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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.

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.

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

The DICKEY-john IntelliAg ISO₆ is a complete monitoring and control system that provides up to 6 channels of control for row crop planters, drills, air seeders and air carts to control planting, liquid, and granular applications. The system monitors up to 120 rows with up to 6 sensors per row for individual row performance and population and 1 ground speed, 5 hopper levels, 4 air pressure, 4 RPM sensor, and 1 lift switch with additional working set members (WSMB).

The IntelliAg system includes the following required components:

- Universal Terminal
- ISO₆ Master Module
- Safety Input Sensors (any two of the following)
  - Implement Lift
  - Ground Speed
  - Secondary Ground Speed
  - Master Switch
- Two CAN Terminators
- Cab and Implement Harnessing

Optional components include:

- Working Set Member Modules (WSMB)
- Implement Lift
- ISO Output Module (section control)
- Working Set Member 2 (seed singulation)
- Remote Test Switch (required for Continuous Test and 5 Rev Test)
- WSMB Accessory Module
- Frame Fold Module
- Row Shutoff Switch Module
- Boom Shutoff Switch Module

DICKEY-john provides a full suite of complimentary sensors that are compatible with the IntelliAg ISO₆ platform.

Terminal mounts in the cab using:

- RAM Mount
- Terminal Mounting Plate

UNIVERSAL TERMINAL (UT)

A touch screen universal terminal with a color display is the main user interface with the IntelliAg system components to monitor and control...
product application. ISO₆ is compatible with most ISO-compliant universal terminals.

Figure 1
IntelliAg Universal Terminal

ISO₆ MODULE (PDC) PLANTER DRILL CONTROL

Figure 2
Planter Drill Control

The ISO₆ module houses the system’s primary interface device. All system parameters, constants, and memory are stored in the ISO₆. The ISO₆ has 6 channels for planter control, granular seeding, granular fertilizer, liquid control, monitor only mode, or RPM control. In addition, the module can accept inputs from 1 hopper level, 1 air pressure, 1 RPM, 1 ground speed, and up to 16 population/blockage sensors with all 16 rows capable of advanced seeding calculations (skips, doubles, seed spacing). The ISO₆ module uses a 30-pin and 18-pin connector to connect to the ISO6 module secured with a 1/4” socket or nut driver.
WORKING SET MEMBER (WSMB) MODULE (OPTIONAL)

Figure 3
Working Set Member Module

Each Working Set Member (WSMB) module is an auxiliary to the ISO₆. A WSMB can accept up to 18 rows of seed sensors. The WSMB passes information directly to the ISO₆. Up to 8 WSMB’s can be installed to monitor up to 144 sensors. The flexible design of the WSMB allows for installation virtually anywhere on the implement.

WORKING SET MEMBER2 (WSMB2) MODULE (OPTIONAL)

Figure 4
Working Set Member 2 Module

A Working Set Member 2 module provides seed singulation calculations for spacing quality, seed singulation, skips, and multiples. A maximum of 2 WSMB2 modules can be installed to monitor up to 36 sensors. A total of 52 sensors are supported using two WSMB2 modules and an ISO₆ module.
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 universal terminal connector.
• One terminator plugs into the implement harness of the last module connected to the CAN bus.

Figure 5
Can Terminator

TERMINAL MOUNTING KIT

Refer to the operator's manual for mounting the bracket to terminal and tractor cab.
COMPONENT INSTALLATION

ISO6 MODULE

1. Select an area on the implement to mount the ISO6 module that allows for easy hookup and access.
2. Use the enclosure as a template to mark the location of the mounting holes.
3. Drill four 9/32 inch diameter holes where marked.

IMPORTANT: Do not use the enclosure as a guide when drilling. Do not overtighten nuts as this may damage the mounting tabs of the enclosure. Recommended torque is 10-12 in-lbs.

The ISO6 may be mounted in any of the following orientations:

Figure 6
Acceptable Orientation

| PREFERRED | ACCEPTABLE | ACCEPTABLE |

CAUTION

Do not install the module in any orientation other than shown in (Figure 6). The connection wires must not be mounted upward, as moisture can collect inside the unit and damage the circuits. Ensure that module connectors do not face upward when implement is in a folded position as well.

4. Mount with the label side of module facing out. Do not mount with the connector facing up (see Caution).
WORKING SET MEMBER (WSMB) MODULE

The WSMB module can be attached to the implement:

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

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

WSMB INSTALL CONSIDERATIONS

1. Select an area on the implement to mount the member that allows for easy hookup and access. Extensions may be used to reach members installed on remote areas of the implement.
2. The module can be mounted in the same orientations as the ISO module as illustrated in (Figure 6).

CAUTION

Do not install the module in any orientation other than illustrated in (Figure 6). The connection wires must not be mounted upward as moisture can collect inside the unit and damage the circuits. Ensure that module connectors do not face upward when implement is in a folded position as well.

3. Mount with the label side of the module facing out.
BOLT WSMB TO FRAME

1. Use the enclosure as a template to mark the location of the mounting holes.
2. Drill two 9/32 inch diameter holes where marked.
3. Attach to frame using 1/4 x 20 bolts or other fastening devices as illustrated in (Figure 8).

**CAUTION**

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

Figure 8

**Working Set Member Installation (Bolted)**
TIE STRAP WSMB TO FRAME

1. Use one long tie-strap to loop around the member body and through both mounting holes as illustrated in (Figure 9).
2. If necessary, drill mounting holes described above.
4. Install a second tie-strap toward the label end of the enclosure for additional support.

**Figure 9**

*Working Set Member Installation (Tie-Strap)*

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

**NOTE:** The last module harness in the system must have a CAN Terminator installed for proper system operation. Refer to Implement Harness (Figure 12) or (Figure 13) for additional information.

**IMPORTANT:** Be sure the locking tabs engage when inserting the connectors. The connection is sealed only when the locking tabs have fully engaged.
12. Connect any additional adapter harnesses to the module harness. The ISO6 T-harness can accept the following adapter harnesses:

- 2 Channel Actuator Harness: This harness has 2 pwm outputs, 2 channel feedbacks, 1 rpm sensor, 1 hopper sensor, 1 speed sensor, 1 implement lift switch, and 1 test switch. P/N 467980162
- 4 Channel Actuator Harness: This harness accepts up to 4 output control channels, 4 control channel feedbacks, 1 hopper level sensor input, 1 shaft sensor input, 1 ground speed input, 1 implement switch input, and a test switch switch connector (P/N 467980160, 467980164). In addition a pair of 6-pin connectors are available for Servo connection that use FB1/FB2 respectively. Install sensors, valves, etc. per the instructions included with the items. Install the PWM valve assembly and feedback sensor for each control loop and connect the devices to their respective inputs on the harness, making certain to match PWM1/Servo 1 with FB1, PWM2/Servo 2 with FB2 etc. Secure any unused and excess cable lengths where necessary.
- 6 Channel Actuator Harness: Similar to the 4 channel actuator harness but brings in a second speed input and adds feedback 5 and 6. Servos are labeled 5 and 6 and must be matched with feedback 5 and 6.
- Seed Sensor Harness: This harness accommodates any standard Dj Seed Sensor harness (PM style 16 row or SE style 12 row) harness depending on the ISO6 harness. A wide variety of harnesses are available to accommodate various numbers of sensor inputs. Install all seed sensors per the instructions included with the individual sensors. Secure any unused or excess cable lengths as necessary.

CONNECT CAB/Terminal Harnessing

Refer to (Figure 10).

1. Connect the cab harness to the back of the universal terminal.
2. Connect the power leads directly to the battery.
3. Connect the ignition wire to a switched +12VDC.
4. Connect the ground leads to the negative battery terminal post.
5. Connect the CAN terminator, radar speed sensor, and row switch module (optional) to the respective connectors on the cab harness.

**TIP:** If the speed sensor is connected to the IntelliAg actuator/ control harness, do not connect anything to the speed sensor connector on the cab harness. Route the IBBC connector to the rear of the tractor where implement attachment occurs. Mount IBBC connector in a secure location at the rear of the tractor

CONNECT IMPLEMENT Harnessing

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

1. Connect the Implement CAN Breakaway extension to the mating IBBC connector installed on the back of the tractor. If using an ISO-ready tractor and terminal, the implement connect can be plugged directly into the OEM IBBC connector.
2. Route the harness along the implement hitch to the ISO₆ harness module harness (use an implement extension harness if additional length is needed).

3. Secure harness as needed.

4. Connect the module harness to the mating connectors of the Implement CAN harness and then connect the module to the harness. The ISO₆ harness module uses a 30 and 18-way connector with a jackscrew to secure the connector to the module using a 1/4" socket or nut driver. The WSMB uses a pair of 12-pin connectors.

5. Secure module harness as needed.

CAB HARNESSING

The AI-120 terminal connects to the tractor cab harness via an adapter harness. A GPS receiver is required to provide implement position via CAN or RS232 communication. A row switch module provides quick access of turning sections on and off when manual override is required. Ignition wire connects to switched power source.

A DICKEY-john output module and harness are required for interfacing with shutoff modules (Tru Count solenoid modules are not supplied by DICKEY-john). Harnessing structure illustrated below.
IMPLEMENT HARNESSING DIAGRAMS

Various implement harness options are available based on application type and must be selected at the System screen.
Implement Harnessing

From Previous Module Harness or Extension Harness (See Figure 12)

Implement CAN Extension Harness 46798014X (Multiple Lengths)

WSMB Module Seed Monitor 467981100S1 or WSMB2 Module Seed Singulation

WSMB Module Harness 46798120X

Connect to next module harness or implement extension harness (Connect CAN terminator if this is the last module on the CAN bus)

CAN Terminator

Standard Dj PM Style Planter Harness
ACCESSORY HARNESS (OPTIONAL)

Figure 13
Accessory Harness

to CAN off
WSMT module
46798-085X

WSMB Extension
Harness
46798-014X

WSMB Harness
46798-1201A

WSMB Accessory
Harness
46798-0205

Hopper Sensor

Hopper Sensor

RPM Sensor

RPM Sensor

Air Pressure Sensor

Air Pressure Sensor
SENSOR INSTALLATION

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

SEED SENSORS

The system is compatible with all existing DICKEY-john seed sensors. Seed sensors may be connected to the PDC ISO6 module and all WSMB planter monitor modules. Any number of sensors up to the maximum capacity of the module may be connected with up to 6 sensors per row. A maximum of 196 seed sensors can be connected to the system.

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

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

If the module has multiple sensors for the same row, all sensors assigned to the same channel must be sequential.

Figure 14
Correct Seed Sensor Module Connection
Figure 15
Incorrect Seed Sensor Module Connection

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

HOPPER LEVEL SENSORS
The system is compatible with the DICKEY-john planter hopper level sensors. One hopper level sensor can connect to the actuator harness and another 4 hopper sensors connect using an accessory harness (p/n 46798-0201). Both harnesses are connected to the ISO6. The hopper level connection is labeled HOPPER 1 2.

RPM/FAN SENSORS
The system is compatible with all existing DICKEY-john digital Fan/RPM sensors. One fan/RPM sensor connects to the ISO6 module. The sensor connects to the actuator harness and is labeled RPM 1. Up to 3 additional RPM sensors connect to an accessory harness (p/n 46798-0201).

AIR PRESSURE SENSORS
The system is compatible with DICKEY-john air pressure sensors. One air pressure sensor with adapter harness connects to the RPM harness connection labeled RPM1. Three additional pressure sensors connect to accessory harness (p/n 46798-0201).
SYSTEM MODES

INTELLIAG ISO₆ ACCESS

The IntelliAg system is accessed by pressing the ISO₆ button located on the left bar. The ISO₆ Control System has two modes of operation:

- Work Mode (master/control switch ON or implement DOWN)
- System Setup (Level 2 and 3 users are accessible with password)

WORK MODE

When the master/control switch is in the ON position or the Start button is enabled (green) with the implement down, the ISO₆ Control System is in Work Mode. In this mode, all enabled system components and control channels are operational, as well as all monitoring functions and system accumulators.

When the master switch is in the OFF position or the Stop button is enabled (red) with the implement up, all control and row monitoring functions cease.

Figure 16

*Figure 16*

*Work Mode Screen*
USER LEVELS

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

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

At initial powerup the system will being in user level 3 (OEM). After a power cycle, the system will continue to log into the chosen User level until changed at the Password screen. The user level is changed at the Version screen using a password.

USER LEVEL 1 OPERATOR (BASIC ACCESS)

Operator View (user level 1) is a restricted level that does not allow any setup/configuration constants to be changed.

In operator view the following functions can be performed:

- Assign materials
- Perform a fill disk
- Increase and decrease rates
- Turn on/off a control channel
- Change instruments on Work screen
- Access Diagnostics screen
- View Version screen
- View Alarm Log and Detail screens
- View Section Control screen
- View Implement Geometry screen
- View Speed screen

All Setup screens are viewable in level 1 mode with non-selectable constants in a gray tone.

To Set User Level 1 Mode:

1. Press the Version button.
2. At the Version screen, press the Password button.
3. At the Password screen, press the Lev 1 Lock button.
   - The “OEM or Dealer Screens On” located at screen bottom disappears after the Lev 1 Lock button is pressed as an indicator it is now in user level 1 mode.
Figure 17
Locking to User Level 1

USER LEVEL 2 (DEALER)

User Level 2 provides open access to all setup/configuration screens excluding Factory Reset and the Alarm Log. To change from operator level to dealer level, a 6-digit password is required. Password includes the five-digit serial number found on the label of the ISO6 or on the Version screen.

To Unlock to Dealer Access:

1. At the Version screen,
   - Record the serial number of the ISO6 module
   - Press the Password button.
2. On the Password screen, enter the 6-digit password as follows:
   - Enter the first digit as 2.
   - For the next five digits, enter the last five digits of the serial number taken from the ISO6 module found on the label or the last five digits found at the Version Information screen (example S/N 163210044 - use 10044).
3. Press the Check button to accept password. At the Password screen, text at screen bottom states “Dealer screens on” in the User Level 2 (Full Access) mode.

The system returns to the Dealer level at each power cycle until changed at the Password screen.
USER LEVEL 3 (OEM)

User Level 3 (OEM) mode provides access to three additional buttons that are not available at the dealer level:

1. Set Defaults button—Allows setting to factory defaults or to the previous configuration settings.
2. Alarm Log button—Clearing of Alarm logs
3. Control Channel Calibration Parameters screen—Manual adjustment of valve calibration parameters. These adjustments should be made with the guidance of a DICKEY-john technical support representative.
NAVIGATION AND ACTION BUTTONS

A set of buttons on the right side of each screen guides the user to navigate between screens. Some system functions have multi-tiered setup screens with a unique set of navigation buttons to guide within those system setup screens.

*Figure 19*

**Navigation Buttons Defined**

**HOME**

The Home button is always located as the first button on a screen and returns to the top level menu when pressed.

**LEFT/RIGHT ARROWS**

The Left Arrow button returns to the previous screen within the multi-tiered setup screens. A Right Arrow button indicates there is an additional setup screen; pressing the right arrow advances to the next setup screen.

**BACK**

The Back button returns to the top level screen within a multi-tiered setup function, i.e., setting up a control channel has several screens within the setup function. Pressing the Back button returns to the top level screen within Control setup.

**DOWN/UP ARROWS**

Down/Up Arrows allow moving up or down within the same screen.
ACTION BUTTONS

Action buttons perform an action relating to setting up system parameters. Some system functions have multi-tiered setup screens with a unique set of navigation buttons to guide within those system setup screens.

**Figure 20**

*Navigation Buttons Location*

![Navigation Buttons Location Diagram]

### ACTION BUTTONS DEFINED

**MODIFY**

The Modify button is only available on the top level Home Menu and is used to select and place a commonly used button on the top level Home Menu.

**EDIT**

The Edit button, found on the Materials and Controls screen, allows modification to the material and channel parameters.

**COPY**

Allows a material and control channel’s parameters to be copied and added as another material or channel to minimize setup time.

**CLEAR**

Removes a material from the material library.

**NEXT PAGE**

Proceeds to the next Work Screen.
**NEXT**
Only displays on the Feature Keys screen and displays the next set of add on software.

**ALARM CANCEL**
Cancels an active alarm.

**DONE**
Accepts changes made to the displayed screen.

**ACCEPT**
Accepts changes made to the displayed screen.

**CANCEL**
Cancels changes made to the displayed screen and reverts to the previous settings.

Additional buttons that are specific to the selected setup screen are described in the relevant sections throughout the manual.
HOME MENU

The default Home Menu is the main screen that a user interfaces with to gain access to primary system setup screens and the Work Screen.

BASIC SETUP STEPS

The basic steps below are recommended in the listed order for initial system setup:

1. Module Configuration (set module addresses)
2. System screen (select harness)
3. Rows (assign)
4. Materials (specify material type)
5. Controls (define control channels)
6. Operations (define control/application configuration)
7. Clutch/Liquid Section setup (setup for section control)
8. Geometry
9. Sensors (assign sensor type)
10. Accessories
11. Task Controller (select compatibility options)
12. All others setup steps are configurable in any order

System setup buttons at the Home Menu screen are the main setup parameters for system operation and are prioritized from left to right in the recommended setup order.

Figure 21
Home Menu Screen

Replace a System Setup Button on the Home menu:

The Home Menu is customizable to select frequently used buttons and remove buttons not used.

1. Press the Modify button. The Home Menu is now in Edit mode.
2. Select the button on the Home Edit screen to replace with a new button.
3. Select the desired button to replace the button selected on the Home Menu.
   - Two Button Selection screens display in Edit mode with available Setup buttons.
   - Press the Next Page button to display the second Button Selection menu.

4. The selected new button autofills into the selected area at the Home Menu.

5. When finished, press the Done button to return to the Home Menu that now displays the new button.

Figure 22
Customizing the Home Menu
Remove a Button from the Home Menu:

1. Press the **Modify** button.
2. Select the button to clear from the Home Menu.
3. At the Button Selection screen, press the **Clear** button.
4. The button is automatically cleared from the Home Menu and a blank placeholder button added until a new button is added.
5. When finished, press the **Done** button to return to the Home menu that now displays an empty placeholder button.

