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PM200, 200E and 250



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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.





INTRODUCTION

SYSTEM OVERVIEW

The DICKEY-john PM200, PM200E, and PM250 Planter Monitors offer features to monitor up to 12 seed or fertilizer rows and one frequency input (shaft speed).

The monitors are compatible with DICKEY-john seed, flow, hopper level, and speed sensors. Configuration data is stored in nonvolatile memory, retaining information even when disconnected from power.

Several planting parameters can be monitored on the Operate Screen and viewed in a large, easy-to-read format. Row monitoring readouts provide constant feedback and can be viewed in a bar graph or symbol format.

Figure 1

PM200, PM200E, and PM250 Planter Monitors



FEATURES

PERFORMANCE

- Planter monitoring of 12 rows
- Monitoring of ground speed and one shaft speed sensor
- Easy and flexible configuration
- Up and down arrow keys cycle through monitor functions:
 - Population
 - Field Area 1
 - Field Area 2
 - Total Area
 - Ground Speed
 - Menu
- Row status information:
 - Bar Graph
 - Symbols (Failure mode)
 - Symbols flashing relative to seeding rates



CONSOLE/DISPLAY

- Compact design
- Large, user friendly keys
- Graphic or text-based output labels
- Three-level backlight intensity adjustment
- Large, concise error messages displayed with audible alarm
- English or metric units

COMPATIBILITY

- Compatible with DICKEY-john sensors
- Plug-in replacement for other DICKEY-john monitors

USER AID

- Help card, refer to [Figure 15](#).



SPECIFICATIONS

Power	10–16 VDC, 5 A fused (2A nominal)
Operating temperature range	-20°C to 70°C (-4°F to 158°F)
Storage temperature range	-40°C to 85°C (-40°F to 185°F)
Size	19.0 cm W x 11.9 cm H x 6.3 cm D (7.5" W x 4.7" H x 2.5" D)
Weight	3.0 lbs *Weight includes console and attached cables (battery power cable and signal cable that extends to the drawbar).
Wire Harnesses	The PM200, 200E, and 250 include integrated harnesses to supply the unit's power (fused), ground speed input, and sensor inputs (to drawbar). The connectors are compatible with existing DICKEY-john harnesses. DICKEY-john can supply custom harnesses required for sensor inputs.
Sensors	Compatible with existing DICKEY-john sensors
Standard mounting	Rear attached horizontal mounting bracket Mounting bracket weighs 1.0 lb.
Optional mounting	Three-axis adjustable mounting bracket
Contrast adjustment	Automatic temperature compensation for contrast
Backlight adjustment	Three settings for full sun, daytime, or nighttime use
Compliant with EU directive 2000/2/EC	
Dust and moisture resistant	

KEY FUNCTIONS

ON/OFF

The **On/Off** key powers the unit on and off. During power up, the monitor performs internal self-tests, illuminates the display, sounds the alarm, and determines which sensors are connected to the system. Pressing and holding the key for one second when the power is ON will turn the power OFF, independent of the screen being displayed.

ENTER

From the Main Operate screen, pressing the **Enter** key displays the selected function line input screen. Also, the **Enter** key selects a highlighted item for data modification. After changing the parameter values, **Enter** accepts the modified data.



UP/DOWN/LEFT/RIGHT ARROWS

On the **Operate** (main) screen, the **Up** and **Down Arrow** keys are used to scroll through planting parameters at the top of the display. On Setup screens, the arrow keys are used to navigate to input boxes to change data values.

ALARM

During an alarm condition, selecting the **Alarm** button acknowledges the alarm condition displayed on the screen. Active row alarms are reset after an ALL ROWS FAILURE condition or a power down-up sequence occurs. If the error condition continues, the key must be selected again to cancel the alarm. When no alarms are active, the volume may be modified by selecting and holding the **Alarm** button.

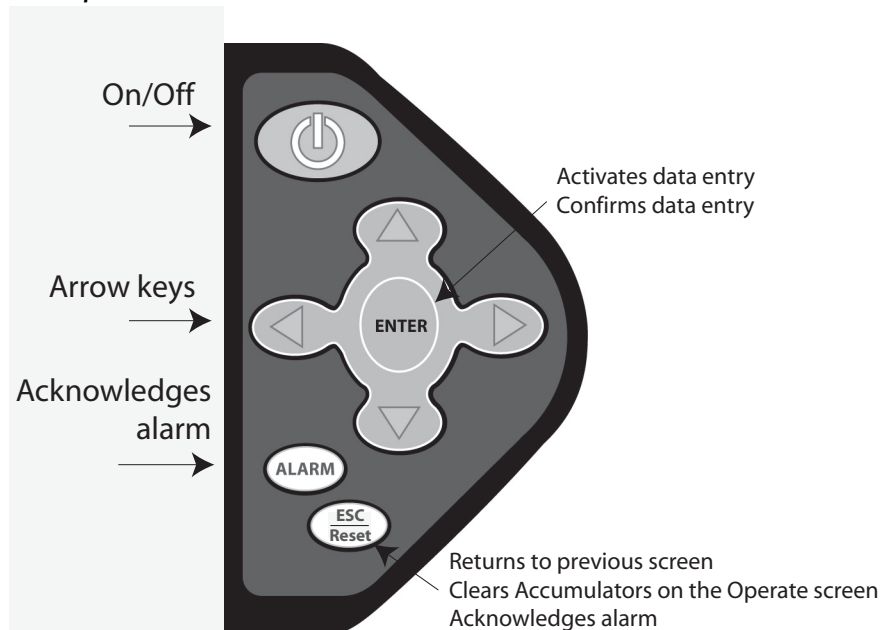
ESC/RESET

On the **Operate** (main) screen, select and hold the **Escape** key for four seconds to clear an area accumulator if it is located on the top line of the display.

When navigating through sub-menus, the **Escape** key moves the user back one selection. After changing parameter values, selecting **Escape** accepts the modified data. The **Escape** key also serves as an alarm cancel key.

Figure 2

Switchpad





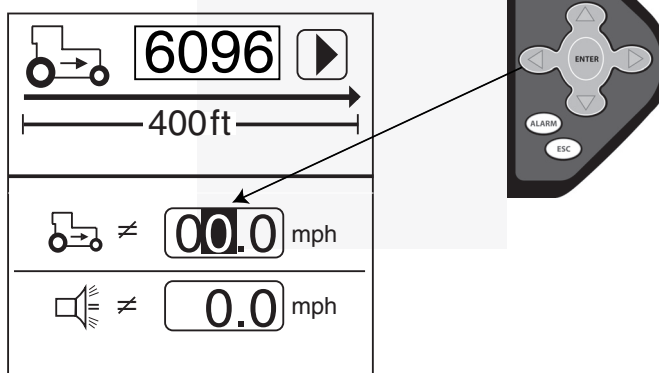
KEYPAD/DISPLAY NAVIGATION

The term “highlight” used throughout the manual refers to selecting a digit to change on the various screens by using keys on the keypad. Pressing **Enter** allows the “highlighted” value to be changed by using the arrow keys. Pressing **Enter** again accepts the new value.

Figure 3

Keypad/Display Navigation

Highlight a value or input box to change by using the arrow keys on the keypad. Press Enter and use the arrow keys to modify the digit. Press Enter again to save the new value.







INSTALLATION

The monitor is tested and inspected before shipping to ensure the unit is fully operational and meets measurement specifications. Inspect for damage that may have occurred during transit. Save all packing materials until the inspection is complete. If damage is found, immediately file a claim with the carrier and notify your DICKEY-john Sales Representative.

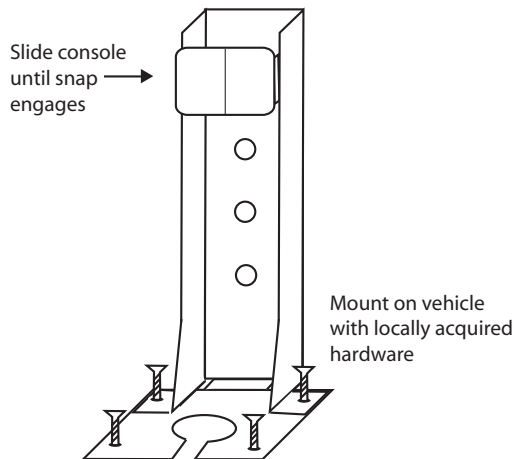
MOUNTING BRACKETS

NOTE: When mounted to a vertical surface, a tie-wrap may be used to secure the cables to the bottom of the bracket.

