Precision Liquid Fertilizer Solutions

www.agxcel.com
where precision meets the soil...
877.218.1981

Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

PLEASE NOTE: Your setup may vary. These screen shots represents a typical AgXcel Liquid Fertilizer System setup. See the Raven LRC Operator's Manual for safety information and additional setup and operating information.

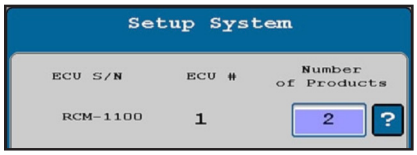
Navigate to the Profile Setup

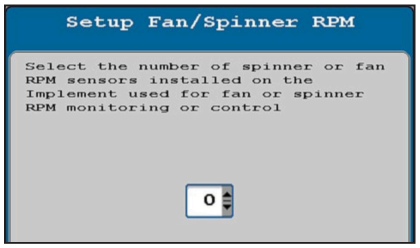
For the initial setup, start a new profile. The Raven LRC allows you to store 8 profiles. Be prepared to wait during this phase of the setup process....***A LONG TIME!***

1. Select New Profile

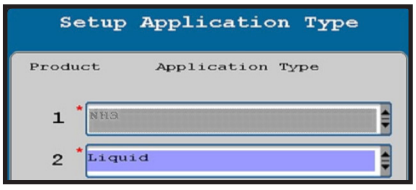
2. Enter Profile Name
3. Machine Type ->NH3 Tool -> AgXcel 2 Product for Liquid

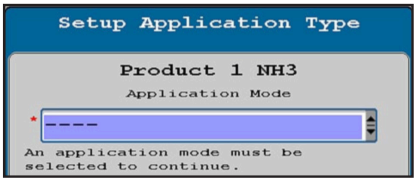
4. Setup System and RPM Sensors

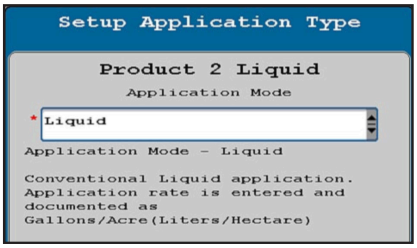




5. Select Application Type & Application Mode.

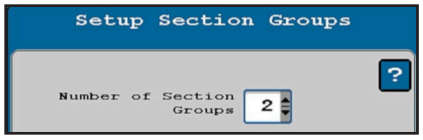


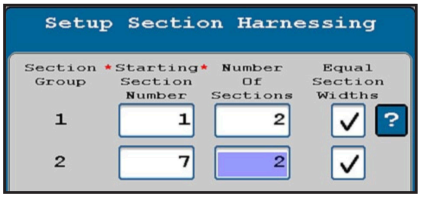




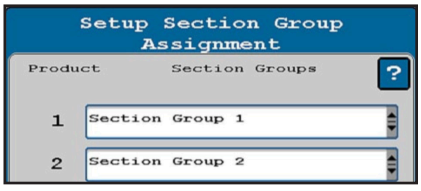
6. Setup Section Groups. Section Group 2 will start with Section Driver 7.

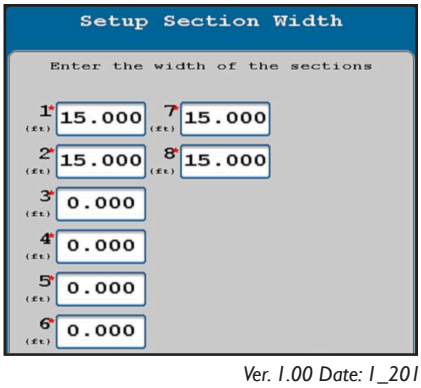
Other Section Setups are possible. PR 1 (NH3) – Sections 1-6 are reserved for NH3 and PR 2 - Starts with Section Driver 7





Sample Setup:





PO Box 1611
Kearney, NE 68848
877.218.1981
www.agxcel.com

Ver. 1.00 Date: 1_2018

Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

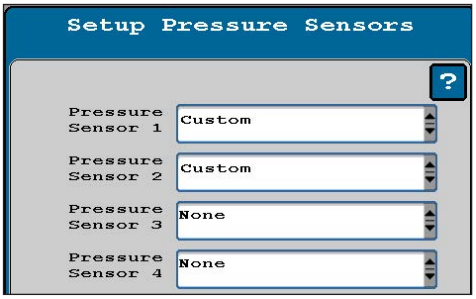
Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

Configuration – cont.

Scale Setup - If using a scale, please select the correct option. If not, select **None.**

7. The AgXcel Pressure Sensor will be setup as a Custom sensor. Calibration will be done later.

Pressure Sensor 1 – NH3
Pressure Sensor 2 – Liquid

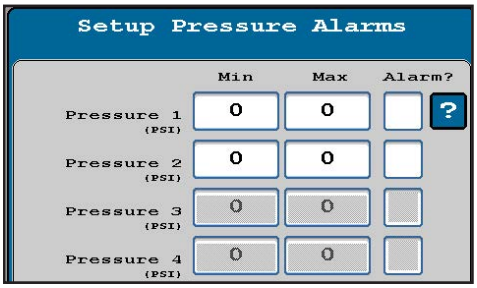


Sensors (such as pressure, pump RPM, spinner RPM) do not need to be assigned to a specific product if they are just being used to monitor a device and not to control it. There may be times when you want to assign the sensor to a product, and there will be time when you do not want to specifically assign the sensor.

For a typical setup, leave these 2 screens as shown on the left and bottom.