---

**Figure 23**

*Removing a Button from the Home Menu*
SYSTEM SETUP BUTTONS

Dedicated buttons are used to setup the Home Menu and also provide navigation to setup system functions. Press the Right Arrow button to display 1 of 2 Button Selection screens.

Figure 24

Button Selection Screens

SYSTEM SETUP BUTTONS DEFINED

WORK SCREEN

Available only on the Home Menu and opens the Work Screen used during normal operation to monitor and control applications (Figure 21).

ACCESSORIES

Setup parameters for installed sensors, i.e., pressure, hopper, RPM.

ALARM LOG

A listing of alarms that have occurred to the system with details on each alarm as well as a Reset button to clear alarms.
CLUTCH SECTIONS
Define sections by channels, rows, outputs, and switches to automatically or manually shut off individual sections.

CONTROLS
Setup of the control channel type identifying the channel parameters.

DIAGNOSTICS
Informational screen to aid in troubleshooting for system issues.

FACTORY RESET
Clears setup parameters and returns to factory default settings or overwrites factory defaults to the existing configuration settings as defined by the user. Alarm Log and Accumulators will be lost.

GEOMETRY
Entry of physical implement coordinates in relation to fixed positions on the vehicle to determine GPS coordinates in the field.

IMPORT/EXPORT
Implement configurations stored on the ISO6 can be exported to a USB memory device for transfer to other machines. This file transfer eliminates manual entry of all settings to similar machines via the import feature.

INSTRUMENTS
Allows customization of the Work screen to display system functions and instruments to user preferences.

LIQUID SECTIONS
Define sections by channels, rows, outputs, and switches to automatically or manually shut off individual sections.

MATERIALS
Setup of material types that are assigned to a control channel. Minimum/maximum limits, target rates, and alarm conditions are defined for materials.

MODULES
Identifies module position on the implement and allows performing an Auto Configuration to locate addresses for connected modules and sensor detection.

OPERATIONS
Identifies the actual physical configuration of how channels are grouped, either in a series or in parallel, and communicates the overall channel width to the Task Controller. A total of 6 operations are possible.
ROWS
Identifies seed row assignments to a module(s). Performing an Auto Configuration automatically configures row assignments for each module based on the module address value and number of rows.

SECTION LINKING
Links sections/channels that are in serial or in parallel formation together with other sections of the system to simultaneously turn on or off when a section is shutoff and turned on.

SEED COUNTS
Displays the number of seeds detected by each sensor.

SENSORS
Identifies sensor type by channels and rows as population or blockage.

SPEED
Setup of ground speed source and ground speed constants.

SYSTEM
Selection of the system harness type and access to feature keys, optional system add ons per customer requirements.

TASK CONTROLLER
Provides the active state of the task controller and the current operations communicating with the task controller. Also selection of the universal terminal type.

TOTALS
System accumulator data displays the total amount of time the system has been on, the amount of time and area application control has occurred, and the distance traveled.

VERSION
Provides software version installed and allows access to enter user level passwords.
MODULES

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

The Module Address (MOD ADDR) column identifies the module’s position on the implement. Accurate module placement is required for proper operation.

Module Limits:
- Up to 16 seed sensors can connect to the ISO6 module
- Up to 8 WSMB’s can be installed to monitor up to 196 sensors
- Up to 2 WSMB2’s can be installed to monitor up to 36 sensors

Each module present on the CAN bus is identified on the Module screen by the serial number and module type. A label on the module indicates the serial number and corresponds with the serial number on the Module screen.

CONNECTING SEED SENSORS TO ISO6 /WSMB

- Each module address is determined by the order in which the modules are installed on the implement.
- Modules and their respective address appears on the Module screen as installed on the implement.
- Seed sensors must be connected to the ISO6 or WSMB continuously and consecutively. Any skipped inputs 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 are numbered.

REPLACING INSTALLED MODULES (AUTO CONFIG)

When an installed module is replaced, i.e., for a defective module, an auto configuration is necessary to remove the old module from the system and replace with the new module.

When a new module is added to the system, it defaults to the last position on the Module screen. Performing an auto configuration positions the module in the correct location.

WARNING

SOME SYSTEM CONFIGURATION WILL NEED TO BE REPEATED WHEN REPLACING A MODULE.
To Perform an Auto Configuration:

1. Press the **Modules** button.
2. At the Module Configuration screen, press the **Auto Config** button.
   - An hour glass appears in the upper right corner during configuration.
3. After completion, the new module appears in the correct module address column and the old module is removed.

**Figure 25**

*Module Configuration Screen*

---

**ADDING NEW MODULES**

When adding a new module to the system, the module appears as the last module and must be placed in its correct position as installed on the implement.

**To Add a New Module:**

1. Press the Module Address input box of the new module.
2. Manually enter the correct module address location.
   - The module location automatically adjusts to the correct position and proceeding modules change to the new module address.
AUTO SORT FEATURE

Performing an Auto Sort is a feature used for those systems that have all modules installed on the implement in sequential order by serial number. When modules are added or removed, pressing the Auto Sort button automatically places the modules in order by their serial number.
IDENTIFY HARNESS STYLE

IMPORTANT: A harness style must be selected prior to channel setup.

The system default is set to “Monitor Only” with no control channels enabled.

Selecting a Harness:

1. Press the System button.
2. Press the Harness drop down box and select the appropriate harness.
3. Press the Save button.
   - Press the Cancel ‘X’ button to cancel the selected changes.
4. A power cycle is required to reboot the system.

NOTE: Refer to the Software Addons section for details on the Feature Keys button.

ADDING A CUSTOM HARNESS

A custom harness is necessary when a harness is not found on the drop down harness list. Contact DICKEY-john U.S. Technical Support at 1-800-637-3302 or DICKEY-john Europe at +33 1 41 19 21 80 for more information.
ROW SETUP

Row Setup controls the number of rows that are monitored and the distance between the rows in order to establish implement width.

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

To Access Row Setup:

1. Press the Rows button to access the Row Setup screen.
2. Enter parameters as defined below.

**Figure 28**

Row Setup Planter Control

**NUMBER OF ROWS**

Enter total number of implement rows.

**ROW WIDTH**

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

**ON/OFF PATTERN**

For split, twin, or skip row type seeding implements there are 3 predefined patterns to configure row patterns. When a row pattern is selected, all of the rows are automatically turned ON or OFF according to the pattern.
Figure 29

Pre-Defined On/Off Patterns

<table>
<thead>
<tr>
<th>PATTERN</th>
<th>Description/Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>-X-X-X-</td>
<td>Every 2nd Row Off</td>
</tr>
<tr>
<td>X-X-X-X</td>
<td>Every 2nd Row On</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>

On/Off Pattern Symbols
Rows Turned ON = -
Rows Turned OFF = X

ACTIVE ROWS

Automatic entry displaying the number of active rows enabled at the control channel(s).

EFFECTIVE ROW WIDTH

The actual row width automatically adjusts as determined by the row pattern selected and is a calculation based on the number of rows, row width, and active rows.

IMPLEMENT 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.
MATERIAL SETUP

CREATING A MATERIALS TABLE

A Materials table stores 16 user-defined materials that provide an overview of all materials assigned and configured for a control channel. A material is setup by selecting one of the material buttons. As materials are configured and saved, the Material buttons at the Materials table changes to the name created at the Material Setup screen.

To Create a Material:

1. Press the Materials button.
2. At the Materials table screen, press to highlight one of the Material buttons.
   - Unassigned materials have a material name as “MATRL 1”
3. Press the Edit button to open a material. Refer to the Edit/Define Material Parameters section for setup instruction.

COPY MATERIALS TO TABLE

An existing material and its parameters can be copied to another Materials button to eliminate entry of similar items. Once the material is copied it can be edited to make modifications as necessary.

To Copy an Existing Material:

1. At the Material table, press the Material button to highlight the material to copy to a new button.
2. Press the **Copy** button.
   - A notepad appears on the material to be copied.
3. Press the **Material** button where the material should be copied.
4. Press the **Paste** button. Material is now copied to the selected position.

*Figure 31*

**Copy Materials**

---

**CLEAR MATERIAL FROM TABLE**

A material and its parameters can be removed from the material table. This clears the entered parameters and material name and returns to the system defaults.

**To Clear Materials:**

1. At the Materials Table screen, press to select and highlight the material to remove from the table.
2. Press the **Clear** button. Material and parameters are cleared.
3. The default image and text display in the table and can be setup as a new material in the future.
Figure 32
Clearing Material
EDIT/DEFINE MATERIAL PARAMETERS

The Material Edit screen defines the parameters for a material. A total of 16 materials can be configured for planter, granular, liquid flow, RPM, and granular monitor. Material parameters may vary based on the material type selected.

To Define Material Parameters:

1. Press to highlight the Material to edit at the Materials table.
   - The Edit button will not display until the material is selected.
2. Press the Edit button.
3. Press on the Name input box.
   - Type in the desired name using the virtual keypad.
4. Press the Check button on the keyboard to accept change.
5. Review and adjust material parameters relevant to the application.
   Refer to definitions of material parameters that follow in this section.

Figure 33
Create a Material Name
APPLICATION CONTROL TYPE

Type establishes the desired type of application control channel used for a specific material. **This step is very important. Material type must correctly match Control type.**

<table>
<thead>
<tr>
<th>Type</th>
<th>Used for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planter Control</td>
<td>seeding on a row crop planter</td>
</tr>
<tr>
<td>Monitor Only</td>
<td>population monitoring only</td>
</tr>
<tr>
<td>Granular Control</td>
<td>granular application control on drills and planters</td>
</tr>
<tr>
<td>Liquid Flow Control</td>
<td>liquid application control</td>
</tr>
<tr>
<td>Granular Monitor</td>
<td>ground drive air cart, drill</td>
</tr>
</tbody>
</table>

MATERIAL TABLE SYMBOLS

Material assignments are identified at the material table by symbols indicated below.

*Figure 34*

**Material Library Symbols**

![Material Library Symbols](image-url)
PLANTER CONTROL MATERIAL TYPE

Material setup for seeding applications.

Figure 35

Material Setup Screen for Planter Control

TYPE

Select Planter Control as the type.

UNITS

An application rate setting in thousands of seeds per acre (KS/AC) or thousands of seeds per hectare (KS/HA). Units automatically change with the type of material application selected.

PRESET METHOD ENABLED

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Work Screen using the Increment/Decrement buttons (Figure 36).

PRESET METHOD DISABLED

When Preset Method is disabled, the target rate on the Work Screen can be adjusted by pressing the Material Increment/Decrement buttons. The target rate increases or decreases based on the Inc/Dec % value set at the Material Configuration screen (Figure 36).
TARGET RATE
Desired rate of application displays in thousands of seeds per acre (KS/AC) or thousands of seeds per hectare (KS/HA).

MAXIMUM RATE
The maximum application rate in thousands of seeds per acre (KS/AC) or thousands of seeds per hectare (KS/HA) that the control allows. Target rate cannot be incrementeted to a value greater than this established maximum rate.

MINIMUM RATE
The minimum application rate in thousands of seeds per acre (KS/AC) or thousands of seeds per hectare (KS/HA) that the control allows. Target Rate cannot be decremented to a value lower than this established minimum rate.
INCREASE/DECREASE %

Establishes the percentage of change of the entered target rate that is applied each time the material Increment/Decrement button is pressed on the Work Screen.

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

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

SEEDS PER REV

Displays the number of seeds that are dropped in one revolution of the seed disk.

NOTE: Press the Arrow button on the Materials screen to view second screen.

HIGH/LOW POPULATION ALARMS

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 current channel target rate setting if rows are assigned to a channel. Otherwise the alarm will trigger from planter average population.

High Alarm example:

If the Target Rate is 100.0 and the High Alarm is 5.0%, multiply 100.0 x 1.05 (a 5% increase) = 105.0. The alarm will activate at this population.
Low Alarm example:
If the Target Rate is 100.0 and the Low Alarm is 5.0%, multiply 100.0 x .95 (a 5% decrease) = 95.0. The alarm will activate at this population.

HIGH/LOW ALARM DELAY
Establishes the delay between the detection of a high or 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 high or low population alarm condition continuously for 10 seconds before the alarm is issued.

ROW FAIL RATE
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 that indicates a row failure threshold of 2 seeds in 1 second.

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

DISC HIGH/LOW LIMITS
The maximum or minimum RPM at which the seed disc operates. The control will not allow the seed disc to rotate faster than the Disc High or Low Limit setting.

PRODUCT LEVEL ALARM
The product level alarm sets the weight (LBS/KG) to alert of low seed levels. The entered value is an estimate in pounds/kilograms (LBS/KG).
GRANULAR SEEDING MATERIAL TYPE

Granular control setup for fertilizer, seeding, and crop protect applications using hydraulic or electric control systems.

**Figure 38**

**Material Setup - Granular Control**

### TYPE

Select Granular Control as the type.

### PRODUCT CLASS

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

### UNITS

The rate units used for the material in pounds per acre (LB/AC), kilograms per hectare (KG/HA) 1000 seeds per acre (KS/AC), 1000 seeds per hectare (KS/HA), seeds per square foot (S/FT²) or seeds per square meter (S/M²).

### PRESET METHOD ENABLED

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates is adjusted from the Work Screen using the Increment/Decrement buttons (Figure 36).

### PRESET METHOD DISABLED

When Preset Method is disabled, the target rate on the Work Screen is adjusted by pressing the Increment/Decrement buttons. The target rate increases or decreases based on the Inc/Dec % value set at the Material Configuration screen (Figure 36).

### TARGET RATE

Target Rate establishes the desired rate of application according to the units specified in the Units setting.
MAXIMUM RATE

Maximum Rate establishes the maximum application rate in pounds per acre (LB/AC) or kilograms per hectare (KG/HA) that the control allows. Target Rate cannot be incremented to a value greater than this established maximum rate.

MINIMUM RATE

Minimum Rate establishes the minimum application rate in pounds per acre (LB/AC) or kilograms per hectare (KG/HA) that the control allows. Target Rate cannot be decremented to a value lower than this established minimum rate.

INCREASE/DECREASE %

The increment and decrement percent rate establishes the percentage of change of the entered target rate applied each time the Increment/Decrement button is pressed on the Work Screen.

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

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

DENSITY

Density is the weight per volume of material to be dispensed and is required to convert the spreader constant. If density is unknown, a value of 1 can be entered to perform a spreader constant. This will place the channel into a pure pulse/ft³ granular system.

SEEDS PER POUND

The number (#) of seeds per pound (S/LB) or seeds per kilogram (S/KG). This setting is used when calculating population values and triggering alarms. The Seeds Per Pound is also used when material Units are set to KS/AC or Seeds/Ft² to convert the target rate to LBS/AC or KG/HA. Editing this setting will update the Thousand Grain Weight setting.

This number is often found printed on the seed bag.
NOTE: Press the Arrow button on the Materials screen to view second screen.

THOUSAND WEIGHT GRAIN

The weight of 1000 seeds in either ounces or grams. This setting is used when calculating population values and triggering alarms. The Thousand Grain Weight is also used when material Units are set to KS/AC or Seeds/Ft² to convert the target rate to LBS/AC or KG/HA. Editing this setting will update the Seeds Per Pound setting.

This number can be found by counting out 1000 seeds and weighing them, or it may be printed on the seed bag.

HIGH/LOW POPULATION ALARMS

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 FAIL RATE
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.

LOW/HIGH SHAFT RPM
Low/High Shaft RPM establishes the low shaft and high shaft RPM the meter shaft will operate. Low shaft RPM is the lowest shaft RPM speed the control channel operates. High shaft RPM is the highest shaft RPM the control channel operates.

PRODUCT LEVEL ALARM
The product level alarm sets the weight to alert of low seed levels. The entered value is an estimate in pounds/kilograms (LBS/KG).
LIQUID FLOW MATERIAL TYPE

Material setup for liquid flow control of fertilizer and crop protection applications.

**Figure 40**
Material Setup Liquid Flow

![Material Setup Liquid Flow Diagram]

**TYPE**
Select Liquid Flow Control as the control type.

**PRODUCT CLASS**
Identifies the type of application as either fertilizer or crop protection i.e., insecticide.

**UNITS**
An application rate setting in gallons per acre (GAL/AC) or litres per hectare (L/HA). Units automatically change with the material application type selected.

**PRESET METHOD ENABLED**
The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Work Screen using the Increment/Decrement buttons (Figure 36).

**PRESET METHOD DISABLED**
When Preset Method is disabled, the target rate on the Work Screen can be adjusted by pressing the Material Increment/Decrement buttons. The target rate increases or decreases based on the Inc/Dec % value set at the Material Configuration screen (Figure 36).
TARGET RATE
Target Rate establishes the desired rate of application in gallons per acre (GAL/AC) or litres per hectare (L/HA).

MAXIMUM RATE
Establishes the maximum application rate in gallons per acre (GAL/AC) or litres per hectare (L/HA) that the control will allow. Target Rate cannot be incremented to a value greater than this established maximum rate.

MINIMUM RATE
Establishes the minimum application rate in gallons per acre (GAL/AC) or litres per hectare (L/HA) that the control will allow. Target Rate cannot be decremented to a value lower than this established minimum rate.

INCREASE/DECREASE %
The Increment/Decrement Percent rate establishes the percentage of change that is applied each time the Increment/Decrement button is pressed on the 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.

NOTE: Press the Arrow button on the Materials screen to view second screen.

LOW/HIGH FLOW LIMIT
The Low/High Flow Limit sets the lowest/highest gallons per minute (G/MN) or litres per minute (L/MN) rate that the control channel operates.

PRODUCT LEVEL ALARM
Sets the gallons left in the tank to trigger an alarm alerting of low liquid levels. The entered value is an estimate in gallons (GAL) or litres (L).
PLANTER MONITOR MATERIAL TYPE

Planter Monitor is typically used for ground drive applications to monitor population with high and low alarms.

**Figure 42**

**Planter Monitor Screen**

**TYPE**

Select Planter Monitor as the control type.

**PRESET METHOD ENABLED**

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Work Screen using the **Increment/Decrement** buttons (Figure 36).

**PRESET METHOD DISABLED**

When Preset Method is disabled, the target rate on the Work Screen can be adjusted by pressing the Material **Increment/Decrement** buttons. The target rate increases or decreases based on the Inc/Dec % value set at the Material Configuration screen (Figure 36).