1. Install the mounting bracket at the desired location using locally acquired hardware.
2. Install the console to the bracket by aligning the console mating grooves with the bracket and sliding the console onto the bracket until the snap engages.

Figure 4

Standard Mounting Bracket



WARNING

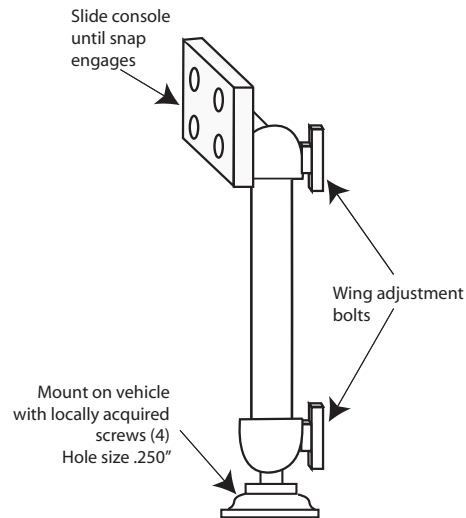
The console must not obstruct the view of the operator or interfere with the operation of the tractor.

CAUTION

To prevent damage to the console, be sure the snap fully engages during installation.



Figure 5
Optional 3D Mounting Bracket



⚠ WARNING

The console must not obstruct the view of the operator or interfere with the operation of the tractor.

CAUTION

To prevent damage to the console, be sure the snap fully engages during installation.

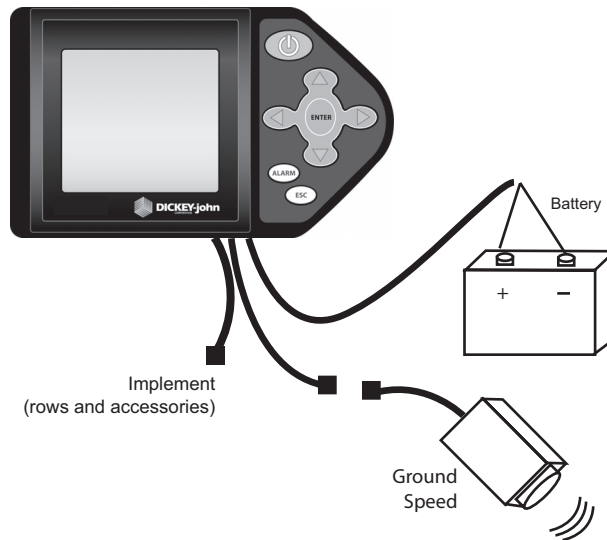


INSTALLING CONSOLE HARNESSSES

Several harnesses are located at the bottom of the monitor. These include power, ground speed sensor, and sensor inputs (rows, lift switch, two hopper levels, and one frequency function [shaft]).

Figure 6

Console Harnesses



1. Route the power harness to a +12 V source near the battery if possible.
2. Route the ground speed sensor harness connection to the radar, Hall Effect, or GPS ground speed sensor.
3. Route the implement harness to the location of choice, typically near the drawbar.

⚠ WARNING

The harnesses must not obstruct movement of the operator or of the moving parts of the tractor or implement. Take care when routing harnesses to secure them at proper locations; provide slack as needed to allow for movement.

CAUTION

Poor +12 V connections may cause intermittent console operation. Be sure to connect the power harness to a clean, well-conditioned source (direct battery connection is preferred).

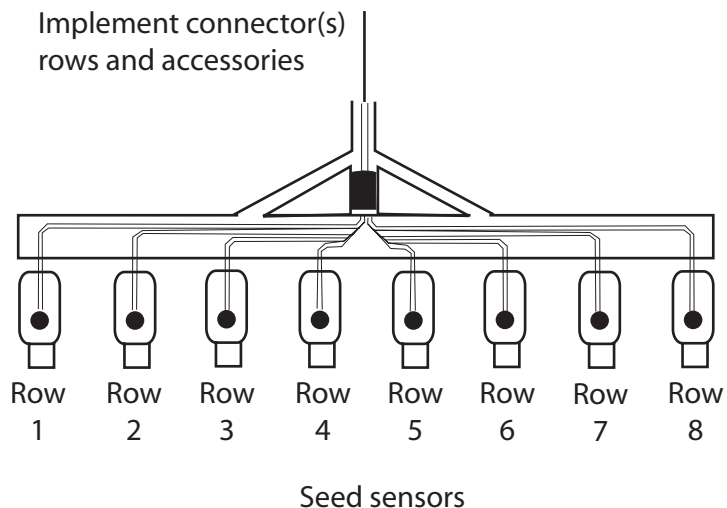


INSTALLING IMPLEMENT HARNESS AND SENSORS

The implement harness provides custom fit and functions required by the implement. Each harness branch is labeled for location (row 1, row 2, etc.) or sensor (lift switch) for routed connection. Some sensors may require special adapters for connection.

Figure 7

Implement Harness/Sensors



1. Install sensors onto seed tubes using tie-wraps.
2. Route implement harness to the appropriate locations; provide slack near moving parts to allow for movement. Attach harness to the implement using tie-wraps.
3. Make sure the hitch connections will connect to the tractor connections with the proper amount of slack for implement movement.

CAUTION

The harnesses must not obstruct moving parts of the tractor or implement. Take care when routing harnesses to retain them at proper locations with adequate slack for movement.



MENU SCREEN

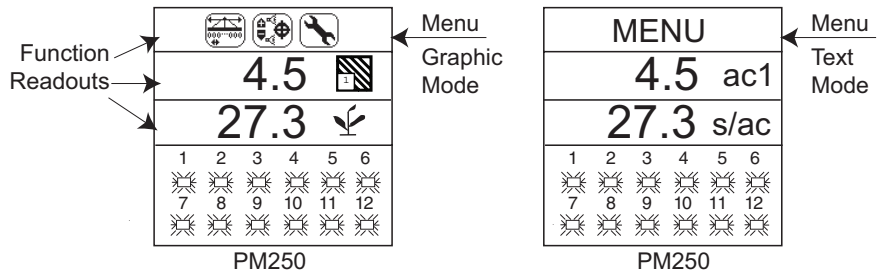
The Menu screen is the main access screen to modify planting and console settings. The Menu screen can be accessed from the Operate screen and will display on a function line as graphics or text.

To access the Menu screen:

1. At the Operate screen, press the **Up or Down Arrow** key to navigate through the function readouts until the Menu line is highlighted.

Figure 8

Menu Function Line (Graphic and Text Mode)

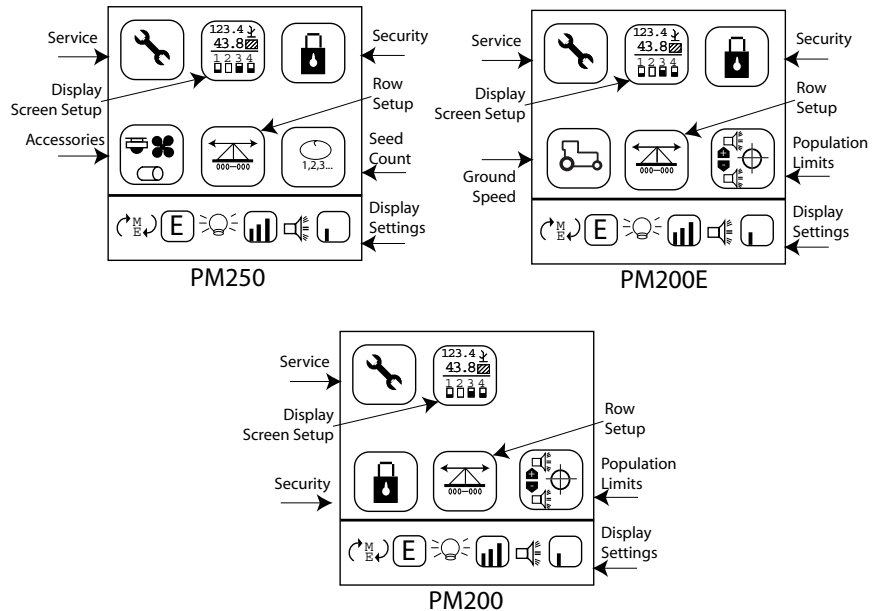


(PM200 and 200E models display 2 lines of function readouts)

2. Press **Enter** to access the Menu Setup screen.

Figure 9

Menu Screen







SECURITY

Security features allow password protection that prevents unauthorized personnel from modifying key parameters in the field.

