Precision Liquid Fertilizer Solutions

agXcel

www.agxcel.com

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877.218.1981

Quick Start Setup Instructions for Case IH Pro 700 with AccuControl

Please Note: Your system may vary from the screens shown here throughout this quick start guide. See the *AFS AccuControl Rate Controller Software Operating Guide* for additional information about configuring your system. This setup may not always happen in the order shown here.

MENU STRUCTURE FOR LIQUID RATE CONTROLLER

Tool Boxx
- Operator
- Layout
- Implement
- Container
- AccuControl

Work Condition
- Layer
- Valve Calibration
- Operation Setup
- Controller Setup
- Product Calibration

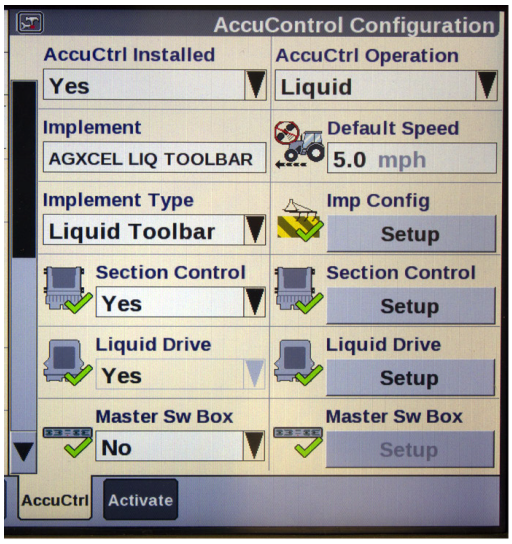
Run
- Run Screens
- Run 1
- Run 2
- Run 3
- Run 4

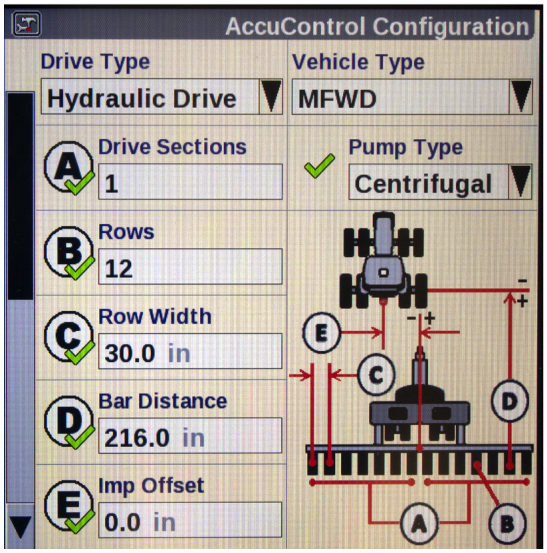
Diagnostics
- Version
- CAN
- Fault
- Resource
- GPS

IMPORTANT: SOFTWARE VERSION AND RATE & SECTION CONTROL MODULE UPDATES
Keep your software up-to-date. Go to Diagnostics > Version to see the Software Version number for each piece of software (esp. AccuControl). Check with your CASE (NH) dealer to see what the latest versions are. Also, check and update the software/firmware for the Field-IQ module (Diagnostics > CAN > Scroll to find Rate & Section Control Module). Have dealer update all this once a year. March 2017--Display and AccuControl version 30.16. Rate & Section Ctrl Module should be 3.19. Version 2.14 will NOT work.

Setting Up the Controller

1. Create an Operator (Toolbox > Oper)
2. Check GPS Status (Toolbox > GPS)
3. Create Implement (Toolbox > Impl)
4. Set up Product (Toolbox > Product)
5. Set up Container (Optional) (Toolbox > Container)
6. Basic Setup (Toolbox > AccuCtrl)
   - A. Select AccuCtrl Operation (Liquid)
   - B. Select AccuCtrl Installed (Yes)
   - C. Select Implement Type (Liquid Toolbar)