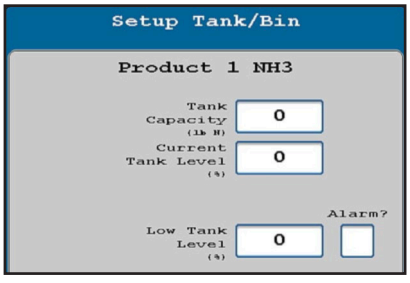
If you assign a Pressure Sensor to a Product, and enter a Minimum/Maximum and check the Alarm box, those become control limits. The system will not go above or below those pressures.

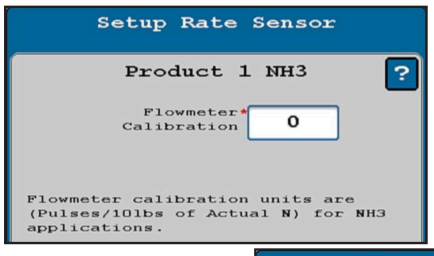
You can put the display for a particular sensor on the product RUN screen so you can see all the information about that system on one screen. (See Display Settings).



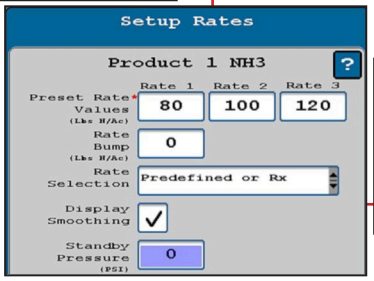
On the AgXcel wiring harnesses, Pressure signal 1 is on the NH3 Product 1 connector. Pressure signal 2 is on the Product 2 connector for Liquid.

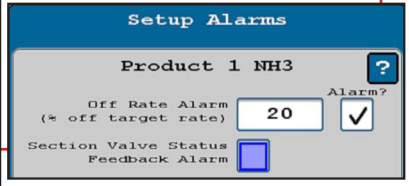
9. NH3 Setup (Please refer to your Owner's Manual for your NH3 settings)





Start with the Default values for Valve Response Rate and Control Effort. Adjust as needed so system adjusts quickly to speed/rate changes, yet doesn't oscillate regularly going across the field. If Control Deadband is set too low, it may create oscillation in the system.



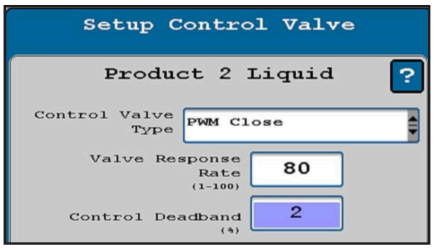


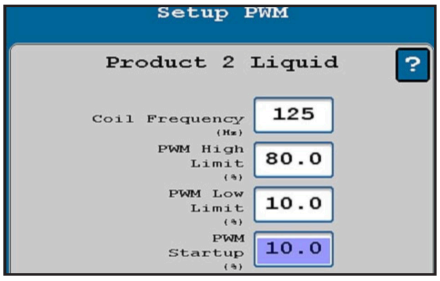
Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

Configuration – cont.

10. Product 2 Control Valve Setup - PWM Setup





Valve Response Rate: *(Adjust as needed)*

Synergist 80

If pump is slow responding to rate or speed changes, increase **Valve Response Rate** 10hz at a time. If product oscillates around rate going across the field, reduce **Valve Response Rate**.

Control Deadband: Start at 2

Coil Frequency:

Synergist 125

PWM High Limit:

Synergist 80

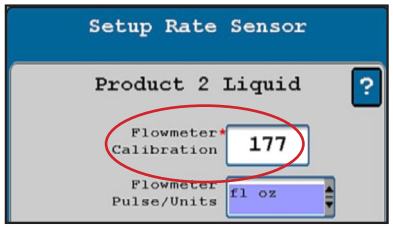
Low Limit *(Adjust in field as needed)*

Synergist 10

Pump Startup *(Adjust in field as needed)*

Synergist 10

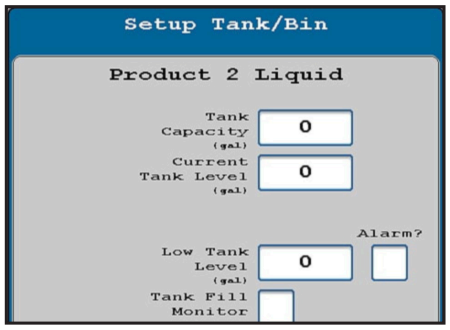
11. Rate Sensor Flowmeter Setup



AGXCEL FLOW METER GUIDE		
MODEL / RATE	PULSES / GAL	Flow Cal #
0.08 - 1.6	37850 *	4731

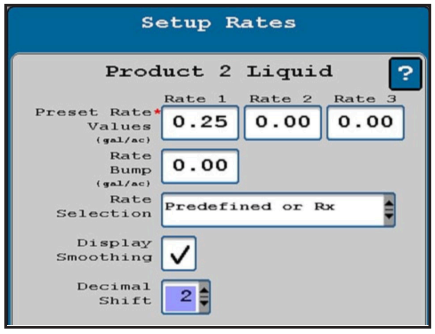
For AgXcel GX40 Synergist, divide pulses/ gal by 128 and use fl. oz. as flowmeter units! GX40 Synergist Flow Cal: 177

12.Tank and fill Flowmeter Setup (Optional)



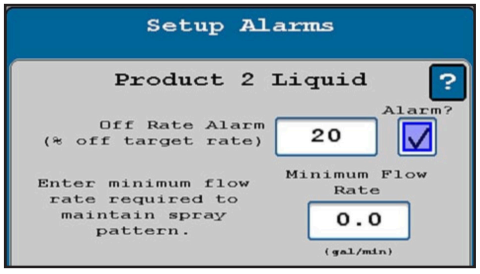
Check Tank Fill Monitor box if using a fill flowmeter. Then enter Tank Fill Flowmeter Calibration (Units are 10gal).