IMPORTANT: The monitor is locked at the factory. Prior to using the monitor, the system **MUST be unlocked via the Password screen before all other screens can be accessed.**

UNLOCK THE PASSWORD SCREEN

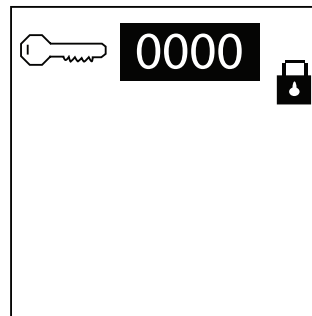
1. At the Menu screen, press the **Arrow** keys to highlight the **Security** icon.
2. Press **Enter** to display the Current Password screen.



Security icon

Figure 10

Current Password Screen



3. Press **Enter** again to enter the default password.
 - PM200 default password is 5498
 - PM200E default password is 9270
 - PM250 default password is 1735Use the **Up and Down Arrow** keys to edit the selected digit. The Up Arrow key increases the value; the Down Arrow key decreases the value. Use the Left and Right Arrows to move to the next digit field.
4. Press **Enter** to display the Change Password screen.

UNLOCK ALL SCREENS

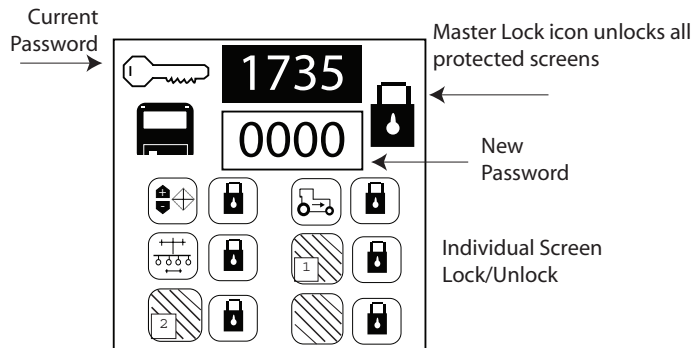
If no screens require password protection:

1. Use the **Arrow** keys to highlight the Master Lock icon and press **Enter**, refer to (Figure 11). Pressing and toggling the **Enter** key will lock and unlock the screens.
2. Press **ESC** to return to the Menu screen. The Master Lock icon will appear on the Menu screen display unlocked and no password entry will be required to use the monitor.



Figure 11

Change Password Screen



LOCK/UNLOCK INDIVIDUAL SCREENS

Individual screens can be locked or unlocked from the Change Password screen:

- Row Setup
- Population Limits
- Ground Speed
- Field Area 1
- Field Area 2
- Total Area

To Lock or Unlock an Individual Screen:

1. Use the **Arrow** keys to highlight the individual screen icon to lock or unlock.
2. Press **Enter** to select and the **Up or Down Arrow** keys to toggle between the lock and unlock state.
3. Press **Enter** or **ESC** to confirm the selection.
4. Continue pressing **ESC** to return to the Operate screen.

TO CREATE A NEW PASSWORD

1. Press **Enter** at the New Password field to edit. Use the Right and Left Arrow keys to select the digit to change. Use the Up and Down Arrow keys to edit the selected digit. The Up Arrow key increases the value; the Down Arrow key decreases the value.
2. To save the new password, press **Enter** and then scroll to the Save icon and press **Enter** again. The new password will display in the current password field as confirmation.
3. Continue pressing **ESC** to return to the Operate screen.



QUICK START GUIDE

IMPORTANT: The monitor is locked at the factory. Prior to using the monitor, the system **MUST** be unlocked via the Password screen before all other screens can be accessed.

Three inputs are required for monitor operation.

- Number of rows
- Row spacing
- Ground speed constant

Refer to the Menu Screen section for identifying Operate screen functions.

PLANTER CONFIGURATION

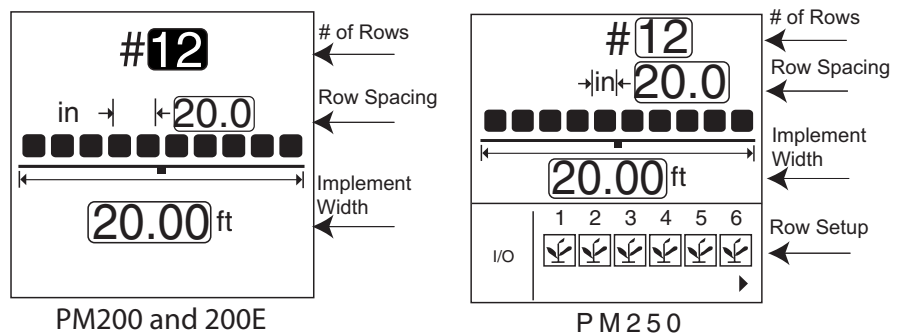
NOTE: The *Planter Configuration* screen must include the number of rows and the row spacing or implement width for the console to properly display population.

NUMBER OF ROWS

1. At the Operate screen, use the **Arrow** keys to highlight the Menu function line and press **Enter**.
2. At the Menu Setup screen, highlight the Row Setup icon and press **Enter**.
3. At the Number of Rows field, press **Enter**. The Up Arrow key increases the value; the Down Arrow key decreases the value. **NOTE:** The maximum number of rows that can be selected are 12.
4. Press the **Enter** key to accept the selection.
5. Continue pressing the **ESC** key to return to the Operate screen or proceed to Row Spacing setup.

Figure 12

Planter Configuration Screen



ROW SPACING

1. Use the **Down** Arrow key to highlight the Row Spacing field.
2. Press **Enter** to modify the field. The Up Arrow key increases the value; the **Down** Arrow key decreases the value.
3. Press **Enter** to confirm the selection. An implement width value will automatically calculate, but can also be changed manually.









Row Setup (PM250):

Row setup defaults to ALL rows population. Rows can be configured to ON (population), OFF (split row), FLOW (blockage), or DISABLED.

To Change Row Setup:

1. Use the **Arrow** keys to highlight the Row Setup (I/O) icon.
2. Press **Enter** and use the **Right or Left Arrow** keys to select the row to change. Rows 1-6 will display on the screen. Use the **Right and Left Arrow** keys to scroll to rows 7-12.
3. Press the **Up or Down Arrow** keys to scroll through the row options.
4. Press **Right or Left Arrow** keys to select another row.
5. Press **Enter** to acknowledge row setup.
6. Continue pressing the **ESC** key to return to the Operate screen.

Row Configuration Definitions:

- When ON  is selected (plant), the row is active and the console will detect sensors and seed flow.
- When OFF  is selected (blank), the row is removed and remaining rows are re-numbered. This is used for split row systems where every other row or sets of internal rows are not planting. Their corresponding row number is ignored, allowing for true planting operations to be displayed on the monitor.
- When DISABLED  is selected (circle with slash), the row input is ignored. The row number will be displayed. This is used when a row or sensor is malfunctioning and the operator wants to disable monitoring on that row.
- When FLOW  is selected (funnel), the row will not be included for population calculations but will be monitored for flow. The flow rows will be used to detect flow (fertilizer or seeds) and alarm if the flow falls below two pulses per second.



Ground Speed icon

GROUND SPEED CONFIGURATION

PM200 AND 250

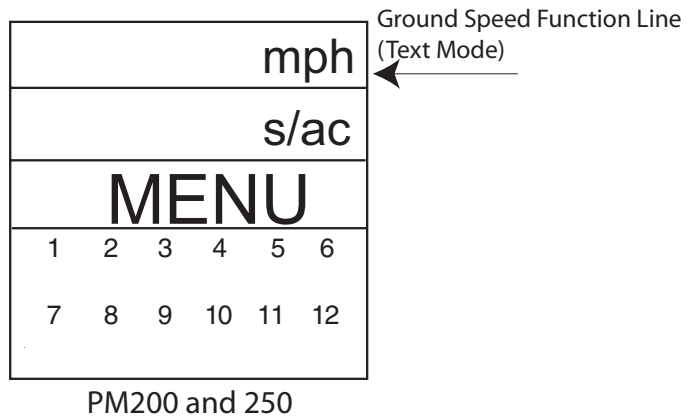
PM200 and 250 accesses Ground Speed Configuration from the Main Operate screen only as shown in (Figure 13).

