



# Quick Start Setup Instructions for AgLeader ISO Liquid Rate Controller

**PLEASE NOTE:** Your setup may vary. Not all screens are shown.  
See AgLeader's Operator's Manual for safety information  
and additional setup/operating information.

## MENU STRUCTURE FOR LIQUID RATE CONTROLLER



### Main Screen

- Overview
- Target/Actual Rates
- MPH



### Settings

- Manage Components
- Control Valve
- Alarm
- System



### Calibration

- Pressure
- Flow
- Pump
- Speed

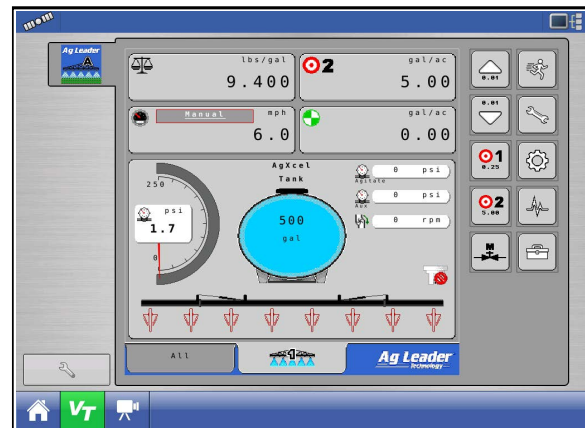


### Diagnostics

- Module
- Alarms
- Unlocks

## System Information

AgLeader technology is a very flexible control platform with many capabilities. This quick start setup guide will show you the necessary steps to setup your display to control AgXcel's Fertilizer Pump Systems. Follow the general directions in your AgLeader ISO User Manual (especially under Configuration and Liquid Rate Control). This manual will show you the specific numbers and settings to use with your AgXcel Fertilizer Pump System.



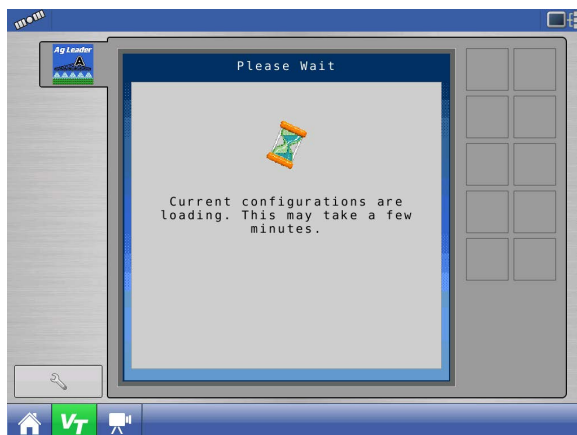
## Integra & InSight Users

Information in this manual is applicable to the ISO version through the monitor's Virtual Terminal, except for screen-shots shown in the **Setup & Operation**. The **Calibration** and **Setup** values in this section **DO** apply to the Integra and InSight. However, the Integra and InSight has a completely different screen layout and menu structure that is not shown in this manual. Use your AgLeader manual to navigate, then enter the appropriate numbers from the AgXcel manual.

## Virtual Terminal (VT) -

When your AgLeader ISO Liquid Rate Controller is correctly connected, It will be discoverable in your monitor's Virtual Terminal section. Select the Virtual Terminal icon, which in this case is displayed on the bottom as "VT"

- From the "Home" screen, press the "VT" icon on the bottom of the screen, which will take you to the **Virtual Terminal** screen.
- Once on the **Virtual Terminal** screen, your AgLeader ISO module will be detected. Once detected, it will load your current configurations. If this is your first time setting up, it will display a message letting you know that system has not been configured.





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## System Configuration -

System configuration is where you will set the AgLeader ISO to be compatible with the AgXcel fertilizer system components. In this section of the setup, this is where you will configure the AgLeader ISOLiquid Rate Controller to manage the AgXcel fertilizer system.

