MONOSEM

MPM II

Electronic Seed Monitor

User Guide & Operator's Manual

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GENERAL INFORMATION

MPM II Electronic Seed Monitor

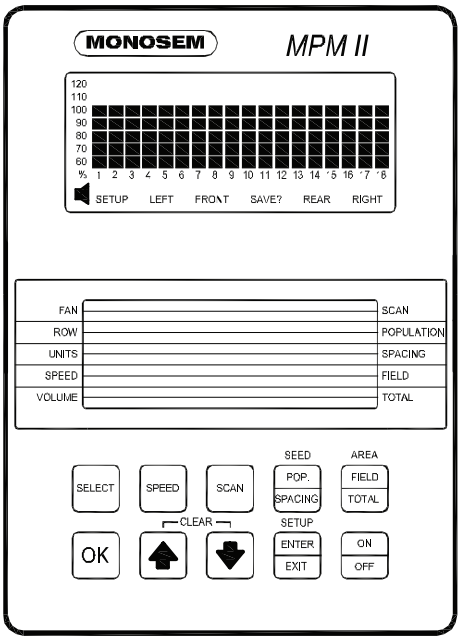
The electronic seed monitor system consists of a console with non-volatile memory which is mounted in the tractor; seed tubes with computerized sensors, one of which is installed in each planter row unit; to which the individual seed tube sensors and rotation sensors connect. The monitor works with a magnetic (pickup) distance sensor or radar distance sensor.

Seed flow for up to 36 rows, in two 18 row sections (left/right) may be monitored with one monitor.

The monitor system is powered by the tractor battery (requires 12 volts DC). The console receives information from each of the sensors and translates this information.

The monitor has two backlit Liquid Crystal Displays (LCD). The **upper display** shows the active section, the number of monitored rows per section, the relative seed rate for each row (using a bar graph display) and scrolls various alarm and warning messages when a condition exists. A continuous audio alarm will sound upon system malfunction or underflow conditions for any monitored row. Alarms must be acknowledged by the user. Various warnings may sound the buzzer or flash one or more icons.
The **lower display** is used to display alphanumeric data such as row spacing, units (Metric or English), speed, volume, seed population, seed spacing, field area, total area and distance sensor pulses per mile/kilometer.

The monitor will power down if no activity is sensed for more than one hour. No activity means there has been no new seed flow and no operator push key input.



KEY FUNCTIONS

Push keys allow the user to select or change the operating mode, the active displays or the current configuration. Depending on the operating mode or the current display selected, some keys are valid while others are not. Each key press if valid is acknowledged by a short beep and its action is taken. If the key press has no action associated, the key press is considered invalid and the user will not get any feedback.

SELECT

Selects the **application mode** (left/right) at the beginning of installation setup
Selects the **active section**(s) (left, right, or left/right) in the normal mode.
Does not have an affect on a system that is configured to monitor only one section.
While programming the monitor, the key will select the digit to change

SPEED

Immediately displays the current ground speed.

SCAN

•If the current average population or average spacing is displayed, this key sequentially displays the seed population/spacing on each row.
•If the display shows functions other than the average seed population or spacing, pressing **SCAN** will sequentially display speed, average seed population and average seed spacing.
•Pressing a second time freezes the display on the current row.
•Pressing a third time restarts the sequential display.

SEED POPULATION / SEED SPACING

Immediately displays the average seed **POPULATION** and the average seed **SPACING** of all active rows.
Each press alternates between seed spacing and seed population.

AREA FIELD / AREA TOTAL

Immediately displays the field and total area planted since the field / total area was last cleared.
Each press alternates between field area and total area.

OK

Ends and saves the new setup during installation.
Acknowledges and silences alarms in the operation mode

UP ARROW AND DOWN ARROW

Scrolls sequentially through the display options on the lower LCD display.
Freezes on the current row in the scan mode.
Scrolls sequentially through the rows when the population scan is frozen.
Used to enter programmable values in the programming mode.
The **Up** and **Down** arrow keys can be pressed at the same time to start the **CLEAR** function.

SETUP ENTER / SETUP EXIT

Enters and exits the programming mode.

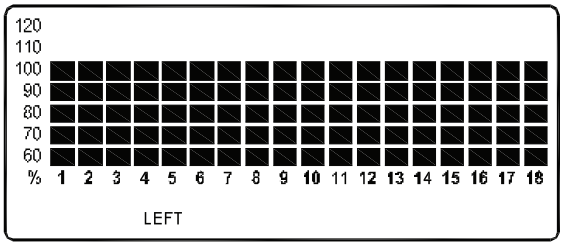
ON / OFF

Powers the unit on and off.

LCD FUNCTIONS

UPPER LCD FUNCTIONS

The monitor collects data on the planting rates from all active rows and calculates an average. This average will determine the 100% mark. Seed rate for each row is then compared to the average value and the result is displayed on the bar graph.
The information regarding each section is displayed alternately every 5 seconds.



While operating a system with two sections programmed, one or both sections may be selected any time. When only one section is selected, the monitor calculates the average based on the remaining active rows from that section.

Press **SELECT** key once to show one section. The flashing icon shows the section that is not selected. The selected section is continuously displayed on the LCD.

