ISO Liquid Initial Setup Checklist

1. Build a System and profile in the Universal Terminal (UT) BEFORE building a display configuration.
   Carefully follow steps 1-16 on pages 24-29.
   Reminders:
   A. Enable/disable Raven ISO Direct Injection, see step 7 on page 26.
   B. When using Flow Based Control (flow meter required), see step 10 on page 27.
   C. When using Pressure Based Control (pressure sensor required), see step 10 on page 27.
   D. Set Aux Valve(s) and/or Control Valve Behavior in step 12 on page 28 and step 13 on page 28.
   E. Enter GPS Offsets in step 15 on page 28. These offsets directly affect AutoSwath performance.

2. Create Nozzle(s) for pressure based control, pressure fallback, and droplet size monitoring (where applicable).
   Carefully enter all Nozzle parameters on pages 30-31.
   Reminder:
   Always perform catch tests to confirm manufacturer nozzle specifications.
   A. Use tip charts provided by nozzle manufacturer.

3. Follow Controller Setting configuration on page 32.
   Reminder:
   A. Enter Prime/Standby Pressure settings (PWM only) on page 20.

   Reminders:
   Always perform catch tests to confirm manufacturer flow meter calibration values.
   For Flow Based Control (pressure sensor optional)
   A. See page 41 to enter Flow Sensor (meter) calibration value.
   B. When applicable, enter Fallback Threshold for system to switch between flow based control and pressure based control on page 20 (pressure sensor required).
   For Pressure Based Control (pressure sensor required)
   A. Calibrate Main Pressure Sensor on page 47.
   B. Select previously created nozzle on Mapping screen as shown on page 4.
   C. Verify product density is correct via Mapping Screen as shown on page 4.

5. Assign Switches via UT. Refer to Auxiliary Assignments Feature User Guide.
   Reminder:
   When using Ag Leader CAN-A DirectCommand switchbox, “Auxiliary Module Support” must be checked in the display ISOBUS Settings shown in the Auxiliary Assignments Feature User Guide.

   Reminder:
   For Ag Leader displays
   A. Check mark Broadcast Display Speed (ISO GBSD) in the Display ISOBUS Settings as shown in Auxiliary Assignments Feature User Guide.
   For 3rd Party Displays
   A. Verify display manufacturer’s speed source is set properly for 3rd party ISOBUS ECUs.
7. Build the display operating configuration and load the product, grower, farm, and field for the operation.

Reminder:

For InCommand1200

A. The Load and Go feature will auto-create the ISOBUS controller.

For other Ag Leader and 3rd party displays

A. User must manually create an ISOBUS controller. See display manufacturer’s operator manual for proper display configuration.

8. Select desired Target Rate on the UT or mapping screen on page 2.


Reminder:

A. Operate applicator to evaluate performance, and then adjust control valve settings as needed on page 32.

B. Configure/adjust AutoSwath section Look-Ahead Settings on page 34.

10. Applicator is ready for use.

**At a Glance—Universal Terminal**

- Product Density Adjustment
- Speed Source Selection
- Main Pressure and Droplet Size Indicator
- Tank Volume Countdown
- Target Rate Adjustment
- Actual Rate
- Pressure and Pump Speed Readout
- Nozzle Selection
- Section Indicator

**ATTENTION!:** Pages 4 - 16 are specific to Ag Leader display functions. If the ISO Liquid Rate Control is being operated through another ISO display, refer to pages 17 - 61 for Universal Terminal specific functions.
Pressing the **Prime** button will bring the system up to the defined Prime/Standby pressure and hold it. This feature is only available when a PWM control valve and pressure sensor are utilized.
At a Glance—With Ag Leader Display

Press Rate tab > Settings (wrench) button

Press Settings tab to access Liquid Control Options screen.

Go to Liquid Control Options screen.

NOTE! The user can calculate the density by entering the known weight and volume.

Select the nozzle that will be used on the machine.

NOTE! Product Density and Nozzle Selection are required for pressure based control. If there is not a nozzle present to select, the user must add one in the module.

ATTENTION!: Pages 4 - 16 are specific to Ag Leader display functions. If the ISO Liquid Rate Control is being operated through another ISO display, refer to pages 17 - 61 for Universal Terminal specific functions.

Load Configuration

Press the Application App from the home screen to load a configuration.

NOTE! If a System or Profile has not been setup yet in the Universal Terminal, please refer to “System Settings” on page 35 and/or “Profiles” on page 24 before loading a configuration.
ISO Liquid Rate Control

Map View

A. Menu button
B. Total Logged Field Area
C. Ground Speed
D. AgFiniti® Status
E. Diagnostics
F. GPS Signal Indicator
G. Display Legend
H. Product Control toolbox
I. Vehicle Icon
J. Event Summary
K. Map View
L. Split screen
M. AutoSwath™
N. Pressure Diagnostics

NOTE!: Pressing the Map View button will cycle between the available Map screen views, and the appearance of the Map View button changes.

Product Control Toolbox

During DirectCommand™ Run Time operations, the Product Tabs are shown in the upper right-hand side of the Map screen. Press the Product Tabs, and an extended view shows the Rate buttons, Manual Valve Control button, Prescription button, Rate Increase and Rate Decrease arrows, and the Rate Setup button, all of which are described below.

A. Product
B. Target Rate
C. Actual Rate
D. Rate 1 button
E. Rate 2 button
F. Manual Valve Control
G. Prescription button
H. Rate Increase arrow
I. Rate Decrease arrow
J. Rate Setup button
K. Section Status Indicator
L. Container Level

Target Rate—The Target Rate is desired application rate.

NOTE!: In some conditions, the Target Rate may increment more quickly than the Actual Rate.

Actual Rate—The Flow Sensor returns the actual rate being applied.

NOTE!: In some conditions, the Actual Rate may increment slower than the Target Rate, or its numeric values may vary before matching the Target Rate.

Container Level—The Container Level shows the amount of product in the container.

Rate 1 and Rate 2 buttons—The Rate 1 and Rate 2 settings represent preset application rates that allow operators to quickly change between desired target rates for each individual product.
**Manual Valve Control button** — The Manual Valve Control button allows operators to specify the position of the control valve. Operators use this option to prime the system before application or clean out the equipment at the end of the day.

**Rate Increase and Decrease Arrows** — The arrows allow Product Application Rate to be changed according to the Target Rate Increment. In using manual valve control, the increase and decrease buttons allow the position of the control valve to be defined by the operator.