To access the Ground Speed Configuration screen from the Main Operate screen:

1. Scroll to the mph function line.

Figure 13

Ground Speed Function Line (Operate Screen)

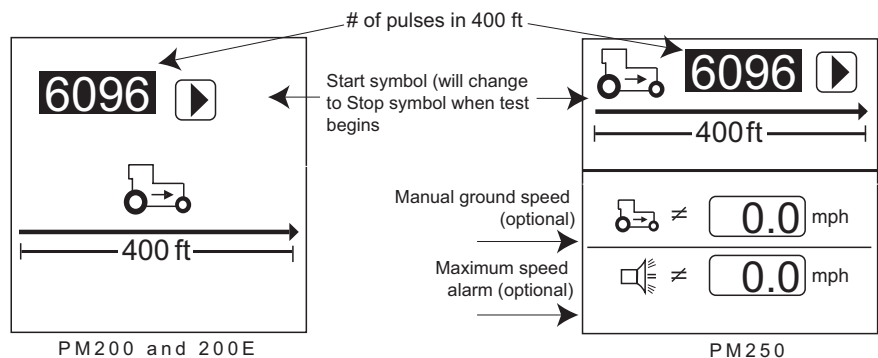


2. With the mph function line highlighted, press **Enter** to display the Ground Speed Configuration screen.

NOTE: Manual ground speed and maximum speed alarm options are available on the PM250 and can be used when a ground speed sensor or tractor radar has failed in the field and no ground speed input is available. Refer to the Additional Setup Features section for information.

Figure 14

Ground Speed Configuration Screen



PM200E

PM200E accesses Ground Speed Configuration from the Menu screen only.



IMPORTANT: PM200 and PM200E models assume a manual ground speed and cannot be set, refer to (Figure 14).

- PM200 manual ground speed is set at 5 mph
- PM200E manual ground speed is set at 6 km/h

TO PERFORM A NEW CALIBRATION:

1. Measure a 400 foot (122 meter) course, clearly marking the start and finish points.
2. Begin moving the tractor at a speed between 2 and 5 mph (2.3 and 8 Km/h). Allow enough distance before reaching the first marker to ensure ground speed is at desired speed. Press the **Start** (▶) softkey when the tractor is even with the designated start point.
3. Without slowing down and the tractor even with the designated finish point, press the **Stop** (■) softkey. The new calibration factor will display. The value will be saved upon screen exit.

IMPORTANT: Pressing the ESC key while the calibration is running will not save the value.

4. To ensure accuracy, record the number and repeat this process two additional times. Average the three numbers recorded and manually enter the new number.
5. Continue pressing the **ESC** key to return to the main operate screen.

HELP CARD

The Help Card (Figure 15) provides a compact, quick reference for set-up screens and general operating information.

OPERATOR'S MANUAL



Figure 15
Help Card

Operate Screen Functions

Menu Setup Screens

NOTE: PM200 and PM250 models can access Population Limits, Ground Speed, and Area Accumulator screens directly from the Main Operate screen.

Start	Stop	Reset	Security	Password
Save Password	Alarm	English/Metric	Back light	Graphic/Text Label
Population Adjust	Response Rate	Symbols		

Keypad Functions

- Use ▲▲▼▼ (arrow keys) to highlight and select item
- Use ENTER to modify highlighted item
- Use ▲▲▼▼ (arrow keys) to change items/digits or to select digits
- Use ENTER to accept data
- Alarm key acknowledges and silences alarm
- ESC/Reset returns to the previous screen

Alarms

Warning	Hi/Lo	Hopper
All Rows Failed	Planter Lifted	No Speed Input
Model Data Absent	Model Data Conflict	



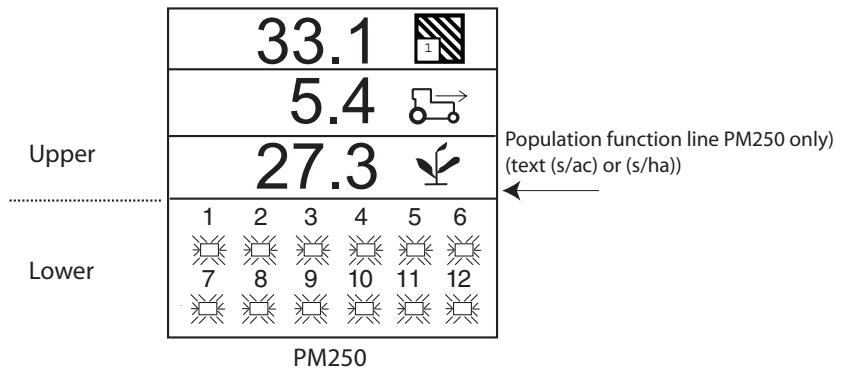
MAIN OPERATE SCREEN

The Main Operate screen is the primary screen that displays while planting and is divided into two categories:

- Upper
- Lower

Figure 16

Operate Screen



UPPER DISPLAY

The Upper display indicates 2 planting readouts (PM200 and PM200E) or three planting readouts (PM250) at a time. The screen will always default to ground speed (mph or Km/h), field 1 area accumulator (ac1/ha1) and population (PM250 only) (s/ac or s/ha) when turned on.

Using the **Up and Down Arrow** keys will cycle through to other available screens:

- Menu
- Total Area (ac3/ha3)
- Field Area 2 (ac2/ha2)

The display can be customized to select units of measurement, backlighting, alarm volume, and graphic or text icons. Refer to the Menu Setup (Optional) section for instructions.

AVAILABLE PLANTING READOUTS

AVERAGE POPULATION



Average Population displays the average of the planter's rows that are configured for population in thousands of seeds per acre (s/ac) or thousands of seeds per hectare (s/ha). The population response rate and population adjustment can be modified on the Population Setup screen (PM250). This function can be with a symbol or text depending on the text/graphic setting.



FIELD AREA 1

Field Area 1 (ac1/ha1) displays the area of Field 1 in acres (ac) or hectares (ha) depending on the English/Metric setting. This function can be labeled with a symbol or text depending on the text/graphic setting.



FIELD AREA 2

Field Area 2 (ac2/ha2) displays the area of Field 2 in acres (ac) or hectares (ha) depending on the English/Metric setting. This function can be labeled with a symbol or text depending on the text/graphic setting.



TOTAL AREA

Total Area (ac3/ha3) displays the total field area in acres (ac) or hectares (ha) depending on the English/Metric setting. This function can be labeled with a symbol or text depending on the text/graphic setting.



SPEED

Speed displays vehicle speed in miles per hour (mph) or kilometers per hour (km/h) depending on the English/Metric setting. This function can be labeled with a symbol or text, depending on the text/graphic setting.

LOWER DISPLAY

The lower parameter display provides a visual planting status for each row. Refer to the Menu Setup (Optional) section for selecting symbols or bar graph indicators.



ADDITIONAL MONITOR FEATURES

Additional monitor features enhance planting operation that include:

- Population Limits (Hi and Low)
- Manual Ground Speed
- Field Area 1 Accumulation
- Field Area 2 Accumulation
- Field Area 3 Total Area Accumulation

POPULATION LIMITS

Inputs available to monitor population during planting:

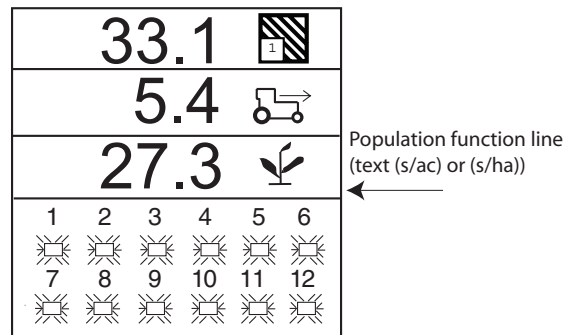
- Hi and low population limits (PM200, PM200E, PM250)
- Target population (PM250)
- Population adjustment (PM250)
- Population filter (PM250)

To Enter Population Constants:

1. From the Operate screen, scroll to the Population function line (s/ac or s/ha) and press **Enter** to access the Population screen.