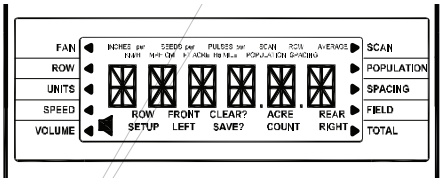
Press **SELECT** key again to activate both sections. Ex: Press **SELECT** key second time. The information regarding each section will display alternately every 5 seconds. For simple applications, where only one section is programmed, the display will automatically lock on that section. Pressing **SELECT** key will have no affect.

NOTE: When alternating between two sections, the display will lock on the section containing the first recognized alarm until the alarm is acknowledged by pressing the **OK** key or the alarm condition is removed.

LCD FUNCTIONS

LOWER LCD FUNCTIONS

The **UP** and **DOWN** arrow keys will sequentially change what is being displayed on the lower LCD. Pressing the **UP** or **DOWN** arrow keys will move the arrow head icon (on the left and right hand side of the display) to another item. For example, if the arrow icon is pointing to **SPEED**, ground speed will be displayed on the LCD. Pressing the **UP** arrow key will move the icon to the display will change to display all the icons used to represent the current (English or Metric) measurement system.



The shortcut keys, **SPEED, SEED POPULATION/SPACING** and **AREA FIELD/TOTAL** allow direct access to their respective displays. For example, no matter what is currently being displayed on the lower LCD, pressing the **SPEED** key will change the display to the current speed. Pressing the **SEED POPULATION/SPACING** or **AREA FIELD/TOTAL** keys will alternate between the two functions assigned to that key.

Pressing the **SCAN** key while displaying seed spacing or population will cause a sequential display of each individual row. Pressing the **SCAN** key a second time will freeze the display on the currently displayed row. Pressing **SCAN** key will restart the automatic advancing of the scan function.

Pressing the **SCAN** key while displaying speed will cause a sequential display of speed, average planter population and average seed spacing. Pressing the **SCAN** key a second time will freeze the display on the currently displayed reading.

ROW SPACING

Press the arrow keys to **ROW SPACING** to display the current spacing between rows in inches or centimeters. The **ROW SPACING** icons turn on, displaying a 3 digit, one decimal place format. In the acre counter mode, this function displays the implement width in feet or meters, using a 3 digit, no decimal places format.

UNITS

Press the arrow keys to **UNITS** to display all the icons from the currently selected English or Metric measurement system.
For the English system, the icons are:
INCH, MPH, FT, ACRE, and MILE.
For the Metric system, the icons are:
M, KM/H, and Ha

SPEED

Press the **SPEED** key to display the current speed in MPH or KM/H, using a 3 digit, one decimal place format.

VOLUME

Press the arrow keys to **VOLUME** to display the presently selected audio volume.
The **SPEAKER** icon turns on.

SCAN

Press the **SCAN** key to display the seed spacing or seed population pf each individual row.
Pressing the **SCAN** key while displaying any other function will cause the monitor to sequentially display speed, average seed population and average seed spacing.
Pressing the **SCAN** key a second time will freeze the display.
Pressing the **SCAN** key a third time restarts the sequential display. The **UP** and **DOWN** arrow keys can be used to change the current display.

SEED POPULATION/ SEED SPACING

Each **SEED POP/SPACING** key press alternates between seed population and seed spacing. **SEED POPULATION** displays the average number of seeds or the row average number of seeds per acre or seeds per hectare for all the active rows. The average is displayed using a 6 digit, no decimal places format. The **AVERAGE POPULATION** icon will turn on. When in the scan mode, the scan arrow and **SCAN ROW POPULATION** will appear. The **ROW** number icon and the current row will be displayed on the right in the 1000's using 3 digits, one decimal place (e.g. 32.9 means 32,900). When in scan freeze mode, the scan arrow and **ROW POPULATION** will turn on (scan arrow may be flashing). The **UP** and **DOWN** keys may be used to lock on the desired row.

SEED SPACING

displays the average distance or the row average distance between seeds for all active rows in inches per seed or centimeters per seed, using a 3 digit, one decimal place format. When the average is displayed the **AVERAGE SPACING** icons are turned on. When in the scan mode, the scan arrow and **SCAN ROW SPACINGS** icon will appear. The **ROW** number icon and the current row will be displayed on the left and the spacing will be displayed on the right . The display will sequence to the next row every 5 seconds. When in scan freeze mode, the scan arrow and **SPACING** will turn on (scan arrow may be used to lock on the desired row.)

FIELD AREA/TOTAL AREA

Each **AREA FIELD/TOTAL** key press alternates between field area and total area.

FIELD AREA

displays the total number of acres or hectares, using a 6 digit, one decimal place format.

NOTE: When **FIELD AREA** is selected, the **UP** and **DOWN** key must be held slightly longer than normal so the monitor will not mistake this action with a **CLEAR**, which consists of the **UP** and **DOWN** arrow keys pressed simultaneously. A beep will sound when the function activates.

TOTAL AREA

displays the total number of acres or hectares, using a 6 digit, one decimal place format. The total area counter updates every time the field area counter increments. Clearing the total area counter will also clear the field area counter.

PROGRAMMING

CHANGING THE AUDIO VOLUME

1. To enter the programming mode, press and hold the **SETUP** key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the **SETUP** icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.
NOTE: The monitor must be in a programmable function (row spacing, units, seed, volume, or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.

2. Press the **UP** or **DOWN** arrows to move the flashing arrow to **VOLUME**. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

3. Press **OK** and the flashing arrow becomes solid and the beeper will sound.
NOTE: The lower LCD will display the current volume and the **SPEAKER** icon is turned on. Settings are from 0 to 7.