**TARGET RATE**

Target Rate establishes the desired rate of application in thousands of seed per acre (KS/AC) or thousands of seeds per hectare (KS/HA).

**MAXIMUM RATE**

Maximum Rate establishes the maximum application rate in thousands of seed per acre (KS/AC) or thousands of seeds per hectare (KS/HA) that the control allows. Target Rate cannot be incremented to a value greater than this established maximum rate.
MINIMUM RATE

Minimum Rate establishes the minimum application rate in thousands of seed per acre (KS/AC) or thousands of seeds per hectare (KS/HA) that the control allows. Target Rate cannot be decremented to a value lower than this established minimum rate.

INCREASE/DECREASE %

The Increment/Decrement Percent rate establishes the percentage of change that is applied each time the Increment/Decrement button is pressed on the Work Screen.

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

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

SEEDS PER REV

Displays the number of seeds that are dropped in one revolution of the seed disk.

NOTE: Press the Arrow button on the Materials screen to view second screen.

HIGH/LOW POPULATION ALARMS

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 x 30 ks/ac and the high alarm is 5.0% multiply 30 ks/acre x 1.05 (a 5% increase) = 31.5 ks/ac. The alarm will activate at this rate.

Low Alarm example
If the Target Rate is 100 x 30 ks/ac and the low alarm is 5.0% multiply 30 ks/acre x .95 (a 5% decrease) = 28.5 ks/ac. The alarm will activate at this rate.

HIGH/LOW ALARM DELAY
Establishes the delay between the detection of a high or 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 high or low population alarm condition continuously for 10 seconds before the alarm is issued.

ROW FAIL RATE
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.

POPULATION ADJUST
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.

\[(\text{Actual Population} - \text{Monitor Population}) \times 100\]
\[\text{Monitor Population}\]

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

DISC HIGH/LOW LIMITS
The maximum or minimum RPM at which the seed disc will operate.

PRODUCT LEVEL ALARM
The product level alarm sets the weight to alert of low seed levels. The entered value is an estimate in thousands of seeds (KS).
GRANULAR MONITOR MATERIAL TYPE

Select Granular Monitor setup for fertilizer and crop protect applications using hydraulic control systems.

**Figure 44**

**Granular Monitor Screen**

**TYPE**

Select Granular Monitor as the control type.

**PRODUCT CLASS**

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

**UNITS**

The rate units used for the material in pounds per acre (LB/AC), kilograms per hectare (KG/HA).

**PRESET METHOD ENABLED**

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Work Screen using the Increment/Decrement buttons (Figure 36).

**PRESET METHOD DISABLED**

When Preset Method is disabled, the target rate on the Work Screen can be adjusted by pressing the Material Increment/Decrement buttons. The target rate increases or decreases based on the Inc/Dec % value set at the Material Configuration screen (Figure 36).

**TARGET RATE**

Target Rate establishes the desired rate of application in pounds per acre (LB/AC) or kilograms per hectare (KG/HA).
MAXIMUM RATE

Maximum Rate establishes the maximum application rate in pounds per acre (LB/AC) or kilograms per hectare (KG/HA) that the control will allow. Target Rate cannot be incremented to a value greater than this established maximum rate.

MINIMUM RATE

Minimum Rate establishes the minimum application rate in pounds per acre (LB/AC) or kilograms per hectare (KG/HA) that the control will allow. Target Rate cannot be decremented to a value lower than this established minimum rate.

INCREASE/DECREASE %

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

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

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

DENSITY

Density is the weight per volume of material to be dispensed and is required to convert the spreader constant. If density is unknown, a value of 1 can be entered to perform a spreader constant. This will place the channel into a pure pulse/ft³ granular system.

SEEDS PER POUND

The number (#) of seeds per pound (S/LB) or seeds per kilogram (S/KG). This setting is used when calculating population values and triggering alarms. The Seed Per Pound is also used when material Units are set to KS/AC or Seeds/Ft² to convert the target rate to LBS/AC or KG/HA. Editing this setting will update the Thousand Grain Weight setting.

This number is often found printed on the seed bag.
THOUSAND WEIGHT GRAIN

The weight of 1000 seeds in either ounces or grams. This setting is used when calculating population values and triggering alarms. The Thousand Grain Weight is also used when material Units are set to KS/AC or Seeds/FT² to convert the target rate to LBS/AC or KG/HA. Editing this setting will update the Seeds Per Pound setting.

This number can be found by counting out 1000 seeds and weighing them, or it may be printed on the seed bag.

HIGH/LOW POPULATION ALARMS

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

ROW FAIL RATE

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.

LOW/HIGH SHAFT RPM

Low/High Shaft RPM establishes the low shaft and high shaft RPM the meter shaft will operate.

PRODUCT LEVEL ALARM

The product level alarm sets the weight to alert of low seed levels. The entered value is an estimate in pounds (LBS) or kilograms (KG).
SHAFT CONTROL

Shaft Control channel defines the setup parameters to regulate a shaft control input, i.e. spinner, RPM.

**Figure 46**

**Shaft Control**

**TYPE**

Select Shaft Control as the type.

**UNITS**

An application rate setting in units that automatically change with the type of material application selected.

**PRESET METHOD ENABLED**

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Work Screen using the **Increment/Decrement** buttons (**Figure 36**).

**PRESET METHOD DISABLED**

When Preset Method is disabled, the target rate on the Work Screen can be adjusted by pressing the Material **Increment/Decrement** buttons. The target rate increases or decreases based on the Inc/Dec % value set at the Material Configuration screen (**Figure 36**).

**TARGET RATE**

Target Rate establishes the desired rate of application according to the units specified in the Units setting.
MAXIMUM/MINIMUM RATE

Maximum Rate establishes the maximum application rate in RPM. Target Rate cannot be incremented to a value greater than this established maximum rate.

Minimum Rate establishes the minimum application rate in RPM. Target Rate cannot be decremented to a value lower than this established minimum rate.

INCREASE/DECREASE %

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

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.

Figure 47

Material Setup - RPM Control Page 2

NOTE: Press the Arrow button on the Materials screen to view second screen.

LOW/HIGH RPM LIMIT

Low/High Shaft RPM establishes the low shaft and high shaft RPM the meter shaft will operate. Low shaft RPM is the lowest shaft RPM speed the control channel operates. High shaft RPM is the highest shaft RPM the control channel operates.
FAN CONTROL

Fan Control channel defines the setup parameters to regulate a fan control input in RPM.

Figure 48  Fan Control

**TYPE**

Select Fan Control as the type.

**UNITS**

An application rate setting in units that automatically change with the type of material application selected.

**PRESET METHOD ENABLED**

The Preset Method table allows 10 user-defined target rates to be entered. When enabled, target rates can be adjusted from the Work Screen using the Increment/Decrement buttons (Figure 36).

**PRESET METHOD DISABLED**

When Preset Method is disabled, the target rate on the Work Screen can be adjusted by pressing the Material Increment/Decrement buttons. The target rate increases or decreases based on the Inc/Dec % value set at the Material Configuration screen (Figure 36).

**TARGET RATE**

Target Rate establishes the desired rate of application in RPM.

**MAXIMUM/MINIMUM RATE**

Maximum Rate establishes the maximum application rate in RPM. Target Rate cannot be incremented to a value greater than this established maximum rate.
Minimum Rate establishes the minimum application rate in RPM. Target Rate cannot be decremented to a value lower than this established minimum rate.

**INCREASE/DECREASE %**

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

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.

**NOTE:** Press the Arrow button on the Materials screen to view second screen.

**Figure 49**

Material Setup - Fan Page 2

**LOW/HIGH RPM LIMIT**

Low/High Shaft RPM establishes the low shaft and high shaft RPM the meter shaft will operate. Low shaft RPM is the lowest shaft RPM speed the control channel operates. High shaft RPM is the highest shaft RPM the control channel operates.
CONTROL CHANNEL SETUP

Up to six material application control channels are available based on the number of purchased channels and corresponding harness.

ASSIGN A CONTROL CHANNEL

The Controls screen on initial setup is blank. Adding, deleting, and editing channel setup parameters are defined at this screen. As channels are configured and saved in sequential order, the Controls screen identifies the channel type and material assigned. A channel type cannot be changed after setup. The channel must be removed and a new one created.

Once a channel is created, select the channel to edit setup parameters.

To Assign a Control Channel:

1. Press the Controls button. The appropriate material type must be setup before assigning a control channel.
2. Press to highlight an empty Control Channel box.
3. Press the Add Channel button to select the control channel type.
4. Select the desired Channel Type button.
   – The selected channel type now appears on the Controls screen.
5. Press to highlight and select the channel.
6. Press the Edit button to open the channel and establish channel parameters. Reference the “Control Channel Type” section.
DELETE A CONTROL CHANNEL

A control channel and its parameters can be removed from the Controls screen. Deleting a channel clears the entered parameters for the channel.

To Clear Materials:

1. At the Controls screen, press to select and highlight the control channel.
2. Press the Remove Channel button.
3. Press the Checkmark button to acknowledge.
   - Channel parameters are cleared and the channel can be setup as a new control type in the future.
   - Press the Cancel ‘X’ button to abort.
COPY A CONTROL CHANNEL

A control channel's setup parameters can be copied to another channel.

1. Select to highlight the control channel to copy.
2. Press the Copy button.
   - The copied channel appears in the next open channel space.

*Figure 53 Clear a Channel*
CHANNEL LINKING

Material application control channels can be linked together in a master/subordinate relationship. This allows for simultaneous on/off and rate control from the Work Screen.

To Link Channels:

1. At the Control screen, press the Channel Linking button.
2. At the Channel Linking screen, press the Add Link button.
3. Select the link type as:
   - Rate: linking the rates of multiple channels
   - On/Off: Linking channels to simultaneously turn on and off
   - Master/Subordinate: Links a master/subordinate output to simultaneously turn on/off channels, i.e., planter control channel/fan
4. Press the channels input box to select the channels to link.
   - Continue to press the Add Link button until all links are complete.
5. When finished, press the Back button.
6. The new link type and channels display on the Channel Linking screen.
7. To Edit a link, select a specific link and press the Edit button to open and make any changes.

Figure 54
Linking Channels
CONTROL CHANNEL TYPE

A material application channel can be assigned as Planter Control, Planter Monitor, Granular Control, Granular Monitor, Liquid Flow, Fan Control, or Shaft Control.

To Edit Control Channel Parameters:
1. At the Controls screen, highlight the channel button and press the Edit button.

PLANTER CONTROL CHANNEL

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

Figure 55
Planter Control Setup

MATERIAL NAME
Select the material name assigned to the channel.

CONTROL MODE

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

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

MANUAL WITHOUT FEEDBACK-Overrides the current system when not operating properly, i.e., bad feedback sensor. Using the Increment/Decrement buttons at the Work Screen will set the flow rate for the control channel. No application rate feedback will display.
DRIVE TYPE
PWM (Pulse Width Modulation)
A valve, usually hydraulic, which varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.

DRIVE FREQUENCY
Specifies the frequency for the proportional valve installed. The recommended setting for this option should be specified from the specific valve manufacturer.

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

INPUT FILTER
Provides a setting for the amount of filtering applied to the feedback frequency feedback of the control channel.

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

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

GEAR RATIO
Specifies the actual ratio from the application rate sensor to the seed meter. This specifies the number of revolutions the application rate sensor turns in relation to one revolution the seed meter turns.

SENSOR CONSTANT
Establishes the number of pulses for one revolution of the application rate sensor. If a standard DICKEY-john application rate sensor is used, the value should be set to 360.

SEED ROW ASSIGNMENT
Enter the first and last number of seed rows assigned to the control channel.

NUMBER (#) OF SEED ROWS
Displays the total number of seed rows assigned to the control channel.

CHANNEL WIDTH
The overall row width assigned to a specific channel. Width calculation is determined by the number of rows assigned to the channel multiplied by the row spacing.
PRECHARGE TIME

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

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

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

A Precharge Alarm displays any time the Preset feature is established or changed and the master/control switch is turned ON.

To Activate Precharge Time:

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

A granular control channel controls granular application on planters and drills.

**Figure 57**
Granular Control Channel

**MATERIAL NAME**
Select the material assigned to the channel.

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

**CONTROL MODE**

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

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

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

**DRIVE TYPE**

**PWM (Pulse Width Modulation)**
A valve, usually hydraulic, which varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.
SERVO
A ball valve or butterfly valve that is driven by an electric motor gearbox and the valve is installed in the tank return line.

DRIVE FREQUENCY
Specifies the frequency for the proportional valve installed. The recommended setting for this option should be specified from the valve manufacturer.

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.

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.

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

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

SPREADER CONSTANT
How many pulses the application rate sensor produces per volume of material discharged.

SEED ROW ASSIGNMENT
Enter the first and last number of seed rows assigned to the control channel.

NUMBER (#) OF SEED ROWS
Displays the total number of seed rows assigned to the control channel.

CHANNEL WIDTH
Granular Seeding-The implement width for rows assigned to a channel.
Granular Fertilizer-The fertilizer spread width assigned to a channel.
FLUSH ENABLE

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

To Activate Flush Enable:

1. At the Controls screen, change Flush Disabled to Enabled. Flush Enable must be activated at the Control screen before the Flush Ground Speed feature displays on the Speed setup screen.
   – A Flush Ground Speed greater than 0 must be entered on the Speed setup screen for this feature to operate.

PRECHARGE TIME

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

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

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

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

IMPORTANT: At the Work screen, turn the master switch ON to activate the Precharge feature.
To Enable Precharge Time:

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

RATE REDUCTION

Return to Tank
As the channel’s applied width reduces, the shaft speed is not reduced. Typically used for machines that have diverter shutoffs that returns seed to the tank.

Meter Rate
As the channel’s applied width reduces, the shaft speed is reduced to maintain the sample application rate. Typically used for machines that have row shutoff that block seed flow to the row.
LIQUID FLOW CONTROL CHANNEL

Control setup parameters for liquid flow control applications.

Figure 60
Liquid Flow Control

<table>
<thead>
<tr>
<th>Material Name</th>
<th>LIQ FERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank Number</td>
<td>1</td>
</tr>
<tr>
<td>Control Mode</td>
<td>Auto</td>
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<tr>
<td>Drive Type</td>
<td>Servo 6</td>
</tr>
<tr>
<td>Drive Freq.</td>
<td>40 Hz</td>
</tr>
<tr>
<td>Input Filter</td>
<td>20 x</td>
</tr>
<tr>
<td>K-Factor</td>
<td>741.6</td>
</tr>
<tr>
<td>Valve Locking</td>
<td>Disabled</td>
</tr>
<tr>
<td>Nozzles</td>
<td>1-24</td>
</tr>
<tr>
<td>Number of Nozzles</td>
<td>24</td>
</tr>
<tr>
<td>Noz Spacing</td>
<td>0.0 IN</td>
</tr>
<tr>
<td>Channel Width</td>
<td>0.0 IN</td>
</tr>
<tr>
<td>PreCharge</td>
<td>0.0 SEC</td>
</tr>
<tr>
<td>Flush Enable</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

MATERIAL NAME
Select the material assigned to the channel.

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

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

MANUAL WITH FEEDBACK- Overrides the current system when not operating properly, i.e., faulty coil. Using the Increment/Decrement buttons at the Main Operate screen will set the rate for the control channel. Manual Mode with Feedback shows the actual application rate applied based on actual flow and constants.

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

DRIVE TYPE
PWM (Pulse Width Modulation)
A valve, usually hydraulic, which varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.
SERVO
A ball valve or butterfly valve that is driven by an electric motor gearbox and the valve is installed in the tank return line.

DRIVE FREQUENCY
Specifies the frequency for the proportional or servo valve installed. The recommended setting for this option should be specified from the valve manufacturer.

INPUT FILTER
An adjustment setting for the amount of filtering applied to the flow meter feedback frequency of the control channel.

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

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

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

NOZZLES
Enter the first and last number of nozzles assigned to a channel.

NUMBER OF NOZZLES
The total number of nozzles assigned to a channel.

NOZZLE SPACING
The distance in inches (metres) between nozzles on the spray bar for broadcast operations. The value to enter is determined by measuring the distance between nozzles to the nearest 1/10th.

CHANNEL WIDTH
Channel Width is an automatic calculation of the overall channel width based from the number of nozzles times width spacing.
**PRECHARGE TIME**

Refer to (Figure 59).

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

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

*Figure 61*

*Enable Precharge Seconds and Ground Speed*

To Activate Precharge Time:

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

**FLUSH ENABLE**

Refer to (Figure 58).

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

To Activate Flush Enable:

1. Change Flush Disable to Enable. Flush Enable must be activated before the Flush Ground Speed feature displays on the Ground Speed Setup screen.
   - A Flush Ground Speed greater than 0 must be entered on the Ground Speed setup screen for this feature to operate.
PLANTER MONITOR CHANNEL
Control setup parameters for planter monitor applications.

IMPORTANT: When using an application rate sensor, select the appropriate Drive Type and install the application rate sensor to the corresponding feedback.

MATERIAL NAME
Select the material assigned to the channel.
CONTROL MODE

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

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

DRIVE TYPE

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

INPUT FILTER
An adjustment setting for the amount of filtering applied to the feedback frequency feedback of the control channel.

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

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.

GEAR RATIO
Specifies the actual ratio from the application rate sensor to the output shaft. This specifies the number of revolutions the application rate sensor turns in relation to one revolution the final output shaft turns.

SEED ROW ASSIGNMENT
Enter the first and last number of seed rows assigned to the control channel.

NUMBER (#) OF SEED ROWS
Displays the total number of seed rows assigned to the control channel.

CHANNEL WIDTH
Enter the width of rows assigned to a specific channel. Width calculation can be determined by number of planter rows assigned to the channel multiplied by the row spacing.
**GRANULAR MONITOR CHANNEL**

The following constants define the parameters for Granular Monitor.

**IMPORTANT:** When using an application rate sensor, select the appropriate Drive Type and install the application rate sensor on the corresponding feedback.