7. Implement Configuration (Toolbox > AccuCtrl >
   - A. Press 'Setup'
   - B. Select Drive Type (will be Hydraulic Drive)
   - C. Select Vehicle Type
   - D. Set Number of Drive Sections (A) Always = 1
   - E. Pump Type will be set at Centrifugal
   - F. Set Total Number of Rows (B)
   - G. Enter Row Width (C)
   - H. Enter Bar Distance in Inches (axle to knife) (D)
   - I. Measure Implement Right/Left Offset
   - J. Scroll down to Enter Rows per Drive Section (same as Total Number of Rows)
   - K. Press 'Done'

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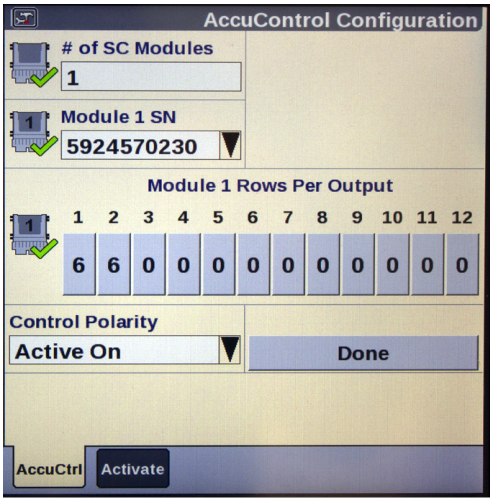


8. Section Control Setup (If equipped with Section Shutoff Valves) Toolbox > AccuControl > Section Control
   A. Select Section Control (Yes)
   B. Press 'Setup'
   C. Assign Module Serial Numbers
   D. Assign Rows per Output (number of rows per Section)
   E. Select Control Polarity (Active On)
   F. Select 'Done'
9. Overlap/ Boundary Control (Toolbox > Overlap)
   A. Turn Overlap Control and Boundary Control ON.
   B. Adust values as desired.

AccuControl Setup for Liquid

10. Liquid Drive Setup ***Toolbox > AccuControl > Liquid Drive***
   A. Select Liquid Drive (Yes)
   B. Press 'Setup'
   C. Assign Liquid Drive Serial Numbers
   D. Select Drive Type (PWM)
   E. Select Master Valve Type (NO)
   F. Select Pump Disarm (No)
   G. Select Sec Off Behavior (Turn Off)
   H. Enter Drive Meter Cal Number
      See Chart below*
   I. Press 'Done'

***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.**

FLOW RANGE (GPM) DIVIDE BY 8 REQUIRED	PULSES PER GALLON	PRO 700 ACCU-CONTROL	
		DB8 CABLE	CAL#
0.08 - 1.6	22710	NO	22710
0.13 - 2.6	22710	NO	22710
0.3 - 5	11355	NO	11355
0.6 - 13	4542	NO	4542
1.3 - 26	2271	NO	2271
2.6 - 53	1135	NO	1135

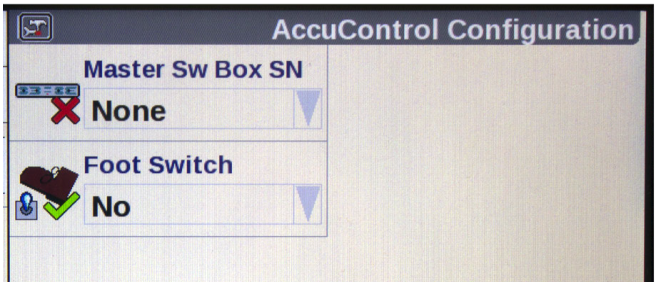
AGXCEL TURBINE FLOW METERS

FM750 Reg
Micro-Trak Cal Number - 145 (SprayMate, Auto-X)
Pulses Per Gallon - 72.50 (JD, AGL, Trimble)
Pulses Per 10 Gallon - 725 (Raven)

