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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.

![Safety Alert Symbol]

**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.
SYSTEM OVERVIEW

The DICKEY-john IntelliAg Air Cart Control system monitors granular seeding and granular fertilizer 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 or a 10” Virtual Terminal
- Working Set Master Module
- Up to 11 Working Set Member modules (monitors up to a total of 198 rows of seed input) (optional)
- Implement Lift Switch (optional)
- CAN Terminators
- TECU (10” VT only)
- Video Surveillance (10” VT only)

All of the devices communicate using the ISO 11783 CAN communications standard. System components are described in the following section.

VIRTUAL TERMINAL (VT)

A 5” or 10” Virtual Terminal provides user interface with the IntelliAg system used for output and input of data. Reference the VT operator’s manual for setup and configuration instructions.

Figure 1
5” or 10” Virtual Terminal
MASTER SWITCH

The Master Switch starts and stops production 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 housed inside the tractor cab.

WORKING SET MASTER (WSMT) MODULE (AIR CART MONITOR)

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 two channels for granular seed monitor, or granular fertilizer monitor. In addition, the WSMT can accept inputs from 5 hopper levels, 3 RPM shaft sensors, 4 air pressure sensors, 1 lift switch and 1 ground speed sensor. The WSMT module uses a 30 and 18 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)

Each Working Set Member (WSMB) module is a slave 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 11 WSMB’s may be installed to monitor up to 198 rows. The flexible design of the WSMB allows for installation virtually anywhere on the implement.

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.
SYSTEM REQUIREMENTS

The minimum requirements to operate the IntelliAg Air Cart Monitor system consist of:

- Virtual Terminal
- Master Switch
- Working Set Master
- Two CAN terminators
- TECU (10" VT only)

Optional and not required for system operation:

- Working Set Member(s)
- Output Module

PERFORMANCE FEATURES

- Three user access levels for viewing and setting constants
  - User Level 1 (End User)
  - User Level 2 (Dealer)
  - User Level 3 (OEM)
- Monitoring of up to 198 rows, 1 ground speed sensor, 5 hopper levels, 3 shaft RPM sensors, 4 pressure sensors, one lift switch
- Easy and flexible configuration
- User-definable view of functions including:
  - control actual rates
  - control target rates
  - control rate
  - control scan
  - ground speed
  - total area
  - field area - 1 and 2
  - channel areas - 1 and 2
  - area scan
  - pressure scan
  - RPM scan
  - control feedback scan
  - system active time
  - channel material accumulation
  - channel product level
  - area per hour
  - hopper level status scan
  - distance accumulator
  - seed count accumulator
  - population row scan
  - population min scan
  - population max scan
  - population min/max row
  - population average
  - spacing row scan
  - spacing min/max scan
  - spacing min scan
NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

User-definable functions continued-
- spacing max scan
- spacing average
- seeds per distance row scan
- seeds per distance min/max scan
- seeds per distance min scan
- seeds per distance max scan
- seeds per distance average (population)
- singulation average (population)
- singulation row scan (population)
- singulation min/max scan (population)

COMPATIBILITY
- Compatible with DICKEY-john sensors
INSTALLATION

VIRTUAL TERMINAL

Reference the Virtual Terminal (VT) operator’s manual for installing the VT to the tractor cab. Once the Virtual Terminal has been mounted, connect the tractor (cab) harness as illustrated in (Figure 13) or (Figure 14).

Figure 6
5” and 10” Virtual Terminals

MASTER SWITCH

1. Install the master switch within easy reach of the operator.
2. Once mounted, connect the master switch to the tractor (cab) harness as illustrated in (Figure 13) or (Figure 14).

Figure 7
Master Switch
WORKING SET MASTER (WSMT) MODULE

1. Select an area on the implement to mount the WSMT that allows for easy hookup and access. Use the enclosure as a template to mark the location of the mounting holes. 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:

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

3. Once mounted, connect the WSMT to the Working Set Master module harness and connect the WSMT harness to the Power/CAN backbone.

CAUTION

Do not install the module in any orientation other than shown in (Figure 9). 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. Connect sensors and outputs to the module harness. The WSMT Module harness can accept the following sensors or output:

- Feedback Sensors (Fb1 and Fb2) for each seed meter
- Main Drive Clutch output
- Fan Solenoid Protection output
- 2 Hopper Sensors
- 2 Air Pressure Sensors
- 1 Implement Lift Sensor
- 1 RPM Sensor (RPM1)
- Ground Speed
- 2 Zeromax Control
- Pair of 6-pin connectors are available for Servo connection.

Install sensors, valves, etc. per the instructions included with the items. Install the feedback sensors for each seed meter and connect the devices to their respective inputs on the harness. Secure any unused and excess cable lengths were necessary. Refer to (Figure 17) for additional information.

- No seed sensors can be connected directly to the Air Cart WSMT.
WORKING SET MEMBER (WSMB) MODULE

Figure 10

Working Set Member Module

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. This step minimizes setup time at the Module Configuration screen. Pressing the Auto Sort button groups same module types together and in the order the modules are mounted on the implement.

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 9).

CAUTION

Do not install the module in any orientation other than illustrated in (Figure 9). The connection wires must not be mounted upward as moisture can collect inside the unit and damage the circuits.

3. Mount with the label side of the module facing out.
4. To bolt the member to a frame:
   • Use the enclosure as a template to mark the location of the mounting holes.
   • Drill two 9/32 inch diameter holes where marked.
   • Attach to frame using 1/4 x 20 bolts or other fastening devices as illustrated in (Figure 11).

IMPORTANT: 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 11
Working Set Member Installation (Bolted)

1/4 x 20 BOLT
1/4 FLAT WASHER
1/4 SPLIT LOCKWASHER
1/4 NUT

IMPLEMENT FRAME

1/4 x 20 THREADED "U" BOLT OR OTHER FASTENING DEVICE

IMPLEMENT FRAME OR SUPPORT

1/4 FLAT WASHER
1/4 NUT
1/4 SPLIT LOCKWASHER
5. To tie strap the member to a frame:
   • Use one long tie-strap to loop around the member body and through both mounting holes as illustrated in (Figure 12).
   • If necessary, drill mounting holes following the procedure described above.
   • Securely tighten tie-strap.
   • Install a second tie-strap toward the label end of the enclosure for additional support.

   Figure 12
   Working Set Member Installation (Tie-Strap)

6. Connect a WSMB harness to the WSMB module and connect the WSMB harness to the Power/CAN backbone.
7. Connect each module harness to its module, inserting both connectors until the connector locking tabs engage.
8. Lay out 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.
9. Route sensor wires in locations where they will not be damaged by chains, drive shafts, sprockets, etc.
10. Secure the harness to the toolbar with tie-straps to ensure good wire sealing.
11. Coil and secure any unused sensor connections.
12. The WSMB Module harness can accept a standard DICKEY-john style PM 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.
13. Route the planter harness on the implement securing as necessary.
14. Install seed sensors per the instructions included with the sensors. Refer to the Implement Harness diagram (Figure 16) for additional information.

NOTE: The last module harness in the system must have a CAN Terminator installed for proper system operation. Refer to Implement Harness (Figure 13) or (Figure 14) 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.
CAB HARNESS CONNECTIONS

The following diagrams illustrate cab harness layout and connections for Dickey-john 5” and 10” Virtual Terminals.

Figure 13

Cab Harness Layout and Connections (5” Virtual Terminal)
NOTE: The ignition lead must be connected to switched +12VDC for the system to power properly.

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 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.
Figure 14

Cab Harness Layout Connection (10” Virtual Terminal)

To Implement CAN Harness

System Power Harness 467980455

Battery

Ignition Connect to switched +12VDC
NOTE: This wire must be connected to switched +12VDC

Tractor ECU 467985060S1

Tractor Harness 467980451A

CAN Terminator 467980126

Master Switch 467980124S1

Virtual Terminal

Chassis Ground

467980502

Radar Speed Sensor
(Radar connected to either tractor harness or WSMT as shown below)
10” VIRTUAL TERMINAL CAB HARNESS CONNECTIONS

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

1. Connect the power leads direct to the battery.
2. Connect the ignition wire to a switched +12 VDC.
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, radar speed sensor, GPS, and tractor ECU 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.
IMPLEMENT HARNESS CONNECTIONS

Refer to the following diagrams for implement harness layout and connections. The diagrams provide an example system using two modules and a CAN extension.

Figure 15
Implement Harness
Figure 16
Implement Harness (Continued)
1. Connect the Implement CAN breakaway extension to the mating connector of the cab harness. Route the harness along the implement hitch to the next extension or module harness (use an implement extension harness if additional length is needed). Secure harness as needed.

2. Connect the harnessing to the mating connectors of the Implement CAN harness, and then connect the module to the harness. The WSMT 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. Secure module harness as needed.

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

NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

The system is compatible with all existing DICKEY-john seed sensors. Seed sensors may be connected to the WSMB Modules. Any number of sensors up to the maximum capacity of the module may be connected. A maximum of 214 seed sensors can be connected to the system.

IMPORTANT: Seed sensors must be connected to a WSMB only and cannot be connected to an accessory harness of the WSMT.
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 17**

Correct Seed Sensor Module Connection

![Correct Seed Sensor Module Connection Diagram](image1)

**Figure 18**

Incorrect Seed Sensor Module Connection

![Incorrect Seed Sensor Module Connection Diagram](image2)

Failure to correctly install seed sensors will result in incorrect row assignment on the planter monitor display functions.
HOPPER LEVEL SENSORS
The system is compatible with the DICKEY-john hopper level sensors. Two hopper level sensors can be connected to the WSMT module.

