

TM3



*Operator's
Manual*

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System Overview

The M3 Monitor System by Agri-Tronix is the product of many years of experience in manufacturing and servicing agricultural electronics. The M3 was designed from the ground up to be accurate, user friendly, dependable and affordable. Using an Intel® microprocessor the M3 monitors speed, area, population, hopper levels, limit switch status, seed spacing, and row failure to keep the operator informed of the current status of the planter or drill.

The M3 has two separate sets of setup parameters that may be entered and retained, eliminating the need to re-enter values when switching planters or drills. Every feature of the M3 has been designed to be as simple to operate as possible.

The M3 uses standard 3-wire, 8-volt seed sensors that have been used on many planter monitor systems for the last 30 years. No special seed sensors are required.

The M3 display module has large characters that are easy to read and a backlight that enables the display to be read at night.

The audible alarm is adjustable and can be silenced with a simple press of the data selector knob.

Electrical connectors on the rear of the M3 makes installing and removing the M3 simple and painless.

The exclusive data selector knob used to select and enter data is an industry first. Entering and selecting data is as easy as adjusting the volume on a radio.

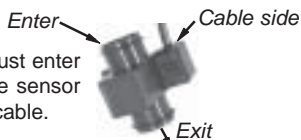
Population updates are performed every 100 feet . When driving at planting speeds the M3 will update row populations approximately every 10 seconds.

The M3 can be used as an acre/speed indicator while the planter or drill is disconnected.

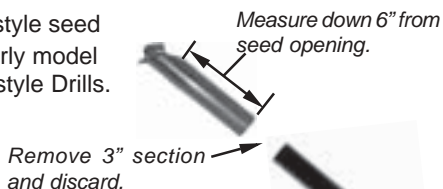
Drill Seed Sensor Installation

Tip: Locate the seed tubes that run out of grain first when the seed bins are low. On most drills this is the end rows or the rows one row in from the end.

The seeds must enter the end of the sensor that has the cable.



Style A Rigid style seed tubes typical of early model John Deere 750® style Drills.



Note: Do not overtighten clamps



Completed Installation

Style B Rigid style seed tubes under 1.5 inches in diameter.

It is important that the seed tube in the bottom coupling not extend up into the sensor. The path for the seed needs to be free flowing with as little obstruction as possible.

Insert tubes to this point



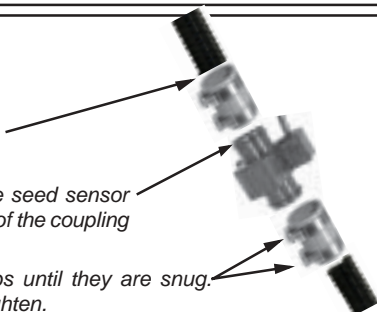
"Bell shape" coupling is acceptable. (Do not insert the tubes past the top edge of clamp.)

Style C Hard flex style seed tubes typical of the early model John Deere 750® style Drills.

1 Measure down 6 inches from seed cup and remove 2 inch section of seed tube.

2 Place the clamp over the end of the seed sensor and insert the seed tube into the end of the coupling until it touches the seed sensor.

3 Tighten clamps until they are snug. Do not overtighten.

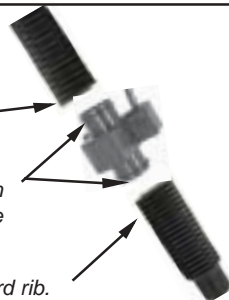


Style D Soft Flexible style seed tubes typically found on Great Plains®, Sunflower® and other popular drills.

1 Measure down 6 inches when in planting position and cut flex hose.

2 Place tubes over ribs on seed sensor and secure with ty-raps.

3 Place ty-rap in third rib.



Distance Sensor Installation

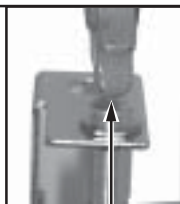
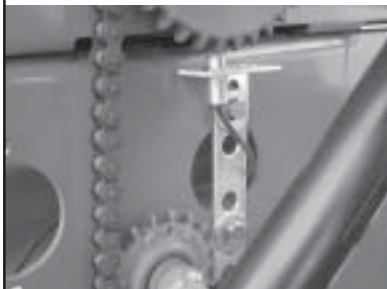
For radar installations see the installation manual supplied with radar.

The optional distance sensor for the M3 system is an electronic device that can detect the teeth on a chain sprocket. This system can be installed on drills or planters. A bracket is supplied and the general installation instructions are presented below.

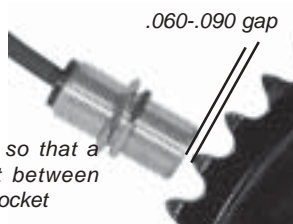
1. Locate a sprocket on the drill that is ground driven. The sprocket should be a sprocket that does not change speed if the transmission ratio is changed.
2. The speed sensor must sense the teeth on the sprocket that does not have a chain engaged.
3. Attach the bracket so that the sprocket teeth pass the center of the sensor (see figure below) and the air gap is the thickness of a quarter. It may be necessary to drill holes to mount the bracket.
4. Route the cables so they clear all moving shafts and chains. (Be sure they clear when the drill is in both the up and down position.)
5. If the harness on your drill or planter is equipped with a distance sensor lead, the distance sensor wire can be plugged in at that location. On some applications where a distance connector is not provided, it will require a separate cable be routed to the rear of the M3 console.

The speed sensor kit is a universal kit and may need to have the bracket bent or re-drilled to fit some drill applications.

Typical installation on a John Deere 750® drill.



Align sensor so that the sprocket is in the center of the distance sensor



Adjust sensor so that a quarter will fit between sensor and sprocket

Console Installation

Installing the M3 Console

The M3 console can be mounted anywhere in the tractor cab that does not obstruct the driver's view and can be easily accessed to operate.

The M3 bracket is designed so that it may be top-mounted with the bracket overhead or bottom-mounted with the bracket underneath.



To mount the bracket:

Using the bracket as a template, mark two holes and drill two 3/8" holes.



Before drilling two 3/8" holes to mount the bracket, check to be sure there are no wires, tubing or hoses behind the surface that would be damaged by the drilling operation.

Using the mounting bolts supplied, fasten the bracket to the surface and install the M3 console in the bracket using the bracket knobs.



Do not overtighten the bracket knobs, tighten only enough so the console will not move.

Description	Part Number
Mounting Bracket	1000-5723
Mounting Bracket Knob (each)	1000-5724
M3 Cab Harness (Standard Pinout)	1000-4256
M3 Cab Harness (Computer-Trac® Pinout)	1000-5800
M3 power cable	1000-3795
Hopper level Sensor	1000-5563
Gear tooth Sensor Kit	1000-6525
Radar Sensor Kit (Cable, Bracket, Sensor)	1000-2740

Console Installation

Installing the M3 Cab Harness

The M3 console is equipped with connectors on the rear of the unit so the monitor can easily be removed from the tractor. The cab cable (12 ft. cable with 37-pin connectors on each end) sends power and transmits signals from the seed sensors, limit switch, hopper level switches and speed sensor located on the planter or drill.