13. Set Rates & Rate Smoothing as desired.



Set Rates and Rate Smoothing as desired. Check the Decimal Shift box to enter rates with one or more decimal point (such as 0.25 gpa).

14. Off Rate Alarm Setup



Set Off Rate Alarm as desired. The Minimum Flow Rate box will be present if a pressure sensor has not been assigned to this product. Typically, Minimum Flow Rate will be left at 0.

NOTE: This guide sheet does not cover every possible setup. Your setup may be different. See the Raven Liquid Rate Controller Operators Manual for important safety information and complete setup and operating instructions.

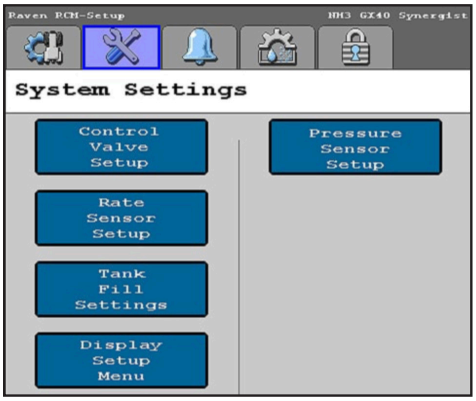
Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

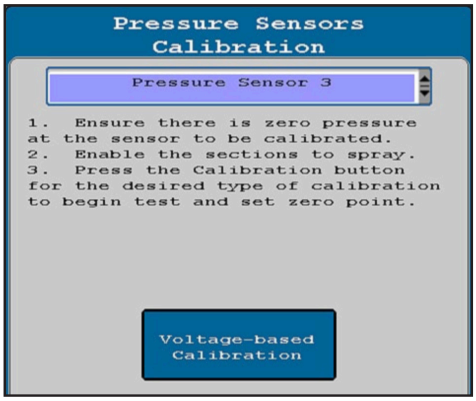
Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

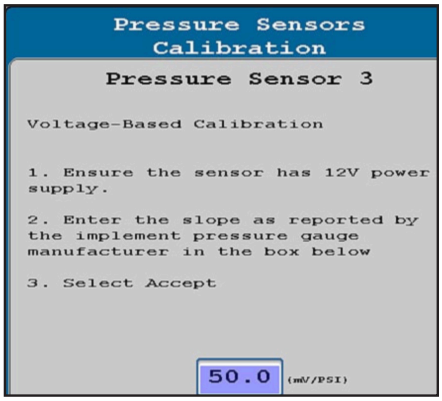
15. Pressure Sensor

When using an AgXcel pressure sensor the steps must be performed below. AgXcel uses a 0 - 100 PSI pressure transducer and a calibration number of **50.0 mv/PSI** is to be used. To ensure that the sensor is properly calibrated, please make sure that the M12 connector with a **GREEN lit LED is DISCONNECTED** from the sensor, this will ensure that the sensor does not detect any pressure in the system. 0 Pressure = 0.00 V.

For compete information on how the **Sensor** is operating, go to:
Diagnostics > Readings > Pressure Sensors. **0 Pressure Voltage should be 0.00 V .**







Valuable Tip for Best Startup Performance on AgXcel Liquid System. For best performance set the PWM Startup at or slightly above the normal operating PWM Duty Cycle (DC%). When the pump starts, it will go immediately to that Duty Cycle and then will have just a monitor adjustment to lock on to the Target Rate. For example, if the normal DC% is as shown on the right, set the PWM Start-up at 40%. And the pump will start just a little faster than normal operating speed for a quick return to rate.

Press and HOLD the SETTINGS tab for about 10 seconds until the Advanced Tuning button displays

16. Advance Tuning

- Many times the Control Valve Settings are not enough to appropriately control the AgXcel EMD PWM Intelligent Module. Therefore, additional fine tuning using the Raven LRC under the Advance Tuning section is required. On the AgXcel GX2 or Synergist system the PID values must be modified. For more in-depth details of this feature press the ? button.

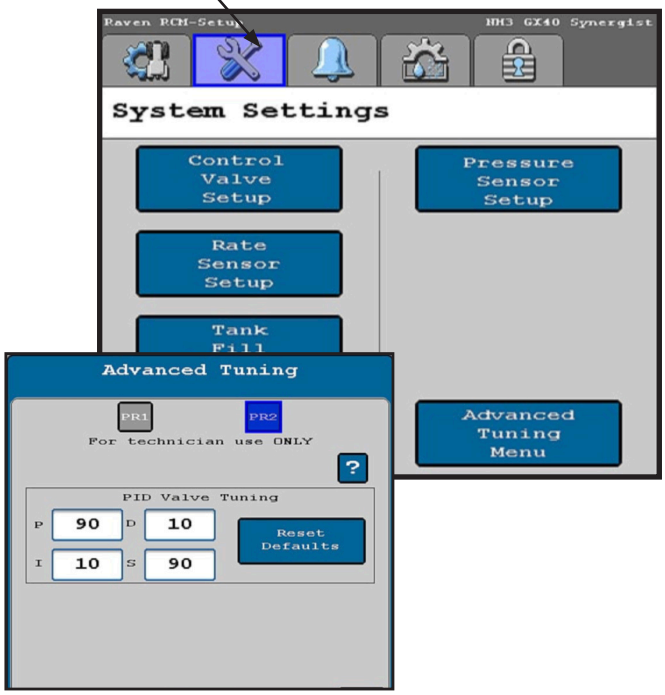
Default Settings are:

P = 50 D = 50
I = 20 S = 50

PID Valve Tunning for AgXcel GX2 Electric System:

Set P = 90 D = 10
Set i = 10 S = 90

Setting P = 100 and S = 100 will ensure the quickest response from the AgXcel GX2 Electric System



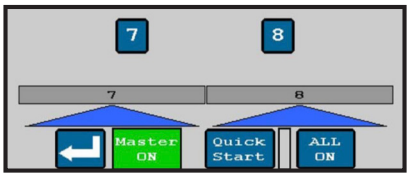
Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

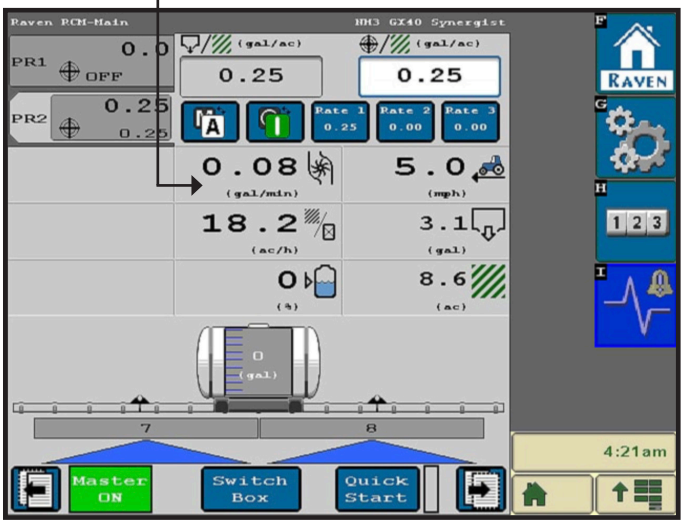
Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

Configuration – cont.

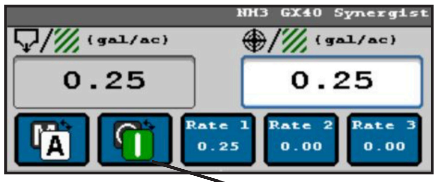
Set these 4 items in **Setup -> Settings -> Display Settings**

- **Gal/min**
- **Pressure (PSI)**
- **DC(%) (PWM)**
- **Mi/hr**

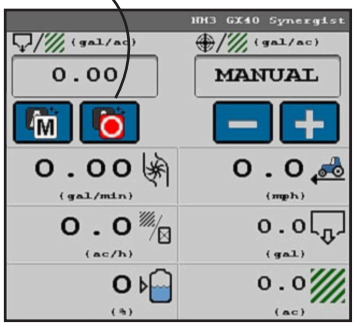




Auto Mode



System ENABLE / DISABLE



Manual Mode

Press on this bar to open Section Switch Box

17. NH3 Initial Operation: PLEASE REFER TO YOUR OWNER'S MANUAL FOR YOUR NH3 SETTINGS

18. Liquid Initial Operation in MANUAL mode:

- Fill the system with water. For first time startup, open bleeder valve.
- Enter a Test Speed at Setup > Implement
- Navigate to MANUAL MODE as shown above.
- Height switch must be DOWN.
- Turn on Master Switch. Press + to increase flow.
- Monitor Flow (gal/min), PSI, DC, Pump RPM.
- Go to Section Switch box (above). Turn Sections OFF and ON.
- Turn Master Switch OFF.

OPTIONAL MANUAL PUMP OPERATION:

Start with Diagnostics > Tests > Calibrate PWM LIMITS. This is the place where you can manually run the pump to test the Liquid System:

Override Height Switch Manual Switch > ON Press Start > Press and hold (+) to speed up pump

Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

19. **Liquid initial Operation in AUTO mode: (for Generic or liquid Fertilizer Tool profile):**

- Enter a Test Speed at Setup > Implement
- Press the AUTO button
- Ensure that the hight switch is down or unchecked
- Turn the Master ON
- You can not monitor system flow vitals and ensure that all outlets of liquid are flowing
- Once again check sections of sections are being used
- System testing is complete - Turn OFF the Master Switch

AgXcel System Performance Settings - To ensure the best performance of your AgXcel system especially at Start Up, setting the **PWM Start Up %** can be fine tuned. PWM Start Up % sends voltage to the pumps at the % that has been set. This can assist in the priming cycle to get the pumps running quicker. Once the pumps jumps up to the % set then it will begin its cycle to lock into the required target rate setting.

Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

Initial Operations - STEP 1

AgXcel highly recommends you perform these steps with water to verify system is correctly installed and ready for the field! Please note, pressure will be much lower with water than with NutriSphere.

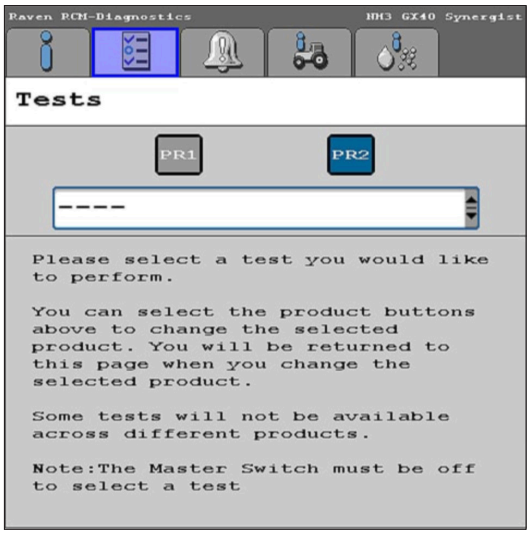
Go to the **Section Test (Diagnostics, Tests, Select Product 2, Nozzle Flow Check)**. **Section Test** essentially functions like a **MANUAL** mode where you have direct control of pump and valves.