RPM/FAN SENSORS
The system is compatible with all existing DICKEY-john digital fan/RPM sensors. One Fan/RPM sensors can be connected to the WSMT module.

AIR PRESSURE SENSORS
The system is compatible with DICKEY-john air pressure sensors. Two Air Pressure Sensors can be connected to the WSMT.
SYSTEM MODES

The Virtual Terminal has two modes of operation:

- Operate
- Setup/Configuration (Setup constants accessible only with password)

The position of the master switch determines which mode is selected.

USER LEVEL ACCESS

The system has three user levels:

- User Level 1: Operator View
- User Level 2: Setup of constants (system configuration)
- User Level 3: Setup of constants and alarm reset

The system loads in User Level 1 at every power cycle. Access to User Level 2 and 3 screens require a password available through Great Plains Service.

OPERATE 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 19
Operate Mode

![Operate Mode](image)
AVAILABLE BUTTONS IN OPERATE MODE

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.

MASTER SWITCH ON/OFF

The Master Switch On/Off button is available only when no physical Master Switch is installed.

NEXT CHANNEL

The Next Channel button selects the next available channel for changes of rate or to turn channel off. A channel can also be selected by touching the channel on the screen. The active channel can be set to ON or OFF by selecting the On/Off Channel button described below. The active channel is displayed in reverse video display in a multiple channel configuration. The Target Rate for a channel can be adjusted by using the Inc/Dec buttons described below. 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

The Next Screen button displays information on 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

The Increment button 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

The Decrement button 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

The Inc/Dec Reset to Target button is used to return 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

The Turn On/Off Channel buttons turn 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

The Summary button 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 20**

**Setup/Configuration Mode**

<table>
<thead>
<tr>
<th>415.23</th>
<th>9.4 MPH</th>
<th>2171.5</th>
<th>2428 Lbs/AC</th>
<th>0.00</th>
<th>1644.1 RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEED 5 CH1</td>
<td>FERT 5 CH2</td>
<td></td>
<td></td>
<td>0.00 RPM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AVAILABLE BUTTONS IN SETUP MODE**

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.

**ROW MONITOR SETUP**

The Row Monitor Setup button accesses the Row Monitor Setup screen. All user-entered constants relating to general planter monitor functions are accessed on this screen.

**CONTROL SETUP**

The Control Setup button accesses the Control Setup screen. Up to 16 different materials can be configured and stored for planter, liquid, fertilizer 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
The Alarm Log button accesses the Alarm Log screen. 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.

CONFIGURATION
The Module Configuration button accesses the Import/Export Configuration screen. System configurations can be exported to an SD card and imported to other Working Set Masters eliminating manual data entry.

SUMMARY
The Summary button 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.
SYSTEM CONFIGURATION

The following parameters must be defined for effective system operation:

- Control Channel Setup
- Material Setup
- Ground Speed Setup and Calibration
- Module Configuration (Working Set Master and Members)
- Control Channel Implement Offsets (for GPS and/or field accumulators)

CONTROL SETUP OVERVIEW

The Control Setup screen provides an overview of all materials that have been assigned and configured for a control channel.

The Control Setup screen has control channel selection at the top of the screen and all assigned and unassigned material names at the bottom half of the screen.

- Channel 1 is preloaded as granular seed control
- Channel 2 is preloaded as granular fertilizer control
- Channel 3 is disabled
- Channel 4 is disabled

Figure 21
Control Setup Screen

MATERIAL/CHANNEL SETUP STEPS

Materials must be assigned to a granular seed monitor, granular fertilizer monitor, RPM, granular seed control, or granular fertilizer control channel. Once a material's designation is established, it can be assigned to one of two control channels.
For operator convenience, it is recommended that materials and channels be created in the following order (refer to Figure 22):

1. Material Configuration Setup—Allows setup of detailed material parameters or valve parameters and match these with the type of control or monitoring to be performed.
2. Control Channel Setup—Configure control channels as Granular Seed Control, Granular Fertilizer Control, Granular Seed Monitor, Granular Fertilizer Monitor.
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**

![Diagram of recommended steps for material/channel setup](image)
CONTROL CHANNEL AND MATERIAL SELECTION

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.

To change a control channel material:
1. From the Control Setup screen, press the Material Selection box for the control channel (Figure 23).
2. Use the left and right arrows to scroll through available materials.
3. Press the check mark to select the new material or ‘X’ to cancel.
4. The material appears on the Control Setup screen as the active material.

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

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.

MATERIAL ASSIGNMENT (MATRL 1-16)

Up to 16 different material names display on the Control Setup screen. Material buttons are preloaded with a material type but can be changed.

• Material Buttons 1-4 are preloaded as Granular Seed Control
• Material Buttons 5-8 are preloaded as Granular Seed Monitor
• Material Buttons 9-12 are preloaded as Granular Fertilizer Control
• Material Buttons 13-16 are preloaded as Granular Fertilizer Monitor

Materials can be given a different name than the preloaded name assigned that identifies the control/monitor 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.
MATERIAL SETUP

Up to 16 different materials can be configured for Granular Seed Control, Granular Fertilizer Control, Granular Seed Monitor, or Granular Fertilizer Monitor.

At the Control Setup screen:

1. Select a material by pressing one of the Material buttons (Seed 1-8 and Fert 1-8) to display the Material Setup screen.

CREATE A MATERIAL NAME

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.

To Edit the Material Name:

1. At the Material Setup screen, press the Material Name Input box as shown in (Figure 24) to display the virtual keypad.
2. Type in a material name and press the checkmark to save or the 'X' to cancel. Available characters are a combination of upper case, numbers, letters, symbols, and spaces.
Figure 24
Edit Material Name at Material Setup Screen

Figure 25
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.**

<table>
<thead>
<tr>
<th>Type</th>
<th>Use for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granular Seed Control</td>
<td>seed control on a drill or air cart (linear actuator gearbox control)</td>
</tr>
<tr>
<td>Granular Fertilizer Control</td>
<td>granular application control, air cart, or spreader (linear actuator gearbox control)</td>
</tr>
<tr>
<td>Granular Seed Monitor</td>
<td>seed control on a drill or air cart (manual crank screw gearbox control)</td>
</tr>
<tr>
<td>Granular Fertilizer Monitor</td>
<td>granular application control, air cart, or spreader (manual crank screw gearbox control)</td>
</tr>
<tr>
<td>Monitor Only</td>
<td>population monitoring only</td>
</tr>
<tr>
<td>RPM Control</td>
<td>monitors fan/shaft speed</td>
</tr>
</tbody>
</table>
UNITS

Two unit types are selectable.

- **Lb/ac with Rev/ac** - (Lb/ac) Application rate with a weight per area. (Rev/ac) The number of turns of the metering shaft per acre.
- **Lb/ac with lb/hr** - (Lb/ac) Application rate with a weight per area. (Lb/hr) The amount of material dispensed per hour.

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 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 to the left of the triangle is the difference off of target rate.
MATERIAL SETUP CONSTANTS - GRANULAR SEED MONITOR AND FERTILIZER MONITOR

Material setup for Granular Seed Monitor and Fertilizer Monitor using manual crank screw gearbox control.

**Figure 28**
Granular Seed Monitor Material Setup Screen

```
5 - 16  3  SEED 5
CH 1

Type GRAN SEED MONITOR
Units Lb/ac with Rev/ac
Target Rate 60.0
Density 60.0
Total # Towers 5
Calibration Constant 77600
Variable Cal Constant DISABLED
Low Shaft RPM 10 RPM
High Shaft RPM 50 RPM
Prod Level Alarm 0 LBS
```

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

**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 lb/ft³ can be entered to perform a spreader constant. This will place the channel into a pure pulses/ft³ granular system.

**TOTAL # OF TOWERS**
Total # of Towers used to dispense seeds. Default value is 5.

**CALIBRATION CONSTANT**
Calibration 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 ft³ 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 Calibration Constant from the Calibration procedure.
**VARIABLE CALIBRATION CONSTANT**

Variable Calibration Constant adjusts the accuracy of the seed amount dispensed based on the seed type and meter shaft speed. A selection of 25 pre-defined seed types are available. The default is set to Disabled.

**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 seed or fertilizer levels. The entered value is an estimate in pounds.

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

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

**NOTE:** It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

**SEEDS PER POUND**

The number (#) of seeds per pound is the value used to convert the current application rate from lb/ac to KS/AC to determine population and population alarms.
NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

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.95 (a 5% decrease) = 285 KS/AC. The alarm will activate at this rate.

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.

IMPORTANT: Row Width and On/Off Patterns can be set at the Material Setup screen or the Row I/O screen. The system will use the last entered constants from either screen. However, it is recommended that patterns are set for each material at the Material Setup screen.

ON/OFF PATTERN

For split, twin, or skip row type seeding implements there are 21 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.
MATERIAL SETUP CONSTANTS-GRAN SEED AND GRAN FERTILIZER CONTROL

Material Setup parameters for Granular Seed and Granular Fertilizer using linear actuator gearbox control.

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

Figure 30
Granular Seeding Control Material Setup Screen

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 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 pounds per acre (kg/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 of the entered target rate that will be applied each time the Increment/Decrement button is pressed on the Main Work Screen.

NOTE: Additional Material Setup screen, selected by pressing "More", only applies to Granular Seed Control; not Granular Fertilizer.
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/ft³ granular system.

# TOWERS
The number of towers used to dispense seeds. Default value is 5.

CALIBRATION CONSTANT
Calibration 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 ft³ 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 Calibration Constant from the Calibration procedure is recommended for the most accurate results.