When routing the cab cable, be careful that the cable does not rest against sharp edges, touch hot manifolds, or run parallel with hydraulic lines. Route the cab cable to the rear of the tractor where it will mate with the connector from the planter or drill harness.

Installing Power and Radar Cable

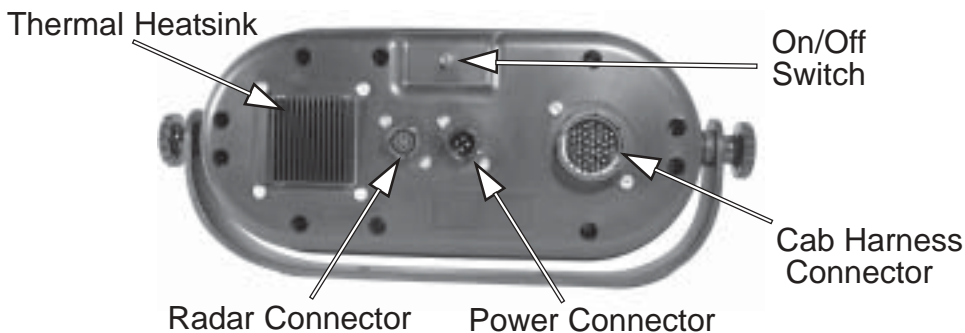
If the optional radar is being used with the M3, it can be connected to the 4-pin radar connector located on the back side of the M3. (See figure at bottom of page)

A power lead is supplied with the monitor that connects to a 10-16 volt DC power source. Connect the red lead to a positive 12 volts and the black lead to the negative side of the battery. (In most applications this would be chassis ground). Connect the 4-pin power connector to the middle connector on the back of the M3 unit.



Do not connect the M3 power leads to 24-volt systems or 6-volt systems.

Turn the power switch (located on rear of unit) to the ON position. The backlight of the display will illuminate and the M3 will start performing a seed sensor check. If the unit is connected to an electrical connection that is powered by the tractor key switch, it will be necessary to turn on the key switch to supply power to the M3.

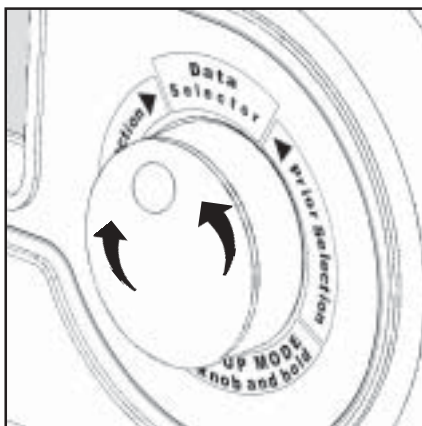


Rear view of M3 console

Overview of M3 Setup

Data Selector Knob Use

To enter and select data on the M3, the use of one knob is all that is needed. The basic operation of the data selector knob is described below.



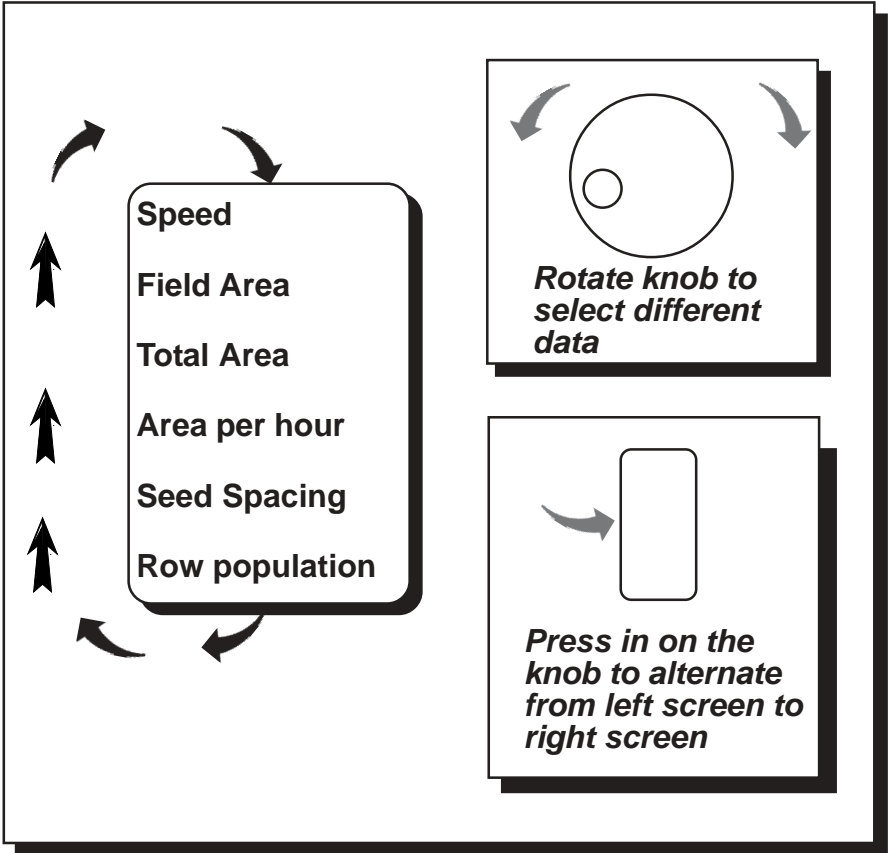
The 3 steps to use the data selector knob:

- 1. Pressing in the data selector knob** activates a switch inside the monitor that acts as an "Enter" switch much like the ENTER key on a computer keyboard. Press in on the switch and you will feel and hear a click when the switch is activated.
- 2. Turning the knob to the left** (counterclockwise) selects a previous selection or de-increments a value.
- 3. Turning the knob to the right** (clockwise) will select the next selection or increments a value.

As you turn the data selector knob, you will notice it has detents built into it that provide a feedback you can feel with your hand. This allows you to easily select or change data one item or number at a time. The knob turns 360 degrees and has no travel limits. There is no chance of damaging the data selector knob by turning the knob too far.

M3 Operation

Data Selector Knob Function



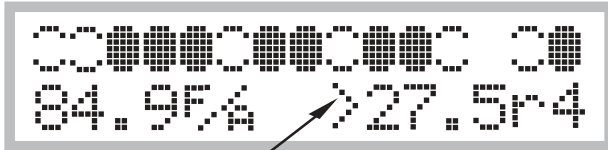
Selecting what data to view is as easy as adjusting the volume on your radio. Rotate the knob to the left or right and the M3 will change the display selections (or values if in setup mode). When in "Run Mode", the screen will display an arrow ">" that points to the data that is being selected. If you press and release the data selector knob, the arrow will transfer to the opposite side of the screen where rotating the knob will scroll through the selections shown in the diagram above. The M3 allows the operator to set the screen for viewing two different variables. The selections can be changed while planting without loss of data or performance.

M3 Operation

Row Lock in Population Function

The M3 defaults to constantly scan the monitored rows and display the row population and average population. It is possible to "Lock" the M3 so that a single row is constantly displayed or the average is constantly displayed. This disables the scan feature although the other rows will continue to calculate population.

To lock in on a particular row or average population, perform the following steps:



To perform Lock function, arrow must be pointing to population function.