**Prescription button**

**Rate Setup button**

**Rate Control Settings**

Adjust the Rate 1 and Rate 2 settings shown at the Product Control Toolbox on the Map screen, as well as import application product prescriptions. To access the Rate Control Settings screen, press the Rate Setup button on the Product Control Toolbox. The Rate Control Settings screen appears.

**Rate 1 and Rate 2** — The Rate 1 and Rate 2 settings represent preset application rates that allow operators to quickly change between desired target rates for each individual product.

Press to enter the desired amount.

**Increment** — The Increment button allows operators to specify the increase or decrease amounts for a specified rate by using on the Product Control Toolbox. Press to enter the desired increment.

**Prescription** — To load a map-based prescription file, press the Prescription button.

**Minimum Flow** — (Used for DirectCommand Liquid Applications only). This setting is used to maintain a consistent spray pattern. The display will not allow flow to drop below the entered setting. Set to flow at the lowest operating pressure for the selected spray tips with all sections on. When spraying with one or more boom sections off, the system automatically reduces the minimum flow setting according to the reduced spray width. To utilize Minimum Flow, nozzles will need to be setup in the Universal Terminal. Once a nozzle is setup, Minimum Flow is calculated based off of the nozzles specifications. Refer to "Nozzles" on page 30 for further detail.
**Container Level Settings**

When filling or emptying container, use the Container Level portion of the Rate Control Settings screen to update the amount of product in the containers.

Container Level screen

Container Level may also be adjusted from the Universal Terminal.

- **Tank Fill** — The Tank Fill button increases the container level logged in the display to the user-defined maximum volume (specified in the Container Setup Wizard).

- **Tank Empty** — The Tank Empty button decreases the container level logged in the display to zero.

- **Tank Partial Fill** — The Tank Partial Fill button increases the container level logged in the display to specific amount specify by pressing calculator icon. Pressing the Partial Fill button summons the Adjust Container Amount screen.

**Adjust Container Amount**

- **Add** — Adds product to the container.
- **Remove** — Removes product from the container.
- **Set** — Sets the product level in the container.

**Tank Alarms**

The Container Alarm button, which appears on the right of the Container Level portion of the Rate screen, displays the capacity of tank as well as the percentage at which the Low Container Level warning will sound. To adjust these settings, press the button and the Container Alarm screen appears.
Adjust your container level warnings, use the following buttons on the right-hand side of the Container Alarm screen.

The **percentage (%)** button sets the warning threshold according to the percentage of solution left in the tank. In the example above, the threshold is set at 10 percent.

The **units of measurement** icon sets the warning threshold according to the amount of solution left in the tank. This icon is named according to the container’s units of measurement you specified during the Controller configuration procedure.

The **Disable Low Container Level** button, which appears as a bell with a red slash across it, disables the Low Container Level warning.

### Loading Prescriptions

1. Press the Rate Setup button on the Product Control Toolbox.

2. Press the Load Prescription button.

3. Using an inserted USB or AgFiniti Cloud, search for and highlight the correct .agsetup, .irx, or shape file and press .

4. Select the prescription in the Select Prescription screen, and select the correct controlling product from the Product dropdown box. A preview prescription map is displayed. Press .
5. In the Modify Prescription Screen the prescription scale, minimum to apply, and maximum to apply can be changed. As the three parameters are changed, the adjusted total to apply and average rate will update accordingly.

6. Press the check mark.

7. After returning to the Mapping Screen, the prescription will appear on the map while in a North Oriented view.

**Shape File Conversion**

What is commonly called a shape file is actually a collection of three different files. All three of the files are required and must be present on the USB drive for the system to use shape file groups for variable rate product application. A single "shape file" can contain recommendation rates for multiple products.

1. To begin, press on the Product Control Toolbox.

   The Rate Control Settings screen appears

2. Press the Load Prescription button.
3. The Select File screen appears. Highlight your desired .shp file and press .

4. Select Column From Shape File
   Select the column that contains the product recommendation rate. The list on the right side of the dialog shows sample data from the selected column.

5. Select Units
   Select the controlling units for product application.

6. Default Rate Setting
   The system assigns a default rate. Use the on-screen keypad to edit the value if desired.

   **NOTE!**: Select the product and units that the shape file prescription was made for. Selection of the wrong data column or unit will result in misapplication of product.

   **ATTENTION!**: The only time the default rate is used by the system during product application is if the Rate Outside of Field selection is set to "Rx default". This setting is located in the equipment configuration settings portion of configuration setup. If the Rate Outside of Field selection is set to "Rx default", the default target rate will be used when the vehicle exits the area covered in the prescription map.

**Creating Products**

Creating application products and product templates can be completed during initial setup or from the Product Selection screen of the Field Operation Wizard when starting a field operation.

**Creating Single Products**

To create a single product, to be added to a product template or to be applied by itself, use the on-screen wizard described in the following steps.
Select:

1. Product Type
2. Product Units
3. EPA Product Number (Optional)
   
   Check box if product is a Restricted Use Pesticide
4. Manufacturer name if applicable.
   
   Manufacturer name can be added to the drop-down menu by pressing .
5. Press to enter a unique name for the product.

Created product should appear under the Application heading located on the Product tab of the Configuration Setup screen.

NOTE!: Some Fertilizer and Carrier product types are predetermined in the display. These product names cannot be edited. Their Manufacturer and EPA Numbers can be edited after the product is created. Examples are: Fertilizer>DAP or Carrier>30% UAN.

Creating Product Template

Product Templates are set up by using the on-screen wizard.

NOTE!: Prior to making a new product template, it is recommended to add the individual products to the list in the units recommended by the chemical label.

It is recommended to create product templates that contain the products applied for a crop type or time of the season.

Examples are:

- Pre-Emerge Burndown
- Post-Emerge Corn
- Post-Emerge Beans
- Insecticide
- Fungicide

In each template the products can be checked on/off for the mix when loaded at the run screen.

1. Select Tank Mix

   Define By

   - Total amounts—mix/blend defined by amounts added to the tank (total of each product in tank)
   - Rate/acre—mix/blend defined by the amounts applied per acre (rate of each product applied/area)

3. Enter a Base Amount or Base Rate and Units.
   
   - Total Amounts—Tank/Bin Size
   - Rate/Acre—For Rate Applied per Acre
4. Select Carrier
   • Press to create a new carrier.