VARIABLE CALIBRATION CONSTANT
Variable Calibration Constant adjusts the accuracy of the seed amount dispensed based on the seed type and meter shaft speed. A selection of 25 pre-defined seed types are available. The default is set to Disabled.

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

NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

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.95 (a 5% decrease) = 285 KS/AC. The alarm will activate at this rate.

ROW WIDTH
Row Width is used for seed rate data 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.
IMPORTANT: Row Width and On/Off Patterns can be set at the Material Setup screen or the Row I/O screen. The system will use the last entered constants from either screen. However, it is recommended that patterns are set for each material at the Material Setup screen.

ON/OFF PATTERN
For split, twin, or skip row type seeding implements there are 21 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.
MATERIAL SETUP - MONITOR ONLY

The Monitor Only selection is typically used for ground drive/nonhydraulic applications to monitor population with high and low alarms on planters. All seeding control channels MUST be disabled in this configuration and/or no rows assigned to those seeding channels. This functionality is not recommended for use on air drills.

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

Figure 32
Monitor Only Screen

NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

TYPE
Select Monitor Only as the Channel Type.

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.

ROW WIDTH
Row Width is used for seed rate data 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.
IMPORTANT: Row Width and On/Off Patterns can be set at the Material Setup screen or the Row I/O screen. The system will use the last entered constants from either screen. However, it is recommended that patterns are set for each material at the Material Setup screen.

ON/OFF PATTERN

For split, twin, or skip row type seeding implements there are 21 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.
MATERIAL SETUP CONSTANTS - RPM CONTROL

The following constants on the Material Configuration Setup screen define the parameters for RPM control. **This functionality is not recommended for use on air drills.**

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

**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.
CONTROL CHANNEL SETUP

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

1. Granular Fertilizer Control
2. Granular Seed Control
3. Granular Seed Monitor
4. Granular Fertilizer Monitor
5. RPM Control
6. Disabled

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

Control channel parameters that can be configured include:

- Control Mode
- Drive Type
- Drive Frequency
- Input Filter
- Gear Ratio
- Sensor Constant
- Ground Speed/Trans In Ratio
- Trans Out Gear Ratio
- # Seed Rows
- Channel Width
- Precharge Time
- Delay Time
- Flush Time

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

To establish 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.

IMPORTANT: It is recommended that Materials are created before configuring channels on the Channel Setup screen.
GRANULAR SEED AND GRANULAR FERT MONITOR SETUP

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

Figure 34
Control Channel Setup - Granular Seed Monitor

<table>
<thead>
<tr>
<th>CHANNEL #1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td><strong>Material Name</strong></td>
</tr>
<tr>
<td><strong>Input Filter</strong></td>
</tr>
<tr>
<td><strong>Sensor Constant</strong></td>
</tr>
<tr>
<td><strong>Gear Ratio</strong></td>
</tr>
<tr>
<td><strong># Seed Rows</strong></td>
</tr>
<tr>
<td><strong>Channel Width</strong></td>
</tr>
</tbody>
</table>

**Type**

Select Granular Fertilizer Monitor or Granular Seed Monitor as Control Type.

**Material Name**

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

**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.

**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.

Number (#) of Seed Rows

Allows entry of a specific number of seed rows to the granular seed 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.
SPREADER CALIBRATION- GRAN SEED AND GRAN FERTILIZER

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 35

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/ft³, Lbs/bu). If not known, enter a value of 1 (Lbs/ft³)

CALIBRATION CONSTANT

Determines how many pulses the application rate sensor produces per volume of material discharged.
NUMBER (#) METER REVS
This does not apply to ground-driven air drills that utilize hand crank calibration. Actual meter revolutions are recorded during the calibration. The higher the number, the more accurate the calibration.

To perform the calibration:
1. Apply the tractor brakes and lock in the applied position.
2. Put the transmission in “park” or in a locked, neutral position.
3. Start the tractor and power up the system.
4. Ensure material is in the hopper and gearbox is positioned correctly for the desired application rate and manually turn the meter until the material is dispensed.
5. Place a container to catch the dispensed material.
6. Press the Start button.
7. Manually turn the calibration crank for 0.1 AC or 0.1 HA. # of revs is used as a reference only.
8. Weigh the material dispensed and enter the value into the Amount Dispensed field.
9. The new calibration constant value will automatically calculate.

IMPORTANT: Increase/Decrease buttons used only for linear actuator control.

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

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

TOTAL # OF TOWERS
Number of towers used to dispense seed flow. Default is 5.

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 and number of towers to calculate the new spreader constant.
GRANULAR SEED AND FERTILIZER CONTROL SETUP

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

**Figure 36**
Granular Seed Control

<table>
<thead>
<tr>
<th>CHANNEL#1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Material Name</td>
</tr>
<tr>
<td>Control Mode</td>
</tr>
<tr>
<td>Drive Type</td>
</tr>
<tr>
<td>Drive Freq.</td>
</tr>
<tr>
<td>Input Filter</td>
</tr>
<tr>
<td>Sensor Constant</td>
</tr>
<tr>
<td>Gear Ratio</td>
</tr>
<tr>
<td>Meter Gear Range</td>
</tr>
<tr>
<td># Seed Rows</td>
</tr>
<tr>
<td>Channel Width</td>
</tr>
<tr>
<td>Flush Enable</td>
</tr>
<tr>
<td>PreCharge(+)\Delay(-)</td>
</tr>
</tbody>
</table>

**TYPE**
Select Granular Seed Control or Granular Fertilizer Control as the channel type.

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

**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**

Zero Max

A Zero Max gear box controlled by a linear actuator.

**DRIVE FREQUENCY**

Drive Frequency specifies the frequency for the linear actuator 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.

**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.

**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.

**METER GEAR RANGE**

Meter Gear Range is determined by the position of the interchangeable gears. High range is used for larger seeds and higher seeding rates. Low range is used for smaller seeds and lower seeding rates.

**NUMBER (#) 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.

---

**NOTE:** The correct number of pulses generated for one revolution must be determined for sensors other than Dickey-john.
Granular Fertilizer
Channel Width requires a manual entry of the fertilizer spread width.

Precharge Time
Precharge Time functionality is a feature used for hydraulic drive systems only and not applicable for ground drive systems.

Delay Time
Delay Time functionality is a feature used for hydraulic drive systems only and not applicable for ground drive systems.

Flush Enable
Flush Enable functionality is a feature used for hydraulic drive systems only and not applicable for ground drive systems.
SPREADER CALIBRATION - GRAN SEED CONTROL AND GRAN FERTILIZER 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.

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

Figure 37
Spread Calibration - Granular Seed Control

<table>
<thead>
<tr>
<th>CHANNEL# 1</th>
<th>SEED 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructions:</td>
<td></td>
</tr>
<tr>
<td>- Verify Seed Meter is Full</td>
<td></td>
</tr>
<tr>
<td>- Prepare to catch material</td>
<td></td>
</tr>
<tr>
<td>- Setup # of revolutions</td>
<td></td>
</tr>
<tr>
<td>- Verify density is correct</td>
<td></td>
</tr>
<tr>
<td>- Press START to calibrate</td>
<td></td>
</tr>
</tbody>
</table>

Density: 60.00 Lbs/ft³
Calibration Constant: 77600 Pb/ft³
Target Meter rpm: 20 RPM
# Meter Revs: 30 REV

Pulse Count: 0 Pb
New Calib Const: 0 Pb
Total # Towers: 5
Amount Dispensed: 0.000 Lbs

⚠️ 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/ft³, Lbs/bu). If not known, enter a value of 1 (Lbs/ft³).
CALIBRATION CONSTANT
Determines how many pulses the application rate sensor produces per volume of material discharged.

TARGET METER RPM
Target Meter RPM does not apply to ground-driven air drills that utilize hand crank calibration.

NUMBER (#) METER REVS
Number of Meter Revolutions does not apply to ground-driven air drills that utilize hand crank calibration. Actual meter revolutions are recorded during calibration. The higher the number, the more accurate the calibration.

To perform the Calibration Constant:
1. Apply the tractor brakes and lock in the applied position.
2. Put the transmission in “park” or in a locked, neutral position.
3. Start the tractor and power up the system.
4. Ensure material is in the hopper and gearbox is positioned correctly for the desired application rate and manually turn the meter until the material is dispensed.
5. Place a container to catch the dispensed material.
6. Press the Start button.
7. Manually turn the calibration crank for 0.1 AC or 0.1 HA. # of revs is used as a reference only.
8. Weigh the material dispensed and enter the value into the Amount Dispensed field.
9. The new calibration constant value will automatically calculate.

IMPORTANT: Increase/Decrease buttons used only for linear actuator control.

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

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

TOTAL # OF TOWERS
Total # of Towers used to regulate seed flow. Default is 5.

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 and number of towers to calculate the new spreader constant.
RPM CONTROL SETUP

The following constants on the Control Channel Setup screen define the parameters for RPM Control. **This functionality is not recommended for use with air drills.**

*Figure 38*

**Control Channel Setup - RPM Control**

<table>
<thead>
<tr>
<th>CHANNEL# 3</th>
<th>RPM CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>RPM</td>
</tr>
<tr>
<td>Material Name</td>
<td>RPM</td>
</tr>
<tr>
<td>Control Mode</td>
<td>Auto</td>
</tr>
<tr>
<td>Drive Type</td>
<td>PWM 3</td>
</tr>
<tr>
<td>Drive Freq.</td>
<td>100 Hz</td>
</tr>
<tr>
<td>Input Filter</td>
<td>50 %</td>
</tr>
<tr>
<td>Sensor Constant</td>
<td>360 Hz</td>
</tr>
<tr>
<td>Master Switch Off</td>
<td>Disabled</td>
</tr>
<tr>
<td>Ramp Up/Down</td>
<td>4.8 %</td>
</tr>
<tr>
<td>Disable Control On</td>
<td>Disabled</td>
</tr>
<tr>
<td>Control Failure Alarm</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

**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 Operate 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.
**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.