Use the **UP** or **DOWN** arrow keys to change the setting.
With every **UP** arrow key push, the beeper will increment by on step between the minimum and the maximum. If the maximum level (7) is reached the volume rolls over to the minimum level (0).
Pressing the **DOWN** arrow key lowers the volume until the minimum level (0), at which point the volume rolls over to the maximum level (7).

4. exit, see **EXIT**

UNITS

(Metric or English)
1. To enter the programming mode, press and hold the **SETUP** key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the **SETUP** icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.
NOTE: The monitor must be in a programmable function (row spacing, units, seed, volume, or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.

2. Press the **UP** or **DOWN** arrows to move the flashing arrow to **UNITS**. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

3. Press **OK** and the flashing arrow becomes solid and the beeper will sound.
NOTE: The lower LCD will alternately display all Metric icons or all English icons, indicating the Metric or English mode respectively

Use the **UP** or **DOWN** arrow keys to change the setting.

4. exit, see **EXIT**

PROGRAMMING

ROW SPACING

1. To enter the programming mode, press and hold the **SETUP** key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the **SETUP** icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.
NOTE: The monitor must be in a programmable function (row spacing, units, seed, volume, or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.

2. Press the **UP** or **DOWN** arrows to move the flashing arrow to **ROW SPACING**. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

3. Press **OK** and the flashing arrow becomes solid and the beeper will sound.
NOTE: The lower LCD will display the current row spacing (in inches or centimeters) and **ROW SPACING** icon is turned on

The least significant digit of the displayed value will be blinking.
Use the **UP** or **DOWN** arrow keys to change the this value.
Once this digit is correct, press the M**ODE SELECT** key and the blinking digit will move to the next significant digit, where the process can be repeated.

4. exit, see **EXIT**

CLEARING TOTAL AREA

1. To enter the programming mode, press and hold the **SETUP** key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the **SETUP** icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.
NOTE: The monitor must be in a programmable function (row spacing, units, seed, volume, or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.

2. Press the **UP** or **DOWN** arrows to move the flashing arrow to **TOTAL AREA**. As the arrow icon moves, the lower LCD will display the current setting of the item selected.

3. Press **OK** and the flashing arrow becomes solid and the beeper will sound.
The lower LCD will display the total area and the **ACRE** or **HA** icon turns on.
With the flashing arrow on **TOTAL AREA**, press the **OK** key.
To reset the counter, press the **UP** and **DOWN** arrow keys at the same time and hold them down for a short period of time to clear the data. The **CLEAR?** Icon will be displayed and the monitor will beep several times. When the data is actually cleared, the monitor will emit a long beep, and the field area is reset to zeros. After the long beep, the previous recorded total area is not retrievable. Once cleared, the user may not choose to exit programming mode without saving as described in **EXIT**

SPEED

To enter the programming mode, press and hold the **SETUP** key. The monitor will emit several short beeps, followed by a long beep. On the lower LCD, the **SETUP** icon turns on and the arrow head icon will flash, indicating that the user can select an item to program.
NOTE: The monitor must be in a programmable function (row spacing, units, seed, volume, or area) to enter setup. The monitor will not enter setup in seed population or seed spacing.

Press the **UP** or **DOWN** arrows to move the flashing arrow to **SPEED.** As the arrow icon moves, the lower LCD will display the current setting of the item selected.

Press **OK** and the flashing arrow becomes solid and the beeper will sound. The speed constant is used to record how many pulses are generated per mile (or kilometer) from the ground speed sensor. The lower LCD will display the current pulses per mile (or kilometer), using a 6 digit, no decimal place format. The **PULSES per MILE** (or **PULSES per KM**) icons are turned on.

NOTE: It is highly recommended that a field calibration be done to establish the PPM (Pulses per mile) number on a new machine installation. Several factors can affect this value such as wheel slip on the magnetic distance sensor, mounting angle and height on the radar distance\ce sensor, etc. IT IS NOT UNCOMMON FOR THE MPH ON THE MONITOR TO VARY SLIGHTLY FROM THE TRACTOR SPEEDOMETER. Adjusting the PPM in the monitor to make the MPH agree can cause serious errors in acre / hectare counts an population readings. Do field checks to verify populations and seed spacing.

NOTE: On a new system installation, the monitor will default to 500 PPM. This will have to be changed to obtain accurate readings from the monitor.

FIELD TEST

In field conditions:

- •Measure 330 feet (1/16 mile) or 100 meters, (depending on your unit of measure).
- •Pull the tractor up to the starting line.
- •Press the **UP** and **DOWN** arrows at the same time and hold them down until the **CLEAR?** icon is displayed and the monitor beeps several times. When the data is actually cleared, the monitor will emit a long beep and the number of pulses is cleared.
- •Drive the tractor for 330 feet (1/16 mile) or 100 meters and STOP

The monitor will count the number of pulses and display them.

EXIT

To exit WITHOUT SAVING

press and release the **OK** key. The monitor will restore the lower LCD to show the setting of the item, and the arrow icon will flash, allowing the user to select another item to program.

To exit and SAVE

press and hold the **OK** key. The monitor will emit several short beeps and **SAVE?** icon is turned on. After a short time a long beep is heard, and the lower LCD will display the word **DONE.** Release the **OK** key.
If the **OK** key is released BEFORE the word DONE is displayed, the changes WILL NOT BE SAVED. The word **DONE** MUST be displayed in order for the save to have occurred.

