



<b>Safety Notices</b> .....	<b>1</b>
Disclaimer .....	1
<b>System Components</b> .....	<b>3</b>
Virtual Terminal (VT) .....	3
Master Switch .....	4
Working Set Master (WSMT) Module PDC (Planter Drill Control) .....	5
Working Set Member (WSMB) Module (optional) .....	5
Implement Lift Switch (optional) .....	6
CAN Terminators .....	6
<b>Component Installation</b> .....	<b>7</b>
Working Set Master (WSMT) Module .....	7
Working Set Member (WSMB) Module .....	8
WSMB Install Considerations .....	8
Bolt WSMB to Frame .....	9
Tie Strap WSMB to Frame .....	10
Connecting Cab/Terminal Harnessing .....	11
Connecting Implement Harnessing .....	12
Cab Harness Connection to 12" VT .....	13
Cab Harness Connection to 5" VT .....	14
Cab Harness Connection to 10" VT .....	15
Implement Harness Diagrams .....	16
Sensor Installation .....	18
Seed Sensors .....	18
Hopper Level Sensors .....	19
RPM/Fan Sensors .....	19
Air Pressure Sensors .....	19
<b>System Modes</b> .....	<b>21</b>
IntelliAg WSMT2 Access .....	21
Work Mode .....	21
Work Mode Buttons .....	22
Setup/Configuration Mode .....	24
Setup Mode Buttons .....	24
Planter Fill Disk .....	24
Row Monitor Setup .....	24
Control Setup .....	24
Speed Set .....	25
Diagnostics .....	25
Alarm Log .....	25
System Accumulators .....	25
Module Configuration .....	25
Screen Configuration .....	25
Planter Output Module (POM) Configuration (optional) .....	25
Configuration .....	25
Summary .....	25
<b>User Levels</b> .....	<b>27</b>
User Level 1 Operator (Basic View) .....	27
User Level 2 Dealer .....	27



<b>Material Setup .....</b>	<b>29</b>
Control Setup Overview .....	29
Planter Control Material Type .....	33
Granular Control Material Type .....	38
Liquid Flow Material Type .....	42
Monitor Only Material Type .....	44
RPM Control Material Type .....	46
Granular Monitor Material Type .....	48
Spreader Calibration .....	50
Split Air Regulation Material Type .....	51
<b>Control Channel Setup .....</b>	<b>53</b>
Select a Channel Type .....	54
Planter Control Setup .....	54
Valve Calibration - Planter Control .....	57
Fill Disk .....	58
Fill Disk for a Control Channel .....	59
Granular Control Setup .....	60
Valve Calibration - Granular Control .....	64
Spreader Calibration - Granular Control .....	66
Liquid Flow Setup .....	69
Valve Calibration - Liquid .....	72
Liquid Flow Calibration .....	74
Initiating a Liquid Flow Calibration Procedure .....	74
Granular Monitor Setup .....	76
Spreader Calibration - Granular Monitor .....	78
RPM Control Setup .....	80
Valve Calibration - RPM Control .....	83
Split Air Regulation Control .....	86
<b>Module Configuration .....</b>	<b>89</b>
Serial Number and Module Type .....	90
Connecting Seed Sensors to WSMT/WSMB .....	90
Performing an Auto Configuration .....	90
Auto Config Examples .....	91
<b>Seed Rows .....</b>	<b>95</b>
Row Status/Row Width Setup .....	96
Row Monitor Setup .....	99
<b>Accessories .....</b>	<b>101</b>
Hopper Assignment .....	101
# Of Hoppers .....	101
Hopper Set .....	102
Logic Level .....	102
Alarm Delay .....	103
Channel .....	103
Accessory Assignment Screen .....	103
# Of Pressure/RPM Sensors .....	104
RPM Sensors .....	104
Pressure Sensors .....	106



<b>Physical Layout (Implement)</b> .....	<b>109</b>
3 Point Hitch and Towed Hitch .....	111
Rigid Cart Mount .....	111
Tow-Behind Cart .....	112
Physical Check .....	113
Linking Channels and Rates .....	114
<b>Ground Speed Setup</b> .....	<b>115</b>
Source .....	115
GSPD Constant .....	116
Shut Off Speed .....	116
Minimum Override .....	116
Master SW Timeout .....	117
Ground Fail Alarm Delay .....	117
Precharge Ground Speed .....	117
Flush Enable Speed .....	117
Implement Lift .....	117
Ground Speed Calibration .....	118
<b>Summary Screen</b> .....	<b>119</b>
<b>Master Switch Assignment</b> .....	<b>121</b>
12" VT Aux Input/Function Assignment .....	121
10" VT Aux Input/Function Assignment .....	122
5" VT Aux Input/Function Assignment .....	122
<b>Customizing the Work Screen</b> .....	<b>127</b>
Selecting a Display Item .....	127
Bar Graph Setup (Population/Spacing Quality) .....	128
Return System Active Delay .....	129
Display Items Defined .....	129
Clearing Accumulators .....	129
Control Actual Channels 1-4 .....	129
Control Target Channels 1-4 .....	130
Control Rate Channels 1-4 .....	130
Control Scan .....	130
Pop Row Scan .....	130
Pop Min Max row Scan .....	131
Pop Min Row .....	131
Pop Max Row .....	131
Pop Avg .....	131
Spacing Row Scan .....	131
Spacing Min Max Row Scan .....	132
Spacing Min Row .....	132
Spacing Max Row .....	132
Spacing Avg .....	132
Seed/Distance Row Scan .....	132
Seed/Distance Min Max Row Scan .....	133
Seed/Distance Min Row .....	133
Seed/Distance Max Row .....	133
Seed/Distance Average .....	133
Singulation Average .....	133
Singulation Row Scan .....	133
Singulation Min Max Scan .....	134
Ground Speed .....	134
Total Area .....	134



<b>Customizing the Work Screen cont.....</b>	<b>134</b>
Field 1 Area .....	134
Field 2 Area .....	135
Channels 1 - 4 Area .....	135
Area Scan .....	135
Control Feedback Scan .....	135
Area Per Hour .....	135
System Active Time .....	136
Seed Count Accum Row .....	136
Distance Accumulator .....	136
Channels 1 - 4 Material Accum .....	136
Accessory Input Scan .....	137
Channel 1-4 Product Level .....	137
Hopper Level Status Scan .....	137
Boom Status .....	137
Guidance Status .....	138
Spacing Quality Data Items .....	138
Seeding Skips .....	138
Seed Multiples .....	139
<b>Operation .....</b>	<b>141</b>
Row Fill (Split Air Regulation) .....	141
Fill Disk .....	141
Start .....	142
Stop .....	143
Operate Screen Symbols .....	143
Autopilot Steering Navigation .....	144
Accumulators .....	144
Precharge Feature .....	146
Dispensing Material with Flush Enable .....	147
Switching Between IntelliAg and Task Controller Application Rates .....	147
<b>System Tests .....</b>	<b>149</b>
Continuous Test .....	149
5 Rev Test .....	150
Remote Test Switch .....	151
<b>Import/Export Data .....</b>	<b>153</b>
<b>System Information/Diagnostics .....</b>	<b>155</b>
Accumulators/Seed Count/Distance Screen .....	155
Diagnostics .....	156
Diagnostics Manual Valve Position .....	158
Seed Count Screen .....	159
Information Screen .....	160
Resetting NOVRAM Values .....	161
Acknowledging Alarm Conditions .....	161
Alarm Log .....	162
Alarm Detail .....	163
Alarm Reset .....	163
<b>Troubleshooting &amp; Alarms .....</b>	<b>165</b>
<b>Warranty.....</b>	<b>175</b>



## SAFETY NOTICES

Safety notices are one of the primary ways to call attention to potential hazards.

**This Safety Alert Symbol identifies important safety messages in this manual. When you see this symbol, carefully read the message that follows. Be alert to the possibility of personal injury or death.**

---

### **▲ WARNING**

Use of the word **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

---

### **▲ CAUTION**

Use of the word **CAUTION** with the Safety Alert Symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

---

### **CAUTION**

Use of the word **CAUTION** without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in equipment damage.

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## DISCLAIMER

DICKEY-john reserves the right to make engineering refinements or procedural changes that may not be reflected in this manual. Material included in this manual is for information purposes and is subject to change without notice.

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## SYSTEM COMPONENTS

The DICKEY-john IntelliAg Planter Drill Control system is a 4 channel control system for row crop planters to control planting, liquid, and granular applications. The IntelliAg is designed to ISO 11783 CAN communication standards providing the capability of communicating with other manufacturer's ISO 11783-compatible equipment.

The IntelliAg consists of:

- 5" Virtual Terminal, 10" Virtual Terminal, or 12" Virtual Terminal
- Master Switch
- Working Set Master Module
- CAN Terminators
- TECU (10" VT only)
- Harnesses

Optional components include:

- Working Set Member(s) Modules (up to 10 to monitor up to a total of 196 rows of seed input)
- Clutch/Switch Folding Module
- Planter Output Module
- Remote Test Switch (required for Continuous Test and 5 Rev Test)
- Implement Lift
- Video Surveillance (10" VT and 12" VT)

IntelliAg is compatible with all DICKEY-john sensors.

*NOTE: Examples shown throughout this manual depict display screens of the 12" Virtual Terminal display.*

## VIRTUAL TERMINAL (VT)

A 5", 10", or 12" Virtual Terminal is the main user interface with the IntelliAg system components to monitor and control product application.

**Figure 1**

**12" Virtual Terminal**



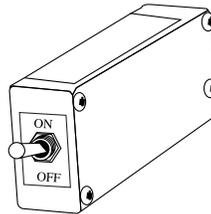


**Figure 2**  
**5" or 10" Virtual Terminal**



## MASTER SWITCH

**Figure 3**  
**Master Switch**



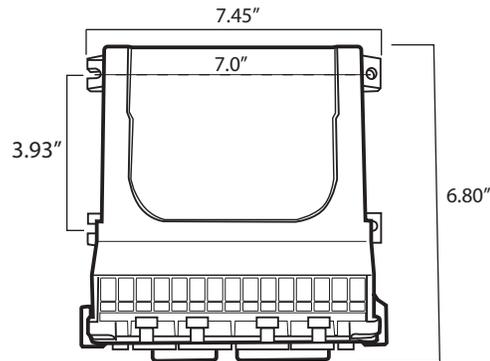
The Master Switch starts and stops product application through a single switch. The two switch positions are ON and OFF. The normal operating position for field application is ON. In this position, ground speed controls the application rate. When ground speed is reduced to zero, all application ceases. The OFF position inhibits all product flow. When set to the OFF position, the system shuts off for safety and travel purposes. Setup and configuration of the system is accomplished when the Master Switch is in the OFF position. The Master Switch is also housed inside the cab of the tractor.



## WORKING SET MASTER (WSMT) MODULE PDC (PLANTER DRILL CONTROL)

**Figure 4**

### *Working Set Master Module*

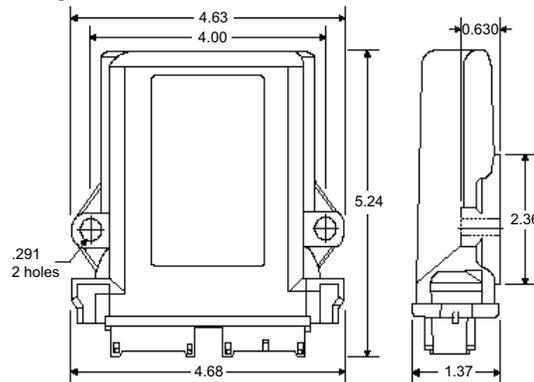


The Working Set Master (WSMT) module houses the system's primary interface device. All system parameters, constants and memory are stored in the WSMT. The WSMT has four channels for planter, granular seeding, granular fertilizer, liquid control or RPM. In addition, the WSMT can accept inputs from 1 hopper level, 1 RPM or pressure sensor, 1 lift switch, 1 ground speed sensor and up to 16 seed sensors. The WSMT module uses a 48-pin connector with a jackscrew to secure the connector to the module. The WSMT is typically mounted on the implement.

## WORKING SET MEMBER (WSMB) MODULE (OPTIONAL)

**Figure 5**

### *Working Set Member Module*



Each Working Set Member (WSMB) module is an auxiliary to the Working Set Master (WSMT). Each WSMB can accept up to 18 rows of seed sensors. The WSMB passes information directly to the WSMT. Up to 10 WSMB's can be installed to monitor up to 196 rows. The flexible design of the WSMB allows for installation virtually anywhere on the implement.



## IMPLEMENT LIFT SWITCH (OPTIONAL)

The Implement Lift Switch detects the position of the implement. When using an Implement Lift Switch, the Master Switch can be left in the ON position during operation, and the system will be turned OFF and ON as the implement is raised and lowered. The Master Switch should be turned OFF when in transport, when stationary, or when the operator has left the cab.

## CAN TERMINATORS

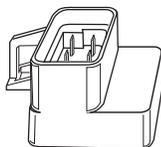
CAN Terminators are necessary for proper communication between each component of the system.

- One terminator is located on the cab harness, approximately 30 inches from the Virtual Terminal connector.
- One terminator plugs into the implement harness of the last module connected to the CAN bus.

*Figure 6*

*Can Terminator*

---





## COMPONENT INSTALLATION

### WORKING SET MASTER (WSMT) MODULE

1. Select an area on the implement to mount the WSMT that allows for easy hookup and access.
2. Use the enclosure as a template to mark the location of the mounting holes.
3. Drill four 9/32 inch diameter holes where marked.

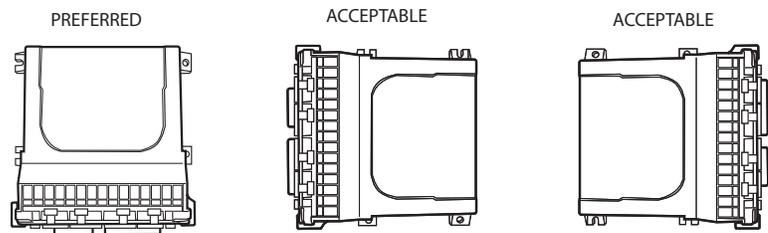
**IMPORTANT: Do not use the enclosure as a guide when drilling. Do not overtighten nuts as this may damage the mounting tabs of the enclosure.**

The WSMT may be mounted in any of the following orientations:

*Figure 7*

---

#### *Acceptable Orientation*



---

#### **CAUTION**

**Do not install the module in any orientation other than shown in (Figure 7). The connection wires must not be mounted upward, as moisture can collect inside the unit and damage the circuits. Ensure that module connectors do not face upward when implement is in a folded position as well.**

---

4. Mount with the label side of module facing out. Do not mount with the connector facing up (see caution).



## WORKING SET MEMBER (WSMB) MODULE

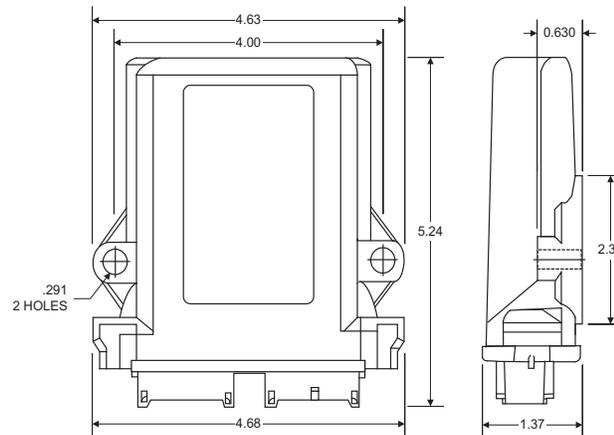
The WSMB module can be attached to the implement:

1. Bolting to the implement
2. Using tie strap to secure to implement

**IMPORTANT:** For applications using multiple modules, it is recommended that the WSMB's are mounted on the implement by increasing serial number order from left to right.

**Figure 8**

**Working Set Member Module**



### WSMB INSTALL CONSIDERATIONS

1. Select an area on the implement to mount the member that allows for easy hookup and access. Extensions may be used to reach members installed on remote areas of the implement.
2. The module can be mounted in the same orientations as the Working Set Master (WSMT) as illustrated in (Figure 7).

### **CAUTION**

Do not install the module in any orientation other than illustrated in (Figure 7). The connection wires must not be mounted upward as moisture can collect inside the unit and damage the circuits. Ensure that module connectors do not face upward when implement is in a folded position as well.

3. Mount with the label side of the module facing out.



## BOLT WSMB TO FRAME:

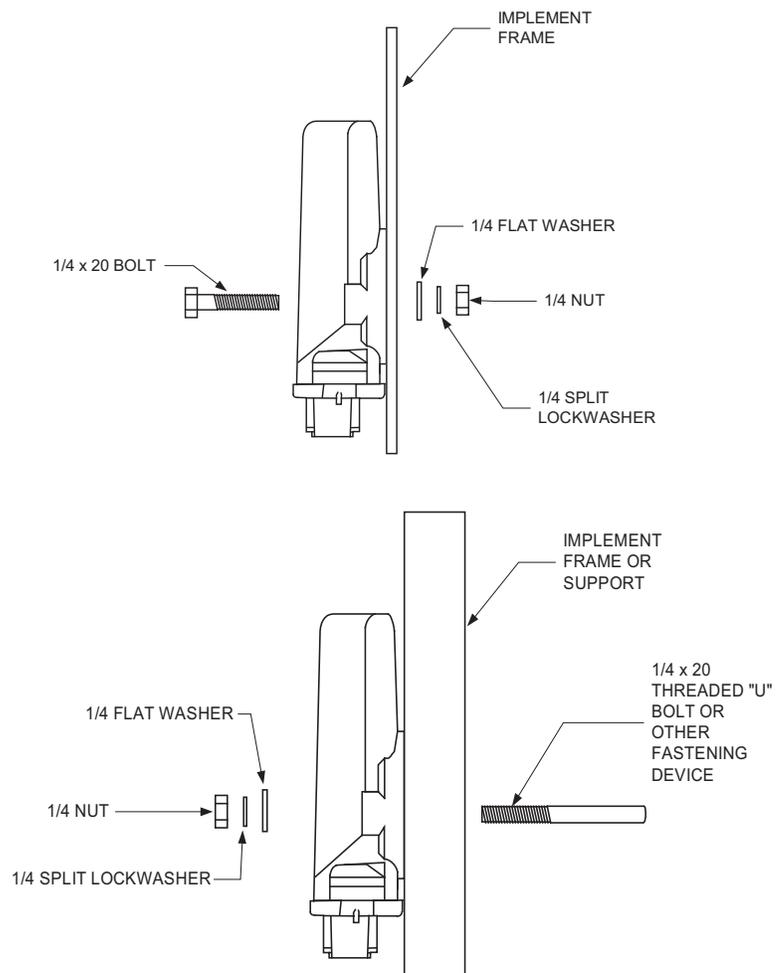
1. Use the enclosure as a template to mark the location of the mounting holes.
2. Drill two 9/32 inch diameter holes where marked.
3. Attach to frame using 1/4 x 20 bolts or other fastening devices as illustrated in (Figure 9).

### **CAUTION**

Do not use the enclosure as a guide when drilling. Do not overtighten nuts as this may damage the mounting tabs on the enclosure.

Figure 9

### Working Set Member Installation (Bolted)



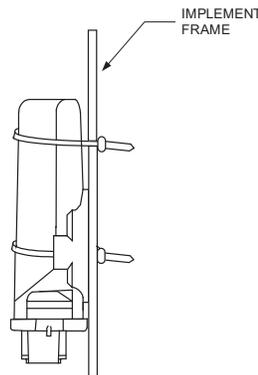


## TIE STRAP WSMB TO FRAME:

1. Use one long tie-strap to loop around the member body and through both mounting holes as illustrated in (Figure 10).
2. If necessary, drill mounting holes following the procedure described above.
3. Securely tighten tie-strap.
4. Install a second tie-strap toward the label end of the enclosure for additional support.

**Figure 10**

### **Working Set Member Installation (Tie-Strap)**



5. Connect a WSMB harness to the WSMB module and connect the WSMB harness to the Power/CAN backbone, refer to (Figure 15).
6. Connect each module harness to its module, inserting both connectors until the connector locking tabs engage.
7. Layout the planter harness along the frame of the implement to each of the seed sensors.
  - For seed sensors, extensions will most likely not be necessary.
8. Route sensor wires in locations where they will not be damaged by chains, drive shafts, sprockets, etc.
9. Secure the harness to the toolbar with a minimum of 3" straight wire exiting the module before bending and attaching with tie-straps ensure good wire sealing.
10. Coil and secure any unused sensor connections.
11. The WSMB Module harness can accept a standard DICKEY-john PM style planter harness (single round 37-pin connector) or an SE style planter harness (1 gray 12-pin, 1 black 12-pin rectangular connector) depending on the WSMB harness used. Harnesses are available for a number of row configurations.
  - Route the planter harness on the implement, securing as necessary.
  - Install seed sensors per the instructions included with the sensors. Refer to the implement harness diagram for additional information () or ().

**NOTE:** *The last module harness in the system must have a CAN Terminator installed for proper system operation. Refer to Implement Harness () or () for additional information.*

**IMPORTANT:** **Be sure the locking tabs engage when inserting the connectors. The connection is sealed only when the locking tabs have fully engaged.**



12. Connect any additional adapter harnesses to the module harness. The PCM Module harness can accept the following adapter harnesses:
  - **Actuator Harness:** This harness accepts up to 4 output control channels, 4 control channel feedbacks, 1 hopper level sensor input, 1 shaft sensor input, 1 ground speed input, and 1 implement switch input. In addition a pair of 6-pin connectors are available for Servo connection that use FB1/FB2 respectively. Install sensors, valves, etc. per the instructions included with the items. Install the PWM valve assembly and feedback sensor for each control loop and connect the devices to their respective inputs on the harness, making certain to match PWM1/Servo 1 with FB1, PWM2/Servo 2 with FB2 etc. Secure any unused and excess cable lengths where necessary.
  - **Seed Sensor Harness:** This harness accommodates any standard Dj Seed Sensor harness (PM style or SE style) harness depending on the WSMT harness. A wide variety of harnesses are available to accommodate various numbers of sensor inputs. Install all seed sensors per the instructions included with the individual sensors. Secure any unused or excess cable lengths as necessary.

## CONNECTING CAB/TERMINAL HARNESSING

Refer to (Figure 11), (Figure 12), and (Figure 13).

### **5" Virtual Terminal Cab Harness Connections**

1. Connect the power leads directly to the battery.
2. Connect the ignition wire to a switched +12VDC.
3. Connect the Chassis Ground lead to a bare point of the cab frame that offers a good chassis ground connection.
4. Connect the Master Switch, CAN Terminator and Radar Speed Sensor to their respective connectors on the cab harness. If the Speed Sensor is to be connected to the WSMT, do not connect anything to the Speed Sensor connector on the Cab Harness.

### **10" Virtual Terminal Cab Harness Connections**

1. Connect the ignition wire to a switched +12VDC.
2. Connect the Chassis Ground lead to a bare point of the cab frame that offers a good chassis ground connection.
3. Connect the Master Switch, CAN Terminator, Radar Speed Sensor, GPS, and Tractor ECU to their respective connectors on the cab harness.

### **12" Virtual Terminal Cab Harness Connections**

1. Connect the ignition wire to a switched +12VDC.
2. Connect the Chassis Ground lead to a bare point of the cab frame that offers a good chassis ground connection.
3. Connect the AI-120 Adapter Harness to the VT and the tractor cab harness.
4. Connect the master switch, CAN terminator, radar speed sensor, GPS, and tractor ECU to their respective connectors on the cab harness.
5. Connect the boom switch module extension harness, if used, to the tractor cab harness. The CAN terminator attaches to the boom switch module extension, if used.



*TIP: If the speed sensor is connected to the IntelliAg actuator/control harness, do not connect anything to the speed sensor connector on the cab harness.*

## CONNECTING IMPLEMENT HARNESSING

Refer to (Figure 11) and (Figure 12).

1. Connect the Implement CAN Breakaway extension to the mating connector of the cab harness.
2. Route the harness along the implement hitch to the PCM module harness (use an implement extension harness if additional length is needed).
3. Secure harness as needed.
4. Connect the module harness to the mating connectors of the Implement CAN harness and then connect the module to the harness. The PCM module uses a 30 and 18-way connector with a jackscrew to secure the connector to the module. The WSMB uses a pair of 12-pin connectors.
5. Secure module harness as needed.

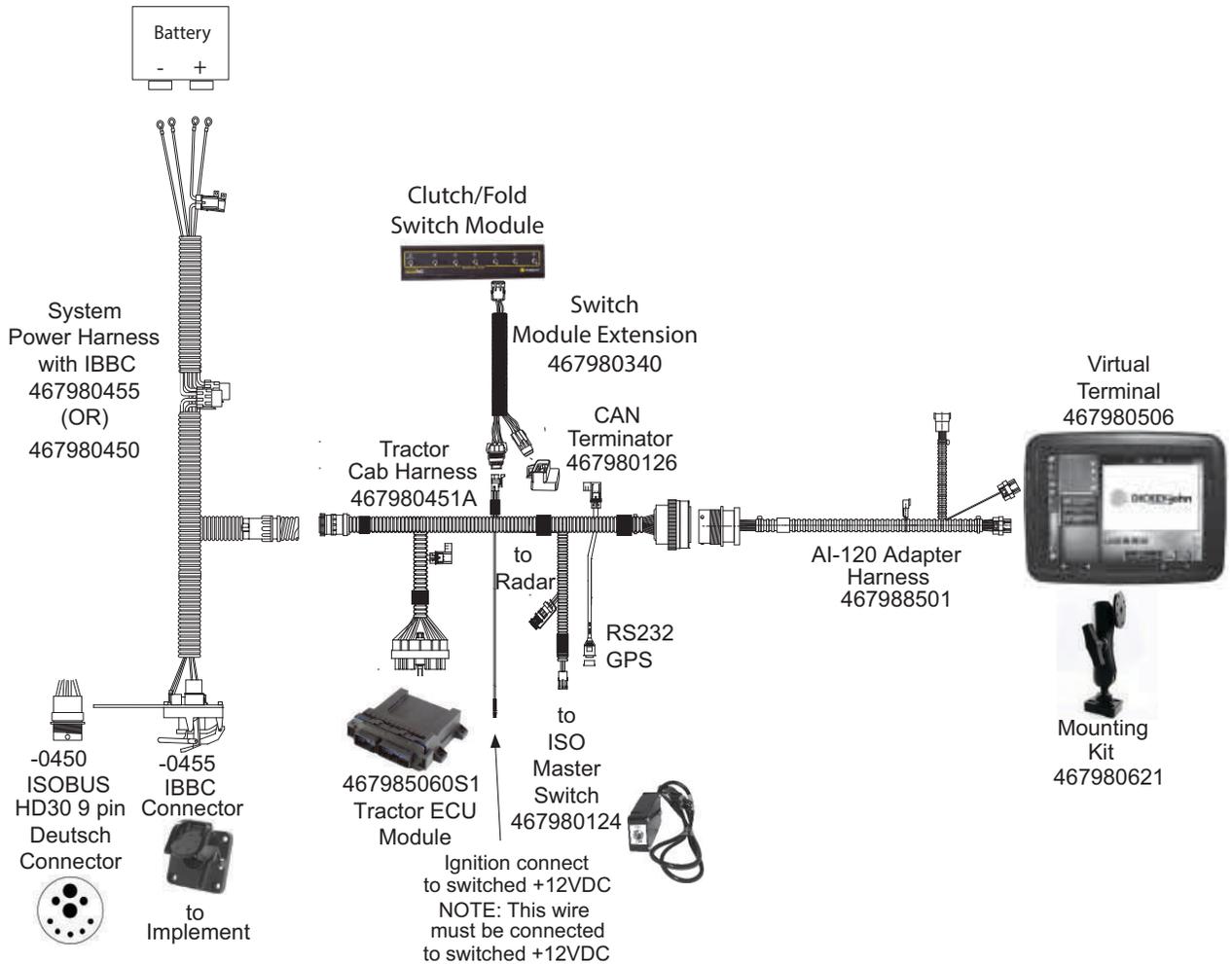


## CAB HARNESS CONNECTION TO 12" VT

The following diagram illustrates cab harness layout and connections for DICKEY-john 12" Virtual Terminal.

**Figure 11**

**Cab Harness Connection to 12" AI-120 Virtual Terminal**



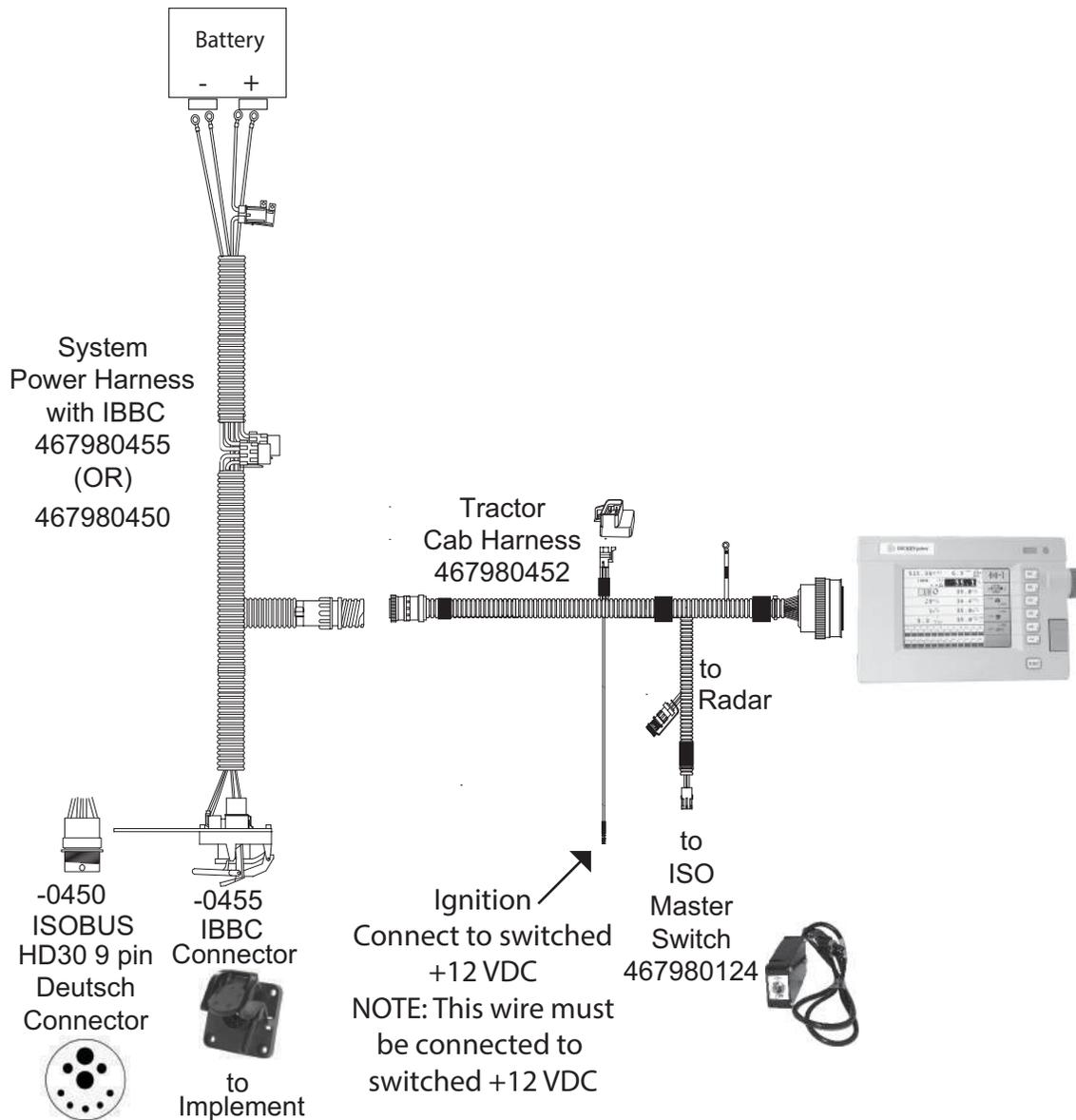


## CAB HARNESS CONNECTION TO 5" VT

The following diagram illustrates cab harness layout and connections for DICKEY-john 5" Virtual Terminal.

**Figure 12**

**Cab Harness Connection to 5" Virtual Terminal**



**NOTE:** The ignition lead must be connected to switched +12VDC for the system to power on and off properly.

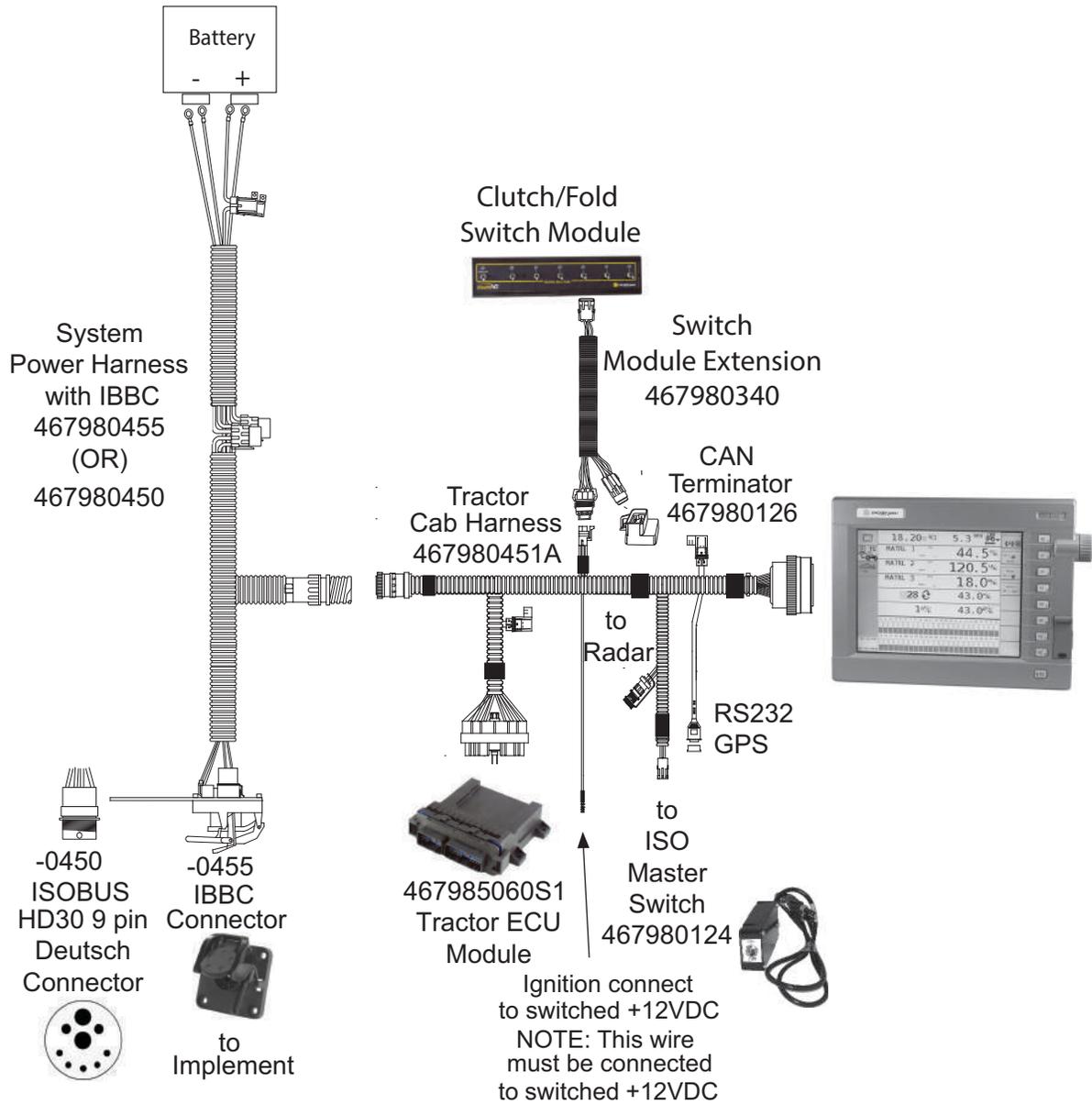


## CAB HARNESS CONNECTION TO 10" VT

The following diagram illustrates cab harness layout and connections for DICKEY-john 10" Virtual Terminal.