1. Select population scan. The selection arrow must be pointing to the population function. (shown in the above diagram)

2. Press in and turn the data encoder knob to the right (clockwise). This will advance the row numbers. (Note! At this time the scan function is still operating and the M3 could increment to the next row automatically).

Option: Wait until the desired row is displayed, press in on the data selector knob and turn to the left (counterclockwise), when the word "locked" is displayed release the knob.

3. Without releasing the knob turn the knob counterclockwise, when the word "locked" appears on the display, release the data selector knob.

4. The M3 will remain locked on the selection until the data selector is pressed in and released or pressed in and turned to the right (clockwise). The display will momentarily read "scan"

Overview of M3 Setup

Placing the M3 in Setup Mode

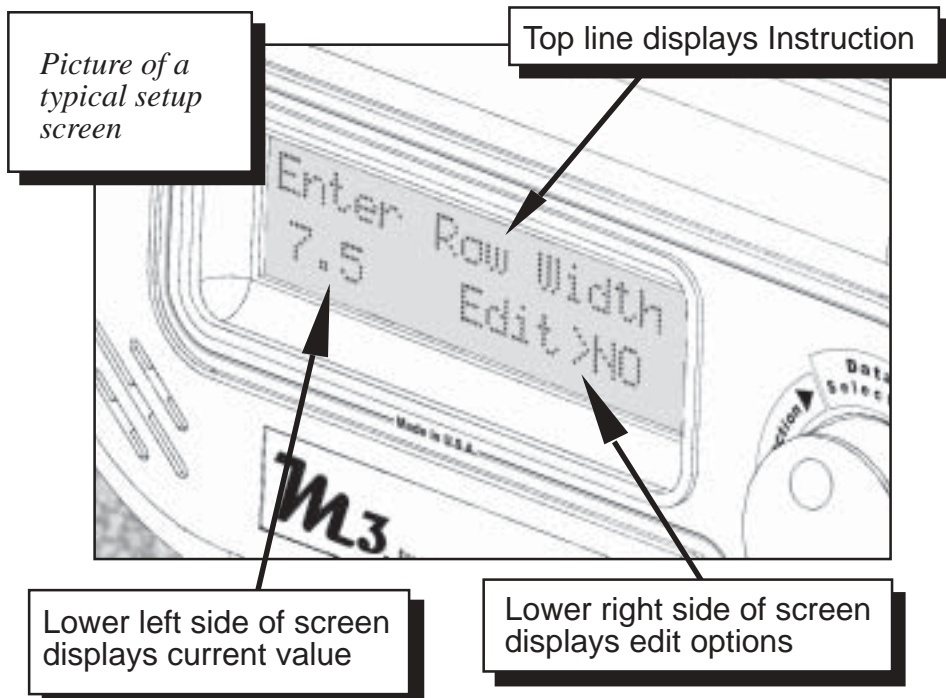
There are many features that can be adjusted on the M3, but only the first three parameters **must** be entered to start using the M3 monitor system.

To place the M3 into SETUP MODE:

1. If powered on, turn the M3 off by switching the power switch located at the rear of the console to the OFF position.
2. Press in and hold the data selector knob while turning the power switch to the ON position. Release the knob when the word "Setup" appears on the top line.

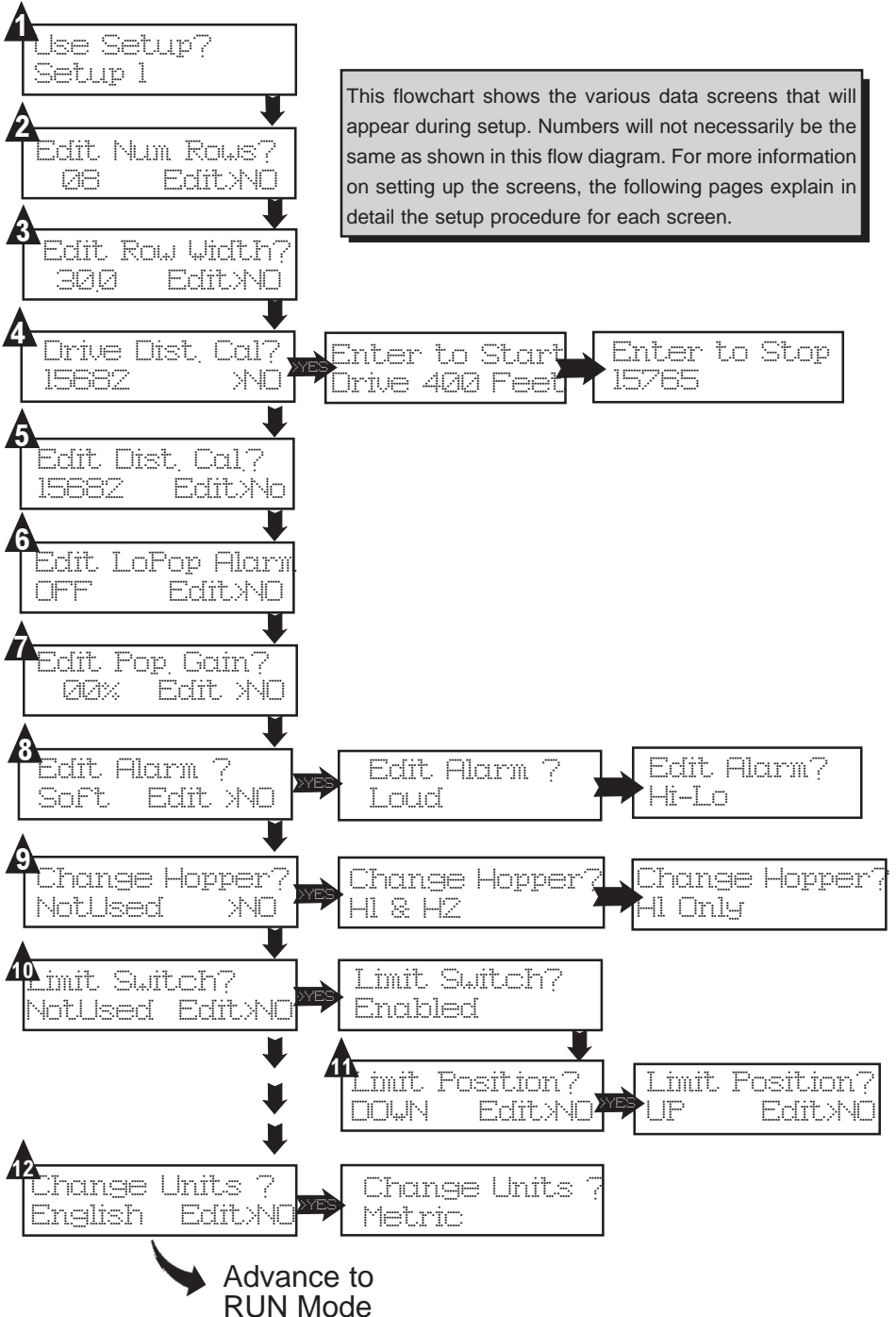
This will place the M3 into the setup mode and allow the operator to view and change the setup parameters.

The pages that follow will explain the various setup screens and how to set them up.