NOTE: The programming mode may be exited at any time, by pressing the **SETUP** key. Pressing this key will return the monitor to its normal operation. All items changed and saved will come into affect immediately. Any items changed, but not saved will revert to the original programmed value.

NOTE: If a discrepancy occurs and digits must be changed enter the programming mode and proceed as follows:

- Press the **OK** key and the flashing arrow becomes solid. The least significant digit of the displayed value will be blinking.
- This value can be changed by pressing wither the **UP** or **DOWN** arrow keys.
- Once this digit is correct, press the **MODE SELECT** key and the blinking digit will move to the next significant digit, where the process can be repeated.

The monitor limits the entry of pulses per mile or kilometer to a minimum of 500 PPM (310 ppkm), and to a maximum of 500,000 PPM (310,686 ppkm).

KEY	FLASHING DIGIT	DISPLAY VALUE
UP	**right most digit**	203**1**, 203**2**, 203**3**
MODE SELECT (press once)	**2nd digit from right**	20**3**3
DOWN	**2nd digit from right**	20**2**3, 20**1**3, 20**0**3, 20**9**3, 20**8**3
MODE SELECT (press twice)	**left most digit**	**2**083
DOWN	**left most digit**	**1**083, **0**500 (min value), **9**500, **8**500

WARNINGS AND ALARMS

SYSTEM ALARMS

A system alarm is entered when the monitor detects a faulty sensor or one of several other communication faults.

The corresponding row number starts flashing and the beeper sounds. All segments on the corresponding bar graph are turned off. Pushing the **OK** key to acknowledge the alarm will turn the beeper off. The row number will continue to flash until the alarm condition is removed. If the monitor detects a faulty sensor and there is no planting activity present, the monitor will scroll "**CHECK CONNECTION"**

If the distance sensor is detected as faulty, the monitor will display either **PICKUP** or **RADAR**, depending on the type of sensor installed, and the audible alarm will sound. The user can push the **OK** key to acknowledge the alarm. When the distance sensor is faulty, the monitor will change to a bar graph only mode where the rows are still displayed relative to each other. No area related information (speed, field acres, total acres, seed spacing or seed population) will be accumulated or displayed.

UNDER FLOW ALARMS

If the seed rate for one or more rows is less than 55% of the calculated average, the corresponding 60% segment will stay on, the corresponding row number starts flashing and the alarm sounds. Pushing the **OK** key to acknowledge the alarm will turn the alarm off. The 60% segment of the bar graph remains on and the row number continues to flash until the alarm condition is corrected.

NOTE: All alarms present within a short time before planting stops, are frozen on the serene and the text **LOW** or **FAIL** will display on the LCD. If the underflow is between 0%-10%, this warrants a **FAIL** condition. If the underflow is between 10%-55%, a **LOW** condition is generated. If multiple rows have an underflow condition, **FAIL** will display if any one or more rows is between 0%-10%. This allows the user to identify and fix the problem rows.

NOTE: This warning will not trigger unless a minimum time of continuous planting has passed.

NOTE: If all the rows show a seed rate of zero, the condition will not generate an alarm. It will be assumed the planter has stopped. The row numbers and the bottom 60% segment will remain on for all selected rows.

MULTIPLE ALARMS

If more than one alarm condition occurs at the same time, pushing the **OK** key will acknowledge all alarms that are currently displayed. For example, if one row on the left and one row on the right is alarming; pushing the **OK** key will only acknowledge one of them. However, if there are two alarms on the lift, both alarms would be acknowledged with one push of the **OK** key.

WARNINGS AND ALARMS

SECTION NOT SELECTED WARNING

If the monitor was programmed for two sections and only one is currently selected for the display (by pressing the **SELECT** key), the icon of the disabled section will flash for a period of 1 minute, then turn off at each power up. If seed flow is sensed in the disabled section, the icon for that section (left or right) will begin to flash.

SEED PLANTING STOPPED WARNING

When the monitor detects no seed flow on all rows, the monitor will emit 3 short beeps to alert the user. This warning will occur each time the planter is stopped, each time the planter is raised at the end of a row or if the mechanical drive fails while planting.

NOTE: This warning will not trigger unless a minimum time of continuous planting has passed.

SEED COUNTING SENSOR IN CALIBRATION WARNING

All seed counting sensors run a self calibration sequence on power up. While in calibration the bottom segment of each corresponding bar graph will flash if the monitor detects movement or planting activity. If the monitor does not detect this, the message **WAIT CALIBRATION** will be scrolled.

SEED COUNTING SENSOR TOO DIRTY WARNING

After the seed counting sensors end their internal self calibration, the monitor may detect one or more sensors are either too dirty or blocked. If the monitor detects planting or movement, the corresponding bar graph remains flashing. The monitor will display **CLEAN SENSORS** on the LCD if no movement or planting is detected, prompting the user to clean the tubes. If the tubes are dirty, they will still show seed flow with less accuracy. If the tubes are blocked the user will get an alarm as soon as planting starts. The corresponding bar graph will remain flashing until the problem is corrected and the monitor is powered down and then powered back up.

LOW BATTERY WARNING

The monitor is constantly monitoring its input voltage to quickly detect low power conditions. If the monitor detects that the input voltage has dropped below 10.5V, it will display **LOW POWER** on the LCD, provided that the monitor does not detect planting.

NOTE: After the alarms have been acknowledged and if the alarm condition is still present, the LCD will continue to display the alarm condition.