2. Turn the **Master** switch on and press START.
3. **Test** section valves by checking and un-checking boxes. Check boxes to open all valves.
4. Push the **"+"** button and hold it. Electric pump should begin running. (It takes lots of individual taps of this button to cause a visible effect).
5. Is water being pumped? If system is not primed, open the priming air bleed valve. This will allow air to be expelled and the pump to prime.
6. With pump running and water flowing, **push "1,2,3" button**. Look at flow in GPM. Is there a reading there? If not, is the system primed with water flowing to every row? If water is flowing, but no reading, check flowmeter calibration and wiring harness connections.
7. Push **wrench** button, now push the "-" button. Go back to the "1,2,3" screen. Did the flow in GPM decrease?
8. ***Make sure the GS2/GS3 flow readout in GPM can be increased and decreased with the plus & minus buttons.***

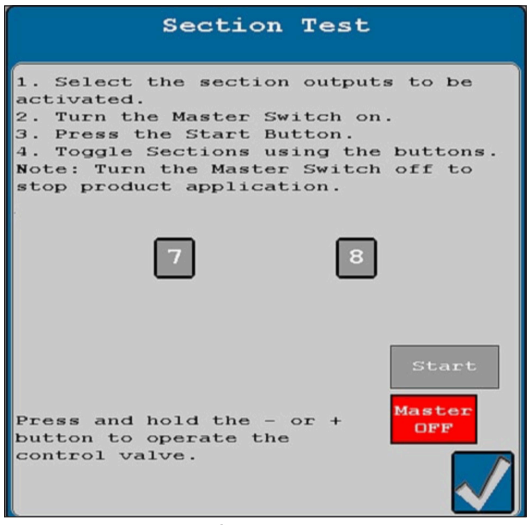
Helpful Tip

The Section Test is the first and most basic test to make sure that the system is set up and hooked up correctly. This test verifies that you can run the pump and control the speed of the pump

If there is a problem with the operation of the system, start with the section test.



Go to Step 2 on the next page when you can increase and decrease the GPM reading using the + and - buttons.

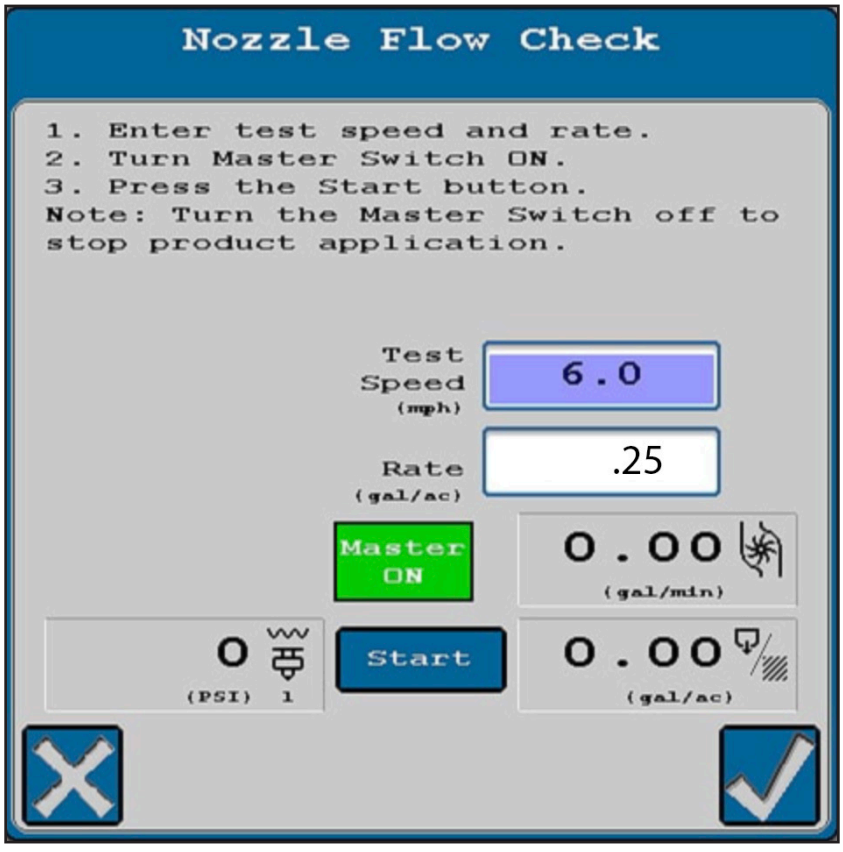


Quick Start Setup Instructions for Raven LRC & AgXcel Harness for NH3 Profile plus GX40 Synergist