Figure 17

Population Function Line



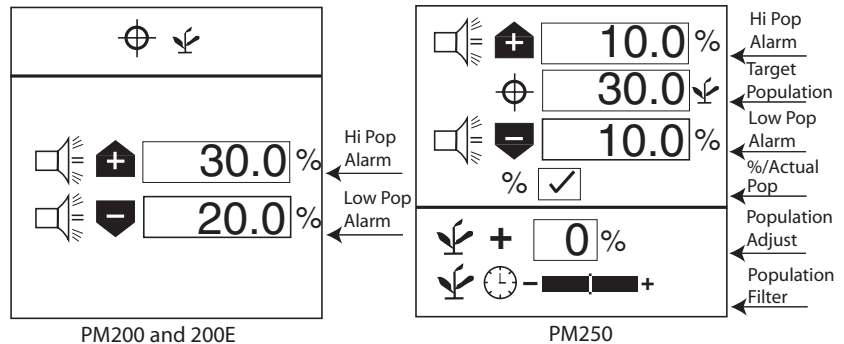
PM250

2. At the population screen, refer to (Figure 18), press the **Enter** key at the input box to select a value to change. The Up Arrow key increases the value; the Down Arrow key decreases the value.
3. Press **Enter** to accept the selection.



Figure 18

Population Screen



HI POPULATION/LOW POPULATION

Hi and Low population values determine when an alarm or row indicator displays to warn of a population problem. Over population and under population values are independent of each other and do not have to be the same percentage value.

On the PM200 and 200E, the values are specified as percentages that are over or under the planter average seed rate. The values can be adjusted in increments of 10% between the maximum and minimum values. A value of 0 disables the alarms.

The PM250 offers additional features to choose high and low limit alarms specified in terms of actual seeds or as percentages. A population adjustment and filter value are also available. **A value of 0 disables the alarms.**

Example:

- 10% of 30,000 seeds/acre
- over-population setting (33,000 seeds/acre)
- under-population setting (27,000 seeds/acre).

If the percentage (%) box is not checked, the values are population based and expressed in 1000s of seeds per acre or hectare.

To Change the Actual Population % box (PM250):

1. Highlight the % input box and press **Enter**.
2. Press the **Enter** key to toggle the setting from checked to unchecked.

TARGET POPULATION (PM250)

Target population is defined in 1000s of seeds per acre or hectare. If no value is entered, the monitor uses average population to calculate alarms or row population indicators.

1. Highlight the Target Population input box and press **Enter**.
2. Use the **Left or Right Arrow** keys to highlight a digit to edit.



3. When a digit is highlighted, use the **Up or Down Arrow** keys to edit the selected digit. Up Arrow increases the digit; down arrow decreases the digit.
4. Press **Enter** to accept the desired entry.

POPULATION ADJUSTMENT (PM250)

A population adjustment provides a means to display populations nearer the actual versus the sensed seeding rates. This is useful when sensors do not detect doubles, triples, or when the sensed application rate does not match the actual application rate.

To Change the Population Adjustment:

1. Highlight the Population Adjust input box and press **Enter**.
2. Use the **Left or Right Arrow** key to select a digit for editing.
3. When a digit is highlighted, use the **Up or Down Arrow** keys to edit the value displayed.
4. Press **Enter** key to confirm the selection.

POPULATION FILTER (PM250)

Population filter provides population display stability for planters with fewer rows. Use the Population Filter to stabilize population and alarm reporting.

To Change the Population Filter Response Rate:

1. Highlight the Population Filter slide.
2. Move the slide to the right (+) when planting high seed rates and to the left (-) when planting low seed rates.
3. Press the **ESC** key to return to the Operate screen.

IMPORTANT: Responsiveness increases as the filter slide is moved to the right (+) while stability decreases. Stability will increase as the filter slide is moved to the left (-) while responsiveness decreases.



NOTE: To verify ground speed accuracy, check that the mph line on the Operate screen matches the tractor speedometer.

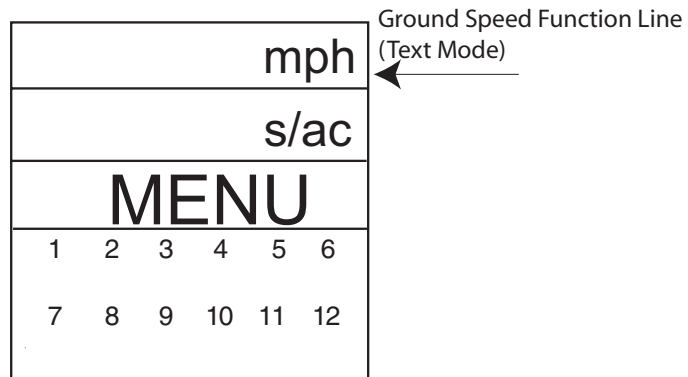
MANUAL GROUND SPEED SETUP

A manual ground speed value (PM250 models) should only be entered when the ground speed sensor or tractor radar has failed and no ground speed input is available. This allows for a "limp home" mode to continue calculating population.

1. From the Operate screen, scroll to the ground speed function line.

Figure 19

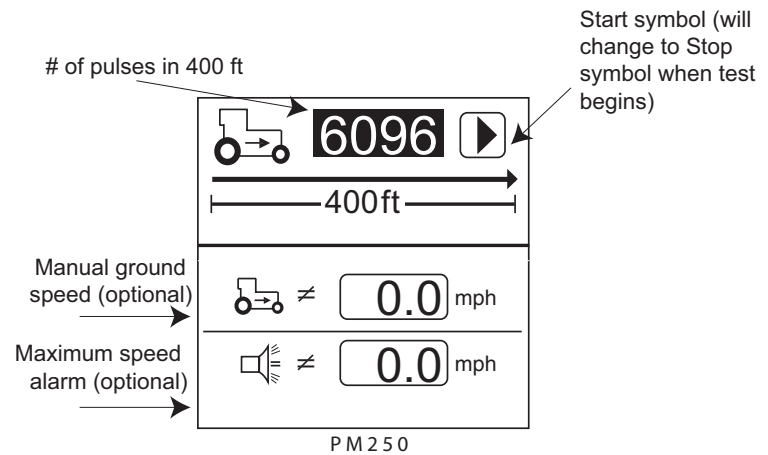
Speed Function Line (Operate Screen)



2. Press **Enter** to display the Ground Speed Configuration screen.

Figure 20

Ground Speed Configuration Screen



3. Highlight the manual ground speed value and press **Enter**.
4. Use the **Left and Right Arrow** keys to select a digit to change. Use the **Up and Down Arrow** keys to enter a value.
5. Press the **Enter** key to accept the new number.

Any non-zero value will activate manual ground speed. Set manual ground speed to zero to disable.



MAXIMUM GROUND SPEED ALARM (PM250)

Allows entry of an optional maximum ground speed alarm to activate when tractor speed has reached the set maximum speed.

1. Highlight the maximum ground speed alarm value and press **Enter**.
2. Use the **Left and Right Arrow** keys to select a digit to change. Use the **Up and Down Arrow** keys to enter a value.
3. Press the **Enter** key to accept the new number.



NOTE: Alarms are disabled in these modes.

AREA ACCUMULATORS

Area Accumulators can be used for planting and non-planting operations to start, stop, or clear accumulations for three independent areas (Field Area 1, Field Area 2, and Total Area).

PLANTING

To accumulate area in a planting mode, the following conditions must occur:

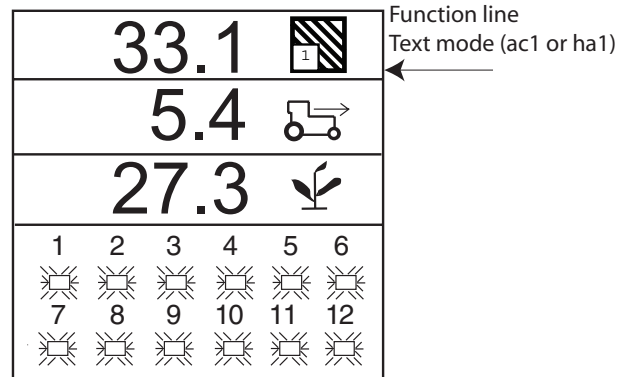
1. Ground speed is greater than zero (0);
2. Seed flow is present;
3. Lift switch, if used, is in down position (implement lowered);
4. Implement width is greater than zero (0) at the Planter Configuration screen.

If any of the above conditions are not true, accumulators will stop.

IMPORTANT: Accumulators can be cleared by highlighting an Area Counter on the Main Operate screen and pressing the ESC key for 3 seconds.

Figure 21

Area Accumulator Function Line



PM250

NON-PLANTING

To accumulate area in a non-planting mode, seed sensor harnessing must be disconnected and the following conditions occur:

1. When the Lift Switch is in the down position (implement lowered) and;
2. Ground speed is greater than zero (0).

If any of the above conditions are not true, accumulators will stop.