**Figure 13**

**Cab Harness Connections to 10" Virtual Terminal**





## IMPLEMENT HARNESS DIAGRAMS

Figure 14

### Implement Harness

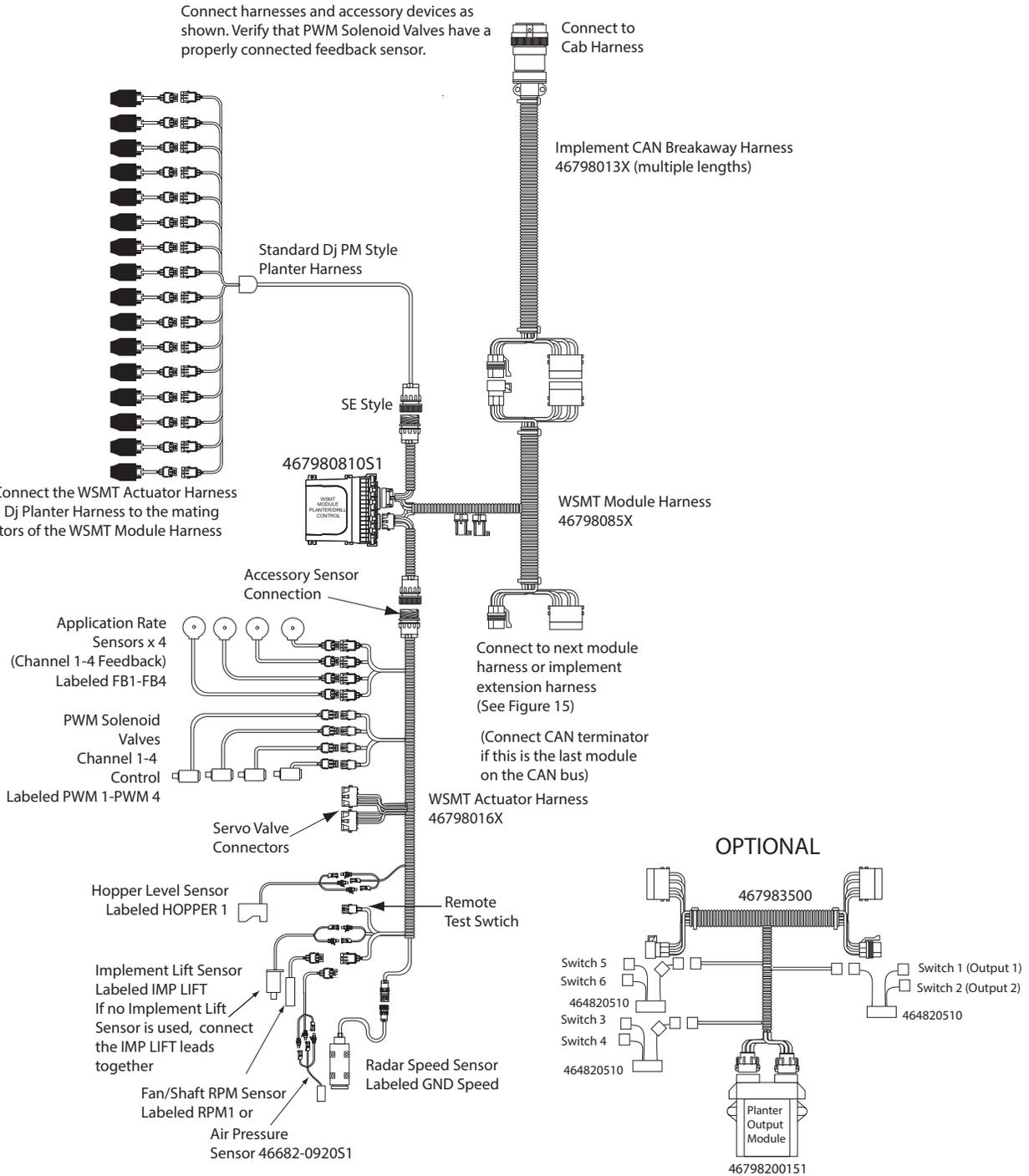
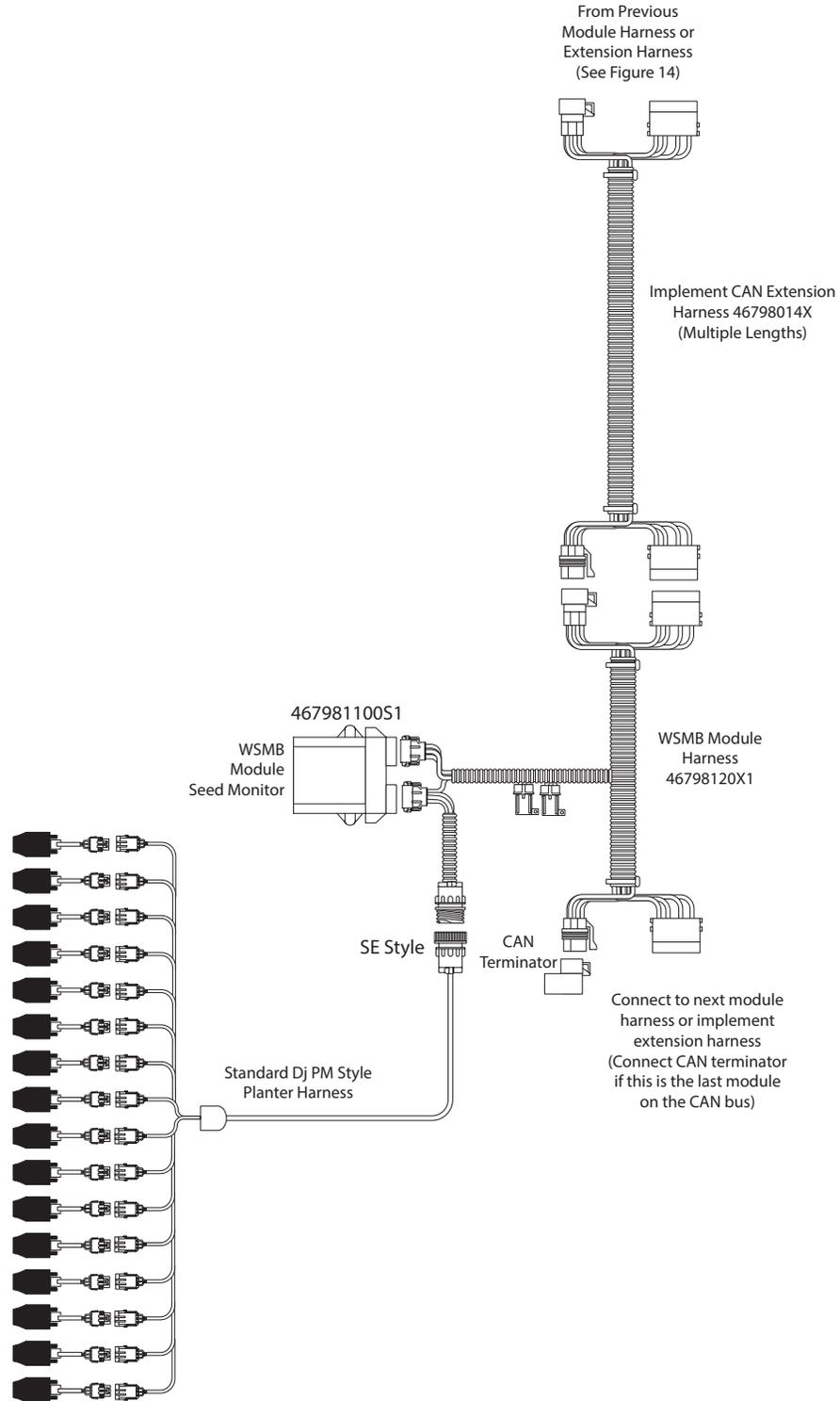




Figure 15

Implement Harness (Continued)





## SENSOR INSTALLATION

For proper system operation, all sensors used with the system must be connected properly as described in the following sections. Sensors that are incorrectly installed will not be properly identified by the system and will result in incorrect numbering of the sensors.

### SEED SENSORS

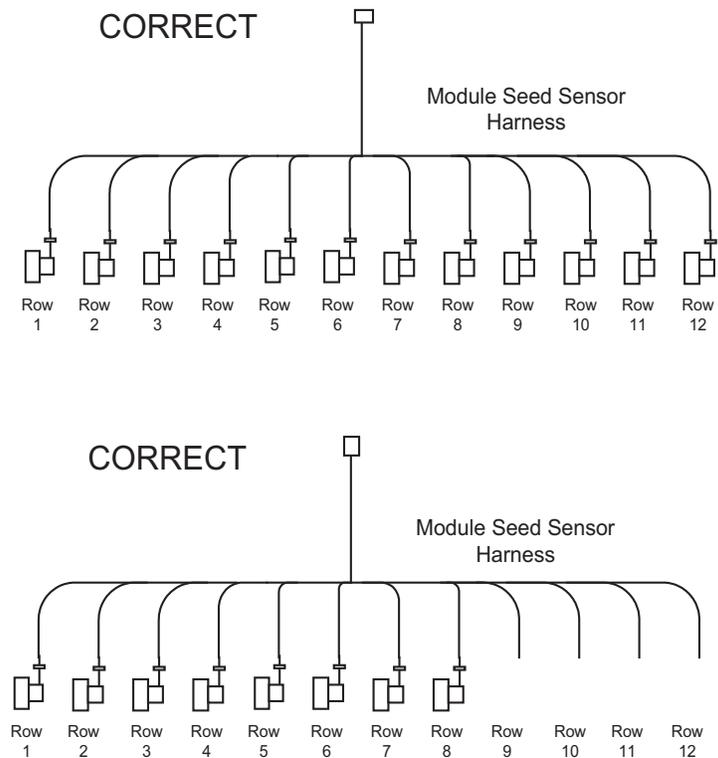
The system is compatible with all existing DICKEY-john seed sensors. Seed sensors may be connected to the WSMT module and all WSMB Planter Monitor Modules. Any number of sensors up to the maximum capacity of the module may be connected. A maximum of 196 seed sensors can be connected to the system.

When connecting seed sensors to the modules, the following requirements must be observed:

**All seed sensors installed must be connected to the seed sensor harness SEQUENTIALLY, starting with the Row 1 input. In the event that not all row inputs on the module will be used, the unused inputs must be the last inputs on that module.**

Figure 16

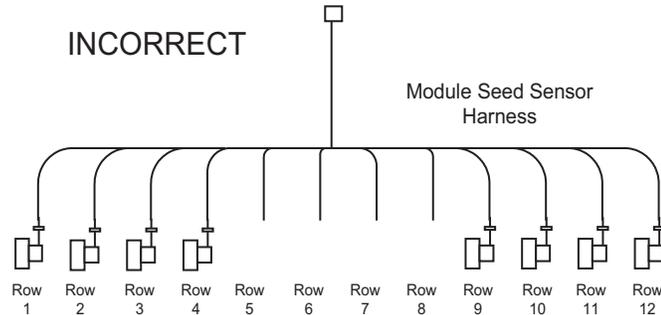
Correct Seed Sensor Module Connection





**Figure 17**

**Incorrect Seed Sensor Module Connection**



Failure to correctly install seed sensors will result in incorrect row assignment on the planter monitor display functions and alarms.

## HOPPER LEVEL SENSORS

The system is compatible with the DICKEY-john planter hopper level sensors. One hopper level sensor can be connected to the actuator harness and another 4 hopper sensors can be connected using an additional harness. Both harnesses are connected to the WSMT. Hopper level connections are labeled HOPPER 1, 2, 3, etc.

## RPM/FAN SENSORS

The system is compatible with all existing DICKEY-john digital Fan/RPM sensors. One Fan/RPM sensor can be connected to the WSMT module. The sensor is connected to the actuator harness. The Fan/RPM sensor connection is labeled RPM 1.

## AIR PRESSURE SENSORS

The system is compatible with DICKEY-john air pressure sensors. One air pressure sensor with adapter harness connects to the RPM harness connection labeled RPM 1.





## SYSTEM MODES

### INTELLIAG WSMT2 ACCESS

IntelliAg system setup is accessed by pressing the IntelliAg PDCGY button located on the left bar.

The Virtual Terminal has two modes of operation:

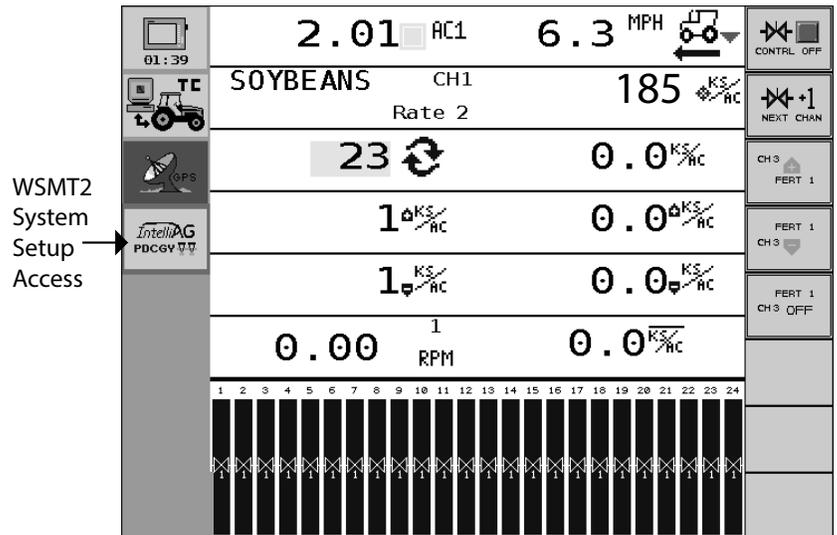
- Operate (master/control switch ON)
- Setup/Configuration (master switch off/level 2 and 3 users can access with password)

### WORK MODE

When the Master Switch is in the ON position, the Virtual Terminal (VT) is in Operate mode. In this mode, all enabled system components and control channels are operational, as well as all monitoring functions and system accumulators.

**Figure 18**

**Operate Mode**





## WORK MODE BUTTONS

Virtual buttons on the display are used to interact with the system. Top-level buttons that appear on the Operate and Setup/Configuration screens are defined below.

### NEXT CHANNEL



Selects the next available channel to be active and viewable, as illustrated in [Figure 17](#), "Channel 1". The active channel can be set to ON or OFF by selecting the Turn On/Off Channel button. The active channel is displayed in reverse video display in a multiple channel configuration.

The Target Rate can be adjusted by using the Inc/Dec buttons. The Next Channel button advances to the next available channel information. The channel's Inc/Dec buttons, as well as the ON/OFF buttons, display the current channel label. This key is visible only when multiple channels have been configured.

### NEXT SCREEN



Displays the next configured work screen. The number to the left of the graphic identifies the current screen. The number on the right identifies the next screen to display. The Next Work Screen only displays if multiple screens are configured.

### INCREMENT



Increases the active channel's target rate by the amount specified in the Inc/Dec % or rate table setup for that material. Increment can be pressed several times to increase the target rate by the specified amount for every actuation, until the maximum rate value or preset value is reached. The active channel/material is displayed in the button text.

### DECREMENT



Decreases the active channel's target rate by the amount specified in the Inc/Dec% or rate table setup for that material. Decrement can be pressed several times to reduce the target rate by the specified amount for every actuation, until the minimum rate value or preset value is reached. The active channel/material is displayed in the button text.

### INC/DEC RESET TO TARGET



Returns the active channel to the original material target rate. This button is only available for channels that are active and have had the target rate adjusted using the Increment or Decrement buttons in inc/dec % mode. The active channel displays in the button text.



## TURN ON/OFF CHANNEL

Turns the active channel ON and OFF, respectively. Channels that are set to OFF will not operate when the master switch is set to the ON position. Turning a channel OFF is not the same as disabling a channel in Channel Setup Mode. The active channel is displayed in the button text. If the key text is OFF, this is the action that will be performed when the key is pressed.



## SUMMARY

Accesses the Summary screen and provides an overview of system configurations for enabled channels. Specific setup screens can be accessed (Level 2 and 3 Users only) by pressing inside the yellow boxes for Channel, Material, Row, Module, Speed Set, and Accessory Sensor screens.

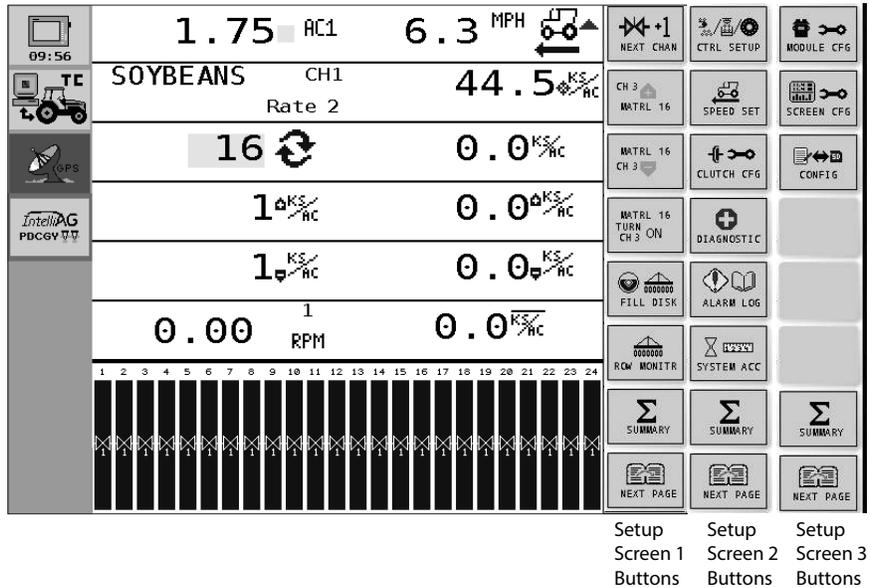


## SETUP/CONFIGURATION MODE

When the master switch is in the OFF position, the VT is in Setup/Configuration mode. In this mode, all control and monitoring functions cease. A password is required to access this mode.

Figure 19

Setup/Configuration Mode



## SETUP MODE BUTTONS

Additional buttons for system configuration and parameter setup functions are enabled and only appear in setup/configuration mode. Refer to the System Configuration section for information on these functions.

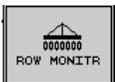
### PLANTER FILL DISK

Fills the seed meters with seed to allow instant seed flow when the channel is turned ON. Pressing the Fill Disk button rotates the seed meters on **ALL ACTIVE** planter control channels one revolution, then stops. For additional information, refer to the System Configuration section.



### ROW MONITOR SETUP

All user-entered constants relating to general planter monitor functions are accessed on this screen.



### CONTROL SETUP

Up to 16 different materials can be configured and stored for planter, liquid, fertilizer, RPM control, and monitor only.





## SPEED SET

The Speed Set button accesses the Ground Speed Setup screen. Ground speed is the rate in MPH (Km/h) as measured by the ground speed sensor.



## DIAGNOSTICS

The Diagnostics button accesses the Diagnostics screen. Various system operating parameters display on this screen. There is no user-entered data on this screen.



## ALARM LOG

An account of the previous alarms issued is stored here. There is no user-entered data on this screen. Not all alarms are recorded in the alarm log.



## SYSTEM ACCUMULATORS

The System Accumulators button accesses the System Accumulators screen. All of the system accumulators for time and distance display on this screen. There is no user-entered data on this screen.



## MODULE CONFIGURATION

The Module Configuration button accesses the Module Configuration Setup screen. All user-entered data pertaining to module configuration is established on this screen.



## SCREEN CONFIGURATION

The Screen Configuration button accesses the Screen Configuration Setup screen. The Virtual Terminal can be customized to display any combination of data items available. Up to three individual display screens can be customized. All work screen configurations are established on this screen.



## PLANTER OUTPUT MODULE (POM) CONFIGURATION (OPTIONAL)

This screen is only accessible when using a Planter Output Module for clutch/frame control.



## CONFIGURATION

Accesses the Import/Export Configuration screen and exports configurations to an SD card and imports these configuration to other Working Set Masters eliminating manual data entry.



## SUMMARY

Provides an overview of system configurations for enabled channels. Specific setup screens can be accessed (Level 2 and 3 Users only) by pressing inside the yellow boxes for Channel, Material, Row, Module, Speed Set, and Accessory Sensor screens.





## USER LEVELS

The system has three user levels that allow access to certain screens based on user level type.

- User Level 1 Operator (Basic View)
- User Level 2 Dealer (Full Access)
- User Level 3 OEM (Authorized Personnel)

At initial powerup, the system loads in User Level 1. A password is required to enter User Level 2 mode.

### USER LEVEL 1 OPERATOR (BASIC VIEW)

Operator View (User Level 1) is a restricted level that does not allow any setup/configuration constants to be changed. The system will defer to Level 1 at each power cycle until unlocked with a password at the Password screen.

In operator view the following functions can be performed:

- Perform a fill disk
- Increase and decrease rates
- Change materials
- Access Diagnostics screen
- Access/view Information screen
- Access/view Alarm Log and Detail screens
- Access/view Summary screen

All other screens for configuring and setup of constants must be performed in Level 2 mode.

### USER LEVEL 2 DEALER

User Level 2 is open access to all setup/configuration screens. To change from operator level to dealer level, a 6-digit password is required. Password includes the five-digit serial number found on the label of the WSMT or on the System Information screen.

#### To Access Password screen:

1. At the **Work screen** screen, press **Diagnostics** button.
2. At the Diagnostics screen, press the **Information** button.
3. At the Information screen,
  - Record the serial number of the WSMT
  - Press the **Password** button.



### To Unlock to Dealer/OEM Access:

4. On the Password screen, enter the 6-digit password as follows:
  - Enter the first digit as 2 for User Level 2.
  - For the next five digits, enter the serial number taken from the WSMT module found on the label or the Information screen (example S/N 10003).
  - Press the **Check** button to accept password. At the Password screen, text at screen bottom states "Dealer screens on" in the User Level 2 (Full Access) mode.

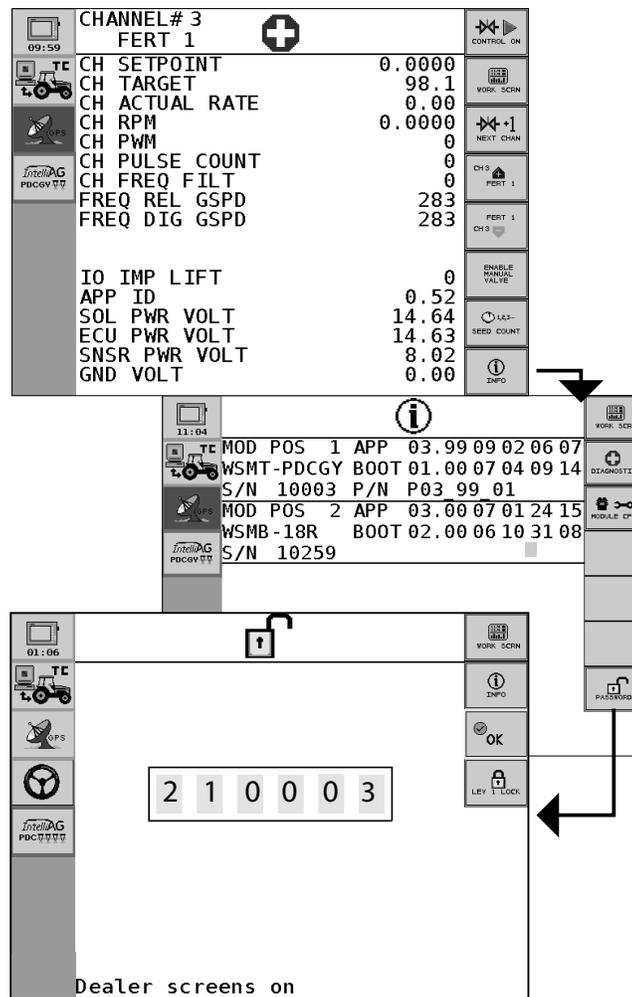
The system will return to the previous set level at each power cycle until changed at the Password screen.

### To Lock to Operator View:

5. Press the **Lev 1 Lock** button. The **Password** button will disappear from the screen and the system will now operate in Level 1 mode.

**Figure 20**

### Changing User Level





## MATERIAL SETUP

The following parameters must be defined for effective system operation:

- Channel Setup
- Material Setup
- Ground Speed Setup and Calibration
- Module Configuration

## CONTROL SETUP OVERVIEW

The Control Setup screen acts as a materials library providing an overview of all materials that are assigned and configured for a control channel. Control channels are accessible at the top of the screen.

Materials must be assigned to a planting, liquid, fertilizer, RPM, split air regulation, granular seed/fertilizer, or monitor control channel. Once a material's designation is established, it can be assigned to one of four control channels.

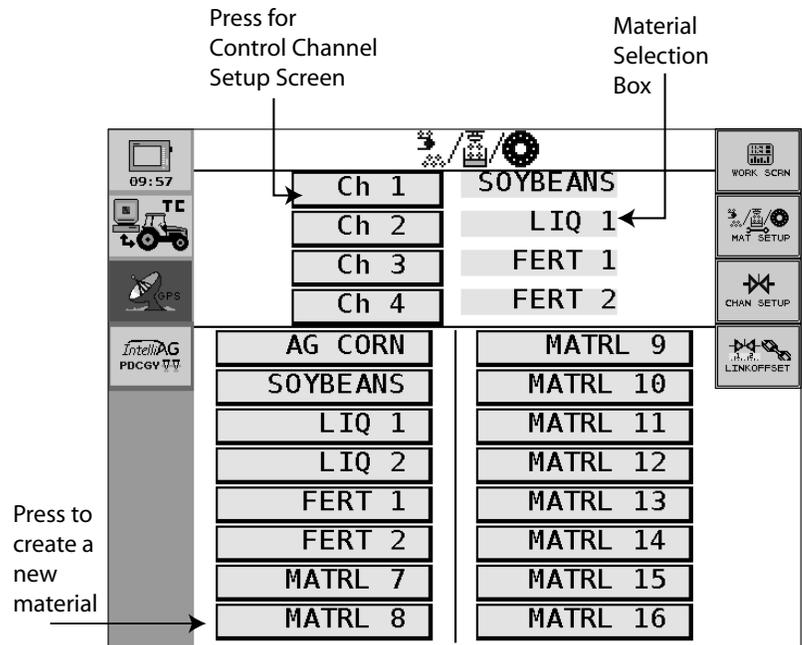
(Figure 21) shows channel 1 (planter control), channel 2 (liquid), channel 3 (granular fertilizer 1), and channel 4 (granular fertilizer 2).

Four possible parameters are setup at the Control Setup screen.

1. Creation of materials and its parameters
2. Control channels and its parameters
3. Physical layout of implement
4. Linking Channels

**Figure 21**

**Control Setup Screen**





For operator convenience, it is recommended that materials and channels be established in the following order (refer to Figure 22):

1. Material Configuration Setup-Create all material types that will be assigned to a control channel.
2. Control Channel Setup-Configure control channels as Planter, Liquid, Granular Seeding, Granular Fertilizer, Granular Fertilizer or Seed Monitor, RPM, Monitor Only, or Split Air Regulation control.
3. Control Setup Screen-Channels and materials can be selected on this screen. Selecting an unassigned material button allows a new material to be created and assigned to a channel.

**Figure 22**

**Recommended Steps for Material/Channel Setup**

**Step 1: Material Setup**

12:58	2-16	CH 2	SOYBEANS
Tractor icon	Type	PLANTER CONTROL	
GPS icon	Units	Ks/ac with s/sec	
IntelliAG icon	Preset Method	Disabled	
	Target Rate	185	Ks/ac
	Max Rate	200	Ks/ac
	Min Rate	165	Ks/ac
	Inc/Dec %	1.0	%
	Seeds Per Rev	30	
	Disc Low Limit	0	RPM
	Disc High Limit	500	RPM
	High Pop Alarm	20.0	%
	Low Pop Alarm	20.0	%
	Prod Level Alarm	0	KS

**Step 2: Channel Setup**

01:00	CHANNEL# 2	PLANTER CONTROL
Tractor icon	Type	PLANTER CONTROL
GPS icon	Material Name	SOYBEANS
IntelliAG icon	Control Mode	Auto
	Drive Type	PWM 2
	Drive Freq.	100
	Input Filter	50.0
	Gear Ratio	6.000
	Sensor Constant	360
	# Seed Rows	34
	Seed Rows	1-34
	Channel Width	1020.0
	PreCharge Time	0
	Delay Time	0.0
	Flush Enable	Disabled

**Step 3: Material Library Screen**

12:58	Ch 1	FERT 1
Tractor icon	Ch 2	SOYBEANS
GPS icon	Ch 3	FERT 2
IntelliAG icon	Ch 4	LIQ 2
	AG CORN	MATRL 9
	SOYBEANS	MATRL 10
	LIQ 1	MATRL 11
	LIQ 2	MATRL 12
	FERT 1	MATRL 13
	FERT 2	MATRL 14
	MATRL 7	MATRL 15
	MATRL 8	MATRL 16



## EDIT/DEFINE MATERIAL PARAMETERS

Up to 16 different material names display on the Control Setup screen. Unassigned materials appear on the Material button with a generic name, MATRL1. Materials should be given a name that clearly identifies the material type.

As materials are configured and saved, the **Material** buttons on the Control Setup screen changes to the name created at the Material Setup screen. The Material Setup screen can be accessed at any time by pressing the Material Name button. Refer to the Material Setup section for further instructions.

Channels 1 through 4 located at the top of the Control Setup screen identifies the current material assigned to a specific channel. If more than one material is configured for a channel, the control channel's material will appear in a yellow highlight box.

Channel/Material Assignment is identified as follows:

- Channel 1-4 Active Channel/Material: The active material assigned to a channel appears at the top of the display.
- No Material Selected: If no material matches the channel type, the channel displays on the Material Library screen as None. A material can be configured for the channel by selecting an available material at the Control Setup Screen.
- Disabled: If a channel is disabled from the Channel Setup screen, the channel displays as Disabled. The channel is turned OFF and is not configured for operation. To establish a new channel, select the **Channel Setup** button.

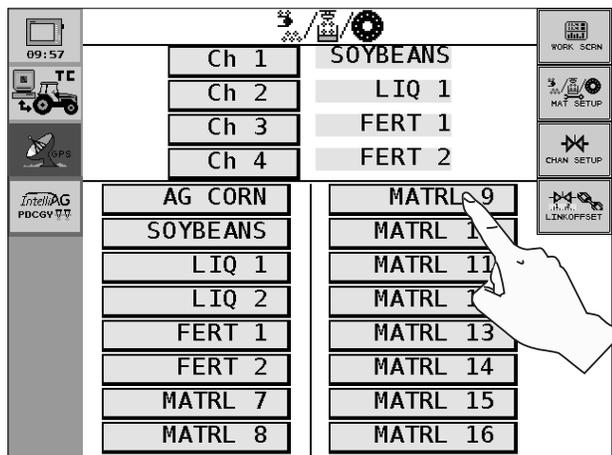
**NOTE:** *If there is only one material or control type established that channel's material is not selectable from the Control Setup screen.*

### To Edit a Material:

1. Select a material by pressing one of the Material 1 through 16 buttons to display the Material Setup screen.

**Figure 23**

**Control Setup Screen**



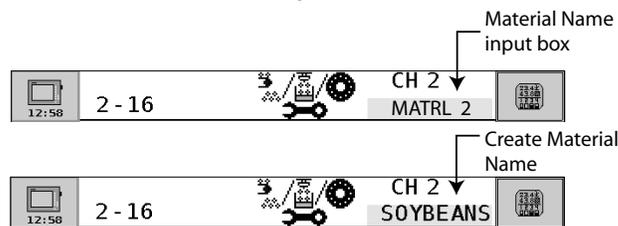
2. Press on the Name input box (Figure 24).



3. Type in the desired name using the virtual keyboard.
  - Each material name can be customized to accurately define the material's type. Creating a name allows for quick identification at the Control Setup screen and will display throughout various screens to identify the active material assigned to a channel. Available characters are a combination of upper case, numbers, letters, symbols, and spaces.

**Figure 24**

**Edit Material Name at Material Setup Screen**



## TYPE

Type establishes the desired type of application control channel used for a specific material. **This step is very important. The Material Type must correctly match the Control Type for material selection from the Control Setup screen to operate properly.**

Type	Use for
Planter Control	seeding on a row crop planter
Granular (seeding)	seed control on a drill or air cart
Granular (fertilizer)	granular application control, air cart, or spreader
Granular (crop protect)	granular application control insecticide
Liquid Flow	liquid application control
Monitor Only	population monitoring only
RPM Control	monitors fan/shaft speed
Split Air Regulation	option to control meter manifold pressure and maintain correct pressure levels for the air stream
Granular Monitor (seeding, fertilizer, crop protect)	ground drive air cart



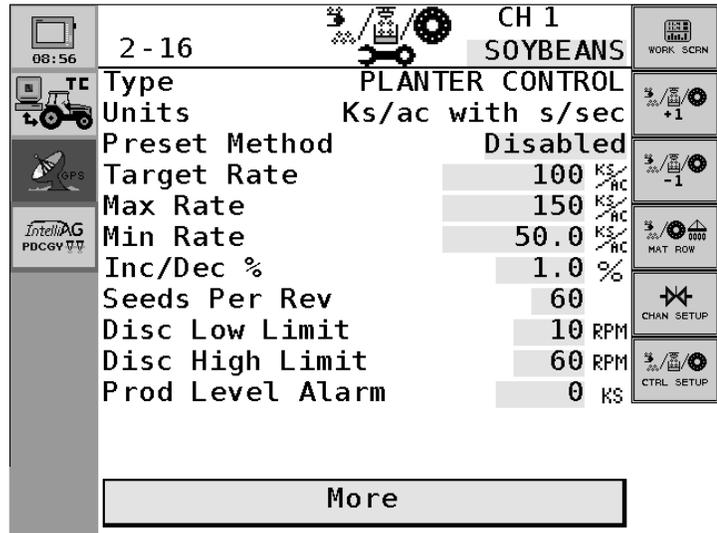
## PLANTER CONTROL MATERIAL TYPE

Material setup parameters for Planter Control.

**NOTE:** Refer to Control Setup to link a material to a channel.

**Figure 25**

**Planter Control Setup Screen - Preset Method Disabled**



### TYPE

Select Planter Control as the control type.

### UNITS

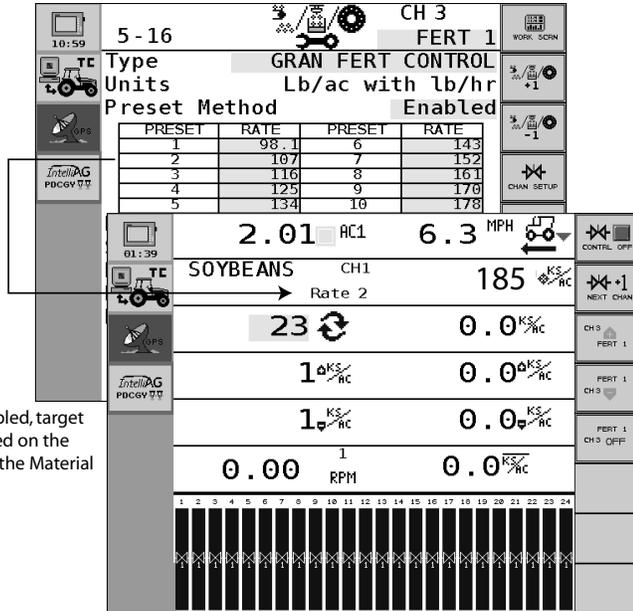
An application rate setting in KS (thousand) seeds per acre or (KS/Ha). Units automatically change with the type of material selected.

### PRESET METHOD ENABLED

The Preset Method table allows user-defined target rates to be entered. When enabled, target rates can be adjusted from the Main Work screen using the **Increment and Decrement** buttons. Up to 10 preset target rates can be configured ([Figure 26](#)).



**Figure 26**  
**Material Setup Screen-Preset Method Enabled**



With Preset enabled, target rate adjusts based on the rates entered at the Material Setup screen.

**PRESET METHOD DISABLED**

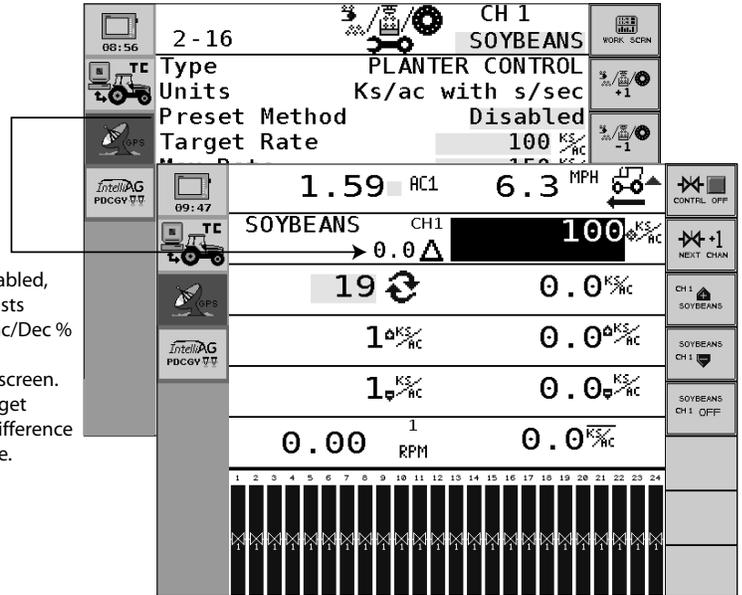
When the Preset Method is disabled, the target rate on the Main Work screen can be adjusted by pressing the Material Increment/Decrement buttons. The target rate will increase or decrease based on the Inc/Dec % value set at the Material Setup screen.



**NOTE:** Rate changes can only occur on actively viewed control channels.

**Figure 27**

**Material Configuration Setup Screen-Preset Method Disabled**



With Preset disabled, target rate adjusts based on the Inc/Dec % rate set at the Material Setup screen. Value left of target symbol is the difference off of target rate.

## TARGET RATE

Target Rate establishes the desired rate of application in KS (thousand) seeds per acre or (KS/Ha).

## MAX RATE

Maximum Rate establishes the maximum application rate in KS (thousand) seeds per acre or (KS/Ha) that the control will allow. Target Rate cannot be incremented to a value greater than this established Max Rate.

## MIN RATE

Minimum Rate establishes the minimum application rate in KS (thousand) seeds per acre or (KS/Ha) that the control will allow. Target Rate cannot be decremented to a value lower than this established Min Rate.

## INC/DEC %

The Increment/Decrement percent rate establishes the percentage of change of the entered target rate that is applied each time the **Material Increment/Decrement** button is pressed on the Main Work Screen.

**IMPORTANT: The Maximum or Minimum Rates may not be reached if the % increase or decrease, based off the Target Rate, exceeds the maximum or minimum rate limits set.**

**EXAMPLE:** Maximum Rate is set for 101. Target Rate is set for 100. If the % increase is set at 2%, the maximum rate of 101 will not be met because the % increase of 2% would exceed the 101 maximum rate limit.





**SEEDS PER REV**

Seeds Per Rev displays the number of seeds that are dropped in one revolution of the seed disk.

**DISC HIGH LIMIT**

Disc High Limit establishes the maximum RPM at which the seed disc will operate. The control will not allow the seed disc to rotate faster than the Disc High Limit setting.

**DISC LOW LIMIT**

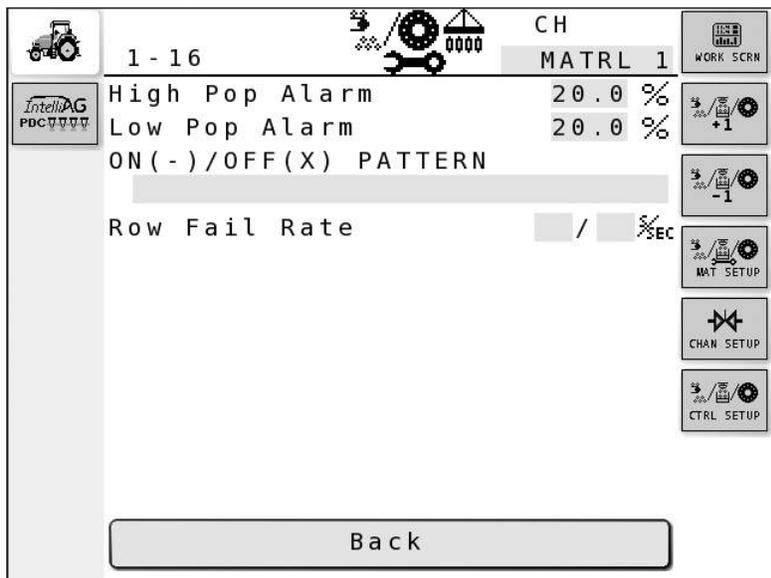
Disc Low Limit establishes the minimum RPM at which the seed disc will operate. The control will not allow the seed disc to rotate slower than the Disc Low Limit setting.

**PROD LEVEL ALARM**

The Product Level alarm sets the level to trigger an alarm alerting of low product levels. The entered value is an estimate volume.

*Figure 28*

*Planter Control Setup Screen - Preset Method Disabled*



**HIGH AND LOW POPULATION ALARMS**

The High and Low Alarms option sets the high and low population limit values. The limit can be set to 0.0 to disable the population alarms. The entered value is dependent on the target rate.

- The High and Low Alarms are entered as a percentage. The percentage value is referenced in relation to the current channel target rate setting if rows are assigned to a channel. Otherwise the alarm will trigger from planter average population.



### **High Alarm example:**

If the Target Rate is 100.0 and the High Alarm is 5.0%, multiply  $100.0 \times 1.05$  (a 5% increase) = 105.0. The alarm will activate at this population.

### **Low Alarm example:**

If the Target Rate is 100.0 and the Low Alarm is 5.0%, multiply  $100.0 \times .95$  (a 5% decrease) = 95.0. The alarm will activate at this population.

## **ON/OFF PATTERN**

For split or skip row type seeding implements there are 3 predefined patterns to configure row patterns. When a row pattern is selected, all of the rows are automatically turned ON or OFF according to the pattern. Individual rows in the Row Setup screen can still be manually edited to Population, Blockage, or off before or after a pattern is selected. The pattern setting, when selected, will override previous individual existing row settings.

## **ROW FAIL RATE**

The Row Fail Rate value sets the threshold for Row Failure alarms. The value is entered in seeds per second. Both values are adjustable, allowing for numerous combinations. The default value is 2/1, which indicates a row failure threshold of 2 seeds in 1 second.