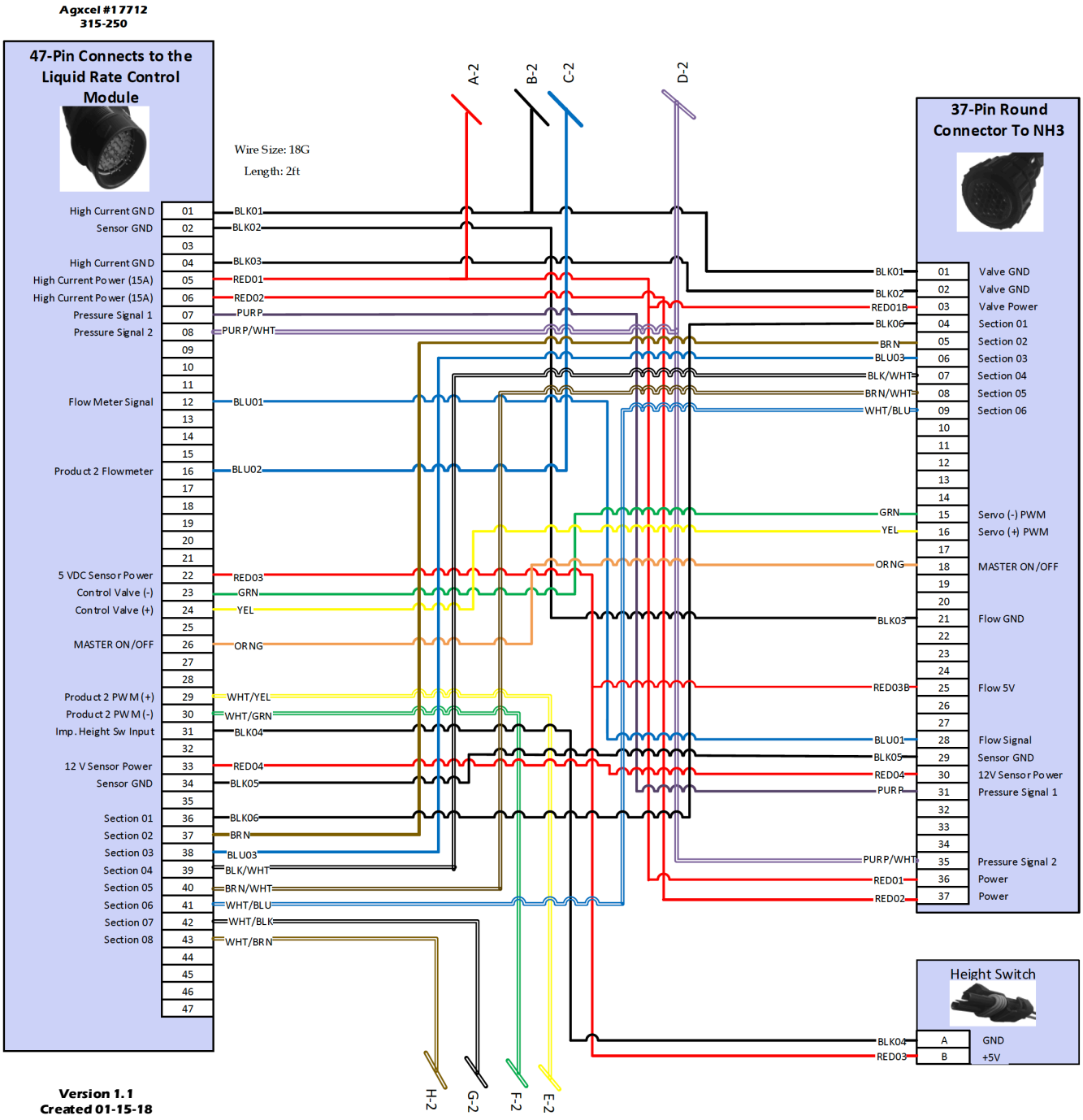
Involved AgXcel Harnesses: 17712, 17713, 17714, 55613