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

**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 at 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.

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

*Figure 39*

**Valve Calibration RPM Control**

<table>
<thead>
<tr>
<th>CHANNEL# 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAN</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>CH PWM</th>
<th>0 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH FREQ FILT</td>
<td>0 Hz</td>
</tr>
<tr>
<td>CH RPM</td>
<td>0.0 RPM</td>
</tr>
</tbody>
</table>

**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.
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.
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.

Figure 40
Limit Output RPM Control
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.
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.
MODULE CONFIGURATION

System components must be installed correctly and vehicle parameters entered into the IntelliAg system for effective operation. The following steps provide guidelines for entering those parameters.

**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.

The Module Configuration screen identifies modules on the CAN bus and the sensors connected to each module. This configuration is necessary for proper sensor monitoring and self-test operation. A check mark to the left of each module’s Serial Number identifies that module as active and a communicating module on the bus.

1. From the Main Work screen, press the **Module Configuration** button to access the Module Configuration screen.

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

*Figure 41*  
*Module Configuration Screen*

<table>
<thead>
<tr>
<th>SERIAL NUMBER</th>
<th>MODULE TYPE</th>
<th>MODULE ADDR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10063</td>
<td>WSMT-ACGP</td>
<td>1</td>
</tr>
<tr>
<td>10259</td>
<td>WSMB-18R</td>
<td>2</td>
</tr>
</tbody>
</table>

**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.
IMPORTANT: If an implement uses more than one module type, mount the modules on the implement in serial number order starting on the left side and proceeding to the right. Auto Sort will then sort the modules in the correct order for seed sensor assignment. Refer to the Auto Sort section for instruction.

MODULE ADDRESS

The Module Address column is a critical parameter used to identify module’s position on the implement and to identify the number of rows connected to the Working Set Master (WSMT) and Working Set Members (WSMB) (optional). Accurate placement of the modules is required for correct console operation.

- Up to 16 seed or blockage sensors can connect to the Working Set Master
- Working Set Members can be added to monitor 18 rows each
- Up to 15 Working Set Members can be installed to monitor up to a total 214 rows

The following requirements must be observed when connecting seed sensors to the WSMT or WSMB:

1. Each Module Address is determined by the order in which the modules are installed on the implement.
2. The Module Address should always start at the number 1 position.
3. 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.

AUTO SORT

At initial entry to the Module Configuration screen, the modules will appear in random order and may not correspond with the actual mounting location on the implement.

If modules are mounted on the implement by increasing serial number order from left to right, pressing the Auto Sort button will group same module types together and in the order the modules were mounted on the implement.

After Auto Sort is performed, modules will appear on the Module Configuration screen in groups by serial number order and module type.

IMPORTANT: The WSMT will always appear as Module Address 1 and may need to be repositioned to correspond to its actual mounting location after an Auto Sort.
To perform Auto Sort:

1. At the Module Configuration screen, press the Auto Sort button.
2. Verify that the module types and serial number have been sorted into groups.
3. Change the WSMT address number to the correct module address number as it relates to its mounting location on the implement. All other module types should be in correct order if modules were installed as stated above.
4. Proceed to Auto Configuration.

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.

1. Press the Module Configuration button to access the Module Configuration screen.
2. Press the Auto Config button. An hourglass appears in the upper right corner while the system is being configured.

IMPORTANT: Double check each sensor configuration to verify correct numbering. RPM sensors must be configured manually.

IMPORTANT: All sensors must be connected to the harnessing in the correct sequence for AUTO CONFIG to operate properly. Refer to the Installation Instructions accompanying each module for correct installation.

To Run Auto Config:

1. Press the Auto Config button. An hourglass will appear in the upper right corner while the system is being configured.
### Auto Sort Examples

**Before Auto Sort**

<table>
<thead>
<tr>
<th>SERIAL NUMBER</th>
<th>MODULE TYPE</th>
<th>MODULE ADDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10003</td>
<td>WSMT-ACCGP</td>
<td>1</td>
</tr>
<tr>
<td>10259</td>
<td>WSMB-18R</td>
<td>2</td>
</tr>
<tr>
<td>10037</td>
<td>WSMB-18R</td>
<td>3</td>
</tr>
<tr>
<td>10248</td>
<td>WSMB-18R</td>
<td>4</td>
</tr>
</tbody>
</table>

**After Auto Sort**

<table>
<thead>
<tr>
<th>SERIAL NUMBER</th>
<th>MODULE TYPE</th>
<th>MODULE ADDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10003</td>
<td>WSMT-ACCGP</td>
<td>1</td>
</tr>
<tr>
<td>10259</td>
<td>WSMB-18R</td>
<td>2</td>
</tr>
<tr>
<td>10037</td>
<td>WSMB-18R</td>
<td>3</td>
</tr>
<tr>
<td>10248</td>
<td>WSMB-18R</td>
<td>4</td>
</tr>
</tbody>
</table>

**Move WSMT after Auto Sort**

<table>
<thead>
<tr>
<th>SERIAL NUMBER</th>
<th>MODULE TYPE</th>
<th>MODULE ADDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10003</td>
<td>WSMB-18R</td>
<td>2</td>
</tr>
<tr>
<td>10037</td>
<td>WSMT-ACCGP</td>
<td>3</td>
</tr>
<tr>
<td>10248</td>
<td>WSMB-18R</td>
<td>4</td>
</tr>
<tr>
<td>10259</td>
<td>WSMB-18R</td>
<td>4</td>
</tr>
</tbody>
</table>

Manually move WSMT to correspond with its actual mounting location.
The following illustrations provide examples of possible installations:

**Figure 43**

*18 Row Installation Example*

**Module Configuration Screen**

**Seed Sensor Configuration Screen**
Figure 44 depicts a 36 row installation with the Working Set Master assigned to Module Address 1. One Working Set Member is utilized to monitor rows 1-18 and the second Working Set Member is utilized to monitor rows 19-36.

Figure 44

36 Row Installation Example
Figure 45 depicts a 42 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 45**

42 Row Installation Example

---

**Module Configuration Screen**

<table>
<thead>
<tr>
<th>SERIAL NUMBER</th>
<th>MODULE TYPE</th>
<th>MODULE ADDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10003</td>
<td>WSMB - 18R</td>
<td>2</td>
</tr>
<tr>
<td>10259</td>
<td>WSMB - ACCGP</td>
<td>2</td>
</tr>
<tr>
<td>10004</td>
<td>WSMB - 18R</td>
<td>3</td>
</tr>
<tr>
<td>10005</td>
<td>WSMB - 18R</td>
<td>4</td>
</tr>
</tbody>
</table>

**Seed Sensor Configuration Screen**

Working Set Master Module Address 2
Rows 13-24

Working Set Member Module Address 3
Rows 19-30

Working Set Member Module Address 4
Rows 31-42

---
ROW ASSIGNMENT

The Row Assignment screen automatically populates with the module address and module type entered at the Module Configuration screen.

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

**Figure 46**
Row Assignment Screen

The following data items can be edited:

**IMPORTANT:** The # or Row data items for each listed module and the Row #s value will automatically populate if the Auto Config button is used to configure installed sensors.

**# OF ROWS**

The # of Rows column displays the total number of seed sensors that are connected to each module. The Row #s value is automatically configured by Auto Config for proper row numbering for each module based upon the module address value and # of rows.

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

**To Edit # Of Rows Data:**

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 appears 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.

![Row Status/Row Width Setup Screen](image)

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

**NOTE:** It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

**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.

There are two choices available for this 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.

### ENABLED

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

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

**Example 1:** 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.

**Example 2:** The On/Off Pattern Setting is changed to every 3rd row off. The row width parameter adjusts to 22.5 inches automatically. The implement width value adjusts to 247.5 inches to accommodate the new pattern.

### 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, twin, or skip row type seeding implements there are 21 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.

NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.
NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

**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 Hi 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_B_)
  - Even rows use Blockage and odd rows use Hi Rate
- Every 2nd Row Pop (B_B_B_)
  - Even rows use Hi Rate and odd rows use Blockage

**ON/OFF Pattern Symbols**

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Description/Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>... ...</td>
<td>Every Row On</td>
</tr>
<tr>
<td>-X-X-X</td>
<td>Every 2nd Row Off</td>
</tr>
<tr>
<td>X-X-X</td>
<td>Every 2nd Row On</td>
</tr>
<tr>
<td>--X--X--</td>
<td>Every 3rd Row Off</td>
</tr>
<tr>
<td>-X--X--X</td>
<td>Every 3rd Row On</td>
</tr>
<tr>
<td>X--X--X</td>
<td>Every 3rd Row Off</td>
</tr>
<tr>
<td>XX--X--X</td>
<td>Every 3rd Row On</td>
</tr>
<tr>
<td>X-XX--XX</td>
<td>Every 3rd Row Off</td>
</tr>
<tr>
<td>XX--X-XX</td>
<td>Every 3rd Row On</td>
</tr>
<tr>
<td>-XX--XX-</td>
<td>Every 3rd Row Off</td>
</tr>
<tr>
<td>---X---X</td>
<td>Every 4th Row Off</td>
</tr>
<tr>
<td>-X---X-</td>
<td>Every 4th Row On</td>
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<tr>
<td>-X---X</td>
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<tr>
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</tr>
<tr>
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<tr>
<td>XX--XX-XX</td>
<td>Every 4th Row On</td>
</tr>
<tr>
<td>X-XX--XX</td>
<td>Every 4th Row Off</td>
</tr>
<tr>
<td>-XX-XX--</td>
<td>Every 4th Row On</td>
</tr>
<tr>
<td>--XX--XX</td>
<td>Twin Rows</td>
</tr>
<tr>
<td>-XX--XX--</td>
<td>Twin Rows</td>
</tr>
<tr>
<td>XX--XX--XX</td>
<td>Twin Rows</td>
</tr>
<tr>
<td>X--XX--XX--</td>
<td>Twin Rows</td>
</tr>
</tbody>
</table>

Population =  
Blockage =  
OFF = X
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. Up to 5 hopper sensors can be connected.