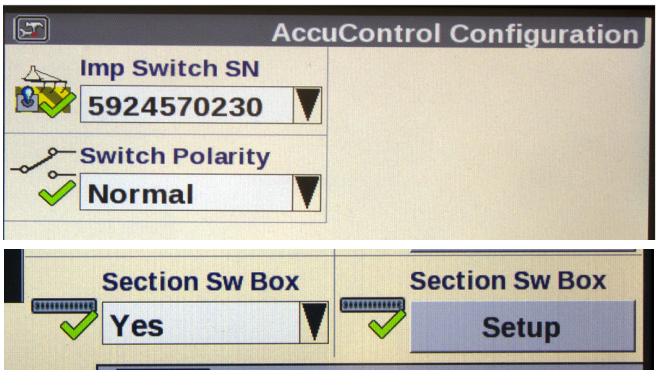
FM750 LF
Micro-Trak Cal Number - 466 (Spraymate, Auto-X)
Pulses Per Gallon - 233 (JD, AGL, Trimble)
Pulses Per 10 Gallon - 2330 (Raven)

Optional Master Switch Box and Foot Switch

11. Master Switch Box (If equipped with External Switch Box)
   A. Select Master Sw Box (Yes or No)
   B. Press 'Setup'
   C. Verify Serial Number
   D. Select Foot Swiitch (if installed)
   E. Press 'Done'



Quick Start Setup Instructions for Case IH Pro 700 with AccuControl

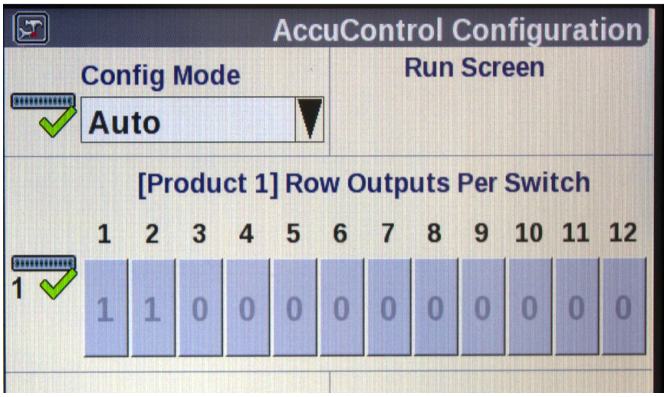


12. Implement Switch (if installed)
    A. Select Imp Switch (Yes)
    B. Press 'Setup'
    C. Select Imp Switch Serial Number
    D. Select Switch Polarity (Determine this by raising and lowering the implement and watch the Implement Status Arrow in Sta tus/Warning Area for proper operation.)
    E. Press 'Done'

13. Section Switch Box (If system is equipped with External Section Switch Box or desire Manual Valve Section Control through Run Screens).

    A. Select Section Switch Box (Yes)
    B. Press 'Setup'
    C. Select Config Mode (Auto)
    D. Verify Sw Box Serial Number (if equipped)

    If no external switchbox is installed, User Defined Windows can be assigned to a Run Screen (Toolbox>Layout).



Create a Layout

Go to Toolbox>Layout
Select Current Layout and then select New
Name the Layout. Under Run Screen select a screen.
In the white boxes add the following items to Run Screen

- AccuControl Speed
- Master Control
- Liquid Op Mode
- Liquid Control
- Liq App Rate Scan
- Container
- Liq Flow Rt Scan
- Section Control
- Overlap Control
- Clutch Control (may want this if the system has electric section valves)