M3 Setup

Flow Chart of Setup Screens



M3 Setup

Entering Setup Parameters

The setup screens allow the operator to enter information needed by the computer to perform calculations. Most parameters are pre-set at the factory with values that will allow the M3 to operate.

The 3 items that must be entered by the operator are found in the first 3 data screens:

- 1 Number of Rows**
- 2 Row Width**
- 3 Distance Calibration**

After these parameters have been set, the M3 can be used. All other parameters help the operator fine-tune the system to his application or they enable optional equipment to be connected to the M3 such as limit switches and bin level sensors to operate.

NOTE!! When resetting parameters, all values such as acre counts and population readings will be erased.

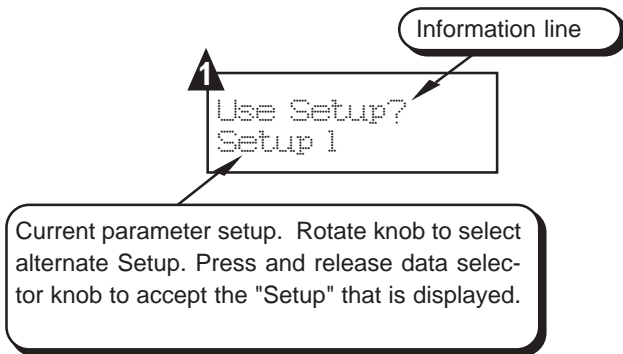
You are now ready to start
programming your M3
Monitor System!

M3 Setup

Dual Setup Parameters

NOTE! To enter M3 setup mode:

1. Turn the M3 off.
2. Press in and hold the data selector knob.
3. Turn the M3 on.
4. Release the data selector knob when the screen below appears.



This screen allows the selection of two different "Sets" of control variables. This feature allows you to use the M3 with two different implements, or systems where rows are to different configurations. This will eliminate the need to reenter row widths, number of rows and distance calibrations values.

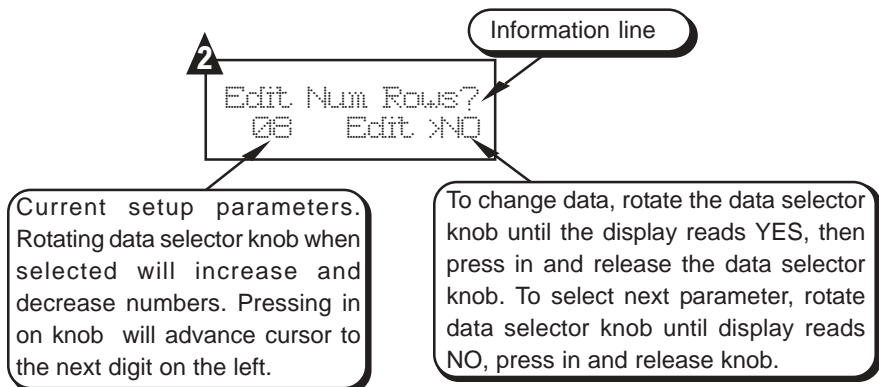
When the screen first appears, rotate the data selector knob to alternate between Setup1 and Setup 2.

Once the desired setup is displayed, press the data selector knob in and release to load in the parameters.

The computer will load in the saved parameters for the setup that was selected will advance to the next setup screen.

M3 Setup

Edit Number of Rows



This screen sets the *total number* of rows on the planter or drill.
(NOTE!! Enter all rows including rows that do not have seed sensors)
This value is multiplied by the row width value to calculate total implement width.

When the screen first appears, rotate the data selector knob to the left or right and the words in the lower right corner will alternate between YES & NO.

If the word YES is displayed and the data selector knob is pressed in, the M3 allows you to change the selection on the left side of the screen from "00" to "99".

When the cursor is under a number, rotating the knob (clockwise) will increment and (counterclockwise) de-increment the number above the cursor. Pressing in on the knob will select the next digit to the left. (Hint!! If the data selector knob is pressed in and rotated at the same time, the cursor can be placed under the digit to change).

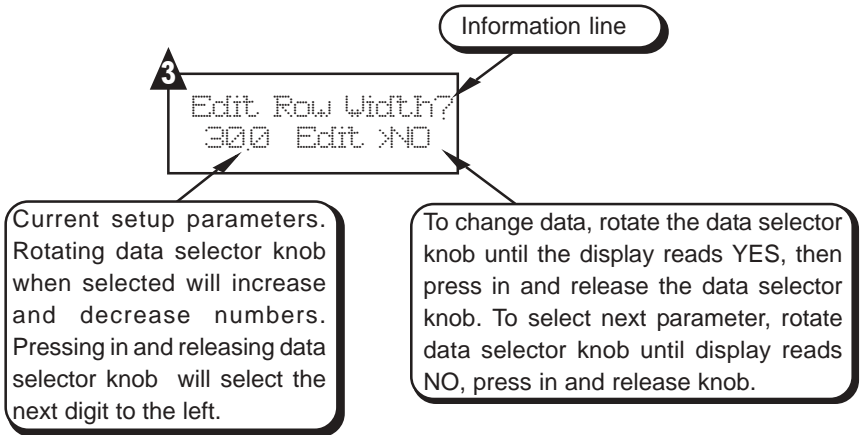
When the word NO is displayed in the lower right screen and the data selector knob is pressed in, the computer will advance to the next setup screen.

If the number is not correct, rotate the knob until YES is displayed. Press in on the knob and the number can be edited.

NOTE! The objective of this parameter is to inform the computer how wide the planter or drill is so that accurate area counts can be achieved. The number entered in this screen is multiplied by the row width to calculate implement width. Count all rows (including any skip rows)

M3 Setup

Edit Row Width



This screen allows entry of the row width of the planter or drill. This parameter is multiplied by the number of rows in the previous setup to calculate total implement width used in area calculation. This value is also used to calculate individual row population.

When the screen first appears, rotate the data selector knob clockwise or counterclockwise and the words in the lower right corner will alternate between YES & NO.

If the word YES is displayed and the data selector knob is pressed in, the unit then allows you to change the selection on the left side of the screen from "00.0" to "99.9"

When the cursor is under a number, rotating the knob will increment and decrement the number above the cursor. Pressing in on the knob will select the next digit to the left.

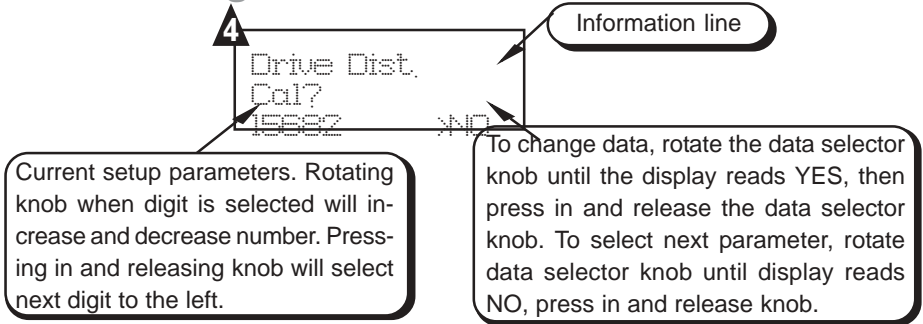
Note!! If the data selector knob is pressed in and rotated at the same time, you can select the digit to the left or right to edit.