### Configure Equipment -

1. **System Type:** Liquid Fertilizer
2. **Equipment Type:** User Defined
3. **Boom/Toolbar Position:** User Defined

### Hardware Detection -

This screen will display the successfully connected modules. You will see your liquid module(s) and your swath module if you have them available.

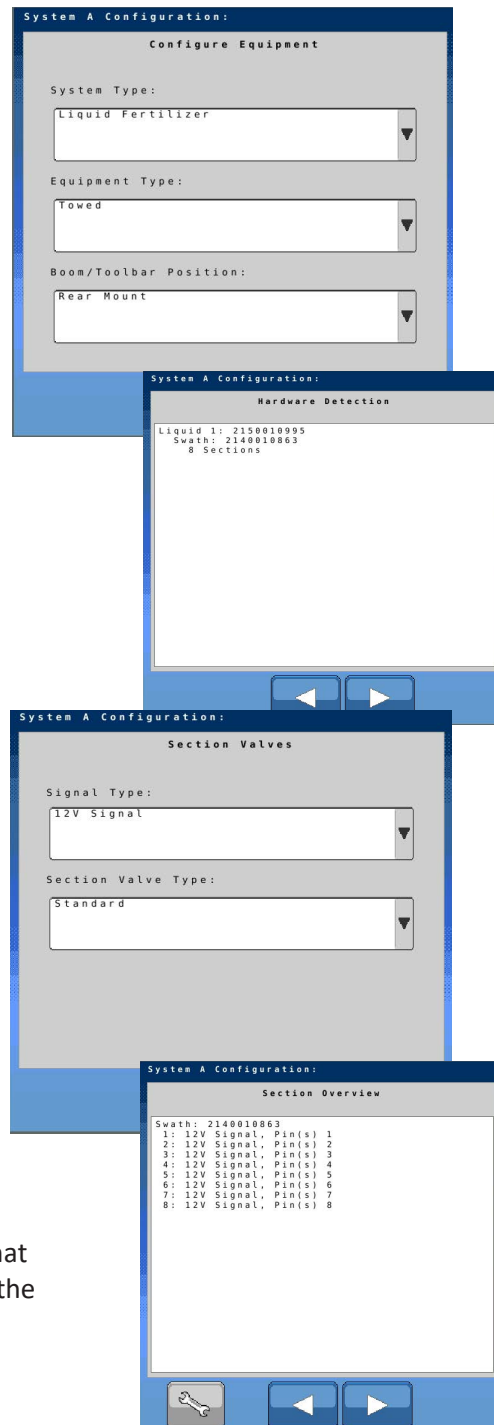
### Section Valves (If Swath Module is Connected)

The Section Valve screen will only display if you have the AgLeader ISO swath module correctly connected.

1. **Signal Type:** 12v Signal
2. **Section Valve Type:** Standard

### Section Overview -

AgLeader ISO will detect how many section shutoff valves that are connected to the swath module harness. Depending on the amount of sections that are connected will be listed in the Section Overview.





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Pin	Signal Type	Section
1	12V Signal	1
2	12V Signal	2
3	12V Signal	3
4	12V Signal	4
5	12V Signal	5
6	12V Signal	6
7	12V Signal	7
8	12V Signal	8
9	Not Used	
10	Not Used	
11	Not Used	
12	Not Used	

Signal Type: 12V Signal  
Section Name: 1

Profile Name: AgXcel

Nozzle Spacing: 30.0 in

Section	Nozzles	Width
1	1	30.0
2	1	30.0
3	1	30.0
4	1	30.0
5	1	30.0
6	1	30.0
7	1	30.0
8	1	30.0

Totals: 240.0 in  
8 Nozzles

Enable Direct Injection Communication

## Swath Configuration -

Swath Configuration will allow you to name each section and assign the signal type to them.

1. **Signal Type:** 12v Signal
2. **Section Name:** User Defined

## Profile Configuration - Profile Name

This will section of the configuration will allow you to create a profile that will save the configurations set to that profile that is being created. AgLeader ISO can have up to 4 stored profiles on its system.

## Nozzle Spacing -

This is the measurement between each nozzle or row on your toolbar. This will be measured in inches.