![Figure 49: Hopper Assignment Screen](image)

The following data items can be edited:

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

**# OF HOPPERS**

The # of Hopper 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.
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 50**

**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:

**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.

**ACTIVE LO**

- For a Dj Hopper Level sensor, this value should be set to **ACTIVE LO**.
ACTIVE LO
- Sets the active state to "Low" signifying that an alarm is generated if the sensor’s output is in a low state. Use this setting if the connected sensor outputs a low condition when active.

ALARM DELAY
Alarm Delay controls the delay time between the detection of a hopper alarm condition and the generation of the resulting alarm. The value is entered in seconds.

CHANNEL
Assigns the hopper sensor to a specific control channel.

RPM MODULE
The RPM Module screen configures optional sensors such as an RPM to monitor a shaft/fan. Up to 3 shaft/RPM sensors can be connected.

The RPM Module screen displays:
- Module address
- Type
- Number of rows
- Row numbers for the system

1. At the Module Configuration screen, press the RPM Module button to access the RPM Module screen.

**Figure 51**
RPM Module Screen

**IMPORTANT:** An RPM Sensor must be configured manually. Auto Config only detects the presence of a pressure sensor.
**# 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 SETUP**

The RPM Setup screen controls the parameters for each RPM sensor:

- High alarm
- Low alarm
- High alarm delay
- Low alarm delay
- RPM constant
- RPM filter
- Disable control on low alarm

When an RPM sensor is entered at the RPM Module screen, an RPM Setup button displays.

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

![RPM Setup Screen](image)

**IMPORTANT:** RPM sensors must be configured manually.

**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 default RPM Constant is 3 pulses per shaft revolution read from three screw heads on the fan hub.

**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.
PSI MODULE

The PSI Module screen configures optional pressure sensors. Up to 4 sensors can be connected.

The PSI Module screen displays:
- Module address
- Type
- Number of Sensors
- Row numbers for the system

1. At the Module Configuration screen, press the PSI Module button to access the PSI Module screen.

**Figure 53**

*PSI Module Screen*

**IMPORTANT:** The Auto Config button detects the presence of pressure sensors and automatically configures and populates into the PSI Module screen.
PRESSURE SENSOR SETUP

The Pressure Sensor Setup screen controls the parameters for each pressure sensor. Up to 4 pressure sensors can be connected.

- Sensor type
- High alarm
- Low alarm
- High alarm delay
- Low alarm delay
- Pressure filter

1. Press the Pressure button to access the Pressure Setup screen.

Figure 54
Pressure Setup Screen

NOTE: The Auto Config button will detect the presence of a pressure sensor and automatically configures and populates into the PSI Module 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 ounces per square inch.

LOW ALARM

The Low Alarm option sets the pressure value at which a low pressure warning error is generated. The value is entered in ounces per square inch.

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 Operate 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%.
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 (only constant that displays on screen when the Population/Blockage pattern is set to Every Row Blockage).

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

**NOTE:** A material name displays 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 55**
Row Monitor Setup Screen

![Row Monitor Setup Screen](image)

**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.

**NOTE:** It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

**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.
**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. 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.
GROUND SPEED SETUP

Ground Speed Setup determines:

- The input source and type of ground speed sensor
- The manual default ground speed (only displays when manual is selected as source).
- Shut off speed
- Minimum override
- Ground speed constant
- Master switch timeout
- Ground speed fail alarm delay
- Implement Lift
- Precharge speed (displays only when the Precharge time is greater than 0 mph (0 kmh) on a Control Channel Setup screen)
- Flush ground speed (displays only when Flush Enable is activated on a Control Channel Setup Work screen, press the Speed Set button to access the Ground Speed Setup screen.

Figure 56
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 57**

*Manual Ground Speed*

![Manual Ground Speed Diagram]

**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.
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 Time functionality is a feature used for hydraulic drive systems only and not applicable for ground drive systems.

FLUSH ENABLE SPEED

Flush Enable Speed is a feature used for hydraulic drive systems only and not applicable for ground drive systems.

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: It is imperative to get an accurate ground speed reading, as this reading directly impacts the accuracy of population, area accumulation, and application rate control.

1. Press the Speed Calibration button to access the Ground Speed Calibration screen.

To Perform the Initial Ground Speed Calibration:

1. Carefully measure an exact 400 foot (100 meter) course, clearly marking the start and finish points.
2. With the tractor moving between 2 and 5 MPH (3.2 and 8 Km/h), press the Start button when the tractor is even with the designated start point. The display showing the ground speed calibration will zero and begin counting ground speed pulses.
3. When the tractor is even with the designated finish point, press the Stop button. The new calibration number will display on the center of the screen.
4. To ensure accuracy, record the number and repeat this process two additional times. Average the three numbers recorded.
5. Enter the average calibration number.
6. Save the desired settings.
10” 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 60**
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.

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.
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 61).

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

Figure 61
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 62).
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 63).

5. Press the OK button to save the configuration and return to the Aux Input/Function Setup screen.

6. Press and hold the ESC button for one or more seconds to return to the Virtual Terminal Setup screen.

Figure 63
Aux Input Configuration Screen

The Master Switch Connection icon may appear automatically on this screen, or may appear after the DEFAULT softkey has been pressed.
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.

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

Figure 64
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.
WORK SCREEN CONFIGURATION

A data item can be placed in any position by selecting the location on Screen Configuration. The display is functionally divided into 2 columns and 6 rows.

1. Press the Work Screen button to access Screen Configuration.
   - 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.

After these values are selected, the new settings display on the configured work screens.

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

In order to configure the second and third display screens, select the Next Screen button.

BARGRAPH SETUP

Bar graph setup allows customization of the rows being 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.
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.
SUMMARY SCREEN

The Summary screen provides an overview of setup constants 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

1. At the Main Work screen, press the Summary button to access the Summary screen.

Figure 66
Summary Screen
NOTE: Data Items on the Main Work screen with a check box allows the number to be reset to zero.

The following section illustrates available display parameters and respective functions. Display parameter placement can be moved to display on the Main Work screen to individual preferences. Refer to SYSTEM CONFIGURATION for additional information on setting parameters.

RESETTING DATA ITEM VALUES

Some Data Items values can be reset to zero from the Main Work screen.

CONTROL ACTUAL CHANNELS 1-2

WHEAT CH1
Rate 1 98.1\text{ LBS}/\text{AC}

Control Actual Channels 1 - 2 display the channel feedback application rates in its respective units depending on channel setup. The channel rate value is also displayed. This Data Item displays on an entire row of the work screen.

CONTROL TARGET CHANNELS 1-2

WHEAT CH1
Rate 1 98.1*\text{ LBS}/\text{AC}

Control Target Channels 1 - 2 display the channel target set rates in its respective units depending on channel setup. The channel rate value is also displayed. This Data Item displays on an entire row of the work screen.

CONTROL RATE CHANNELS 1-2

WHEAT CH1
Rate 1 0.0\text{ LBS}/\text{HR} 98.1 \text{ LBS}/\text{AC}

Control Rate Channels 1-2 display the channel feedback application rates in its respective units depending on channel setup. This Data Item displays on an entire row of the work screen.

CONTROL SCAN

PHOSPHRS CH2
Rate 1 98.1 \text{ LBS}/\text{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 displays on an entire row of the work screen.
NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

**POP ROW SCAN**

5 🔄 0.0 ks/AC

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.

**POP MIN MAX ROW SCAN**

3 🔄 ks/AC 0.0 ks/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 🔄 ks/AC 0.0 ks/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 displays on an entire row of the work screen.

**POP MAX ROW**

1 🔄 ks/AC 0.0 ks/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 displays on an entire row of the work screen.

**POP AVG**

0.0 ks/AC

Pop Avg displays the average population in seeds per acre (or seeds/Ha) of all active seeding rows per channel.
NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

SPACING ROW SCAN

1 0.00

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 0.0

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 0.0

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 0.0

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 will display on an entire row of the work screen.

SPACING AVG

0.0

Spacing Avg displays the average spacing in inches (cm) of all active seeding rows.
NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

SEED/DISTANCE ROW SCAN

1 \( \frac{S}{FT} \) 0.0 \( \frac{S}{FT} \)

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 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.

SEED/DISTANCE MIN MAX ROW

1 \( \frac{S}{FT} \) 0.0 \( \frac{S}{FT} \)

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 \( \frac{S}{FT} \) 0.0 \( \frac{S}{FT} \)

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 will be displayed on an entire row of the work screen.

SEED/DISTANCE MAX ROW

1 \( \frac{S}{FT} \) 0.0 \( \frac{S}{FT} \)

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 (POPULATION)

0.0 \( \frac{S}{FT} \)

Seed/Distance Average displays the average number of seeds per foot (meter) of all active seeding rows.
NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

**SINGULATION AVERAGE (POPULATION)**

0 %

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.