MACHINE OPERATION

FIELD OPERATION

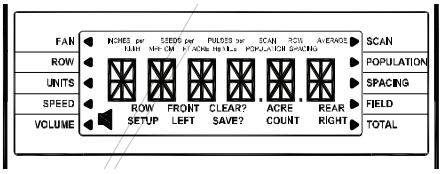
Press the **ON/OFF** key to turn the monitor on & off. Information regarding each section is displayed alternately every 5 seconds.

LEFT / RIGHT CONFIGURATION

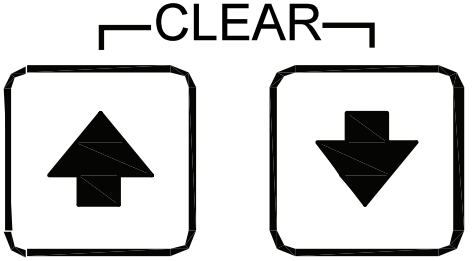
Press the **SELECT** key once to show LEFT section only.
Press the **SELECT** key a second time to show RIGHT section only
Press the **SELECT** key a third time to return to each section being displayed alternately every 5 seconds.

NOTE: All planters with 18 rows or less should always be entered in the "left" section.

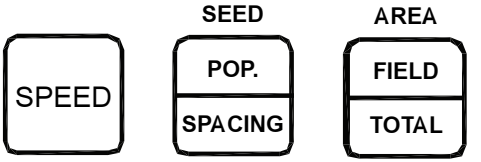
NOTE: **SELECT** key has no function when only a single section is being used.



At Power up, the lower LCD will show speed (MPH or KmPH)



Press the **UP** or **DOWN** arrow keys to move the flashing arrow on the lower LCD to change what is displayed on the lower LCD.



Press the shortcut keys
SPEED,
SEED POPULATION / SEED SPACING or
AREA FIELD / TOTAL
for direct access to these displays.

Press the **SEED POPULATION / SEED SPACING or AREA FIELD / TOTAL** keys to alternate between the two functions assigned to that key.

Press the **SEED POPULATION / SEED SPACING** key to choose average row seed spacing/population per acre.

Press the **SCAN** key to display individual rows starting at row 1.

Press the **SCAN** key again to lock on current row.

Press the **SCAN** key again to resume scrolling.

Use the **UP** or **DOWN** arrow keys to move a particular row.

Press the **SEED POPULATION / SEED SPACING** key to go back to planter average.

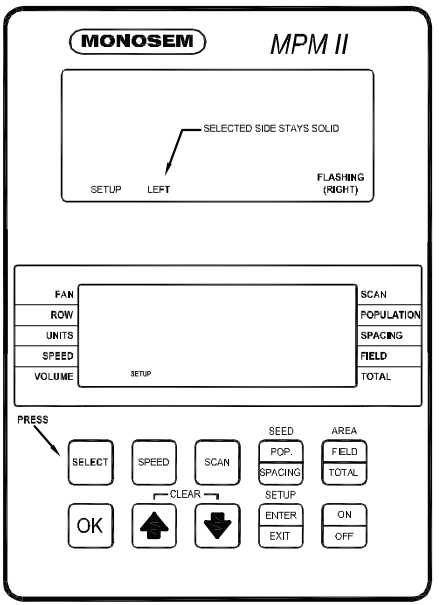
CLEARING FIELD AREA

To reset the counter, press the **UP** or **DOWN** arrow keys to move the arrow in the lower display to **FIELD AREA**

Press the **UP** and **DOWN** arrow keys at the same time to clear the data. The **CL EAR?** Icon will be displayed and the monitor will beep several times. When the data is actually cleared, the monitor will emit a long beep, and the field area is reset to zero. After the long beep, the previous field area recorded is not retrievable.

NOTE: Clearing the field area counter will not clear the total area counter. See **Programming-Clearing Total Area** for clearing total area.

Press the **OK** key to silence alarms. See **Warnings and Alarms.**



CONNECTING SEED TUBES, RADAR / MAGNETIC DISTANCE SENSORS

1. ALL the seed tubes with sensors must be disconnected (including the radar, magnetic distance) from the harness and or console and the monitor must be off.

NOTE: If the monitor detects a radar sensor but no seed tubes at power up, it will automatically go into **ACRE COUNT** mode. See Acre counter/ speedometer mode.

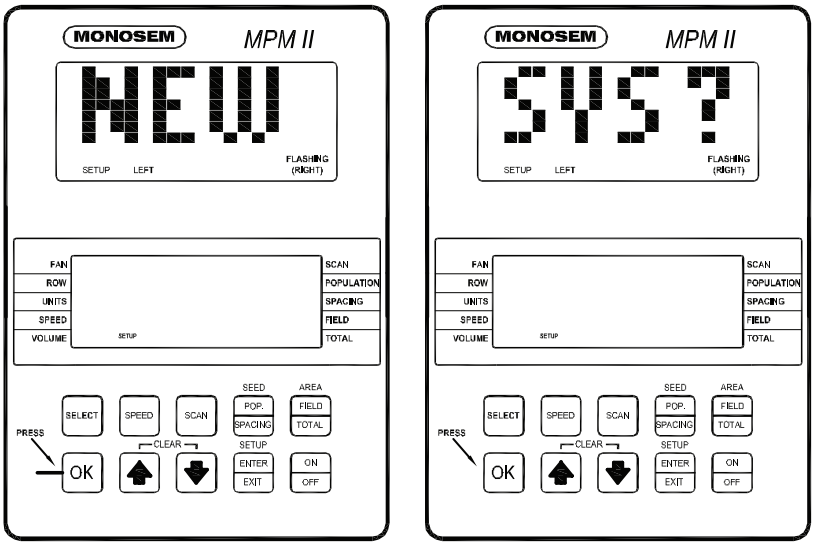
NOTE: Disconnect magnetic distance sensor between MUX adapter and planter harness. (Disconnect the 3 wire connector and leave the 2 wire connector alone.) DO NOT disconnect between Distance Sensor and MUX adapter.