*Figure 64*

**Granular Monitor Control Channel**

<table>
<thead>
<tr>
<th>Material Name</th>
<th>MATRL 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Mode</td>
<td>Feedback</td>
</tr>
<tr>
<td>Drive Type</td>
<td>PWM 1</td>
</tr>
<tr>
<td>Input Filter</td>
<td>20</td>
</tr>
<tr>
<td>Sensor Constant</td>
<td>360</td>
</tr>
<tr>
<td>Gear Ratio</td>
<td>1.000</td>
</tr>
<tr>
<td>Spreader Constant</td>
<td>5548</td>
</tr>
<tr>
<td>Seed Rows</td>
<td>1-16</td>
</tr>
<tr>
<td># Seed Rows</td>
<td>16</td>
</tr>
<tr>
<td>Channel Width</td>
<td>4800.0 IN</td>
</tr>
</tbody>
</table>

**MATERIAL NAME**

Select the material assigned to the channel.

**CONTROL MODE**

**AUTO**—Control channel is calculating based on application rate sensor feedback.

**FEEDBACK**—Overides the current system when not operating properly, i.e., faulty coil. Using the Increment/Decrement buttons at the Main Operate screen will set the rate for the control channel. Manual Mode with Feedback shows the actual application rate applied based on actual ground speed and constants.

**NO FEEDBACK**—Overides the current system when not operating properly, i.e., bad feedback sensor. Using the Increment/Decrement buttons at the Work Screen will set the flow rate for the control channel. No application rate feedback will display.
DRIVE TYPE

PWM (Pulse Width Modulation)

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

INPUT FILTER

An adjustment setting for the amount of filtering applied to the feedback frequency feedback of the control channel.

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

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.

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.

SPREADER CONSTANT

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

SEED ROW ASSIGNMENT

Enter the first and last number of seed rows assigned to the control channel.

NUMBER (#) OF SEED ROWS

Displays the total number of seed rows assigned to the control channel.

CHANNEL WIDTH

Enter the width of rows assigned to a specific channel. Width calculation can be determined by number of planter rows assigned to the channel multiplied by the row spacing.
FAN CONTROL

The following constants define the parameters for fan control.

**Figure 65**

**Fan Control Channel Setup**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Name</td>
<td>MATRL 7</td>
</tr>
<tr>
<td>Control Mode</td>
<td>Auto</td>
</tr>
<tr>
<td>Drive Type</td>
<td>PWM 4</td>
</tr>
<tr>
<td>Drive Freq.</td>
<td>100 Hz</td>
</tr>
<tr>
<td>Input Filter</td>
<td>20</td>
</tr>
<tr>
<td>Sensor Constant</td>
<td>360</td>
</tr>
<tr>
<td>Implement Up</td>
<td>Disabled</td>
</tr>
<tr>
<td>Disable Control On</td>
<td>Disabled</td>
</tr>
<tr>
<td>Control Failure Alarm</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

**MATERIAL NAME**

Select the material assigned to the channel.

**CONTROL MODE**

**AUTO**-Control channel is calculating based on application rate sensor feedback.

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

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

**DRIVE TYPE**

**PWM (Pulse Width Modulation)**

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

Specifies the frequency for the proportional valve installed. The recommended setting for this option should be specified from the specific valve manufacturer.

INPUT FILTER

An adjustment setting for the amount of filtering applied to the feedback frequency feedback of the control channel.

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

SENSOR CONSTANT

Establishes the number of pulses for one revolution of the application rate sensor. If a standard DICKEY-john application rate sensor is used, the value should be set to 360.

IMPLEMENT UP

Disabled
The control loop runs regardless of implement lift state. If sufficient hydraulic capacity is not available, alarms may trigger if the fan is not maintaining set point.

Locked
When the implement is raised the control loop is stopped and output is frozen at its previous value. If you don’t have enough hydraulic capacity and the fan is not maintaining set point prevents alarms for occurring even though the fan is still not working properly.

DISABLE CONTROL ON CONTROL FAILURE ALARM

Select to enable or disable ALL non-fan control channels if the RPM value of the sensor falls below the low alarm level setting.

The two settings include:

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

The following constants define the parameters for Shaft Control.

Figure 66

Shaft Control Channel Setup

MATERIAL NAME
Select the material assigned to the channel.

CONTROL MODE

AUTO - Control channel is calculating based on application rate sensor feedback.

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

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

DRIVE TYPE

PWM (Pulse Width Modulation)
A valve, usually hydraulic, which varies the oil flow to a hydraulic motor proportioned to electric current supplied. This type of valve consists of a flow cartridge and coil assembly.
DRIVE FREQUENCY
Specifies the frequency for the proportional valve installed. The recommended setting for this option should be specified from the specific valve manufacturer.

INPUT FILTER
An adjustment setting for the amount of filtering applied to the feedback frequency feedback of the control channel.

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

SENSOR CONSTANT
Establishes the number of pulses for one revolution of the application rate sensor. If a standard DICKEY-john application rate sensor is used, the value should be set to 360.
CALIBRATIONS-VALVE AND SPREADER

Valve calibrations are required for proper system operation for planter, granular, and liquid flow channels. Some calibration screens vary based on control channel type.

PLANter CONTROL AND GRANULAR VALVE CALIBRATION

Performing a valve calibration is required for control channel types other than planter monitor and granular monitor to set system parameters and should be performed for best results. A Valve Calibration button appears on the control channel screen if this step is appropriate for the assigned channel type.

TIP: Valve calibration steps 1-11 are the same when performing for Planter, Granular, Liquid Flow, Fan and Shaft Control.

**CAUTION**

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

**PERFORM A VALVE CALIBRATION**

1. At the Controls screen, press the **Valve Calibration** button to access the Valve Calibration screen (Figure 65).
2. Move the implement to the “raised” position.
3. Apply the tractor brakes and lock in the applied position.
4. Put the transmission in “park” or in a locked, neutral position.
   - Verify disc speed high limit is set correctly. Valve calibration will try and obtain the high disc speed.
5. Start the tractor and engage the hydraulic system, i.e. PTO or auxiliary lever.
6. Run the engine at normal operating speed until the hydraulic fluid is at normal operating temperature.
7. Press the **Start** button.
8. The valve calibration immediately starts.
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 (GRANULAR)

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

To Perform a Limit Output:

1. At the Valve Calibration screen, press the Limit Output button to access the Limit Output screen.
2. Move the implement to the “raised” position.
3. Apply the tractor brakes and lock in the applied position.
4. Put the transmission in “park” or in a locked, neutral position.
5. Engage hydraulic system.
6. Run engine at normal operating RPM until hydraulic fluid is at normal operating temperature.
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 immediately begins. The calibration runs using the new max flow value.
NOTE: Refer to the System Tests section for using a remote test switch during a spreader calibration.

Figure 68
Limit Output Screen

SPREADER CALIBRATION (GRANULAR)

A Spreader Constant Calibration requires a catch test to determine the spreader constant. This function is only available for granular seed and fertilizer applications.

PERFORM A SPREADER CALIBRATION

IMPORTANT: A valve calibration should be performed before a spreader calibration.

1. Load hopper with material.
2. Move implement to raised position.
3. Apply tractor brakes and lock in applied position.
4. Put transmission in park or in a locked, neutral position.
5. Engage hydraulic system.
6. Run engine at normal operating RPM until hydraulic fluid is at normal operating temperature.
7. At the Controls screen, press the Spread Cal button.
8. Press the Shaft Turn button to fill seed/fertilizer metering system before starting calibration.
9. At the Calibration screen, enter the following values:
   - Density: Enter product weight per volume in 1 lbs/ft³.
   - Target Meter RPM: Enter the RPM at which the output meter shaft will turn during the calibration.
   - # of Meter Revs: Enter number of total revolutions the meter will turn during the calibration. This determines the length of the test and is more accurate the higher the number.
10. At the Calibration screen, press the Start button.
11. Weigh and enter lbs. of material dispensed in the Amount Dispensed field.
12. Press the **Save** button.
13. The new spreader constant automatically calculates and is entered for this material.

*Figure 69*

*Granular Control Spreader Calibration*
SPREADER CONSTANTS DEFINED

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.

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

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

Number (#) Meter Revs
The number of revolutions the meter turns during the calibration. This will constitute the length of the test. The higher the number, the more accurate the calibration.

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

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

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

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

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

Performing a Limit Output, Valve Calibration, and K Factor Calibration are recommended for a Liquid Flow control channel type.

PERFORM A VALVE CALIBRATION

Follow valve calibration steps 1-11 listed in planter and granular control section.

Figure 70
Liquid Flow Valve Calibration

![Liquid Flow Valve Calibration Diagram]
LIMIT OUTPUT

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

Perform a Limit Output:

1. At the Valve Calibration screen, press the Limit Output button.
2. Move the implement to the “raised” position.
3. Apply the tractor brakes and lock in the applied position.
4. Put the transmission in “park” or in a locked, neutral position.
5. Engage hydraulic system.
6. Run engine at normal operating RPM until hydraulic fluid is at normal operating temperature.
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 immediately begins. The calibration runs using the new max flow value.

Figure 71
Limit Output Screen
K FACTOR CALIBRATION

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

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

Method 1 100% Catch Test:

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

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

PERFORM A LIQUID FLOW CATCH TEST

![CAUTION]

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

1. At the Liquid Control setup screen, press the K Factor Calibration button.
2. Enter the Target Ground Speed and Target Flow Rate to calculate the operation rate.
3. Press the Start button.
4. Press Stop button when container is full.

![DANGER]

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.

5. Enter amount (gallons) dispensed in the Total Amount Collect field.
6. Press Save button to accept the selection.
7. The system automatically calculates and saves the new K Factor for this material.
### K Factor Screen

**Figure 72**

<table>
<thead>
<tr>
<th>CHANNEL #</th>
<th>4</th>
<th>MATRL 4</th>
<th>K-FACT CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target Rate</strong></td>
<td>23.9</td>
<td><strong>GAL/MM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Target Gnd Speed</strong></td>
<td>3.1</td>
<td><strong>MPH</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Target Flow Rate</strong></td>
<td>4.5</td>
<td><strong>GAL/MM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>K-Factor</strong></td>
<td>741.64</td>
<td><strong>GAL/MM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Pulse Count</strong></td>
<td>0</td>
<td><strong>PUL</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Amount Collect</strong></td>
<td>0.0</td>
<td><strong>GAL</strong></td>
<td></td>
</tr>
<tr>
<td><strong>New K-Factor</strong></td>
<td>0.00</td>
<td><strong>GAL/MM</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Instructions**
- Set target rate/ground speed
- Prepare to collect material
- Press Start/testing switch to begin
- Run test, press stop when done
- Measure total material collected
- Enter value to get new K-factor

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**IntelliAg® ISO6™** PDC UL 2/3 V3

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CALIBRATIONS-VALVE AND SPREADER / 99
OPERATIONS

The Operations screen groups together a series of similar channels or similar channels in parallel formation along the width of the implement and communicates the overall channel width to the Task Controller. A total of 6 operations are possible.

The system does automatically assign similar channels to an operation but these assignments can be changed to user-specific requirements.

To Edit an Operation:

1. Press the Operations button.
   - The Operations screen displays the operation groups and the channel assigned to each group.
2. Highlight an operation and press the Edit button.
3. Press the Name input box to change the operation name, if desired.
4. Press the Channels input box to change a channel.
5. Press the Add button to create a new operation.
6. Press the Remove button to delete an operation.

Press the Auto Configuration button to reset all Operations to the default groupings and remove any added operations.

Figure 73
Enter an Operation
SECTION CONTROL

ROW CROP PLANTER

Auto Section Control is an automated row shutoff system that automatically shuts off individual sections utilizing a GPS signal as previously planted areas are approached. Manual control is also possible using optional equipment.

Controlling sections by rows require:

• Planter output modules
• Row Switch Modules (optional)

Clutch configuration is required to:

• Identify how many planter output modules are connected to the IntelliAg system
• Assign how many outputs are assigned to each output module
• Assign how many rows are assigned to each output
• Optionally assign Row Switch Module switches to outputs that enable and disable planter sections

IDENTIFY SECTIONS AND OUTPUTS

Multiple Output Module Assignment

Output module addresses are a critical parameter used to identify a module’s position on the implement that controls row shutoff switches. There is a 24 clutch maximum.

IMPORTANT: If a planter uses more than one output module, modules MUST be installed in increasing serial number order starting on the left side and proceeding to the right so that row assignment is configured correctly.

To Enter # of Outputs per Module:

1. Press the Clutch Sections button.
2. At the Clutch Sections screen, enter the total number of sections.
3. Enter the number of solenoid outputs for each module. Outputs do NOT always total the number of clutches but the total number of controlled solenoids. The Outputs column value is automatically sequenced for each module based on the module address value.
4. Press the Arrow button to assign channels, rows, outputs, and switches.
ASSIGN CHANNELS/ROWS/OUTPUTS/SWITCHES

Rows, channels, outputs, and switches require assignment to sections. As rows are assigned to each section, row numbers automatically populate.

To Assign Clutch Sections:

1. At the Clutch Sections screen, press the Arrow button.
2. Enter the channel that corresponds with the section.
3. Enter the number of rows to be turned on/off by each output/channel. The row numbers are sequentially assigned to the left, center, and right outputs based on the # of rows entered.
4. Enter the output assigned to the respective row.
5. Enter the switch assigned to the respective row that identifies what switches on the row shutoff switch box enable and disable planter sections or outputs. If a task controller is used, manual switches are optional. If used, they serve as a “Priority Off” function.
LIQUID BOOM SECTION CONTROL

For liquid pressure applications using boom control, a module’s position, number of outputs, and boom assignment must be defined.

Controlling sections require:
- Boom output module
- Boom switch modules (optional)

BOOM SETUP

The Boom Setup screen identifies how many boom output modules are connected to the system and allows assignment of boom outputs and boom sections to each module.

To Assign Boom Output Modules:
1. Press the Liquid Sections button.
2. Enter total number of sections.
3. Enter number of nozzles assigned to each module in the # of Outputs input box.

ASSIGN CHANNELS, ROWS, OUTPUTS, SWITCHES

Assigns control channels, rows, outputs, and switches to the associated boom section.

To Enter Channels Assigned to Sections:
1. At the Liquid Sections screen, press the Arrow button.
2. Press the Channel input box to assign a control channel to a section.
3. Enter number of nozzles, the outputs, and boom switch module switches for each section.
## Assign Sections

### Table: Liquid Sections

<table>
<thead>
<tr>
<th>Sect. #</th>
<th>CH. # of Nozz</th>
<th>Nozzle #</th>
<th>Output</th>
<th>Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1 - 6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>6 - 11</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>13 - 18</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>19 - 24</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>1 - 12</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>13 - 24</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

- The table shows the assignment of liquid sections for different sections.
- Each section has a corresponding channel number, nozzle range, output, and switch setting.

---

**Note:** The table above is an example of how to assign liquid sections. The specific assignments may vary depending on the model and requirements of the equipment.
SECTION LINKING

Section Linking groups sections in a series or in parallel to other sections in the system so that these ‘linked’ groups turn on or off simultaneously at the Work Screen.

Sections are commonly used as a channel (swath by drive), individual, or series of rows commanded as a single section (clutch control).

To Link Sections:
1. Press the Section Linking button.
2. At the Section Linking screen, press the Add button.
3. Press the Master selection box and select the Master control type to turn on/off sections as clutch (planter), Liquid (liquid), or channel (specific channel).
4. Press the Subordinate selection box and select the secondary auxiliary to the Master.
5. Assign each section controlled by the Master to the appropriate channel.
6. Assign each section of the subordinate module controlled by the Master.
7. After all sections and channels are linked, press the Back button. – The Section Linking screen is now populated with all of the master/slave linkages.
8. Press a specific section linking item and press the Edit button to make changes.
9. Press a specific section linking item and press the Remove button to delete a link.
10. Press the Down Arrow button to view additional section linking items.

IMPORTANT: Refer to the Task Controller screen and/or the Channel Linking screens for more refined settings that are beyond the parameters of section linking.
Figure 78
Linking Sections
SECTION LINKING EXAMPLES

Figures 78 depicts 3 typical examples of linking sections:

A) A swath-by-drive example with channel 1 (section 1) and channel 4 (section 4) both turn off simultaneously when crossing a previously applied area. Channel 2 (section 2) and channel 5 (section 5) turn off simultaneously and channel 3 (section 3) and channel 6 (section 6) turn off simultaneously.

B) Six seeding channels of different crops with a common operation.
   - Channel/Section 1 - 4 Corn
   - Channel/Section 5 Fertilizer linked to channel 1 and 2
   - Channel/Section 6 Fertilizer linked to channel 3 and 4

A swath-by-drive example with channel 5 (section 5) linked to channel 1 (section 1) and channel 2 (section 2) and section 6 linked to channel 3 and 4. Section 5 turns off when channels 1 and 2 are turned off; section 6 turns off when channels 3 and 4 are turned off.

C) A swath-by-drive example with channel 1 (section 1), channel 2 (section 2), channel 3 (section 3) with channel 4 section 4 linked to channels 1, 2, and 3. Channel 4, section 4 only turns off when all channels/section 1,2,3 are turned off.

Figure 79

Section Linking Examples for Two Materials

<table>
<thead>
<tr>
<th>Example</th>
<th>2 Materials (Seed and Fertilizer) 3 Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Section 1: CH1 (8 rows)  CH2 (8 rows)  CH3 (8 rows)</td>
</tr>
<tr>
<td></td>
<td>Section 2: CH4 (8 rows)  CH5 (8 rows)  CH6 (8 rows)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>2 Materials (Seed and Fertilizer) 2 Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Section 1: CH1 (12 rows)  CH2 (12 rows)  CH3 (12 rows)  CH4 (12 rows)</td>
</tr>
<tr>
<td></td>
<td>Section 2: CH5 (24 rows)  CH6 (24 rows)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>2 Materials (Seed and Fertilizer) 1 Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Section 1: CH1 (8 rows)  CH2 (8 rows)  CH3 (8 rows)</td>
</tr>
<tr>
<td></td>
<td>Section 2: CH4 (24 rows)</td>
</tr>
</tbody>
</table>
IMPLEMENT GEOMETRY

Physical layout of the implement is required to determine the position of a channel in the field. Configuring an implement identifies the hitch type the implement uses, and area the implement covers. Exact distances are required for physical layout of the implement.