**SINGULATION ROW SCAN (POPULATION)**

1 0 %

Singulation Row Scan displays the percent singulation of each of the 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 (POPULATION)**

1 0 %

Singulation Min Max Scan alternates the display of the minimum row, singulation, and maximum row singulation every four seconds. When a minimum row is displayed, 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 Speed Set Calibration. This data item also displays the implement status by the up/down arrow behind the tractor.

**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.

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 a least one seeding row and the ground speed is above the Shutoff Speed parameter entered on the Speed Set Calibration screen. This accumulator is independent of any other area accumulator and cannot 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

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 may be reset to 0.0 at any time. Current area is retained after power down.

FIELD 2 AREA

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 may be reset to 0.0 at any time. Current area is retained after power down.

CHANNELS 1 - 2 AREA

Channels 1 - 2 Area displays the area covered by Channels 1 - 2. Area is calculated using the Channel Width parameter that is entered on the Channel Setup screen. Area accumulators will begin recording data when the implement switch is engaged, the implement is in the lowered position, and the ground speed is above the Shutoff Speed parameter entered on the Speed Set Calibration screen. This accumulator is independent of any other area accumulator and may be reset to 0.0 at any time. Current area is retained after power down.

AREA SCAN

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

Control Feedback scans through all active feedback sensors sequentially in four-second intervals based on channel type. The current sensor is identified by the number displayed above the RPM symbol.

AREA PER HOUR

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 (Row I/O) screen.

SYSTEM ACTIVE TIME

System Active Time records the amount of time the implement switch is engaged 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 the rotary knob is used to select a particular row number for continuous view. The Seed Count function is enabled/disabled on the Accumulators/Seed Count/Distance Count screen. This Data Item will be displayed on an entire row of the work screen.

CHANNELS 1 - 2 MATERIAL ACCUM

Channels 1 - 2 Material Accum displays the current accumulated material for Channels 1 - 2. Material is accumulated according to the applied rate.

NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended. Population and alarms relating to population are italicized.
PRESSURE SCAN

0.00 oz/in²

Pressure Scan scans through all active pressure sensors sequentially, displaying the actual pressure measured in oz/in² (kPa) in four-second intervals. The current sensor is identified by the number above the pressure symbol.

RPM SCAN

1.0 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 1-2 PRODUCT LEVEL

Reset

0 LBS

Channels 1-2 Product Levels indicate 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 changed 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 non-empty status.

DISTANCE ACCUMULATOR

0.0 ft

Distance Accumulator displays the distance the tractor has traveled in feet (meters). The Distance Accumulator function is enabled/disabled on the Accumulators/Seed Count/Distance Count screen.
SYSTEM OPERATION

START

1. Lower the implement to operating position engaging the implement switch, if present and enabled.
2. With the 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.

STOP

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

Figure 67
Main Work Screen Functions
WORK SCREEN SYMBOLS

TARGET RATE
The Target Application Rate displays when the 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.

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.

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 and the Master Switch ON 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.
NOTE:  It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

ROW INDICATORS

Row Indicators in bar graph format on the bottom of the Work screen indicates seed flow 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 68
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 (eg., 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. (Figure 67) identifies an Accumulator icon.

PRECHARGE GROUND SPEED

Precharge Ground Speed is used for hydraulic drive systems only and not applicable for ground drive systems.

FLUSH ENABLE

Flush enable is a feature used for hydraulic drive systems only and not applicable for ground drive systems.
SYSTEM INFORMATION AND DIAGNOSTICS

To view the following Information and Diagnostics screens, the Master Switch must be set to the OFF position.

ACCUMULATORS/SEED COUNT/DISTANCE SCREEN

The 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 System Accumulators button to access the Accumulators/Seed Count/Distance screen.

NOTE: It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

Figure 69
Accumulators/Seed Count/Distance Screen

<table>
<thead>
<tr>
<th>Powered On Time</th>
<th>467.9HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sys. Active Time</td>
<td>7.94HR</td>
</tr>
<tr>
<td>Sys. Active Area</td>
<td>299.31AC</td>
</tr>
<tr>
<td>Distance</td>
<td>104993.2FT</td>
</tr>
</tbody>
</table>

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. Powered On Time cannot be reset.

System Active Time
System Active Time is the accumulated time, in hours, that the machine has actively been monitoring with ground speed and the implement switch engaged. System Active Time accumulates whenever seeds are detected on at least one sensor. Time does not accumulate during an ALL ROWS FAILED condition. System Active Time cannot be reset.

System Active Area
System Active Area is the accumulated area, in acres, that the machine has actively been monitoring with ground speed and the implement switch engaged. System Active Area accumulates whenever seeds are detected on at least one sensor. Area does not accumulate during an ALL ROWS FAILED condition. System Active Area cannot be reset.
DISTANCE

Distance is the accumulated distance in feet (meters) that the implement has travelled. 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 connected to the WSMT module. The control valve can be manually opened on this screen when necessary. Refer to Valve Calibration for additional information.

Each channel has its own Diagnostics screen. None of the items on the screen can be edited. However the Channel Pulse Count data can be reset. The system can be active while the Diagnostic screen is displayed.

Figure 70

To View Diagnostics:
1. Press the Diagnostics button to access the Diagnostics screen.
2. The Diagnostics screen will show Channel 1 as a default.
3. 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.

CH SETPOINT
The Channel Setpoint value is calculated by the system. It displays the feedback frequency of the application rate sensor used for that channel's feedback.

CH TARGET
The Channel Target value is the current channel's population 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 monitored rate with the system active.
CH RPM
The Channel RPM value is the current RPM. The sensor constant and gear ratio parameters entered on the Channel Configuration screen allow the RPM to be calculated.

CH PWM (CONTROL ONLY)
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 pressing the Pulse Reset 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.

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.

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. If the sensor is unblocked, the value is “0”. A blocked sensor’s value is 1.

I/O IMP LIFT
The IO Implement Lift value displays the current state of the implement status switch. This value will be “1” when the implement is down. The value will be “0” when the implement is raised.

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.

APP ID
Hardware identification only. Not applicable to the end user.
SOL PWR VOLT
The Solenoid Power Voltage 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 Voltage 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 Voltage 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, the ground volt value is typically 2.50.

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.
   – To select a different channel, 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 selected channel. This allows for manual open and close of valve position.

   **WARNING**
   Ensure hands are away from machinery during manual valve open and close. Failure to practice all necessary caution may result in serious injury.

   **IMPORTANT:** The Enable feature only operates on the Diagnostics screen.

2. If the Disable Manual Valve button displays, 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 actuator position.
5. The **Increment** button must be pressed repeatedly to move the actuator. The Channel Pulse Count and Channel Frequency Filter values display the current output of the feedback sensor.

6. Press the **Decrement** button to decrease the actuator position.

7. The active channel is displayed in the button text.

8. Turn the Master Switch OFF to shutdown the 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.

**NOTE:** It is recommended that air carts be used with blockage functionality only. Population functions for counting seed is not recommended.

![Seed Count Screen](image)

**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 the Accumulators/Seed Count screen or press the **Accumulators** button to return to the Accumulator screen.
INFORMATION SCREEN

The Information screen displays the software versions of the modules 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.

From the Diagnostics screen, press the Information button to access the Information screen.

Figure 72
Information Screen

RESETTING NOVRAM VALUES
(Level 3 User Only)

NOVRAM 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 NOVRAM 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 NOVRAM Reset button unless you want ALL system data settings to be reset to factory standard defaults. It is recommended that NOVRAM not be reset unless instructed by DICKEY-john Technical Support.
ACKNOWLEDGING ALARM CONDITIONS

Various alarm conditions may be presented 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 instructions on how to fix the alarm. Each alarm type has an associated alarm number that can be cross-referenced in the Troubleshooting and Alarms section.

Some alarms require a specific action 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 or the ESC key.

Alarm details can only be cleared by a Level 2 or Level 3 User.

ALARM LOG

The Alarm Log screen provides a list of each alarm that has been issued during system operation. Information displayed on the Alarm Log screen is informational only and cannot be edited.

Each time an alarm condition is detected, it is logged and communicated to the WSMT.

To View Alarm History:

1. From the Main Work screen, 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 signifies that more alarms are present and accessible by pressing the Previous or Next buttons.

![Figure 74](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 75](Alarm Log Detail Screen)
ALARM RESET

(Level 3 User Only)

To reset Alarm Log:

1. From the Alarm Log screen, press the **Alarm Reset** button.
2. Press **YES** button to clear.
3. Press **NO** button to return to Alarm Log screen.

*Figure 76*

**Alarm Reset Screen**
TASK CONTROLLER

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 OFFSET

To determine implement offset, the Y coordinates are required entries to establish the calculation from the center of each control channel location to the rear hitch connection in inches. The vehicle coordinates for each control channel are used to calculate Field Area 1, 2, and Total Area accumulators.

NOTE: For those systems using Task Controller, both X and Y coordinate entries are required for GPS navigation and field area accumulators. Reference the Task Controller section for setup instructions.

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.

NOTE: Position of coordinates to the hitch/GPS receiver point will determine if the number is entered as positive (+) or negative (-).

To enter an Implement Offset:

1. From the Control Setup screen, press the Link Offset button.

CALCULATING IMPLEMENT OFFSET

Implement Offset is the distance from the center of a control channel to the hitch connection or GPS receiver point.

From behind the implement facing tractor:

- Channels to the left of the hitch/GPS receiver point (negative entry) (-y)
- Channels to the right of the hitch/GPS receiver point (positive entry) (+y)
CHANNEL LINKING

Channel Linking allows control channels to be linked together so that rates can be increased or decreased simultaneously and turned on or off at the Main Work screen.