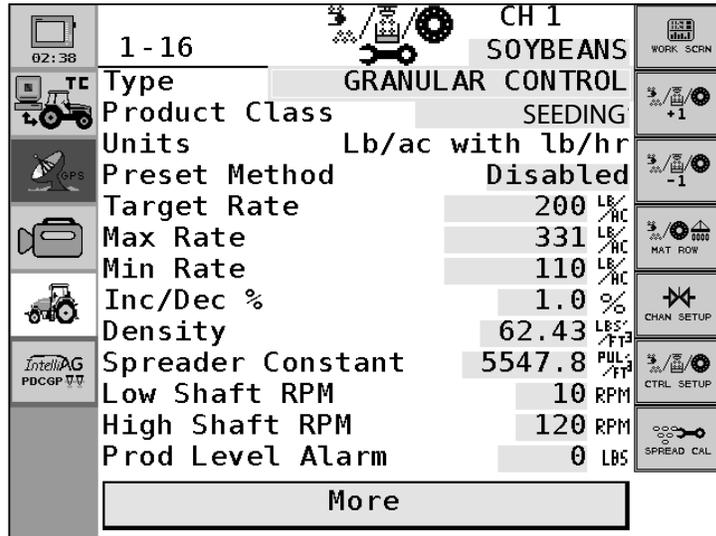
## GRANULAR CONTROL MATERIAL TYPE

Material Setup parameters for granular control using hydraulic control systems (fertilizer, seeding, and crop protect applications).

**NOTE:** Refer to Control Setup to link a material to a channel.

**Figure 29**

**Granular Control Material Setup Screen**



### TYPE

Select Granular Control as the control type.

### PRODUCT CLASS

Product class identifies the type of application as either (seeding, fertilizer, or crop protect i.e., insecticide).

### PRESET METHOD ENABLED

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Main Work screen using the Increment/Decrement buttons (Figure 26).

### PRESET METHOD DISABLED

When Present Method is disabled, the target rate on the Main Work screen can be adjusted by pressing the material Increment/Decrement buttons. The target rate increases or decreased based on the Inc/Dec% value set at the Material Configuration screen (Figure 27).

### TARGET RATE

Target Rate establishes the desired rate of application in pounds per acre (kg/Ha).



## MAX RATE

Maximum Rate establishes the maximum application rate in pounds per acre (kg/Ha) that the control allows. Target Rate cannot be incremented to a value greater than this established maximum rate.

## MIN RATE

Minimum Rate establishes the minimum application rate in pounds per acre (kg/Ha) that the control allows. Target Rate cannot be decremented to a value lower than this established minimum rate.



## INC/DEC %

The Increment/Decrement percent rate establishes the percentage of change of the entered target rate that will be applied each time the **Increment/Decrement** button is pressed on the Main Work Screen.

**IMPORTANT: The maximum or minimum rates may not be reached if the % increase or decrease, based off the Target Rate, exceeds the maximum or minimum rate limits set.**

EXAMPLE: Maximum Rate is set for 101. Target Rate is set for 100. If the % increase is set at 2%, the maximum rate of 101 will not be met because the % increase of 2% would exceed the 101 maximum rate limit.

## DENSITY

Density is the weight per volume of material to be dispensed and is required to convert the spreader constant. If density is unknown, a value of 1 can be entered to perform a spreader constant. This will place the channel into a pure pulse/ft<sup>3</sup> granular system.

## SPREADER CONSTANT

Spreader Constant establishes the value for the amount of material per pulse of the application rate sensor. The value entered defines the pulses from the feedback sensor per ft<sup>3</sup> of material discharged. Each material (and gate setting as applicable) has its own spreader constant. For best results, the value must be as accurate as possible. **This value may be set manually, however, using the Spreader Constant Calibration is recommended for the most accurate results.**

## LOW SHAFT RPM

Low Shaft RPM establishes the low shaft RPM at which the meter shaft will operate. Low shaft RPM is the lowest shaft RPM speed that the control channel will operate.

## HIGH SHAFT RPM

High Shaft RPM establishes the high shaft RPM at which the meter shaft will operate. High shaft RPM is the highest shaft RPM that the control channel will operate.

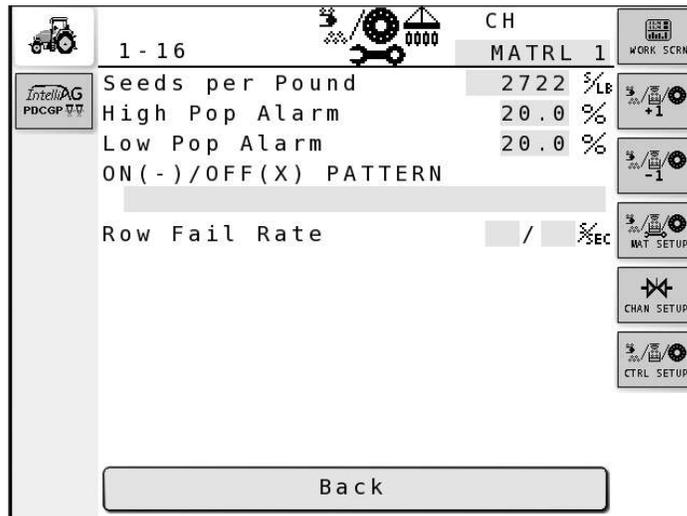


## PROD LEVEL ALARM

The product level alarm sets the weight (lbs/Kg) to alert of low seed levels. The entered value is an estimate in lbs.

**Figure 30**

**Granular Control Material Setup Screen**



**NOTE:** Additional Material Setup screen, selected by pressing 'More', only applies to Granular Seed Control; not Granular Fertilizer.

## SEEDS PER POUND

The number (#) of seeds per pound is the value used to convert the current application rate to KS/AC to determine population and population alarms.

## HIGH AND LOW POPULATION ALARM

The High and Low Alarm option sets the high and low population limit values. The limit can be set to 0.0 to disable the population alarms. The entered value is dependent on the target rate.

- The High and Low Alarms are entered as a percentage. The percentage value is referenced in relation to the Target Rate x seed/lb setting.

### High Alarm example

If the Target Rate is 100.0 x 3,000 seed/lb and the High Alarm is 5.0%, multiply 300,000 KS/AC x 1.05 (a 5% increase) = 315 KS/AC. The alarm will activate at this rate.

### Low Alarm example

If the Target Rate is 100.0 x 3,000 seed/lb and the Low Alarm is 5.0%, multiply 300,000 x 0.95 (a 5% decrease) = 285 KS/AC. The alarm will activate at this rate.



## **ON/OFF PATTERN**

For split or skip row type seeding implements there are 3 predefined patterns to configure row patterns. When a row pattern is selected, all of the rows are automatically turned ON or OFF according to the pattern. Individual rows in the Row Setup screen can still be manually edited to Population, Blockage, or off before or after a pattern is selected. The pattern setting, when selected, will override previous individual existing row settings.

## **ROW FAIL RATE**

The Row Fail Rate value sets the threshold for Row Failure alarms. The value is entered in seeds per second. Both values are adjustable, allowing for numerous combinations. The default value is 2/1 which indicates a row failure threshold of 2 seeds in 1 second.



## LIQUID FLOW MATERIAL TYPE

Material Setup for Liquid Flow control (fertilizer and crop protection applications).

**NOTE:** Refer to Control Setup to link a material to a channel.

**Figure 31**

**Liquid Flow Material Setup Screen**

03:26	3-16	CH	MATRL 3	WORK SCR
TC	Type	LIQUID FLOW CONTROL		+1
	Product Class	Fertilizer		
GPS	Units	Gal/ac with gal/min		-1
	Preset Method	Disabled		
	Target Rate	23.9 GAL'/AC		
	Max Rate	39.6 GAL'/AC		CHAN SETUP
	Min Rate	13.2 GAL'/AC		
	Inc/Dec %	1.0 %		CTRL SETUP
	Low Flow Limit	3 GAL'/MH		
IntelliAG PDCGP	High Flow Limit	32 GAL'/MH		
	Prod Level Alarm	0 GAL		

### TYPE

Select Liquid Flow Control as the control type.

### PRODUCT CLASS

Product class identifies the type of application as either (fertilizer or crop protect i.e., insecticide).

### PRESET METHOD ENABLED

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Main Work screen using the Increment/Decrement buttons (Figure 26).

### PRESET METHOD DISABLED

When Present Method is disabled, the target rate on the Main Work screen can be adjusted by pressing the material **Increment/Decrement** buttons. The target rate increases or decreases based on the Inc/Dec% value set at the Material Configuration screen (Figure 27).

### TARGET RATE

Target Rate establishes the desired rate of application in gallons per acre (Liters/Ha).



## MAX RATE

Maximum Rate establishes the maximum application rate in gallons per acre (Liter/Ha) that the control will allow. Target Rate cannot be incremented to a value greater than this established maximum rate.

## MIN RATE

Minimum Rate establishes the minimum application rate in gallons per acre (Liter/Ha) that the control will allow. Target Rate cannot be decremented to a value lower than this established minimum rate.



## INC/DEC %

The Increment/Decrement Percent rate establishes the percentage of change that will be applied each time the **Increment/Decrement** button is pressed on the Main Work screen.



**IMPORTANT: The maximum or minimum rates may not be reached if the % increase or decrease, based off the Target Rate, exceeds the maximum or minimum rate limits set.**

EXAMPLE: Maximum Rate is set for 101. Target Rate is set for 100. If the % increase is set at 2%, the maximum rate of 101 will not be met because the % increase of 2% would exceed the 101 maximum rate limit.

## LOW FLOW LIMIT

The Low Flow Limit sets the lowest gallon per minute flow rate which the control channel will operate.

## HIGH FLOW LIMIT

The High Flow Limit set the highest gallon per minute flow rate which the control channel will operate.

## PRODUCT LEVEL ALARM

The Product Level alarm sets the gallons left in the tank to trigger an alarm alerting of low liquid levels. The entered value is an estimate in gallons.



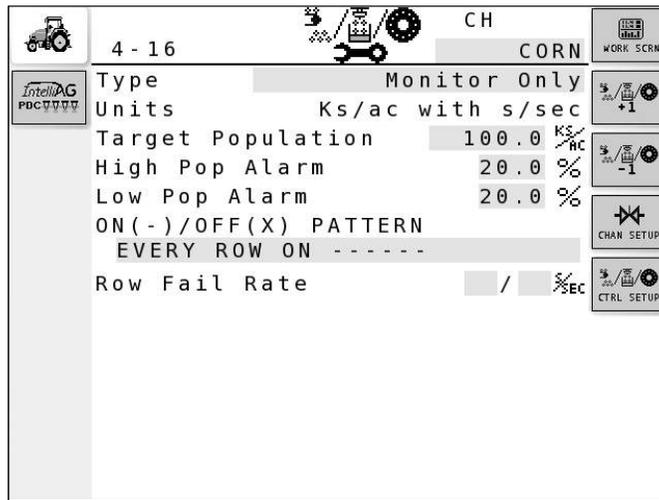
## MONITOR ONLY MATERIAL TYPE

The Monitor Only selection is typically used for ground drive applications to monitor population with high and low alarms. All seeding control channels **MUST** be disabled in this configuration and/or no rows assigned to those seeding channels.

**IMPORTANT: A material name must be selected at the Row Monitor Setup screen to activate high and low population alarms.**

Figure 32

Monitor Only Screen



### TYPE

Select Monitor Only as the control type.

### UNITS

An application rate setting per area that automatically changes with the type of material application selected (Ks/ac with s/sec).

### TARGET POPULATION

Target population is defined in 1000s of seeds per acre or hectare.

### HIGH AND LOW POPULATION ALARMS

The High Population and Low Population values determine when an alarm and row indicator displays to warn of a population problem. The values are % based. The high population and low population values are independent of each other and do not have to be the same percentage value.



## **ON/OFF PATTERN**

For split, twin, or skip row type seeding implements there are 3 predefined patterns to configure row patterns. When a row pattern is selected, all of the rows are automatically turned ON or OFF according to the pattern. Individual rows in the Row Setup screen can still be manually edited to Population, Blockage, or off before or after a pattern is selected. The pattern setting, when selected, will override previous individual existing row settings.

## **ROW FAIL RATE**

The Row Fail Rate value sets the threshold for Row Failure alarms. The value is entered in seeds per second. Both values are adjustable, allowing for numerous combinations. The default value is 2/1, which indicates a row failure threshold of 2 seeds in 1 second.



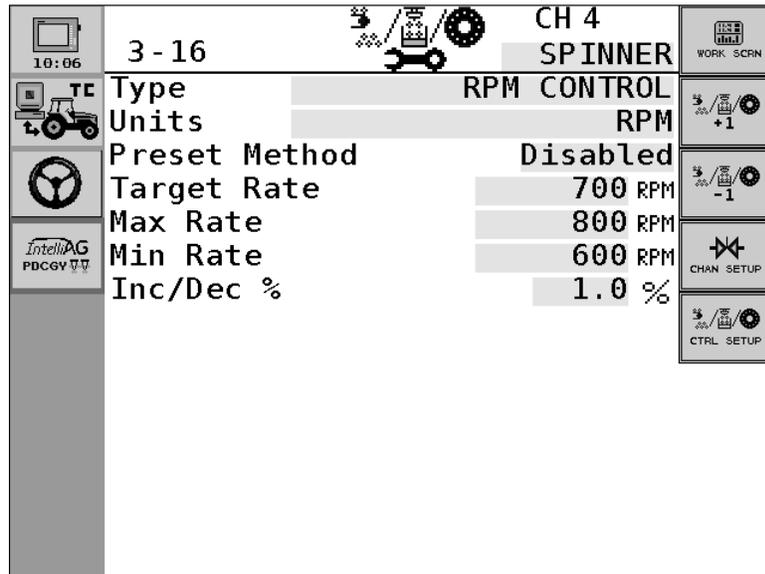
## RPM CONTROL MATERIAL TYPE

Material setup for RPM control.

**NOTE:** Refer to Channel Setup to link a material to a channel.

**Figure 33**

**RPM Control Material Setup screen**



### TYPE

Select RPM Control as the control type.

### UNITS

RPM-Controls the RPM shaft/fan speed

RPM with CFM-Controls material application by cubic feet per minute

RPM with Width (ft) - Enter an RPM speed and corresponding width that the material spreads at the defined speed.

### PRESET METHOD ENABLED

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Main Work screen using the Increment/Decrement buttons (Figure 26).

### PRESET METHOD DISABLED

When Present Method is disabled, the target rate on the Main Work screen can be adjusted by pressing the material Increment/Decrement buttons. The target rate increases or decreased based on the Inc/Dec% value set at the Material Configuration screen (Figure 27).

### TARGET RATE

Target Rate establishes the desired rate of RPM.



## MAX RATE

Maximum Rate establishes the maximum RPM the control will allow. Target Rate cannot be incremented to a value greater than this established maximum rate.

## MIN RATE

Minimum Rate establishes the minimum RPM the control will allow. Target Rate cannot be decremented to a value lower than this established minimum rate.

## INC/DEC %

The Increment/Decrement percent rate establishes the percentage of RPM change each time the **Increment/Decrement** button is pressed on the Main Work screen.

**IMPORTANT: The maximum or minimum rates may not be reached if the % increase or decrease, based off the target rate, exceeds the maximum or minimum rate limits set.**

EXAMPLE: Maximum Rate is set for 101. Target Rate is set for 100. If the % increase is set at 2%, the maximum rate of 101 will not be met because the % increase of 2% would exceed the 101 maximum rate limit.



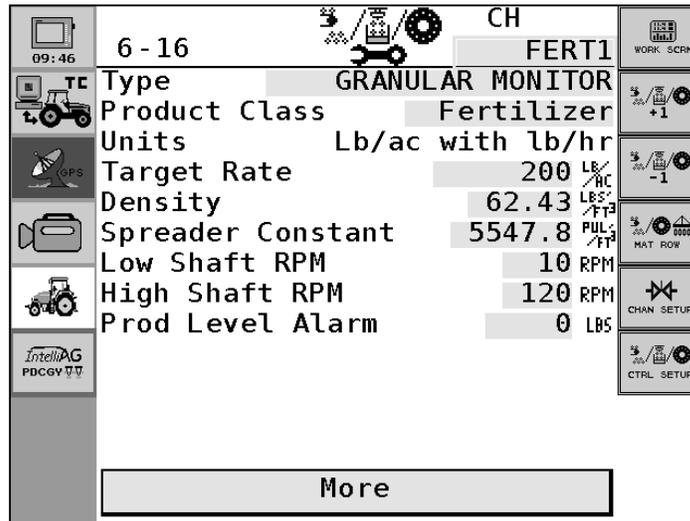


## GRANULAR MONITOR MATERIAL TYPE

Material setup for Granular Monitor using ground drive/nonhydraulic systems for fertilizer and seeding applications.

Figure 34

Granular Seed Monitor Material Setup Screen



**NOTE:** Additional Material Setup screen, selected by pressing 'More', only applies to Granular Seed Monitor; not Granular Fertilizer Monitor.

### TYPE

Select Granular Monitor as the control type.

### PRODUCT CLASS

Product class identifies the type of application as either (fertilizer or crop protect i.e., insecticide).

### UNITS

An application rate setting per area that automatically changes with the type of material application selected (Lb/ac with lb/hr)

### TARGET RATE

Target Rate establishes the desired rate of application in pounds per acre (Kg/ha).

### DENSITY

Density is the weight per volume of material to be dispensed and is required to convert the spreader constant. If density is unknown, a value of 1 can be entered to perform a spreader constant. This will place the channel into a pure pulses/ft<sup>3</sup> granular system.



## SPREADER CONSTANT

Spreader Constant establishes the value for the amount of material per pulse of the application rate sensor. The value entered defines the pulses from the feedback sensor per ft<sup>3</sup> of material discharged. Each material (and gate setting as applicable) has its own spreader constant. For best results, the value must be as accurate as possible.

**This value may be set manually. However, for the most accurate result, use the Spreader Constant Calibration.**

## LOW SHAFT RPM

Low Shaft RPM establishes the low shaft RPM at which the meter shaft will operate.

## HIGH SHAFT RPM

High Shaft RPM establishes the high shaft RPM at which the meter shaft will operate.

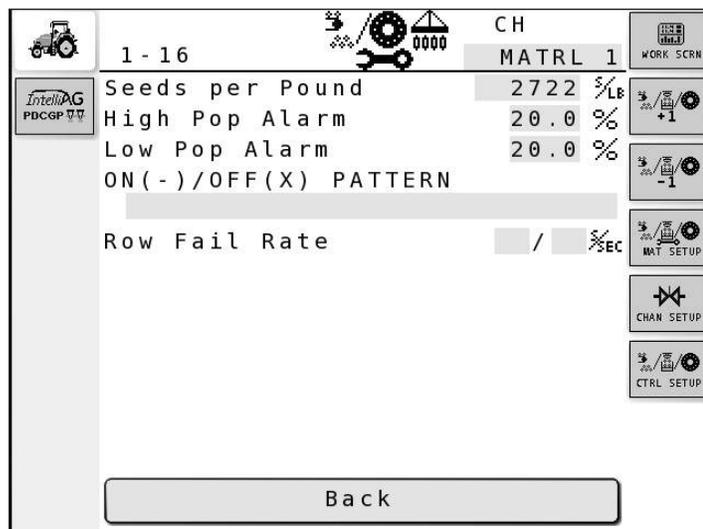
## PROD LEVEL ALARM

The product level alarm sets the weight to trigger an alarm alerting of low fertilizer levels. The entered value is an estimate in gallons.

*NOTE: Additional Material Setup screen, selected by pressing 'More', only applies to Granular Seed Monitor; not Granular Fertilizer Monitor*

**Figure 35**

**Granular Monitor Material Setup Screen**



*NOTE: Back button returns to previous Material Setup screen.*

## SEEDS PER POUND

The number (#) of seeds per pound is the value used to convert the current application rate to KS/AC to determine population and population alarms.



## HIGH AND LOW POPULATION ALARMS

The High and Low Alarms option sets the high and low population limit values. The limit can be set to 0.0 to disable the population alarms. The entered value is dependent on the target rate.

- The High and Low Alarms are entered as a percentage. The percentage value is referenced in relation to the Target Rate x seed/lb setting.

### High Alarm example

If the Target Rate is 100.0 x 3,000 seed/lb and the High Alarm is 5.0%, multiply 300,000 KS/AC x 1.05 (a 5% increase) = 315 KS/AC. The alarm will activate at this rate.

### Low Alarm Example

If the Target Rate is 100.0 x 3,000 seed/lb and the Low Alarm is 5.0%, multiply 300,000 x .95 (a 5% decrease) = 285 KS/AC. The alarm will activate at this rate.

## ON/OFF PATTERN

For split or skip row type seeding implements there are 3 predefined patterns to configure row patterns. When a row pattern is selected, all of the rows are automatically turned ON or OFF according to the pattern. Individual rows in the Row Setup screen can still be manually edited to Population, Blockage, or **off** before or after a pattern is selected. The pattern setting, when selected, will override previous individual existing row settings.

## ROW FAIL RATE

The Row Fail Rate value sets the threshold for Row Failure alarms. The value is entered in seeds per second. Both values are adjustable, allowing for numerous combinations. The default value is 2/1, which indicates a row failure threshold of 2 seeds in 1 second.

## SPREADER CALIBRATION

A Spreader Calibration can be performed at Material Setup and Control Setup for Granular Seed Monitor and Granular Fertilizer Monitor. Reference the Control Setup section for Granular Seed and Fertilizer Monitor for performing a Spreader Calibration.

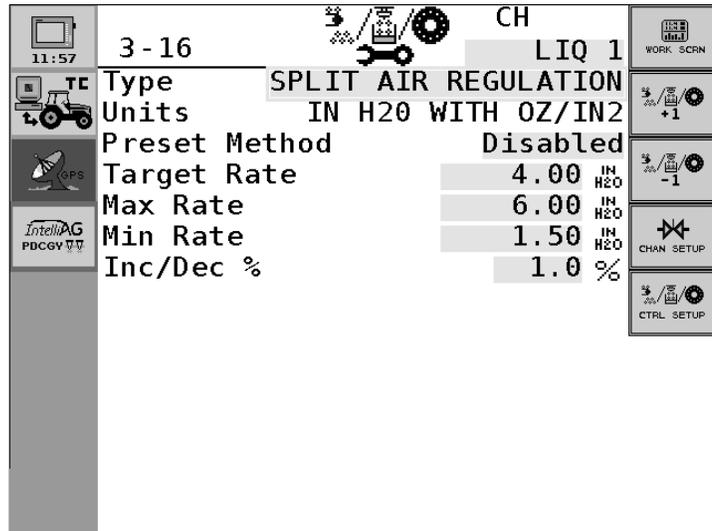


## SPLIT AIR REGULATION MATERIAL TYPE

Split Air Regulation Control is used to maintain a positive manifold pressure to deliver seed to the meter.

Figure 36

Split Air Regulation



### TYPE

Select Split Air Regulation as the type.

### UNITS

An application rate setting per area that automatically changes with the type of material application selected.

### PRESET METHOD ENABLED

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Main Work screen using the Increment/Decrement buttons (Figure 26).

### PRESET METHOD DISABLED

When Present Method is disabled, the target rate on the Main Work screen can be adjusted by pressing the material Increment/Decrement buttons. The target rate increases or decreased based on the Inc/Dec% value set at the Material Configuration screen (Figure 27).

### TARGET RATE

Target Rate establishes the desired rate of application in inches of H<sup>2</sup>O.



## **MAX RATE**

Maximum Rate establishes the maximum application rate in inches of H<sub>2</sub>O. Target Rate cannot be incremented to a value greater than this established maximum rate.

## **MIN RATE**

Minimum Rate establishes the minimum application rate in inches of H<sub>2</sub>O. Target Rate cannot be decremented to a value lower than this established minimum rate.

## **INC/DEC %**

The Increment/Decrement percent rate establishes the percentage of change of the entered target rate that will be applied each time the **Increment/Decrement** button is pressed on the Main Work screen.

**IMPORTANT: The Maximum or Minimum Rates may not be reached if the % increase or decrease, based off the Target Rate, exceeds the maximum or minimum rate limits set.**



## CONTROL CHANNEL SETUP

Channel Setup allows configuration of 4 independent control channels. Control channel choices consist of:

1. Planter Control
2. Granular Control
3. Liquid Flow Control
4. RPM Control
5. Granular Monitor
6. Split Air Regulation
7. Monitor Only
8. Disabled

A control channel identified as Disabled indicates the channel is not in use.

Once a material has been created and linked to a channel type, that material is automatically assigned to the corresponding channel.

**TIP: It is recommended that materials are created before configuring channels.**

### To Setup a Control Channel:

1. At the Control Setup screen, press the **Channel Setup** button to display the Channel Setup screen.

Refer to the appropriate control channel section for configuring constants.

To configure more than one control channel, press the **Next Channel** button.





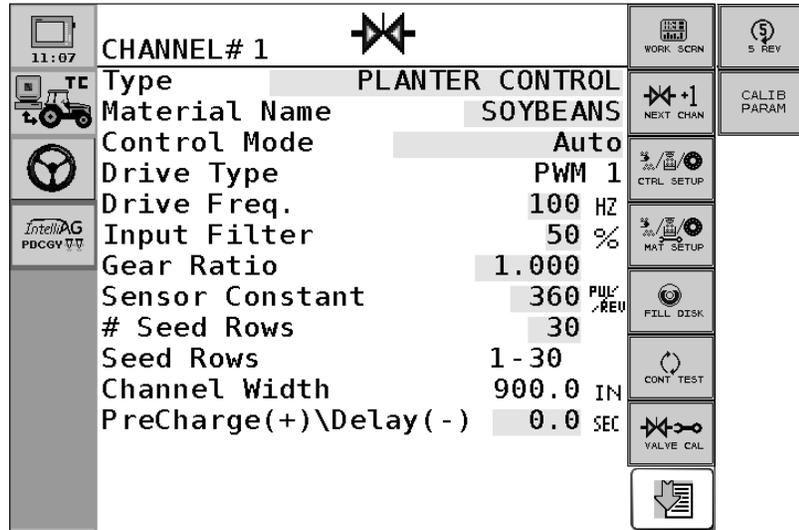
## SELECT A CHANNEL TYPE

### PLANTER CONTROL SETUP

A Planter Control channel contains the parameters to control the application rate of a row crop planter.

Figure 37

Control Channel Setup - Planter Control



### TYPE

Select Planter Control as the Channel Type.

### MATERIAL NAME

The Material Name displays only when a material is configured for the same channel type.

### CONTROL MODE

**AUTO**-Control Channel is calculating application rates based on ground speed and row spacing under normal operating conditions.

**MANUAL W/FEEDBACK**-Overrides the current system when not operating properly, i.e., faulty coil. Using the **Increment/Decrement** buttons at the Main Work screen will set the rate for the control channel. Manual Mode with Feedback will show the actual application rate being applied based on actual ground speed and constants.

**MANUAL W/O FEEDBACK**-Overrides the current system when not operating properly, i.e., bad feedback sensor. Using the **Increment/Decrement** buttons at the Main Work screen will set the flow rate for the control channel. No application rate feedback will display.





## DRIVE TYPE

### PWM (Pulse Width Modulation)

A valve, usually hydraulic, which varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.

## DRIVE FREQUENCY

Drive Frequency specifies the frequency for the proportional valve being used. The recommended setting for this option should be specified from the specific valve manufacturer.

*NOTE: DICKEY-john proportional valves operate at 100 hz.*

## Input Filter

The Input Filter provides a setting for the amount of filtering applied to the feedback frequency feedback of the control channel.

**IMPORTANT: It is NOT recommended that the Input Filter be manually altered. Any adjustments could result in the channel not operating properly. If adjustments are made, a valve calibration must be performed.**

*NOTE: The correct number of pulses generated for one revolution must be determined for sensors other than DICKEY-john.*

## SENSOR CONSTANT

Sensor Constant establishes the number of pulses for one revolution of the application rate sensor. If a standard DICKEY-john application rate sensor is used, the value should be set to 360.0.

## GEAR RATIO

Gear Ratio specifies the actual ratio from the **application rate** sensor to the **seed meter**. This specifies the number of revolutions the application rate sensor turns in relation to one revolution the seed meter turns.

## NUMBER (#) OF SEED ROWS

Allows entry of a specific number of seed rows to the control channel. Row assignment is given a priority based on the channel and will be assigned sequentially thereafter. Channel 1 will always be assigned to the first set of rows, Channel 2 the next set of rows, and so on. This will disable the row alarms when a respective channel is turned off.

## CHANNEL WIDTH

Channel Width is the width for rows assigned to a specific channel. Width calculation can be determined by number of planter rows assigned to the channel multiplied by the row spacing.

## PRECHARGE TIME

Precharge Time is a specified length of time a control channel will operate or be active with a minimum precharge ground speed greater than 0 (Refer to the Ground Speed Setup section for Precharge Ground Speed setup information). This feature will activate the control when the master switch is turned ON even without ground speed.



The precharge feature is typically used in applications that have significant distance between the implement row unit and storage bulk tank where seed placement takes several seconds due to the travel time of the seed/fertilizer from the bulk tank to the ground.

The precharge feature will operate until the precharge time lapses or the precharge ground speed has been exceeded. If the master switch is turned OFF, the precharge feature will abort.

A Precharge Alarm will display any time the preset feature is established or changed and the master switch is turned ON.

**IMPORTANT: A Precharge number MUST be entered as a positive number (5.0 seconds) for the system to identify between a Precharge or Delay Time state.**

### To activate Precharge:

1. At the Control Channel screen, enter a Precharge time. A Precharge Time must be entered as a **POSITIVE** number (5.0 seconds) before the Precharge Ground Speed feature displays on the Ground Speed Setup screen (Refer to Ground Speed Setup section).
2. Press the **Work Screen** button and select the **Speed Set** button.
3. Enter a Precharge Ground Speed greater than 0.

**IMPORTANT: Turn the master switch ON to activate the Precharge feature.**

### Delay Time

**IMPORTANT: A Delay Time number MUST be entered as a negative number (-5.0 seconds) for the system to identify between a Delay Time or Precharge state.**

### With an Implement Lift Switch

Delay Time determines the length of time before the control channel will start after the master switch has been turned ON and the implement switch is in a lowered position.

- The system will **immediately** shutdown the channel when the implement lift switch is in the raised position.
- The system will delay the channel shutdown if the master switch is turned OFF and the implement is in the down position.



*NOTE: Delay Time functionality may work differently than described above if the system has been purchased direct from the original equipment manufacturer. Refer to the manufacturer's operator manual for further instruction.*



## Without an Implement Lift Switch

When the Delay Time feature is utilized without an implement lift switch:

- The control channel will delay after the master switch has been turned ON.
- A delay will also occur and then shutdown the control channel when the master switch is turned OFF.

## FLUSH ENABLE

Flush Enable is a manual override mode that opens the valve and dispenses granular fertilizer, granular seed, or liquid material for a period of time in relation to a user-defined flush speed. The Flush Enable feature can only be activated when the tractor is stopped.

### To Activate Flush Enable:

1. Change Flush Disable to Enable. Flush Enable must be activated before the Flush Ground Speed feature displays on the Ground Speed Setup screen.
2. A Flush Ground Speed greater than 0 must be entered on the Ground Speed setup screen for this feature to operate.

## VALVE CALIBRATION - PLANTER CONTROL

The **Valve Calibration** screen sets the machine hydraulic system parameters and should be performed for best results. Each control channel that is enabled requires a valve calibration.

At the Channel Setup screen, press the **Valve Calibration** button to access the Valve Calibration screen.



**NOTE:** Verify disc speed high limit is set correctly. Valve calibration will try and obtain the high disc speed.

**Figure 38**

### Valve Calibration Screen - Planter Control

Channel	Parameter	Value
CH	PWM	0 %
CH	FREQ FILT	0 HZ
CH	RPM	0.0 RPM

Instructions:

- Ensure implement is raised
- With brakes locked and transmission in PARK position, start engine
- Engage hydraulics and run engine at normal speed until hydraulic fluid is at operating temperature
- Press START key and turn master switch on

Buttons: CONTROL ON, WORK SCRIN, CHAN SETUP, START



## CHANNEL ON

The **Channel On** button appears on this screen only if the channel is turned off. The channel must be ON before performing a valve calibration. Press the **Channel On** button to turn the channel on.

### **WARNING**

---

When the **START** key is engaged, the machine will become operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.

---

### **CAUTION**

---

Hoppers are assumed to be empty for this calibration. If they are loaded, material will be dispensed onto the ground.

---



## To perform the Control Channel Valve Calibration:

1. Move the implement to the “raised” position.
2. Apply the tractor brakes and lock in the applied position.
3. Put the transmission in “park” or in a locked, neutral position.
4. Start the tractor and engage the hydraulic system, i.e. PTO or auxiliary lever.
5. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
6. Press the **Start** button.
7. Turn the master switch to the ON position.
8. The valve calibration will immediately start.
9. Keep the hydraulics engaged until the calibration is complete. The calibration may take a minute up to several minutes. Each calibration step is monitored on the lower left corner of the display.
10. When the calibration is complete, the control shuts down automatically. All calibration data is automatically stored.

## FILL DISK

Fill Disk is used to fill the seed meters after a variety changes or after power up on air-actuated planters with seed to allow instant seed flow when the control is turned on. Pressing the **Fill Disk** button will rotate the seed meters 1 time, then stop.



## FILL DISK FOR A CONTROL CHANNEL

1. Press the **Control Setup** button.
2. Press the **Channel Setup** button.
3. Press the **Fill Disk** button.
4. Raise the implement.
5. With brakes locked and transmission in the park position, start the engine.
6. Engage hydraulics and run engine at normal speed until hydraulic fluid is at operating temperature.

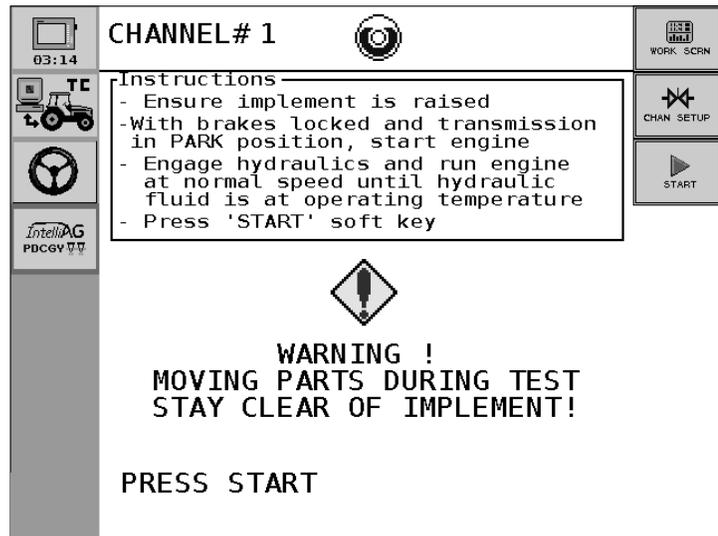
### **CAUTION**

Implement will begin to operate after pressing the Start button. Ensure that all persons and objects are away from the implement to avoid personal injury.

7. Press the **Start** button. The seed meters will turn for 1 revolution, then stop.
8. Pressing the **Stop** button will also terminate the test.

**Figure 39**

*Fill Disk Screen for One Control Channel*



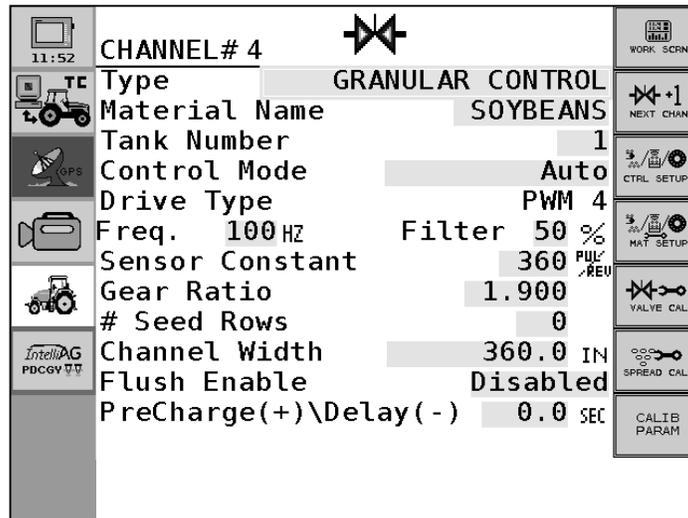


## GRANULAR CONTROL SETUP

The following constants on the Control Channel Setup screen define the parameters for Granular Seed and Granular Fertilizer.

Figure 40

Control Channel Setup-Granular



### Type

Select Granular Control as the control type.

### Material Name

The Material Name displays only when a material is configured for the same channel type.

### Tank Number

Enter the tank number linked to the channel for control of material.

### Control Mode

**AUTO**-Control channel is calculating application rates based on ground speed and channel width under normal operating conditions.

**MANUAL W/FEEDBACK**-Overrides the current system when not operating properly, i.e., faulty coil. Using the **Increment/Decrement** buttons from the Main Work screen sets the rate for the control channel. Manual Mode with Feedback shows the actual application rate being applied based on actual ground speed and constants.

**MANUAL W/O FEEDBACK**-Overrides the current system when not operating properly, i.e. bad feedback sensor. Using the **Increment/Decrement** buttons from the Main Work screen sets the rate for the control channel. No application rate feedback will display.





## Drive Type

### PWM (Pulse Width Modulation)

A valve, usually hydraulic, which varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.

### Servo

A hydraulic valve that is opened and closed by an electric motor gearbox.

*NOTE: DICKY-john Servo valves operate at 40 Hz; DICKY-john Proportional Valves operate at 100 Hz.*

## Drive Frequency

Drive Frequency specifies the frequency for the proportional valve that is being used. The recommended setting for this option should be specified from the specific valve manufacturer.

## Filter

The amount of filtering applied to the frequency feedback of the control channel.

**IMPORTANT: It is NOT recommended that the Filter be altered. Any adjustments could result in the channel not operating properly. If adjustments are made a valve calibration must be performed.**

*NOTE: The correct number of pulses generated for one revolution must be determined for sensors other than DICKY-john.*

## Sensor Constant

Sensor Constant establishes the number of pulses for one revolution of the metering unit. If a standard DICKY-john application rate sensor is used, the value should be set to 360.0.

## Gear Ratio

Gear Ratio specifies the actual ratio from the **application rate** sensor to the **output shaft**. This specifies the number of revolutions the application rate sensor turns in relation to one revolution the final output shaft turns.

## Number (#) of Seed Rows

Allows entry of a specific number of seed rows to the control channel. Row assignment is given a priority based on the channel and will be assigned sequentially thereafter. Channel 1 will always be assigned to the first set of rows, Channel 2 the next set of rows, and so on. This will disable the row alarms when a respective channel is turned off.

## Channel Width

### Granular Seeding

Channel Width requires a manual entry of the implement width for rows assigned to a specific channel.



## Granular Fertilizer

Channel Width requires a manual entry of the fertilizer spread width.

## Precharge Time

Precharge Time is a specified length of time a control channel will operate or be active with a minimum Precharge ground speed greater than 0. (Refer to the Ground Speed Setup section for Precharge Ground Speed Setup information). This feature will activate the control when the master switch is turned ON even without ground speed.