MEASURE X/Y COORDINATES

1. Stand behind the implement facing the tractor.
   X coordinate:
   • Measure from the hitch pivot point to where the seed is placed in the ground, i.e. bottom of seed tube, entered as a negative entry (-X). This measurement should be entered for each control channel enabled.
   Y coordinate:
   • For each channel determine the center point of the channel. Use this method:
     – Find the implement center. This is the point on the toolbar that is directly behind the hitch.
     – Determine the distance from the implement center for the first and last rows or nozzles on the channel.
     – Calculate the distance from implement center of the center point of the channel by adding the first and last row distances and dividing by two.
     – Distances left of the implement center are entered as negative numbers (-Y) and to the right are entered as positive numbers.
   • For channels that use rows the Y values are automatically populated, so use the channel center points to verify the channel setup is correct.
   • For channels that use nozzles, enter the center point for each channel.

Figure 80
32 Row Planter, 3 Point, 2 Control Channels X/Y Coordinate Example

<table>
<thead>
<tr>
<th>Channel 1 Planter Ctrl Rows 1-16</th>
<th>Channel 2 Planter Ctrl Rows 17-32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement Center 0&quot;</td>
<td>Channel Center</td>
</tr>
<tr>
<td>-180:180</td>
<td>-Y</td>
</tr>
<tr>
<td>+Y</td>
<td>X coordinate</td>
</tr>
</tbody>
</table>

Y coordinate
- Y = center of channel 1 (rows 1-16) left of hitch
+Y = center of channel 2 (rows 17-32) right of hitch

X coordinate
- X = distance from hitch to bottom of seed tube
IMPORTANT: It is critical to enter the exact distances required when setting up the physical layout of the implement position. It is strongly suggested that a tape measure is used to ensure exact measurements. Failure to enter accurate measurements of the implement control channels will impact the system's performance to shut row sections off at the proper location within the field.

To Enter X/Y Coordinates:

1. Press the Geometry button.
2. At the Geometry screen, press the Geometry Setup button.
   - The tractor/implement illustration on the Geometry screen (Figure 82) is a visual indicator of channel/implement layout once dimensions are entered at the Geometry Setup screen.

3. At the Geometry Setup screen, select the implement type used that matches the equipment.
4. At the Geometry Setup screen, enter the X and Y coordinates for the implement type selected. Measurements for each implement type defined below.

**THREE-POINT HITCH TYPE**

A) Enter the distance (Y value) from implement center to channel center left and right. If implement bar is offset from 0, enter the size of the offset. This value is typically 0.
SEMI-MOUNT AND DRAWBAR HITCH TYPES

A) Enter the distance from the hitch to the pivot point axle center. On a 2 point implement, the measurement is taken at the semi-mount single pivot point that is incorporated into the 2 point mount.

B) Enter the distance (Y value) from implement center to channel center left and right. If implement bar is offset from 0, enter the size of the offset. This value is typically 0.

Figure 85

Semi-Mount Implement Type

DOUBLE PIVOT HITCH TYPE

A) Enter the distance from the tractor hitch to cart axle center.

B) Enter the distance from the first cart axle center (directly behind tractor) to the second cart hitch.

C) Enter the distance from the second cart hitch to the implement axle center.

D) Enter the distance (Y value) from implement center to channel center left and right. If implement bar is offset from 0, enter the size of the offset. This value is typically 0.
5. Press the **Arrow** button to display the Channel Geometry screen. A channel’s position identifies the distance between the implement GPS coordinates and where seed is dispersed.

6. The initial Channel Geometry screen displays multiple channel positions stacked behind one another.

7. Enter the ‘X’ coordinate in inches for the first channel.

8. Press the **Down Arrow** button to enter the next channel’s coordinates. As each channel’s position ‘X’ coordinate is entered it displays in the new assigned position.

9. Press the **Done** button when finished.

**IMPORTANT:** Verify that all channels align correctly and no channel overlap occurs. Failure to enter accurate measurements of a control channel’s position will impact the system’s performance to shut row sections off at the proper location within the field.
Figure 87

Enter Control Channel Positions “X” Coordinate

CHANNEL POSITION
Initial screen appearance with channel position ‘X’ coordinate for multiple channels stacked behind one another and are not viewable.
SENSOR SETUP

Sensor setup assigns up to 196 sensors to rows, selection of the row type (population/blockage), and assignment of channels to a module type. If no rows are configured, population monitoring cannot occur.

Sensor Configuration Requirements:

- A channel must have continuous rows
- A section must have continuous rows
- If a channel has sections, all of the channel rows must be assigned to a section
- On any given row, every sensor must be assigned a unique channel
- Inputs on a module must start at input 1 and sequence up a number continuously with no skipped inputs.
- The lowest module address must represent the module closest to the left side (row 1) of the system. The highest module address must represent the module closest to the right side (number of configured rows) of the system.
- A module does not have to be completely filled to its capacity; however, the rules of sequencing numbers in a continuous pattern applies when moving to the next module.
- The control channel number assigned to a sensor determines what is measured. For example, assigning a blockage sensor to a fertilizer channel or a seed sensor assigned to a population channel.

Figure 88
Correct Sensor Connections to Module

IMPORTANT: If there are gaps in sensor inputs on a module, the counting of sensors stops and an alarm activates.
**SENSOR SETUP**

Sensor Setup assigns sensors to modules and channels.

**To Assign Sensors:**

1. Press the **Sensors** button.
2. Verify Sensors are set to Enabled and take note of the Module type to ensure the right amount of sensors are entered for that module.
3. Press the **Setup** button.
4. Enter number of sensors assigned to the module noted on the screen.
5. Enter the row type as population or blockage.
6. Enter the channel assigned to the sensors.
7. Press the **Add** button to display a new sensor row input bar. Add remaining sensors to fill the module.
8. Press the **Next Module** button to display the next Module screen.
   - Press the **Previous Module** button to return to previous screen.

**Figure 89**
Incorrect Sensor Connections to Module

**Figure 90**
Assigning Sensors to ISO₆ Module
9. At the next Sensor screen (WSMB2) enter total number of sensors, sensor type, and channel assignment for the first group of sensors.
10. Press the Add button to display a new sensor row input bar. Add remaining sensors to fill the module.
11. Press the Next Module button to proceed to add sensors to the next module until all sensors are input.
12. After all sensors are entered, press the Arrow button.
   – A sensor’s position is indicated in the channel/row it is assigned to with an “X” indicating the sensor is off.

13. Press the Auto Config button to assign sensors to the channels.
14. Press the Checkmark button to begin auto configuration.
   – Channel/sensor assignment does not become active until an auto configuration occurs.
15. After configuration is complete, sensors and assignments now display on the Sensors Summary screen as population or blockage.

A malfunctioning sensor can be set to OFF to eliminate row failure alarms. Sensors turned off are not calculated in population blockage. A physically disconnected sensor will trigger a Configured but not Detected alarm.
**SENSOR SUMMARY**

After performing an Auto Configuration, sensor row assignments appear at the Sensor Summary screen identifying sensor location/row number on the module and sensor type assignment as population, blockage, or off.

At anytime, not just during setup, a sensor’s current state can be changed at this screen as either off or its original assignment. In certain instances, a user may want to manually adjust a sensors location that has been configured by performing an Auto Configuration, i.e., when there are fewer sensors than rows on a channel. A sensor can be turned off for a row and manually entered at another location.

Also a faulty sensor can be turned off to eliminate population alarms.

**To Adjust a Sensor Type:**

1. Press the **Setup** button.
   - Editing must be done within Setup mode.
2. Press the **Arrow** button.
3. At the Sensor Details screen, scroll using the Up or Down Arrow buttons to select the appropriate sensor.
4. Press the sensor type box and select the new sensor type from the drop down box as population, blockage, or off (X).

Figure 94
Sensor Summary
SENSOR SUMMARY

Sensor Summary displays sensors on a row and their respective channel assignment. In Summary view, the table displays the type of sensor configured. The legend in the header displays the available types.

Pressing the Details button displays the module address and input number. This screen is viewable only.

Figure 95
Sensor Details

![Sensor Details](image)

SENSOR DETECT

Performing a Sensor Detect checks the system configuration to verify that sensors configured match the actual number of sensors connected to a module.

- An alarm may trigger if any missing sensors are found or too many sensors are configured.
- If an alarm occurs, verify that the number of sensors at the Sensor Summary screen matches the actual number of sensors connected to the appropriate module.
- Confirm that all harnessing and sensors are connected properly.
Sensor Setup example for 24 Row setup.
WSMT (18 row maximum)
Rows 1-6 (6 rows) assigned to CH1
Rows 7-12 (6 rows) assigned to CH2
WSMB2 (18 row maximum)
Rows 13-18 (6 rows) assigned to CH3
Rows 19-24 (6 rows) assigned to CH4
Rows 1-6 (6 rows) assigned to CH5
WSMB2 (18 row maximum)
Rows 1-6 (6 rows) assigned to CH5
Rows 13-24 (12 rows) assigned to CH6
Figure 97

48 Row Installation

Sensor Setup Example for 48 Row Setup

WSMT (16 row maximum)
Rows 1-12 (12 rows) assigned to CH1
WSMB2 (18 row maximum)
Rows 13-24 (12 rows) assigned to CH2
Rows 25-30 (6 rows) assigned to CH3
WSMB2 (18 row maximum)
Rows 31-36 (6 rows) assigned to CH3
Rows 37-48 (12 rows) assigned to CH4
GROUND SPEED SETUP

The default ground speed source is set to CAN ground. Other sources include:
- CAN Wheel
- Digital Frequency
- Reluctance Frequency
- Manual
- CAN GPS

Performing a ground speed calibration is required for digital and reluctance frequency settings.

To Select a Ground Speed Type:
1. Press the Speed button.
2. On the Speed Set screen, enter ground speed parameters as defined below.

Figure 98
Ground Speed Setup Screen

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

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

CAN WHEEL
Wheel speed data is communicated on the CAN bus. This source does not account for slip-like CAN ground.
**RELUCT FREQ**
Ground speed is provided by a reluctance (2-wire) type sensor connected to the actuator harness through an adapter harness.

**DIGITAL FREQ**
Ground speed is provided by a radar/digital (3-wire) type sensor connected to the actuator harness.

**MANUAL**
A Manual Speed button displays on the Work Screen and sets the system to operate using a constant, internally generated ground speed and is typically used in the event of a ground speed sensor failure. This is a constant, internally generated ground speed that causes 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.

- No ground speed sensor is required when using the Manual setting.
- No area accumulation occurs when speed source is manual.

**CAN GPS**
Ground speed is provided by the tractor GPS. Specific PGN outputs are required for this setting.

- GPS must output messages on CAN bus.
- The message required for communication is PGN 129026, NMEA high-precision rapid update.

**MAIN GROUND SPEED CONSTANT**
Represents the pulse count produced by the ground speed sensor over a 400’ distance. A ground speed calibration is recommended to obtain the ground speed constant. Refer to the Calibration section for additional information.

Using a single source radar assumes all rows are moving at the single speed provided by the tractor speed sensor.

**SHUTOFF 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 operates at this speed until actual ground speed rises above the minimum override speed or the actual speed drops below the shutoff speed. The Minimum Override speed has a background color of black and appears in the ground speed location on the Work Screen.
NOTE: Minimum override and Master Switch Timeout features will not display on the Ground Speed setup screen when only Monitor Type channels are configured.

**Figure 99**  
**Minimum Override**

Minimum Override set at 5 MPH

---

**MASTER SW 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**

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 Monitor Type control channels are configured.

**IMPLEMENT SPEED**

A harness is required for this feature and is an input that is connected to the sensor that senses the implement speed, i.e. tone wheel with digital proximity sensor. If enabled, the frequency detected on this input must be above the frequency threshold before channels will run. Implement Speed must be enabled when the Master Switch button is not used.

**FREQUENCY THRESHOLD**

The threshold frequency of the implement speed. When the implement exceeds the frequency threshold, the channels turn on.
GROUND SPEED CALIBRATION

Ground speed is the rate in MPH (Kph) 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 metres).

IMPORTANT: Performing a ground speed calibration directly influences population, area accumulation, and application rate control and is required for digital and reluctance frequency.

Figure 100

Ground Speed Calibration

To Perform a Calibration:

3. Measure a 400 foot (100 metres) course marking start and finish points.
4. Press the Calibrate button to open the Calibration screen.
5. Drive tractor 2-5 mph and press the Start button at the start of the 400 foot course to begin calibration. The display showing the ground speed calibration will zero and begin counting ground speed pulses.
6. Press Stop button at the end of the 400 foot course. The new calibration number displays on the center of the screen.

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

7. Enter the average calibration number.
8. Press the Save button to save the new calibration.
ACCESSORY SENSORS

The Accessory Sensor screen displays the optional sensors installed, such as an RPM to monitor shaft/fan or an air pressure sensor. The system detects attached pressure and hopper sensors by pressing the Auto Config button. RPM sensors must be configured manually and are not recognized during an Auto Configuration.

Specific setup parameters for installed sensors must be defined at the respective setup screen (Pressure Setup, Hopper Setup, and RPM Setup).

Figure 101
Accessory Sensor Screen
PRESSURE SENSOR SETUP

If a pressure sensor is installed, the number of pressure sensors detected is automatically entered on the Accessory Sensor screen in the # of Press column (Figure 101).

To Set Pressure Sensor Parameters:

1. Press the Accessories button.
2. At the Accessory Sensor screen, press the Pressure Setup button.
   - Pressure sensors must be detected before the Pressure Setup button appears.
3. Enter the pressure sensor parameters as defined below.

**Figure 102**

Pressure Sensor Setup

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Sensor #</td>
<td>1</td>
</tr>
<tr>
<td>High Alarm</td>
<td>0.0</td>
</tr>
<tr>
<td>Low Alarm</td>
<td>0.0</td>
</tr>
<tr>
<td>High Alarm Delay</td>
<td>1 Sec</td>
</tr>
<tr>
<td>Low Alarm Delay</td>
<td>1 Sec</td>
</tr>
<tr>
<td>Pressure Filter</td>
<td>0%</td>
</tr>
</tbody>
</table>

**HIGH/LOW ALARM**

Enter a pressure value at which a high and low pressure warning alarm alerts of an out of limits state.

**HIGH/LOW ALARM DELAY**

Enter a pressure value in seconds that creates a delay between the detection of a high or low pressure alarm condition and the resulting alarm display.

**PRESSURE FILTER**

Enter a value to stabilize the signal of the pressure sensor. Typically no filtering is required and therefore the standard value is set at 0%. If the pressure readout on the Work Mode 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%.
HOPPER SENSOR SETUP

Sets the active state of hopper sensors and the alarm delay time. If a hopper sensor is installed, the number of sensors detected is automatically entered on the Accessory Sensor screen in the # of Hoppers column (Figure 101).

To Set Hopper Sensor Parameters:

1. At the Accessory Sensor screen, press the Hopper Setup button.
   - Hopper sensors must be detected before the Hopper Setup button appears.
2. Enter the hopper sensor parameters as defined below.

**Figure 103**

Hopper Sensor Setup

<table>
<thead>
<tr>
<th>Hopper # 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic Level: ACTIVE LO</td>
</tr>
<tr>
<td>Alarm Delay: 1 sec</td>
</tr>
<tr>
<td>Channel: NONE</td>
</tr>
</tbody>
</table>

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 HI**

- 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**

- 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.

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

<table>
<thead>
<tr>
<th>SENSOR LOGIC LEVEL</th>
<th>VALUE</th>
<th>HOPPER</th>
<th>STATUS</th>
<th>ALARM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active High</td>
<td>0</td>
<td>Full</td>
<td>Blocked</td>
<td>No alarm</td>
</tr>
<tr>
<td>Active High</td>
<td>1</td>
<td>Empty</td>
<td>Not Blocked</td>
<td>Alarm</td>
</tr>
<tr>
<td>Active Low</td>
<td>0</td>
<td>Empty</td>
<td>Not Blocked</td>
<td>Alarm</td>
</tr>
<tr>
<td>Active Low</td>
<td>1</td>
<td>Full</td>
<td>Blocked</td>
<td>No Alarm</td>
</tr>
</tbody>
</table>

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 SENSOR SETUP
The number of RPM sensors is manually entered on the Accessory Sensor screen in the # of RPM column (Figure 101).

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

To Set RPM Sensor Parameters:
1. At the Accessory Sensor screen, press the RPM Setup button.
2. Enter the RPM sensor parameters as defined below.

Figure 104
RPM Setup Screen
HIGH/LOW ALARM
Enter an RPM value that a high/low RPM warning error alarm is generated. The value is entered in RPM.

HIGH/LOW ALARM DELAY
Enter an alarm delay value between the detection of a high/low RPM alarm condition and the resulting alarm display. The value is entered in seconds.

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

RPM FILTER
Enter a value that filters 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 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
Select to enable or disable ALL active control channels if the RPM value of the sensor falls below the low alarm level setting.

The two settings include:

• ENABLED - control channels shut down when the RPM value falls below the low warning setting.
• DISABLED - disables the function. Control channels continue to operate normally regardless of the RPM value. However, when the low RPM state occurs, the information alarm still occurs.
CUSTOMIZING THE WORK SCREEN

The Instruments screen allows customization of how the Work Screen appears during operation. Two default screens display the most commonly used display types but can be changed as desired. A total of 4 Work Screens are possible.

Page 1 defaults include:
- Product levels
- Area accumulation levels
- Seeding
- Accessories
- Materials
- Population (bar graphs)

Figure 105
Work Screen Defaults

MODIFYING THE INSTRUMENT LAYOUT

The Work Screen layout is divided into 20 quadrants. Quadrants can be merged together to make a larger quadrant for a larger display of the item. Combining multiple quadrants is possible for some display types and the choice is selected at the Display Type screen.
SELECTING A DISPLAY TYPE

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

Display types can be selected and placed in any position.

- Display types can be changed at any time
- Any display type can be placed in any position
- Duplicate display types can be configured on a single display if desired
- Up to four display screens are configurable
- Combining quadrants may limit the size of the adjoining quadrant and display type
- Choice of quadrant size is selected at the Display Type screen.
- If the larger data item selection will not fit on the Work Screen display, that selection is nonselectable.