## Nozzle Assignment (Sections) -

If you do have the AgLeader ISO Swath Module then you will be able to assign how many rows are in each section for the setup that you have.

## Direct Injection Communication -

Enable this if you are using direct injection setup.



# Quick Start Setup Instructions for AgLeader ISO Liquid Rate Controller

## Channel Configuration - Channel Name and Capacity

On the channel configuration screen, AgLeader will allow you to name the tank and capacity that you are using with the AgXcel's pump system.

## Rate Control Settings -

Rate controller settings is where you will set the AgLeader to be compatible with the AgXcel fertilizer system components.

**Control Valve Configuration:** PWM 12V

**Feedback Type:** Flow Meter

**Use Pressure Fall-back:** Enable this setting to allow AgLeader to lock into your target rate by using pressure readings as a fall-back\*

\*When using optional Pressure Transducer Kit P/N 53491

## Rate Off Settings -

**Aux Valve 1 Behavior:** Closed

**Aux Valve 2 Behavior:** Closed

**Control Valve Behavior:** Closed

Channel Configuration: Tank 2150010995

Channel Name and Capacity

Name: Tank

Capacity: 500.0 gal

Channel Configuration: Tank 2150010995

Rate Off Settings

Aux Valve 1 Behavior: Closed

Aux Valve 2 Behavior: Closed

Control Valve Behavior: Close

Channel Configuration: Tank 2150010995

Rate Control Settings

Control Valve Configuration: PWM 12V

Feedback Type: Flow Meter

Use Pressure Fallback: ☐

## Profile Configuration - Task Controller GPS Offsets

Enter the GPS offsets for the setup.

Profile Configuration: Task Controller GPS Offsets

a 0.0 in

b 0.0 in

c 0.0 in

Right

Diagram showing a vehicle with GPS offsets a, b, and c.

Once the profile has been completed, a notice will pop up stating that the set up is complete and that the sensors will need to be calibrated

Profile Configuration:

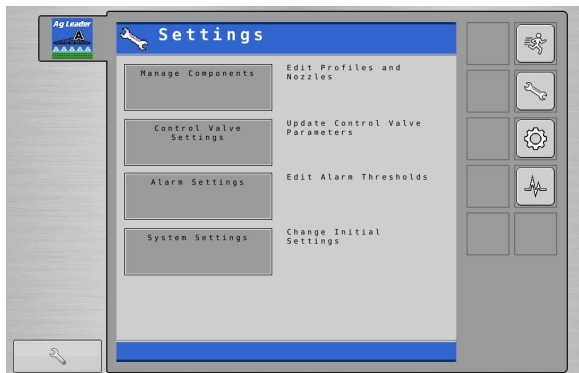
You have completed the profile setup. Sensors must be calibrated prior to use.



# Quick Start Setup Instructions for AgLeader ISO Liquid Rate Controller



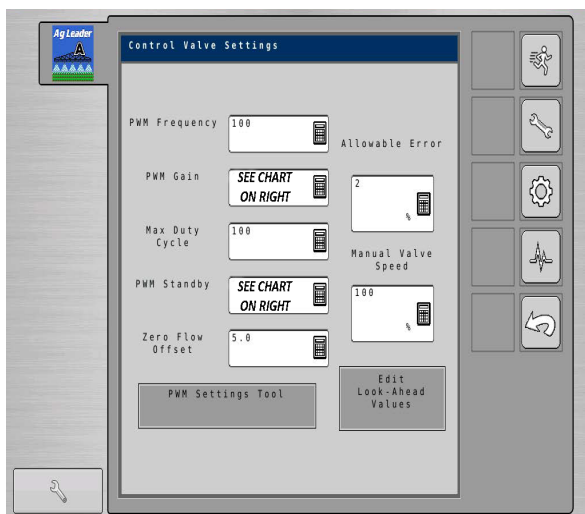
## AgLeader ISO Settings Structure



- **Manage Components** - Edit Profiles and Nozzles
- **Control Valve** - Update Control Valve Parameters
- **Alarm** - Edit Alarm Thresholds
- **System** - Change Initial Settings

### Settings - Manage Components

In the Manage Component menu, you will be able to add, edit, or remove profiles for your AgLeader ISO. You can store up to 4 profiles on the AgLeader. Selecting the Nozzle tab will also allow you to do the same for the nozzle profiles.