Once the word NO is displayed in the lower right screen and the data selector knob is pressed in, then the computer will advance to the next setup parameter.

If the number is not correct, rotate the knob until YES is displayed. Press in on the knob and you can edit the number.

M3 Setup

Performing Field Calibration



This screen enables the M3 to perform a field calibration of the distance sensor. A distance of 400 feet must be marked off and identified with flags or objects that can be seen from the tractor cab.

When the above screen appears, rotate the data selector knob to the left or right and the words in the lower right corner will alternate between YES & NO.

When the word YES is displayed, press in and release the data selector knob and the computer will display the screen below:

Enter to Start
Drive 400 Feet

At this time, drive the tractor towards the first flag, while passing the first flag, press in on the data selector knob, the screen below will appear and the numbers on the display will start counting up.

Enter to Stop
15367

As the tractor drives past the finish flag, press the data selector knob. This will indicate to the computer that the required distance has been driven. After the data selector knob is pressed and released the following screen will appear if the number is valid.

4

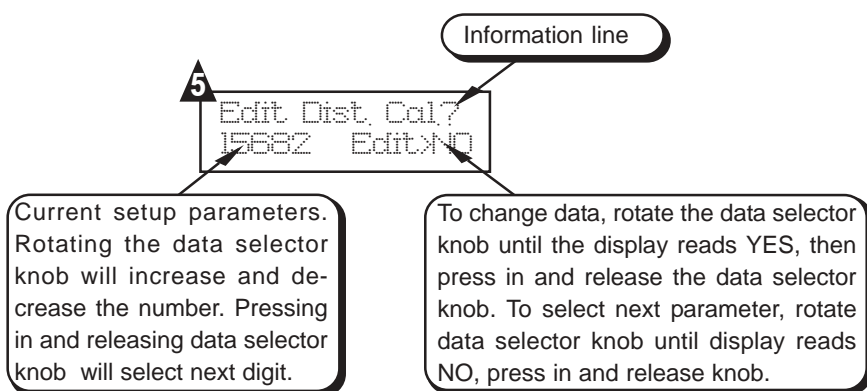
Drive Dist. Cal?
15682

>NO

Your M3 monitor is now calibrated with the distance sensor. At this point, the field calibration can be performed again or press the data selector knob with the word NO in the lower right screen and the M3 will advance to the next setup screen.

M3 Setup

Distance Calibration Number



This screen allows the distance calibration number to be changed manually. In most applications, performing the field calibration is adequate and the number should not have to be changed. This number informs the computer of the number of pulses transmitted by the speed sensor when driven a 400' distance.

To change the distance calibration number, rotate the data selector knob to the left or right and the words in the lower right corner will alternate between YES & NO.

When the word YES is displayed and the data selector knob is pressed in, the computer allows you to edit the selection on the left side of the screen from "00000" to "99999"

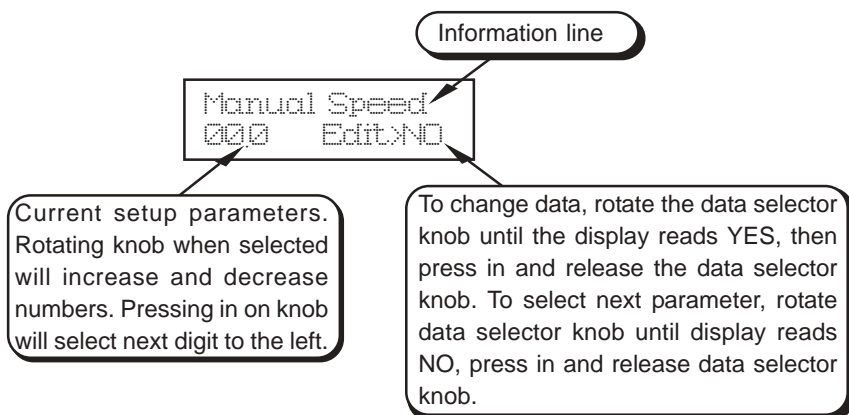
NOTE!!

The minimum number that the computer will accept is 250. The maximum number is 25000. Any number not in this range will be rejected by the computer. A value of 00000 will cause the computer operate in MANUAL SPEED MODE. See the next page for more information on running in manual mode.

To run in Manual Speed Mode- set the distance calibration number to 00000. See the next page for manual speed setup.

M3 Setup

Setting Manual Speed Mode



If you are using a speed input device, disregard this page.

This screen will appear only if the distance calibration number is set to "00000".

In Manual Speed Mode, the operator enters the planting speed and the computer will calculate population without a speed sensor input. The planter must be driven at the speed that was entered or the population readings will have an error.

NOTE!!

The area counters will not increment when using manual speed settings.

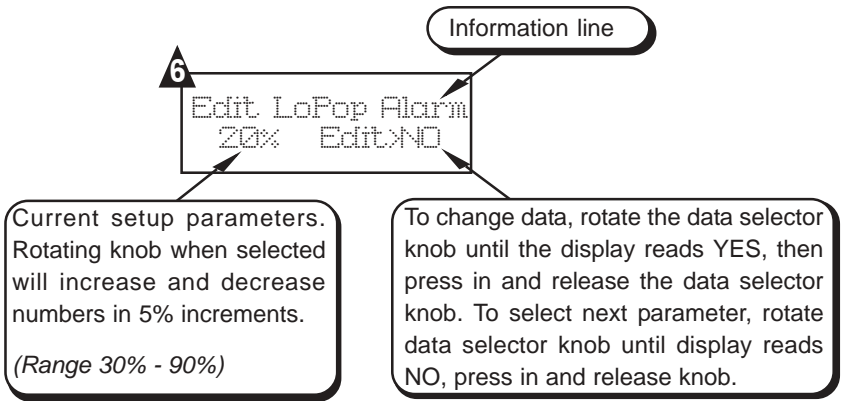
To accept the entered value, rotate the data selector knob until the word NO appears in the lower right screen and press in and release the data selector knob. The M3 will advance to the next setup screen.

NOTE!!

The tractor must be driven within .1 m.p.h. consistently to attain accurate population readings. The first population update when you resume planting will always be low unless tractor is driving at planting speed when the implement is lowered.

M3 Setup

Setting Low Population Alarm



The M3 can be setup to warn the operator that a row population is below the average population of the combined rows.

To change the Low population alarm, rotate the data selector knob to the left or right and the words in the lower right corner will alternate between YES & NO.

When the word YES is displayed, press in and release the data selector knob. Rotating the data selector knob will adjust the value from 90% to 30% in 5% increments. (i.e. 90% will cause a row to show "Low" population if the row population is less than 90% of the average population. A 30% setting will cause the M3 to alarm if row population falls below 30% of the average population)

When the low population set point has been set, rotate the knob until the word NO appears in the lower right screen and press in on the data selector knob. The M3 will advance to the next setup screen.

This function performs best when four or more seed sensors are used on the system. On a 2-row system, there are not enough rows to calculate a satisfactory average.