To Select Display Types:

1. Press the Instruments button.
2. Select one of the quadrants.
3. At the Display Type screen, press to select one of the 16 main heading types (2 Display Type screens).
4. Select the desired data item type and size. Refer to Display Types Defined section below for definitions.
5. Press the Done button to accept selection.
   - Press the Clear button to remove selected data item
   - Press the Arrow button to create a second Work Screen (up to 4 Work Screens).
Figure 107
Selecting a Quadrant and Display Type

Quadrant 1

Quadrant 20

DISPLAY TYPE
- Accessories
- Control
- Marker
- Population
- Product Levels
- Quality

DISPLAY TYPE
- Area
- Hydraulics
- NH3 Capacity

DISPLAY TYPE
- Section/Row
- Seeding
- Sowing
- Materials
- Task Controller
- Trailing
DISPLAY TYPES DEFINED

SEEDING
Displays row number (R1) with the min/max/average of the selected display type; Population (KSeeds/AC or Kseeds/HA), Spacing (Inch/Seed or MM/Seed) and Distance (Seeds/Ft or Seeds/M).

Figure 108
Seeding Display Type

![Seeding Display Type](image)

Figure 109
Seeding Display Type Defined (Work Screen)

<table>
<thead>
<tr>
<th>Row number of lowest pop row</th>
<th>Units</th>
<th>Row number of highest pop row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low pop limit for lowest % row</td>
<td>% off target for lowest % row</td>
<td>Actual pop of lowest % row</td>
</tr>
<tr>
<td>Ave pop of all population</td>
<td>Actual pop of highest % row</td>
<td>High pop limit of highest % row</td>
</tr>
<tr>
<td>Displays % off target for highest % row</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SINGULATION
Seed singulation maximum is 88 rows of seed input.

% Singulation
Singulation refers to the portion of seeds planted individually rather than in groups. This instrument displays the average percent seed singulation of the planter’s rows that are configured for population in large bold font. Additional information includes the worst four performing rows.
% Multiples
This instrument displays the average percent of multiple seeds dropped within each row in one location in large bold font. Also displays the worst 4 performing rows.

% Quality
This instrument displays the average percent spacing quality across the planter rows that are configured using a WSMB2 module against all planter rows in large bold font. Also displays the worst 4 performing rows.

% Skips
This instrument displays the average percent of seeding skips across the planter that are configured using a WSMB2 module against all planter rows in large bold font. Also displays worst 4 performing rows.

Figure 110
Singulation Display Type

POPULATION (BAR GRAPH)
This instrument displays population status by row and allows customization of the rows that are monitored and displayed on the Work Mode screen. Multiple bar graphs can be added with different settings per bar graph.
Width
This instrument selects the graphic size of the bar graphs as either narrow, medium, or wide. The wider bar graphs may not all appear on the first screen if a larger number of rows are monitored. 2x1 (fits 12 rows or 6 medium rows) and 4x1 (fits 24 narrow rows or 12 medium rows).

Row Scan
This instrument scans through rows at a fast or slow rate. After the last row displays, the scan rows will re-sequence beginning with the first active row.

Channels
This instrument selects the channels to monitor on the Work Screen.

IMPORTANT: Channels must be selected at this screen to become active on the Work Screen.

Figure 111
Bar Graph

QUALITY
This instrument displays the amount of spacing between each seed while planting that provides a comparison of row-to-row meter performance. Ideal conditions are equal spacing between each seed (100%). As spacing becomes less uniform and more random, the spacing quality percentage decreases and falls below 100%. Multiple bar graphs can be added with different settings per bar graph.

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

Width
This instrument selects the width of the bar graphs as either narrow or medium. The wider bar graphs may not all appear on the first screen if a larger number of rows are monitored. 2x1 (fits 12 rows or 6 medium rows) and 4x1 (fits 24 narrow rows or 12 medium rows).
Row Scan
This instrument scans through rows at a fast or slow rate. After the last row displays, the scan rows will re-sequence beginning with the first active row.

Channels
This instrument selects the channels to monitor on the Work Screen.

Spacing Variance
This instrument sets the user-defined percentage to set the bar graph range for spacing quality per row.

Bargraph Size
This instrument sets the bar graph size as 2x1 or 4x1 column.

IMPORTANT: Channels must be selected at this screen to become active on the Work Screen.

Figure 112
Spacing Quality Bar Graph

Figure 113
Spacing Quality Bar Graph Defined

Bargraph range calculation:
100 - value = bottom bargraph value
100%
User Defined %
(bottom of bargraph)
(Example: 90%)
Row turns red at warning line
(75% of defined range)
(Example: ≤92.5%)
Warning line (75% of bargraph range)
(Example 92.5%)
AREA

Total Area
This instrument displays the area covered by the implement in acres (AC) or hectares (HA). Total area is calculated using implement width. Area accumulates for seeding when seeds are detected on at least one seeding row and the ground speed is above the Shutoff Speed. This accumulator is independent of any other area accumulator and can be reset to 0.0 at any time. Current area is retained after power down. If no rows are configured, the Total Area Accumulator uses the largest channel width.

Area Per Hour
This instrument displays the current area per hour in acres (AC) or hectares (HA). The value is continuously calculated based on the current ground speed and implement width.

Channel Scan
When active, this instrument scans through active channels displaying the total acreage covered by channel.

Channel 1-6 Area
This instrument displays the area covered by control channels 1-6. Area is calculated using the channel width parameter. Area accumulates when the master switch is ON and the ground speed is above the shutoff speed. This accumulator is independent of any other area accumulator and is resettable to 0.0. Current area is retained after power down.

Selecting a channel type, i.e. channel 1 area, accumulates area totals specific to that channel.

Material Type Totals by Area
This instrument displays 6 material types for a total area: Planter, Granular Seed, Granular Fertilizer, Liquid Fertilizer, Granular Crop Protect, Liquid Crop Protect.

To display a total material for an area that encompasses all channels with the same material type, the product class must be defined at the Material setup screen. When the product class is defined, this choice appears on the Material Instrument screen (Figure 114).

NOTE: Area Totals for a specific field is selected at the Totals screen.

IMPORTANT: Items must be selected at this screen to become active on the Work Screen.

IMPORTANT: An accumulator reset is completed for an entire field. Resetting to zero for an individual item is not possible.
Material type displays as a choice when selected at the Material Setup screen as a Product Class.

**Figure 114**

Area

**Figure 115**

Display Type Area Symbols

<table>
<thead>
<tr>
<th>Total Area</th>
<th>Field Scan</th>
<th>Field 1 Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Σ 9 2 7</td>
<td>2 9 2 7</td>
<td>8 0 0</td>
</tr>
</tbody>
</table>

Field 2 Area

Area Per Hour

Channel Scan
CONTROL

1. Select the display type (1x1 through 1x4 columns) to appear on the Work Screen by pressing the respective radio button.
2. Select the channel (Channel 1 - Channel 6) and the display type to appear on the Work Screen (1x1 through 2x4 columns) by pressing the respective radio button.
3. Select the Actual Control Type:
   - Area - Displays actual application rate values for the desired channel with the target rate value in black. Both rates appear in black within target parameters and red when outside of parameter limits.
   - Time - Displays actual seeds per second values for the desired channel with the application target rate value in black.
   - None - Displays only the target application rate value in black.
4. Select the control channel (1-6) to monitor on the Work Screen.

IMPORTANT: Channels must be selected at this screen to become active on the Work Screen.

Figure 116
Control Screen
MATERIALS

This instrument displays accumulating material totals for distance and seed counts by field. The specific field totals that displays as an Instrument data item is set at the Totals screen.

Total Seeds Applied

This instrument counts pulses for all seed sensors set to population. Also displays total number of seeds planted.

Channel 1-6 Seeds

This instrument displays the area covered by control channels 1-6. Area accumulates when the master switch is ON and the ground speed is above the shutoff speed. This accumulator is independent of any other area accumulator. Current area is retained after power down.

Channel Scan

This instrument cycles through active control channels every few seconds displaying seed counts.

Material Name

This instrument displays a total area by material type that encompasses all channels with the same material type. The product class must be defined at the Material Setup screen. When the product class is defined, this choice appears on the Material Instrument screen.

IMPORTANT: Channels must be selected at this screen to become active on the Work Screen.

IMPORTANT: An accumulator reset is completed for an entire field. Resetting to zero for an individual item is not possible.

Figure 117

Materials
**SECTION/BOOM**

This instrument displays section status by channel.

- Select the channel to monitor (Boom 1-6) and the display type (1x1 through 1x4 columns) to appear on the Work Screen by pressing the respective radio button.

**IMPORTANT:** Channels must be selected at this screen to become active on the Work Screen.

---

**PRODUCT LEVELS**

This instrument displays how much product remains in the hopper or tank for the channels selected. All six channels are selectable.

- Select the channel (Channel 1 Level - Channel 6 Level) and the display type to appear on the Work Screen (1x1 through 1x2 columns) by pressing the respective radio button.
ACCESSORIES

This instrument displays the status of pressure, RPM, and hopper sensors.

- Select the accessory to appear on the Work Screen (1x1 through 1x2 columns) by pressing the respective radio button.
TASK CONTROLLER

This instrument indicates the active status of the task controller.

*Figure 122
Task Controller*

This concludes Work Screen setup.
PERFORMING A FILL DISK

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

The Fill Disk button allows the seed meter to make one revolution.

FILL DISK FOR PLANTER/GRAIN SEEDING CHANNELS

The Fill Disk button at the Work Screen runs the selected channel.

1. At the Work Screen, highlight the appropriate channel.
2. Press the Next Page button to display the Fill Disk button.
3. Press the Fill Disk button.
4. Raise the implement.
5. With brakes locked and transmission in the park position, start the engine.
6. Engage hydraulics and run engine at normal speed until hydraulic fluid is at operating temperature.

NOTE: Refer to the System Tests section for using a remote test switch during a fill disk operation.

CAUTION

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

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

START

1. Lower the implement to operating position, engaging the implement switch, if present and enabled.
2. Ensure the system is engaged with the hydraulic system engaged and the tractor at its normal operating RPM.
3. Set the master/control switch to the ON position or press the Start Master button. All enabled control channels will begin controlling at the current ground speed. All accumulators will begin recording data.

**WARNING**

When the implement is down and the safety input is active (master switch in the ON position or secondary speed above threshold), the machine is fully operational. All necessary precautions must be taken to ensure user safety. Failure to practice all necessary caution may result in serious injury or death.
STOP

1. Set the master/control switch to the Off position or press the Stop Master button. All control channels cease operation and all data accumulation halts.
2. Operation immediately stops when the ground speed is 0 or the implement is raised to disengage.
SCROLL WORK MODE SCREENS

Users have the ability to scroll between multiple work screens during operation. A total of four Work Mode screens are accessible during operation if four screens are setup.

To Change Work Screen View:

1. At the Work Mode screen, press the Right Arrow button. Continue to press this button to advance to the next screen.

Figure 125
Toggle Work Screens
WORK SCREEN FUNCTIONS

The Work Screen in Work Mode displays the various instruments that were selected at the Instruments screen. A total of four Work Screens are accessible during Work Mode if four screens are setup.

In Work Mode, buttons appear on the right side of the screen based on the main instruments selected on the Instruments screen. (Figure 126) shows channel 1 control instrument selected. All buttons on the right side of the screen affect channel 1. When another instrument is selected, these buttons are replaced with the buttons relative to the newly selected instrument.

TIP: Rates only display in Work Mode; not at the Instruments screen. If the Master Switch button does not appear as the first button on the side bar, Work Mode is NOT the active screen. Navigate to the Home Menu and select the Work Screen button.

Figure 126

Work Screen

READING THE CONTROL CHANNEL

- The status ball represents the actual applied rate.
- The arched status bar contains 5 sections. The middle section is the ideal applied rate/target rate.
- The rates to the left of the ideal range are under applying rates below the target limit parameters (yellow).
- The rates to the right of the ideal range are over applying rates above the target limit parameters (red).
- The target rate displays as a constant value. Application rates appear in black within target rate range. Rate values appear in red when outside of target rate limit parameters.
CONTROL CHANNEL ADJUSTMENT

Control channels can be adjusted in Work Mode by selecting the channel on screen (Figure 126). A channel can be adjusted as follows:

- Active channel can be set to ON or OFF by selecting the On/Off Channel button.
- Target rates can be adjusted by using the Inc/Dec buttons and the Reset Target button.

INCREMENT

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

DECREMENT

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

INC/DEC RESET TO TARGET

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

CONTROL ON/OFF CHANNEL

The active channel can be turned either ON and OFF by pressing this button. Channels that are set to OFF will not operate when the master/control 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 button text is OFF, this is the action that occurs when the button is pressed.
OPERATE SCREEN SYMBOLS

IMPLEMENT LIFT SWITCH

The Work Screen identifies the implement position as up or down. The implement lift switch automatically turns the control channels on and off without turning the master/control switch off. The Implement Lift Indicator must be in the **down** position for the control channels to operate.

Refer to the Implement Lift Sensor instructions for installation location.

ROW INDICATORS

Row Indicators in the bar graph area of the Work Screen indicate seed rate for each row. The size of the bar graphic is automatically proportional to the screen size. The following symbols illuminate in the bar graph area:

**Figure 128**

*Row Indicator Symbols*

- **Row assignment to channel**
- **Row Failure**
- **Row off by control and seeds detected**
- **Row off manually or pattern**
- **High Population**
- **Low Population**
- **Not planting Master Switch off**
- **Planting at desired rate**
- **Planting at desired rate**

- **OFF**
- **Row Off**
A Task Controller icon displays on the Work Screen during operation to indicate that the task controller function is actively running.

**Figure 129**

**Task Controller**

- Red = Task controller off
- Green = Task controller on and applying applied rate
- Gray = Task controller is not commanding rate
- Yellow = Manual rate override
WORK MODE INFORMATION SCREENS

Each display type on the Work Screen has an associated information screen that provides specific details relating to that item.

Some values can be reset to zero from these Information screens or reset to zero when the master switch is off. Once an accumulator has reached its maximum value, it will roll over to zero.

To View Work Mode Information Screens:

1. At the Work Screen, press the Instrument box to highlight. Refer to (Figure 130).
2. The associated Information button appears in the right side bar. Press the Information button to open.

CONTROL CHANNEL

The Control Information screen provides data for the selected channel for feedback sensors, valve output, and system voltages of the ISO6 module.

This data with descriptions are also found at the Diagnostics screen.

Figure 130

Control Information Screen
SEEDING

The Seeding Information screen provides population, spacing, and distance data with maximum and minimum values by row as well as the overall average data.

POPULATION:
- Seeding row with the minimum and maximum population in thousands of seeds per acre (KSeeds/AC) or thousands of seeds per hectare (KSeeds/HA).
- Average population in thousands of seeds per acre ((KSeeds/AC) or thousands of seeds per hectare (KSeeds/HA).

SPACING:
- Seeding row with the minimum and maximum spacing in inches
- Average spacing in inches per seed (Inch/Seed) or millimeters per seed (MM/Seed) of all active seeding rows.

DISTANCE:
- Seeding row with the minimum and maximum number of seeds per foot (seeds/Ft) or seeds per meter (seeds/M).
- Average distance displays the average number of seeds per foot (seeds/Ft) or seeds per meter (seeds/M) of all active seeding rows.

Figure 131
Seeding Information Screen
MATERIALS

Provides material totals by a single channel as well as material totals for all similar channels. Material totals are retained after power down. Material reset is completed at the Totals screen.

Figure 132

Materials

SEED COUNT

A seed count is performed from the Materials Information screen.

To Use the Seed Count Function:

1. Press the Seed Count button.
2. At the Seed Count screen, press the Start button. Seed count data for each sensor accumulates when seed drops through the sensor.
   - Press the Next Rows button to view additional rows.
3. Press the Stop button to stop counting seeds.
Figure 133
Seed Count

<table>
<thead>
<tr>
<th>SEED COUNTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>53</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>53</td>
</tr>
</tbody>
</table>
BAR GRAPH

Bar Graph Information screen displays complete data on one screen for a specific row. Highlight the row input box to change to another row or press the Next Row button to view data for the next row.

Data specifics for a row include Population, Spacing, Distance.

*Figure 134*

**Bar Graph**

<table>
<thead>
<tr>
<th>WORK SCREEN</th>
<th>16.0 Mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH1</td>
<td>CH2</td>
</tr>
<tr>
<td>100.0 Mph</td>
<td>0.0 Mph</td>
</tr>
</tbody>
</table>

**Max Row Population**
Displays the row producing the highest population.

**Min Row Population**
Displays the row producing the lowest population.

**Row Scan**
Starts and stops cycling through all active rows and their respective data.

**Next Row**
Advances to the next row and relevant data.

**Previous Row**
Advances to the previous row and relevant data.
AREA

Provides area totals by a single channel as well as area totals for all similar channels. Area totals are retained after power down. Area total reset is completed at the Totals screen.

Per Hour displays acres covered per hour and is not resettable.

*Figure 135 Area*
BOOMS

Booms indicate the status of each boom section and is only operational with liquid control channels when a DICKEY-john boom switch module and boom output module are installed for boom control. The boom status is indicated in green, red, or white.

Green - Section is on
Red - Section is off by manual switch
White - Section is off by task controller

The boom channel (example below BOOM 1) indicates the active channel.

Figure 136

Booms
ACCESSORIES

PRESSURE
Actual pressure measured in oz/in² (kPa) displays for installed pressure sensors.

RPM
Actual RPM for active shaft/fan sensors displays for installed RPM sensors.

HOPPER
Empty or nonempty status displays for installed hopper sensors.

Figure 137
Accessories
SEED SINGULATION AND SPACING QUALITY

% SINGULATE
An average singulation percentage displays in the % Singulate column the average percent seed singulation of the planter's rows that are configured using an ISO6 module or a WSMB2 module against all planter rows.

% MULTIPLES
A seed multiples average displays in the % Multiples column the average percent of multiple seeds dropped in one location across the planter.

% QUALITY
Displays the average percent spacing of quality across the planter rows in the % Quality column.

% SKIPS
Displays the average percent of seeding skips across the planter in the % Skips column.

Figure 138
Seed Singulation and Spacing Quality
QUALITY

Quality bar graph information screen displays complete data on one screen for a specific row. Highlight the row input to change to another row or press the Next Row button to view the next row.

Data specifics for a row include Singulation %, Quality %, Skips %, and Multiples %.