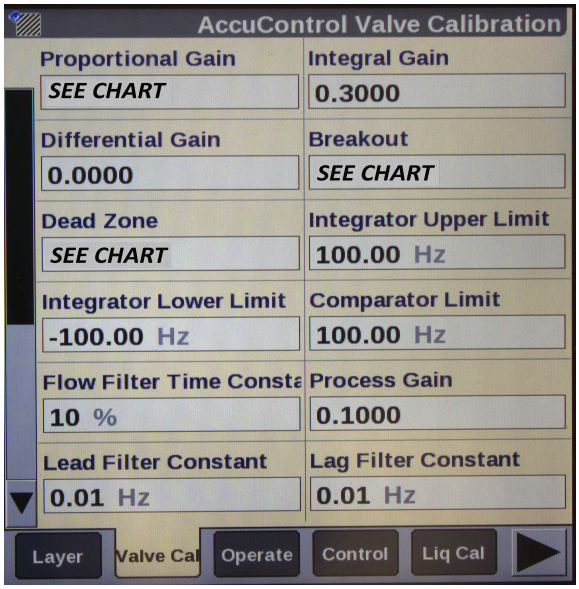
The Run Screen Layout is largely a matter of operator preference. Some of these items may be added to the Left Hand Area is space is available or more than one Run Screen can be set up.

Quick Start Setup Instructions for Case IH Pro 700 with AccuControl

Valve Calibration

Work Condition > Valve Cal > Advanced Valve Calibration

Electric pump systems typically run well with the default settings. There is more variation in hydraulic systems. The Valve Calibration procedure may give you the best settings for a hydraulic system, but other times it may not. Try the following default values as a starting point and make adjustments as needed.



Proportional Gain:

GX5 (hydraulic).... 0.3
GX2 (electric)..... 0.6
Synergist..... 0.6

Breakout:

GX5 (hydraulic)..... 10
GX2 (electric)..... 3
Synergist..... 3

Dead Zone:

GX5(hydraulic)..... 3
GX2 (electric)..... 2
Synergist..... 2

Integrator Upper Limit:

All Systems..... 100

Integrator Lower Limit:

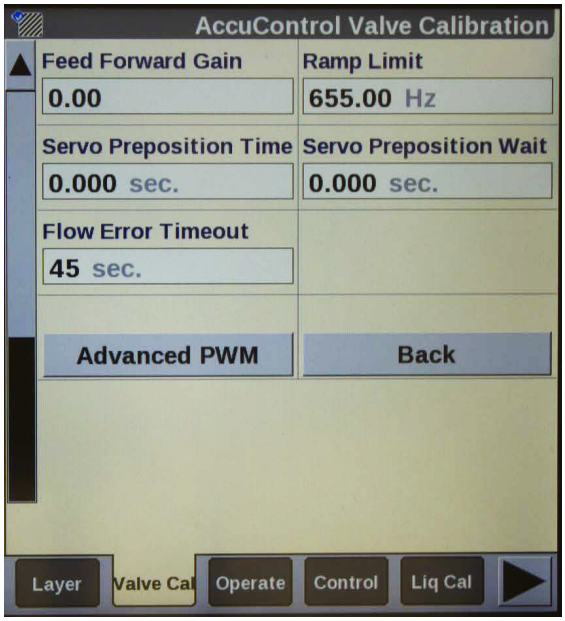
All Systems..... -100

Comparator Limit:

All Systems..... 100

Additional Tips for Getting Started

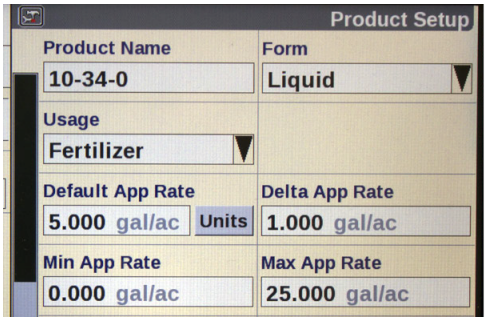
- Set the **Flow Error Timeout at 30-45** seconds until you get the system adjusted and operating correctly. the default is 5 seconds. This may result in the application being shut down before you have a chance to see how it is operating. After the system is operating correctly, this can be set lower to you a quicker warning if something is wrong. **(Work Condition > Valve Cal> Advance Calibration > Scroll down to 2nd page and Flow Error Timeout)**
- Set the **Fault Speed to Slow or Off** until you get the system adjusted and operating correctly. The default is Normal. **(Work Condition > Operate > Fault Speed)** After the system is operating correctly, this can be set back to Normal. You can run this at Slow if the system gives too many Fault Warnings at Normal.
- For initial operation, run Liquid Cal procedure.