### Settings - Control Valve Setting

#### PWM Frequency:

All Systems..... 100

#### Zero Offset:

GX5(hydraulic)..... 30

GX2 (electric)..... 5

Synergist..... 5

#### PWM Gain:

GX5 (hydraulic).... 800

GX2 (electric)..... 9900

Synergist..... 9900

#### Allowable Error:

All Systems..... 2%

#### Max Duty Cycle:

All Systems..... 100

#### Manual Valve Speed:

All Systems..... 100%

#### PWM Standby:

GX5 (hydraulic)..... 30

GX2 (electric)..... 10

Synergist..... 10

Zero Flow Offset is Low PWM Limit  
Lower this setting if pump will not go low enough. Raise this to get to the rate quicker on startup.



# Quick Start Setup Instructions for AgLeader ISO Liquid Rate Controller

## Look-Ahead Settings

Turn-On Look-Ahead: 0.9 s  
Turn-Off Look-Ahead: 0.5 s  
Rate Change Look-Ahead: 0.0 s  
Flow Control Delay: 0.0 s  
Disable Sections On/Off Delays: Unchecked



## AgLeader ISO Calibration Structure

- Pressure Sensor Calibration
- Flow Sensor Calibration
- Pump Sensor Calibration
- Speed Sensor

## Calibration - Pressure Sensor

Sensor: Main Selected

Main: Voltage

Calibration Method:  
Single Set Point

Pressure Sensor Calibration  
Number:  
50 mv/psi





# Quick Start Setup Instructions for AgLeader ISO Liquid Rate Controller

## Calibration - Flow Sensor

Calibration Method: Manual Calibration

### AgXcel's Flow Meter Chart

FLOW RANGE (GPM) DIVIDE BY 8 REQUIRED	PULSES PER GALLON	AG LEADER		AGXCEL TURBINE FLOW METERS
		DB8 CABLE	CAL#	
0.08 - 1.6	22710	YES	2839	FM750 Reg Micro-Trak Cal Number - 145 (SprayMate, Auto-X) Pulses Per Gallon - 72.50 (JD, AGL, Trimble) Pulses Per 10 Gallon - 725 (Raven)
0.13 - 2.6	22710	YES	2839	
0.3 - 5	11355	YES	1419	
0.6 - 13	4542	NO	4542	FM750 LF Micro-Trak Cal Number - 466 (Spraymate, Auto-X) Pulses Per Gallon - 233 (JD, AGL, Trimble) Pulses Per 10 Gallon - 2330 (Raven)
1.3 - 26	2271	NO	2271	
2.6 - 53	1135	NO	1135	

Please refer to your Serial Number system guide to see your flow calibration number. If unavailable, please refer to the flow chart above. Check your flow meter range by the sticker located on the side of your flow meter. Also confirm your harness connecting to your flow meter if you currently have a standard Orion adapter harness or a Divide by 8 harness.

## Calibration - Pump Sensor

Check your pump's sensor pulses/rev calibration number. If you do not have one then disable the pump's sensor feature.

## Calibration - Speed Sensor

Check your speed sensor pulses/100ft calibration number. If unable to find then run the calibration that you see in the above screenshots.