IMPORTANT: There will be no ground speed failure alarms when accumulating area in a non-planting condition.

NOTE: PM200E model requires a lift switch in non-planting operations to accurately monitor acre accumulators for acreage monitoring. PM200 and 250 models do not require a lift switch as the start and stop functions can be performed on the Area Accumulator screen.



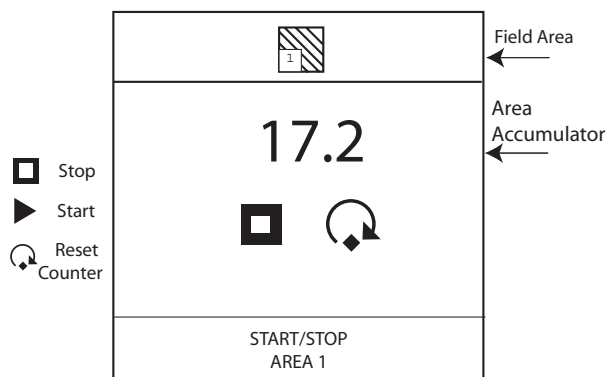
AREA ACCUMULATOR SCREEN (PM200 AND 250)

The PM200 and 250 have an Area Accumulator screen that allows manual start and stop of accumulation and can be used when a Lift Switch is not installed.

1. From the Main Operate screen, highlight the Area Accumulator function line (ac1, ac2, ac3) and press **Enter**.
2. To clear an accumulation, highlight the reset counter icon and press **Enter**. To start an accumulation, highlight the Start/Stop icon and press **Enter**. When the accumulator is running, the Start icon will change to a Stop icon.
3. To stop an accumulation, press **Enter**. The Stop icon will change to a Start icon.

Figure 22

Area Accumulator Screen







MENU SETUP SCREEN (OPTIONAL)

Optional settings are available on the Menu Setup screen that include:

- Units, backlight, and alarm volume
- Display screen setup
- Accessory setup
- Seed count
- Service

UNITS, BACKLIGHT, AND ALARM VOLUME

The monitor's display can be customized to:

- Change the units of measurement to English or Metric
- Adjust backlight intensity
- Increase or decrease alarm volume

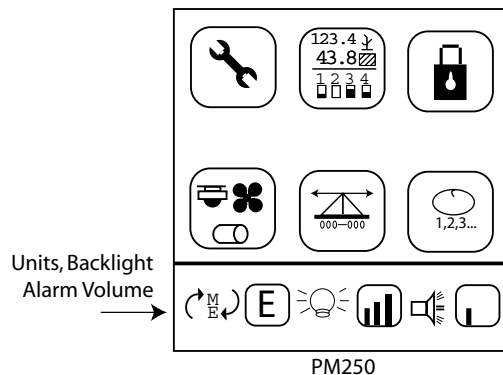
To Change Units, Adjust Backlight, and Alarm Volume:

1. From the Menu screen, press the **Down Arrow** key to highlight either the **Units, Backlight, or Alarm Volume** icon.
2. Press **Enter** to highlight the setting to change and press the **Up and Down Arrow** key to cycle through each selection.
3. Press **Enter** to accept the desired selection.

NOTE: Alarm volume can also be adjusted from the Operate screen by pressing and holding the Alarm key on the keypad.

Figure 23

Menu Screen



Display Setup icon

DISPLAY SETUP SCREEN

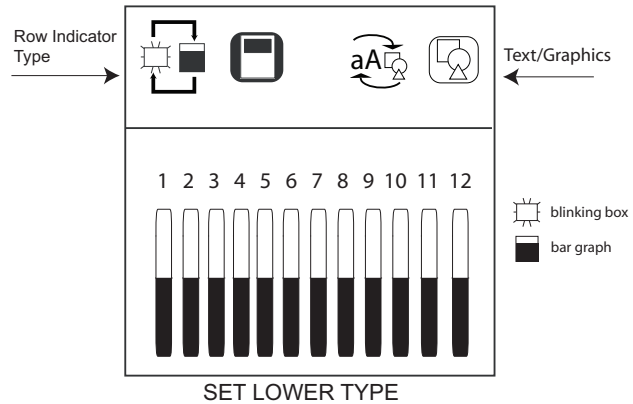
The Display Setup screen allows customization of the Operate screen by:

- Selecting text or graphic symbols to identify planting parameters in the upper display
- Selecting the row indicator status as either bar graphs or blinking box symbols in the lower display



Figure 24

Display Setup Screen



To Change the Row Indicator Type:

1. From the Menu screen, select the Display Screen Setup icon and press **Enter** to display the screen.
2. At the Row Indicator Status icon, press **Enter**.
3. Use the **Arrow** keys to toggle between the bar graph or or blinking box symbol.
4. Press **Enter** to accept.

To Change the Graphic/Text Settings:

1. From the Menu screen, select the Display Screen Setup icon and press **Enter** to display the screen.
2. Use the **Right Arrow** key to highlight the Graphic/Text icon and press **Enter**.
3. Use the **Arrow** keys to toggle between the graphic and text selection.
4. Press **Enter** to accept.

ACCESSORY SETUP (SHAFT SENSOR) (PM250)

To add a shaft sensor and its performance characteristics (calibration values, limits, etc.) to the monitoring inputs, it must be activated by entering a calibration constant. If minimum or maximum alarms are desired, the limits can be added to the calibrated sensors.

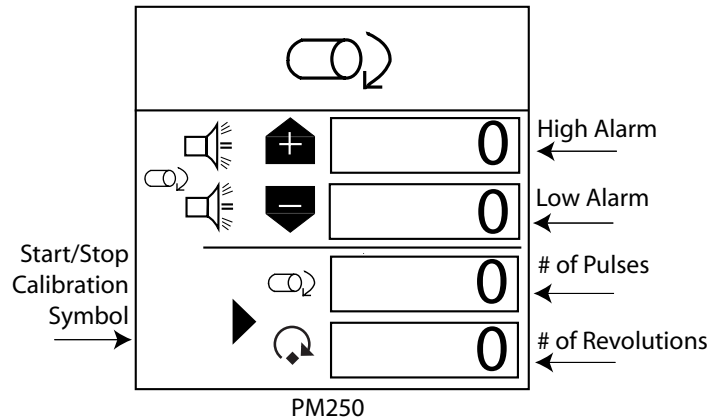


Accessory icon



Figure 25

Accessory Screen (Shaft)



To Enter a Calibration Constant:

1. From the Menu screen, scroll to highlight the Accessory Setup icon and press **Enter** to display the Accessory screen.
2. Use the **Arrow** keys to highlight the entry to change. Press **Enter** again and use the **Arrow** keys to add the desired value in the input box.
3. Press **Enter** to accept the entry.

WARNING

Ensure equipment is configured to operate safely. Shaft calibration requires movement in associated equipment and revolution counting.

To Perform a Sensor Calibration:

1. Scroll to highlight the **Start** symbol. Ensure the system is in a safe state.
2. Start the monitor calibration by pressing the **Enter** key. The **Start** symbol (triangle) will change to a **Stop** symbol (square).
3. Activate the shaft.
4. Count the revolutions while the monitor measures pulses.
5. Deactivate the shaft.
6. Stop the monitor calibration by pressing the **Enter** key again.
7. Use the **Arrow** key to highlight the revolutions input box.
8. Press the **Enter** key and enter the number of revolutions.
9. Press **ESC** to return to the Menu screen.



Seed Count icon

SEED COUNT MODE (PM250)

SEED COUNT mode determines row unit performance when operating in a stationary manner.



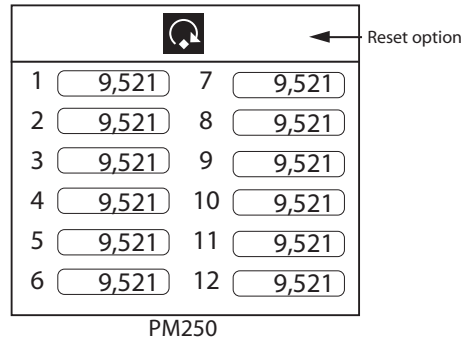
To Reset All Rows:

1. From the Menu screen, scroll to highlight the Seed Count icon and press **Enter** to display the Seed Count screen.
2. Press the **Enter** key at the Reset icon to reset to zero and start seed count.
3. Press **ESC** to return to the Menu screen.