Quick Start Setup Instructions for Case IH Pro 700 with AccuControl

Pro 700 & AccuControl Operation for Liquid Application

To start applying product:
Go to Toolbox>AccuCtrl>Default Speed - Enter a default speed. The applicator will default to this speed if all ground speed sources are lost. The Master Apply button may need to be cycled twice to start the application.



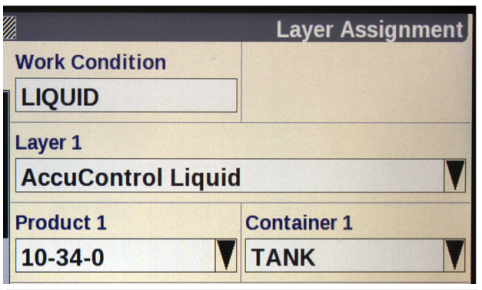
1.Preparation

A.Insert a data card in the display.
B.Create or Select a Grower/Farm/Field/Task & Crop Type

(Performance > Profile)

2. Product Setup: Toolbox > Product

A. Name the product (Example: 28-0-0)
B. Select the form for the product (Liquid)
C. Select Usage (Fertilizer)
D. Enter Default Application Rate
E. Enter Minimum and Maximum Application Rate.

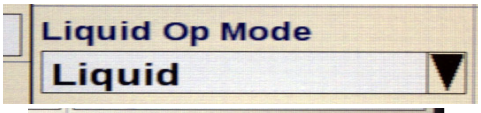


3. Product Layer Assignment: Work Condition > Layer to assign a product to a control section of the applicator

A. Select or Create a Work Condition.
B. Select Layer 1 Control Type (AccuControl Liquid)
C. Select Product for Layer 1 Control
D. Select Container if using the Container
E. Assign additional layers if needed.

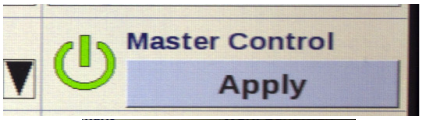
4. Controller Setup - Liquid: Work Condition > Control

A. Verify Implement
B. Verify Work Condition
C. Select Controller—Liquid
D. Product Delay-Default is 1 .0 sec.
E. Enter the Minimum Speed (if the speed drops below this, the applicator will keep applying at this speed)
F. Enter a value for Off-target Alarm Limit (probably 15-20%)



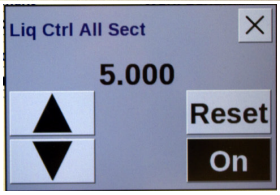
5. Enable Application: Run Screens

A. Liquid Op Mode—Select Liquid
B. Read the safety message and press Accept.
C. Master Control—Press Apply on display or switch on Master Switch on switch-box (if equipped)



6. Liquid Rate Control

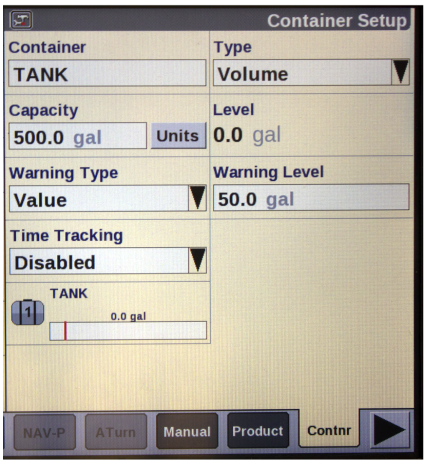
A. Liquid Control defaulted to ON
B. Increase or decrease rate if needed
C. Automatic rate control (prescription) is assigned in