5. Press by the Add Mix/Blend Contents box to start the process of adding components to the mix.

6. Select the desired component from the drop-down menu.

    NOTE! More than 7 products can be part of a template, but only 7 or fewer can be active at the same time.

    • A new product can be set up at this time by pressing and following the Product Setup Wizard.

    • Press to add selected product, or press to return to Add Mix/Blend screen without adding a product.

7. Press to add an additional product.

8. When all components have been added press .

9. Enter Manufacturer name is applicable.
   • Manufacturer name can be added to the drop-down menu by pressing .

10. Press to enter a unique name for the mix/blend.
    • Press to complete the process of setting up the mix/blend, or press to return to the Configuration Setup screen without adding a mix.

The product mix/blend appears under the Application heading located on the Product tab of the Configuration Setup screen.

Configure Product Mix

When using a product template, the mix contents and amounts are defined in the Configure Product Mix screen available in the Event Setup Wizard, or Product button in the main menu.
1. Select your mix/blend from the drop-down list or press \[\text{+}\] to create and new mix/blend.

2. The product template mix contents and amounts are defined by:
   
   A. activating or de-activating products
   
   B. changing rate or total amount of product
   
   C. changing total amount of the product or overall rate of product application

   A product can not be active with a rate of zero. Press \[\text{-}\] to access the Mix Calculator.

3. When a product template is setup using rate/area, the Mix Calculator can be used to show how much of each product to put in the tank when the user enters the desired amount to fill.
4. Press the Volume to Calculate button and input the total volume. Table will give the user the amount of each product to put in the tank.

<table>
<thead>
<tr>
<th>Product</th>
<th>Rate</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>18.797</td>
<td>413.906</td>
</tr>
<tr>
<td>Atrazine</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>Crop Oi</td>
<td>4</td>
<td>120</td>
</tr>
<tr>
<td>Laudis</td>
<td>22</td>
<td>600</td>
</tr>
</tbody>
</table>

```
Mix Rate:
```

5. Select Region from the drop-down menu or press to name Region
Verify the Controlling Product for the Mix/Blend.
Press to load the Event to the Map Screen, or press to return to Home screen without setting up an Event.

Create Configuration

A wizard will guide you through the process of selecting or creating a configuration with application settings. The configuration can be started in two places:

OR

Your Operating Configuration will then be viewable when you start a new Field Operation with the Application Wizard.

You can also use the Manage Equipment button to create or edit specific vehicles and implements.
Implement Offsets

Implement Offsets screen appears, with each channel's settings shown on its own tab. Defaults to the value entered during Configuration Wizard.

Boom sections can independently be offset forward or back (application only)

Press to access Swath Section Offsets screen.

Select Swath section to edit and press Edit button.

Enter Offset for that specific section and Forward/Backward from rear axle.

Press to enter change.

Setup will indicate which offset is entered

Global—All sections have the same offset.

Individual—At least one section has a different offset.
When using Hardi ISOBUS, Implement Modeling can be set to Hardi SafeTrack. This allows the display to accurately calculate the path of the sprayer.

Hardi SafeTrack Modeling is utilized by the display when SafeTrack is engaged on the machine.

NOTE! When a Hardi ECU is present and SafeTrack is in use, the Heading Aggressiveness will be grayed out in the Implement Offsets screen. The Heading Aggressiveness will need to be adjusted from the Hardi interface.

If a trailed implement utilizes a steerable axle, the Hardi SafeTrack feature can be used without a Hardi ECU. This will allow manual adjustment of the Heading Aggressiveness from the Implement Offsets screen.

• **Heading Aggressiveness**

  The Heading Aggressiveness setting can be used to fine tune the mapping of a trailed implement. (Example: Pull type sprayer that has a steerable axle feature) The setting ranges from 0 - 10. The default value is 2.

  An aggressiveness setting near 0 or 1 will model similar to an implement that has a rigid axle. With the only pivot point being the implement's attachment at the vehicle's hitch.

  As the aggressiveness setting is increased, the modeling will start to resemble an implement that "follows" the path of the vehicle. The modeling will become more exaggerated the closer the setting is to 9 or 10.
UT Runscreen

The runscreen has 4 readouts that will be presented regardless of the system type.

- **Product Density**
- **Rate Control Settings**
- **Speed Source Settings**
- **Actual Rate Settings**

### Product Density

This displays the current product density. If connected to an Ag Leader display with an event loaded, this will need to be set on the map screen under settings.

To enter a product density:

1. Press

2. Enter value.

3. Press ✅ to save or ✗ to cancel.

**NOTE!** The density can be calculated if the volume and weight of the product is known. Enter both values into the Conversion Calculator and press ✅.

**NOTE!** Product density is disabled when an NH3 system is active.
Rate Control Settings

Rate Control Settings is where Target Rate 1 and 2 are set, as well as the increment value.

Enter each value and press \( \checkmark \) to save or \( \times \) to cancel.

NOTE! An Anhydrous Ammonia system will also allow the user to define the controlling units as either lbs of N/ac, lbs of NH3/ac, or gallons/ac.

Speed Source Settings

This is where the user defines the speed source. The user can choose from the options below.

ISO GBSD—Ground Based Speed and Direction from a GPS source (ISO11783). Message is received on the ISO CAN bus.

ISO WBSD—Wheel Based Speed and Direction from a tractor ECU typically, could be radar (ISO11783). Message is received on the ISO CAN bus.

Module Wheel Speed—Module wheel speed input source. Wheel speed sensor on the implement.

CAN GPS—NMEA 2000 CAN GPS source. Could be direct from a GPS receiver or other ECU. Message is received on the ISO CAN bus.

Machine Selected Speed—Speed source supplied from the vehicle ECU. This speed source is determined by the vehicle ECU as the best available speed source and sent on the ISO CAN bus (i.e. GPS, Wheel, Radar). Not all vehicle ECUs will have this type of speed message available.

Select the desired speed source from the combo box.

To set a Manual Override speed:

A. Check Manual Override checkbox
B. Enter desired speed in input box
Press ✓ to save or ✗ to cancel.

**Auxiliary Speed Source**
Allows user to input auxiliary speed source such as radar via ISO switchbox.

ℹ️ Note!: Improperly selecting this will cause 0 speed on Universal Terminal.

**Actual Rate Settings**
The Actual Rate Settings is where the user turns Rate Smoothing on and off:

- Check this setting to smooth the displayed actual rate by 10%.
- Uncheck this setting to display the actual rate the flow sensor is reporting.