**NOTE:** *The master switch must be ON to activate the Precharge feature.*

The Precharge feature is typically used in applications that have significant distance between the implement row unit and storage bulk tank where seed placement takes several seconds due to the travel time of the seed/fertilizer from the bulk tank to the ground.

A Precharge alarm will display any time the Preset feature is established or changed and the master switch is turned ON.

**IMPORTANT: A Precharge number MUST be entered as a positive number (5.0 seconds) for the system to identify between a Precharge or Delay Time state.**

### To activate Precharge:

1. At the Control Channel screen, enter a Precharge time. A Precharge Time must be entered before the Precharge Ground Speed feature displays on the Ground Speed Setup screen (Refer to Ground Speed Setup section).
2. Press the **Work Screen** button and select the **Speed Set** button.
3. Enter a Precharge Ground Speed greater than 0.



**IMPORTANT: Turn the master switch ON to activate the Precharge feature.**

## Delay Time

**NOTE:** *Delay Time functionality may work differently than described above if the system has been purchased direct from the original equipment manufacturer. Refer to the manufacturer's operator manual for further instruction.*

**IMPORTANT: A Delay Time number MUST be entered as a negative number (-5.0 seconds) for the system to identify between a Delay Time or Precharge state.**

### With an Implement Lift Switch

Delay Time determines the length of time before the control channel will start after the master switch has been turned ON and the implement switch is in a lowered position.

- The system will **immediately** shutdown the channel when the implement lift switch is in the raised position.
- The system will delay the channel shutdown if the master switch is turned OFF and the implement is in the down position.



## **Without an Implement Lift Switch**

When the Delay Time feature is utilized without an implement lift switch:

- The control channel delays after the master switch has been turned ON.
- A delay also occurs and then shutsdowns the control channel when the master switch is turned OFF.

## **Flush Enable**

Flush Enable is a manual override mode that opens the valve and dispenses granular fertilizer, granular seed, or liquid material for a period of time in relation to a user-defined flush speed. The Flush Enable feature can only be activated when the tractor is stopped.

### **To activate Flush Enable:**

1. Change Flush Disable to Enable. Flush Enable must be activated before the Flush Ground Speed feature displays on the Ground Speed Setup screen.
2. A Flush Ground Speed greater than 0 must be entered on the Ground Speed setup screen for this feature to operate.



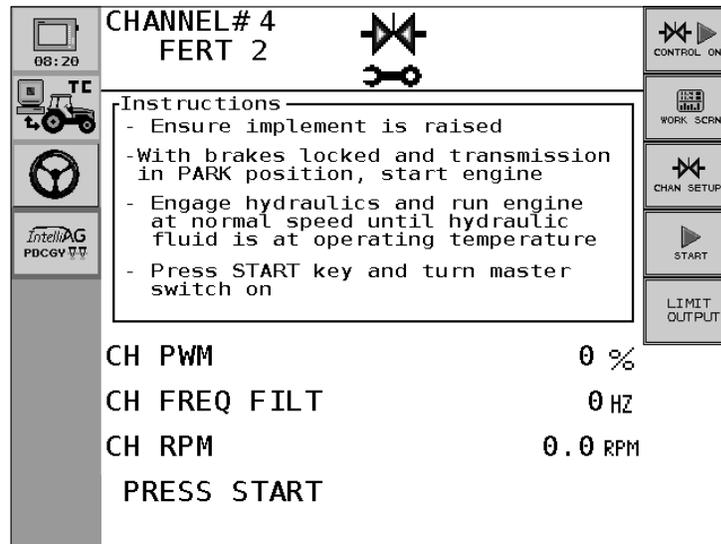
## VALVE CALIBRATION - GRANULAR CONTROL

The **Valve Calibration** screen sets the machine hydraulic system parameters and should be performed for best results. Each control channel that is enabled requires a valve calibration.

Press the **Valve Calibration** button to access the Valve Calibration screen.

*Figure 41*

**Control Channel Calibration Screen - Gran Seed and Gran Fert**



### CHANNEL ON

The **Channel On** button appears on this screen only if the channel is turned off. The channel must be ON before performing a valve calibration. Press the **Channel On** button to turn the channel on.

### **WARNING**

**When the START key is engaged, the machine will become operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.**

### **CAUTION**

**Hoppers are assumed to be empty for this calibration. If they are loaded, material will be dispensed onto the ground.**

#### **To perform the Control Channel Valve Calibration:**

1. Move the implement to the “raised” position.
2. Apply the tractor brakes and lock in the applied position.
3. Put the transmission in “park” or in a locked, neutral position.



4. Start the tractor and engage the hydraulic system, i.e., PTO or auxiliary lever.
5. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
6. Press the **Start** button.
7. Turn the master switch to the ON position.
8. The valve calibration will immediately start.
9. Keep the hydraulics engaged until the calibration is complete. The calibration may take a minute up to several minutes. Each calibration step is monitored on the lower left corner of the display.
10. When the calibration is complete, the control shuts down automatically. All calibration data is automatically stored.

## LIMIT OUTPUT

In certain instances, it is necessary to limit the output of the control channel. System capacities are greater than the actual desired capacities. These features allow setting the maximum output of the channel to prevent machine damage.

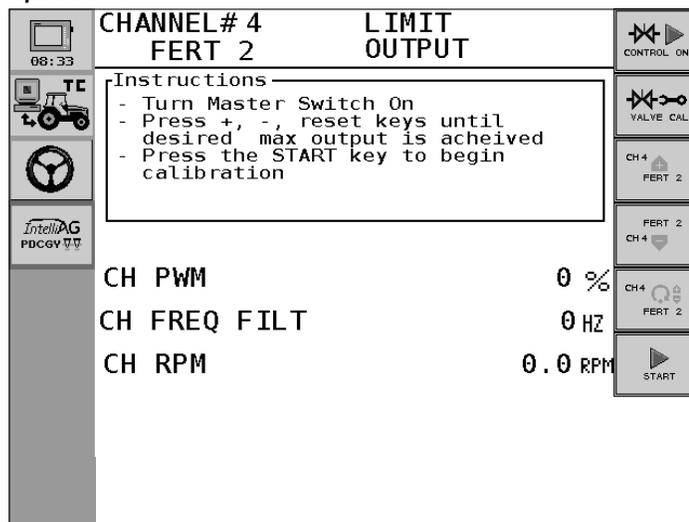
Press the **Limit Output** button to access the **Limit Output** screen.



**NOTE:** If the channel is turned OFF, the Increment, Decrement, and Reset buttons will not function. Return to the Main Work screen to turn ON.

**Figure 42**

**Limit Output Screen**



### To Limit Max Output:

1. Move the implement to the "raised" position.
2. Apply the tractor brakes and lock in the applied position.
3. Put the transmission in "park" or in a locked, neutral position.
4. Start the tractor and engage the hydraulic system, i.e., PTO or auxiliary lever.
5. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
6. Place the master switch in the ON position.



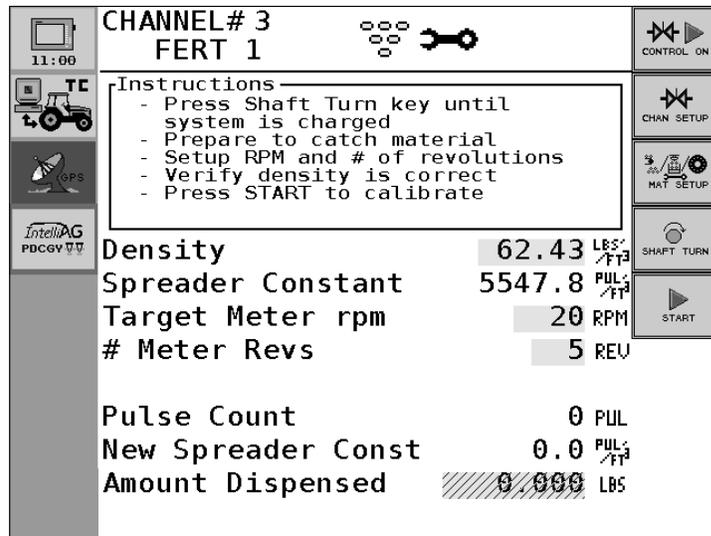
7. To change the valve position, press the **Increment** or **Decrement** buttons repeatedly until the desired minimum or maximum output value is reached.
8. Press the **Start** button and the valve calibration will immediately begin. The calibration will run using the new max flow value.

## SPREADER CALIBRATION -GRANULAR CONTROL

The Spreader Constant Calibration screen performs a catch test to determine the spreader constant. This button is only available for granular seed and fertilizer applications.

**Figure 43**

**Spreader Constant Calibration Screen**



### WARNING

When the **START** key is engaged, the machine will become operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.

### CAUTION

Hoppers must contain material. Be prepared to catch the material in a container so it can be weighed at the end of the calibration.

## DENSITY

Relative granular density as represented by the weight of product per volume (lbs/ft<sup>3</sup>, Lbs/bu.) If not known, enter a value of 1 lbs/ft<sup>3</sup>.



## SPREADER CONSTANT

Determines how many pulses the application rate sensor produces per volume of material discharged.

## TARGET METER RPM

Target Meter RPM is the speed at which the output meter shaft turns while the calibration is performed.

## NUMBER (#) METER REVS

Number of Meter Revolutions is the number of revolutions the meter will turn during the calibration. This will constitute the length of the test. The higher the number, the more accurate the calibration.

**NOTE:** *If performing a Spreader Calibration on a box type drill, catch the output of a few seed meters, average the weight measured from these meters, and multiply this average weight by the total number of meters on the drill. Enter this weight for the Amount Dispensed value.*

### To perform the Spreader Constant Calibration:

1. Press the **Spreader Calibration** button to access the **Spreader Calibration** screen.
2. Ensure that the system has performed a valve calibration.
3. Move the implement to the “raised” position.
4. Apply the tractor brakes and lock in the applied position.
5. Put the transmission in “park” or in a locked, neutral position.
6. Start the tractor and engage the hydraulic system, i.e., PTO or auxiliary switch.
7. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
8. Perform a fill disk until seeds are continuously being dispensed.
9. Place a container to catch the dispensed material.
10. Press the **Start** button.
11. Turn the master switch to the ON position.
12. The control will run the dispensing unit (meter/conveyor) at the specified RPM for the specified number of meter revolutions and then shut down automatically.
13. Weigh the material dispensed and enter the value into the Amount Dispensed field.
14. The new spreader constant value will automatically calculate.



## PULSE COUNT

A pulse count produced from the feedback sensor. This number is informational only.

## NEW SPREADER CONSTANT

After the spreader calibration is performed and the amount is entered, press the **Save** button to accept the new constant.



## AMOUNT DISPENSED

Enter the amount (Lbs/Kg) dispensed after performing the spreader constant calibration. The amount dispensed number is used with pulse count and density to calculate the new spreader constant.



## SHAFT TURN

The **Shaft Turn** button turns the shaft one (1) gear revolution and fills the seed meter for instant seed flow when the control is turned on.

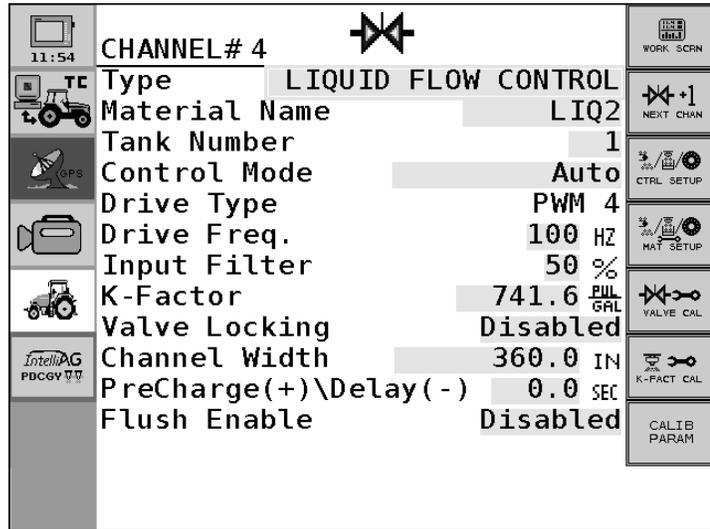


## LIQUID FLOW SETUP

The following constants on the Control Channel Setup screen define the parameters for Liquid Flow Control.

**Figure 44**

**Control Channel Setup-Liquid Flow Control Setup Example**



### Type

Select Liquid Flow as the channel type.

### Material Name

The Material Name displays only when a material is configured for the same channel.

### Tank Number

Enter the Tank Number linked to the channel that controls material application.

### Control Mode

**AUTO**-Control Channel is calculating application rates based on ground speed and channel width under normal operating conditions.

**MANUAL W/FEEDBACK**-Overrides the current system when not operating properly, i.e., faulty coil on hydraulic valve. Using the **Increment/Decrement** buttons from the Main Work screen will set the rate for the control channel. Manual Mode with Feedback will show the actual application rate being applied based on actual ground speed and constants.

**MANUAL W/O FEEDBACK**-Overrides the current system when not operating properly, i.e., bad flow meter. Using the **Increment/Decrement** buttons from the Main Work screen will set the rate for the control channel. No application rate feedback will display.





## Drive Type

Three drive type selections are available based on the following:

### SERVO

A ball valve or butterfly valve that is driven by an electric motor gearbox and the valve is installed in the main product delivery line.

### SERVO RETURN

A ball valve or butterfly valve that is driven by an electric motor gearbox and the valve is installed in the tank return line.

*NOTE: DICKY-john Servo valves operate at 40 Hz; DICKY-john Proportional valves operate at 100 Hz.*

### PWM (Pulse Width Modulation)

A proportional valve regulating hydraulics and varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.

## Drive Frequency

Drive Frequency specifies the frequency for the proportional or servo valve that is being used. The recommended setting for this option should be specified from the specific valve manufacturer.

## Input Filter

The Input Filter provides a setting for the amount of filtering applied to the flow meter feedback frequency of the control channel.

**IMPORTANT: It is NOT recommended that the Input Filter be altered. Any adjustments could result in the channel not operating properly. If adjustments are made, a valve calibration must be performed.**

## K Factor

K Factor specifies how many pulses are produced by the sensor per gallon/liter of liquid through the flow meter. A flow meter calibration is recommended for better accuracy. However, if known, the K-Factor can be entered manually. If not, a flow meter calibration is required. Refer to the Liquid Flow Calibration section for additional information.

## Valve Locking

When enabled, locks the valve into the last operating position whenever the booms are turned off. This maintains system pressure while turning so a quick spray pattern may resume after turning is complete. Valve locking is also used for tank agitation.

## Channel Width

Channel Width requires a manual entry of the width of the liquid sprayed.

## Precharge Time

Precharge Time is a specified length of time a control channel will operate or be active with a minimum Precharge ground speed greater than 1. (Refer to the Ground Speed Setup section for Precharge Ground Speed setup information).



**NOTE:** The master switch must be ON to activate the Precharge feature.

**NOTE:** Delay Time functionality may work differently than described above if the system has been purchased direct from the original equipment manufacturer. Refer to the manufacturer's operator manual for further instruction.

**IMPORTANT:** A Precharge number **MUST** be entered as a positive number (5.0 seconds) for the system to identify between a Precharge or Delay Time state.

#### To activate Precharge:

1. At the Control Channel screen, enter a Precharge time. A Precharge Time must be entered before the Precharge Ground Speed feature displays on the Ground Speed Setup screen (Refer to Ground Speed Setup section).
2. Press the **Work Screen** button and select the **Speed Set** button.
3. Enter a Precharge Ground Speed greater than 0.

**IMPORTANT:** Turn the master switch ON to activate the Precharge feature.

## Delay Time

**IMPORTANT:** A Delay Time number **MUST** be entered as a negative number (-5.0 seconds) for the system to identify between a Delay Time or Precharge state.

#### With an Implement Lift Switch

Delay Time determines the length of time before the control channel will start after the master switch has been turned ON and the implement switch is in a lowered position.

- The system will **immediately** shutdown the channel when the implement lift switch is in the raised position.
- The system will delay the channel shutdown if the master switch is turned OFF and the implement is in the down position.

#### Without an Implement Lift Switch

When the Delay Time feature is utilized without an implement lift switch:

- The control channel will delay after the master switch has been turned ON.
- A delay will also occur and then shutdown the control channel when the master switch is turned OFF.

## Flush Enable

Flush Enable is a manual override mode that opens the valve and dispenses granular fertilizer, granular seed, or liquid material for a period of time in relation to a user-defined flush speed. The Flush Enable feature can only be activated when the tractor is stopped.

#### To activate Flush Enable:

1. Change Flush Disable to Enable. Flush Enable must be activated before the Flush Ground Speed feature displays on the Ground Speed Setup screen.
2. A Flush Ground Speed greater than 0 must be entered on the Ground Speed setup screen for this feature to operate.

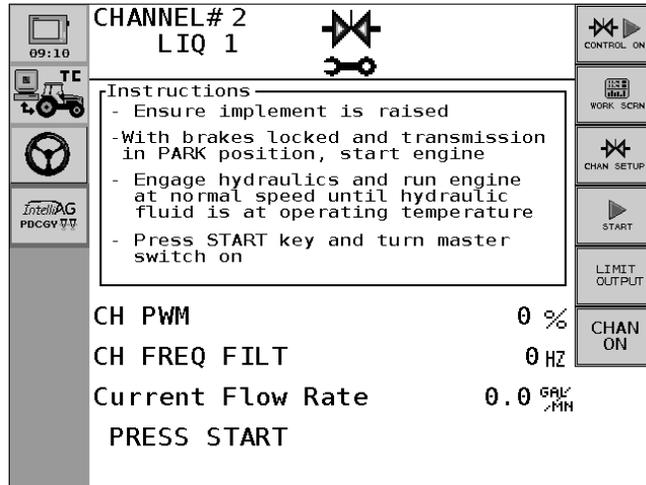


## VALVE CALIBRATION - LIQUID

The **Valve Calibration** screen sets the machine hydraulic system parameters and should be performed for best results. Each control channel that is enabled requires a valve calibration.

Figure 45

Control Channel Calibration Screen - Liquid Flow



### CHANNEL ON

The **Channel On** button appears on this screen only if the channel is turned off. The channel must be ON before performing a valve calibration. Press the **Channel On** button to turn the channel on.

### **WARNING**

When the **START** key is engaged, the machine will become operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.

### **CAUTION**

Hoppers should have material for this calibration and material will dispense onto the ground during the calibration.



### To perform the Control Channel Valve Calibration:

1. Press the Valve Calibration button to access the Valve Calibration screen.
1. Move the implement to the “raised” position.
2. Apply the tractor brakes and lock in the applied position.
3. Put the transmission in “park” or in a locked, neutral position.



4. Start the tractor and engage PTO if used to drive the hydraulic system.
5. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
6. Press the **Start** button.
7. Turn the master switch to the ON position.
8. The valve calibration will immediately start.
9. Keep the hydraulics engaged until the calibration is complete. The calibration may take a minute up to several minutes. Each calibration step is monitored on the lower left corner of the display.
10. When the calibration is complete, the control shuts down automatically. All calibration data is automatically stored.

## LIMIT OUTPUT

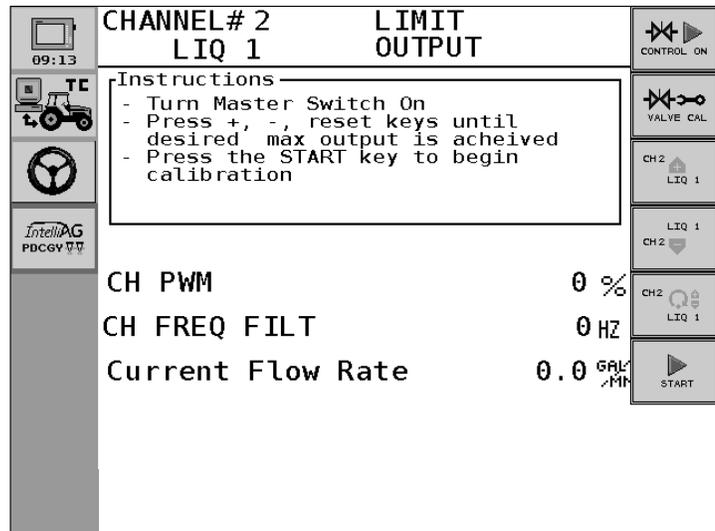
In certain instances, it is necessary to limit the output of the control channel. System capacities are greater than the actual desired capacities. These features allow you to set the maximum output of the channel to prevent machine damage.



**NOTE:** If the Channel is turned OFF, the Increment, Decrement, and Reset buttons will not function. Return to the Main Work screen to turn ON.

**Figure 46**

**Limit Output Screen**



### To Limit Max Output:

1. Press the Limit Output button to access the Limit Output screen.
2. Move the implement to the "raised" position.
3. Apply the tractor brakes and lock in the applied position.
4. Put the transmission in "park" or in a locked, neutral position.
5. Start the tractor and engage PTO if used to drive the hydraulic system.
6. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
7. Place the master switch in the ON position.
8. To change the valve position, press the **Increment** or **Decrement** buttons repeatedly until the desired minimum or maximum output value is reached.
9. Press the **Start** button and the valve calibration will immediately begin. The calibration will run using the new max flow value.





## LIQUID FLOW CALIBRATION

To determine the actual K-Factor of a system, water should be dispensed through the system and measured. The calibration procedure will accumulate the pulse. At the end of the calibration procedure, the operator enters the amount dispensed. This number becomes the actual K-Factor instead of the one stamped on the flow meter body.

One of two methods can be used to measure the gallons of liquid flowing through the sprayer system. The more liquid passing through the system during calibration increases the degree of K-Factor accuracy.

### Method 1 100% Catch Test:

This is the recommended method because a larger volume of liquid passes through the entire sprayer system making errors in weighing a smaller factor.

1. Fill the tank and weigh the load.
2. Activate the calibration routine.
3. After spraying a few hundred gallons but before the load is empty, stop the calibration.
4. Weigh the load again.
5. Calculate gallons dropped.

### Method 2 Partial Catch:

1. Use a container such as a bucket or barrel to catch all liquid.
2. Weigh empty container.
3. Weigh container with liquid.
4. Calculate weight of the liquid (weight of full container minus empty container).
5. Calculate gallons dispensed.
6. Calculate % of total volume caught.
7. Gallons dropped/% caught.

### Method 3 Nozzle Flow Meter Test:

1. Use measured catch container.
2. Set target flow rate.
3. Enter # of nozzles of complete channel.
4. Catch volume dispensed from nozzle in 1 minute.
5. Catch multiple nozzles.
6. Average the volume caught from the collected nozzles.
7. Enter average value.

## INITIATING A LIQUID FLOW CALIBRATION PROCEDURE

1. From the **Channel Setup** screen, press the **K-Factor Calibration** button.
2. Set the Target Flow Rate and Target Ground Speed which will calculate the operation rate.
3. Press the **Start** button to initiate flow calibration procedure.
4. Press **Stop** when container is full.
5. Enter amount (gallons) dispensed in the **Total Amount Collect** field.
6. Press **Save** button to accept the selection.





Figure 47

Liquid Flow Calibration Screen

09:47	CHANNEL# 2 LIQ 1	 	 CONTROL ON
 TC	Instructions - Setup GPM or Target Speed - Prepare to catch material - Press START to calibrate		 CHAN SETUP
 IntelliAG PDCGV			 MAT SETUP
<b>100% Catch Test</b>			 START
	Target Rate	11.8	GAL / AC
	Target Gnd Speed	5.0	MPH
	Target Flow Rate	3.6	GAL / MIN
	K-Factor	741.6	PUL / GAL
	Pulse Count	0	PUL
	Total Amount Collect	0.0	GAL
	New K-Factor	0.0	PUL / GAL

**⚠ WARNING**

When the START key is engaged, the machine will become operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.

**⚠ CAUTION**

Tanks must contain material. Be prepared to catch the material in a container so it can be weighed at the end of the calibration.

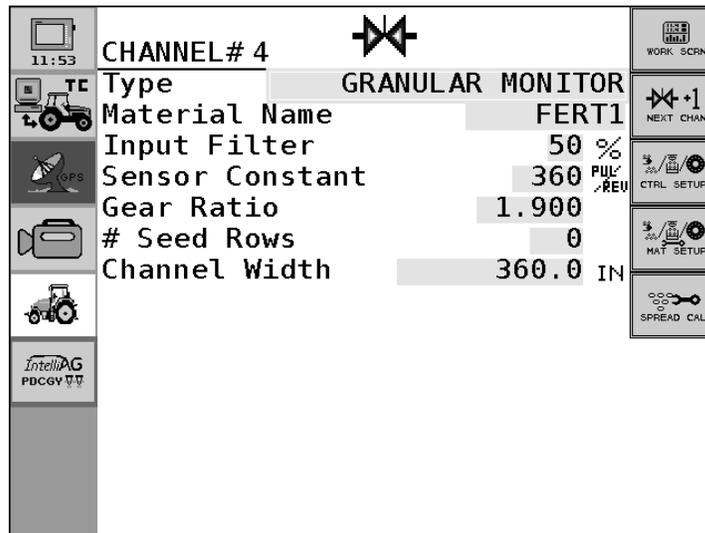


## GRANULAR MONITOR SETUP

The following constants on the Control Channel Setup screen define the parameters for Granular Monitor setup (granular seed and fertilizer applications).

Figure 48

Control Channel - Granular Monitor



### Type

Select Granular Seed Monitor or Granular Fertilizer Monitor as the channel type.

### Material Name

The Material Name displays only when a material is configured for the same channel.

### INPUT FILTER

The Input Filter provides a setting for the amount of filtering applied to the flow meter feedback frequency of the control channel.

**IMPORTANT: It is NOT recommended that the Input Filter be altered. Any adjustments could result in the channel not operating properly. If adjustments are made, a valve calibration must be performed.**

### SENSOR CONSTANT

Sensor Constant establishes the number of pulses for one revolution of the metering unit. If a standard DICKEY-john application rate sensor is used, the value should be set to 360.0.

*NOTE: The correct number of pulses generated for one revolution must be determined for sensors other than DICKEY-john.*



## GEAR RATIO

Gear Ratio specifies the actual ratio from the **application rate** sensor to the **output shaft**. This specifies the number of revolutions the application rate sensor turns in relation to one revolution the final output shaft turns.

## # SEED ROWS

Allows entry of a specific number of seed rows to the control channel. Row assignment is given a priority based on the channel and will be assigned sequentially thereafter. Channel 1 will always be assigned to the first set of rows, Channel 2 the next set of rows, and so on. This will disable the row alarms when a respective channel is turned off. This entry is only available for Granular Seed Monitor channel.

## CHANNEL WIDTH

### Granular Seeding

Channel Width requires a manual entry of the implement width for rows assigned to a specific channel.

### Granular Fertilizer

Channel Width requires a manual entry of the fertilizer spread width.



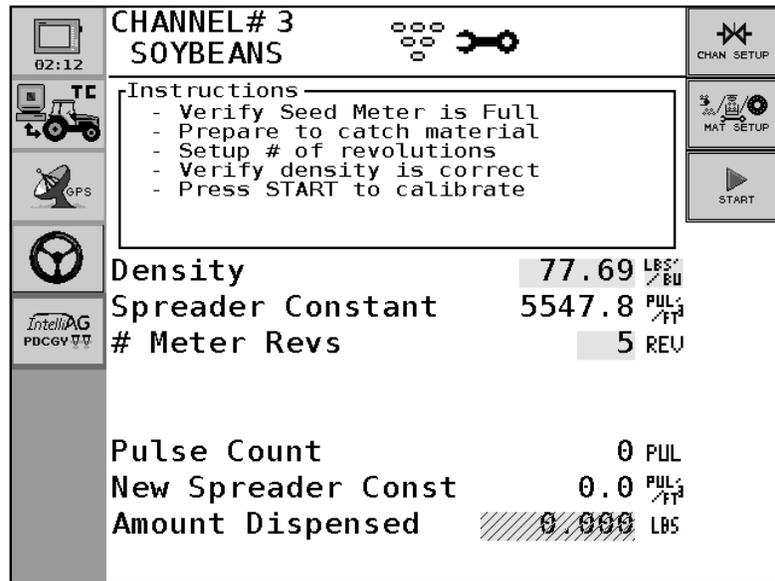
## SPREADER CALIBRATION - GRANULAR MONITOR

The Spreader Constant Calibration screen performs a catch test to determine the spreader constant. This button is only available for granular seed and fertilizer applications.

Press the **Spreader Calibration** button to access the **Spreader Calibration** screen.

Figure 49

Spreader Calibration - Granular Seed Monitor



### WARNING

When the **START** key is engaged, the machine becomes operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.

### CAUTION

Hoppers must contain material. Be prepared to catch the material in a container so it can be weighed at the end of the calibration.

## DENSITY

Relative granular density as represented by the weight of product per volume. If not known, enter a value of 1. (Lbs/ft<sup>3</sup>, Lbs/bu.)

## SPREADER CONSTANT

Determines how many pulses the application rate sensor produces per volume of material discharged.



**NOTE:** *If performing a Spreader Calibration on a box type drill, catch the output of a few seed meters, average the weight measured from these meters, and multiply this average weight by the total number of meters on the drill. Enter this weight for the Amount Dispensed value.*



## NUMBER (#) METER REVS

Number of Meter Revolutions is the number of revolutions the meter will turn during the calibration. This will constitute the length of the test. The higher the number, the more accurate the calibration.

### To perform the Spreader Constant Calibration:

1. Ensure that the system has performed a valve calibration.
2. Move the implement to the “raised” position.
3. Apply the tractor brakes and lock in the applied position.
4. Put the transmission in “park” or in a locked, neutral position.
5. Start the tractor and engage PTO if used to drive the hydraulic system.
6. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
7. Perform a fill disk until seeds are continuously being dispensed.
8. Place a container to catch the dispensed material.
9. Press the **Start** button.
10. Turn the master switch to the ON position.
11. The control will run the dispensing unit (meter/conveyor) at the specified RPM for the specified number of meter revolutions and then shut down automatically.
12. Weigh the material dispensed and enter the value into the Amount Dispensed field.
13. The new spreader constant value will automatically calculate.

## PULSE COUNT

A pulse count produced from the feedback sensor. This number is informational only.

## NEW SPREADER CONSTANT

After the spreader calibration is performed and the amount is entered, press the **Save** button to accept the new constant.



## AMOUNT DISPENSED

Enter the amount (Lbs/Kg) dispensed after performing the spreader constant calibration. The amount dispensed number is used with pulse count and density to calculate the new spreader constant.

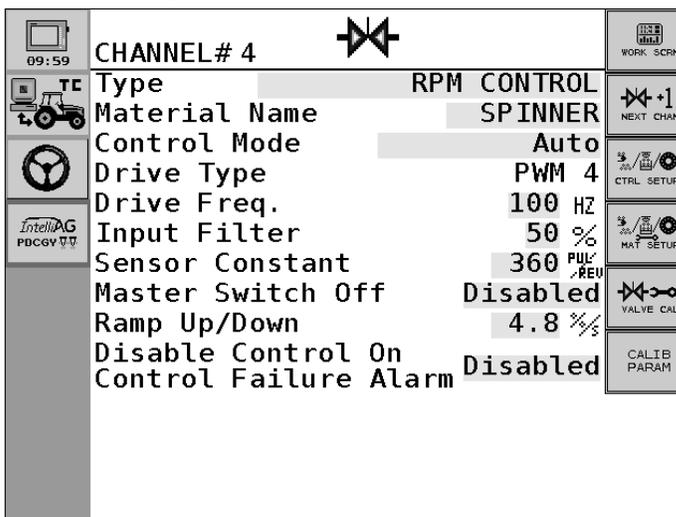


## RPM CONTROL SETUP

The following constants define the parameters for RPM Control.

Figure 50

Control Channel Setup - RPM Control



### TYPE

Determines the control channel type as RPM control.

### MATERIAL NAME

The Material Name displays only when a material is configured for the same channel type.

### CONTROL MODE

**AUTO**-Control channel is calculating application rates based on ground speed and channel width under normal operating conditions.

**MANUAL W/FEEDBACK**-Overrides the current system when not operating properly, i.e., faulty coil. Using the **Increment/Decrement** buttons from the Main Work screen will set the RPM for the control channel. Manual Mode with Feedback will show the actual RPM based on actual ground speed and constants.

**MANUAL W/O FEEDBACK**-Overrides the current system when not operating properly, i.e. bad feedback sensor. Using the **Increment/Decrement** buttons from the Main Work screen will set the RPM for the control channel. No application rate feedback will display.





*NOTE: DICKEY-john Servo valves operate at 40 Hz; DICKEY-john Proportional Valves operate at 100 Hz.*

## DRIVE TYPE

### PWM (Pulse Width Modulation)

A valve, usually hydraulic, which varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.

### Servo

A hydraulic valve that is opened and closed by an electric motor gearbox.

## DRIVE FREQUENCY

Drive Frequency specifies the frequency for the proportional valve that is being used. The recommended setting for this option should be specified from the specific valve manufacturer.

## INPUT FILTER

The Input Filter provides a setting for the amount of filtering applied to the feedback frequency feedback of the Control Channel.

**IMPORTANT: It is NOT recommended that the Input Filter be altered. Any adjustments could result in the channel not operating properly. If adjustments are made a valve calibration must be performed.**

## SENSOR CONSTANT

Sensor Constant establishes the number of pulses for one revolution of the metering unit. If a DICKEY-john application rate sensor is used, the value should be set to 360.0.

## MASTER SWITCH OFF

Disabled-Shuts down the control channel when booms are turned off. Channel will start operating again when master switch is turned on.

Locked-Locks the valve into the last operating position when booms are turned off. This maintains system pressure while turning so a quick spray pattern may resume after turning is complete. Also used for tank agitation.

Active-Channel continues to operate after the master switch is turned off.

## RAMP UP/DOWN

Sets the response time of the RPM control. The higher the value, the quicker the response; the lower the value, the slower the response time. Default value is set a 4.8%.

## CAUTION

---

**Use caution when selecting a ramp up/down value. A rate set too high may cause equipment damage.**

---



## **DISABLE CONTROL ON CONTROL FAILURE ALARM**

The setting for Disable Control on Control Failure Alarm shuts down ALL of the active control channels if the RPM sensor fails.

- ENABLED setting shuts down the control channels when the RPM sensor fails
- DISABLED setting disables the function. All non-RPM control channels continue to operate with a failed RPM sensor.



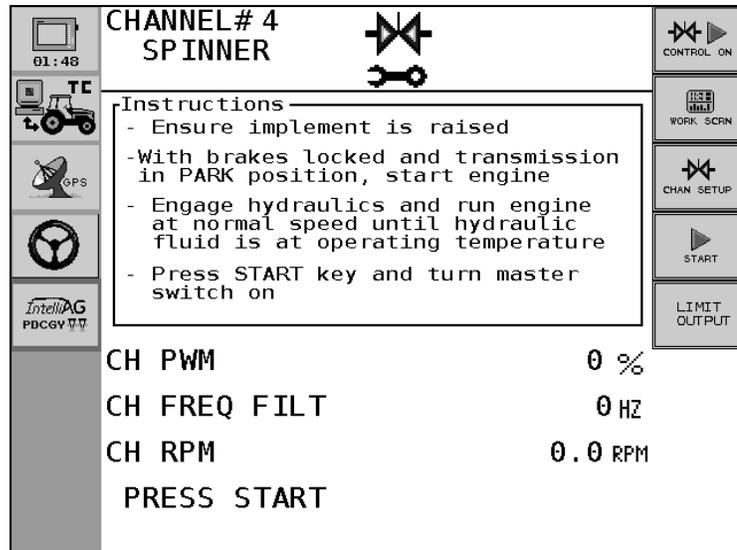
## VALVE CALIBRATION - RPM CONTROL

The **Valve Calibration** screen sets the machine hydraulic system parameters and should be performed for best results. Each control channel that is enabled requires a valve calibration.



Figure 51

Valve Calibration RPM Control



### CHANNEL ON

The **Channel On** button appears on this screen only if the channel is turned off. The channel must be ON before performing a valve calibration. Press the **Channel On** button to turn the channel on.

### **⚠ WARNING**

When the **START** key is engaged, the machine will become operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.

### **⚠ CAUTION**

Hoppers are assumed to be empty for this calibration. If they are loaded, material will be dispensed onto the ground.

#### To perform the Control Channel Valve Calibration:

1. Press the Valve Calibration button to access the Valve Calibration screen.
2. Move the implement to the "raised" position.
3. Apply the tractor brakes and lock in the applied position.
4. Put the transmission in "park" or in a locked, neutral position.



5. Start the tractor and engage PTO if used to drive the hydraulic system.
6. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
7. Press the **Start** button.
8. Turn the master switch to the ON position.
9. The valve calibration will immediately start.
10. Keep the hydraulics engaged until the calibration is complete. The calibration may take a minute up to several minutes. Each calibration step is monitored on the lower left corner of the display.
11. When the calibration is complete, the control shuts down automatically. All calibration data is automatically stored.



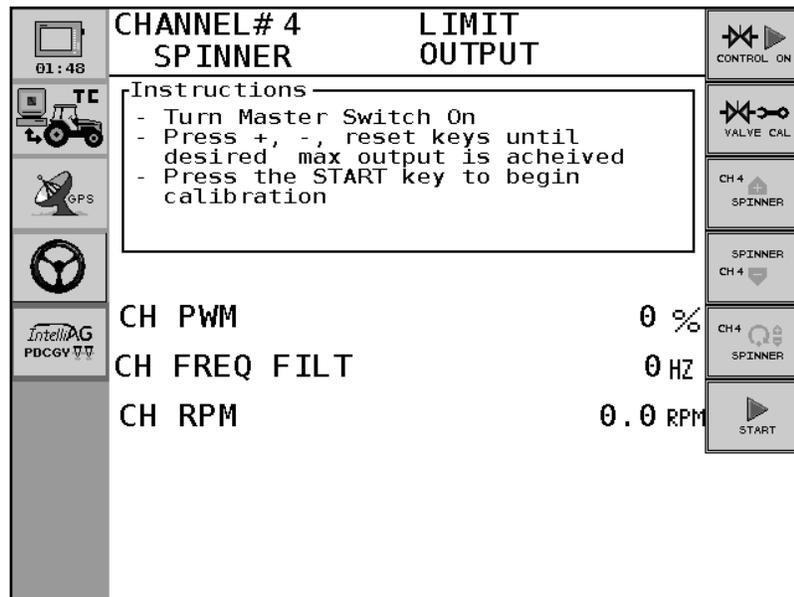
## LIMIT OUTPUT

In certain instances, it is necessary to limit the output of the control channel. System capacities are greater than the actual desired capacities. These features allow setting the maximum output of the channel to prevent machine damage.

**NOTE:** If the Channel is turned OFF, the Increment, Decrement, and Reset buttons will not function. Return to the Main Work screen to turn ON.

**Figure 52**

**Limit Output RPM Control**



### To Limit Max Output:

1. Press the Limit Output button to access the Limit Output screen.
2. Move the implement to the "raised" position.
3. Apply the tractor brakes and lock in the applied position.
4. Put the transmission in "park" or in a locked, neutral position.
5. Start the tractor and engage PTO if used to drive the hydraulic system.
6. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
7. Place the master switch in the ON position.