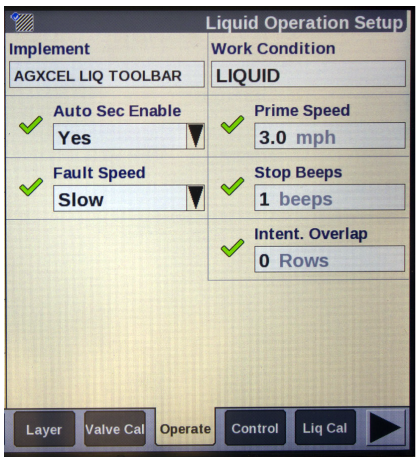
Quick Start Setup Instructions for Case IH Pro 700 with AccuControl

These are only examples screen shots. Your system may vary and not require these particular settings, or it may require settings not shown in this document. Please check your Case IH Pro 700 display manual and your AFS AccuControl manual for more information about your setup.

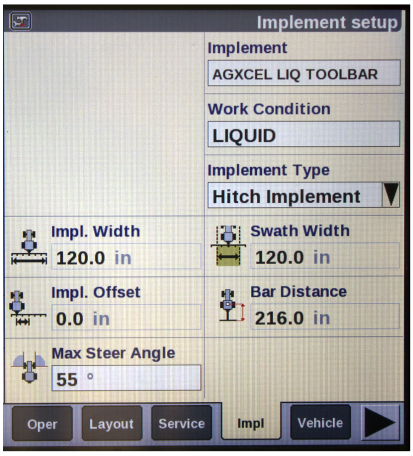
Container Setup (Example)
Toolbox - Container



Fault Speed, Alarms, Etc.
Work Condition > Operate

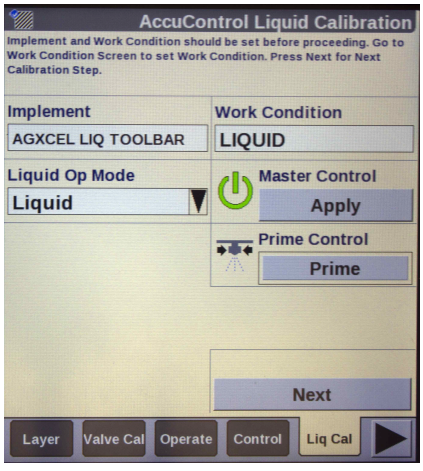


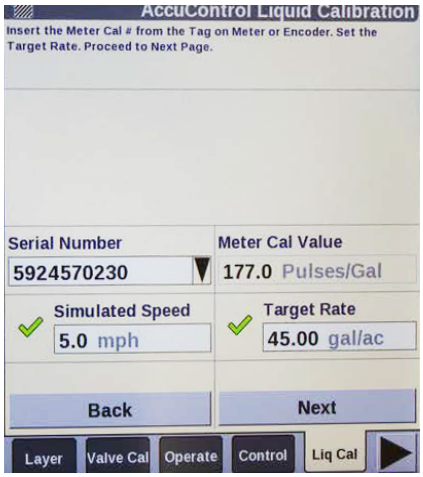
Implement Setup (Example)
Toolbox - Implement

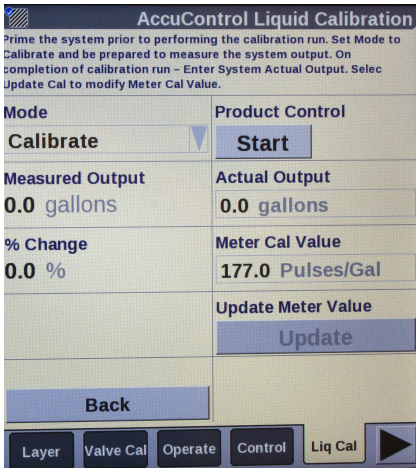


AccuControl Liquid Calibration

The following screenshots show the screens used in running a flowmeter calibration or catch test.
Work Conditions > Liquid Cal