Initial Operations - STEP 2

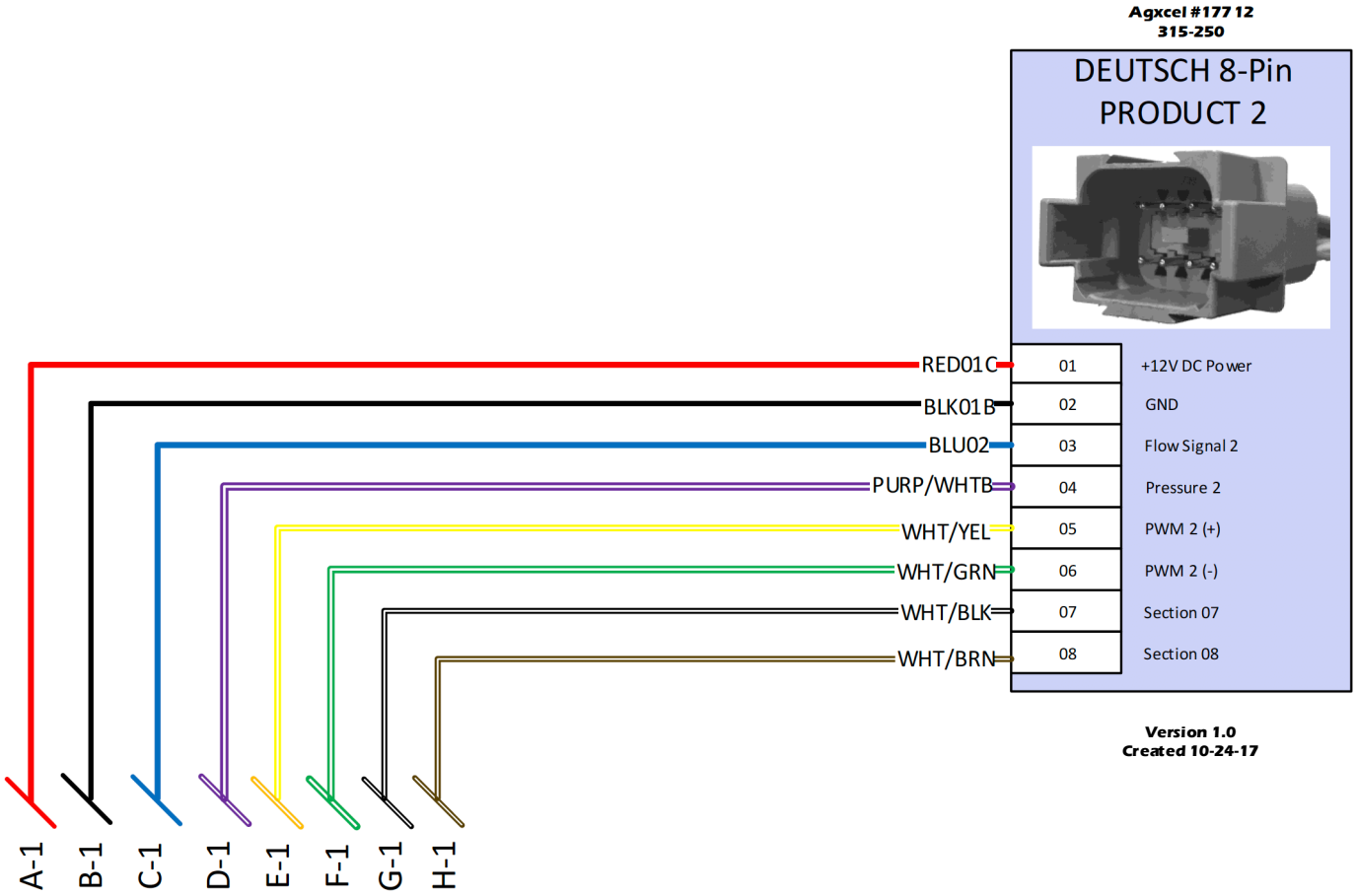
1. Go to the **Nozzle Flow Check (Diagnostics, Tests, Nozzle Flow Check)**. This test will operate the system as if it were running in the field at a speed and application rate you enter. (Note: When testing with water, the system will operate much differently than it will with the actual product. It will take much higher rates with water to build pressure and it may not lock on to rate as well.)
2. **Test Speed:** Enter your typical field operating speed.
3. **Rate:** Enter your typical application rate. (32 oz/ac. Ignore gal/ac)
4. Turn the **Master switch on and press START**.
5. Pump will turn on and begin applying the entered rate.
6. Observe the system. Are the flow and pressure on the screen stable and reasonable? Is the flow reasonable and equal from each application point?
7. Repeat this **test at minimum and maximum** values for both **Test Speed and Rate**. Remember heavier, thicker products such as NutriSphere will have higher pressures at a given flow than water.
8. You can use this procedure with product (instead of water) to verify your **minimum pressure is at least 10 psi** (to ensure all check valves open). Also check the **maximum speed and rate to make sure pressure is under 50 psi**.



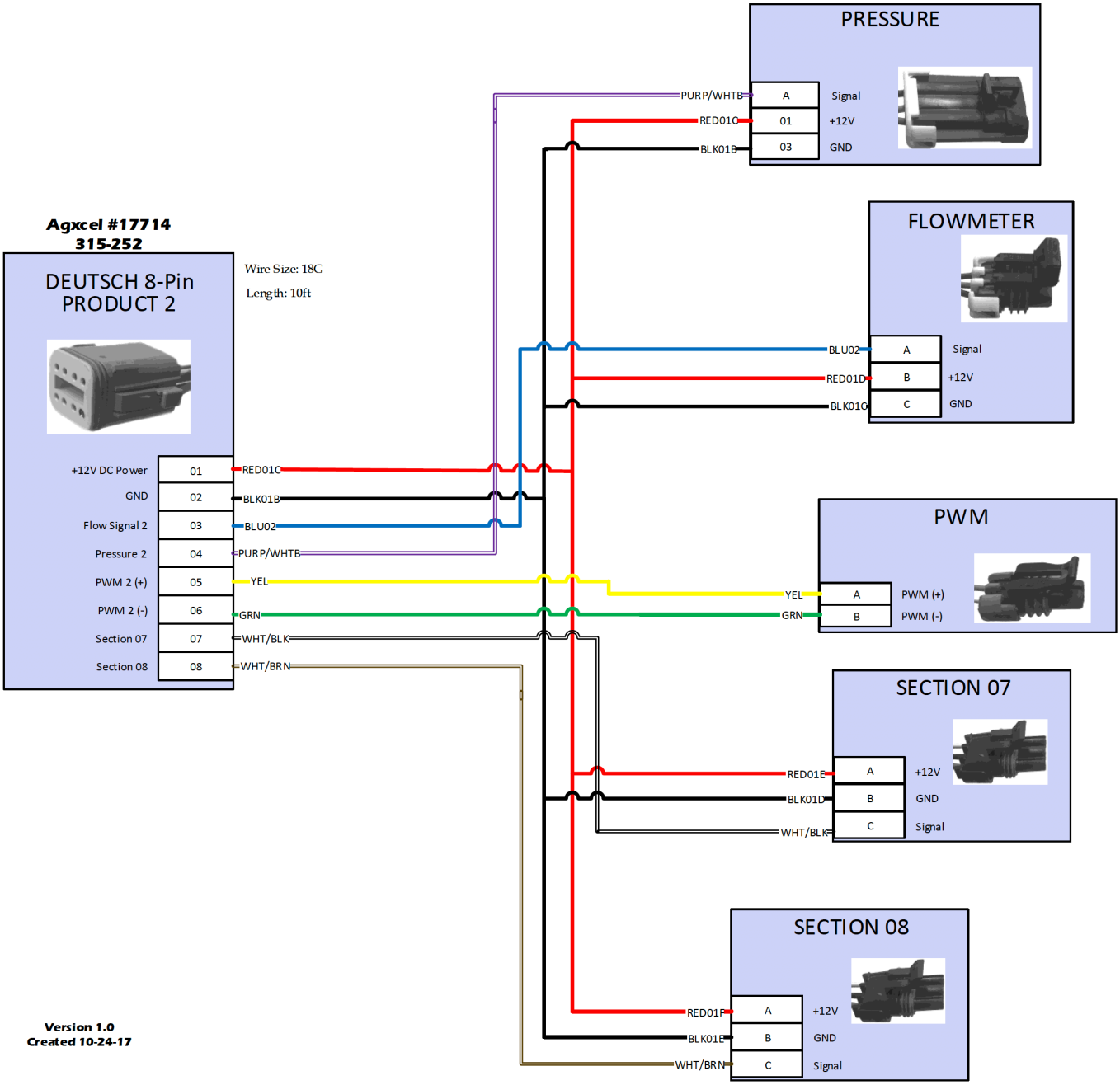
AgXcel Raven LRC
Integration Harness For NH3 (w/6Secs)
And GX40 Synergist (w/2 Secs)