To Link Channels:

1. At the Control Channel table, press the Channel input box and select the linking symbol for the channels to be linked together.

(Figure 77) depicts channels 1 and 3 linked together to control rates and turn the Channels on and off simultaneously.

MATERIAL 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 in ON for 5 seconds
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

**IMPORT/EXPORT DATA**

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 80
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 81
Import Data Validation Screen

- Instructions
  - Verify all system electronics and members are connected and positioned correctly
  - Insert SD Card
- Import
  - Enter import filename
  - Press Import and wait for Import Data Success
  - Press Power key
- Export
  - Enter export filename
  - Press Export and wait for Export Data Success

Import Filename: **Config.xml**
Export Filename: **Config.xml**

Import Data Validation
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](image)

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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 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.
<table>
<thead>
<tr>
<th>ALARM #</th>
<th>ALARM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Software Task Stack Overflow Alarm</td>
<td>1. Internal system software error.</td>
<td>1. Cycle system power OFF/ON. If condition persists, contact DICKEY-john Technical Support (1-800-637-3302) or DICKEY-john Europe (011-33-141-192189).</td>
</tr>
<tr>
<td>2</td>
<td>Software System Stack Overflow Alarm</td>
<td>1. Internal system software error.</td>
<td>1. Cycle system power OFF/ON. If condition persists, contact DICKEY-john Technical Support (1-800-637-3302) or DICKEY-john Europe (011-33-141-192189).</td>
</tr>
<tr>
<td>3</td>
<td>VT Out of Memory Alarm</td>
<td>THE ECU MEMORY REQUIREMENTS ARE GREATER THAN THE VIRTUAL TERMINAL CAN HANDLE.</td>
<td>1. Remove any unnecessary ECU’s. 2. Contact DICKEY-john Technical Support (1-800-637-3302) or DICKEY-john Europe (011-33-141-192189) for updated hardware.</td>
</tr>
<tr>
<td>4</td>
<td>Software Version Does Not Support this Configuration Alarm</td>
<td>1. Occurs if new software is loaded and does not support the configuration of the hardware it is loaded on.</td>
<td>1. Record software and model information listed below. 2. Contact dealer for software update.</td>
</tr>
<tr>
<td>202</td>
<td>Ground Speed Failure Alarm</td>
<td>ONLY ACTIVE IN PLANTER MONITOR MODE. SEEDS ARE DETECTED WHEN THERE IS NO GROUND SPEED.</td>
<td>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.</td>
</tr>
<tr>
<td>203</td>
<td>Continuous Test Failure Alarm</td>
<td>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.</td>
<td>1. Enter an appropriate Test Speed. 2. Verify or enter appropriate Disk Hi and/or Disk Low values.</td>
</tr>
<tr>
<td>204</td>
<td>5 Revolution Test Failure Alarm</td>
<td>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.</td>
<td>1. Enter an appropriate test speed. 2. Verify or enter appropriate Disk Hi and/or Disk Low values.</td>
</tr>
<tr>
<td>205</td>
<td>Channel Failure Alarm</td>
<td>1. Defective control valve. 2. Defective feedback sensor. 3. Defective module harness or module harness fuse. 4. Defective module.</td>
<td>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.</td>
</tr>
<tr>
<td>206</td>
<td>Channel Unable to Control Alarm</td>
<td>1. Incorrect channel settings. 2. Incorrect feedback sensor installation. 3. Defective feedback sensor.</td>
<td>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.</td>
</tr>
</tbody>
</table>
## ALARM TROUBLESHOOTING & ALARMS