**System Settings screen**
This screen displays information about the implement.
Universal Pressure Sensor

It displays the Universal Pressure sensor and Droplet Size indicator. This will display the current pressure read out from pressure sensor one. If a pressure sensor is not present the module will calculate the system pressure. A nozzle must be defined and selected for this.

It will also display the droplet size ranges for the selected nozzle. A nozzle must be defined and selected for this to be present.

Pressing the Universal Pressure gauge will take the user to the Pressure Settings

- **Max graph Pressure**—The user can define the range the Universal pressure gauge displays. The max is 250 psi (17 bar).

- **Prime/Standby Pressure**—The user can set the desired psi or bar for the system to hold when priming the system or when all sections are off.

ATTENTION!: When Prime or Standby Pressure is in use, the module will first control at the PWM Standby setting. After it achieves the PWM Standby duty cycle, the module will then attempt to hold the Prime/Standby Pressure. PWM Standby will need to be set appropriately to closely match the desired Prime/Standby Pressure. If the Prime/Standby Pressure cannot be achieved, the control module will time-out. See "PWM Settings Tool" on page 33 to set the PWM Standby appropriately.

- **Fallback Threshold**—The user can set the range of flow that the system will switch between flow based control or pressure based control. For example, setting the threshold to 10 gal/min will result in the system using the flow meter when flow is >10 gal/min and using the pressure sensor when flow is <10 gal/min.

NOTE! Fallback Threshold is only available if the pressure fallback setting was check marked when creating the profile.

Vapor State Monitoring

- When an Anhydrous Ammonia system is setup, NH₃ state monitoring is capable. In order to use the on screen gauge for NH₃ state monitoring, a temperature sensor and main line pressure sensor must both be installed and calibrated. Once both sensors are installed and calibrated, the UT pressure gauge will now display only RED and GREEN portions.

  - When the UT pressure gauge needle is in the GREEN area, this indicates that the NH₃ is being applied in a liquid state.
  - When the UT pressure gauge needle is in the RED area, this indicates that the NH₃ is being applied in a vapor state.
Pressure, Temperature, and RPM readings

System Settings screen also displays Agitate and Aux pressure, as well as Pump RPM. These will only display a readout if the sensor is present on the system, and is calibrated.

An Anhydrous Ammonia system will display Temperature, Aux Pressure, and the remaining tank percentage. Temperature and Aux Pressure require a sensor in order to provide a read out.

Tank Capacity

The tank capacity indicator will display the remaining tank volume.

Pressing the tank capacity indicator will take the user to Container Settings screen.

Fill, Set, or Empty Tank

Pressing fill will fill the tank to its full capacity.

Pressing set will allow the user to enter a specific volume that is not completely full or empty.

Pressing empty will remove all volume from the tank.
Container Alarms

Pressing Container Alarms will allow the user to set the alarm threshold by either an amount of volume or by a percentage of the tank capacity.

NH3 Tank Capacity

When an Anhydrous Ammonia system is active the user gets a few more options with the tank capacity. NH3 tanks size vary depending on where the user gets them from or what’s available. Because of this the user can redefine the tank capacity at any time.

The user can also set the remaining capacity based on the controlling units or by a percentage. The user could tell the system there are 1500 lbs of N left in the tank or 17.8% left in the tank.
Nozzles

The user can change nozzle by pressing the nozzle indicator. Select the current nozzle, that is present on the machine, from the available options.

Section Indicators

The section indicators show the application state of each section on the sprayer.

- Applying
- Not applying due to AutoSwath
- Not applying due to switches off

Toolbar section indicators are shown below:

- Applying
- Not applying due to AutoSwath
- Not applying due to switches off
Pressing the section indicators will take the user to the Totals settings.

Totals Settings shows the user the total area covered and product applied for the entire season or current event. Each can be reset at any time.

**NOTE!** If connected to an Ag Leader display, the current totals will reset with each new event created.

**Manage Components**

Manage Components is used to create machine profiles and nozzles.

**Profiles**

Creating machine profiles is useful when there is more than one possible configuration of the same machine. For example, if a user sprays with the entire 120ft boom of their sprayer on one field. On the next field they fold in their extensions to only spray using 90ft of the swath width. Creating a profile for each scenario will prevent accidental activation of sections that are folded causing over application. Each system can have up to 4 profiles saved.
Add Profile

1. Select a configuration to copy for the base of your profile. Press to continue.

2. Name the Profile. Press to continue.
3. Enter the Nozzle Spacing. Press \( \Rightarrow \) to continue.

4. Enter the number of nozzles for each section.

Use \( \Rightarrow \) and \( \Leftarrow \) to select sections.

Use \( \Rightarrow \) to disable sections that won’t be used in this profile.

5. Verify that the swath and number of nozzles are correct.

6. Press \( \Rightarrow \) to continue.

7. Place a checkmark in the box to enable Direct Injection Communication if a Raven ISO Injection Pump will be used. If one will not be used do not place a check mark in the box. Press \( \Rightarrow \) to continue.

\( \text{NOTE!} \) This is only used for Raven ISO Injection Pump.
8. Name the channel and enter the tank capacity. Press  to continue.

9. Select the Control Valve Configuration based on what is present on the vehicle.

10. Select the Feedback Type. This will determine if the system controls the rate using flow based control or pressure based control.
    - Select Flow Meter for flow based control. A flow meter must be present on the machine.
    - Select Pressure Sensor for pressure based control. A main pressure sensor must be present on the machine.

11. Place a check mark in the box to use Pressure Fallback, otherwise leave the box unchecked. Pressure Fallback is a setting that allows the system to automatically switch between flow based and pressure based control. It is very useful in low flow situations where a flow meter may not be accurate enough to read low flow rates. In that situation the system will activate Pressure Fallback (based on a user defined threshold) and switch from flow based control to pressure based control. Both a flow meter and a pressure sensor must be present on the machine to use Pressure Fallback.

Press  to continue.
12. Select the behavior for Aux Valve 1, 2, and the Control Valve.
   • Selecting Closed or Open for Aux Valve 1 and 2, determines what state each valve enters when all sections are turned off

13. Selecting Hold or Closed for the Control Valve behavior determines what state the control valve enters when all sections turn off.
   • Hold—The control valve will hold the last known rate when all sections turn off.

   NOTE! When using a PWM control valve the option will change to Maintain Standby Pressure. With this setting the control valve will maintain the user defined standby pressure when all sections are off.

