure sensor is on same line side as nozzles • Make sure sensor is properly connected • Check for plugged Nozzles
Controller Reads Error	• Check power source and all connections • If GPS reads “--.-” there is no reliable signal. Try repositioning the GPS receiver or disconnecting and reconnecting.
No read out on controller	• Check all connections • Make sure you have power to the control box • Check hitch point connection • Make sure communication cable on controller is tight
Cut or stripped wires	• 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 lengh is being used for your application

Appendix 1

Figure 1- In-Cab Harness
10 Wires - 12" Long
18ga Wires

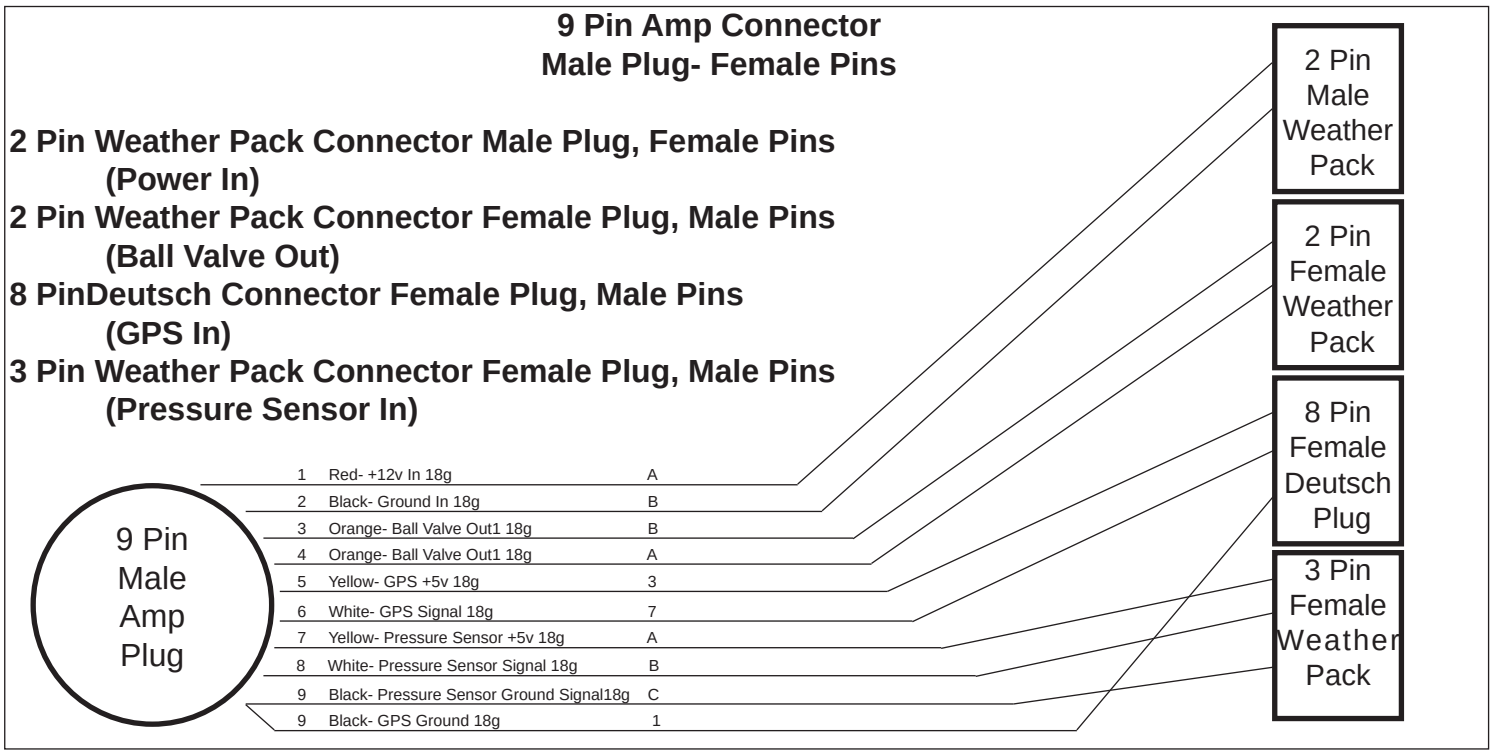


Figure 2- Cab to Hitch Harness
5 Wires - 12' Long

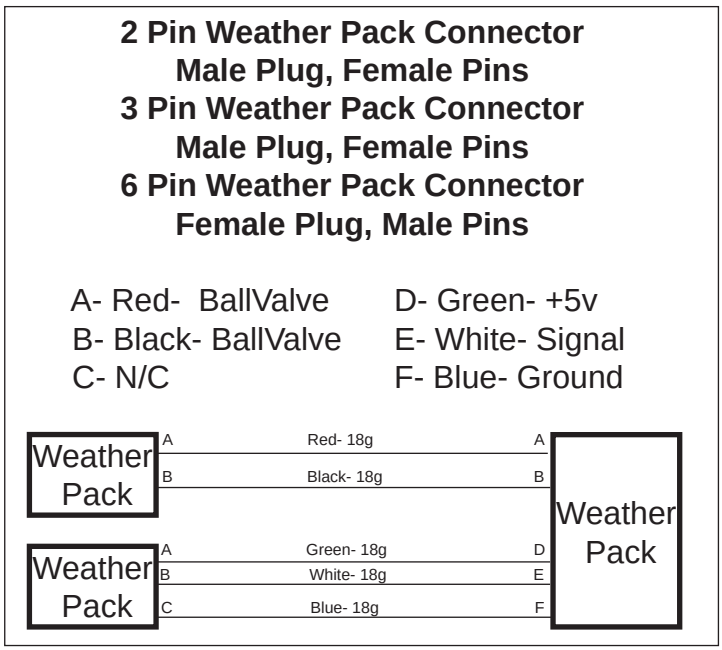