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

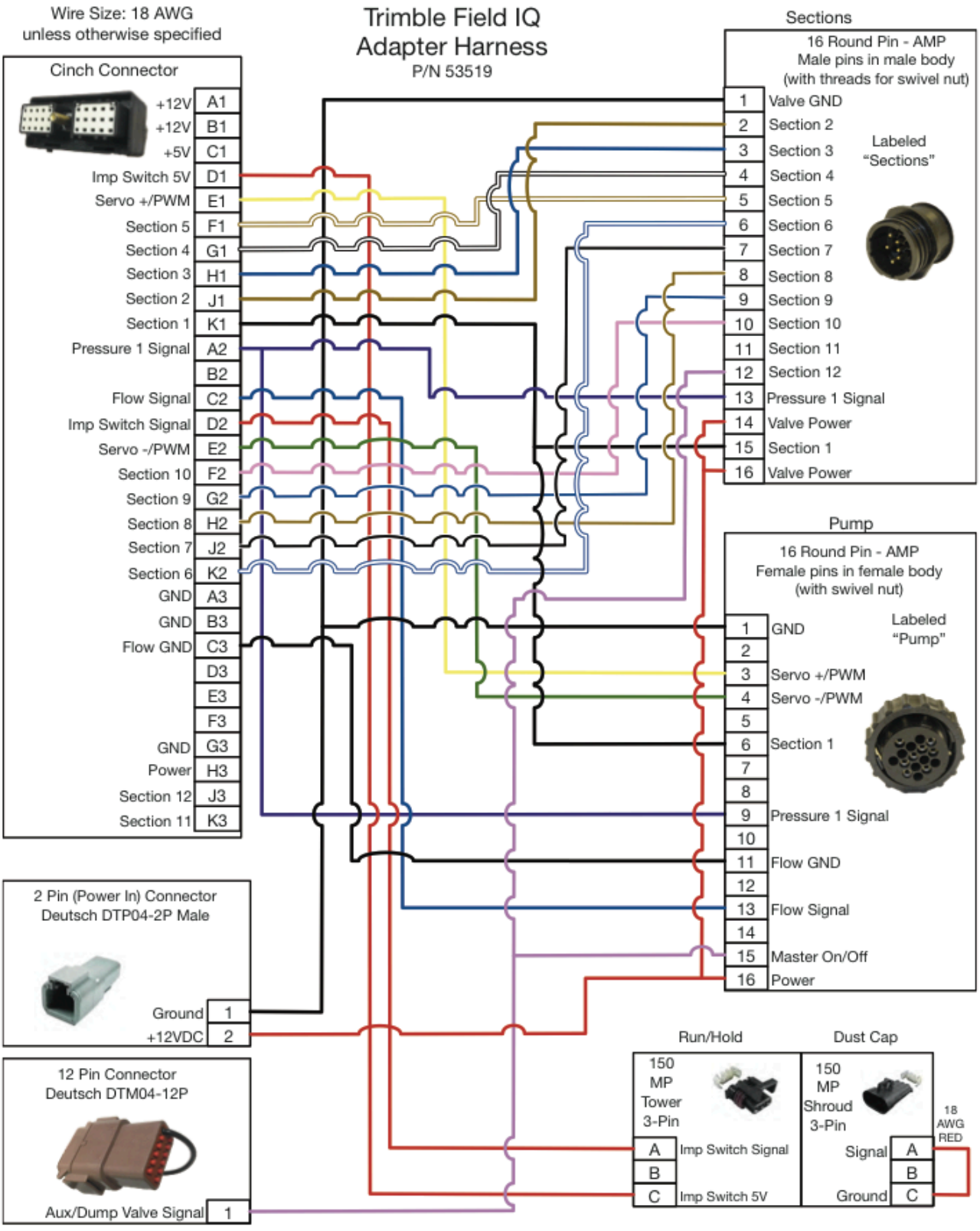
TIP - Many times the system may have difficulty priming, or if a flow meter has not detected flow and you want the system to continue running so as to prime. Go to Diagnostics > Tests > Calibrate PWM Limits

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.

AgXcel Case IH Pro 700 w/Accucontrol Using Trimble's Integration Harness Pinout Diagrams

PINOUT DIAGRAMS



AgXcel's Channel Harness Pinout Diagram

PINOUT DIAGRAMS