   • Close—The control valve will close when all sections turn off. This is useful on implements that don’t utilize boom sections or only have a single section, such as NH3 Toolbars or Liquid Manure Tankers.

14. Once all behaviors have been selected, press to continue.

15. Enter the depicted GPS Offsets in inches. Press .
16. Profile Setup is now complete.

   Press \( \checkmark \).

   NOTE! The module will have to reboot to save the configuration.

   Press \( \checkmark \).

**Delete Profile**

Use the Profile Selection box to select the profile you wish to delete.

Once the profile is displayed in the box, press \( \checkmark \).

   NOTE! The active profile cannot be deleted. In the instance that all profiles are desired to be deleted, use the Reset Function. See System Settings.

To confirm deleting the profile, press \( \checkmark \).

To cancel deleting the profile, press \( \times \).
Set Active Profile

1. Select the profile to be set active from the Profile Selection and then press

2. The module will have to reboot to activate the profile. Press ✓.

3. When the module reboots, the profile should be active.

Nozzles

Creating nozzles is required for pressure based control, pressure fall-back, and droplet size monitoring. A nozzle's specifications are needed to achieve each feature.

NOTE! Nozzles within Manage Components is only useful for creating and defining nozzles. A user will not set active nozzles here as they would with profiles. Active nozzles are selected on the runscreen.

Add Nozzle

Select a Nozzle Creation Method.
• **Select All Parameters manually**—This allows the user to create a new nozzle and enter in all of the nozzle specifications from a tip chart.

• **Select an ISO Nozzle**—There are 11 preloaded ISO nozzles entered with all required specifications already entered.

Press \[ \] .

**NOTE!** Pressure thresholds and Droplet size thresholds will still need to be defined.

• **Select a Previously Created Nozzle**—This allows the user to copy a previously created nozzle and modify it. This helps when creating nozzles with similar specifications.

Enter the nozzle Name, Reference Pressure, Reference Flow, Min Pressure, and Max pressure. Press \[ \] .

• **Reference Pressure**—One of the pressures listed for the nozzle on the tip chart. Recommend closest pressure to desired target rate and speed.

• **Reference Flow**—Corresponding flow to the selected reference pressure.

• **Min Pressure**—The minimum pressure the system will achieve when this nozzle is selected.

• **Max Pressure**—The maximum pressure the system will achieve when this nozzle is selected.

**NOTE!** Reference Pressure, Reference Flow, and Min Pressure are required for Minimum Flow and are required even if a pressure sensor is NOT installed.

Enter the base pressure for each droplet size supported by this nozzle. Press \[ \] .

**NOTE!** Use a tip chart to find these values. If a droplet size is not achievable with a nozzle leave the psi value blank. Only droplets with psi values entered will be displayed on the digital pressure gauge.

Select the nozzle color. Press \[ \] to save and finish.

**Delete Nozzle**

Use the Nozzle Selection box to select the nozzle you wish to delete.

Press \[ \] .

To confirm deleting the nozzle, press \[ \] . To cancel deleting the nozzle, press \[ \] .
Controller Settings

Control Valve Settings

This Control Valve Settings screen will be provided for profiles setup with the control valve types listed below.

- PWM 12 Volt
- PWM Ground

NOTE! If these settings show up and you do not have one of the listed control valves, verify the correct profile is selected. If the correct profile is active, the profile needs reconfigured.

- **PWM Frequency**—The frequency that the PWM control valve is pulsed at. Settings can be found from the manufacturer of the valve. Typical settings range from 100-125 Hz.

- **PWM Gain**—Determines how aggressively the control valve responds when making rate change adjustments. The higher the value the more aggressive the system response is.

- **Max Duty Cycle**—The maximum percent duty cycle the valve is allowed to achieve. The valve will not be allowed to achieve a higher duty cycle than the valve entered.

- **PWM Standby**—This is a user-defined setting that determines the percent duty cycle the system uses when the booms are all off. The setting must be greater than the Zero Flow Offset.

- **Zero Flow Offset**—The maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero Flow Offset value can cause the product control system to not properly control low rates. See the PWM valve manufacturer information for recommended settings.

- **Allowable Error**—The percent of error that is allowed prior to the product control system making any flow rate changes.

- **Manual Valve Speed**—Amount of change the manual increment / decrement will adjust the valve. This defines the amount of duty cycle change for PWM each time the manual increment or decrement is pressed.
The PWM Settings Tool allows a user to easily set the zero flow offset, PWM standby, and max duty cycle of the valve on implement. It allows the user to manually increase and decrease flow. The tool will display the current duty cycle of the valve and the current pressure on the system.

**NOTE!** A digital pressure sensor or analog pressure gauge is required to use this tool.

Enter the PWM Settings Tool.

1. Each press of \[ \text{↑} \] will increase the duty cycle of the valve, and each press of \[ \text{↓} \] will decrease the duty cycle of the valve.

2. Press \[ \text{↑} \] until the system registers pressure. The minimum amount of pressure from zero pressure is desired.

3. Press \[ \text{← Set} \] and Zero Flow Offset Value should change to the current duty cycle shown for the valve.

4. Press \[ \text{↑} \] until the system achieves the pressure that is desired for the system to hold when all sections are off.

5. Press \[ \text{← Set} \] and PWM Standby Value should change to the current duty cycle shown for the valve.

6. Press \[ \text{↑} \] until the system achieves the maximum pressure desired.

7. Press \[ \text{← Set} \] and Max Duty Cycle Value should change to the current duty cycle shown for the valve.

8. Press \[ \text{✔} \] to save these settings or press \[ \text{✘} \] to discard these settings.
This Control Valve Settings screen will be provided for profiles setup with the control valve types listed below.

- Inline Servo
- Bypass Servo
- Pump Servo
- Ramsey
- Aim Command

NOTE! If these settings show up and you do not have one of the listed control valves, verify the correct profile is selected. If the correct profile is active, the profile needs reconfigured.

- **Valve Response 1** — The speed of the servo valve when product control error exceeds the Response Threshold setting. Valve Response 1 represents the fast speed of the servo valve.

- **Valve Response 2** — The speed of the servo valve when product control error is less than the Response Threshold setting. Valve Response 2 represents the slow speed of the servo valve.

- **Response Threshold** — Determines where the control channel switches between using Valve Response 1 and Valve Response 2 speed setting.