2. Press the **ON** key. The monitor automatically enters the setup procedure.

3. Press the **SELECT** key. Each time you press the **SELECT** key the mode will toggle between left/right. The selected display will be solid and the configuration not currently selected will be flashing.

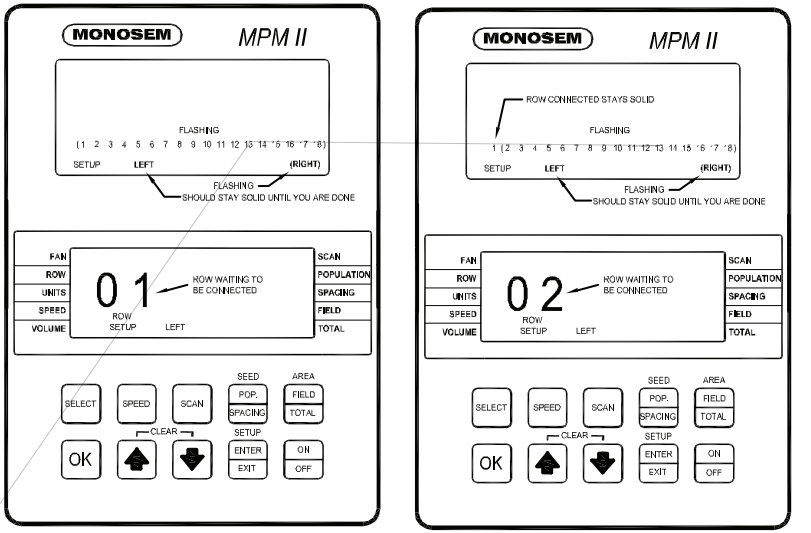
All planters with 18 rows or less should always be entered in the **LEFT** section.

4. Press and hold the **OK** key to confirm the selection. During confirmation, the display will alternate between **NEW** and **SYS?** The alarm will sound four short beeps followed by one long beep. At this point your selection has been saved and row numbers will appear flashing on the upper display.



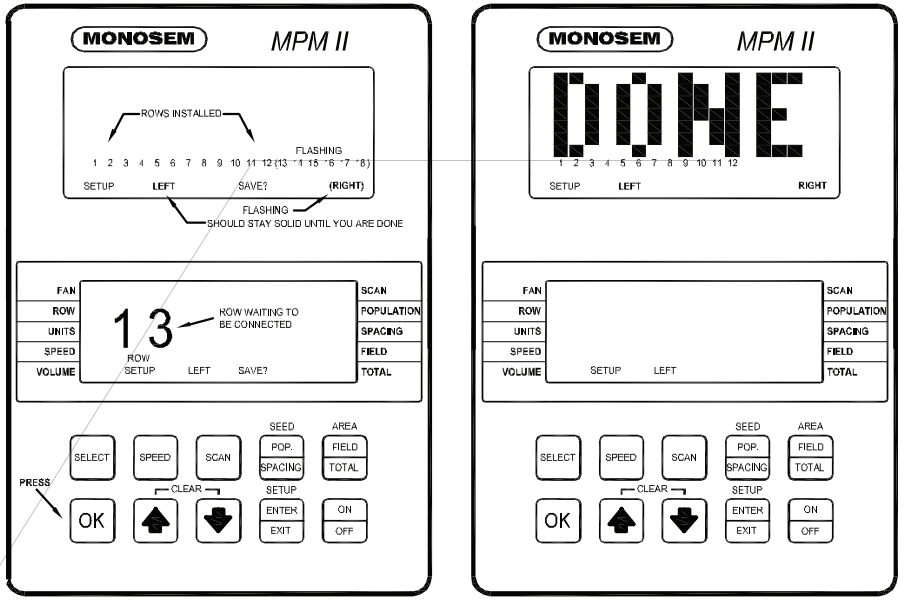
5. Determine which row you want as number one and plug the seed tube w/ sensor into the harness.

Continue plugging in sensors. Row 1 first, Row 2 second and so on up to 18 rows. When a sensor is plugged in, the corresponding row number on the LCD display will stay solid, the monitor will chirp twice and the LED (Light Emitting Diode) on the seed tube sensor will turn on for approximately 30 seconds to show connection is made



6. When all the seed tubes with sensors for the current section (left/right) are installed, check to be sure the monitor displays solid numbers for the number of sensors connected.

If this condition is satisfied, press and hold the **OK** key to save the setup for the current section. The **SAVE?** icon will show followed by continuous short beeps indicating the monitor is preparing to save. The installer has five seconds to decide if he wants to save the current configuration. During this time short beeps will sound. To complete the save, hold the **OK** key pressed until the word **DONE** shows on the screen followed by a long beep and the **SAVE?** icon turns off. When the **OK** key is released the monitor will continue with the second section installation.