IMPORTANT: Singulation, Quality, Skips, and Multiple % is only calculated for the rows connected to a WSMB2 module or an ISO6. Any rows connected to a WSMB module will NOT be included in this calculation.

Figure 139

Quality

Next Row
Advances to the next row and relevant data.

Previous Row
Advances to the previous row and relevant data.

Max Row Population
Displays the row producing the highest population.
Min Row Population
Displays the row producing the lowest population.

Row Scan
Starts and stops cycling through all active rows and their respective data.

PRODUCT LEVELS
Channel 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.

To Enter Product Levels:
1. Select the Capacity input box to open the virtual keypad and enter the desired level.
2. Select the Reset button to default the levels to the original amount entered.

Figure 140
Product Levels
**TASK CONTROLLER**
Indicates Task Controller status as connected, disconnected, or override.

**SECTION CONTROL OVERRIDE BUTTON**
Press the Section Control Override button to ignore task controller state commands. This function is useful when planting over an area that is already planted and prevents a reset of the task controller map.

*Figure 141*
Task Controller
USING THE PRECHARGE FEATURE

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

**Precharge Features:**
- Operates until the precharge time lapses or the precharge ground speed is exceeded.
- Aborts when reducing ground speed to 0.
- Displays alarm any time the preset feature is established or changed and the master/control switch is turned on.

This feature is applicable to planter control channels; not monitor only.

**TIP:** The master/control switch must be turned ON to activate precharge.

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

Precharge is enabled at the Control Setup and Speed Setup screens.

1. Turn the master/control switch on.
2. Precharge automatically initiates when the master/control switch is turned on and the ground speed is less than the precharge ground speed but greater than 0.
   - The rate instrument populates with the word "CHARGE".

**Figure 142**

*Precharge Feature*
DISPENSING MATERIAL WITH FLUSH ENABLE

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

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

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

**Operating the Flush Enable function:**

1. Select the desired channel.
2. Verify the master switch is turned ON below shutoff speed. Tractor ground speed must be 0 mph.
3. Press the Next Page button to display the Flush Enable button.
4. Press and hold the Flush Enable button to dispense material.
5. Release the Flush Enable button to stop dispensing material. Once speed is above shutoff speed, flush is aborted and ground speed based control will take over.

**Tip:** If Flush button does not display on the Work Screen, verify Flush Enable is Enabled at Control Channel Setup screen and a Flush Ground Speed is entered at the Speed Set screen.

**Figure 143**

Flush Enable on Work Screen
MANUAL SPEED MODE

Manual speed mode is typically used when a ground speed sensor failure has occurred. This sets the system to operate using a constant, internally generated ground speed 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.

- No ground speed sensor is required when using the Manual setting.
- No area accumulation occurs when speed source is set to manual.

To Operate in Manual Speed Mode:

1. Press the Speed button and set the ground speed source to Manual.
2. Enter the desired manual ground speed.
3. Press the Home button to return to Home Menu.

Figure 144
Manual Speed Set Screen

4. At the Home Menu, press the Work Screen button. The manual ground speed entered at the Speed Set screen displays at screen top.
5. Press the Start Master button to begin operation at designated speed.
6. To change the manual speed while operating, press the Speed Information button.
7. To increase or decrease speed use the Increase or Decrease buttons. Speed is adjustable by one or by one-tenth.
8. Press Done button to return to Work Screen.
**Figure 145**

Manual Speed During Operation

Use the softkeys with the double arrows to increase or decrease the speed by one.

Use the softkeys with the single arrows to increase or decrease the speed by one-tenth.

Press DONE to return to the Work Mode.

Manual Gnd Spd 10.0 MPH
TASK CONTROLLER

The Task Controller screen provides the active state of the task controller and the current operations communicating with the task controller. Anytime changes to the system setup occurs the Task Controller momentarily disconnects. Some instances require performing a power cycle.

TASK CONTROLLER COMPATIBILITY

To further refine an operation, such as when the task controller is not communicating properly with the implement, adjustments can be made to correct. Any enabled function at this screen overrides the Operation setup until disabled.

- Disable a channel/operation to prevent data calculations relating to the specific operation from being sent to the task controller.
- Combine channels grouping their data calculations and send to the task controller.
- Combine sections grouping their data calculations and send to the task controller.

To Disconnect Task Controller:

1. Press the Task Controller button.
   - At the Task Controller screen, the image displays the current task controller status.
2. To disconnect, press the Disconnect button.

To Reconnect to the Task Controller:

1. Press the Task Controller button.
2. To reconnect, press the Reconnect button.

To Refine an Operation:

1. Press to highlight the Operation to change.
2. Press the Details button.
3. Select Disable, Combine Channels, or Combine Sections.
4. Hit the Back button to return to the previous screen or the Home button to return to the Home Menu.
Figure 146
Task Controller

TC STATUS

Op 1
Ch: 1, 2, 3, 4

Op 2
Ch: 5, 6

DISABLE
COMBINE CHANNELS
COMBINE SECTIONS
SELECTING A UNIVERSAL TERMINAL TYPE

The universal terminal type must be selected to identify if the terminal is an AI-120 or standard (all other model types). The selection of the universal terminal type resolves section control compatibility with the task controller.

The default setting is set to Standard and only needs changed if an AI-120 universal terminal is installed.

To Change the Compatibility Mode:

1. At the Task Controller screen, press the TC Options button.
2. Press the Compatibility Mode input box and select AI-120.
   - For all other universal terminal types, leave the setting at Standard.

Figure 147
Selection of Universal Terminal Type
IMPORT/EXPORT DATA

Implement configurations stored on the ISO6 module can be exported to a USB memory device for transfer to other machines. This file transfer eliminates manual entry of all settings to similar machines.

Only configurations created from the universal terminal can be imported and exported; no configurations created from a computer will transfer.

NOTE: UT must have file server capabilities in order to import/export data.

IMPORTANT: Import/Export does NOT save ECU or other Task Controller functions.

NOTE: All configuration files previous to software version 2.0 are not compatible.

EXPORT DATA

1. Insert a USB memory device in the terminal.
2. Press the Import/Export button.
3. Press the Export File name input box and enter a file name. File name is case sensitive and must be exact for the import function to appear.
   – Default file name is Config.xml
4. The new data file name appears in the input box and saved as an .xml file extension.
5. Press the Export button.
   – As files are saved, an hour glass flashes at the top of the screen and "Exporting Data...." appears at screen bottom. A successful data transfer appears when complete.
6. Press Next button to search for the next file or to find a file with a different name other than "Config".

Figure 148
Export Data
IMPORT DATA

1. Insert the USB memory device in the terminal.
2. Verify all modules and sensors are connected properly.
3. Press the Import/Export button.
4. At the Import/Export screen, enter the import file name to transfer. File name is case sensitive and must be exact for the import function to appear.
5. Press the Import button.
   - As files are transferring, an hour glass flashes and “Import Data” appears at screen bottom.
   - The Set Defaults button only appears in User Level 3. Press the Set Defaults button to save the imported data as the factory defaults. A confirmation screen must be acknowledged for this to occur.
6. Press the Power button to reboot the terminal.

Figure 149
Import Data
SYSTEM TESTS

CONTINUOUS TEST

Performing a continuous test runs the control while stationary for troubleshooting or maintenance purposes. The values entered will not affect any other setup values that have previously been entered.

To Run a Continuous Test:

1. At the Home Menu, press the Controls button.
2. At the Controls screen, select the appropriate channel.
3. Press the Edit button.
4. Press the Continuous Test button.
5. Enter values to perform a continuous test for
   – Test Ground Speed
   – Row
6. Press the Start button.
7. Press and hold remote test switch until the test is complete.
8. Release test switch and the control will stop.
9. Press the test switch again to clear the seed count and restart the control.
10. Steps 4-6 will repeat until the Stop button is pressed.

Figure 150
Continuous Test Screen

TEST GROUND SPEED

Desired ground speed reference to perform the test.
ROW
The active row viewed on the system. The row that is set here is the row that reports back a seed count in the Test Seed Count value. The operator can change the row # to get performance of all rows during the continuous test to see row-to-row variability.

TEST TARGET POPULATION
The seed rate at which the test is performed. This value is the current target rate and is automatically populated.

TEST SEED COUNT
The seed count reported back on the specified row set in the row data item and is automatically populated.

5 REV TEST
5 Rev Test checks the seed meters for accuracy. When started, the test runs the control for five revolutions of the seed meters then shuts down. The seed count can then be correlated on a row versus the seed count actually dispensed by the meter. A remote test switch is recommended to perform this test. The values entered do not affect any other setup values that have previously been tested.

To Perform the 5 Rev Test:
1. At the Control screen, select the appropriate channel for the test.
2. Press the Edit button.
3. Press the 5 Rev button.
4. The following parameters must be entered to perform a 5 Rev Test.
   - Test Ground Speed
   - Row
5. Press the Start button. The test runs for 5 revolutions then stops.
TEST GROUND SPEED
The ground speed reference used to perform the test.

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

TEST TARGET POPULATION
The seed rate at which the test is performed. This value is the current target rate and is automatically populated.

TEST SEED COUNT
The seed count that automatically populates on a specified row set.

REMOTE TEST SWITCH
A momentary switch can be purchased from DICKEY-john that allows the control to be turned on when pressed and held during the fill disk, valve calibration, K Factor calibration, spreader calibration, continuous test, and 5 Rev tests. Releasing the button stops the operations. Using a remote test switch allows the operator to go back to the implement to perform the test and investigate mechanical issues or perform seed counts instead of performing the test inside the cab from the terminal. The test switch only functions when the implement switch is in the up (off) position.

NOTE: The remote test switch connects to the actuator harness. Remote test switch part number is 464210515S1.

CAUTION
Once testing is complete, the remote test switch should be disconnected to prevent accidental control engagement.
ACCUMULATORS

SEED COUNT

Displays the number of seeds detected by each sensor. Individual seed rows can be assessed and seed counts for those rows can be accumulated. Up to 15 row numbers display at one time.

To Use the Seed Count function:
1. Press the **Seed Counts** button.
2. Press the **Start** button. Seed count data for each sensor accumulates when seed drops through the sensor.
   - Press the **Next Rows** button to view additional rows.
3. Press the **Stop** button to stop counting seeds.

Figure 152
Seed Count Screen

4. Press the **Home** button to exit or the **Back** button to return to the System menu screen.

TOTALS

The Totals screen displays the total amount of time the system has been on, the amount of time and area application control has occurred, and the distance traveled and active field description.

To View Totals:
1. At the Home Menu, press the **Totals** button.
2. Select the active field to report totals on the Work Screen.
   - Field totals display in the Instrument display type for materials and area.
   - Field names and descriptions can be renamed by pressing the respective input boxes.
   - Up to five field totals are possible.
POWERED ON TIME

Powered On Time is the accumulated time, in hours, that the system has been powered ON. Powered On Time accumulates regardless of the mode of operation - whether it is in Setup or Operate mode. Powered On Time cannot be reset.

SYSTEM ACTIVE TIME

System Active Time is the accumulated time, in hours, that the machine has actively been controlling. System Active Time accumulates whenever seeds are detected on at least one sensor. Planting time does not accumulate during an ALL ROWS FAILED condition. System Active Time can be reset by pressing the Reset Time button.

SYSTEM ACTIVE AREA

System Active Area is the accumulated area covered while the master/ control switch is on. System Active Area cannot be reset.

DISTANCE

Distance is the accumulated distance, in feet (meters), that the implement has traveled. The Distance accumulator function is controlled by using the following procedures:

1. Press the Start Distance button to begin accumulating distance. This occurs whenever there is ground speed.
2. Press the Stop Distance button to stop distance accumulation.
3. Press the Reset Distance button to reset the value back to 0.0.

ACTIVE FIELD

Select the desired field to display the current totals for a field that appears on the Work Screen in either the Materials or Area Instrument data item.
VERSION INFORMATION

IMPORTANT: The master switch must be off to view Version Information screens.

The Version Information screen displays the module software versions and serial numbers of all modules connected to the system. This information may be required when troubleshooting. No information on the screen can be edited.

Each module connected is identified by module type (i.e. WSMB-RSM), module position (i.e. MOD ADDR 1), and serial number (i.e. S/N 18847). Module position cannot be altered on this screen.

There is also a soft key that can be used to restart the WSMT without turning off the tractor ignition.

To view Version Information:
1. Press the Version button.
2. Press the Down button to access additional screens displaying all module types.

NOTE: Entry of passwords to change user levels is accessed at this screen. Reference the User Level section.
FACTORY RESET (USER LEVEL 3)

Level 3 Users have access to restore system settings to:

- Factory defaults—restores configuration files to factory defaults
- Overwrite defaults—configuration files set by the user that overwrites factory defaults.

**CAUTION**

Performing a factory reset should be completed by an authorized service technician. Restoring or overwriting current configuration files removes the user-defined configuration settings. User-defined configuration files can be exported to a USB memory device for importing a later time, if desired.

**To Reset Memory:**

1. Press the **Factory Reset** button.
2. Select the button type to **Reset to Defaults** or **Overwrite Defaults**.
3. Press the **Checkmark** button to begin system reset.
   - Press the Cancel ‘X’ button to cancel reset.

*Figure 155*

**Reset Configurations Settings**

![(factory reset button)](image-url)
ALARMS

Alarms display when an abnormal event occurs outside of normal parameters. Alarms are typically in a full screen display describing the alarm and may give instructions on how to fix the alarm. Each alarm has an associated alarm number. Some alarms (such as the master/control switch alarm) require a specific action by the operator before the alarm condition will cease. In these cases, instructions are indicated on the alarm display.

Alarms can be acknowledged by pressing the Cancel button. Detailed information about the alarm can be accessed by pressing the Alarm Detail button.

ALARM LOG AND DETAILS

An Alarm Log provides a list of specific alarms issued during system operation. Information displayed is informational only and cannot be edited. Each time specific alarm conditions are detected, it is logged and communicated to the ISO6 module.

To View Alarm Log and Details:

1. Press the Alarm Log button.
2. At the Alarm Log screen, a list of alarms displays.
   - Alarm number and description displays
   - Up to 20 alarms can be recalled
   - Each alarm occurrence can have up to 5 instances of the alarm tagged with a date and time stamp.
3. To select specific alarm details, press the Previous or Next buttons to move the small display arrow next to the desired alarm number.
4. Press the Alarm Detail button to view all of the occurrences of the selected alarm.
   - The down arrow in the lower left at screen bottom signifies that more alarms are present and accessible by pressing the Previous or Next buttons.
ALARM RESET (LEVEL 3 OEM USER)

OEM Level users have access to clear logged alarms. To reset the Alarm Log, press the Alarm Reset button.

1. Press the Checkmark button to clear.
2. Press the ‘X’ button to retain alarm log and return to Alarm Log screen.

Figure 157
Alarm Reset
DIAGNOSTICS

The Diagnostics screen provides information from feedback sensors, valve output, and system voltages of the planter drill control. The control valve can be manually opened on this screen when necessary.

Each channel has its own Diagnostics screen. Items on the screen are not editable, but the Channel Pulse Count data is resettable. The system can be active on the Diagnostics screen.

To View Diagnostics:
1. Verify the master/control switch button is off.
2. At the Home Menu screen, press the Diagnostics button.
3. At the Diagnostics screen, press the Start Master button or turn the physical switch on.

⚠️ DANGER

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.

TARGET RATE

Channel Target is the current channel’s rate as entered into the Target Rate constant on the Controls Configuration screen.

TARGET SPEED

The calculated RPM or flow rate for the current channel.
SETPOINT
Channel Setpoint is calculated by the system displaying the expected feedback frequency of the application rate sensor or flow meter used for that channel’s feedback.

PWM
The Channel PWM value is the current pulse width modulation (PWM) output drive signal to the solenoid valve. The higher the number, the further the valve opens.

ACTUAL RATE
The Channel Actual Rate value is the current channel’s actual controlled rate with the system active.

ACTUAL SPEED
The channel’s actual RPM or flow rate.

FEEDBACK FREQUENCY
Feedback frequency is the current channel’s feedback frequency of the application rate sensor or flow meter used for that channel’s feedback.

PULSE COUNT
The Channel Pulse Count value is the accumulated pulse count detected from the channel feedback sensor. This value may be reset by the operator by pressing the Reset Channel Pulse Count button.

IO IMP LIFT
The IO Implement Lift value displays the current state of the implement status switch. This text states “lowered” when the implement is down. The text states “raised” when the implement is raised.

SOL PWR VOLT
The Solenoid Power Volt value displays the detected solenoid power voltage. This voltage level is the high current voltage leg of the system which is used to power high current solenoids and valve actuators. This value will generally be equal or nearly equal to the tractor battery voltage.

ECU PWR VOLT
The Electrical Control Unit (ECU) Power Volt value is the detected ECU voltage. This voltage level is the low current voltage leg of the system and is used to power modules and sensors. This value will generally be equal or nearly equal to the tractor battery voltage.

SNSR PWR VOLT
The Sensor Power Volt value is the detected output voltage to the seed sensor on the ISO module. This value is typically +8 VDC.

NOTE: If the values are reversed and the value displays a “lowered” when the implement is raised, the wiring for the implement switch will need to be reversed so that an accurate readout is achieved.
GND VOLT

Measures the difference between the ECU ground and the solenoid ground. This value is typically between -0.5V and +0.5V. Values below -2.0V and above +2.0V triggers the Ground Offset Voltage Out of Range alarm.

MANUAL OPEN OF CHANNEL (SYSTEM FAILURE)

Manual opening of a selected channel's valve is used for calibration or troubleshooting purposes in the case of system failure. This procedure should only be performed with the guidance of an authorized technician.