- **Allowable Error** — The percent of error that is allowed prior to the product control system making any flow rate changes.

- **Manual Valve Speed** — Amount of change the manual increment / decrement will adjust the valve. Essentially this changes the amount of time the valve is driven for a servo valve.

### Edit Look-Ahead Settings

- **Turn – On Look-Ahead** — Determines how far ahead the system looks to turn the swath sections back on. This setting compensates for any delay in the product control system when the sections are turned on.

- **Turn – Off Look-Ahead** — Determines how far ahead the system looks to turn the swath sections off. This setting compensates for delay in the product control system when the boom sections are turned off.

- **Rate Change Look-Ahead** — Determines the amount of time the system looks ahead to the next target rate zone of a prescription.

- **Flow Control Delay** — Period of time from master switch on and the start of product application to the first flow control correction. This setting can be used to eliminate unwanted correction of flow control at the start of each pass. Typical setting values are zero for granular and 1 – 2 seconds for liquid application control.
• **Disable Section On/Off Delays**—Disables the Turn-On and Turn-Off Look Aheads. Disable these when using a non-Ag Leader display that has its own look ahead settings.

  Connected display will handle section delays. If this option is disabled, users must uncheck ECU Section Delays in ISOBUS settings.

**Alarm Settings**

The Rate Not Responding alarm is a user defined alarm that alerts the operator when the actual rate is off of the target rate by a define amount, for a certain amount of time.

**Rate Not Responding Threshold**—The percentage of rate error that triggers the alarms.

**Rate Not Responding Timeout**—The amount of time that the error occurs before the alarm triggers.

**Relationship Threshold**—The percentage of error allowed between the flow rates.

  Flow rate from the flow meter, and the flow rate calculated from the main system pressure, must be within the defined threshold. The alarm associated with this setting is “Pressure/Flow out of Relationship.”

**System Settings**

**Switch Systems**

Switching systems can be useful with multi-purpose machines. It gives you the ability to switch between one of the below system types.

- Sprayer
- Anhydrous Ammonia
- Liquid Fertilizer
- Liquid Manure

**ATTENTION!:** Upon the first initial start up of the module, the user will be prompted with the message "System has not been configured. Press accept to begin setup." The user can then pick from one of the available system types listed above.

**ATTENTION!:** With all four system types, if only 1 section is the desired number of application sections, a swath module is not required. In order for a system to be utilized in this manner, the ISOBUS Liquid Product Module will need to be updated to version 1.9, or greater.

The system has the ability to set up two systems,

**System A and System B.** The active system can be identified by the A or B shown on the object pool tab on the UT screen.

Once a system type is selected, each profile created under that system will be created as that system type.
An example of using multiple systems would be a self-propelled sprayer that uses a spray boom, and can also use an injection toolbar for side dressing. In this case the user would set up a Sprayer system. The user could also have different profiles under that system for different swath widths and number of section, if they want to fold in boom extensions.

The user would set up system B as a Liquid Fertilizer system. This could also have profiles with different swath widths and number of sections. Then when the machine switches between spraying and side dressing the user simply needs to press and select which profile to activate.

To switch systems, press Switch Systems.

The module must reboot to switch systems. To cancel switching systems, press . Otherwise press to continue.
Press ✅ to finish switching systems.

**Reconfigure**

Reconfigure allows the user to change edit configuration information regarding sections. This is handy if the user didn't know the number of sections when creating the configuration, if extra sections or end row nozzles are added to a machine, or disabling a section.

1. To edit the section information of the active profile, press **Reconfigure**.
2. The module will do a hardware detection, press \[ \text{Hardware Detection} \].

3. Edit the number of sections or end row nozzles if necessary, press \[ \text{Section Characteristics} \].

**ATTENTION:** Starting in version 1.9 of the ISOBUS Liquid Product Module support of up to 36 boom sections was implemented. The operating display must also support the desired amount of boom sections.

Ag Leader has recommended validation steps that need to be performed on a sprayer to determine if the liquid control system can support more than 24 sections. These validation steps will determine if the liquid control system can accurately control flow on small width boom sections at varying speeds and AutoSwath scenarios. If a boom section has too small of a width, the liquid control system may not have the ability to lock onto rate. This will be more prevalent with high capacity sprayers.

Ag Leader recommends these steps be taken for all sprayer control types, other than calibrated reflow. Through testing, calibrated reflow control systems can accurately control flow up to 36 boom/nozzle sections. Validation steps can be found on the Ag Leader Knowledgebase.
4. Edit the signal type or section valve type if necessary, press ▶️

5. Verify the section overview is correct.
   - If it is correct, press ✔️ to finish and save.
   - If it is not correct, press ✕️ to edit.
   - Press ✕️ to cancel.

**Reset**

Pressing Reset will delete all profiles and data stored in the module for active system. For example, resetting while system A is active will delete all profiles and date stored in the module for system A. Profiles and data for System B will still be intact.

1. To reset the active system press Reset.
2. A warning will appear on the screen.
   • To finish the reset, press ✓.
   • To cancel the reset, press ❌.

   The module will reboot and require a profile to be setup.

### UT Settings—Switch Setup

To configure auxiliary switches for control module functions (i.e. master switch, boom sections, rate selection), press the Wrench to open the Universal Terminal Settings screen. Then select Auxiliary Assignment. Please reference the "Auxiliary Assignments" Feature User Guide (PN: 2006034) for further instructions.

### Calibration

#### Flow Sensor Calibration

The system offers four types of calibration methods. The methods available will depend on which profile type is currently active system. The table below illustrates which methods are available for each system.

<table>
<thead>
<tr>
<th></th>
<th>Manual Calibration</th>
<th>Nozzle Catch Test</th>
<th>Field Dispense Volume</th>
<th>Static Dispense Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprayer</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Anhydrous Ammonia Toolbar</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Liquid Fertilizer</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Liquid Manure</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
One of the methods will need to be performed in order to operate the system. Manual calibration is recommended to be performed before any others. Below provides an explanation of each method.

**Manual Calibration**—Entering the flow sensor calibration number. This value can typically be found on the flow sensor.

**Nozzle Catch Test**—Catching and measuring the amount of produce dispensed from a single nozzle for the duration of one minute. The user will enter actual amount dispensed and the flow sensor calibration number will be adjusted.

**Field Dispense Volume**—A load will be applied and recorded in the field, typically an entire tank or bin. The user will enter the actual amount of product applied (obtained from a scale ticket or weight system) and the flow sensor calibration number will be adjusted.