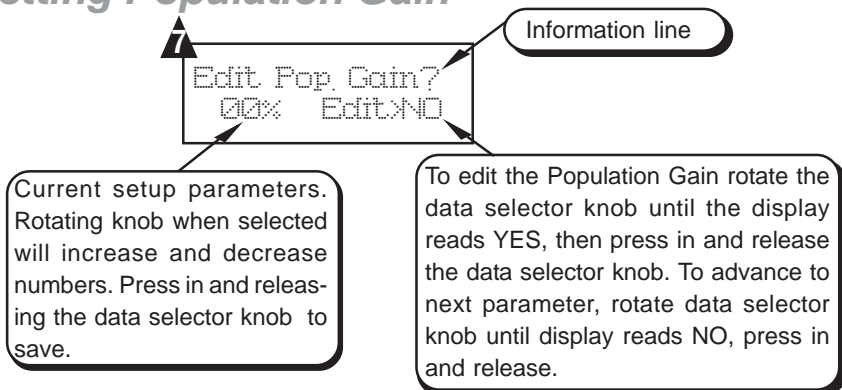
NOTE!!

To turn the low population alarm OFF, set the alarm point to "OFF".

Depending on the planter or drill, if the alarm point is set too high intermittent low population alarms will occur. To correct this situation, lower the alarm value.

M3 Setup

Setting Population Gain



The accuracy of a planter monitor system is determined by the seed sensor and how accurately it counts the seeds. The method of seed delivery plays an important role in accurate seed counting. A seed sensor mounted on a planter or drill that can drop the seeds one seed at a time will count much more accurately (close to 100%) than a seed sensor that is mounted on a drill that has a fluted type of seed delivery that distributes seeds several at a time. Different styles of seed sensors will also count differently. A Dickey-john® infrared high count sensor will count more seeds than a Dickey-john® normal count seed sensor.

The M3 can be adjusted with the population gain setting so that the error in seed counting is corrected. A typical example would be a John Deere® 750 drill setup to plant soybeans. These drills will have a typical error of 13% to 15%. This means that the seed sensor will miss 13 to 15 seeds for every 100 seeds planted. By programming 13% into the population gain, the M3 will calculate population with the error correction and display a population value that is much closer to the true population that is being planted.

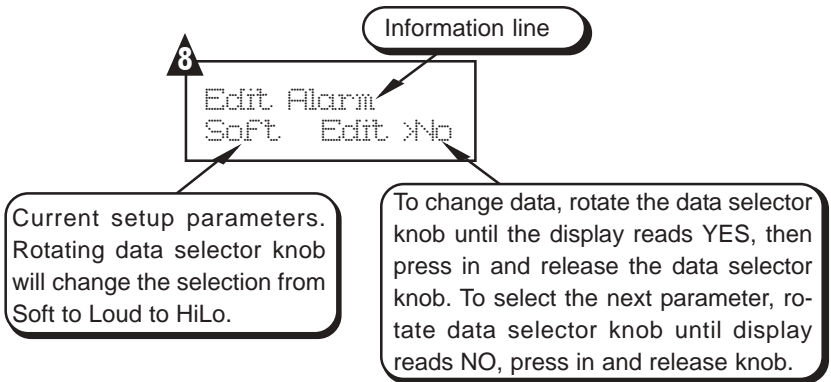
To change the population gain number, rotate the data selector knob to the left or right and the words in the lower right corner will alternate between YES & NO.

When the word YES is displayed and the data selector knob is pressed in, the computer allows you to edit the selection on the left side of the screen from "00%" to "99%" (NOTE!! 99% will almost double the value that is counted by the seed sensors. 00% will add no correction.)

When the gain has been set, rotate the knob until the word NO appears in the lower right screen and press in on the data selector knob. The M3 will advance to the next setup parameter.

M3 Setup

Adjusting the Alarm Style



Today's tractors vary from a tractor with no cab and loud exhaust to cabs that are air-conditioned and ultra quiet. The alarm on the M3 can be adjusted so that it alerts you of a problem, and not be annoying.

To change the "Alarm Style", rotate the data selector knob to the left or right and the words in the lower right corner will alternate between YES & NO.

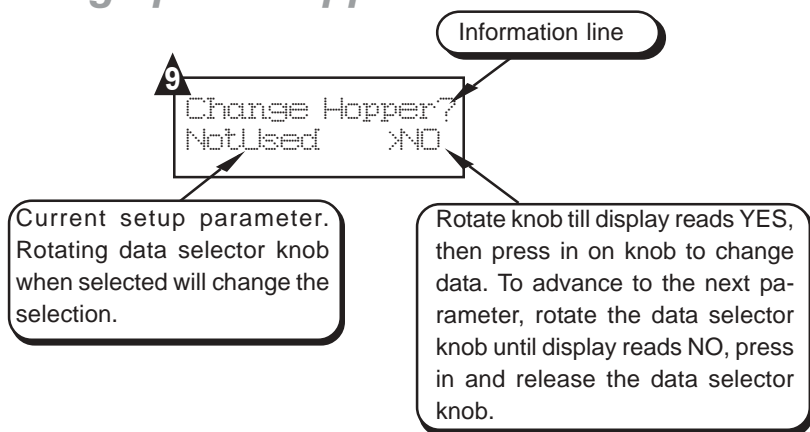
When the word YES is displayed and the data selector knob is pressed in, the M3 allows you to select the alarm style desired. By rotating the knob, the selections will change from SOFT, LOUD and Hi/Lo. The Soft setting is for tractors with cabs that are quiet and do not need a loud alarm. The Loud setting sends maximum volume to the horn for noisy environments. The Hilo setting alternates between soft and loud to create a pulsating alarm that will draw attention in extremely noisy environments.

After you have made your selection, press in and release the data selector knob.

Select NO in the lower right screen and press in on the data selector knob to advance to the next setup screen.

M3 Setup

Setting up the Hopper Monitor



The M3 can monitor two hopper level sensors. The sensors will alert the operator when the seed level drops below the "level-sensor" located in the seed hoppers.

NOTE! Optional hopper level sensors must be mounted in the seed hoppers and an implement wiring harness with hopper level inputs must be provided to use this option.

When using the hopper level sensors the maximum number of seed sensors that may be monitored is reduced to 12 rows. Hopper level signals will be transmitted using the signal wires used for rows 15 and 16.

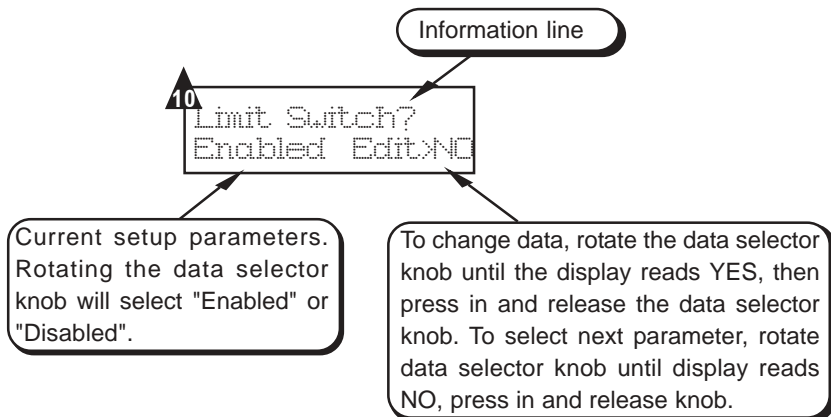
Rotate the data selector knob until the word YES is displayed in the lower right corner of the display. Press and release the data selector knob. By rotating the data selector knob the selection will change from "H1", "H1& H2" or "NotUsed". (The M3 ships from the factory with the hopper sensor option set to "Not Used".)