# Quick Start Setup Instructions for AgLeader ISO Liquid Rate Controller

## Run Screen Settings

Press on the boxes on the main Run Screen to:

- Enter a Manual Speed
- Set up Target Rate 1 and Target Rate 2
- Turn on Rate Smoothing
- Set the amount of liquid in the Tank
- Set up the Pressure Dial

The main Run Screen displays the following information:

- Top left: Ag Leader logo
- Top center: Scales icon, lbs/gal, 9.400
- Top right: gal/ac, 7.00 (with a red '2' target icon)
- Middle left: Manual speed, mph, 5.0 (with a red '1' target icon)
- Middle right: gal/ac, 7.00 (with a green '2' target icon)
- Bottom left: Pressure gauge, psi, 11.7
- Bottom center: AgXcel GX2 Demo Tank, 488 gal
- Bottom right: Agitate (0 psi), Aux (0 psi), 429496 rpm, ISO 035
- Bottom: All, 1, Ag Leader Technology

The four settings sub-screens are:

- Speed Source Settings:** Speed Source: ISO GBSD, Manual Override: 5.0 mph
- Rate Control Settings:** Target 1: 5.00 gal/ac, Target 2: 7.00 gal/ac, Increment: 1.00 gal/ac
- Actual Rate Settings:** Use Rate Smoothing? (checkbox)
- Pressure Settings:** Max Graph Pressure: 100 psi, Prime/Standby Pressure: 0 psi
- Container Settings:** 486 gal, with up, down, and question mark buttons

Red arrows indicate the setup sequence: 1. Manual Speed (5.0 mph), 2. Target Rate 1 (5.00 gal/ac), 3. Target Rate 2 (7.00 gal/ac), 4. Pressure (11.7 psi), 5. Tank (488 gal), 6. Pressure (100 psi), 7. Container (486 gal).





## AGXCEL LIQUID FERTILIZER SYSTEMS FREQUENTLY ASKED QUESTIONS

### ***I am trying to achieve 5 GPA but my system will not go lower than 9 GPA.***

- Make sure your PWM Low Limit is set to a number that is lower than your required lowest rate. This can be found in your Valve Control PWM settings on your console. If the PWM Low Limit is set too high you will not be able to achieve the lowest rate possible if set other than 10. Many times setting the Low Limit to 0 will work just fine especially when running lower rates.
- With an AgXcel System always make sure your Minimum Flow rate is set to 0.0 GPM or your system will not drop below this rate. For example if the Minimum flow rate is set to 3 GPM your system will not drop below this setting so if your required GPA requires 2.1 GPM then your system will not achieve this rate given that you have set the Minimum Flow rate to 3 GPM.
- When using an AgXcel GX5 Hydraulic system, make sure the AgXcel silver hyd valve is NOT in manual override. Check to ensure that the RED knob on top of the valve is pressed down by turning the knob clockwise while pressing the RED knob down. This will lock the PWM valve down so that the electronic solenoid can control the hyd flow.

### ***I am trying to achieve 12 GPA but my system will only go up to 8 GPA on my GX5 Hyd system or I am trying to achieve 8GPA and can only achieve 5 GPA on my GX2 electric system***

#### **AgXcel GX2 Electric System**

- What is your system pressure? If system pressure is too high (50PSI or above) this will prevent you from achieving your highest rate possible. High system pressure with an electric system can put the electric pump head into bypass mode and will not allow for full flow.
- **Check the following areas to lower your pressure**
  1. Select a larger orifice or Micro Tube with a larger hole, this will allow for easier flow of liquid through the system and can increase over all flow and GPA
  2. Check your system filters and make sure they are clean. This should be a practice each morning before using the system
- AgXcel GX2 Electric Systems can achieve up to about 5.9 GPM with dual electric pumps. Check your total GPM requirements and ensure that you are within range
- When using a Dual Pump System – unplug 1 pump and ensure that the other pump is working. Perform this test with both pumps and if one pump sounds weak replace it immediately
- Ensure that your PWM High Limit is set to 100. Many times an Auto Tune will set this to a lower number so make sure this is set to 100
- If you controller has this option, make sure the PWM Duty Cycle is within range
- Check all your boom widths and make sure that all are set correctly