**Static Dispense Volume**—The user will apply product in a stationary position, catch and measure the amount of product, and input the amount of product that was dispensed. The flow sensor calibration will then be adjusted.

**Manual Calibration**

1. Select Manual Calibration from the combo box and press 

2. Enter the flow sensor calibration number.

**NOTE!** The system measures impulses/gallon (liter). Some sensors measure in 10 or 2 pulses/gallon (liter). These calibration numbers will need to be altered. Example: A raven flow sensor reads 10 pulses/gallon. A calibration number of 720 would be entered as 72 into the system.
3. The calibration is complete and new calibration number sound be displayed. Press ✅ to finish.

Field Dispense Volume

For this calibration method to work, product needs to be applied in the field before calibrating, preferably an entire tank or bin.

1. Select Field Dispense Volume form the combo box and press ➡️.

2. The recorded acres and total product will be displayed.

3. Enter the actual amount of product applied and press ➡️. 
4. The calibration is complete and new calibration number sound be displayed. Press ✔️ to finish.

Nozzle Catch Test

1. Select Nozzle Catch test from the combo box and press ➤.  

2. Enter a simulated speed and target rate.

3. Press START when product is ready to be dispensed and someone is in position to catch the product from a single nozzle.

NOTE! It is recommended to enter a speed and rate similar to what the system will be operating at in the field.
4. Press [STOP] when the Running Time has reached 60 seconds. A box to enter the Observed Flow will appear.

5. Enter the amount of product that was collected in units of gal/min. Press [START].

6. The calibration is complete and new calibration number sound be displayed. Press [✓] to finish.
Static Dispense Volume

1. Select Static Dispense Volume from the combo box and press START.

2. When the machine is ready to dispense product, press START.
3. Decrease Flow and Increase Flow should appear and all section valves should open.

CAUTION: Make sure all personal are at a safe distance before dispensing product.

4. Press Increase Flow until product begins to dispense and a desired pressure is achieved.

NOTE! Pressing and holding Increase Flow or Decrease Flow will not continue to open or close the valve. The user must press the button each time they want the valve to open or close.

5. Allow the system to dispense a desired amount of product.

6. Press STOP once the desired amount has been dispensed.

7. Enter the amount of product that was actually dispensed into the Known Volume box and press .

8. The calibration is complete and new calibration number sound be displayed.

9. Press to finish.
Pressure Sensor Calibration

1. Select which pressure sensor to calibrate from the combo box. If none appear in the combo box, press ** in the lower left corner to activate pressure sensors.

2. Define whether the sensor is a voltage or current loop sensor. Ag Leader sensors should be selected as Voltage.

3. Once all sensors are defined press **.
4. Select a sensor to calibrate and press .

5. Each sensor can be calibrated using a Single Set Point or Multiple Set Points.

**Single Set Point Method**—Will record the mV the sensor is seeing at a single pressure reading. (Recommended to record mV value when the sensor is seeing 0 psi).

**Multiple Set Point Method**—Will record the mV the sensor is seeing at zero pressure and at a non-zero pressure. The system will require an analog gauge to be present in the system for this method.

**Single Set Point Calibration**

1. Select Single Set Point Calibration from the combo box and press .
2. Enter the mV/psi calibration value of the sensor. A sensor provided by Ag Leader is 16 mV/psi. If the calibration number of the sensor is unknown, press

3. Enter the Min and Max Pressure, as well as the Min and Max voltage or milliamp values of the sensor. (Ag Leader’s sensor is a Current Loop style sensor.) Sometimes these can be found on the sensor itself, otherwise contact the sensor’s manufacturer.

4. Once the values are entered, press

5. The derived Calibration Number should be present in the box. Press.
6. Press **Record Setpoint** to record the current sensor reading once the system is at zero pressure.

7. Press **PLAY**.

8. Press **RESET** to redo the calibration.
9. The calibration is complete and new calibration number sound be displayed.
Press \( \checkmark \) to finish.

**Multiple Set Point Calibration**

1. Select Multiple Set Point Calibration from the combo box and press \( \rightarrow \).
2. Press **Record Setpoint** to record the current sensor reading once the system is at zero pressure.

3. Press **RESET**.

   **NOTE!** Press **RESET** to redo the calibration.

4. Use **△** and **▽** to apply pressure to the system. Enter the pressure that is displayed on the analog gauge into the psi box and press **Record Setpoint**.

5. Press **Record Setpoint**.
6. The calibration is complete and new calibration number sound be displayed.
7. Press the button to finish.

Pump Speed Sensor Calibration
1. Enter the pulse/rev calibration value of the sensor.
2. The calibration is complete.
3. Press the button.
Speed Sensor Calibration

1. Enter the distance that will be traveled during the speed calibration.

   If the pulses/100ft calibration value of the sensor is already known, press .

2. Enter the pulses/100ft calibration value of the sensor and press .

3. Press .

   To verify the calibration, repeat the previous steps.

Calibration Complete

Calibration Number:
4. Once the vehicle is in position to drive the marked out distance, press and begin driving the vehicle.

5. Press once the vehicle has reached the end of the marked out distance.

6. Press .

7. The calibration is complete and new calibration number sound be displayed.

8. Press to finish.

**Temperature Calibration**

A temperature sensor can be used on an Anhydrous Ammonia system type. The system can use a Voltage or Current Loop style sensor. The calibration routine will use a Single-Point calibration method.

1. Define whether the sensor is Voltage or Current Loop sensor.

2. Enter the mV/F calibration value of the sensor. If the calibration number of the sensor is unknown, press the Derive Sensor Calibration button.

3. Enter the Min and Max Temperature, as well as the Min and Max voltage or milliamp values of the sensor. (Ag Leader's sensor is a Current Loop style sensor.) Sometimes these can be found on the sensor itself, otherwise contact the sensor's manufacturer.

4. Once the values are entered, press the Calculate button.

5. The derived Calibration Number should be present in the box.

6. Press .

7. Enter the current temperature in degrees F, then press Record Set Point. Press .

   NOTE! Press the Reset button to redo the calibration.

8. The calibration is complete and new calibration number sound be displayed.

9. Press to finish.

**Diagnostics**
Module Diagnostics

The modules on the ISOBUS will be displayed here. The user will select the module they wish to view diagnostics of. There should be an ISO Liquid Control module and may be one ISO Swath module present. Each ISO Liquid Control module will display a channel and serial number. Each ISO Swath module will display the sections it controls and a serial number.