NOTE: Alarms are disabled in Seed Count mode.

Figure 26

Seed Count Reset



SERVICE SCREEN



Service icon

The Service screen is typically used for troubleshooting purposes and includes information regarding:

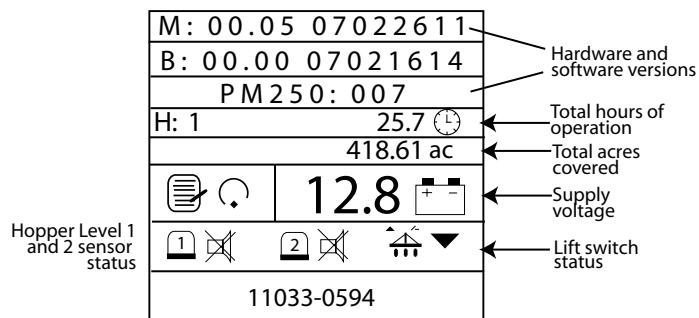
- Monitors software, hardware and model versions
- Total hours of operation
- Total acres covered
- Supply voltage to the console
- Hopper and lift switch status

To Display the Service Screen:

1. From the Menu screen, scroll to highlight the Service icon and press **Enter** to display the Service screen.

Figure 27

Service Screen





ALARMS

NOTE: An audible 2-chirp alarm is also output during navigation or data entry to indicate an illegal or nonfunctional key selection.

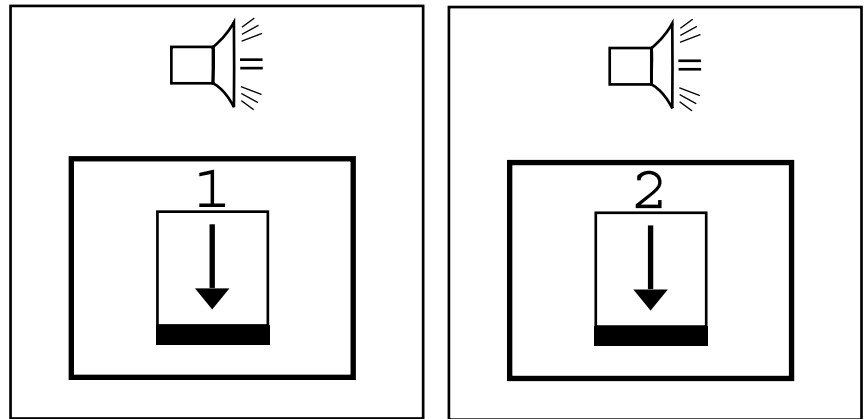
Primary operating alarms are displayed on the entire screen and are accompanied by an audible alarm.

HOPPER LEVEL

Hopper level alarms activate when the seed level drops below the sensor mounting level (Figure 28). Alarm can be silenced by pressing the **Alarm Cancel** key.

Figure 28

Hopper 1 And 2 Alarms



ROW FAILURE

A row failure alarm occurs when the console detects less than 2 seeds per second through the seed tube. This may also result from a poor or faulty connection to the seed sensor harness. This is a solid-on alarm, as shown in (Figure 29), indicating a problem has been detected and is silenced by pressing the **Alarm Cancel** key.

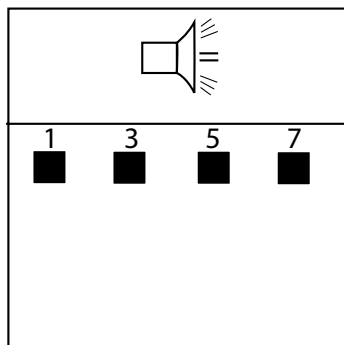
Once the **Alarm Cancel** key is pressed, the alarm will not sound again unless:

1. Planting condition returns to a normal state and falls again below 2 seeds per second.
2. Power on/off sequence occurs before problem is corrected.
3. An All Rows Failure alarm occurs and then the console again detects less than 2 seeds per second through the seed tube.



Figure 29

Row Failure Display



ALL ROWS FAILURE

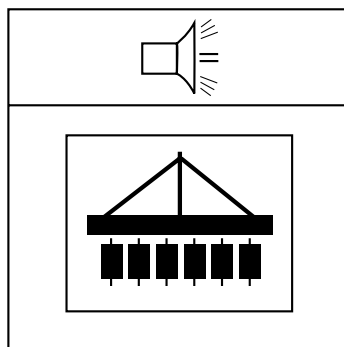
An All Row Failure alarm is a unique alarm identifier (8 chirps) that differentiates from all other alarms and triggers when no seed flow is detected from any row unit when ground speed is detected ([Figure 30](#)).

Typical scenarios to activate an All Row Failure alarm:

1. Tractor is stopped while planter is in the ground.
2. Tractor is operating with planter lifted.
3. Normal "end of run" turn around.

Figure 30

All Rows Failure Display



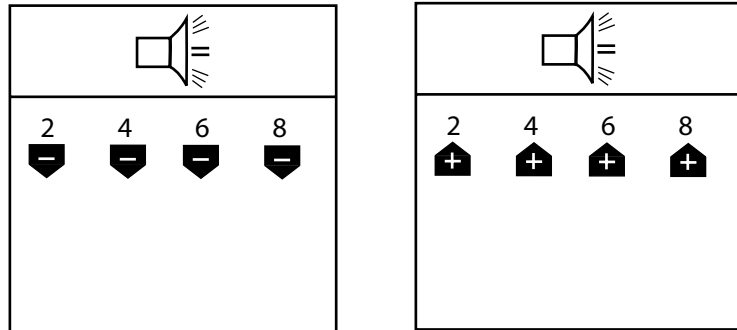


HI/LOW POPULATION WARNING

The Hi and Low population alarms trigger when seed flow drops below the population alarm limit set on the Limits Setup screen. The alarm display will beep and flash on the screen briefly indicating row units are over or under the desired population (Figure 31). The Operate (Main) screen will display the row unit over or under population symbol until corrected, an All Rows Failure occurs, or sensor mechanical problems are fixed.

Figure 31

Population Limit Warning Display

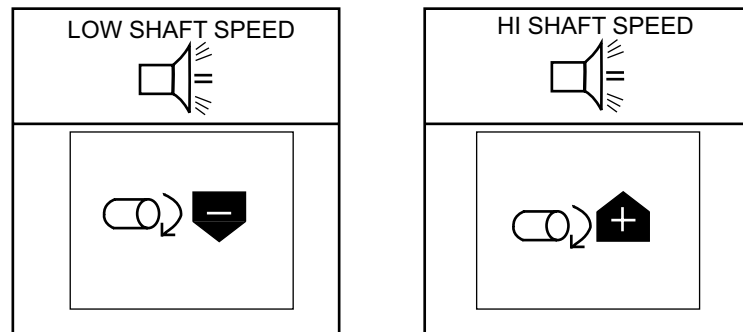


SHAFT SPEED LOW/HI LIMIT WARNING

Alarm sounds when any shaft speed exceeds or falls below the value entered for Shaft Speed Lo or Hi Limits in the Setup mode. Alarm can be silenced by pressing **Alarm** key, but will re-activate if problem is not resolved.

Figure 32

Shaft Speed Limit Warning Display



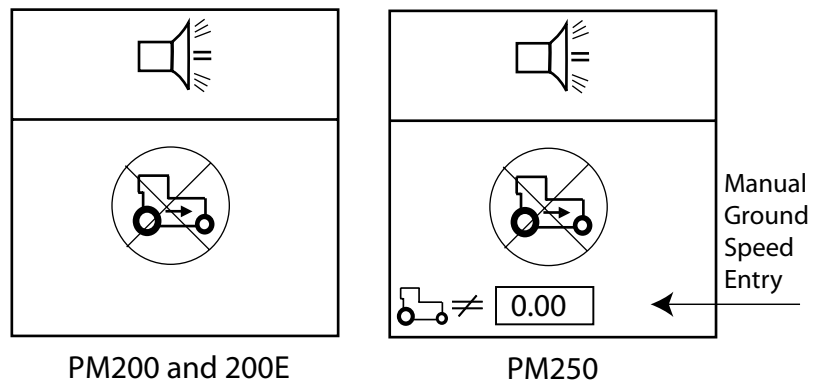


FAILED GROUND SPEED SENSOR (PLANTING DETECTED WITHOUT GROUND SPEED)

The Failed Ground Speed Sensor alarm triggers when planting is detected with no ground speed being reported. This may also result from a poor or faulty connection to the speed sensor or from a defective sensor. This is a 4-chirp alarm which is acknowledged by pressing the **Alarm Cancel** key, but will re-activate until the problem is corrected, refer to (Figure 33). PM250 allows entry of a manual ground speed at the Alarm screen.