8. To change the valve position, press the **Increment** or **Decrement** buttons repeatedly until the desired minimum or maximum output value is reached.
9. Press the **Start** button and the valve calibration will immediately begin. The calibration will run using the new max flow value.

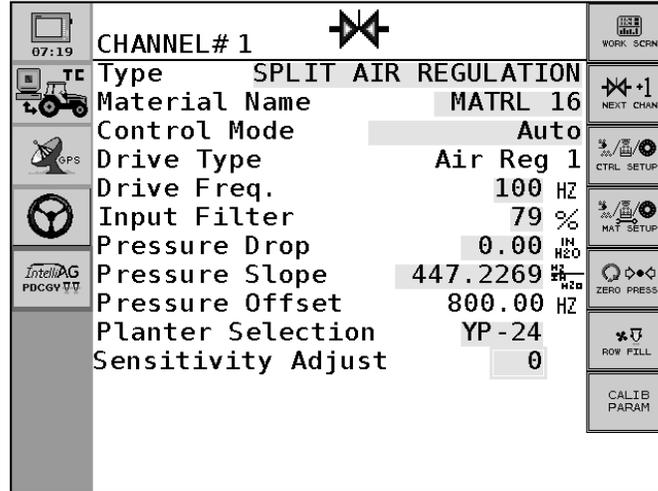


## SPLIT AIR REGULATION CONTROL

The following constants define the parameters for Split Air Regulation.

Figure 53

Split Air Regulation Control



### TYPE

Select Split Air Regulation control as the control type.

**IMPORTANT: Split Air Regulation must be configured as Control Channel 1 or 2.**

### CONTROL MODE

**AUTO**-Control channel is calculating based on air pressure sensor feedback.

**MANUAL W/FEEDBACK**-Overrides the current system when not operating properly, i.e., faulty coil. Using the **Increment/Decrement** buttons from the Main Work screen will set the in/H<sub>2</sub>O for the control channel. Manual Mode with Feedback will show the actual in/H<sub>2</sub>O based on sensor feedback.

**MANUAL W/O FEEDBACK**-Overrides the current system when not operating properly, i.e. bad feedback sensor. Using the **Increment/Decrement** buttons from the Main Work screen will set the in/H<sub>2</sub>O for the control channel. No application rate feedback will display.

### DRIVE TYPE

A Split Air Stream system diverts the planter's fan air flow to the meter manifold as fan speed decreases when the planter is raised or lowered and will continue to maintain correct pressure levels.





## DRIVE FREQUENCY

Drive Frequency specifies the frequency for the proportional valve that is being used. The recommended setting for this option should be specified from the specific valve manufacturer.

## INPUT FILTER

The Input Filter provides a setting for the amount of filtering applied to the feedback frequency feedback of the control channel.

**IMPORTANT: It is NOT recommended that the Input Filter be altered. Any adjustments could result in the channel not operating properly. If adjustments are made a valve calibration must be performed.**

## PRESSURE DROP

Pressure Drop is the difference in pressure sensor mounting location to the seed disk. Default is 0.

## PRESSURE SLOPE

Pressure Slope is the change in pressure sensor voltage to a frequency readable by the IntelliAg system and measured in inches of H<sub>2</sub>O. This setting should only be adjusted by qualified personnel.

## PRESSURE OFFSET

Pressure offset takes a zero point reading providing a frequency when the fan is off. Typical offset reading is approximately 800 Hz. If the planter pressure gauge reading does not match the IntelliAg pressure offset, control rates may not be exact.

Press the **Zero Pressure** button to calculate frequency.



## PLANTER SELECTION

Planter Selection allows the selection of the planter type and adjusts to the the appropriate calibration settings automatically.

## SENSITIVITY ADJUST

Sensitivity Adjust is used to increase or decrease the calibration parameters in the ranges of -10 to +10. The system default is 0 and is the middle point where no adjustments are made. Increasing the response time to a positive number makes the system respond quicker. Decreasing the response time to a negative number makes the system respond slower.

**IMPORTANT: Sensitivity adjustment should be changed only by authorized personnel. Increasing sensitivity can cause the system to be unstable. Decreasing sensitivity can cause the system to be non responsive.**





## MODULE CONFIGURATION

The Module screen identifies modules connected to the CAN bus. A checkmark to the left of each module's serial number identifies that the module is active and communicating.

System components must be installed correctly and vehicle parameters entered into the IntelliAg system for effective operation.

Module Limits:

- Up to 16 seed sensors can connect to the Working Set Master
- Working Set Members can be added to monitor 18 rows each
- Up to 10 Working Set Members can be installed to monitor up to a total of 196 rows

**IMPORTANT: Place the master switch in the OFF position to access and input data into the SETUP/CONFIGURATION mode.**

If the current installation does not use a specific component (e.g., pressure sensors, hoppers, seed sensors) or if the module is not connected in the system, the module will not display on the screen.

### To Access Module Configuration Screen:

1. From the Main Work screen, press the **Module Configuration** button to access the Module Configuration screen.
  - A **Module Next Page** button will display if more than 12 modules are connected. Press the **Module Next Page** button to display additional modules.

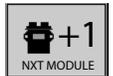
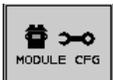


Figure 54

Module Configuration Screen

	SERIAL NUMBER	MODULE TYPE	MODULE ADDR.
✓	10052	WSMT - PDCGP	1
✓	10	WSMB2 - 18R	2
✓	10047	WSMB - CFM	3
✓	11131	WSMB - POM	4

Navigation buttons on the right side of the screen include: WORK SCR, AUTO CONFIG, ROW ASSIGN, HOP ASSIGN, ACC ASSIGN, and INFO.



## SERIAL NUMBER AND MODULE TYPE

Each module present on the CAN bus is identified by the serial number and module type. The module type corresponds to the identification on the serial number label attached to that module.

## CONNECTING SEED SENSORS TO WSMT/WSMB

- Each module address is determined by the order in which the modules are installed on the implement.
- Modules and their respective address should appear on the Module screen as installed on the implement.
- Seed sensors must be connected to the WSMT or WSMB continuously and consecutively. Any skipped rows will cause an alarm.

Example: Module Address 1 should be assigned to the module connected to Row 1. Module Address 2 should be assigned to the module connected to the next set of rows. The assigned numbering continues until all rows have been numbered.

## PERFORMING AN AUTO CONFIGURATION

The **Auto Config** button is an automated method of configuring the attached seed sensors and hopper sensors. To utilize the Auto Configuration function, all sensors must be connected to the appropriate modules in correct sequence.



### **Auto Config detects the following:**

- the presence of seed sensors, hopper, and pressure sensors connected to each module. The detected number of seed sensors for each module automatically appears in the # of Rows data items on the Seed Sensor Configuration screen.
- The detected number of hopper sensors are automatically entered in the # of Hopp data items on the Hopper Sensor Configuration screen.
- The detected number of pressure sensors are automatically entered in the # of ACC data items on the Accessory Sensors Configuration screen.
- Row #'s are automatically assigned based on the module address of each module.

The presence of a clutch folding module and planter output module is detected through the **Auto Config** button and will appear on the Module Configuration screen. Refer to CFM Installation Instructions for install and operating details.



### **To Perform an Auto Configuration:**

1. Press the **Module Configuration** button to access the Module Configuration screen.
2. Press the **Auto Config** button. An hour glass appears in the upper right corner while the system is configuring.



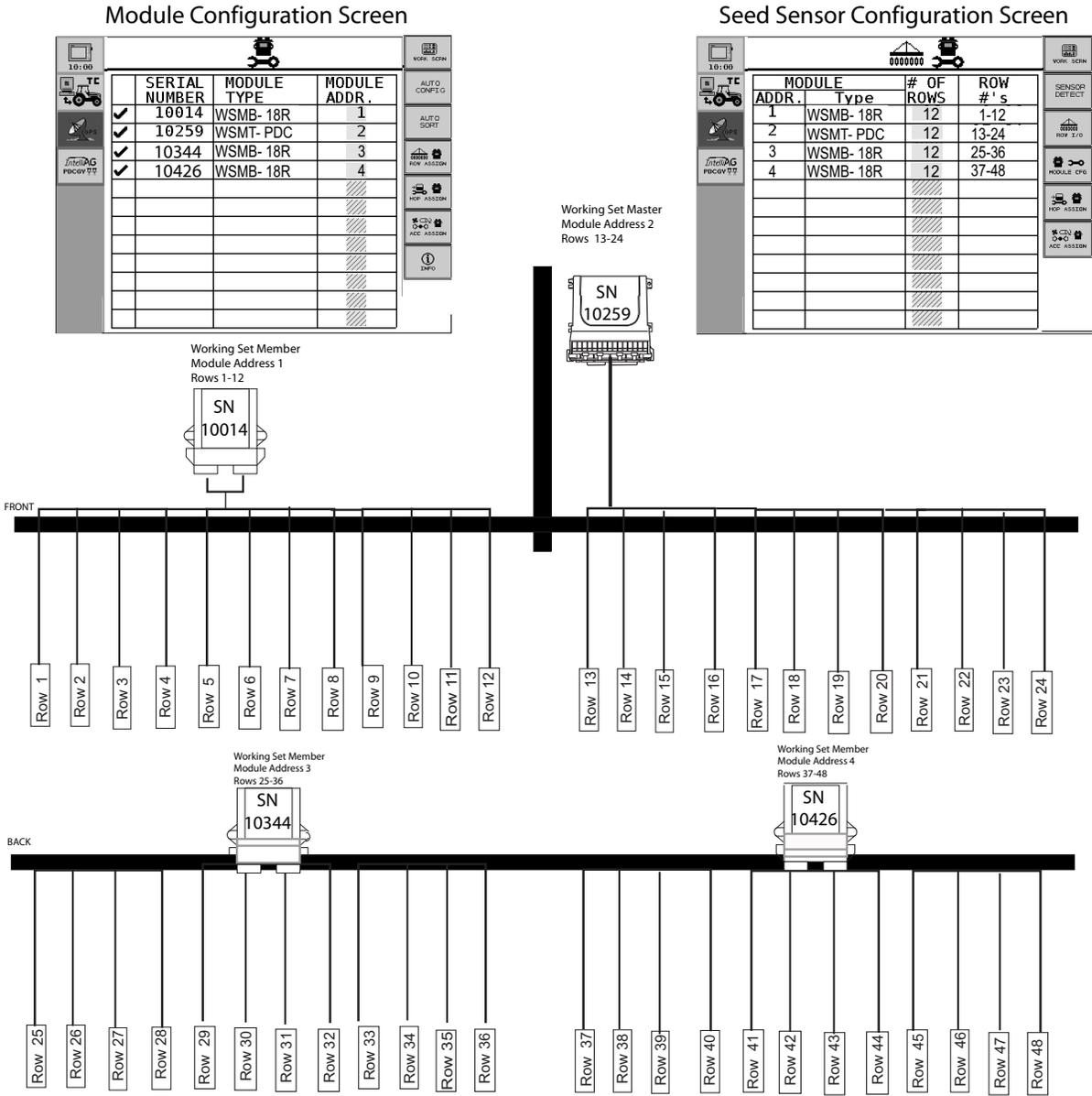




Figure 57 depicts a 48 row installation with the Working Set Master assigned to Module Address 2 and rows 13-24. Three Working Set Members are assigned to the additional rows.

Figure 57

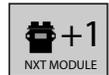
48 Row Installation Example







## SEED ROWS



The **Row Assignment** screen automatically populates with the module address and module type entered at the Module Configuration screen. An Auto Configuration performed at the Module Configuration screen automatically populates the # of Rows column as detected by the modules. If the # of Rows column is correct, no further action is required.

1. Press the **Row Assignment** button to access the Row Assignment screen.

*TIP: A **Module Next Page** button will display if more than 12 modules are connected. Press the **Module Next Page** button to display additional modules.*

**Figure 58**

**Row Assignment Screen**

MODULE ADDR.	Type	# OF ROWS	ROW #'s
1	WSMT-PDCGY	12	1 - 12
2	WSMB - 18R	18	13 - 30

### To Edit Number of Rows:

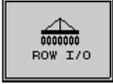
The # of Rows column displays the total number of seed sensors that are connected to each module.

**NOTE:** Only modules that support seed sensors display on the **Row Assignment** screen.



1. Enter the number of rows to be assigned to each module.
2. Press the **Sensor Detect** button to detect and test seed sensors. An hour glass will appear in the upper right corner while the sensors are tested.
3. If the number of sensors detected on each module is not in agreement with the # of Rows value entered, an alarm will activate.
  - Verify that the # of sensors entered on the Row Assignment screen match the actual number of sensors connected to the appropriate module.
  - Confirm that all harnessing and sensors are connected properly.

Refer to the Troubleshooting section for further information.



## ROW STATUS/ROW WIDTH SETUP

The **Row Setup** screen controls the rows that are monitored and the distance between rows and implement width.

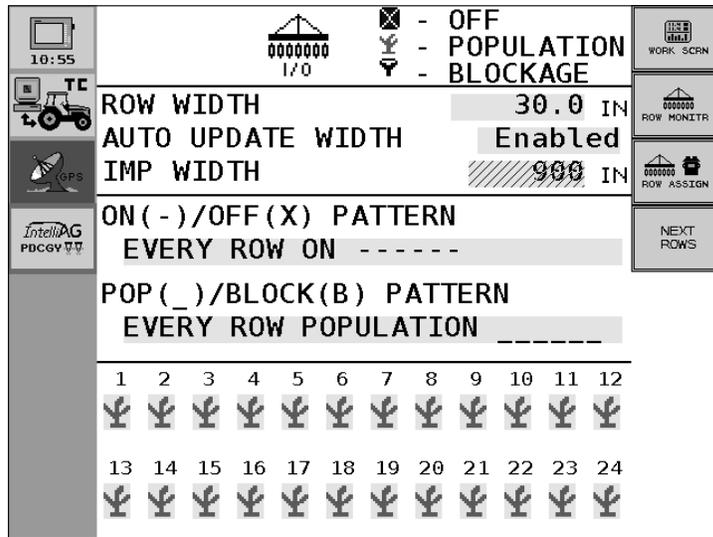
Individual rows can be set to ON or OFF. Any detected row can be set to OFF. Rows set to OFF will remain OFF until they are turned ON again or are set to ON through the Pattern Select. Rows set to OFF are ignored by the system and will not report seed data or react to row failures.

1. Press the **Row Setup** button to access the Row Status/Row Width Setup screen.

**NOTE:** The Next Rows button is only present if more than 24 rows are configured.

**Figure 59**

**Row Status/Row Width Setup Screen**



### ROW WIDTH

Row Width is used for seed rate data and control calculations and is the distance in inches (centimeters) between rows with a resolution of 0.1. This value updates automatically with changes in the On/Off Pattern Setting option if the Auto Update Width option is set to Enabled.

### AUTO UPDATE WIDTH

Auto Update Width automatically updates the Row Width and Implement Width settings when changes are made to the Pattern Setting option.



*NOTE: Depending on the configured number of rows, some On/Off pattern settings can result in erroneous row width or implement width updates if the Auto Update Width is enabled. Always check the calculated values for accuracy when the Auto Update Width is enabled. If the adjusted values are not correct, disable the Auto Update Width feature and manually enter a row width and implement width.*

There are two choices available for this option:

## **ENABLED**

Row Width and Implement Width settings automatically adjust with ON/OFF pattern setting changes.

The following example use a 16 row planter set for 15.0 inch row width. Implement width is automatically calculated as 240.0 inches.

*Example:* The On/Off Pattern Setting is changed to every other row (even rows) OFF. The row width parameter adjusts to 30.0 automatically. The implement width calculated value remains unaffected at 240.0 inches.

## **DISABLED**

The Row Width and Implement Width values will not be adjusted with changes to the ON/OFF Pattern Setting. Implement Width will not be automatically calculated and must be manually entered.

## **IMP WIDTH**

Implement Width is the seeding width of the implement in inches (centimeters) with a resolution of 0.1. This value is used for Total, Field 1/ Field 2 area accumulators only and does not affect seed rate data. Implement width automatically calculates as described in Auto Update Width if the feature is enabled. If Auto Update Width is disabled, manually enter the implement width.

## **ON/OFF PATTERN**

For split or skip row type seeding implements there are 3 predefined patterns to configure row patterns. When a row pattern is selected, all of the rows are automatically turned ON or OFF according to the pattern. Individual rows at the Row Setup screen can still be manually edited to Population, Blockage, or Off before or after a pattern is selected. The pattern setting, when selected, will override previous individual existing row settings.



**Figure 60**

**Pre-Defined On/Off Patterns**

Every Row On           - - - - -  
 Every 2nd Row Off   - X - X - X  
 Every 2nd Row On   X - X - X -

ON/OFF Pattern Symbols	
Rows turned ON =	—
Rows turned OFF =	X

**BLOCKAGE PATTERN**

Blockage Pattern determines which sensors are used to calculate population and those used only for blockage detection. Depending on the customer's preference at the time of purchase, either all Hy Rate sensors, all blockage flow sensors, or a combination of the two can be chosen.

**The system can be configured for:**

- Every Row Population ( \_ \_ \_ \_ \_ )  
Using all Hi Rate sensors
- Every Row Blockage (BBBBBB)  
Using all blockage flow sensors
- Every 2nd Row Block ( \_ B \_ B \_ )  
Even rows use blockage and odd rows use Hi Rate
- Every 2nd Row Pop ( B \_ B \_ )  
Even rows use Hi Rate and odd rows use blockage
- Custom  
Allows customizing each sensor as population, blockage, or off

**Row Icons**

Population =

Blockage =

OFF = X

**Pattern Definitions**

Blockage = B

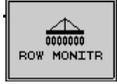
Population = -



## ROW MONITOR SETUP

The **Row Monitor Setup** screen controls the parameters for:

- Material Name - monitor only
- High alarm delay
- Low alarm delay
- Population adjustment
- Population filter
- Row fail rate

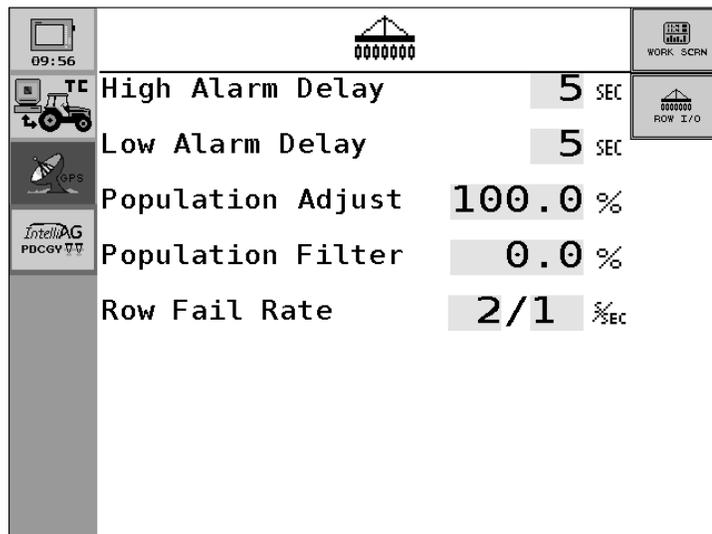


1. From the Main Work screen, press the **Row Monitor Setup** button to access the Row Monitor Setup screen.

**NOTE:** A material name will display on the Row Monitor Setup screen only when ALL seeding control channels are disabled, no seed rows are assigned to channels, and material is set for Monitor Only.

**Figure 61**

**Row Monitor Setup Screen**



**IMPORTANT:** For ground drive/nonhydraulic applications using the planter monitor only feature, all seeding control channels must be disabled, no seed rows assigned to these channels, and a Material Name selected at the Row Monitor Setup screen. Reference the Material Setup-Monitor Only section for additional information.

### MATERIAL NAME

Material Name only displays if there are **NO** seeding channels enabled and no rows assigned to these channels. The Monitor Only selection must be selected at the Material Configuration Setup screen.



*NOTE: Population is updated every 5 seconds. Setting the Alarm Delay for under 5 second intervals does not provide any delay at all.*

## HIGH ALARM DELAY

The High Alarm Delay establishes the delay between the detection of a High Population Alarm condition and the resulting alarm display. The value is entered in seconds. If the value is set to 10, a row must be in a High Population Alarm condition continuously for 10 seconds before the alarm will be issued.

## LOW ALARM DELAY

The Low Alarm Delay establishes the delay between the detection of a Low Population Alarm condition and the resulting alarm display. The value is entered in seconds. If the value is set to 10, a row must be in a Low Population Alarm condition continuously for 10 seconds before the alarm will be issued.

## POPULATION ADJUST

The Population Adjustment percentage scales the displayed population value to allow for inaccuracies with seed sensors in certain applications. This is a multiplier of the monitored population value. For true calculated results, the value should be set to 100.0%. If the monitored value is reading low, the value can be increased above 100.0% to achieve the desired population display. The displayed value is calculated by the monitored value x population scalar.

$$\frac{(\text{Actual Population} - \text{Monitor Population}) \times 100}{\text{Monitor Population}}$$

## POPULATION FILTER

The Population Filter value is used to stabilize the monitored population display. For a true population value, this number should be set to 0.0%. 0.0 is no filtering at all. 99 is the highest level of filtering available. Set the filter to meet the appropriate level of filtering for your specific use.

## ROW FAIL RATE

The Row Fail Rate value sets the threshold for Row Failure alarms. The value is entered in seeds per second. Both values are adjustable, allowing for numerous combinations. The default value is 2/1, which indicates a row failure threshold of 2 seeds in 1 second.



## ACCESSORIES

### HOPPER ASSIGNMENT

The **Hopper Assignment** screen displays:

- Module address
- Type
- Number of hoppers
- Hopper numbers for the system

**To Assign Hoppers:**

1. At the Module Configuration screen, press the **Hopper Assignment** button to access the Hopper Assignment screen.

**Figure 62**

**Hopper Assignment Screen**

MODULE ADDR.	Type	# OF HOPP	HOPP #'s
1	WSMT-PDCGY	5	1 - 5

The following data items can be edited:

**IMPORTANT:** The # of Hopp data items for each listed module and the Hopp #'s value automatically populates if Auto Config is used to configure the installed sensors.

### # OF HOPPERS

The # of Hopp column displays the total number of hopper sensors that are connected to each module. The HOPP #'s value is automatically configured for proper numbering sequence for each module based upon the module address value when an Auto Config is performed.

*NOTE: Only modules that support hopper sensors display on the **Hopper Assignment** screen.*



### To Edit # of Hoppers:

1. Enter the number of hoppers assigned for each module.
2. Press the **Sensor Detect** button to detect and test the hopper sensors. An hour glass appears in the upper right corner during system configuration.
3. If the number of sensors detected on each module is not in agreement with the # of Hopper values entered, an alarm activates.
  - Verify that the # of sensors entered on the Hopper Assignment screen matches the actual number of sensors connected.
  - Confirm that all hopper sensor harnessing is connected properly.

Refer to the Troubleshooting section for further information.

## HOPPER SET

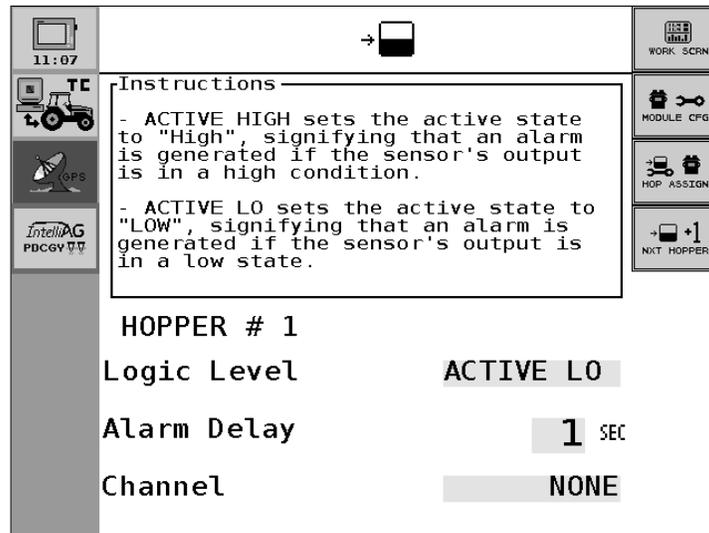


The **Hopper Set** screen controls the active state of the hopper sensor as well as the alarm delay time.

1. Press the **Hopper Set** button to access the Hopper Set screen.

**Figure 63**

**Hopper Set Screen**



### LOGIC LEVEL

Logic Level sets the active state of the sensor and allows flexibility to connect sensors that have different active outputs. There are two settings available:

**NOTE:** For a Dj Hopper Level sensor, this value should be set to ACTIVE LO.

### ACTIVE HIGH

- Sets the active state to "High" signifying that an alarm is generated if the sensor's output is in a high state. Use this setting if the connected sensor outputs a high condition when active.





## # OF PRESSURE/RPM SENSORS

The Number (#) of Pressure/RPM column displays the total number of RPM or pressure sensors that are connected to each module. When a pressure or RPM Sensor is entered into this column, the proper sensor numbering sequence for each module is automatically entered into the Pressure/RPM #'s column based upon the module address value.

## RPM SENSORS

If an RPM sensor is installed, the number of RPM sensors is manually entered on the Accessory Sensor screen in the # of RPM column.



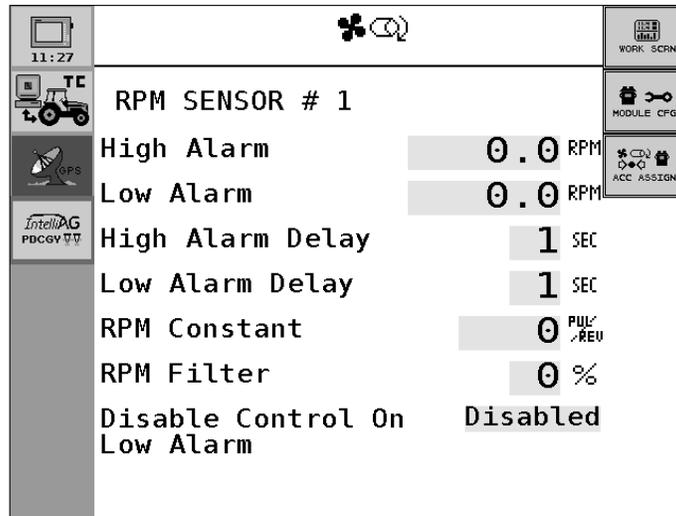
**IMPORTANT: Performing an Auto Config does not detect installed RPM sensors.**

### To Set RPM Sensor Parameters:

1. Press the **RPM Setup** button to access the RPM Setup screen.

Figure 65

RPM Setup Screen



*NOTE: Only modules that can support accessory sensors are displayed on the Accessory Assignment screen.*

### HIGH ALARM

The High Alarm option sets the RPM value at which a high RPM warning error is generated. The value is entered in RPM.

### LOW ALARM

The Low Alarm option sets the RPM value at which a low RPM warning error is generated. The value is entered in RPM.

### HIGH ALARM DELAY

The High Alarm Delay establishes the delay between the detection of a high RPM alarm condition and the resulting alarm display. The value is entered in seconds.



## **LOW ALARM DELAY**

The Low Alarm Delay establishes the delay between the detection of a low RPM alarm condition and the resulting alarm display. The value is entered in seconds.

## **RPM CONSTANT**

The RPM Constant is the number of pulses per shaft revolution. If the sensor is mounted directly to the shaft, the value will be the number of pulses generated by the sensor per revolution of the shaft itself. If the sensor is mounted elsewhere, a gear or sprocket ratio must be calculated and entered into the RPM constant.

## **RPM FILTER**

The RPM filter value is used to filter the signal out of the RPM sensor. Typically no filtering is required so the standard value is set at 0%. If the RPM readout on the Main Work screen is oscillating in excess of 10%, increasing the filter value will filter the signal to reduce the oscillation. For a true RPM value this number should be set to 0%.

## **DISABLE CONTROL ON LOW ALARM**

The setting for Disable Control on Low Alarm shuts down ALL active control channels if the RPM value of the selected sensor falls below the low alarm level setting.

The two settings include:

- **ENABLED** allows the control channels to be shut down when the RPM value falls below the low warning setting.
- **DISABLED** will disable the function. The control channels continue to operate normally regardless of the RPM value. However, when the low RPM state occurs, the information alarm still occurs.



## PRESSURE SENSORS

If a pressure sensor is installed, the number of pressure sensors detected is entered on the Accessory Sensor screen in the # of Press column.

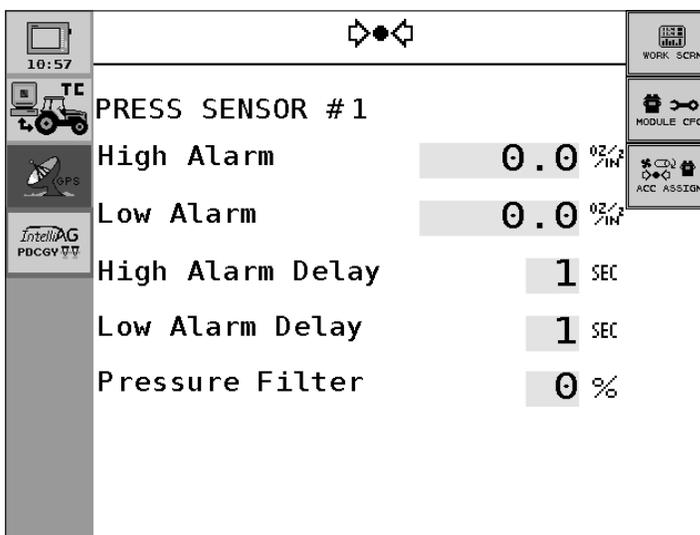
*TIP: Press the Sensor Detect button at anytime to detect and test seed sensors. An hour glass appears in the upper right hand corner while the sensors are tested.*

### To Set Pressure Sensor Parameters:

1. At the Accessory Sensor screen, press the Pressure Setup button.
2. Enter the pressure sensor parameters as defined below.

**Figure 66**

**Pressure Setup Screen.**



### HIGH ALARM

The High Alarm option sets the pressure value at which a high pressure warning error is generated. The value is entered in oz/in<sup>2</sup>.

### LOW ALARM

The Low Alarm option sets the pressure value at which a low pressure warning error is generated. The value is entered in oz/in<sup>2</sup>.

### HIGH ALARM DELAY

The High Alarm Delay establishes the delay between the detection of a high pressure alarm condition and the resulting alarm display. The value is entered in seconds.

### LOW ALARM DELAY

The Low Alarm Delay establishes the delay between the detection of a low pressure alarm condition and the resulting alarm display. The value is entered in seconds.



## **PRESSURE FILTER**

The Pressure Filter value filters the signal out of the pressure sensor. Typically no filtering is required and therefore the standard value is set at 0%. If the pressure readout on the Main Work screen is oscillating in excess of 10%, increasing the filter value filters the signal to reduce the oscillation. For a true pressure value this number should be set to 0%.





## PHYSICAL LAYOUT (IMPLEMENT)

**NOTE:** The following functionality is specific to those systems using Task Controller. Systems with no file server or task controller functionality will not have the below features.

Physical layout of the implement is required to determine the position of a channel in the field. Configuring an implement identifies the implement type, area the implement covers, and any implement offset. Exact distances are required for physical layout of the implement. For those systems using Task Controller, both X and Y coordinate entries are required for GPS navigation and field area accumulators.

The physical layout of planter center is calculated by measuring the distance from the center of the row units to the hitch pivot point connection.

**TIP:** Position of coordinates to the hitch/GPS receiver point determines if the number is entered as positive or negative.

**IMPORTANT: A Control Channel Type must be established first before implement coordinates can be entered. A channel type established as an RPM Control will not allow entry of x, y coordinates.**

### To measure X/Y Coordinates:

- Stand behind the implement facing tractor.
  - X coordinate:
    - Measured from the hitch pivot point to where the seed is placed in the ground, i.e. bottom of seed tube, and entered as a negative entry (-X). This measurement should be entered for each control channel enabled.
  - Y coordinate:
    - Channels to the left of hitch pivot point are entered as a negative entry (-Y).
    - Channels to the right of hitch pivot point are entered as a positive entry (Y).

**Figure 67**

### 32 Row Planter 2 Control Channels X/Y Coordinate Example

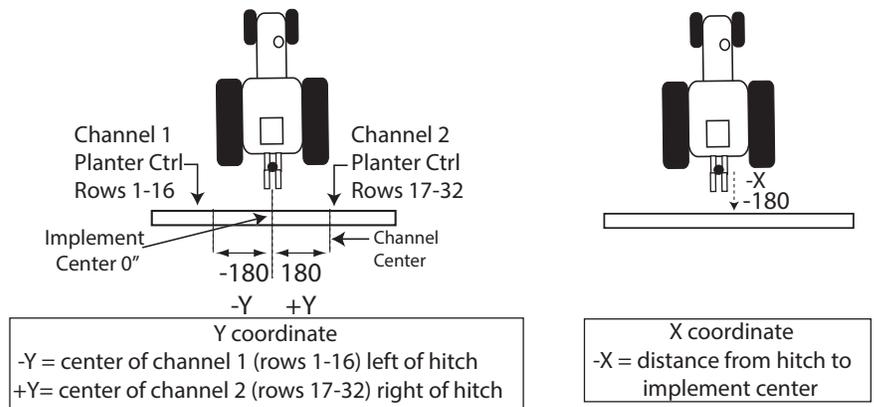
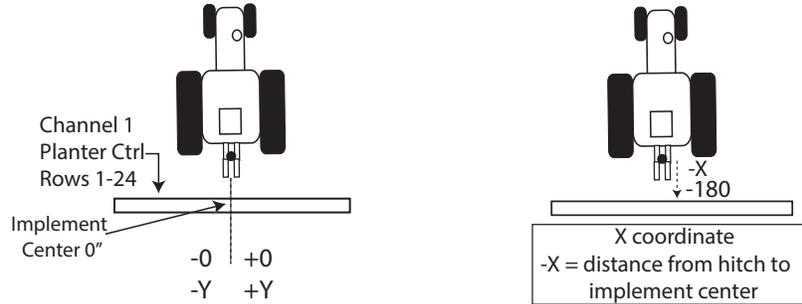




Figure 68

24 Row Planter 1 Control Channel X / Y Coordinate Example

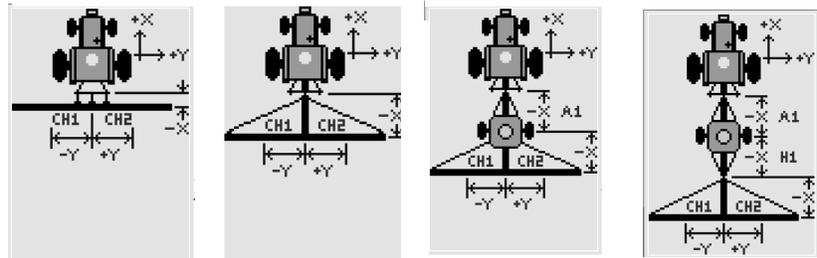


**IMPORTANT:** It is critical to enter the exact distances required when setting up the physical layout of the implement position. Do not guess; use a tape measure to find exact measurements. Failure to enter accurate measurements of the implement control channels will impact the system's performance to shut row sections off at the proper location within the field.

- At the Physical Layout screen, press the implement graphic box and select the implement type used that matches equipment.

Figure 69

Select Implement Type



3-Point Hitch      Towed Hitch      Rigid-Cart Mount      Tow-Behind Cart

- Enter in the table each channel's X and Y coordinates. X and Y coordinate measurements will vary based on the implement type selected.

**NOTE:** When operating with only 1 control channel, the "Y" value on the Physical Layout screen should remain at 0 unless the implement is offset left or right of center.

**IMPORTANT:** If there are no rows assigned to a control channel, such as operating in Monitor Only mode, a row column appears on the Physical Layout screen and rows must be assigned an offset.



### 3 POINT HITCH AND TOWED HITCH

Figure 70

Physical Layout Screen-2 Channel Assignment (3 Point Hitch and Towed Hitch)

Select Implement Type

Implement Table appears showing channel assignment as XY coordinates are entered for two or more channels

X = distance back to center  
Y = left/right of center

Note: Pay attention to +/-

	Ch 1	Ch 2	Ch 3	Ch 4
X IN	0	0		
Y IN	- 180	180		

Enable ISO Section Con

Enter XY coordinates for each enabled channel

### RIGID CART MOUNT

NOTE: Enable ISO Section Control should remain checked when running a task and controlling sections.

An additional -X coordinate measurement from hitch to cart axle is entered in (A1) table.

Figure 71

Physical Layout Screen - 2 Channel Assignment (Rigid Cart Mount)

X = distance back to center  
Y = left/right of center

Note: Pay attention to +/-

	Ch 1	Ch 2	Ch 3	Ch 4
X IN	0	0		
Y IN	- 180	180		

Enable ISO Section Con

A1 Hitch to cart axle measurement

	A1
X IN	- 180

Control channel over lap (Y coordinates are not correct)

Correct control channel alignment (Y coordinates entered correct)



## TOW-BEHIND CART

Two additional -X coordinate measurements from hitch to cart axle entered in (A1) and cart center to implement hitch (H1).

**NOTE:** Enable ISO Section Control should remain checked when running a task and controlling sections.

**Figure 72**  
**Physical Layout Screen (Tow-Behind Cart)**

X = distance back to center  
Y = left/right of center

Note: Pay attention to +/-

	A1	H1			
X IN	-180	0			
	Ch 1	Ch 2	Ch 3	Ch 4	
X IN	0	0			
Y IN	-180	180			

Enable ISO Section Con

4. To view implement layout, press the **Physical Check** button.



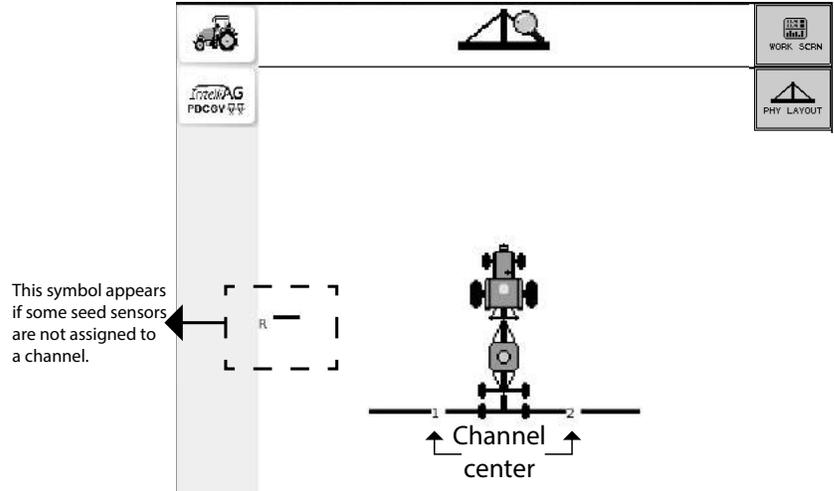
## PHYSICAL CHECK

The Physical Check screen visually displays the implement layout and control channel center as entered on the Physical Layout screen. Use this screen to verify channels are setup correctly.

(Figure 73) depicts channel 1 and 2 setup in a correct format.