ISO Liquid Control Module Diagnostics (Status)

Pressure Sensors—The ISO Liquid Control Module Diagnostics shows a lot of useful information. It will show the pressure sensor defined type and number or counts the module sees from the sensor. If there was no pressure present, or the sensor was disconnected the count would show 0. The sensor type will show Current, Voltage, or None depending on what the user selected. If no sensors have been defined yet it will show none.

Flow Sensor—The flow sensor will show the current number of pulses they sensor is sending and the total count of pulses.

Valve—Valve will show the current state of the control valve as well as the auxiliary valves. The control valve will show Increasing, Decreasing, or Idle depending on its state. The auxiliary valves will show on or off.

Speed—Speed will display the sources defined for the ISO Switchbox as well as the module. It will also display the current MPH.

Power—Power will display the current High Current power coming into the module as well as the ECU power.

Implement Switch—Implement switch will indicate if there is an implement switch module on the bus. If there is it will read Present, if not it will read Absent.
ISO Liquid Control Module Diagnostics (Control)

The Control tab will let the user take manual control of the control valve and auxiliary valve to diagnose any problems.

1. Press **Take Control**.

2. Press **Increase Flow** or **Decrease Flow** to run the control valve.

3. Press **Toggle Aux 1** or **Toggle Aux 2** to cycle the auxiliary valve. Press it again to return it to its original state.
ISO Swath Control Module Diagnostics (Status tab)

The ISO Swath Module Diagnostics shows a lot of useful information about the sections. It shows what each section type is defined as. It shows the current state, on or off. Finally, it shows what pin each section is set to.

ISO Swath Control Module Diagnostics (Control tab)

The Control tab will let the user take manual control of section valves.

1. Press Take Control.
2. Press any of the section buttons to toggle them from off to on. Each section pressed should open and close as you do so.

Alarms

Any trouble codes or module errors will be displayed here. If present select one and provide the diagnostic information below to Ag Leader Technology Technical Support.
Unlocks

1. Select the unlock desired to be enabled.
2. Press Unlock.
3. Provide the Module Serial Number and Registration Number to Ag Leader Technology Technical Support.
4. Enter the unlock code provided by technical support.
5. Press to cancel, otherwise press to save.
6. The unlock should now be displayed as Enabled.
Tools

Tools contains the Prime feature for sprayer systems, and the Tube Check feature for Anhydrous Ammonia systems. It also contains the Direct Injection Diagnostics when an ISO Injection Pump is connected, and the Disable Pump feature for PWM control valve types.

Prime—This feature is only available with a PWM Control Valve type. It can also only be used with a pressure sensor on the system. Pressing the prime button will bring the system up to the defined Prime/Standby Pressure and hold it.

NOTE! The user will need to define a Prime/Standby Pressure under Pressure Settings for this to work.

Disable Pump—When check marked the pump will remain off at all times. Unchecking will allow the system to control it normally.

Tube Check—This feature allows the operator to check for plugged knives or over-all obstructions with the toolbar raised. After pressing the Tube Check button, follow the on-screen instructions.

NOTE!: The Tube Check button will only be available for Anhydrous Ammonia systems.

Direct Injection—Button will navigate you to the Direct Injection Settings (see below) accessible from the module.

NOTE!: The Direct Injection button will only be available if a Raven ISO Injection pump is connected and setup in the active Profile.

The Pump Enable /Disable—Runs the Universal master switch for the pump. If it is checked the pump is enabled, unchecked the pump is disabled. This defaults to disabled at each power cycle.

NOTE! The ISO Liquid Switchbox master switch will turn the pump on and off while going through the field.

Pump Flow—Displays the current pump flow.

Pump Mode—Displays the mode the pump is set to (RX, Cal/Prime, Auto, Manual).

Pump Target & Actual Rate—Displays the pump’s current Target and Actual Rate.
ISO Liquid Module

Φ High Power – Indicates 12V high current power to the module.

<table>
<thead>
<tr>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>High Current Power OK</td>
</tr>
<tr>
<td>Red</td>
<td>No High Current Power</td>
</tr>
<tr>
<td>Off</td>
<td>No CAN Power</td>
</tr>
<tr>
<td>Blinking Yellow/Amber</td>
<td>Upgrading Module Firmware</td>
</tr>
</tbody>
</table>

LED 1 - Local CAN – Indicates if the ISO Liquid Module is communicating with the Swath Module.

<table>
<thead>
<tr>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking Green</td>
<td>Local CAN BUS communicating with Swath module</td>
</tr>
<tr>
<td>Yellow/Amber</td>
<td>Local CAN BUS Error</td>
</tr>
</tbody>
</table>

LED 2 - Indicates if the ISO Liquid module is communicating with the connected display.

<table>
<thead>
<tr>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>No CAN Communication</td>
</tr>
<tr>
<td>Solid Red</td>
<td>CAN BUS Off</td>
</tr>
<tr>
<td>Solid/Blinking Yellow</td>
<td>CAN BUS Error</td>
</tr>
<tr>
<td>Blinking Green</td>
<td>CAN BUS Communicating</td>
</tr>
</tbody>
</table>

Swath Module

Φ High Power – Indicates 12V high current power to the module.

<table>
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<td>Blinking Yellow/Amber</td>
<td>Upgrading Module Firmware</td>
</tr>
</tbody>
</table>

LED 1 - Local CAN – Indicates if the Liquid Swath Module is communicating with the ISO Liquid Module.

<table>
<thead>
<tr>
<th>Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Local CAN BUS Communicating</td>
</tr>
<tr>
<td>Yellow/Amber</td>
<td>Local CAN BUS Error</td>
</tr>
</tbody>
</table>

LED 2 - Not used (always off)
ISOBUS Liquid Control–In-Cab

**NOTES:**
1. Gray Trimble display and display cable are not included in the DirectCommand platform kit and must be ordered separately.
2. Switchbox 40008 and switchbox cable 40008X are included in kit PN 40008X and must be ordered separately.

**KEY**
- ISOBUS
- POWER
- LOCAL CAN ID
- SIGNAL CONTROL
- CABLE

**POWER**

**GUIDANCE SYSTEM**

**SWATH CONTROL KIT**

**BOOM VALVE SECTIONS 1-12**

CONTROL VALVE
FLOW METER
PRESSURE SENSOR