7. Follow steps 5 thru 7 to install the second section. If no seed tubes are installed on the second section, press and hold the **OK** key. The word **DONE** will appear in the upper display. The alarm will sound 4 short beeps followed by one long beep and the **SAVE?** icon turns off. When you release the **OK** key the upper display will scroll **WAITING CALIBRATION.** The lower display will show **GNDSPD** and the alarm will sound continually until the **MDS** is plugged in. If the system will be using a radar sensor, turn the console off. The radar sensor can be installed later.

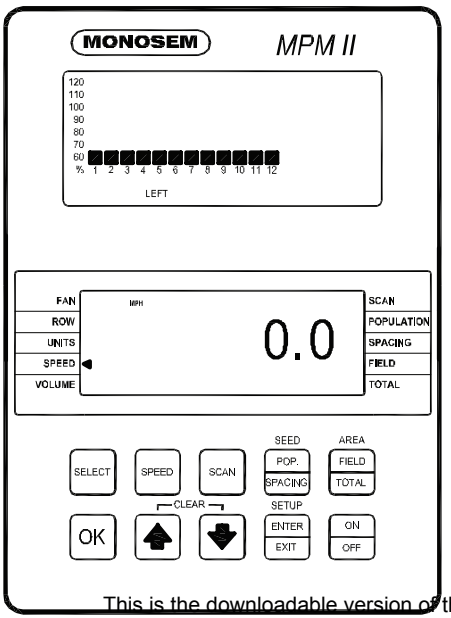
8. When both sections are finished and saved, the monitor will exit setup mode.

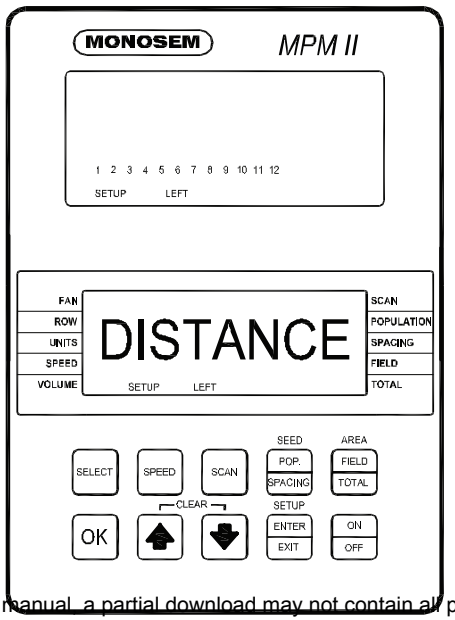
NOTE: To reprogram the system to monitor more or less rows (up to the maximum of 18 per section, 36 total), all sensors must be unplugged, followed by the complete setup procedure.

NOTE: Individual seed tubes may be unplugged for special situations. An alarm will sound which can be silenced by touching the **OK** key. The monitor will recognize the seed tube(s) when reconnected.

If the distance sensor has not been plugged in at this time the console will give continuous beeps and the word "**DISTANCE**" will be shown in the lower LCD. Plug in the distance sensor and the monitor will display either **PICKUP** if a magnetic (pickup) distance sensor is connected, or "**RADAR**" if a radar sensor is installed. Only one distance sensor can be installed at a time.

NOTE: Each time the monitor is powered up, the words **WAIT CALIBRATION** will scroll across the display. This indicates that the console is running a check of all the sensors. After several seconds, the check will be completed and if all sensors are functional the display will show the field operation mode.





TROUBLESHOOTING

PROBLEM: **Faulty monitor values being displayed (such as speed, area, etc)**

Incorrect monitor settings. - Change settings to properly correspond to the system.

The radar / magnetic distance sensor is faulty.- Replace sensor.

The radar sensor was improperly mounted. - Properly mount sensor.

PROBLEM: **MPH readings at idle are erroneous.** (MPM II with radar distance sensor only.)

Radar gun is not located in a stable location. - Relocate to more stable location.

PROBLEM: **Single Sensor communication alarm comes on (alarm on with no bar graph and a blinking row number on a single row**

Faulty seed tube sensor. -Replace Sensor.

Break in the harness just before the seed tube sensor. -Inspect for break in harness and repair. If break can't be found, replace harness section.

The connector is dirty or corroded.-Clean connector.

PROBLEM: **Sensor communication alarms come on for all sensors** (alarm on with no bar graphs and blinking row numbers on all rows.)

The monitor is faulty. -Replace monitor

Break in the harness just after the monitor. - Inspect for break in harness and repair. If the break can't be found, replace harness section.

Connector is dirty or corroded. -Clean connector.

PROBLEM: **Sensor communication alarms come on for some sensors** (alarm on with no bar graphs and blinking row numbers on all rows.)

Break in the harness. -Inspect for break in harness and repair. If break can't be found, replace harness section corresponding with the alarming sensors.

Connector is dirty or corroded -Clean connector.

PROBLEM: **The alarm "Under planting" or "no planting" sounds on a single sensor while planting.** (Alarm on with a single bar graph segment on and a blinking row number on a single row.)

Seed tube sensor is blocked.-Clean sensor.

Faulty seed tube sensor. - Replace sensor.

PROBLEM: **Seed tube sensor dirty or blocked warning comes on** (after calibration, bar graph keeps blinking for a single row.)

Seed tube is dirty. -Clean sensor.

Faulty seed tube sensor. -Replace sensor.