<table>
<thead>
<tr>
<th>ALARM #</th>
<th>ALARM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>207</td>
<td>Channel Unstable Alarm</td>
<td>1. Incorrect channel settings.</td>
<td>1. Verify correct setup constants on the Channel Configuration screen. Perform a valve calibration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Incorrect feedback sensor installation.</td>
<td>2. Verify correct installation of the feedback sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective feedback sensor.</td>
<td>3. Inspect feedback sensor for damage or replace.</td>
</tr>
<tr>
<td>208</td>
<td>Channel Saturation Exceeded Alarm</td>
<td>1. Excessive speed.</td>
<td>1. Reduce speed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Target rate too high</td>
<td>3. Reduce target rate.</td>
</tr>
<tr>
<td>209</td>
<td>Channel High Limit Exceeded Alarm</td>
<td>CONTROL LIMITED BY HIGH LIMIT. UNDER APPLICATION IS OCCURRING. NOTE: System will not run faster than High Limit Value.</td>
<td>1. Check and/or reduce speed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Verify Channel setup (high RPM).</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>3. Perform new valve calibration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Check and/or reduce target rate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Inspect feedback sensor for damage.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>6. Inspect control valve for damage.</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>7. Inspect harness/module for damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8. Decrease target rate.</td>
</tr>
<tr>
<td>210</td>
<td>Channel Low Limit Exceeded Alarm</td>
<td>CONTROL RATE LIMITED BY LOW LIMIT. OVER APPLICATION IS OCCURRING.</td>
<td>1. Increase speed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Verify correct setup constants (low RPM).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Perform valve calibration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Increase target rate.</td>
</tr>
<tr>
<td>211</td>
<td>All Rows Failed Alarm</td>
<td>1. Seed meter drive malfunction.</td>
<td>1. Check seeding drive(s).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Rows are not assigned to channel and channels are turned off.</td>
<td>2. Assign rows to channel.</td>
</tr>
<tr>
<td>212</td>
<td>Row Failure Alarm</td>
<td>SEED RATE HAS FALLEN BELOW THE ROW FAIL RATE SETTING ON THE SEED MONITOR SETUP SCREEN.</td>
<td>1. Verify proper planter operation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Seed meter malfunction.</td>
<td>2. Inspect seed sensor for dirt or damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Dirty or defective seed sensor.</td>
<td>3. Inspect planter harness for damage. Replace or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Damaged planter harness.</td>
<td>4. Inspect harness and module for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Defective module harness or module</td>
<td>5. Fill with seed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Out of seed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Seed meter malfunction or incorrect setup.</td>
<td>2. Inspect seed sensor for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective seed sensor.</td>
<td>3. Inspect module for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Seed meter malfunction or incorrect setup.</td>
<td>2. Inspect seed sensor for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective seed sensor.</td>
<td>3. Inspect module for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Running out of seed.</td>
<td>4. Fill with seed.</td>
</tr>
<tr>
<td>ALARM #</td>
<td>ALARM</td>
<td>PROBABLE CAUSE</td>
<td>CORRECTIVE ACTION</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Implement malfunction or incorrect setup.</td>
<td>2. Inspect pressure sensor for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective pressure sensor.</td>
<td>3. Inspect module for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Implement malfunction or incorrect setup.</td>
<td>2. Inspect pressure sensor for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective pressure sensor.</td>
<td>3. Inspect module harness or module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module harness or module.</td>
<td></td>
</tr>
<tr>
<td>217</td>
<td>Member module Detection Alarm</td>
<td>NUMBER OF MEMBER MODULES DOES NOT MATCH THE SYSTEM CONFIGURATION.</td>
<td>1. Verify correct module configuration setup on the Module Configuration screen.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Too few modules connect to system.</td>
<td>2. Verify correct module configuration setup on the Module Configuration screen.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Too many modules connected to system.</td>
<td>3. Identify missing module in the Module Configuration list. Inspect CAN/module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective CAN/module harness.</td>
<td>harness of the missing module for damage. Repair or replace harness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Blown module harness fuse.</td>
<td>4. Inspect module harness fuse of the identified module. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Defective module.</td>
<td>5. Identify missing module in the Module Configuration list. Inspect missing module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. New module has been added to system.</td>
<td>for damage or replace.</td>
</tr>
<tr>
<td>218</td>
<td>Pressure Sensor Detection Alarm</td>
<td>NUMBER OF PRESSURE SENSORS CONNECTED DOES NOT AGREE WITH THE NUMBER OF SENSORS</td>
<td>1. Inspect pressure sensor for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CONFIGURED ON THE PRESSURE SENSOR CONFIGURATION SCREEN.</td>
<td>2. Inspect module and/or module harness for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Defective Sensor.</td>
<td>3. Verify correct # ACC setting for each module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective module or damaged module harness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Additional pressure sensor detected.</td>
<td></td>
</tr>
<tr>
<td>219</td>
<td>Row Sensor Detection Alarm</td>
<td>NUMBER OF SEED SENSORS CONNECTED DOES NOT AGREE WITH THE NUMBER OF SENSORS</td>
<td>1. Inspect seed sensor for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CONFIGURED ON THE SEED SENSOR CONFIGURATION SCREEN.</td>
<td>2. Inspect module and/or module harness for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Defective seed sensor.</td>
<td>3. Verify correct # ROWS setting for each module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective module or damaged module harness.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Additional seed sensor detected.</td>
<td></td>
</tr>
<tr>
<td>ALARM #</td>
<td>ALARM</td>
<td>PROBABLE CAUSE</td>
<td>CORRECTIVE ACTION</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>220</td>
<td>Row Sensors Installed Incorrectly Alarm</td>
<td>ROWS ARE NOT DETECTED SEQUENTIALLY ON A MODULE.</td>
<td>1. Verify seed sensors are connected sequentially on all modules as instructed in installation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Incorrect seed row connections.</td>
<td>2. Inspect seed sensor for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective seed sensor.</td>
<td>3. Inspect module and/or module harness for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module or damaged module harness.</td>
<td></td>
</tr>
<tr>
<td>221</td>
<td>Channel Invalid State Alarm</td>
<td>1. Internal system software error.</td>
<td>1. Cycle system power Off/On. If condition persists, contact DICKEY-john Technical Support (1-800-637-3302) or DICKEY-john Europe (011-22-141-192189).</td>
</tr>
<tr>
<td>222</td>
<td>Channel Setup Height Error Alarm</td>
<td>1. Implement hydraulic system malfunction.</td>
<td>1. Verify implement hydraulic system operation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective control valve.</td>
<td>2. Inspect control valve for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Incorrect feedback sensor installation.</td>
<td>3. Verify correct installation of the feedback sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Defective feedback sensor.</td>
<td>4. Inspect feedback sensor for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Limit Max Output set too low.</td>
<td>5. Set Limit Max Output to a higher PWM% on the Valve Calibration screen. Perform a new valve calibration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Incorrect feedback sensor installation.</td>
<td>2. Verify correct installation of the feedback sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective feedback sensor.</td>
<td>3. Inspect feedback sensor for damage or replace.</td>
</tr>
<tr>
<td>224</td>
<td>No Channel Gain Steps Calculated Alarm</td>
<td>1. Implement hydraulic system malfunction.</td>
<td>1. Verify implement hydraulic system operation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective control valve.</td>
<td>2. Inspect control valve for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Incorrect feedback sensor installation.</td>
<td>3. Verify correct installation of the feedback sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Defective feedback sensor.</td>
<td>4. Inspect feedback sensor for damage or replace.</td>
</tr>
<tr>
<td>225</td>
<td>Hopper Sensor Low Alarm</td>
<td>1. Incorrect logic level setting on the Hopper Setup screen.</td>
<td>1. Verify correct logic level setting on the Hopper Setup screen.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Dirty or defective hopper sensor.</td>
<td>2. Clean/inspect hopper sensor. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module harness or module</td>
<td>3. Inspect harness and module for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Implement malfunction or incorrect setup.</td>
<td>2. Inspect RPM sensor for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective RPM sensor.</td>
<td>3. Inspect module for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td></td>
</tr>
<tr>
<td>ALARM #</td>
<td>ALARM</td>
<td>PROBABLE CAUSE</td>
<td>CORRECTIVE ACTION</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Inspect RPM sensor for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Inspect module for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Implement malfunction or incorrect setup.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective RPM sensor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module harness or module.</td>
<td></td>
</tr>
<tr>
<td>228</td>
<td>Hopper Sensor Detection Alarm</td>
<td>NUMBER OF HOPPER SENSORS CONNECTED DOES NOT AGREE WITH THE NUMBER OF SENSORS CONFIGURED ON THE HOPPER SENSOR CONFIGURATION SCREEN.</td>
<td>1. Inspect hopper sensor for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Inspect module and/or module harness for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Verify correct # HOPP setting for each module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Verify proper hopper sensor operation/setup.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect hopper sensor for damage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect module harness or damaged module module.</td>
<td></td>
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<tr>
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<td></td>
</tr>
<tr>
<td>229</td>
<td>Hopper Sensors Installed Incorrectly Alarm</td>
<td>HOPPER SENSORS ARE NOT INSTALLED SEQUENTIALLY ON A MODULE.</td>
<td>1. Verify hopper sensors are connected sequentially on all modules as instructed in INSTALLATION.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Inspect hopper sensor for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Inspect module and/or module harness for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Incorrect hopper sensor connections.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective hopper sensor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module or damaged module harness.</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>Pressure Sensors Installed Incorrectly Alarm</td>
<td>PRESSURE SENSORS ARE NOT INSTALLED SEQUENTIALLY ON A MODULE.</td>
<td>1. Verify pressure sensors are connected sequentially on all modules as instructed in INSTALLATION.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Inspect pressure sensor for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Inspect module and/or module harness for damage. Replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Incorrect pressure sensor connections.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective pressure sensor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module or damaged module harness.</td>
<td></td>
</tr>
<tr>
<td>231</td>
<td>Seeding Detected on a Tramlined Row Alarm</td>
<td>Occurs if a tramlined row does not shut off the row unit and seeds continue to be detected. (Only possible if system supportstramlining).</td>
<td>1. Check output row mapping.</td>
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<td>2. Check seed sensor to ensure no false triggering.</td>
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<td>3. Inspect and verify Tramline output is shutting off seeds correctly.</td>
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<td></td>
<td>1. Output to row mapping is assigned incorrectly.</td>
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<td></td>
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<td>2. Seed sensor malfunction.</td>
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<tr>
<td>232</td>
<td>RPM Sensor Low Limit Exceeded With Control Channel Shutdown Alarm</td>
<td>RPM HAS DROPPED BELOW THE DISABLE CONTROL ON LOW ALARM SETTING ON THE ACCESSORY SETUP SCREEN.</td>
<td>1. Inspect RPM sensor for damage. Replace if necessary.</td>
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<td></td>
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<td>2. Inspect module harness for damage. Replace or replace.</td>
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<td>3. Inspect module for damage. Replace if necessary.</td>
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<td>4. Increase RPM.</td>
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<tr>
<td>ALARM #</td>
<td>ALARM</td>
<td>PROBABLE CAUSE</td>
<td>CORRECTIVE ACTION</td>
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</table>
| 233     | Channel Activation Alarm                        | CHANNEL DELAY 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 Delay or Precharge to stop control. |
| 235     | New Member Module Detected Alarm                | 1. New member module has been found.                                           | 1. Assign sensors to the new module at the Module Configuration Setup screen and its position.                                                   |
| 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 keypress.                                | 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.                                                                                             |
2. Verify transmission setting.                                                               |
| 254     | Monitor Channel Low Limit Exceeded Alarm        | 1. Low limit set incorrectly.  
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.                                              |
<table>
<thead>
<tr>
<th>ALARM #</th>
<th>ALARM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
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</table>
| 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. |
| 602     | 8 Volt Supply Failure Alarm                 | 8V SUPPLY VOLTAGE IS BELOW 7.2V OR HIGHER THAN 19V.                           | 1. Inspect module harness for damage. Repair or replace harness.  
2. Inspect seed or hopper sensors connected to the identified module for damage. Replace sensors if necessary.  
3. Replace identified module. |
| 603     | Member Module Communication Failed Alarm    | COMMUNICATION WITH AN ACTIVE MODULE HAS FAILED                                | 1. Identify missing module in the Module Configuration list. Inspect CAN/module harness of the missing module for damage. Repair or replace harness.  
2. Inspect module harness fuse, replace if necessary.  
3. Identify missing module in the Module Configuration list. Inspect missing module for damage or replace. |
| 604     | ECU Voltage Out of Range Alarm              | ECU VOLTAGE IS BELOW 11V OR HIGHER THAN 16V.                                 | 1. Inspect CAN/module harness of the identified module for damage.  
2. Inspect identified module for damage or replace. |
| 605     | Solenoid Voltage Out of Range Alarm         | SOLENOID VOLTAGE IS BELOW 11V OR HIGHER THAN 16V.                           | 1. Inspect CAN/module harness of the identified module for damage. Repair or replace harness.  
2. Inspect module harness fuse or replace.  
3. Inspect identified module for damage or replace. |
| 606     | Ground Offset Voltage Out of Range Alarm    | 1. Damaged/shorted Actuator Harness.                                          | 1. Inspect Actuator Harness for damage around the WPM and Servo valve connections. Repair or replace harness.  
2. Inspect PWM or Servo valve drivers for damage and replace if necessary.  
3. Inspect identified module for damage and replace if necessary. |
| 607     | Task Controller Task Stopped Alarm          | 1. Control rates no longer set by Task Controller.                           | 1. Press TC RATE to keep the last target rate from the Task Controller.  
2. Press MAT RATE to use the target rate from the material setup. |
| 608     | Task Controller Data Logging Error          | 1. Task Controller is setting target rates without logging the data.          | 1. Restart Task Controller task.  
2. Cycle power to entire system. |
### APPENDIX

#### SYSTEM CONFIGURATION WORKSHEET - MODULE SETUP

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<thead>
<tr>
<th>Module Type</th>
<th>Module Address</th>
<th># of Rows</th>
<th>Row #</th>
<th># of Hoppers</th>
<th>Hopper #</th>
<th># of RPM</th>
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| Hopper Set Logic Level |           |       |       |       |
| High Alarm Delay |           |       |       |       |
| Low Alarm Delay |           |       |       |       |
| High Alarm |           |       |       |       |
| Low Alarm |           |       |       |       |
| Pressure Filter |           |       |       |       |

| High Alarm Delay |           |       |       |       |
| Low Alarm Delay |           |       |       |       |
| Pressure Filter |           |       |       |       |
# SYSTEM CONFIGURATION WORKSHEET - CHANNEL CONFIGURATION

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<td><strong>Precharge(+) Delay (-)</strong></td>
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<td><strong>Seed Monitor Configuration</strong></td>
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## Ground Speed Configuration

| **Source**                                 |     |     |     |     |
| **Manual Speed**                          |     |     |     |     |
| **Ground Speed Constant**                 |     |     |     |     |
| **Shutoff Speed**                         |     |     |     |     |
| **Minimum Override**                      |     |     |     |     |
| **Master Sw Timeout**                     |     |     |     |     |
| **Ground Speed Fail Alarm Delay**         |     |     |     |     |
| **Implement Lift**                        |     |     |     |     |
| **Precharge Speed**                       |     |     |     |     |
| **Flush Speed**                           |     |     |     |     |
SYSTEM CONFIGURATION WORKSHEET - WORK SCREEN

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## WORK SCREEN WORKSHEET - MATERIAL SETUP (INC/DEC)

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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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