**Figure 73**

**Physical Check Screen Correct Setup**

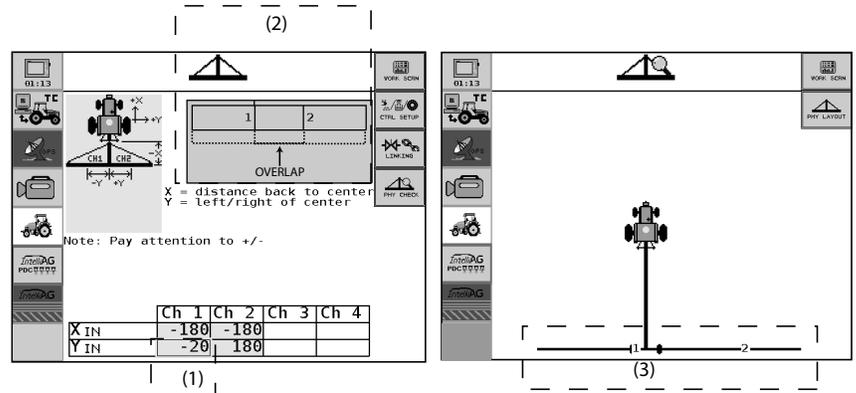


(Figure 74) depicts an incorrect Y channel setup:

1. Y coordinate for channel 1 entered incorrectly.
2. Control channel graphic (gray box) shows that channel 1 and 2 are not aligned correctly and overlap.
3. Physical check screen provides another visual of actual control channel center for ch 1 that is incorrectly aligned and overlapping ch 2.

**Figure 74**

**Physical Check Screen Incorrect Setup**





## LINKING CHANNELS AND RATES

Control channels can be linked together so that rates can be increased or decreased simultaneously and turned on or off simultaneously during operation at the Main Work screen.

- Rate table links channels and rates
- On/Off table links channels to turn on/off simultaneously

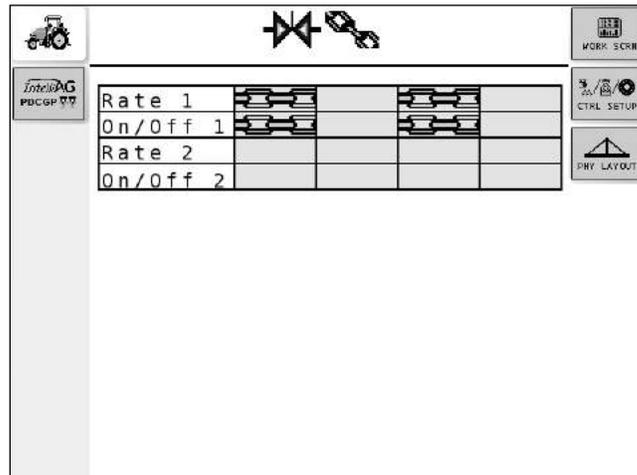
(Figure 75) depicts channels 1 and 3 linked together to control rates and turn the Channels on and off simultaneously.

### To Link Channels/Rates:

1. At the Physical Layout screen, press the **Linking** button.
2. Press inside the boxes to display the link symbol and select to link the channels.

**Figure 75**

**Linking Channels and Rates**





## GROUND SPEED SETUP



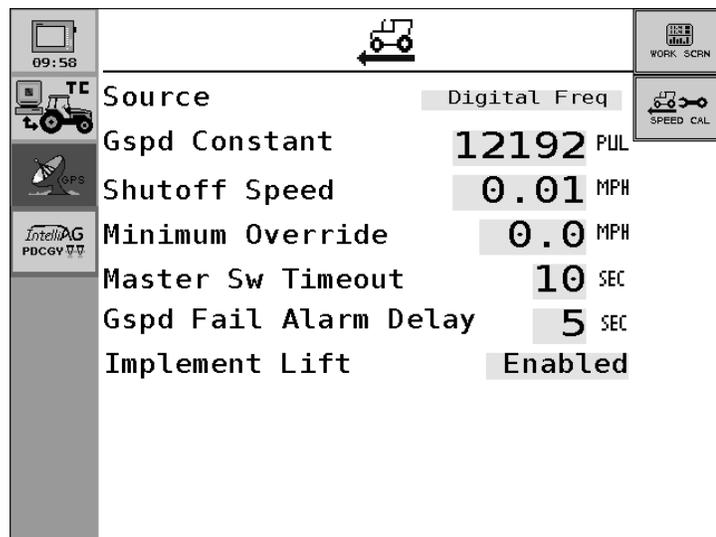
Ground Speed Setup requires selecting a ground speed source, setting speed parameters, and performing a calibration.

### To Select a Ground Speed Type:

1. At the Main Work screen, press the **Speed Set** button.
2. On the Speed Setup screen, enter ground speed parameters as defined below.

Figure 76

Ground Speed Setup Screen



### SOURCE

Source selects the type of ground speed sensor used and where the sensor's input is on the system.

### MANUAL

Sets the system to operate using a constant, internally generated ground speed. No ground speed sensor is required when using the Manual setting.

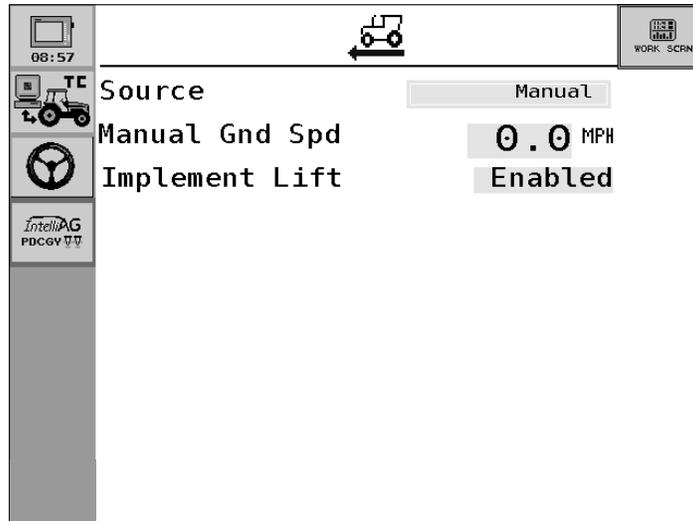
**No area accumulation will occur when speed source is manual.**

Manual Ground Speed can be used in the event of a failure of the ground speed sensor being used. This is a constant, internally generated ground speed that will cause the system to operate when the master switch is ON at the speed that has been programmed. This value can be set to any speed within the delivery capabilities of the system.



Figure 77

## Manual Ground Speed



### RELUCT FREQ

Used when ground speed is provided by a reluctance (2-wire) type sensor connected to the actuator harness through an adapter harness.

### DIGITAL FREQ

Used when ground speed is provided by a radar/digital (3-wire) type sensor connected to the actuator harness.

### CAN GROUND

Used when ground speed is provided by a radar/digital (3-wire) type sensor connected to the cab harness or if radar/forward ground speed is communicated on the CAN bus.

### CAN WHEEL

Used when wheel speed data is communicating on the CAN bus. This source does account for slip-like CAN ground.

### GSPD CONSTANT

Ground Speed Constant is the value representing the pulse count produced by the ground speed sensor over a 400' distance. Refer to Ground Speed Calibration for additional information.

### SHUT OFF SPEED

Shut Off Speed indicates the minimum ground speed allowed before the system shuts off all control channels.

### MINIMUM OVERRIDE

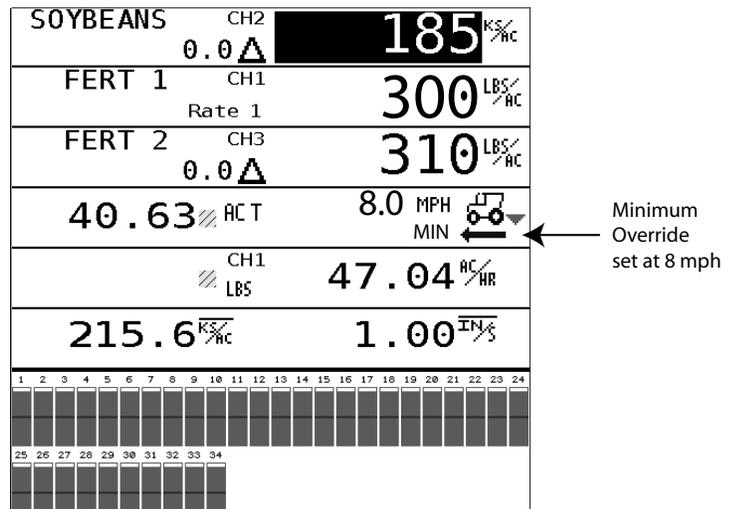
Minimum Override takes over when actual ground speed is below the designated value. The control will operate at this speed until actual ground speed rises above the minimum override speed or the actual speed drops below the shutoff speed.

*NOTE: Manual ground speed can only be entered if the source is changed to MANUAL.*



**Figure 78**

**Minimum Override**



## MASTER SW TIMEOUT

Master Switch Timeout determines the length of time before the system disables the operate function after ground speed is 0 (zero) if the master switch remains in the ON position. After the delay time elapses, an alarm is issued stating that the master switch must be toggled OFF/ON before the system will restart.

## GROUND FAIL ALARM DELAY

Alarm Delay determines the length of time after the ground speed goes to zero and seed flow continues before the alarm sounds. This alarm only applies when all control channels are disabled and the system is running in a Planter Monitor Only mode.

## PRECHARGE GROUND SPEED

Precharge Ground Speed is the speed the system will use when Precharge has been enabled for a control channel and Precharge Ground Speed greater than 0 must be entered to operate.

## FLUSH ENABLE SPEED

Flush Enable Speed is the speed the system will use when Flush Enable is pressed to open the valve and dispense material. The Flush Enable feature can only be activated when the implement is stopped.

## IMPLEMENT LIFT

If an implement lift switch is used, the implement lift status must be enabled. While operating, an alarm condition will occur if the Master Switch is off for more than 5 to 10 seconds, the implement is down, and ground speed is greater than zero. An **Alarm Cancel** button allows the alarm to be deactivated during the current power cycle. If an implement lift switch is not required, this function should be disabled.



**NOTE:** Older DICKEY-john ground speed calibrations had a default value of 6096, which is the nominal pulse count for the radar speed sensor. ISO ground speed calibration has a default value of 12,192. To convert older DICKEY-john ground speed constants, multiply the recorded value by two for an approximate ISO conversion.



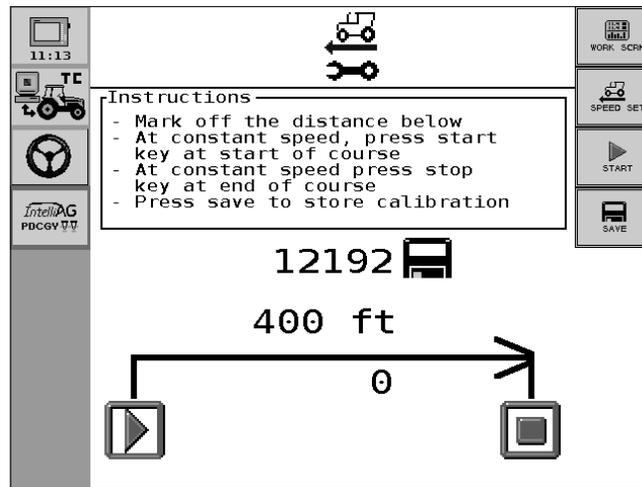
## GROUND SPEED CALIBRATION

Ground speed is the rate in MPH (Km/h) as measured by the ground speed sensor. The number reflects the number of pulses generated by the ground speed sensor while traveling a distance of 400 feet (100 meters).

**IMPORTANT: Performing a ground speed calibration directly influences population, area accumulation, and application rate control and is recommended.**

**Figure 79**

**Ground Speed Calibration Screen**



### To Perform the Initial Ground Speed Calibration:

1. Measure a 400 foot course marking start and finish points.
2. Press the **Speed Calibration** button to open the Calibration screen.
3. Drive tractor a constant speed within the range of 2-5 mph and press the **Start** button at the start of the 400 foot course to begin calibration. The display showing the ground speed calibration will zero and begin counting ground speed pulses.
4. Press Stop button at the end of the 400' course. The new calibration number displays on the center of the screen.

**TIP:** For better accuracy, run this course 3 times and average the 3 calibration numbers. Enter the averaged number and Main Ground Speed Constant.

5. Enter the average calibration number.
6. **Save** the desired settings.



## SUMMARY SCREEN



The Summary screen provides direct access to setup screens for active control channels.

Press inside each box to access a setup screen for the following:

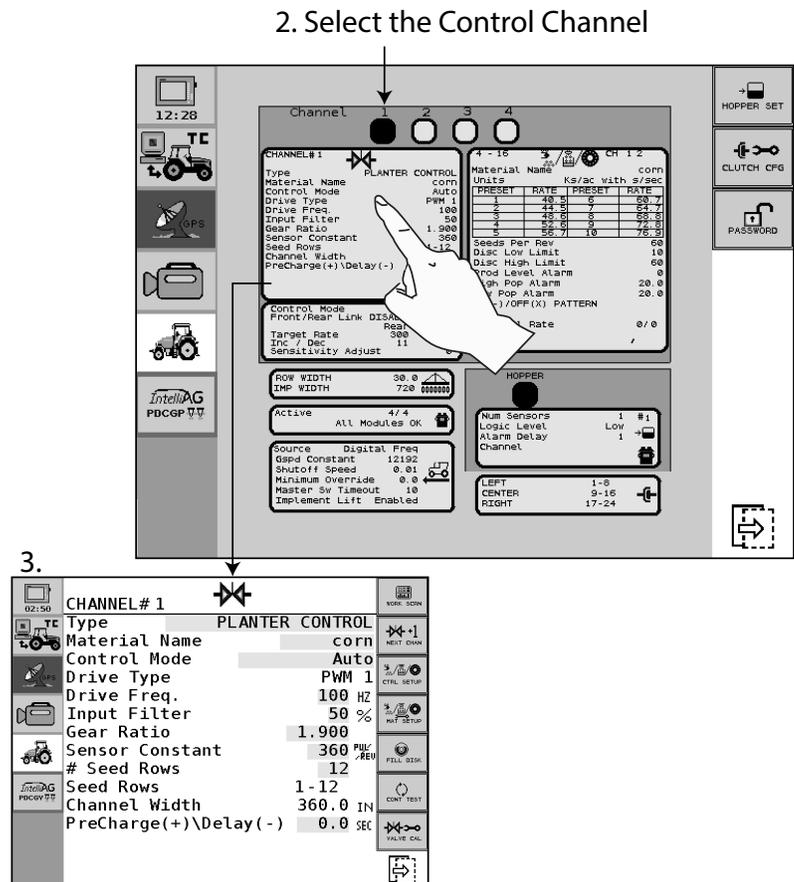
- Channel Setup
- Material Setup
- Row Monitor
- Module Configuration Setup
- Speed Set
- Hopper, Pressure, RPM Setup
- Down Pressure

### To View Summary Screen:

1. At the Main Work screen, press the **Summary** button to access the Summary screen.
2. Select the Control Channel button to display the respective channel's setup screens.
3. Press the box to open the setup screen.

Figure 80

Summary Screen







## MASTER SWITCH ASSIGNMENT

### 12" VT AUX INPUT/FUNCTION ASSIGNMENT

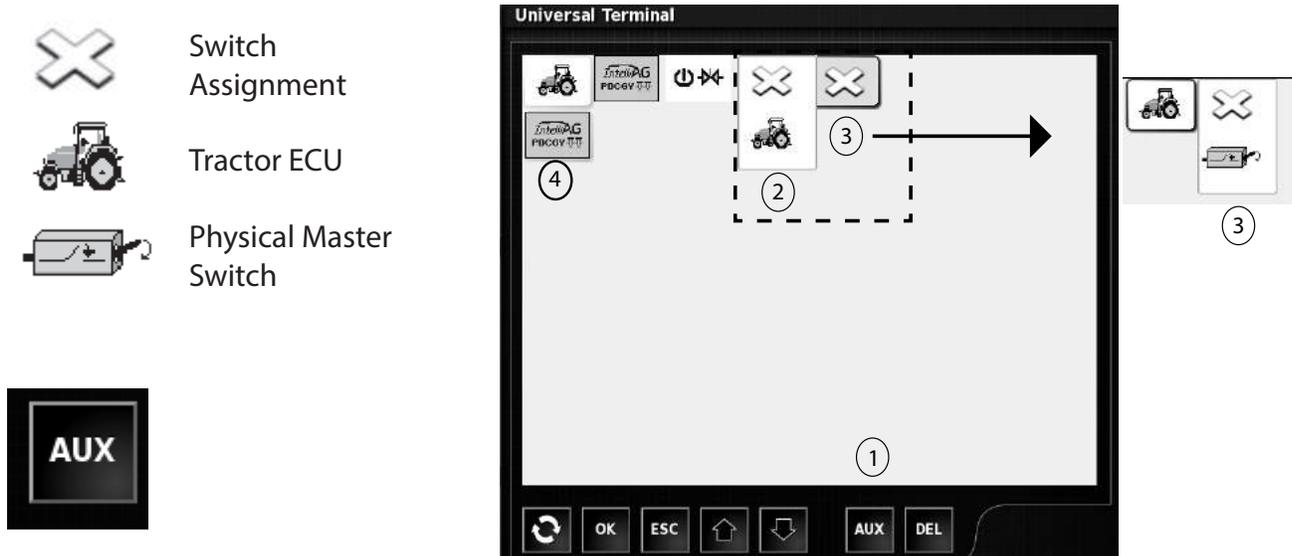
The Auxiliary Input/Function Assignment screen configures the system's master switch input to the TECU so that it will work with the IntelliAg control function.

**IMPORTANT: On initial powerup, a Master Switch Assignment alarm activates requiring a switch assignment. If the master switch is not configured, the Master Switch Assignment alarm will activate at each power cycle until an auxiliary assignment is made and will default to the Master Switch button to activate auxiliary inputs.**

An installed master switch located in the tractor cab is the preferred method for auxiliary input; however, a **Master Switch** button will be assigned and appear on the Work Screen if no physical switch assignment is made.

**Figure 81**

#### Auxiliary Master Switch Assignment



#### To Assign a Physical Master Switch:

1. Press the **AUX** button located on the lower half of display.
  - Several buttons appear on screen, however, only the two “X” buttons are pressed to enable a physical master switch.
2. Press the left “X” button to display the drop down **Tractor** button.
  - Press the **Tractor** button. The button must be pressed first before the right “X” button will work.
3. Press the right “X” button to display the drop down **Physical Switch** button.
  - Press the **Physical Switch** button to enable physical switch.
4. Press the **IntelliAg** button to return to IntelliAg screens.



## 10" VT AUX INPUT/FUNCTION ASSIGNMENT

### To Assign the Master Switch to the IntelliAg:

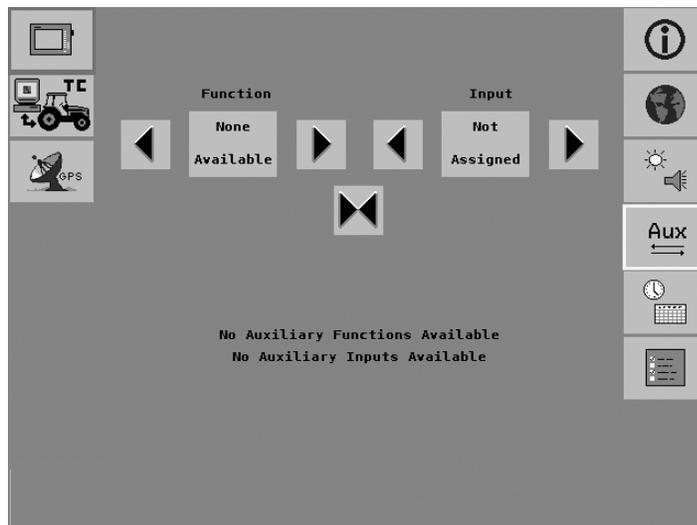
1. Press the **VT** button.
2. Press the **Auxiliary Assignment** button.
3. At the Function box, use the right or left arrows to select the desired function (Control Channel icon).
4. At the Input box, use the right or left arrows to select the desired input (Tractor ECU master switch).
5. Press the **Enter** button to accept.

**No Auxiliary Inputs Available** appears on the screen if the Tractor ECU is not connected. When assigned, this line will disappear.

**No Auxiliary Functions Available** appears on the screen if the IntelliAg system is not connected. When assigned, this line will disappear.

**Figure 82**

*Aux Input/Function Assignment Screen*



**NOTE:** For Virtual Terminals other than DICKEY-john, refer to the manufacturer's VT operator's manual for auxiliary assignment.

## 5" VT AUX INPUT/FUNCTION ASSIGNMENT

The Auxiliary Input/Function Setup screen configures the location of the system's master switch. For proper assignment, the master switch must be configured correctly.

An installed master switch located in the tractor cab is the preferred method for auxiliary input; however a **Master Switch** button on the Virtual Terminal is available if there is no master switch installed in the cab.

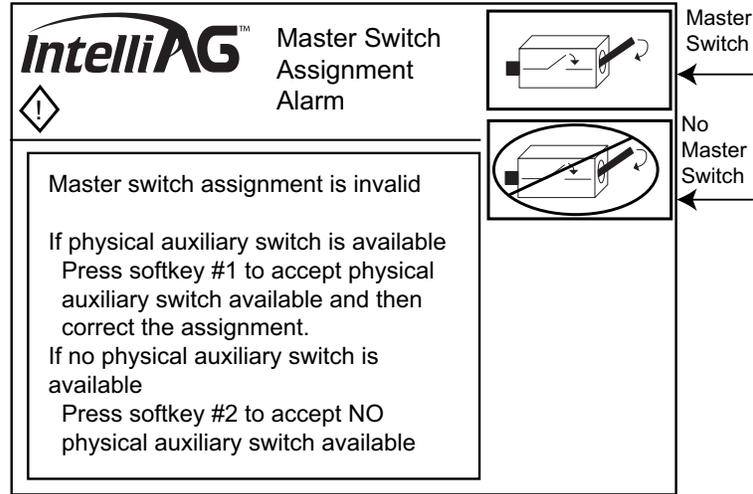
On initial powerup, a Master Switch Assignment alarm activates requiring action (Figure 83).

- Press either the **Master Switch** button or
- Press the **No Master Switch** button



Figure 83

**Master Switch Assignment Alarm**



**IMPORTANT:** If the master switch is not configured, the master switch Assignment Alarm will activate at each power cycle until an auxiliary assignment is made and will default to the master switch button to activate auxiliary inputs.

**MASTER SWITCH ASSIGNED**

If assigning a master switch, the Virtual Terminal must be configured to acknowledge the assignment.



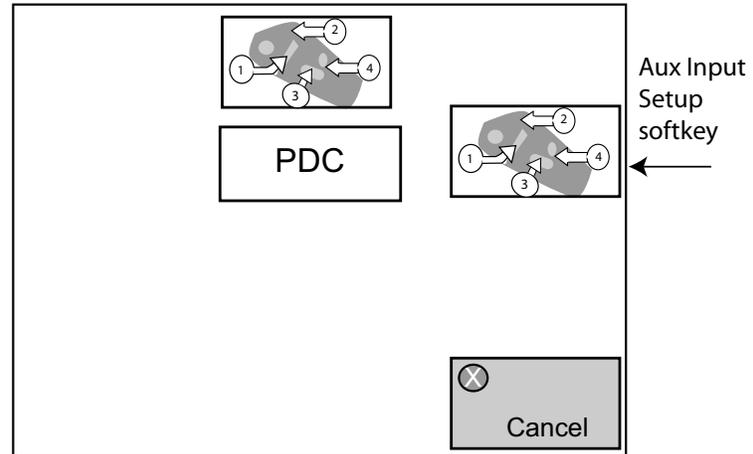
**To Configure an installed master switch:**

1. Press the **ESC** key 2 times to activate the Virtual Terminal Setup screen.
2. Press the **Auxiliary Input/Function Setup** button to access the Auxiliary Input/ Function Setup screen (Figure 84).



Figure 84

**Auxiliary Input/Function Setup Screen**

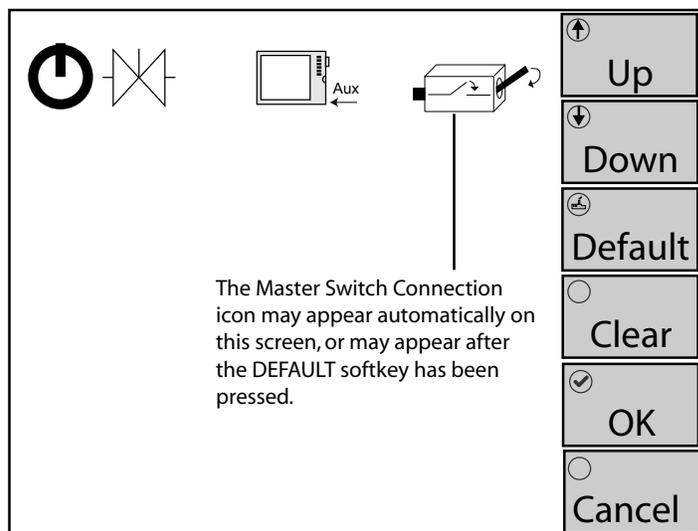




3. Navigate to the configuration screen by pressing the **Auxiliary Input Setup** button.
4. Press the **Default** button. A Master Switch Connection icon will appear on the screen indicating that the master switch is to be connected to the tractor cab harnesses' master switch connector (refer to [Figure 85](#)).
5. Press the **OK** button to save the configuration and return to the Aux Input/Function Setupw screen.
6. Press and hold the **ESC** button for one or more seconds to return to the Virtual Terminal Setup screen.

**Figure 85**

**Aux Input Configuration Screen**





**NO MASTER SWITCH ASSIGNED**

When the No master switch icon is pressed, the Virtual Terminal assigns a master switch button to function as the auxiliary on and off keys.

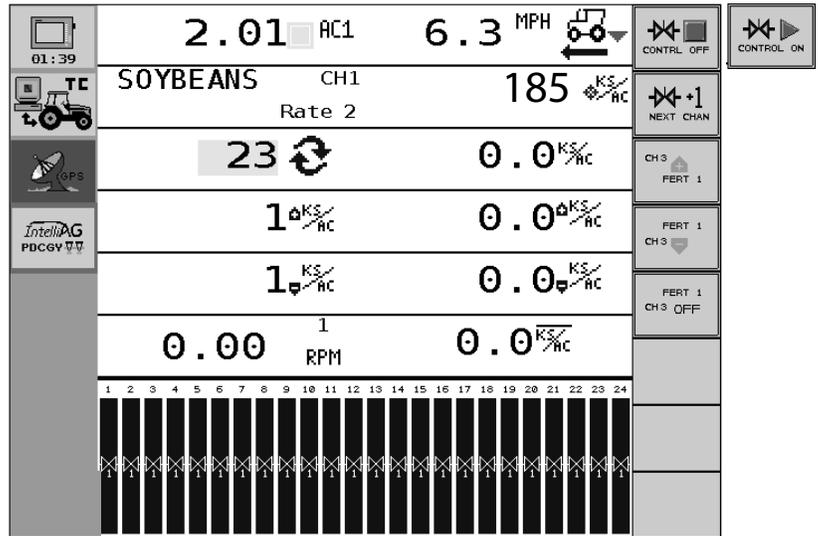
The Main Work screen will display with a **Control ON** button at the top of the screen.

Toggleing between the **Control ON and OFF** button cycles the system control on and off.



**Figure 86**

**Main Work Screen with VT Master Switch Configured**



**IMPORTANT:** As a safeguard, when the Control ON button is pressed, a Master Switch Button Activation alarm must be acknowledged before equipment operates. This alarm occurs the first time the Master Switch button is pressed after every power up.





## CUSTOMIZING THE WORK SCREEN

The Main Work screen can be customized to user preferences from a selected data type list found at the Work Screen Configuration. The display is functionally divided into 2 columns and 6 rows.

### SELECTING A DISPLAY ITEM

Display items are the selectable parameters that appear on the Main Work screen that monitors control channels, rate targets, individual row performance, spacing, population, ground speed, and coverage area during operation.

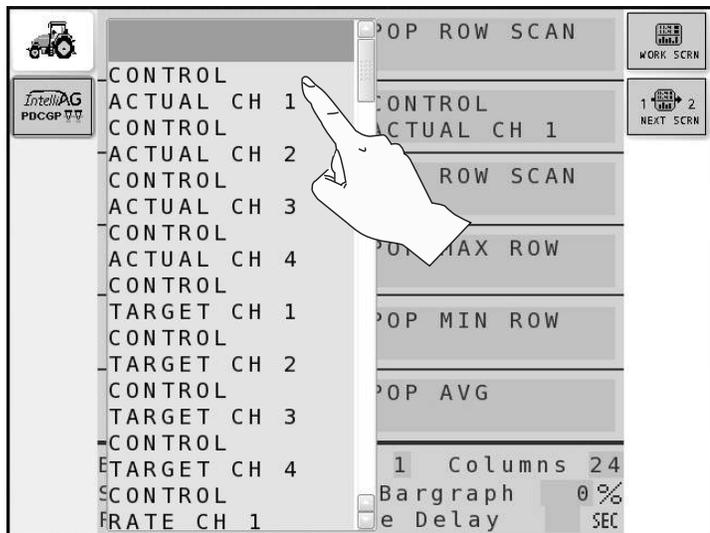
#### To Select Display Items:

1. At the Main Work screen, press the **Screen Cfg** button.
2. Press a Data Item box to select.
  - Any data item can be placed in any position.
  - Duplicate data items can be configured on a single display if desired.
  - Up to three display screens can be configured.
  - Some items selected for the work screen will display on one entire row.
3. Press the **Next Screen** button to configure additional Configuration screens.
4. Press the **Work Screen** button to return to the Main Menu and view the new layout.



**Figure 87**

**Work Screen Configuration Screen**



**NOTE:** Refer to the Data Items section for a detailed description of each item and the associated display images.



## BAR GRAPH SETUP (POPULATION/SPACING QUALITY)

Bar graph setup allows customization of the rows monitored and displayed on the Main Work screen. A maximum of 2 lines and 24 columns can display. Default displays 1 line and 24 columns.

### TYPE

Population - Displays population status by row.

Quality - Reflects how much spacing is occurring between each seed while planting and provides a comparison of row-to-row meter performance. Ideal conditions are equal spacing between each seed (100%). As spacing becomes less uniform and more random, the spacing quality percentage decreases and falls below 100%.

Seed shape, meter type, meter settings, seeding rate, seed bed preparation and vehicle speed are all factors that can affect overall spacing quality.

Spacing quality values can display as a display type and/or as a bar graph on the Work Mode screen.

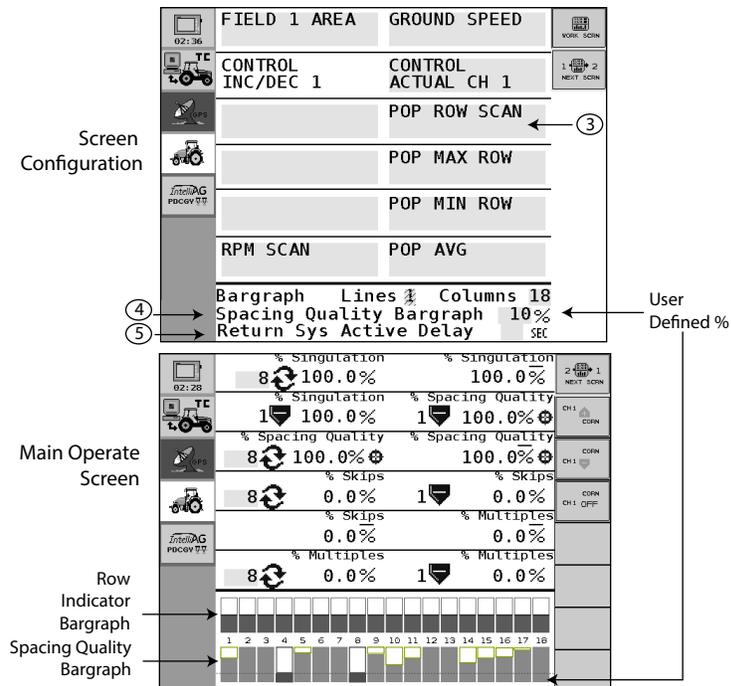
### To enable Spacing Quality Data Items and/or Bargraph:

1. At the Main Operate screen, locate and press the **Next** button to display the **Screen Config** button.
2. Press the **Screen Config** button to display Screen Configuration.
3. Press the Data Item selection box to scroll through available spacing quality selections.
4. To enable the spacing quality bar graph, enter the user-defined percentage to set the bar graph range for spacing quality per row.
5. Set a delay time to automatic return the Main Work screen ([Figure 88](#)).



**Figure 88**

### Spacing Quality





## RETURN SYSTEM ACTIVE DELAY

Setting a time delay (seconds) in the Return System Active Delay input box will trigger the IntelliAg Main Work screen to automatically return as the active screen view when other system application screens are used, i.e., Task Controller or Autopilot.

The delay time starts when the master switch is turned ON and the implement is in a down position. Delay time will not start unless both of these conditions are met.

**IMPORTANT: This feature only operates with DICKEY-john virtual terminals.**

## DISPLAY ITEMS DEFINED

*NOTE: Data Items on the Main Work screen with a check box allows the number to be reset to zero.*

The following illustrates available display items and their respective functions. Display item placement can be set to display on the Main Work screen to an individual preference.



## CLEARING ACCUMULATORS

Some Data Item values can be reset to zero from the Main Work screen. Accumulator displays (e.g., Area 1 Field, Seed Count, etc.) on the active screen can be reset to zero by placing a check mark in the box next to the data item. Only accumulators that are on the currently-displayed screen can be reset. Accumulators are reset independently. They can only be reset when the master switch is OFF. Once an accumulator has reached its maximum value, it will roll over to 0.0.

## CONTROL ACTUAL CHANNELS 1-4

CORN CH1  
Rate 1 40.5  $\frac{KS}{AC}$

*NOTE: All Data Items are selected from Screen Configuration. Refer to the Screen Configuration section for setup instructions.*

Control Actual Channels 1 - 4 display the channel actual application rates in its respective units depending on channel setup. The channel increment/decrement or preset table rate value also displays. When the master switch is OFF, the target rate displays in a small font for the channel. When the master switch is ON, the rate displays in a large font and is the actual application rate. When the channel's target rate is adjusted with the Inc/Dec or rate table function, the new target rates display for 5 seconds, followed by the actual rate. **This Data Item will display on an entire row of the Work screen.**



## CONTROL TARGET CHANNELS 1-4

CORN CH1  
Rate 1      40.5 \*  $\frac{KS}{AC}$

Control Target Channels 1 - 4 display the channel target set rates depending on channel setup. The channel Inc/Dec value or preset table rate also displays. When the master switch is OFF, the rate displays in a small font. When the master switch is ON, the rate displays in a large font. **This Data Item will display on an entire row of the Work screen.**

## CONTROL RATE CHANNELS 1-4

CORN CH1  
0.0  $\frac{S}{SEC}$       40.5  $\frac{KS}{AC}$

Control Rate Channels 1-4 display the channel actual application rates depending on channel setup. The channels calculated flow rate displays. When the master switch is OFF, the rate displays in a small font. When the master switch is ON, the rate displays in a large font. When the channels target rate is adjusted using the Inc/Dec or Preset Table Rate function, the new target rate is displayed for 5 seconds followed by the actual rate. **This Data Item will display on an entire row of the Work screen.**

## CONTROL SCAN

NITROGEN CH2  
Rate 1      98.1  $\frac{LBS}{AC}$

Control Scan displays all active control channels sequentially showing the actual rate in its respective units depending on channel setup, and the Inc/Dec value or preset table rate for each channel in five-second intervals. **This Data item will display on an entire row on the Work screen.**

## POP ROW SCAN

5       0.0  $\frac{KS}{AC}$

**NOTE:** All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.

Pop Row Scan displays all active seed rows population in seeds per acre (or seeds/Ha) for each detected seed sensor. The value to the left side displays the current row number being scanned. The value on the right is the population data. The scans continue sequentially in four-second intervals unless a particular row number is selected for continuous view. **This Data Item will display on an entire row of the Work screen.**



## POP MIN MAX ROW SCAN

3  $\downarrow$   $\frac{\text{KS}}{\text{AC}}$       0.0  $\downarrow$   $\frac{\text{KS}}{\text{AC}}$

Pop Min Max Scan alternately displays the seeding row with the minimum population and the seeding row with the maximum population in seeds per acre (or seeds/Ha). The value to the left side displays the current row number. The value to the right is the population data. Dwell time for each display is four seconds. **This Data Item displays on an entire row of the Work screen.**

## POP MIN ROW

4  $\downarrow$   $\frac{\text{KS}}{\text{AC}}$       0.0  $\downarrow$   $\frac{\text{KS}}{\text{AC}}$

Pop Min Row displays the seeding row with the minimum population in seeds per acre (or seeds/Ha). The value to the left side displays the current row number. The value on the right is the population data. **This Data Item will display on an entire row of the Work screen.**

## POP MAX ROW

1  $\uparrow$   $\frac{\text{KS}}{\text{AC}}$       0.0  $\uparrow$   $\frac{\text{KS}}{\text{AC}}$

Pop Max Row displays the seeding row with the maximum population in seeds per acre (or seeds/Ha). The value to the left side displays the current row number. The value on the right is the population data. **This Data Item will be displayed on an entire row of the Work screen.**

## POP AVG

0.0  $\overline{\frac{\text{KS}}{\text{AC}}}$

Pop Avg displays the average population in seeds per acre (or seeds/Ha) of all active seeding rows per channel.

**NOTE:** All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.

## SPACING ROW SCAN

1  $\updownarrow$       0.00  $\frac{\text{IN}}{\text{S}}$

Spacing Row Scan scans all active seed rows and displays the spacing in inches (cm) for each row as detected by the sensors. The value to the left side displays the current row number. The value on the right is the population data. The scans continue sequentially in four-second intervals unless the rotary knob is used to select a particular row number for continuous view. **This Data Item displays on an entire row of the Work screen.**



## SPACING MIN MAX ROW SCAN

1 ▾ IN/S      0.0 ▾ IN/S

Spacing Min Max Row Scan alternately displays the seeding rows with the minimum and maximum spacing in inches (cm). The value to the left side is the current row number. The value on the right is the spacing. Dwell time for each display is four seconds. **This Data Item displays on an entire row of the Work screen.**

## SPACING MIN ROW

1 ▾ IN/S      0.0 ▾ IN/S

Spacing Min Row displays the seeding row with the minimum spacing in inches (cm). The value to the left side displays the current row number. The value on the right is the spacing. **This Data Item displays on an entire row of the Work screen.**

## SPACING MAX ROW

1 ▲ IN/S      0.0 ▲ IN/S

Spacing Max Row displays the seeding row with the maximum spacing in inches (cm). The value to the left side displays the current row number. The value on the right is the spacing. **This Data Item displays on an entire row of the Work screen.**

## SPACING AVG

0.0  $\overline{\text{IN/S}}$

Spacing Avg displays the average spacing in inches (cm) of all active seeding rows per channel.