Once the hopper levels have been set to enabled or disabled, press the data selector knob to accept the setting.

Select NO in the lower right screen and press the data selector knob to advance to the next setup screen.

M3 Setup

Setting up the Limit Switch Option



The M3 has two area counters, one is used for "Field Area" and other one is for "Total Area". If the limit switch option is disabled, the M3 turns the area counters on when speed and seed activity are sensed. The M3 will turn off the area counters when it senses all rows with seed sensors have stopped planting. This situation occurs when the planter or drill is lifted at the end of the rows. On some drills, a few seeds will continue to drop as the turn is made at the end of the rows with the implement up. This condition causes the area counters to continue counting while the implement is in the up position.

NOTE! When the message "Planter Stopped" appears on the top line, this indicates area counters are turned off.

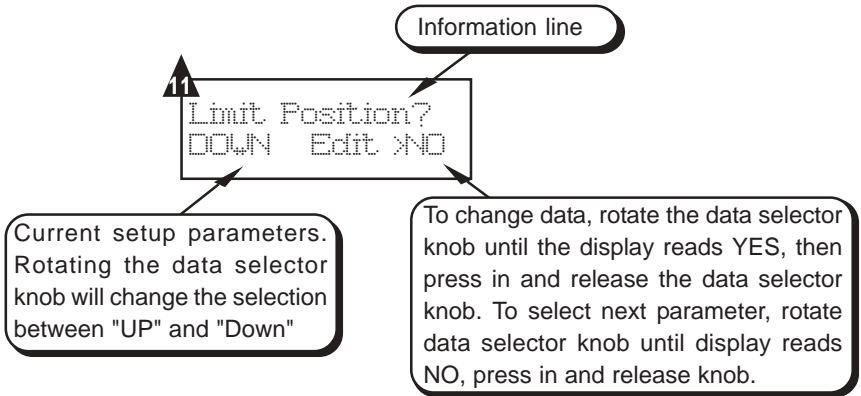
For applications that require a more accurate area count, an implement lift switch can be added to the system. The implement switch will inform the M3 that the implement has been lifted. This will prevent the area counters from counting until the limit switch returns to planting position.

To enable the limit switch option, rotate the data selector knob until the word YES is displayed in the lower right corner of the display. Press and release the data selector knob. Rotate the data selector knob and the M3 allows you to select between ENABLED (a switch is installed in the system) or DISABLED (no switch is installed in the system.) Once you have selected the appropriate setting, press in and release the data selector knob to save the selection.

Select NO in the lower right screen and press in on the data selector knob to advance to the next setup screen. *If "Disabled" was selected the screen on the next page will not appear.*

M3 Setup

Setting the Limit Switch Position



If the limit switch option (screen 10) was set to ENABLED, the above screen will be displayed, otherwise the computer will not display this screen.

This setup parameter tells the computer if the implement is up (non-planting position) or down (planting position).

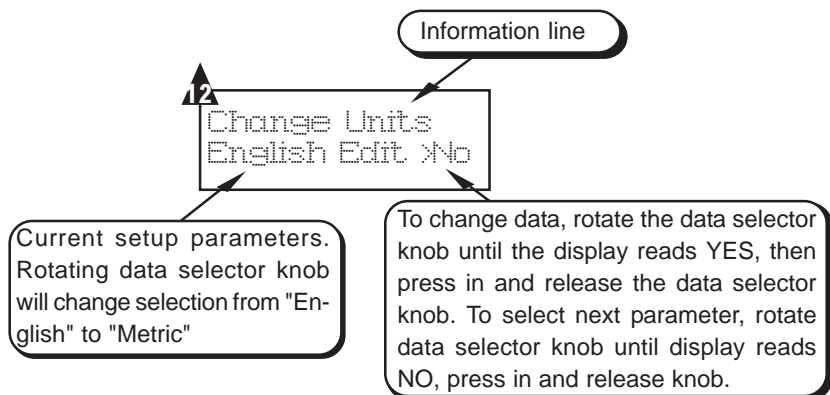
This parameter allows the limit switch to be mounted so that the contacts open when the implement is lowered or the contacts open when the implement is raised.

To change this parameter, rotate the data selector knob until the word YES is displayed in the lower right corner of the display. Press the data selector knob in and release. Rotate the knob and the computer allows you to select DOWN (implement is lowered and in planting position) or UP (implement is raised and in the non-planting position). Once you have selected the appropriate setting, press in on the data selector knob to save the selection.

When satisfied with the selection, select NO in the lower right screen and press in and release the data selector knob to advance to the next setup parameter.

M3 Setup

Changing Units of Measure



The M3 can be setup to measure and display in metric measurement mode. When placed in metric mode, the following changes take place:

Linear measurement is displayed and entered in centimeters

Area is displayed in hectares

Speed is displayed in kilometers per hour

Work rate is displayed as hectares per hour

Rotate the data selector knob until the word YES is displayed in the lower right corner of the display. Press in and release the data selector knob. Rotate the data selector knob and the computer allows you to select ENGLISH or METRIC. Once you have selected the desired setting, press in and release the data selector knob to save the selection.

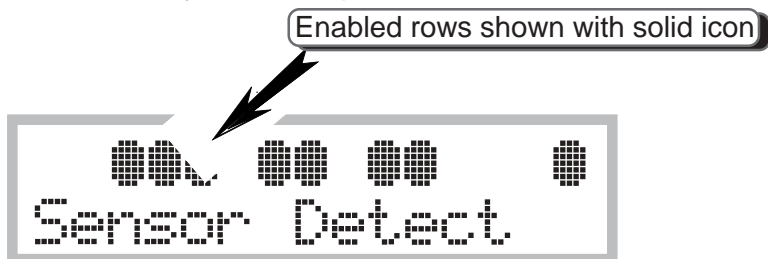
Select NO in the lower right screen and press in and release the data selector knob to exit the setup menus and advance to the run mode.

This completes the setup of the M3. Setup parameters may be changed at any time by holding in on the data selector knob while applying power to the M3. (See page 13)

M3 Start Up Screen

Automatic Seed Sensor Detection

The M3 has been engineered to perform its duties with minimal operator intervention. Automatic seed sensor detection & row enable is performed by the computer each time the M3 is turned on. If the number of rows detected match with a setup that was previously entered, the M3 will load the RUN parameters for that setup. An example would be if the M3 has SETUP 1 loaded with a 4-row drill parameters and SETUP 2 loaded with an 8-row planter configuration, the M3 will automatically select the drill setup if 4 seed sensors are detected and will select the planter setup if 8 seed sensors are detected. Should any other number of rows be detected, the operator will need to manually select the parameter set to load in.



When the M3 power switch is turned ON, the M3 will search for seed sensors that are connected to the system. As each seed sensor is found, an icon located on the top line of the display will turn ON indicating a seed sensor is connected to that input. Any rows that a seed sensor was not detected, will be disabled and remain disabled until a sensor check is performed again. After searching for several seconds the M3 will display the number of sensors found and advance to the next screen.