#### **AgXcel GX5 Hyd System**

- What is your system pressure? If system pressure is too high (90PSI or above) this will prevent you from achieving your highest rate possible. High system pressure with a hydraulic system set 100 PSI bypass spike valve to open and you could begin to lose volume
- **Check the following areas to lower your pressure**
  1. Select a larger orifice or Micro Tube with a larger hole, this will allow for easier flow of liquid through the system and can increase over all flow and GPA
  2. Check your system filters and make sure they are clean. This should be a practice each morning before using the system
- Check your total GPM requirements and ensure that you are within range of the GX5 hyd pumps recommended GPM
- Ensure that your PWM High Limit is set to 100. Many times an Auto Tune will set this to a lower number so make sure this is set to 100
- If you controller has this option, make sure the PWM Duty Cycle is within range
- Check all your boom widths and make sure that all are set correctly



## AGXCEL LIQUID FERTILIZER SYSTEMS FREQUENTLY ASKED QUESTIONS

### ***My rate is fluctuating and is almost locking in but is jumping around***

- Make sure that your Rate Smoothing is checked and set to 10. You can typically find this setting under your System Controller settings. Rate Smoothing allows the system to lock into the rate if the rate is within 10% of the required rate. Many times liquid temperature can affect the performance of the system.
- Make sure your pressure is enough to fully OPEN every check valve on the implement. A good rule of thumb is to ensure that pressure is higher than 15 PSI when using 4lb, 5lb and especially 10lb check valves

### ***How do I know where my pressure should be?***

- AgXcel systems are not pressure based especially when they are controlled with a Liquid Rate Control Module. HOWEVER, pressure can affect the performance of the system if the pressure is too low or too high. Many users feel that the higher the pressure then the less chance they have to plug an orifice. Although this statement holds value it can also have a major effect on system performance
- **Low pressure – RECOMMENDED 15PSI is the lowest**
  1. Can affect the performance of the pump and may cause it to surge which affect the accuracy of your flow
  2. Can affect the performance of your system check valves, not enough pressure and all your check valves may not OPEN and this may affect the accuracy of your system
- **High Pressure – RECOMMENDED – GX2 Electric = 25PSI GX5 Hyd = 70PSI**
  1. Too high of pressure can also affect the performance of your system as this can cause too much restriction in the manifold tubes and too much resistance will slow the rate down
- **RULE OF THUMB FOR PRESSURE**
  - AgXcel GX2 systems = 15PSI – 25 PSI
  - AgXcel GX5 Hyd systems
    - Low Range = 15PSI – 40 PSI
    - Medium Range = 20PSI – 50PSI
    - High Range = 40PSI – 80PSI
  - All these ranges are OK for the AgXcel GX5 system
  - For High Speed Planters check out the AgXcel GX30i VRT Solution

### ***How do I raise and lower my pressure when required***

- If your pressure is too HIGH then increase the size of your orifice and or Micro Tube to a larger hole size
- If your pressure is too LOW then change the size of your orifice or Micro Tube to a smaller hole

***TIP - Many times the system may have difficulty priming, or if a flow meter has not detected flow and you want the system to continue running so as to prime. Go to Diagnostics > Tests > Calibrate PWM Limits***

1. Time for Auto Mode Testing -
2. Once again, enter a Test Speed
3. Press the AUTO button
4. Ensure that the height switch is down or unchecked
5. Turn the Master ON
6. You can now monitor system flow vitals and ensure that all outlets of liquid are flowing
7. Once again, check sections if sections are being used
8. 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 jump up to the % set, then it will begin its cycle to lock into the required target rate setting.