**NOTE:** All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.

## SEED/DISTANCE ROW SCAN

1 ↻      0.0 S/FT

Seed/Distance Row Scan displays all active seed rows and the number of seeds per foot (seeds/meter) for each row detected by the sensors. The value to the left side displays the current row number. The value on the right is the seeds per distance data. The scan continues sequentially in four-second intervals unless a particular row number is selected for continuous view. **This Data Item displays on an entire row of the Work screen.**



## SEED/DISTANCE MIN MAX ROW SCAN

1  $\frac{\uparrow S}{FT}$       0.0  $\frac{\uparrow S}{FT}$

Seed/Distance Min Max Row Scan alternately displays the seed row with the minimum number of seeds per foot (seeds/meter) and the seeding row with the maximum number of seeds per foot (seeds/meter). The value to the left side displays the current row number. The value on the right is the seeds per distance data. Dwell time for each display is four seconds. **This Data Item displays on an entire row of the Work screen.**

## SEED/DISTANCE MIN ROW

1  $\frac{\downarrow S}{ft}$       0.0  $\frac{\downarrow S}{ft}$

Seed/Distance Min Row displays the seeding row with the minimum number of seeds per foot (meter). The value to the left side displays the current row number. The value on the right is the seeds per distance data. **This Data Item displays on an entire row of the Work screen.**

## SEED/DISTANCE MAX ROW

1  $\frac{\uparrow S}{FT}$       0.0  $\frac{\uparrow S}{FT}$

Seed/Distance Max Row displays the seeding row with the maximum number of seeds per foot (meter). The value to the left side displays the current row number. The value on the right is the seeds per distance data. **This Data Item displays on an entire row of the Work screen.**

## SEED/DISTANCE AVERAGE

0.0  $\frac{S}{FT}$

Seed/Distance Average displays the average number of seeds per foot (meter) of all active seeding rows per channel.

**NOTE:** All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.

## SINGULATION AVERAGE

0 %

Singulation Average displays the average percent seed singulation of the planter's rows that are configured for population. Singulation refers to the portion of seeds planted individually, rather than in groups.

**NOTE:** Singulation information is only operable when using a WSMB2 and Seed Smart sensors. Contact DICKEY-john Technical Support at 1-800-637-3302 for additional information.

## SINGULATION ROW SCAN

1  $\frac{\updownarrow}{\text{row}}$       0 %

Singulation Row Scan displays the percent singulation of each of the planter's rows. The displayed row increments every four seconds. After the last row is displayed, the scan will re-sequence beginning with the first active row.



## SINGULATION MIN MAX SCAN

1 0 %

Singulation Min Max Scan alternates the display of the minimum row singulation and maximum row singulation every two seconds. When a minimum row displays, the corresponding symbol is shown with the row number.

## GROUND SPEED

7.7 MPH

Ground Speed displays the current ground speed of the tractor in miles per hour (Kph). The ground speed source is defined during the Ground Speed Calibration setup. This data item also displays the implement status using an up/down arrow next to the tractor icon.

## TOTAL AREA

0.00 ACT

*NOTE: Data Items on the Main Work screen with a check box allows the number to be reset to zero.*

0.00 ACT

*NOTE: All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.*

Total Area displays the area covered by the implement in acres (Ha). Total area is calculated using the Implement Width parameter entered on the **Row Status/Row Width Setup** screen. Area accumulates for seeding when seeds are detected on at least one seeding row and the ground speed is above the Shutoff Speed parameter entered on the **Ground Speed Calibration** screen. This accumulator is independent of any other area accumulator and can be reset to 0.0 at any time. Current area is retained after power down. If no rows are configured, the Total Area Accumulator will use the largest channel width.

## FIELD 1 AREA

0.00 AC1

Field 1 Area displays the area covered by the implement in acres (Ha). Field 1 Area is calculated in the same manner as Total Area. This accumulator is independent of any other area accumulator and can be reset to 0.0 at any time. Current area is retained after power down.



## FIELD 2 AREA

0.00  AC2

Reset  
↓

Field 2 Area displays the area covered by the implement in acres (Ha). Field 2 Area is calculated in the same manner as Total Area. This accumulator is independent of any other area accumulator and can be reset to 0.0 at any time. Current area is retained after power down.

## CHANNELS 1 - 4 AREA

10.95  1AC

Reset  
↓

Channels 1 - 4 Area displays the area covered by Control Channels 1 - 4. Area is calculated using the Channel Width parameter that is entered on the **Control Channel setup** screen. Area accumulates when the master switch is ON and the ground speed is above the Shutoff Speed parameter entered on the **Ground Speed Calibration** screen. This accumulator is independent of any other area accumulator and can be reset to 0.0 at any time. Current area is retained after power down.

## AREA SCAN

0.00 AC1

Area Scan scans through all area accumulators sequentially displaying the area for each accumulator in four-second intervals.

**NOTE:** All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.

## CONTROL FEEDBACK SCAN

0.0 <sup>CH2</sup>  
RPM

Feedback Scan scans through all active control channel feedback sensors sequentially displaying the actual RPM or GPM measured in four-second intervals. The current sensor is identified by the number displayed above the RPM symbol (planter control, granular seeding, granular fertilizer) or GPM symbol (liquid flow).

## AREA PER HOUR

0.00 <sup>AC</sup>/<sub>HR</sub>

Area Per Hour displays the current area per hour in acres (Ha). The value is continuously calculated based on the current ground speed and the Implement Width parameter as entered on the **Row Status/Row Width Setup** screen.



## SYSTEM ACTIVE TIME



System Active Time records the amount of time the master switch is in the ON position indicating the actual number of hours equipment has been operating.

## SEED COUNT ACCUM ROW



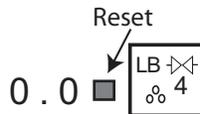
Seed Count Accum Row scans through all of the active seed rows and displays the seed count for each row as detected by the seed sensors. The value to the left side displays the current row number. The value to the right is the seed count. The scan continues sequentially in four-second intervals unless a particular row number is selected for continuous view. The Seed Count function is enabled/disabled on the Accumulators/Seed Count/Distance Count screen. **This Data Item displays on an entire row of the Work screen.**

## DISTANCE ACCUMULATOR



Distance Accumulator displays the distance covered in feet (ft). This accumulator is independent of any other area accumulator and can be reset to 0.0 at any time. Current distance is retained after power down.

## CHANNELS 1 - 4 MATERIAL ACCUM



Channels 1 - 4 Material Accum displays the current accumulated material for Channels 1 - 4. Material is accumulated according to the applied rate. Does not function if channel is planter control.

**NOTE:** All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.



## ACCESSORY INPUT SCAN

### Pressure Scan

0.00 <sup>1</sup> OZ / IN<sup>2</sup>

Pressure Scan scans through all active pressure sensors sequentially, displaying the actual pressure measured in oz/in<sup>2</sup> (kPa) in four-second intervals. The current sensor is identified by the number above the pressure symbol.

### RPM Scan

0.0 <sup>1</sup> RPM

RPM Scan scans through all active shaft/fan sensors sequentially, displaying the actual RPM measured in four-second intervals. The current sensor is identified by the number displayed above the RPM symbol.

## CHANNEL 1-4 PRODUCT LEVEL

Reset  
 CH1  
 0  LBS

Channels 1-4 Product Levels indicates how much product remains in the hopper or tank. The Reset button is unique in that it does not reset the value to zero but allows the user to set the known amount of product added. Selecting the Reset button thereafter will default to the original amount entered. To enter the starting product level, select the value and change to the desired level.

## HOPPER LEVEL STATUS SCAN

1 →

Hopper Level Status Scan scans through all the hopper level sensors in the system and indicates an empty or nonempty status.

**NOTE:** All Data Items are selected from the Work Configuration screen. Refer to the Work Screen Configuration section for setup instructions.

## BOOM STATUS

1  
 Boom #

1    2    3

Boom Status indicates the status of each boom section. The Boom Status feature is only operational with Liquid Control channels when a DICKEY-john boom switch module and boom output module are installed for boom control. This Data Item will scan through 12 sections at a time on an entire row.



## GUIDANCE STATUS

Press to engage and disengage ↓

0.00 IN 0.0 SEC 360\* N  
 ABO 30% Swath Complete DISABLED

Autopilot Steering Navigation can be engaged and disengaged from the Main Work screen and displays swath # (ABO), cross-track error (0.00 IN), age of correction (0.0 SEC), heading direction (360 degrees), and % swath complete. **This Data Item displays on an entire row of the Work screen.**

## SPACING QUALITY DATA ITEMS

### Spacing Quality Average

% Spacing Quality  
 0.0 % ⊕

Spacing Quality Average displays the average percent spacing quality across the planter rows that are configured using a WSMB2 module against all planter rows.

### Spacing Quality Scan

% Spacing Quality  
 ↻ 0.0 % ⊕

Spacing Quality Scan displays the percent of spacing quality within each row in 4 second increments. After the last row is displayed, the scan will resequence beginning with the first active row.

### Spacing Quality Min/Max Scan

% Spacing Quality  
 + 0.0 % ⊕

Spacing Quality Min/Max Scan alternates between the minimum row spacing and maximum row spacing every 4 seconds. When a minimum row displays, the corresponding symbol is shown with the row number.

## SEEDING SKIPS

Seeding skip calculations indicate what percentage of skips are occurring within each seed row.

## SKIP DATA ITEMS

Selectable seeding skip data items that are available to display on the Main Operate screen include:



## Seeding Skips Average

% Skips  
0.0 %

Seeding Skips Average displays the average percent of seeding skips across the planter that are configured using a WSMB2 module against all planter rows.

## Seeding Skips Row Scan

% Skips  
 0.0 %

Seeding Skips Row Scan displays the percent of skips of each row in 4 second increments. After the last row is displayed, the scan will resequence beginning with the first active row.

## Seeding Skips Min/Max Scan

% Skips  
 0.0 %

Seeding Skips Min/Max Scan alternates between the minimum row skip and maximum row skip every 4 seconds. When a minimum row displays, the corresponding symbol is shown with the row number.

## SEED MULTIPLES

Seed multiples indicate what percentage of seeds are occurring within each seed row.

## SEED MULTIPLE DATA ITEMS

Selectable seed multiple data items that are available to display on the Main Operate screen include:

### Seed Multiples Average

% Multiples  
0.0 %

Seed Multiples Average displays the average percent of multiple seeds dropped in one location across the planter that is configured using a WSMB2 module.

### Seed Multiples Row Scan

% Multiples  
 0.0 %

Seed Multiples Row Scan displays the percent of multiple seeds dropped within each row in one location in 4 second increments. After the last row is displayed, the scan will resequence beginning with the first active row.



## Seed Multiples Min/Max Scan

% Multiples

 0.0 %

Seed Multiples Min/Max Scan alternates between the minimum row skip and maximum row skip every 4 seconds. When a minimum row displays, the corresponding symbol is shown with the row number.



## OPERATION

### ROW FILL (SPLIT AIR REGULATION)

Row Fill is used with a control channel designated as Split Air Regulation. Press the **Row Fill** button to fill all row units quickly when the planter is completely empty. Airflow is diverted to supply seed to the meter only.



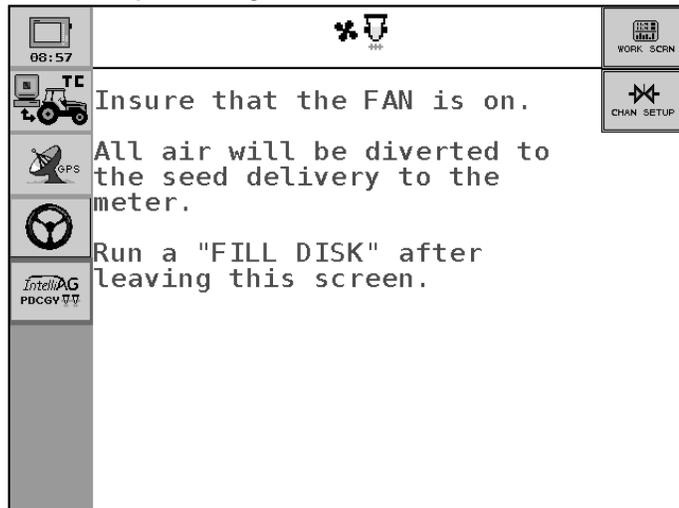
1. At the Main Work screen, press the **Planter Fill Disk** button.
2. At the Planter Fill Disk screen, press the **Row Fill** button to start supplying seed to the meter. The system will automatically fully open the air path to the seed meters.
3. Wait until all meters are filled. Upon exiting the screen the split air will continue to operate normally.

**IMPORTANT: Ensure the fan is on before starting the Row Fill operation.**

4. Perform a Planter Fill Disk after leaving the Row Fill screen.

**Figure 89**

**Row Fill Screen for Split Air Regulation**



### FILL DISK

Fill disk fills the seed meters after a variety change or after power up on air-actuated planters with seed to allow instant seed flow when the control is turned on.

Press the button to rotate the seed meters 1 time, then stop.

### FILL DISK FOR CONTROL CHANNELS

1. From the Main Work screen, press the **Planter Fill Disk** button.
2. Raise the implement.
3. With brakes locked and transmission in the park position, start the engine.



- Engage hydraulics and run engine at normal speed until hydraulic fluid is at operating temperature.

## **CAUTION**

Implement will begin to operate after pressing the Start button. Ensure that all persons and objects are away from the implement to avoid personal injury.



- Press the **Start** button. The seed meters will turn for 1 revolution, then stop.
- Pressing the **Stop** button will also terminate the test.

**Figure 90**

### Fill Disk Screen for All Planter Controls



## START

- Lower the implement to operating position, engaging the implement switch, if present and enabled.
- With the hydraulic system engaged and the tractor at its normal operating RPM, set the master switch to the On position. All enabled control channels will begin controlling at the current ground speed. All accumulators will begin recording data.

## **WARNING**

When the implement is down and the master switch is in the On position, the machine is fully operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.

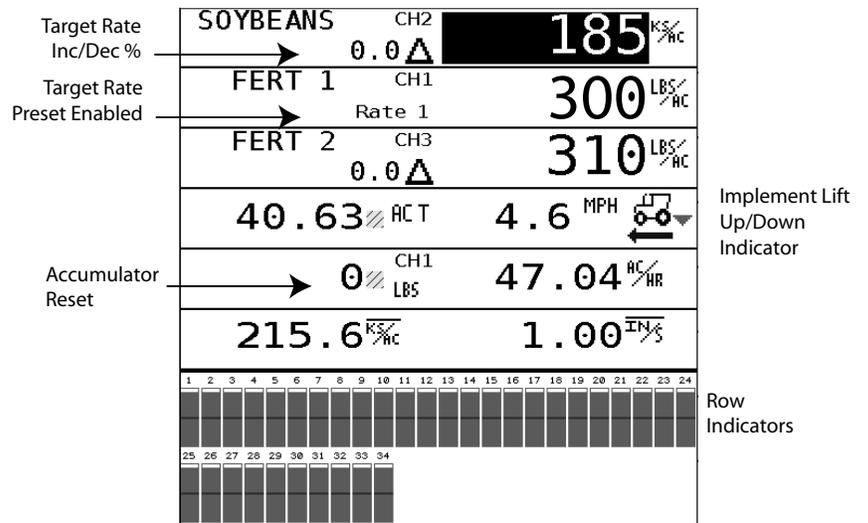


## STOP

1. Set the master switch to the Off position. All control channels will cease operation and all data accumulation will halt.
2. Operation will immediately stop when the ground speed is 0 or raise implement to disengage implement lift, if enabled.

**Figure 91**

### Main Work Screen Functions



## OPERATE SCREEN SYMBOLS

### TARGET RATE

The Target Application Rate displays when Master Switch is off. The actual applied rate appears during Operate mode.



### INCREASE/DECREASE % RATE

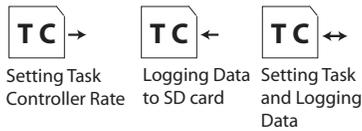
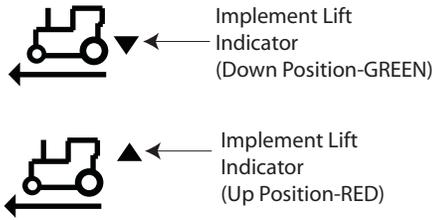
The Increase/Decrease rate is the percentage change being applied each time the Material **Increase/Decrease** button is pressed during Operate mode.



### TARGET PRESET RATE

The Preset Rate is the applied rate that was entered at the Material Configuration setup screen and increases or decreases when the Material **Increase/Decrease** button is pressed during Operate mode.

RATE 1



## IMPLEMENT LIFT SWITCH

When an implement lift switch is installed, the Main Work screen will identify if the implement is in the up or down position. Using an implement lift switch automatically turns the control channels on and off without turning the master switch off. The Implement Lift Indicator must be in the Down position for the control channels to operate. **The Implement Lift Switch box on the Ground Speed Configuration screen must be enabled if an implement lift switch is used.**

Refer to the Implement Lift Sensor instructions for installation location.

## TASK CONTROLLER

The Task Controller icon appears on the Main Work screen when Task Controller is active and controlling the application rate. Return to Task Controller to stop a task.

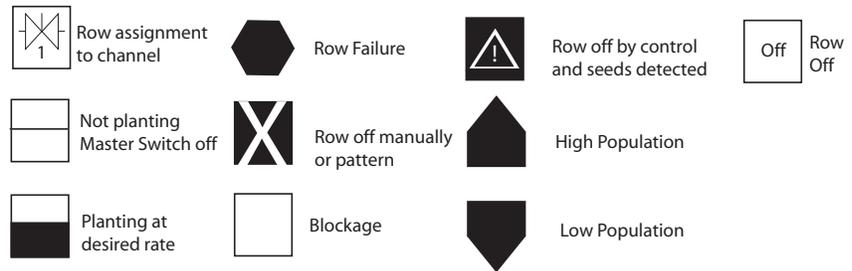
## ROW INDICATORS

Row Indicators in bar graph format on the bottom of the Work screen indicate seed rate for each row. The size of the bar graphic is set on the Work Configuration screen by pressing the **Work Screen** button.

The following symbols illuminate in the bar graph area:

**Figure 92**

### Row Indicator Symbols



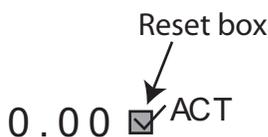
## AUTOPILOT STEERING NAVIGATION



Autopilot Steering Navigation can be engaged and disengaged from the Main Work screen and displays swath # (AB0), cross-track error (0.00 IN), age of correction (0.0 SEC), heading direction (360 degrees), and % swath complete.

## ACCUMULATORS

Some Data Item values can be reset to zero from the Main Work screen. An accumulator displays (e.g., Area 1 Field, Seed Count, etc.) on the active screen and can be reset to zero by placing a check mark in the box next to the data item. Only accumulators on the currently-displayed screen can be reset. Accumulators are reset independently and can only be reset when the master switch is OFF. Once an accumulator has reached its maximum value, it will roll over to 0.0.





5  0.0 <sup>KS</sup>/<sub>AC</sub>

## POPULATION ROW SCAN

Pop Row Scan displays all active seed rows population in seeds per acre (or seeds/Ha) for each detected seed sensor. The value to the left side displays the current row number being scanned. The value on the right is the population data. The scans continue sequentially in four-second intervals unless the rotary knob is used to select a particular row number for continuous view. This Data Item displays on an entire row of the Work screen.

0 %

## SINGULATION AVERAGE POPULATION

Singulation Average displays the average percent seed singulation of the rows that are configured for population. Singulation refers to the portion of seeds planted individually, rather than in groups.

MATRL 1

## MATERIAL NAME

Active Material Name for a control channel created at the Control Channel screen.

1  <sup>KS</sup>/<sub>AC</sub> 0.0  <sup>KS</sup>/<sub>AC</sub>

## POPULATION MAX ROW

Pop Max Row displays the seeding row with the maximum population in seeds per acre (or seeds/Ha). The value to the left side displays the current row number. The value on the right is the population data. **This Data Item displays on an entire row of the work screen.**

4  <sup>KS</sup>/<sub>AC</sub> 0.0  <sup>KS</sup>/<sub>AC</sub>

## POPULATION MIN ROW

Pop Min Row displays the seeding row with the minimum population in seeds per acre (or seeds/Ha). The value to the left side displays the current row number. The value on the right is the population data. **This Data Item displays on an entire row of the work screen.**



## PRECHARGE FEATURE

The Precharge feature is typically used in applications that have significant distance between the storage bulk tank and the implement row unit. This is where seed placement takes several seconds due to the travel time of the seed/fertilizer from the bulk tank to the ground. When the precharge feature is activated, material will dispense at the rate at which the precharge ground speed is set.

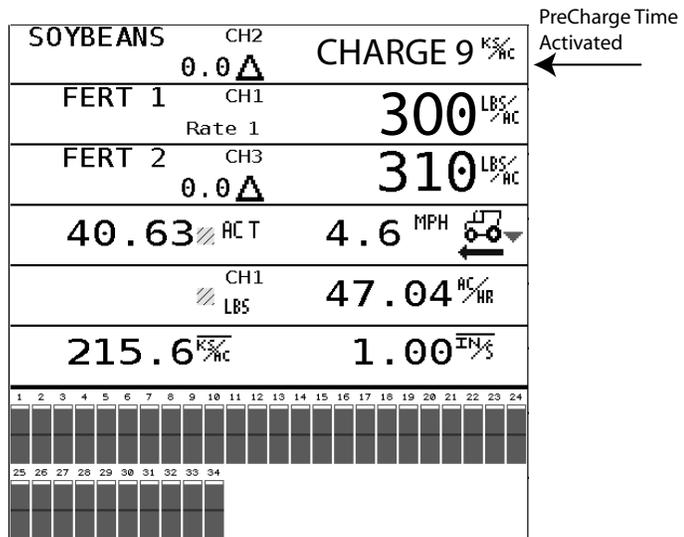
- The precharge feature operates until the precharge time lapses or the precharge ground speed has been exceeded. If ground speed stops while in precharge mode, the feature will abort.
- A precharge alarm displays any time the preset feature is established or changed and the master switch is turned on.
- This feature is applicable to planter control, granular seeding, fertilizer and liquid control channels.

**NOTE:** Master switch must be turned ON to activate a precharge state.

Reference the System Configuration section for control channel and ground speed setup instructions.

**Figure 93**

**Precharge Time and Ground Speed (Main Operate Screen)**



### Operating the Precharge function:

1. Turn the master switch on.
2. The precharge feature will automatically initiate when the master switch is turned on and the ground speed is less than the precharge ground speed.

The rate instrument will populate with the word "CHARGE" and the countdown timer. The timer gives the user the ability to see how much precharge time is left before precharge will abort.



**NOTE:** *Flush Enable will abort if the button is pressed during a Precharge state.*

## DISPENSING MATERIAL WITH FLUSH ENABLE

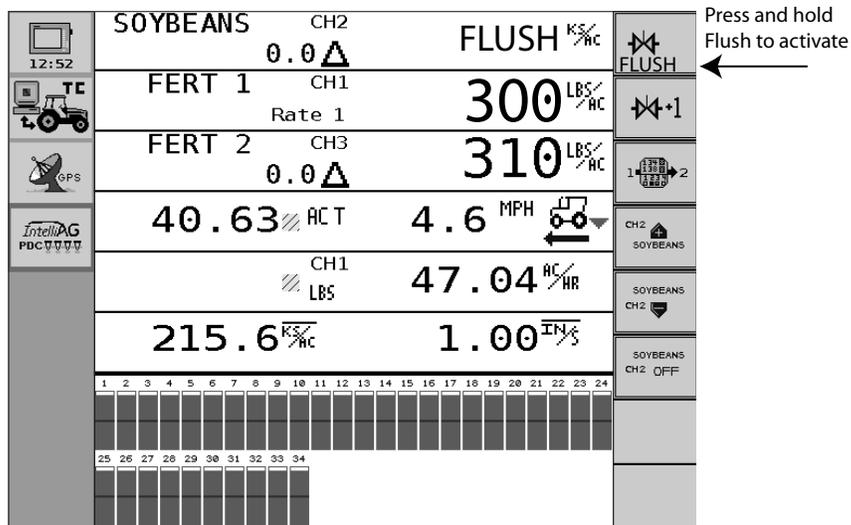
The Flush Enable feature is typically used to begin dispensing material at a higher rate when the tractor is below shutoff speed, i.e. during startup or turn around conditions. Material will dispense at the rate set at the ground speed setup screen.

Flush enable is applicable to granular seeding, fertilizer, or liquid control channels.

Reference System Configuration for control channel and ground speed setup instructions.

**Figure 94**

**Flush Enable (Main Work Screen)**



### Operating the Flush Enable function:

1. Ensure the master switch is turned ON below shutoff speed.
2. Press and hold the **Flush Enable** button to dispense material.
3. Release the **Flush Enable** button to stop dispensing material. Once speed is above shutoff speed, flush is aborted and ground speed based control will take over.

## SWITCHING BETWEEN INTELLIAG AND TASK CONTROLLER APPLICATION RATES

The **Material Rate** button resets a system to IntelliAg rates that has been running a task under Task Controller map control. An SD Card graphic icon on the IntelliAg Work screen indicates this condition. The **Material Rate** button appears on the IntelliAg Work screen to select current rates or to reload IntelliAg rates.



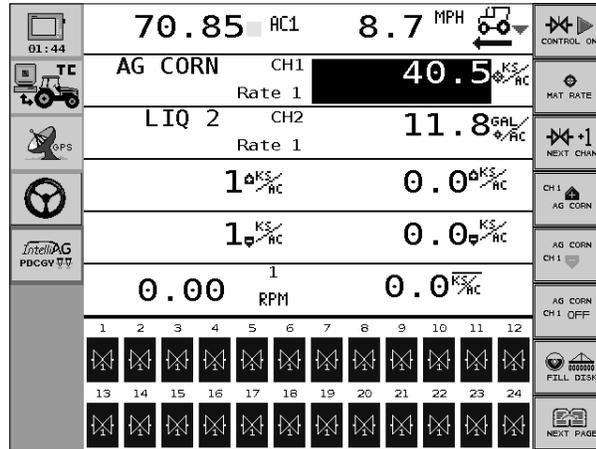


The **Material Rate** button only appears if a task is stopped in Task Controller and:

- ground speed is greater than 0
- the implement lift switch is down (operate mode)
- the master switch is ON for 5 seconds

**Figure 95**

**Material Rate Screen**



Resets a Task Control rate to an IntelliAg rate



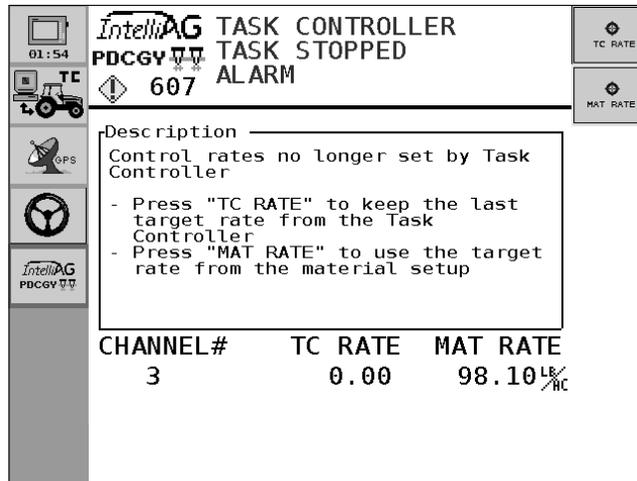
If a Task Controller alarm occurs:

- Press the **TC Rate** button to continue to run a task at the Task Controller rate
- Press the **Material Rate** button to reset the system to IntelliAg rates



**Figure 96**

**Task Controller Alarm**





## SYSTEM TESTS

### CONTINUOUS TEST

Continuous Test runs the control while stationary for troubleshooting or maintenance purposes. A remote test switch is recommended to perform this test.

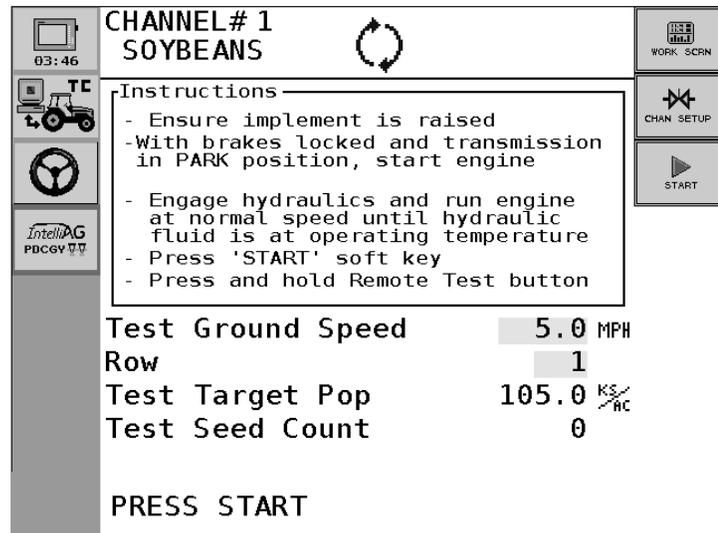


1. To access the Continuous Test screen, press the **Control Setup** button.
2. Press the **Channel Setup** button.
3. Press the **Continuous Test** button to display the Continuous Test screen.
4. The following parameters must be entered to perform a Continuous Test:
  - Test Ground Speed
  - Row

The values entered will not affect any other setup values that have previously been entered.

**Figure 97**

**Continuous Test Screen**



### TEST GROUND SPEED

Test Ground Speed is the ground speed reference used to perform the test.

### ROW

Row is the active row viewed on the system. The row that is set here is the row that reports back a seed count in the Test Seed Count value. The operator can change the row # to get performance of all rows during the Continuous Test to see row-to-row variability.



## TEST TARGET POP

Test Target Pop is the seed rate at which the test is performed. This value is the current target rate and is automatically populated.

## TEST SEED COUNT

Test Seed Count is the seed count reported back on the specified row set in the row data item and is automatically populated.

**NOTE:** The Test Seed Count will automatically reset whenever a new Continuous Test is performed.

### To start the Continuous Test:

1. Press the **Start** button.
2. Press and hold remote test switch until the test is complete.
3. Release test switch and the control will stop.
4. Press the test switch again to clear the seed count and restart the control.
5. Steps 2-4 will repeat until the **Stop** button is pressed.



## 5 REV TEST

5 Rev Test checks the seed meters for accuracy. When started, the test will run the control for five revolutions of the seed meters then shut down. The seed count can then be correlated on a row versus the seed count actually dispensed by the meter. A remote test switch is recommended to perform this test.

### To perform 5 Rev Test:

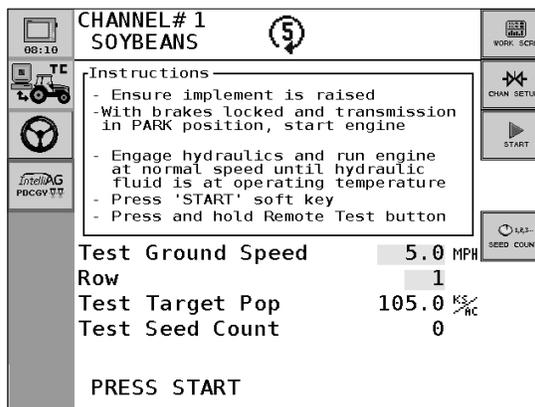
1. Press the **Control Setup** button.
2. Press the **Channel Setup** button.
3. Select the **5 Rev Test** button to access the **5 Rev Test** screen.
4. The following parameters must be entered to perform a 5 Rev Test.
  - Test Ground Speed
  - Row



The values entered do not affect any other setup values that have previously been tested.

**Figure 98**

### 5 Rev Test Screen





## TEST GROUND SPEED

Test Ground Speed is the ground speed reference used to perform the test.

## ROW

Row is the active row configured in the system. The row that is set here is the row that reports back a seed count in the Test Seed Count value. The operator can change the row # to get the seed count of all rows during the test.

## TEST TARGET POP

Test Target Pop is the seed rate at which the test is performed. This value is the current target rate and is automatically populated.

## TEST SEED COUNT

Test Seed Count is the seed count reported back on a specified row set in the row data item and is automatically populated.

### To Start the Continuous Test:

1. Press the **Start** button.
2. The test will run for 5 revolutions then Stop.

To display the number of seeds detected by each sensor, press the **Seed Count** button. Refer to the Operation section for additional information on the Seed Count screen.

*NOTE: Test Seed Count will automatically reset whenever a new Continuous Test is performed.*



## REMOTE TEST SWITCH

A momentary switch can be purchased from DICKEY-john that turns the control ON/OFF during the Continuous and 5 Rev tests.

The switch allows the operator to go back to the implement to perform the test and investigate mechanical issues or perform seed counts instead of performing the test inside the cab from the Virtual Terminal.

The remote test switch is to be connected to the actuator harness.

Remote test switch part number is 464210515S1.



## CAUTION

**Once testing is complete, the remote test switch should be disconnected to prevent accidental control engagement.**





## IMPORT/EXPORT DATA

**NOTE:** The following functionality is specific to those systems using Task Controller. Systems with no file server or task controller functionality will not have the below features.

Implement configurations stored on the Working Set Master (WSMT) can be exported to an SD card for transfer to other machines. This file transfer eliminates manual entry of all settings to similar machines.

Only configurations created from the Virtual Terminal can be imported and exported; no configurations created from a PC will transfer.

**IMPORTANT: Import/export does NOT save ECU or other Task Controller functions.**

**To transfer WSMT configurations:**

1. Verify an SD card is inserted into the VT and all system electronics and members are connected properly and configured correctly.
2. From the IntelliAg Main Work screen, press the **Next Page** button to access the **Config** button.

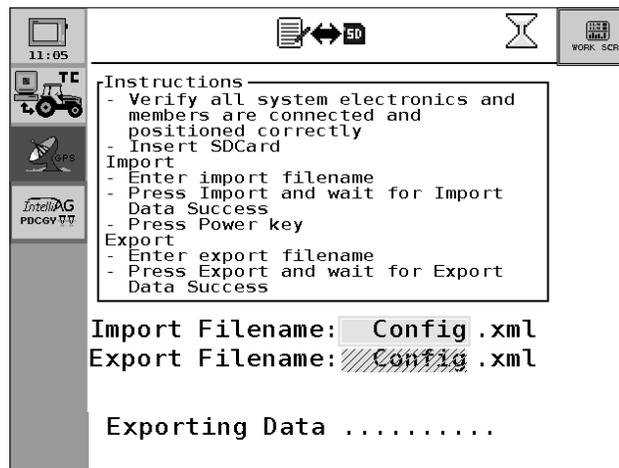


## EXPORT DATA

1. Press the Export Data input box and enter a file name. File name is case sensitive and must be exact for the import function to appear.
2. The new data file name will appear in the input box and be saved as an .xml file extension.
3. Press the **Export** button.  
As files are saved, an hour glass will flash at the top of the screen and "Exporting Data...." will appear at screen bottom. A successful data transfer will appear when complete.
4. The **Import** button will appear after a successful transfer.

**Figure 99**

**Export Data Screen**





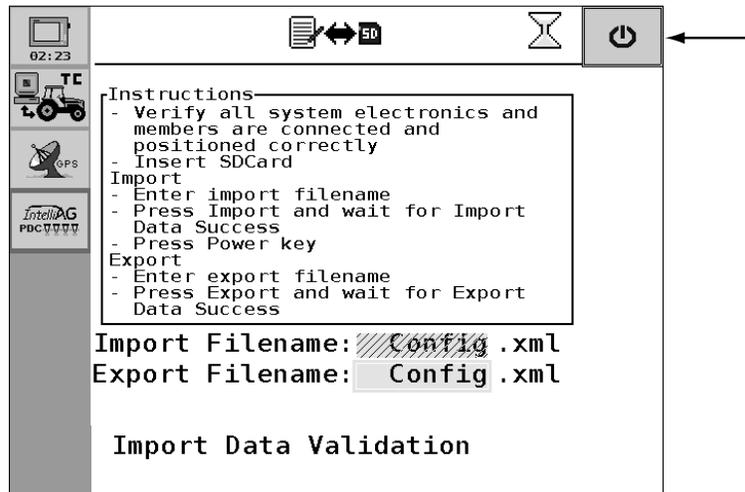
## IMPORT DATA

1. Insert SD card into another Virtual Terminal.
2. Verify all modules and sensors are connected properly and modules are positioned correctly.
3. At the Import/Export Data screen enter the Import File name to transfer. File name is case sensitive and must be exact for the import function to appear.
4. Press the **Import** button.  
As files are transferring, an hour glass will flash and "Import Data Validation" will appear at screen bottom.
5. Press the **Power** button to reboot the IntelliAg WSMT.



**Figure 100**

**Import Data Validation Screen**





## SYSTEM INFORMATION/DIAGNOSTICS



The master switch must be set to the OFF position to view System Information and Diagnostics screens.

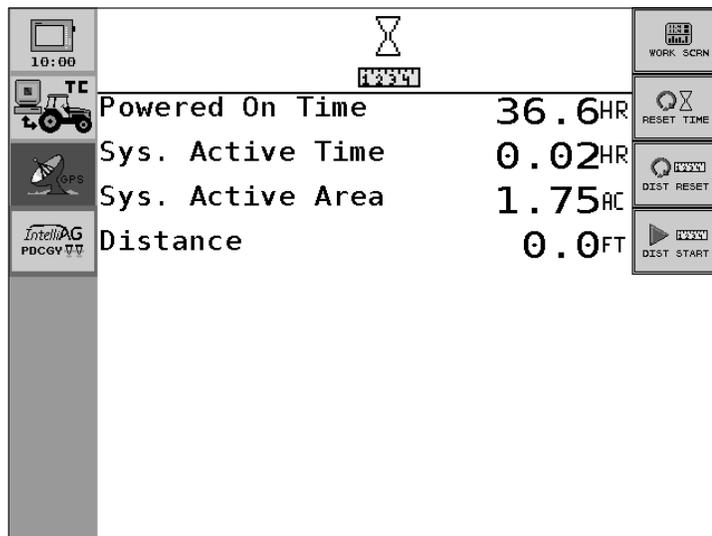
### ACCUMULATORS/SEED COUNT/DISTANCE SCREEN

Displays the amount of time the system has been on, the amount of time and area application control has occurred, and the distance traveled. Data on this screen is for display purposes only - it cannot be edited.

Press the **Accumulators** button to access the Accumulators/Seed Count/Distance screen.

**Figure 101**

**Accumulators/Seed Count/Distance Screen**



**NOTE:** The Master Switch must be set to the OFF position to display the **Accumulators/Seed Count/Distance** screen.

#### POWERED ON TIME

Powered On Time is the accumulated time, in hours, that the system has been powered ON. Powered On Time accumulates regardless of the mode of operation - whether it is in SETUP/CONFIGURATION mode or OPERATE mode. Powered On Time cannot be reset.

#### SYSTEM ACTIVE TIME

System Active Time is the accumulated time, in hours, that the machine has actively been controlling. System Active Time accumulates whenever seeds are detected on at least one sensor. Planting time does not accumulate during an ALL ROWS FAILED condition. System Active Time can be reset by pressing the **Reset Time** button.





## SYSTEM ACTIVE AREA

System Active Area is the accumulated area covered while the Master Switch is on. System Active Area cannot be reset.



## DISTANCE

Distance is the accumulated distance in feet (meters) that the implement has traveled. The Distance Accumulator function can be controlled by using the following procedures:

- Press **Reset Time** button to reset the value back to 0.00 hours.
- Press the **Distance Start** button to begin accumulating distance. This occurs whenever there is ground speed.
- Press the **Distance Stop** button to stop distance accumulation.
- Press the **Distance Reset** button to reset the value back to 0.0.