AgXcel Raven LRC
Integration Harness For NH3 (w/6Secs)
And GX40 Synergist (w/2 Secs)

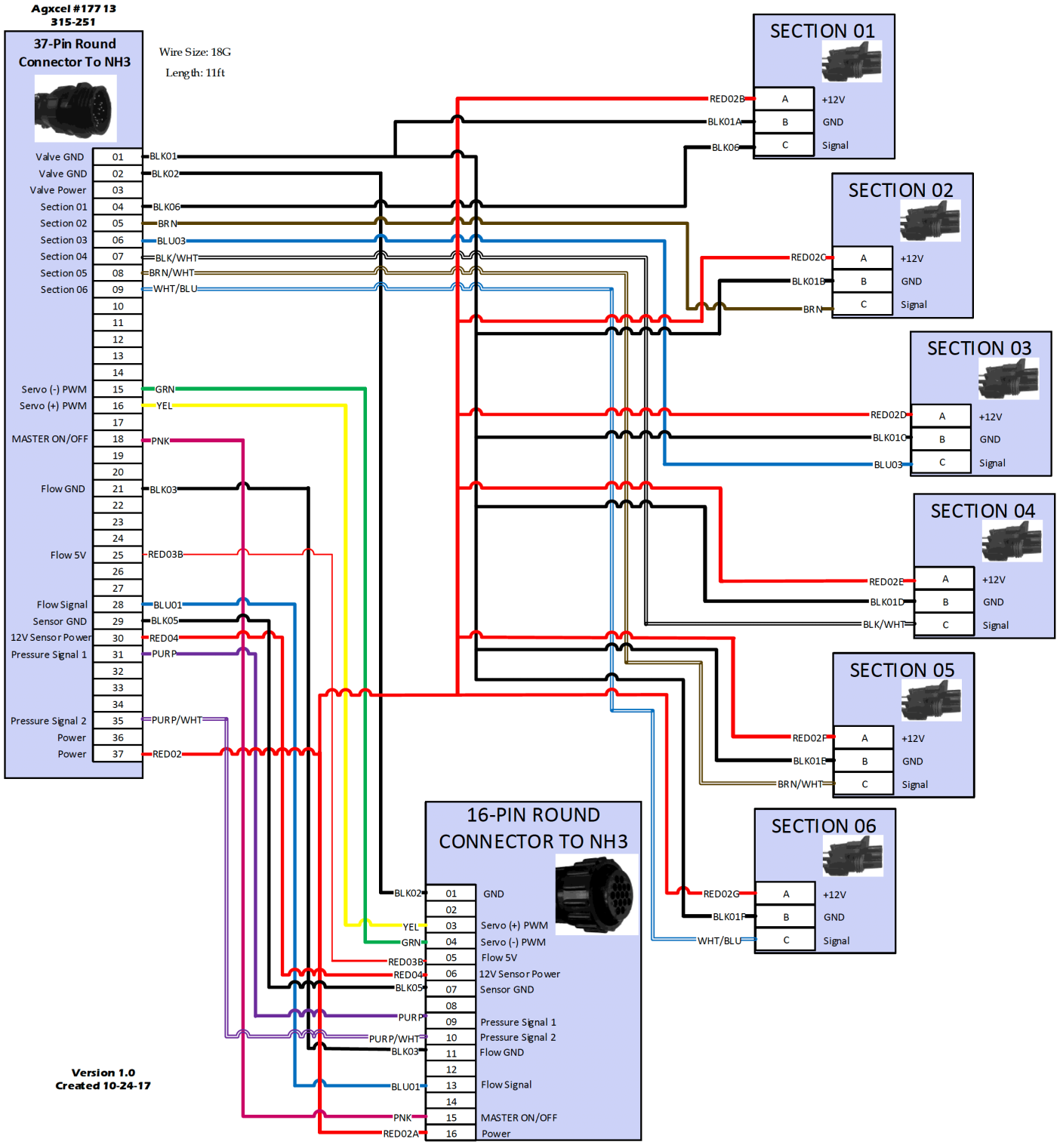


AgXcel Raven LRC
Integration Harness For NH3 (w/6Secs)
And GX40 Synergist (w/2 Secs)



Version 1.0
Created 10-24-17

AgXcel Raven LRC
Integration Harness For NH3 (w/6Secs)
And GX40 Synergist (w/2 Secs)



AgXcel Raven LRC
Integration Harness For NH3 (w/6Secs)
And GX40 Synergist (w/2 Secs)