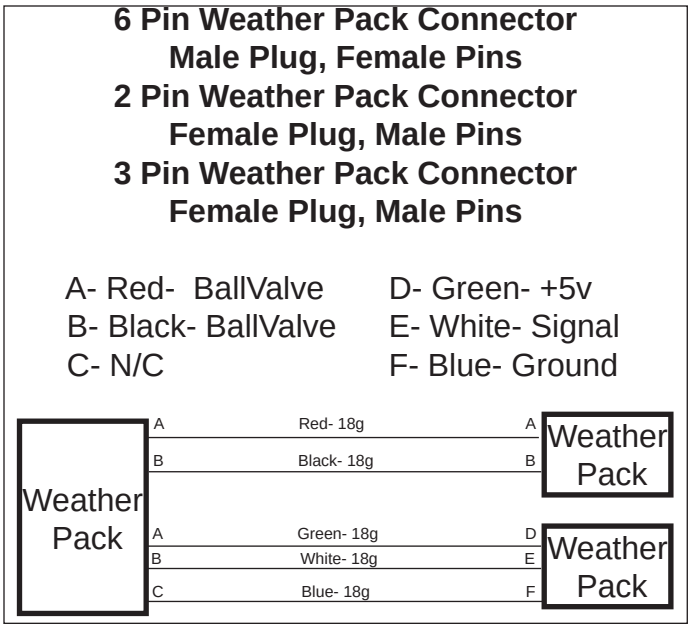


Figure 3- Hitch to Slave Unit Harness
5 Wires - 60' Long



Appendix 3

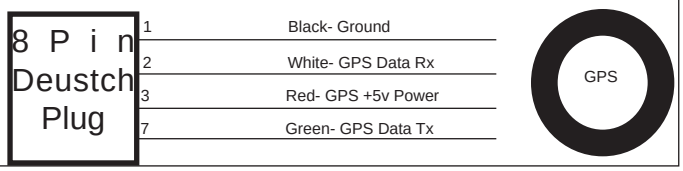
Figure 1- Accessory Diagram
GPS, Pressure Sensor, and Ball Valve

GPS Receiver
8 Pin Deustch Connector
4 Wires - Female Plug, Male Pins

1- Black- Ground 2- White- GPS Data
3- Red GPS +5v 7- Green- GPS Data

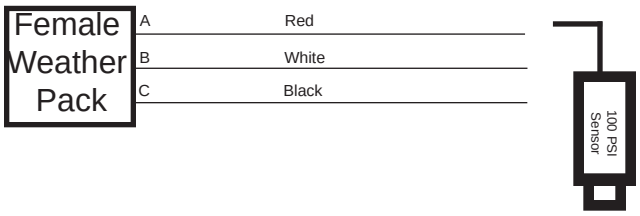
4 Pin Weather Pack Connector- Hitch
Female Plug, Male Pins

1- Black 2- White 3- Red 7- Green



Pressure Sensor
100 PSI Max
3 Pin Weather Pack Connector
Male Plug, Female Pins

A- Red B- White C- Black



ByPass Ball Valve
2 Pin Weather Pack Connector
Male Plug, Female Pins

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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