## DIAGNOSTICS

The Diagnostics screen provides various information from feedback sensors, valve output, and system voltages of the WSMT module. The control valve can be manually opened on this screen when necessary.

Each channel has its own Diagnostics screen. None of the items on the screen may be edited. The system can be active while viewing the Diagnostic screen.

Press the **Diagnostics** button to access the Diagnostics screen.

*Figure 102*

*Diagnostics Screen*

09:59	CHANNEL # 3 FERT 1	+	CONTROL ON
TC	CH SETPOINT	0.0000	WORK SCR
	CH TARGET	98.1	
	CH ACTUAL RATE	0.00	NEXT CHAN
GPS	CH RPM	0.0000	+1
	CH PWM	0	CH 3
IntelliAG PDCGV	CH PULSE COUNT	0	FERT 1
	CH FREQ FILT	0	FERT 1
	FREQ REL GSPD	283	CH 3
	FREQ DIG GSPD	283	ENABLE MANUAL VALVE
	IO IMP LIFT	0	SEED COUNT
	APP ID	0.52	
	SOL PWR VOLT	14.64	
	ECU PWR VOLT	14.63	
	SNSR PWR VOLT	8.02	
	GND VOLT	0.00	INFO

## CH SETPOINT

The Channel Setpoint value is calculated by the system. It displays the expected feedback frequency of the application rate sensor or flowmeter used for that channel's feedback.



## CH TARGET

The Channel Target value is the current channel's rate as entered into the Target Rate constant on the Channel Configuration screen.

## CH ACTUAL RATE

The Channel Actual Rate value is the current channel's actual controlled rate with the system active.

## CH RPM/GPM

The Channel RPM/GPM value is the current RPM/GPM. The sensor constant and gear ratio parameters entered on the Channel Configuration screen allow the RPM/GPM to be calculated.

## CH PWM

The Channel PWM value is the current pulse width modulation (PWM) output drive signal to the solenoid valve. The higher the number, the further the valve opens.

## CH PULSE COUNT

The Channel Pulse Count value is the accumulated pulse count detected from the channel feedback sensor. This value may be reset by the operator by pressing the Reset Channel Pulse Count button.

## CH FREQ FILT

The Channel Frequency's Filtered value is the filtered frequency output from the channel feedback sensor.

## FREQ REL GSPD

The Frequency Reluctance Ground Speed value is the reluctance sensor output signal in hertz (hz). This value is present when ground speed is provided by a reluctance sensor connected to the actuator harness.

## FREQ DIG GSPD

The Frequency Digital Ground Speed value is the digital sensor output signal in hertz (hz). This value is present when ground speed is provided by a radar sensor or other digital speed sensor connected to the actuator harness.

## FREQ PRESS 1

The Frequency Pressure value is the output frequency signal of the air pressure sensor in hertz (hz). This value will typically fall between 200 hz and 1100 hz.

## IO HOPPER 1

The IO Hopper 1 value is the current state of the hopper sensor.

*NOTE: In some instances, FREQ REL GSPD and FREQ DIG GSPD read the same values simultaneously depending upon the sensor used. This is normal and does not impact operation.*



**NOTE:** *If the values are reversed and the value displays a "1" when the implement is raised, the wiring for the implement switch will need to be reversed so that an accurate readout is achieved.*

## IO IMP LIFT

SENSOR LOGIC LEVEL	VALUE	HOPPER	STATUS	ALARM
Active High	0	Full	Blocked	No alarm
Active High	1	Empty	Not Blocked	Alarm
Active Low	0	Empty	Not Blocked	Alarm
Active Low	1	Full	Blocked	No Alarm

## APP ID

Hardware identification only. Not applicable to the end user.

## SOL PWR VOLT

The Solenoid Power Volt value displays the detected solenoid power voltage. This voltage level is the high current voltage leg of the system which is used to power high current solenoids and valve actuators. This value will generally be equal or nearly equal to the tractor battery voltage.

## ECU PWR VOLT

The Electrical Control Unit (ECU) Power Volt value is the detected ECU voltage. This voltage level is the low current voltage leg of the system and is used to power modules and sensors. This value will generally be equal or nearly equal to the tractor battery voltage.

## SNSR PWR VOLT

The Sensor Power Volt value is the detected output voltage to the seed sensor on the Working Set Master (WSMT) module. This value is typically +8 VDC.

## GND VOLT

If the system is properly grounded, this value is typically 2.50V on software versions older than 2.7. Software versions newer than 2.7 and WSMT software is 0V.

## DIAGNOSTICS MANUAL VALVE POSITION

Manual opening of a selected channel's valve is used for calibration or troubleshooting purposes in the case of system failure.

Press the **Diagnostics** button to access the Diagnostics screen.

1. The Diagnostics screen will show Channel 1 as a default.
  - If a channel other than Channel 1 needs to be selected, press the **Next Channel** button until the appropriate channel displays. The **Next Channel** button only displays when more than one channel is configured.





## MANUAL OPEN OF CHANNEL

1. Press the **Enable Manual Valve** button to run the current selected channel. This allows for manual open and close of valve position.

**IMPORTANT: The Enable feature will only operate on the Diagnostics screen.**

2. If the **Disable Manual Valve** button is displayed, the selected channel has already been enabled for manual valve position operation.
3. Set the Master Switch to the ON position.
4. Press the **Increment** button to open the channel's valve. The Channel Pulse Width Modulation (PWM) data item displays the current PWM signal that is being output to the valve.
5. The **Increment** button must be pressed repeatedly to increase the PWM signal to the valve. Each press will increase the signal by 2 hertz (hz). The Channel Pulse Count and Channel Frequency Filter values will display the current output of the feedback sensor.
6. Press the **Decrement** button to decrease the PWM signal and close the valve. The **Decrement** button must be pressed repeatedly to decrease the PWM signal to the valve. Each press will decrease the signal by 2 hertz (hz).
7. The active channel is displayed in the button text.
8. Turn the master switch off to shutdown control channel.

## SEED COUNT SCREEN

The Seed Count screen displays the number of seeds detected by each sensor. Individual seed rows can be assessed and seed counts for those rows may be accumulated. Up to 15 row numbers can display at one time.

Press the **Seed Count** button to display the Seed Count screen.



**Figure 103**

**Seed Count Screen**

11:02	1,2,3...			WORK SCR
TC	1	2	3	+
GPS	0	0	0	1,2,3... CNT RESET
IntelliAG PDCGV	4	5	6	▶
	7	8	9	NEXT ROWS
	10	11	12	
	13	14	15	
	0	0	0	



## Operating the Seed Count function:

1. Press the **Start** button. Seed count data for each sensor will accumulate when seeds drop through the sensor.
2. Press the **Next Rows** button to view additional rows.
3. Press the **Stop** button to stop the seed count function.
4. To reset the seed count on all rows, press the **Count Reset** button.
5. Press the **Work Screen** button to exit or press the **Accumulators** button to return to the Accumulator screen.

## INFORMATION SCREEN

The Information screen displays the module software versions connected to the system and is typically used for troubleshooting. No information on the screen can be edited.

Each module connected is identified by module type, module position, and serial number. Module position cannot be altered on this screen and can only be established on the Module Configuration screen.

Press the **Information** button to access the Information screen.

**Figure 104**

**Information Screen**

11:04		i		Software Version		WORK SCRNM
TC	MOD POS 1	APP 03.99 09 02 06 07				DIAGNOSTIC
	WSMT-PDCGY	BOOT 01.00 07 04 09 14				
	S/N 10003	P/N P03 99 01				MODULE CFG
GPS	MOD POS 2	APP 03.00 07 01 24 15				
	WSMB-18R	BOOT 02.00 06 10 31 08				
IntelliAG PDCGV	S/N 10259					PASSWORD



## RESETTING NOVAM VALUES

### (Level 3 User)

Level 3 Users only have access to Resetting Novram Values. NOVAM refers to the memory location of the Working Set Master (WSMT) module where all configuration and setup data for the system are stored. Resetting the NOVAM will reset all data to factory default constants.

1. From the Main Work screen, press the **Diagnostics** button.
2. At the Diagnostics screen, press the **Memory Reset** button to access the Memory Reset screen.
3. Press the **Reset Novram** button to reset to factory standard defaults.
4. Press the **Diagnostics** button to return to the Diagnostics screen.

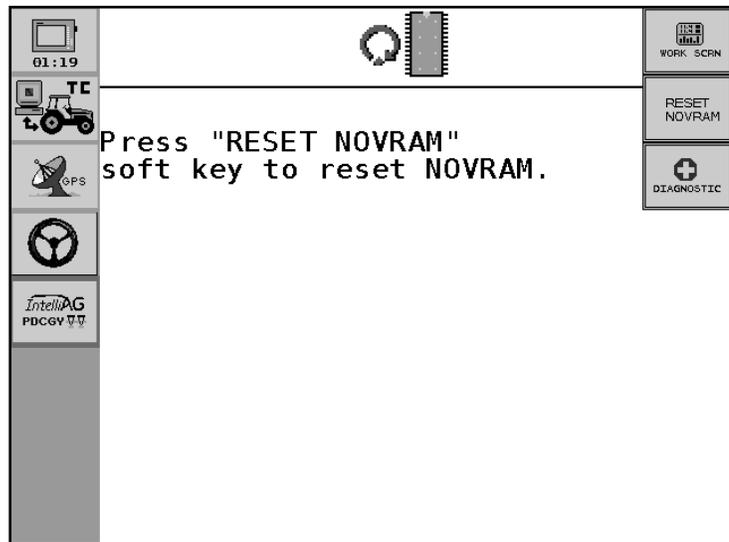


### **CAUTION**

**DO NOT** press the NOVAM Reset button unless you want **ALL** system data settings to be reset to factory standard defaults. It is recommended that NOVAM not be reset unless instructed by DICKEY-john Technical Support.

*Figure 105*

*Reset Novram Screen*



## ACKNOWLEDGING ALARM CONDITIONS

Various alarm conditions may be presented to the operator whenever the system encounters an abnormal condition or detects a specific alarm. Alarms are typically in a full screen display describing the alarm and, dependent upon the alarm type, may give the operator instructions on how to fix the alarm. Each alarm type has an associated alarm number, which can be cross-referenced in the TROUBLESHOOTING AND ALARMS section.



Some alarms (such as the Master Switch alarm) require a specific action by the operator before the alarm condition will cease. In these cases, instructions are indicated on the alarm display.

Other alarms can be acknowledged by pressing the **Alarm Cancel** button of **ESC** key. Detailed information about the alarm can be accessed by pressing the **Alarm Information** button.

## ALARM LOG

The Alarm Log screen provides a list of specific alarms that have been issued during system operation. Information displayed on the Alarm Log screen is informational only and cannot be edited.

Each time specific alarm conditions are detected, it is logged and communicated to the WSMT.

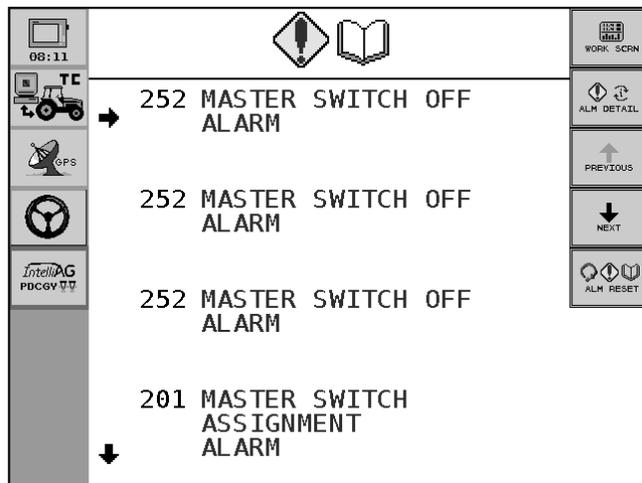
### To View Alarm Log:

1. Press the **Alarm Log** button to access the Alarm Log screen.
  - The number of the alarm, along with the alarm description displays.
  - Up to 20 alarms may be recalled.
  - Each alarm occurrence can have up to 5 instances of the alarm tagged with a date and time stamp.
2. To select specific Alarm details, press the **Previous** or **Next** buttons to move the small display arrow next to the desired alarm number.
3. Press the **Alarm Detail** button to view all of the occurrences of the selected alarm.
  - The down arrow in the lower left at screen bottom signifies that more alarms are present and accessible by pressing the **Previous** or **Next** buttons.



**Figure 106**

### Alarm Log Screen



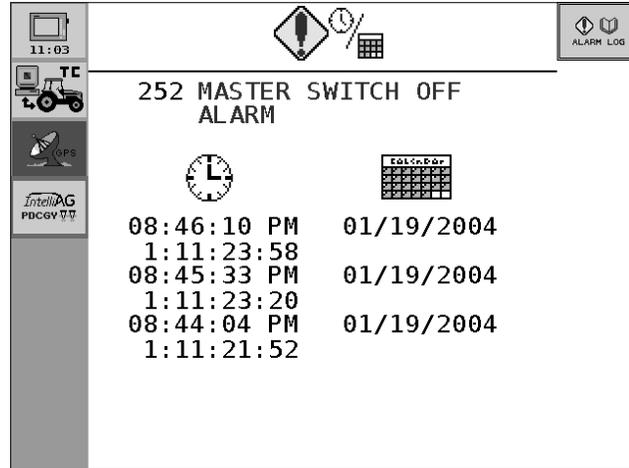


## ALARM DETAIL

1. To view specific alarm details, press the **Alarm Detail** button.
  - The time and date of the selected alarm displays for each occurred instance.
  - The Alarm Log will save up to 5 instances of the selected alarm.

**Figure 107**

**Alarm Detail Screen**



## ALARM RESET

(Level 3 User)

Level 3 Users only have access to the Alarm Reset screen.

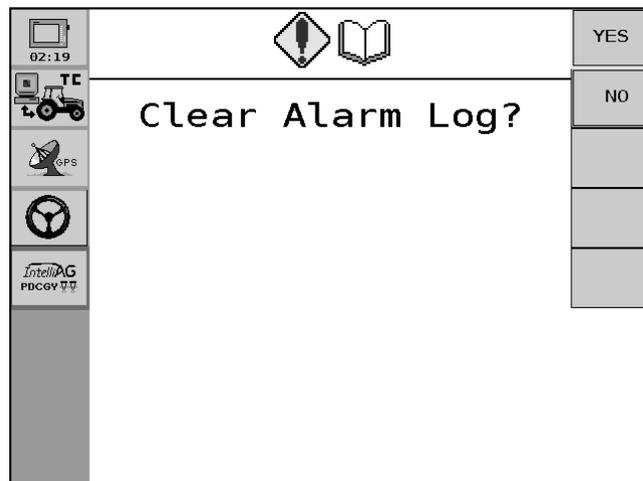
To reset the Alarm Log, press the **Alarm Reset** button.

1. Press **YES** button to clear.
2. Press **NO** button to return to Alarm Log Detail screen.



**Figure 108**

**Reset Alarm Log Screen**







## TROUBLESHOOTING & ALARMS

Alarms are indicated on the Virtual Terminal with the following graphic, as well as with a continuous, audible alarm. The audible alarm is terminated by pressing the **Alarm Cancel** button or **ESC** key. In addition, detailed descriptions of the current alarm can be viewed by pressing the **Alarm Detail** button. Some of the alarm conditions display instructions on correcting the situation.

### IntelliAG



Alarms are presented in a full screen display that will describe the alarm and, depending upon the alarm, may give instructions on how to fix the alarm. Each alarm type has an associated alarm number that can be cross-referenced in this section.

Some alarms (for instance a Master Switch alarm) will require a specific action before the alarm condition will cease. In these cases, the instructions to proceed are indicated in the alarm display.

The following table describes the possible alarm conditions, causes, and remedies.



# OPERATOR'S MANUAL



ALARM #	ALARM	PROBABLE CAUSE	CORRECTIVE ACTION
1	Software Task Stack Overflow Alarm	1. Internal system software error.	1. Cycle system power OFF/ON. If condition persists, contact your local Great Plains dealer.
2	Software System Stack Overflow Alarm	1. Internal system software error.	1. Cycle system power OFF/ON. If condition persists, contact your local Great Plains dealer.
3	VT Out of Memory Alarm	THE ECU MEMORY REQUIREMENTS ARE GREATER THAN THE VIRTUAL TERMINAL CAN HANDLE.	1. Remove any unnecessary ECU's 2. Contact your local Great Plains dealer.
4	Software Version Does Not Support this Configuration Alarm	1. Occurs if new software is loaded and does not support the configuration of the hardware it is loaded on.	1. Record software and model information listed below. 2. Contact dealer for software update.
202	Ground Speed Failure Alarm	ONLY ACTIVE IN PLANTER MONITOR MODE. SEEDS ARE DETECTED WHEN THERE IS NO GROUND SPEED. 1. Incorrect speed source setting or calibration.  2. Defective speed sensor or harness.  3. Defective module or virtual terminal.	1. Verify correct speed source setting and speed calibration on the Ground Speed Calibration screen. 2. Inspect speed sensor/harness for damage or replace speed sensor. 3. Replace module or virtual terminal.
203	Continuous Test Failure Alarm	CONTROL CONDITIONS EXCEED THE DISK RPM LIMITS. 1. Test speed setting is set too high or low. 2. Disk Hi and/or Disk Low settings are incorrect.	1. Enter an appropriate Test Speed. 2. Verify or enter appropriate Disk Hi and/or Disk Low values.
204	5 Revolution Test Failure Alarm	CONTROL CONDITIONS EXCEED THE DISK RPM LIMITS. 1. Test Speed setting is set too high or low. 2. Disk Hi and/or Disk Low settings are incorrect.	1. Enter an appropriate test speed. 2. Verify or enter appropriate Disk Hi and/or Disk Low values.
205	Channel Failure Alarm	1. Defective control valve.  2. Defective feedback sensor.  3. Defective module harness or module harness fuse. 4. Defective module.	1. Inspect control valve for damage or replace. 2. Inspect feedback sensor for damage or replace. 3. Inspect module harness for damage. Replace harness fuse. 4. Inspect module for damage or replace.
206	Channel Unable to Control Alarm	1. Incorrect channel settings.  2. Incorrect feedback sensor installation.  3. Defective feedback sensor.	1. Verify correct setup constants on the Channel Configuration screen. Perform a valve calibration. 2. Verify correct installation of the feedback sensor. 3. Inspect feedback sensor for damage or replace.
207	Channel Unstable Alarm	1. Incorrect channel settings.  2. Incorrect feedback sensor installation.  3. Defective feedback sensor.	1. Verify correct setup constants on the Channel Configuration screen. Perform a valve calibration. 2. Verify correct installation of the feedback sensor. 3. Inspect feedback sensor for damage or replace.

# OPERATOR'S MANUAL



ALARM #	ALARM	PROBABLE CAUSE	CORRECTIVE ACTION
208	Channel Saturation Exceeded Alarm	<ol style="list-style-type: none"> <li>Excessive speed.</li> <li>Incorrect channel settings. Desired rate too high for implement.</li> <li>Target rate too high</li> </ol>	<ol style="list-style-type: none"> <li>Reduce speed.</li> <li>Verify correct setup constants on the Channel Configuration screen. Perform a valve calibration and a Calibration constant.</li> <li>Reduce target rate.</li> </ol>
209	Channel High Limit Exceeded Alarm	<p>CONTROL LIMITED BY HIGH LIMIT. UNDER APPLICATION IS OCCURRING.</p> <p>NOTE: System will not run faster than High Limit Value.</p>	<ol style="list-style-type: none"> <li>Check and/or reduce speed.</li> <li>Verify Channel setup (high RPM)</li> <li>Perform new valve calibration.</li> <li>Check and/or reduce target rate.</li> <li>Inspect feedback sensor for damage.</li> <li>Inspect control valve for damage.</li> <li>Inspect harness/module for damage.</li> <li>Decrease target rate.</li> </ol>
210	Channel Low Limit Exceeded Alarm	<p>CONTROL RATE LIMITED BY LOW LIMIT. OVER APPLICATION IS OCCURRING.</p>	<ol style="list-style-type: none"> <li>Increase speed.</li> <li>Verify correct setup constants (low RPM).</li> <li>Perform valve calibration.</li> <li>Increase target rate.</li> </ol>
211	All Rows Failed Alarm	<ol style="list-style-type: none"> <li>Seed meter drive malfunction.</li> <li>Rows are not assigned to channel and channels are turned off.</li> </ol>	<ol style="list-style-type: none"> <li>Check seeding drive(s).</li> <li>Assign rows to channel.</li> </ol>
212	Row Failure Alarm	<p>SEED RATE HAS FALLEN BELOW THE ROW FAIL RATE SETTING ON THE SEED MONITOR SETUP SCREEN.</p> <ol style="list-style-type: none"> <li>Seed meter malfunction.</li> <li>Dirty or defective seed sensor.</li> <li>Damaged planter harness.</li> <li>Defective module harness or module</li> <li>Out of seed</li> </ol>	<ol style="list-style-type: none"> <li>Verify proper planter operation.</li> <li>Inspect seed sensor for dirt or damage. Replace if necessary.</li> <li>Inspect planter harness for damage. Repair or replace.</li> <li>Inspect harness and module for damage. Replace if necessary.</li> <li>Fill with seed</li> </ol>
213	High Population Limit Exceeded Alarm	<p>SEED RATE HAS EXCEEDED THE HIGH ALARM SETTING ON THE SEED MONITOR SETUP SCREEN.</p> <ol style="list-style-type: none"> <li>Seed meter malfunction or incorrect setup.</li> <li>Defective seed sensor.</li> <li>Defective module.</li> </ol>	<ol style="list-style-type: none"> <li>Verify proper planter options/setup.</li> <li>Inspect seed sensor for damage. Replace if necessary.</li> <li>Inspect module for damage. Replace if necessary.</li> </ol>
214	Low Population Limit Exceeded Alarm	<p>SEED RATE HAS DROPPED BELOW THE LOW ALARM SETTING ON THE SEED MONITOR SETUP SCREEN.</p> <ol style="list-style-type: none"> <li>Seed meter malfunction or incorrect setup.</li> <li>Defective seed sensor.</li> <li>Defective module.</li> <li>Running out of seed.</li> </ol>	<ol style="list-style-type: none"> <li>Verify proper planter operation/setup.</li> <li>Inspect seed sensor for damage. Replace if necessary.</li> <li>Inspect module for damage. Replace if necessary.</li> <li>Fill with seed.</li> </ol>
215	High Pressure Limit Exceeded Alarm	<p>SENSED PRESSURE EXCEEDS THE HIGH ALARM SETTING ON THE PRESSURE SETUP SCREEN.</p> <ol style="list-style-type: none"> <li>Implement malfunction or incorrect setup.</li> <li>Defective pressure sensor.</li> <li>Defective module.</li> </ol>	<ol style="list-style-type: none"> <li>Verify proper implement operation/setup.</li> <li>Inspect pressure sensor for damage. Replace if necessary.</li> <li>Inspect module for damage. Replace if necessary.</li> </ol>

# OPERATOR'S MANUAL



ALARM #	ALARM	PROBABLE CAUSE	CORRECTIVE ACTION
216	Low Pressure Limit Exceeded Alarm	<p>SENSED PRESSURE BELOW THE LOW ALARM SETTING ON THE PRESSURE SETUP SCREEN.</p> <ol style="list-style-type: none"> <li>1. Implement malfunction or incorrect setup.</li> <li>2. Defective pressure sensor.</li> <li>3. Defective module harness or module.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify proper implement operation/setup.</li> <li>2. Inspect pressure sensor for damage. Replace if necessary.</li> <li>3. Inspect module and/or module harness for damage. Replace if necessary.</li> </ol>
217	Member module Detection Alarm	<p>NUMBER OF MEMBER MODULES DOES NOT MATCH THE SYSTEM CONFIGURATION.</p> <ol style="list-style-type: none"> <li>1. Too few modules connect to system.</li> <li>2. Too many modules connected to system.</li> <li>3. Defective CAN/module harness.</li> <li>4. Blown module harness fuse.</li> <li>5. Defective module.</li> <li>6. New module has been added to system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify correct module configuration setup on the Module Configuration screen.</li> <li>2. Verify correct module configuration setup on the Module Configuration screen.</li> <li>3. Identify missing module in the Module Configuration list. Inspect CAN/module harness of the missing module for damage. Repair or replace harness.</li> <li>4. Inspect module harness fuse of the identified module. Replace if necessary.</li> <li>5. Identify missing module in the Module Configuration list. Inspect missing module for damage or replace.</li> <li>6. Verify correct module configuration setup on the Module Configuration screen.</li> </ol>
218	Pressure Sensor Detection Alarm	<p>NUMBER OF PRESSURE SENSORS CONNECTED DOES NOT AGREE WITH THE NUMBER OF SENSORS CONFIGURED ON THE PRESSURE SENSOR CONFIGURATION SCREEN.</p> <ol style="list-style-type: none"> <li>1. Defective Sensor.</li> <li>2. Defective module or damaged module harness.</li> <li>3. Additional pressure sensor detected.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect pressure sensor for damage or replace.</li> <li>2. Inspect module and/or module harness for damage. Replace if necessary.</li> <li>3. Verify correct # ACC setting for each module.</li> </ol>
219	Row Sensor Detection Alarm	<p>NUMBER OF SEED SENSORS CONNECTED DOES NOT AGREE WITH THE NUMBER OF SENSORS CONFIGURED ON THE SEED SENSOR CONFIGURATION SCREEN.</p> <ol style="list-style-type: none"> <li>1. Defective seed sensor.</li> <li>2. Defective module or damaged module harness.</li> <li>3. Additional seed sensor detected.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect seed sensor for damage or replace.</li> <li>2. Inspect module and/or module harness for damage. Replace if necessary.</li> <li>3. Verify correct # ROWS setting for each module.</li> </ol>
220	Row Sensors Installed Incorrectly Alarm	<p>ROWS ARE NOT DETECTED SEQUENTIALLY ON A MODULE.</p> <ol style="list-style-type: none"> <li>1. Incorrect seed row connections.</li> <li>2. Defective seed sensor.</li> <li>3. Defective module or damaged module harness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify seed sensors are connected sequentially on all modules as instructed in installation.</li> <li>2. Inspect seed sensor for damage or replace.</li> <li>3. Inspect module and/or module harness for damage. Replace if necessary.</li> </ol>

# OPERATOR'S MANUAL



ALARM #	ALARM	PROBABLE CAUSE	CORRECTIVE ACTION
221	Channel Invalid State Alarm	1. Internal system software error.	1. Cycle system power Off/On. If condition persists, contact your local Great Plains dealer.
222	Channel Setup Height Error Alarm	1. Implement hydraulic system malfunction. 2. Defective control valve. 3. Incorrect feedback sensor installation. 4. Defective feedback sensor. 5. Limit Max Output set too low.	1. Verify implement hydraulic system operation. 2. Inspect control valve for damage. Replace if necessary. 3. Verify correct installation of the feedback sensor. 4. Inspect feedback sensor for damage or replace. 5. Set Limit Max Output to a higher PWM% on the Valve Calibration screen. Perform a new valve calibration.
223	Channel Max Feedback Unreachable Alarm	1. Limit Max Output set too low. 2. Incorrect feedback sensor installation. 3. Defective feedback sensor.	1. Set Limit Max Output to a higher level on the Valve Calibration screen. Perform a new valve calibration. 2. Verify correct installation of the feedback sensor. 3. Inspect feedback sensor for damage or replace.
224	No Channel Gain Steps Calculated Alarm	1. Implement hydraulic system malfunction. 2. Defective control valve. 3. Incorrect feedback sensor installation. 4. Defective feedback sensor.	1. Verify implement hydraulic system operation. 2. Inspect control valve for damage. Replace if necessary. 3. Verify correct installation of the feedback sensor. 4. Inspect feedback sensor for damage or replace.
225	Hopper Sensor Low Alarm	1. Incorrect logic level setting on the Hopper Setup screen. 2. Dirty or defective hopper sensor. 3. Defective module harness or module 4. Hopper empty	1. Verify correct logic level setting on the Hopper Setup screen. 2. Clean/inspect hopper sensor. Replace if necessary. 3. Inspect harness and module for damage. Replace if necessary. 4. Fill hopper.
226	RPM Sensor High Limit Exceeded Alarm	SENSED RPM EXCEEDS THE HIGH ALARM SETTING ON THE RPM SETUP SCREEN. 1. Implement malfunction or incorrect setup. 2. Defective RPM sensor. 3. Defective module.	1. Verify proper implement operation/setup. 2. Inspect RPM sensor for damage. Replace if necessary. 3. Inspect module for damage. Replace if necessary.
227	RPM Sensor Low Limit Exceeded Alarm	SENSED RPM BELOW THE LOW ALARM SETTING ON THE RPM SETUP SCREEN. 1. Implement malfunction or incorrect setup. 2. Defective RPM sensor. 3. Defective module harness or module.	1. Verify proper implement operation/setup. 2. Inspect RPM sensor for damage. Replace if necessary. 3. Inspect module for damage. Replace if necessary.

# OPERATOR'S MANUAL



ALARM #	ALARM	PROBABLE CAUSE	CORRECTIVE ACTION
228	Hopper Sensor Detection Alarm	<p>NUMBER OF HOPPER SENSORS CONNECTED DOES NOT AGREE WITH THE NUMBER OF SENSORS CONFIGURED ON THE HOPPER SENSOR CONFIGURATION SCREEN.</p> <ol style="list-style-type: none"> <li>1. Defective hopper sensor.</li> <li>2. Defective module or damaged module harness.</li> <li>3. Additional hopper sensors detected.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect hopper sensor for damage or replace.</li> <li>2. Inspect module and/or module harness for damage. Replace if necessary.</li> <li>3. Verify correct # HOPP setting for each module.</li> </ol>
229	Hopper Sensors Installed Incorrectly Alarm	<p>HOPPER SENSORS ARE NOT INSTALLED SEQUENTIALLY ON A MODULE.</p> <ol style="list-style-type: none"> <li>1. Incorrect hopper sensor connections.</li> <li>2. Defective hopper sensor.</li> <li>3. Defective module or damaged module harness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify hopper sensors are connected sequentially on all modules as instructed in INSTALLATION.</li> <li>2. Inspect hopper sensor for damage or replace.</li> <li>3. Inspect module and/or module harness for damage. Replace if necessary.</li> </ol>
230	Pressure Sensors Installed Incorrectly Alarm	<p>PRESSURE SENSORS ARE NOT INSTALLED SEQUENTIALLY ON A MODULE.</p> <ol style="list-style-type: none"> <li>1. Incorrect pressure sensor connections.</li> <li>2. Defective pressure sensor.</li> <li>3. Defective module or damaged module harness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify pressure sensors are connected sequentially on all modules as instructed in INSTALLATION.</li> <li>2. Inspect pressure sensor for damage or replace.</li> <li>3. Inspect module and/or module harness for damage. Replace if necessary.</li> </ol>
231	Seeding Detected on a Tramlined Row Alarm	<p>Occurs if a tramlined row does not shut off the row unit and seeds continue to be detected. (Only possible if system supports tramlining).</p> <ol style="list-style-type: none"> <li>1. Output to row mapping is assigned incorrectly.</li> <li>2. Seed sensor malfunction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check output row mapping.</li> <li>2. Check seed sensor to ensure no false triggering.</li> <li>3. Inspect and verify Tramline output is shutting off seeds correctly.</li> </ol>
232	RPM Sensor Low Limit Exceeded With Control Channel Shutdown Alarm	<p>RPM HAS DROPPED BELOW THE DISABLE CONTROL ON LOW ALARM SETTING ON THE ACCESSORY SETUP SCREEN.</p> <ol style="list-style-type: none"> <li>1. Defective RPM sensor.</li> <li>2. Damaged module harness.</li> <li>3. Defective module.</li> <li>4. Low RPM</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect RPM sensor for damage. Replace if necessary.</li> <li>2. Inspect module harness for damage. Repair or replace.</li> <li>3. Inspect module for damage. Replace if necessary.</li> <li>4. Increase RPM.</li> </ol>
233	Channel Activation Alarm	<p>CHANNEL DELAY OR PRECHARGE IS ENABLED. DURING THIS THE CONTROL WILL RUN WITHOUT GROUND SPEED OR WITHOUT THE IMPLEMENT DOWN.</p>	<ol style="list-style-type: none"> <li>1. Acknowledge alarm to activate control channels.</li> <li>2. Acknowledge alarm and disable Delay or Precharge to stop control.</li> </ol>
235	New Member Module Detected Alarm	<ol style="list-style-type: none"> <li>1. New member module has been found.</li> </ol>	<ol style="list-style-type: none"> <li>1. Assign sensors to the new module at the Module Configuration Setup screen and its position.</li> </ol>

# OPERATOR'S MANUAL



ALARM #	ALARM	PROBABLE CAUSE	CORRECTIVE ACTION
236	Intermittent Member Module Detected Alarm	1. A member module that had previously failed communication has come online.	1. Inspect harness connections to this module.
237	Product Level Low Alarm	1. Calculated product level has dropped below alarm level.	1. Fill product bin and reset level.
240	Seeding Detected on a Control Off Row Alarm	1. Channel turned off and seed continues to be detected.	1. Check seed dispensing unit for proper shut off.
241	Control Not Active With Implement Lowered and Speed	1. Control will not operate while on a setup screen.	1. Navigate to the Work Screen to activate the control. 2. Raise implement and stop forward speed to clear alarm.
246	Master Switch Softkey Press Alarm	1. Warning of action associated with key press.	1. Press Control Start key to activate control.
249	Control Channel Activation Alarm	1. Controls will run without ground speed or without implement lowered. Channel Manual Mode or Precharge is enabled. During this the control will run without ground speed or without the implement down.	1. Acknowledge alarm to activate control channels. 2. Acknowledge alarm and disable manual or precharge to stop control.
251	New Hardware Detected Alarm	1. New hardware detected that requires system to be rebooted to acknowledge hardware.	1. Cycle system power to complete hardware install.
253	Monitor Channel High Limit Exceeded Alarm	1. High limit set incorrectly. 2. Transmission not set correctly.	1. Verify high limit. 2. Verify transmission setting.
254	Monitor Channel Low Limit Exceeded Alarm	1. Low limit set incorrectly. 2. Transmission not set correctly.	1. Verify low limit. 2. Verify transmission setting.
255	Channel Invalid Material Alarm	1. There is no material defined with a type that matches the selected control channel type.	1. Create a material with the channel type.
260	Control Channel Failure Alarm	1. Control channel is not responding.	1. Cycle Master Switch or implement switch to restart the control channel. 2. Verify drive is connected and engaged. 3. Check feedback sensor for damage. 4. Check harness for damage. 5. Check module for damage.
261	Control Channel Unable to Control Alarm	1. Control Channel cannot control to the specified rate.	1. Inspect control channel setup. 2. Perform new valve calibration. 3. Check feedback sensor for damage. 4. Check control valve for damage. 5. Check harness for damage. 6. Check module for damage.
262	RPM Control Channel is off Alarm	1. RPM Channels are off. System may not operate properly.	1. Acknowledge alarm to leave RPM control channels off. 2. Press "CHAN ON" to turn all RPM channels on.
264	Ground speed Calibration Configuration Alarm	Current ground speed calibration exceeds the max number of ground speed pulses of 50000 that can be entered as a ground speed constant.	1. Probable that the marked off course limits were exceeded. Verify course length of 400 ft (100m). 2. Ground speed sensor has too high resolution of pulses. Check speed sensor for damage.

# OPERATOR'S MANUAL



ALARM #	ALARM	PROBABLE CAUSE	CORRECTIVE ACTION
602	8 Volt Supply Failure Alarm	<p>8V SUPPLY VOLTAGE IS BELOW 7.2V OR HIGHER THAN 16V.</p> <ol style="list-style-type: none"> <li>1. Damaged module harness.</li> <li>2. Defective seed or hopper sensor.</li> <li>3. Defective module.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect module harness for damage. Repair or replace harness.</li> <li>2. Inspect seed or hopper sensors connected to the identified module for damage. Replace sensors if necessary.</li> <li>3. Replace identified module.</li> </ol>
603	Member Module Communication Failed Alarm	<p>COMMUNICATION WITH AN ACTIVE MODULE HAS FAILED</p> <ol style="list-style-type: none"> <li>1. Damaged CAN or module harness.</li> <li>2. Blown module harness fuse.</li> <li>3. Defective module.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify missing module in the Module Configuration list. Inspect CAN/module harness of the missing module for damage. Repair or replace harness.</li> <li>2. Inspect module harness fuse, replace if necessary.</li> <li>3. Identify missing module in the Module Configuration list. Inspect missing module for damage or replace.</li> </ol>
604	ECU Voltage Out of Range Alarm	<p>ECU VOLTAGE IS BELOW 11V OR HIGHER THAN 16V.</p> <ol style="list-style-type: none"> <li>1. Damaged CAN or module harness.</li> <li>2. Defective module</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect CAN/module harness of the identified module for damage.</li> <li>2. Inspect identified module for damage or replace.</li> </ol>
605	Solenoid Voltage Out of Range Alarm	<p>SOLENOID VOLTAGE IS BELOW 11V OR HIGHER THAN 16V.</p> <ol style="list-style-type: none"> <li>1. Damaged CAN or module harness.</li> <li>2. Blown module harness fuse.</li> <li>3. Defective module.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect CAN/module harness of the identified module for damage. Repair or replace harness.</li> <li>2. Inspect module harness fuse or replace.</li> <li>3. Inspect identified module for damage or replace.</li> </ol>
606	Ground Offset Voltage Out of Range Alarm	<ol style="list-style-type: none"> <li>1. Damaged/shorted Actuator Harness.</li> <li>2. Defective PWM valve driver or Servo valve driver.</li> <li>3. Defective module.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect Actuator Harness for damage around the WPM and Servo valve connections. Repair or replace harness.</li> <li>2. Inspect PWM or Servo valve drivers for damage and replace if necessary.</li> <li>3. Inspect identified module for damage and replace if necessary.</li> </ol>
607	Task Controller Task Stopped Alarm	<ol style="list-style-type: none"> <li>1. Control rates no longer set by Task Controller.</li> </ol>	<ol style="list-style-type: none"> <li>1. Press TC RATE to keep the last target rate from the Task Controller.</li> <li>2. Press MAT RATE to use the target rate from the material setup.</li> </ol>
608	Task Controller Data Logging Error	<ol style="list-style-type: none"> <li>1. Task Controller is setting target rates without logging the data.</li> </ol>	<ol style="list-style-type: none"> <li>1. Restart Task Controller task.</li> <li>2. Cycle power to entire system.</li> </ol>



*Dealers have the responsibility of calling to the attention of their customers the following warranty prior to acceptance of an order from their customer for any DICKEY-john product.*

## **DICKEY-john® WARRANTY**

DICKEY-john warrants to the original purchaser for use that, if any part of the product proves to be defective in material or workmanship within one year from date of original installation, and is returned to DICKEY-john within 30 days after such defect is discovered, DICKEY-john will (at our option) either replace or repair said part. This warranty does not apply to damage resulting from misuse, neglect, accident, or improper installation or maintenance; any expenses or liability for repairs made by outside parties without DICKEY-john's written consent; damage to any associated equipment; or lost profits or special damages. Said part will not be considered defective if it substantially fulfills the performance expectations. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE, AND OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. DICKEY-john neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part and will not be liable for consequential damages. Purchaser accepts these terms and warranty limitations unless the product is returned within fifteen days for full refund of purchase price.

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