In the event no sensors can be found, the M3 will enter into Area Counter Mode. This mode allows the M3 to display speed and display area while the drill or planter is disconnected.

NOTE!!

This sensor search does not test the seed sensors for acceptable operation. A seed sensor that is enabled may not count seeds at the desired accuracy.

M3 Start Up Screen

Displaying Parameter List

The M3 will display several setup parameters after the sensor search.

The following parameters are displayed after the seed sensor search.

Number Rows 08

Imp. Width 2400

Row Width 75

This feature is useful for operators that are switching from SETUP 1 to SETUP 2. The friendly reminder screens enables the operator to verify the M3 setup is correct for the planter or drill connected.

NOTE!!

To bypass the parameter list, simply press in on the data selector knob and release.

Screen Icons

Icon Description

Top line of display has flashing icons that flash off and on while seeds are being detected. The icon to the far left is row 1 and the icon to the far right is row 16.

The brackets indicate that a row is enabled. Any row disabled will not have the brackets shown.

Row 14 Disabled

84.9F% >27.5r4

FIELD AREA

F%

The symbol to the left indicates the M3 is displaying **FIELD AREA**.

SEED SPACING

S%

The symbol to the left indicates the M3 is displaying **SEED SPACING**.

TOTAL AREA

T%

The symbol to the left indicates the M3 is displaying **TOTAL AREA**.

MILES PER HOUR

MR

The symbol to the left indicates the M3 is displaying **MILES PER HOUR**.

AREA PER HOUR

AR

The symbol to the left indicates the M3 is displaying **AREA PER HOUR**.

The arrow ">" indicates area of screen that data can be selected. Pressing and releasing the data selector knob will allow the data on opposite side of the screen to be changed.

POPULATION

27.5r4

The number to the right of the "r" is the row number being displayed. The number to the left is the population reading. A decimal point indicates the reading is x 100. Therefore, the above reading is 27,500 seeds per acre on row 4. If there is no decimal point, then the reading is x1000 therefore 178r7 would be 178,000 seeds per acre on row 7. After the last row is displayed, an average population of all rows monitored will be displayed and the row scan will start over. See page 8 for "Row Lock".

M3 Error Message

Row Failure

The M3 continually monitors the enabled rows for population and failed rows. In the event a seed sensor does not detect a seed for a period of 2 seconds, an alarm will sound and an error message will appear on the top line of the display. Should more than one seed sensor fail, the error messages will display each of the failed rows one at a time.



Row 3 Failed
84.9F% >27.5r4

NOTE!

To silence the alarm press in and release the data selector knob.

If all enabled rows stop planting, the horn will silence and the message PLANTER STOPPED will appear.

NOTE!!

If the optional limit switch is installed the M3 will display LIMIT UP when the planter is raised.

If a row resumes planting after the "row fail" alarm sounds, the alarm and the error message will automatically turn off .

M3 Error Message

Low Population Alarm

When the low population alarm is set to a value other than "00", the M3 will continually monitor the seed sensors for a low population condition. In the event a row population is below the low population alarm point, The horn will sound and the top line of the display will indicate which row has a low population alarm.

Example: While setting up the M3, if the low population alarm is set to 70%, a row will show a low population warning anytime the row population is less than 70% of the total average population.



Row 3 Low
84.95% → 27.5r4

NOTE!

To silence the alarm and remove the warning message, press in and release the data selector knob.

After the alarm is acknowledged the alarm will remain off until the next population update, if the population remains below the alarm setpoint, the alarm and warning message will appear.

NOTE!!

Low population is based upon the readings of the other sensors. In the event all rows drop in population by an equal amount, no alarm will sound.

Area Counter Mode

Area Counter Mode

If the M3 detects zero sensors upon initial power up, the unit will enter into Area counter mode. In this mode the M3 can be used to display speed and accumulate area covered with the two area counters.



84.9F/A > 7.5M/A

The data can be selected in the same manner as when in planting mode. Disregard functions that do not apply(such as seed spacing and population) when the M3 is in Area Counter Mode.

An optional limit switch can be connected to the M3 system to turn the area counters off and on. If no limit switch is used the M3 will accumulate area anytime there is speed.

Resetting Area Counters

Note!

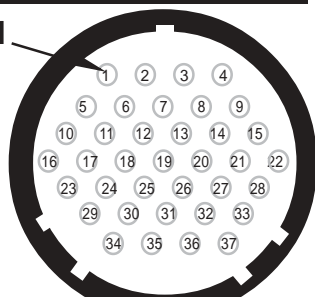
To reset an area counter to zero, press and hold the data selector knob for 5 seconds while the selection arrow (>) is pointing to the area counter to be reset. Release the data selector knob when the area counter displays zero. This procedure is used both in Area Counter Mode and in Planting Mode.

Reference Section

M3 Wiring Diagrams

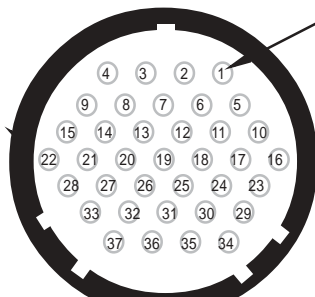
Monitor Connector

Pin 1



Harness Connector

Pin 1



Computer-trak® pinout

1	1	Row 1 Signal
2	2	Row 2 Signal
3	3	Row 3 Signal
4	4	Row 4 Signal
5	5	Row 5 Signal
6	6	Row 6 Signal
7	7	Row 7 Signal
8	8	Row 8 Signal
9	9	Row 9 Signal
10	10	Row 10 Signal
11	11	Row 11 Signal
12	12	Row 12 Signal
13	13	Row 13 Signal
14	14	Row 14 Signal
15	15	Row 15/Hopper 1 Signal
16	16	Row 16/Hopper 2 Signal
24	24	+8 volts to Implement
25	n/c	+8 volts to Implement
26	26	Ground to Implement
27	n/c	Ground to Implement
34	34	Power (Monitor Power)
35	35	Ground (Monitor Power)
36	36	Limit Switch Input
37	37	Distance Signal Input

1	1	Row 1 Signal
2	2	Row 2 Signal
3	3	Row 3 Signal
4	4	Row 4 Signal
5	5	Row 5 Signal
6	6	Row 6 Signal
7	7	Row 7 Signal
8	8	Row 8 Signal
9	9	Row 9 Signal
10	10	Row 10 Signal
11	11	Row 11 Signal
12	12	Row 12 Signal
13	13	Row 13 Signal
14	14	Row 14 Signal
15	15	Row 15/Hopper 1 Signal
16	16	Row 16/Hopper 2 Signal
24	27	+8 volts to Implement
25	n/c	+8 volts to Implement
26	28	Ground to Implement
27	n/c	Ground to Implement
36	36	Limit Switch Input
37	37	Distance Signal Input

Dickey-john® pinout

Power Connector



1	Ground
2	Power (12 volts)
3	No Connection
4	No Connection

Radar Connector



1	Ground
2	Signal
3	Power (12 volts)
4	No Connection