Figure 33

Ground Speed Sensor Failure Alarm

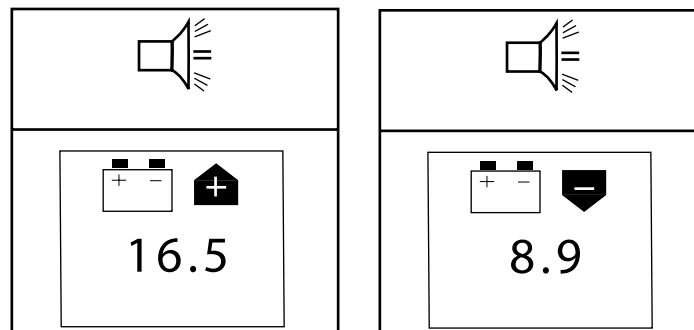


SUPPLY HI/LOW

The Supply Hi/Low alarm triggers when supply voltage is out of range - over voltage or under voltage. The correct power operating range is 10-16 VDC. Alarm indicates an electrical problem exists that must be corrected, refer to (Figure 34).

Figure 34

Supply Voltage Alarm



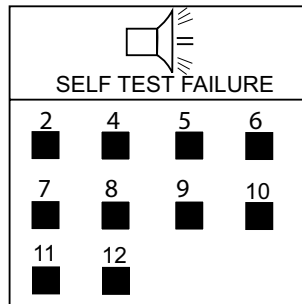


SENSOR SELF-TEST

The Sensor Self Test activates at every power cycle comparing configured number of rows to number of rows detected. Any sensor not found during self-test or inaccurate configuration will sound the self-test failure alarm. The alarm can be acknowledged by pressing the **Alarm Cancel** key, but will re-activate at each powerup until the problem is resolved.

Figure 35

Self Test Failure Display

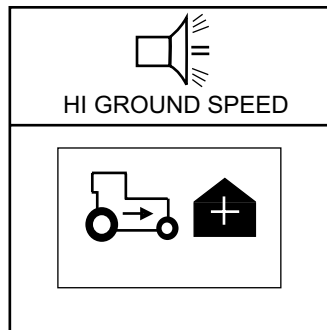


HI GROUND SPEED EXCEEDED (PM250)

The Hi Ground Speed Exceeded alarm is triggered anytime the speed has exceeded the speed entered in the Ground Speed Setup screen. Alarm can be silenced by pressing the **Alarm Cancel** key.

Figure 36

Maximum Speed Exceeded Warning Display



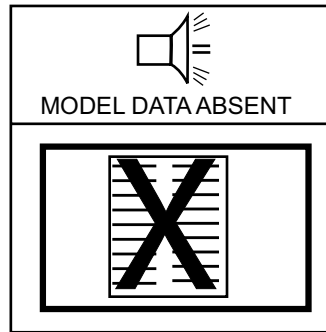


MODEL DATA ABSENT

If the Model Data Absent alarm appears, the unit is not operational. Contact a dealer or DICKEY-john Technical support for assistance.

Figure 37

Model Data Absent

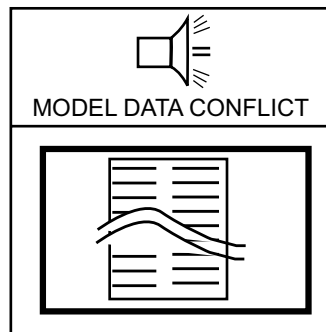


MODEL DATA CONFLICT

If the Model Data Conflict alarm appears, the unit is not operational. Contact a dealer or DICKEY-john Technical support for assistance.

Figure 38

Model Data Conflict





TROUBLESHOOTING

Issue	Probable Cause	Corrective Action
Monitor will not power on.	<ol style="list-style-type: none"> 1. Blown console fuse 2. Poor battery connection 3. Low battery voltage 4. Defective console 	<ol style="list-style-type: none"> 1. Check fuse (located near battery connection). If needed, replace with 5.0 A fuse maximum. If fuse blows again, check all harnesses for pinches or breaks that may cause power short to ground. 2. Ensure connections are clean and tight. Inspect harness for damage. 3. Console voltage must be at least 10 V. If low, recharge or replace battery. 4. Contact your dealer, DICKEY-john USA (1-800-637-3302), or DICKEY-john Europe (011-33-141-192189).
Row failure or hi/low alarm activates when row is planting properly.	<ol style="list-style-type: none"> 1. Seed sensor coated with dirt 2. Faulty sensor or harness 3. Defective console. 	<ol style="list-style-type: none"> 1. Clean sensor using a dry bottle brush. 2. Drop seed down the seed tube or place a dry bottle brush down the seed tube to trigger sensor. Observe if troubleshooting sensor LED mounted to the tube blinks. If sensor does not blink, replace the sensor. If the sensor LED blinks, check harness for damage or pinched wires. If the sensor does not have an LED, swap harness connection with adjacent sensor to determine if sensor is damaged. 3. Contact your dealer, DICKEY-john USA (1-800-637-3302), or DICKEY-john Europe (011-33-141-192189).
Hopper alarm does not sound when the hopper is empty.	<ol style="list-style-type: none"> 1. Hopper sensor coated with dirt 2. Faulty sensor or harness shorted to ground 3. Defective console 	<ol style="list-style-type: none"> 1. Clean sensor using a dry bottle brush. 2. Swap harness connection with another sensor to determine if sensor or harness is damaged. Use service screen if another sensor is not available. Replace sensor or repair harness. 3. Contact your dealer, DICKEY-john USA (1-800-637-3302), or DICKEY-john Europe (011-33-141-192189).
Hopper alarm sounds when hopper is full.	<ol style="list-style-type: none"> 1. Faulty sensor or harness open 2. Defective console 	<ol style="list-style-type: none"> 1. Swap harness connection with another sensor to determine if sensor or harness is damaged. Replace sensor or repair harness. 3. Contact your dealer, DICKEY-john USA (1-800-637-3302), or DICKEY-john Europe (011-33-141-192189).
Ground speed alarm sounds with forward movement.	<ol style="list-style-type: none"> 1. Ground speed sensor failure 2. Console failure 3. Ground Speed constant is set to 0. 	<ol style="list-style-type: none"> 1. No ground speed sensor is detected, or planting is detected on atleast one row with no ground speed. Replace faulty ground speed sensor. 2. Contact your dealer, DICKEY-john USA (1-800-637-3302), or DICKEY-john Europe (011-33-141-192189). 3. Run a ground speed calibration and enter a constant at the Ground Speed Configuration screen.
Ground speed high alarm sounds.	<ol style="list-style-type: none"> 1. Ground speed alarm set too low. 2. Incorrect ground speed constant. 	<ol style="list-style-type: none"> 1. Set ground speed alarm limit higher or to zero to disable. 2. Ground speed sensor has not been calibrated, radar sensor angle has changed, or incorrect sensor constant is entered.
Self test alarm	<ol style="list-style-type: none"> 1. Faulty sensor or harness. 2. Console failure 	<ol style="list-style-type: none"> 1. Trigger sensor and observe troubleshooting LED. If sensor does not have LED, swap harness connection with adjacent sensor to determine if sensor or harness id damaged. Replace sensor or harness. 3. Contact your dealer, DICKEY-john USA (1-800-637-3302), or DICKEY-john Europe (011-33-141-192189).



Dealers have the responsibility of calling to the attention of their customers the following warranty prior to acceptance of an order from their customer for any DICKEY-john product.

DICKEY-john® WARRANTY

DICKEY-john warrants to the original purchaser for use that, if any part of the product proves to be defective in material or workmanship within one year from date of original installation, and is returned to DICKEY-john within 30 days after such defect is discovered, DICKEY-john will (at our option) either replace or repair said part. This warranty does not apply to damage resulting from misuse, neglect, accident, or improper installation or maintenance. Said part will not be considered defective if it substantially fulfills the performance expectations. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE, AND OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. DICKEY-john neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part and will not be liable for consequential damages. Purchaser accepts these terms and warranty limitations unless the product is returned within fifteen days for full refund of purchase price.

**For DICKEY-john Service Department, call
1-800-637-3302 in either the U.S.A. or Canada**



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