PROBLEM: **LED on the seed tube sensor will not come on.**

Faulty seed tube sensor. - Replace sensor.

Connector is dirty or corroded -Clean connector.

Break in the harness just before the sensor. - Repair harness.

PROBLEM: **System low error message**

Pinched wire on harness. - Repair or replace harness.

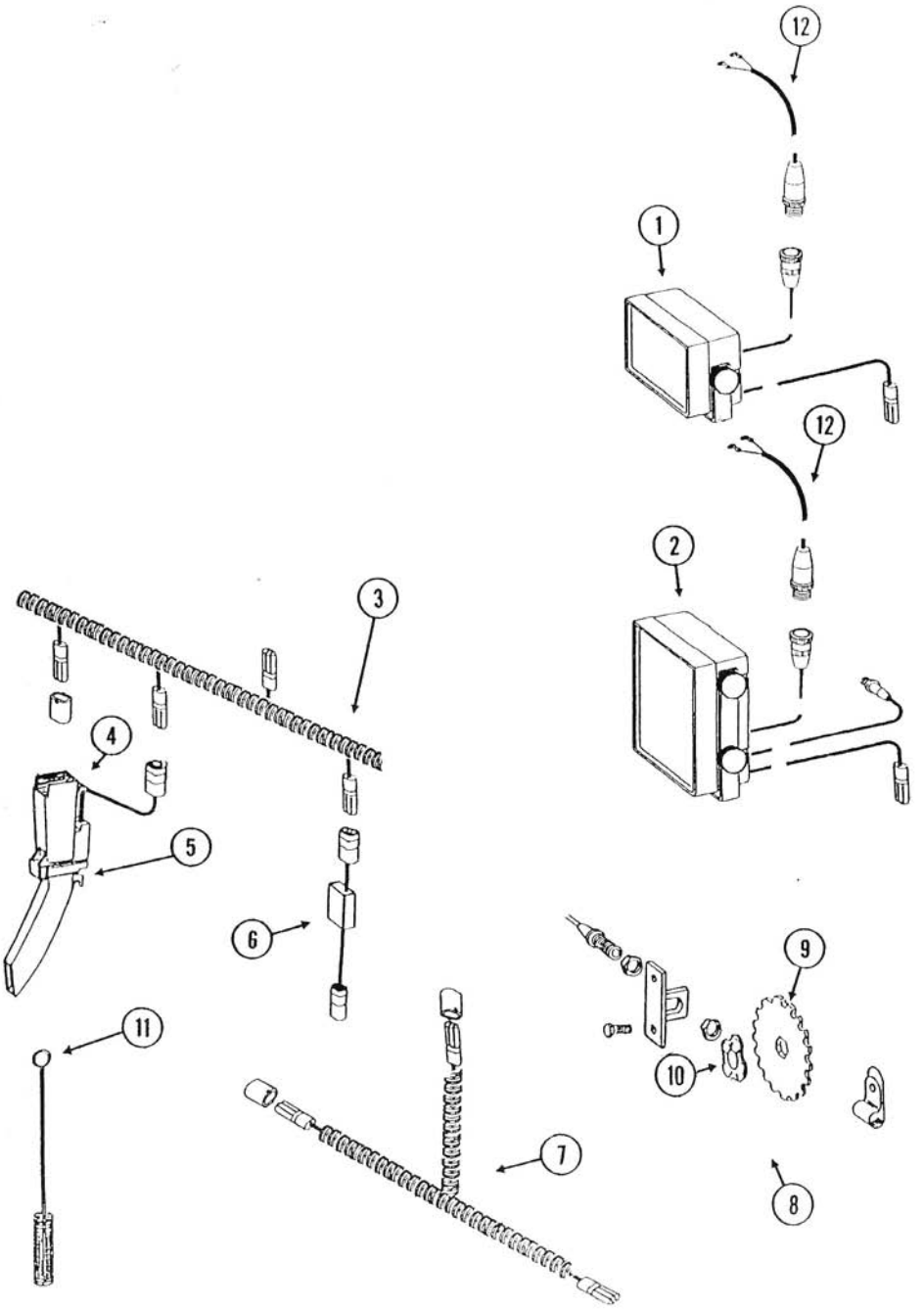
PROBLEM: **COP error message appears**

Internal console error. -Press **OK**. If this doesn't help, reprogram the monitor. If still malfunctioning, send in for service.

PROBLEM: **Monitor not reading population**.

Radar is possibly not working. - Turn console on and unplug radar wire. Look for radar on error message. If faulty replace radar.

REPLACEMENT PARTS



REPLACEMENT PARTS

ITEM	PART #	DESCRIPTION
1	VA598004	MPM I monitor console*
2	VA598005	MPM II monitor console*
3	L318954	4-row Harness
3	L318956	6-row Harness
3	L318958	8-row Harness
3	L318962	12-row Harness
3	L318966	16-row Harness
3	L318974	24-row Harness
3	L318986	36-row Harness
4	VA598003	Seed tube with sensor
	VA598503	Seed tube only
5	VA598H03	Sensor only
6	VA291009	Mux adaptor, ground speed
7	VA598708	Y Adaptor for MDS
8	KA6147	Magnetic Distance Sensor Kit
9	KD8751	Magnetic Distance Sensor Pulse Wheel
10	KD8771	Spring wave washer
11	VMO355519	Cleaning brush
12	VA48377	Power adapter cable

*Includes MPM console, mounting bracket,power adapter cable and cleaning brush.

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