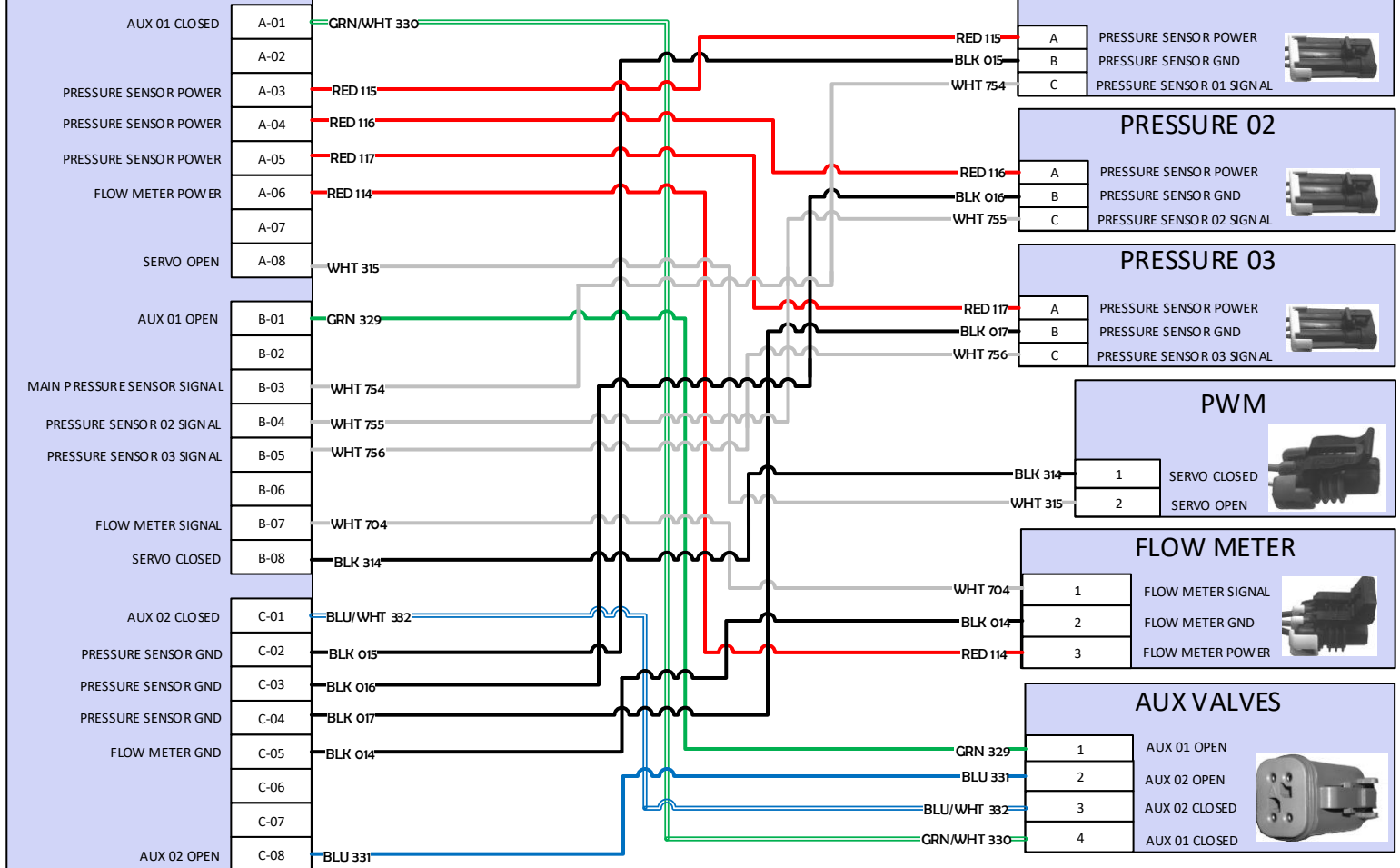
## AG LEADER ISO Main Channel Harness

Agxcel #55695

### 24-PIN CHANNEL CONNECTOR



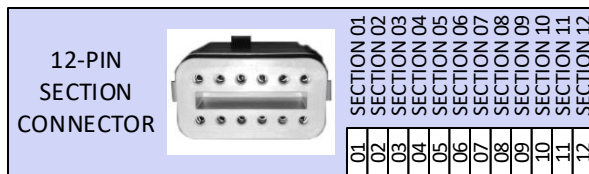
Wire Size: 18G  
Length: 11"x17"



Version 1.0  
Created 01-10-2018



# AG LEADER ISO 12 Section Swath Harness



Wire Size: 18G  
Length: 22"x34"

Agxcel #55700