---

**DANGER**

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 Manually Open Channel:

1. At the Controls screen for the appropriate channel, set the Control Mode to either Manual with Feedback or Manual without Feedback.
2. Press the **Home** button to return to the Home Menu and select the **Diagnostics** button.
3. Go to the **Diagnostics** screen.
   - The Diagnostics screen will show Channel 1 as a default.
   - If a channel other than Channel 1 needs selected, press the **Next Channel** button until the appropriate channel displays. The **Next Channel** button only displays when more than one channel is configured.
4. Set the master switch to the ON position or press the **Start** button.
5. Press the **Increment** button to open the channel's valve. The Channel Pulse Width Modulation (PWM) data item displays the current PWM signal that is output to the valve.
   - The **Increment** button must be pressed repeatedly to increase the PWM signal to the valve. Each press will increase the signal by 2 hertz (hz). The Channel Pulse Count and Channel Frequency Filter values display the current output of the feedback sensor.
6. Press the **Decrement** button to decrease the PWM signal and close the valve. The **Decrement** button must be pressed repeatedly to decrease the PWM signal to the valve. Each press decreases the signal by 2 hertz (hz).
   - The active channel displays in the button text.
7. Turn the master switch off to shutdown control channel or press the **Stop** button.
8. Press the **Home** button and select the Controls button to reset Control Mode to Auto.
Figure 159
Manual Open of a Channel

![Diagram of manual open of a channel]

1. Material Name: CORN
2. Drive Type: 1
3. Drive Freq.: 1
4. Input Filter: 1
5. Gear Ratio: 1.000
6. Sensor Constant: 360
7. Seed Rows: 1
8. # Seed Rows: 6
9. Channel Width: 180.0 IN
10. PreCharge: 6.0 SEC

---

Diagnostics Table:

- **TARGET RATE**: 35.0
- **TARGET SPEED**: 0.0000
- **SETPOINT**: 0.0000
- **PWM**: 0
- **ACTUAL RATE**: 0.0
- **ACTUAL SPEED**: 0.0000
- **FEEDBACK FREQ**: 0
- **PULSE COUNT**: 0
- **FREQ GSPD**: 0
- **IO IMP LIFT**: LOWERED
- **SOL PWR VOLT**: 13.55
- **ECU PWR VOLT**: 13.32
- **SNSR PWR VOLT**: 8.10
- **GND VOLT**: -0.02
SOFTWARE ADD-ONS

The Feature Keys screen displays customer-specific add-ons to the system. Each line item identifies the module name and details that may be required for troubleshooting purposes. This screen is viewable only and cannot be changed.

To View Feature Keys:

1. Press the System button.
2. At the System screen, press the Feature Keys button.
   - All add on software displays onscreen.
3. Press the Next button to view additional feature keys.

NOTE: Instructions for functionality added as a Feature Key is discussed in their respective manuals.

FEATURE KEY POSSIBLE ADD-ONS

Additional functionality is available by adding Feature Keys and include:

- Frame Fold
  - Marker
  - Working Hydraulics
  - Folding Hydraulics
- Control Channel Expansion (3, 4, 5, 6)
- Advanced Seeding Data
TROUBLESHOOTING & ALARM CODES

Alarms are presented in a full screen display with description and resolution instructions, if applicable. Each alarm type has an associated alarm number that can be cross-referenced in this section.

An 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 alarms (i.e. Master Switch alarm) require a specific action before the alarm condition will cease. In these cases, the instructions to proceed are indicated in the alarm display.

Figure 161
Alarm and Alarm Number

The following table describes the possible alarm conditions, causes, and remedies.

For troubleshooting assistance, please contact your local dealer.
<table>
<thead>
<tr>
<th>ALARM #</th>
<th>ALARM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Control CPU Communications Intermittent Alarm</td>
<td>1. Processor has automatically restarted.</td>
<td>1. Wait until intermittent alarm occurs before running system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Power off the system if intermittent alarm does not appear.</td>
</tr>
<tr>
<td>7</td>
<td>Monitor CPU Communications Failed Alarm</td>
<td>1. Processor has automatically restarted.</td>
<td>1. Wait until intermittent alarm occurs before running system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Power off the system if intermittent alarm does not appear.</td>
</tr>
<tr>
<td>8</td>
<td>Monitor CPU Communications Intermittent Alarm</td>
<td>1. Processor that had previously failed communication has come online.</td>
<td>1. No action needed.</td>
</tr>
<tr>
<td>200</td>
<td>Master Switch Time Out Alarm</td>
<td>1. Master switch is active but no ground speed is detected. If no speed is detected, the master switch will deactivate.</td>
<td>1. Press Cancel to keep the master switch active.</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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Incorrect speed source setting or calibration.</td>
<td>2. Inspect speed sensor/harness for damage or replace speed sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective speed sensor or harness.</td>
<td>3. Replace module or universal terminal.</td>
</tr>
<tr>
<td>206</td>
<td>Control Channel Unable to Control Alarm</td>
<td>Control channel cannot control to the specified rate.</td>
<td>1. Verify correct setup constants on the Control Channel screen.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Incorrect channel settings.</td>
<td>2. Perform a valve calibration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Incorrect feedback sensor installation.</td>
<td>3. Verify correct installation of the feedback sensor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective feedback sensor.</td>
<td>4. Check control valve for damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Check harness and module for damage.</td>
</tr>
<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>2. Incorrect channel settings.</td>
<td>2. Verify correct setup constants on the Channel Configuration screen. Perform a valve calibration and a Calibration constant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Desired rate too high for implement.</td>
<td>3. Reduce 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. Repair 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>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>213</td>
<td>High Population Limit Exceeded Alarm</td>
<td>Seed Rate Has Exceeded The High Alarm Setting On The Seed Monitor Setup Screen. 1. Seed meter malfunction or incorrect setup. 2. Defective seed sensor. 3. Defective module.</td>
<td>1. Verify proper planter options/setup. 2. Inspect seed sensor for damage. Replace if necessary. 3. Inspect module for damage. Replace if necessary.</td>
</tr>
<tr>
<td>214</td>
<td>Low Population Limit Exceeded Alarm</td>
<td>Seed Rate Has Dropped Below The Low Alarm Setting On The Seed Monitor Setup Screen. 1. Seed meter malfunction or incorrect setup. 2. Defective seed sensor. 3. Defective module. 4. Running out of seed.</td>
<td>1. Verify proper planter operation/setup. 2. Inspect seed sensor for damage. Replace if necessary. 3. Inspect module for damage. Replace if necessary. 4. Fill with seed.</td>
</tr>
<tr>
<td>215</td>
<td>High Pressure Limit Exceeded Alarm</td>
<td>Sensed Pressure Exceeds The High Alarm Setting On The Pressure Setup Screen. 1. Implement malfunction or incorrect setup. 2. Defective pressure sensor. 3. Defective module.</td>
<td>1. Verify proper implement operation/setup. 2. Inspect pressure sensor for damage. Replace if necessary. 3. Inspect module for damage. Replace if necessary.</td>
</tr>
<tr>
<td>216</td>
<td>Low Pressure Limit Exceeded Alarm</td>
<td>Sensed Pressure Below The Low Alarm Setting On The Pressure Setup Screen. 1. Implement malfunction or incorrect setup. 2. Defective pressure sensor. 3. Defective module.</td>
<td>1. Verify proper implement operation/setup. 2. Inspect pressure sensor for damage. Replace if necessary. 3. Inspect module and/or module harness for damage. Replace if necessary.</td>
</tr>
<tr>
<td>217</td>
<td>Member module Detection Alarm</td>
<td>Number Of Member Modules Does Not Match The System Configuration. 1. Too few modules connect to system. 2. Too many modules connected to system. 3. Defective CAN/module harness. 4. Blown module harness fuse. 5. Defective module. 6. New module has been added to system.</td>
<td>1. Verify correct module configuration setup on the Module Configuration screen. 2. Verify correct module configuration setup on the Module Configuration screen. 3. Identify missing module in the Module Configuration list. Inspect CAN/module harness of the missing module for damage. Repair or replace harness. 4. Inspect module harness fuse of the identified module. Replace if necessary. 5. Identify missing module in the Module Configuration list. Inspect missing module for damage or replace. 6. Verify correct module configuration setup on the Module Configuration screen.</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 Configured On The Pressure Sensor Configuration Screen. 1. Defective Sensor. 2. Defective module or damaged module harness. 3. Additional pressure sensor detected.</td>
<td>1. Inspect pressure sensor for damage or replace. 2. Inspect module and/or module harness for damage. Replace if necessary. 3. Verify correct# ACC setting for each module.</td>
</tr>
<tr>
<td>219</td>
<td>Row Sensor Not Detected Alarm</td>
<td>1. Incorrect seed row connections. 2. Additional seed sensor detected. 3. Incorrect setup. 4. Defective seed sensor. 5. Defective module or damaged module harness.</td>
<td>1. Inspect seed sensor for damage or replace. 2. Inspect module and/or module harness for damage. Replace if necessary. 3. Verify correct # ROWS setting for each module.</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 your local dealer.</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>
</tbody>
</table>
| 222    | Control Channel Step Height Error Alarm   | 1. Implement hydraulic system malfunction.  
2. Defective control valve.  
3. Incorrect feedback sensor installation.  
4. Defective feedback sensor.  
2. Inspect control valve for damage. Replace if necessary.  
3. Verify correct installation of the feedback sensor.  
4. Inspect feedback sensor for damage or replace.  
5. Set Limit Max Output to a higher PWM% on the Valve Calibration screen. Perform a new valve calibration. |
| 223    | Control Channel Max Feedback Unreachable Alarm | 1. Limit Max Output set too low.  
2. Incorrect feedback sensor installation.  
3. Defective feedback sensor. | 1. Set Limit Max Output to a higher level on the Valve Calibration screen. Perform a new valve calibration.  
2. Verify correct installation of the feedback sensor.  
3. Inspect feedback sensor for damage or replace. |
| 224    | No Channel Gain Steps Calculated Alarm    | 1. Implement hydraulic system malfunction.  
2. Defective control valve.  
3. Incorrect feedback sensor installation.  
4. Defective feedback sensor. | 1. Verify implement hydraulic system operation.  
2. Inspect control valve for damage. Replace if necessary.  
3. Verify correct installation of the feedback sensor.  
4. Inspect feedback sensor for damage or replace. |
| 225    | Hopper Sensor Low Alarm                   | 1. Incorrect logic level setting on the Hopper Setup screen.  
2. Dirty or defective hopper sensor.  
3. Defective module harness or module  
2. Clean/inspect hopper sensor. Replace if necessary.  
3. Inspect harness and module for damage. Replace if necessary.  
4. Fill hopper. |
| 226    | RPM Sensor High Limit Exceeded Alarm      | Sensedd RPM exceeds the high alarm setting on the RPM or Control Setup screen.  
1. Implement malfunction or incorrect setup.  
2. Defective RPM sensor.  
2. Inspect RPM sensor for damage. Replace if necessary.  
3. Inspect module for damage. Replace if necessary. |
| 227    | RPM Sensor Low Limit Exceeded Alarm       | Sensedd RPM exceeds the low alarm setting on the RPM or Control Setup screen.  
1. Implement malfunction or incorrect setup.  
2. Defective RPM sensor.  
3. Defective module harness or module. | 1. Verify proper implement operation/setup.  
2. Inspect RPM sensor for damage. Replace if necessary.  
3. Inspect module for damage. Replace if necessary. |
| 228    | Hopper Sensor Detection Alarm             | Number Of Hopper Sensors Connected Does Not Agree With The Number Of Sensors Configured On The Hopper Sensor Configuration Screen.  
1. Defective hopper sensor.  
2. Defective module or damaged module harness.  
3. Additional hopper sensors detected. | 1. Inspect hopper sensor for damage or replace.  
2. Inspect module and/or module harness for damage. Replace if necessary.  
3. Verify correct # HOPP setting for each module. |
## Troubleshooting & Alarm Codes

<table>
<thead>
<tr>
<th>ALARM #</th>
<th>ALARM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>232</td>
<td>Control Channel Shutdown Alarm</td>
<td>Rpm Has Dropped Below The Disable Control On Low Alarm Setting On The Accessory Setup Screen. 1. Defective RPM sensor. 2. Damaged module harness. 3. Defective module. 4. Low RPM</td>
<td>1. Inspect RPM sensor for damage. Replace if necessary. 2. Inspect module harness for damage. Repair or replace. 3. Inspect module for damage. Replace if necessary. 4. Increase RPM.</td>
</tr>
<tr>
<td>235</td>
<td>New Member Module Detected Alarm</td>
<td>1. New member module has been found.</td>
<td>1. Assign sensors to the new module at the Module Configuration Setup screen and its position.</td>
</tr>
<tr>
<td>236</td>
<td>Intermittent Member Module Detected Alarm</td>
<td>1. A member module that had previously failed communication has come online.</td>
<td>1. Inspect harness connections to this module.</td>
</tr>
<tr>
<td>237</td>
<td>Product Level Low Alarm</td>
<td>1. Calculated product level has dropped below alarm level.</td>
<td>1. Fill product bin and reset level.</td>
</tr>
<tr>
<td>238</td>
<td>Left/Right Field Marker Control Failed Alarm</td>
<td>1. Marker feedback does not match marker control.</td>
<td>1. Check feedback sensor and module for damage.</td>
</tr>
<tr>
<td>239</td>
<td>Half Width Control Failed Alarm</td>
<td>1. Half width feedback does not match the tramline control.</td>
<td>1. Check the feedback sensor and module for damage.</td>
</tr>
<tr>
<td>240</td>
<td>Pre-emergence Marker Control Failed Alarm</td>
<td>1. Pre-emergence marker feedback does not match marker control</td>
<td>1. Check feedback sensor for damage. 2. Check module harness for damage.</td>
</tr>
<tr>
<td>241</td>
<td>Seeding Detected on a Control Off Row Alarm</td>
<td>1. Seed rate detected on an off row.</td>
<td>1. Inspect harness and module for damage. Check control shutoff. Verify correct row to control channel assignment.</td>
</tr>
<tr>
<td>248</td>
<td>BSM/ESM Communication Lost Alarm</td>
<td>Communication With An Active Module Has Failed 1. Damaged CAN or module harness. 2. Blown module harness fuse. 3. Defective module.</td>
<td>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.</td>
</tr>
<tr>
<td>249</td>
<td>BSM/ESM Foot Switch Lost Alarm</td>
<td>1. Incorrect foot switch connections. 2. Defective BSM or foot switch. 3. Defective module harness.</td>
<td>1. Inspect BSM, foot switch, and module harness.</td>
</tr>
<tr>
<td>256</td>
<td>Channel Invalid Material Alarm</td>
<td>1. No material exists that is compatible with channel type.</td>
<td>1. Setup a material for the channel type.</td>
</tr>
<tr>
<td>260</td>
<td>Tramline Output Error</td>
<td>1. Tramline output feedback does not match the tramline control.</td>
<td>1. Check the feedback sensor for damage. 2. Check the tramline output for damage.</td>
</tr>
<tr>
<td>268</td>
<td>Down Pressure High Limit Exceeded Alarm</td>
<td>1. Down pressure exceeds high limit setup.</td>
<td>1. Inspect down pressure high setup. 2. Check planter spring settings. 3. Check load cell sensor for damage. 4. Check harness and module for damage.</td>
</tr>
<tr>
<td>269</td>
<td>Down Pressure Low Limit Exceeded Alarm</td>
<td>1. Down pressure exceeds low limit setup.</td>
<td>1. Inspect down pressure low setup. 2. Check planter spring settings. 3. Check load cell sensor for damage. 4. Check harness and module for damage.</td>
</tr>
<tr>
<td>270</td>
<td>Load Cell Failure Alarm</td>
<td>1. A load cell has failed.</td>
<td>1. Check planter spring settings. 2. Check load cell sensor for damage. 3. Check air valve for damage. 4. Check harness and module for damage.</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>272</td>
<td>Defaults Loaded Alarm</td>
<td>System configuration is corrupt and has been reset to default settings.</td>
<td>1. Check system configuration for correctness. If this persists, contact dealer for support</td>
</tr>
<tr>
<td>300</td>
<td>Disconnected from Task Controller Alarm</td>
<td>System configuration has changed and the connection to the task controller has been disconnected.</td>
<td>1. Continue setup and restart system.</td>
</tr>
<tr>
<td>301</td>
<td>Task Controller Rate Override Alarm</td>
<td>The commanded rate from the task controller has been manually overridden.</td>
<td>1. Press the Reset button to return to the commanded rate.</td>
</tr>
<tr>
<td>602</td>
<td>8 Volt Supply Failure Alarm</td>
<td>8v Supply Voltage Is Below 7.2v Or Higher Than 16v.</td>
<td>1. Inspect module harness for damage. Repair or replace harness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Damaged module harness.</td>
<td>2. Inspect seed or hopper sensors connected to the identified module for damage. Replace sensors if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective seed or hopper sensor.</td>
<td>3. Replace identified module.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td></td>
</tr>
<tr>
<td>603</td>
<td>Member Module Communication Failed Alarm</td>
<td>Communication With An Active Module Has Failed</td>
<td>1. Identify missing module in the Module Configuration list.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Damaged CAN or module harness.</td>
<td>Inspect CAN/module harness of the missing module for damage. Repair or replace harness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Blown module harness fuse.</td>
<td>2. Inspect module harness fuse, replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td>3. Identify missing module in the Module Configuration list. Inspect missing module for damage or replace.</td>
</tr>
<tr>
<td>604</td>
<td>ECU Voltage Out of Range Alarm</td>
<td>ECU Voltage Is Below 11v Or Higher Than 16v.</td>
<td>1. Inspect CAN/module harness of the identified module for damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Damaged CAN or module harness.</td>
<td>2. Inspect identified module for damage or replace.</td>
</tr>
<tr>
<td>605</td>
<td>Solenoid Voltage Out of Range Alarm</td>
<td>Solenoid Voltage Is Below 11v Or Higher Than 16v.</td>
<td>1. Inspect CAN/module harness of the identified module for damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Damaged CAN or module harness.</td>
<td>2. Inspect module harness fuse or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Blown module harness fuse.</td>
<td>3. Inspect identified module for damage or replace.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td></td>
</tr>
<tr>
<td>606</td>
<td>Ground Offset Voltage Out of Range Alarm</td>
<td>1. Damaged/shorted Actuator Harness.</td>
<td>1. Inspect Actuator Harness for damage around the WPM and Servo valve connections. Repair or replace harness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Defective PWM valve driver or Servo valve driver.</td>
<td>2. Inspect PWM or Servo valve drivers for damage and replace if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Defective module.</td>
<td>3. Inspect identified module for damage and replace if necessary.</td>
</tr>
</tbody>
</table>
INTELLIAG® ISO™

PLANTER DRILL CONTROL

VERSION 3

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