

## ***OPERATORS MANUAL***

Issue 2.1  
7/1/05

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## Operation

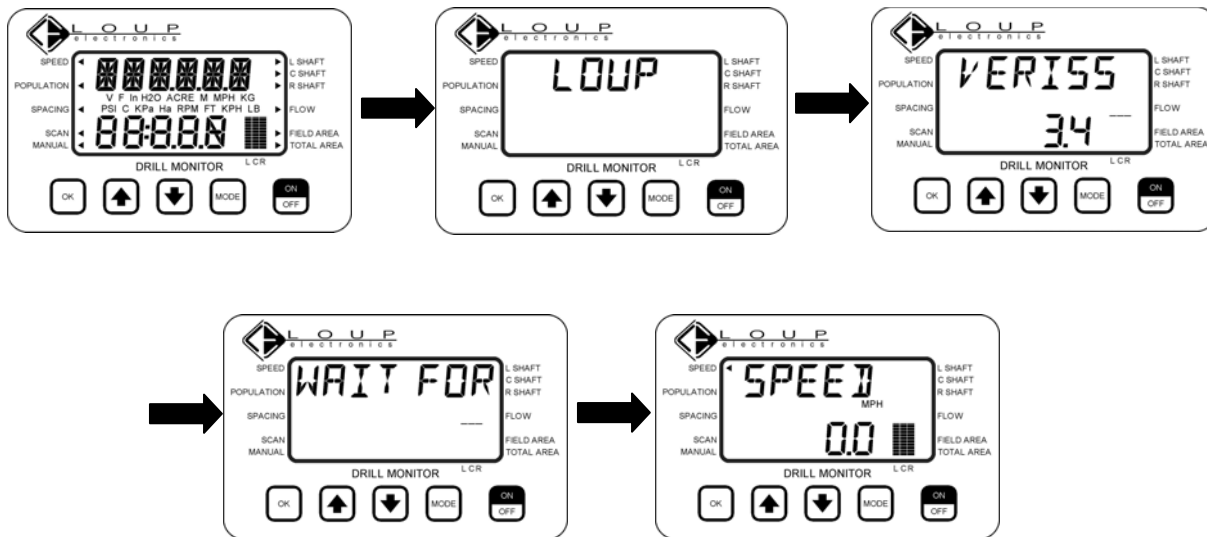
This manual will familiarize you with operation, calibration and technical information. All aspects and features are detailed but may not be applicable to your system configuration.

The LOUP ELECTRONICS Drill Monitor is capable of monitoring and displaying:

- Ground speed (Implemented Mounted Speed Sensor or optional Radar)
- Population in Seeds/Acre (up to 24 sensors can be connected)
- Spacing between seeds or Seeds per Foot (S/FT or IN/S)
- Three shaft speed RPM's (Left, Center & Right)
- Seed Flow (FLOW) up to 112 sensors can be connected
- Field Area (FAREA)
- Total area (TAREA)
- Three Hoppers (displayed as bargraph display)

## Start-Up


Each time the monitor is powered on the monitor will perform the following start-up routine.




Once the SPEED 0.0 is displayed, the monitor is in the normal operate mode.

*Note that the bargraphs in the lower right hand corner represent Hopper Sensors. If no hopper level sensors are present these bargraphs will not be displayed.*



If the implement is not moving in it's working condition within 30 seconds of start-up a SPEED

alarm will be generated. To silence the alarm, press . The indicator arrow will continue to flash until the implement is in motion and above 2 MPH.

If hopper level sensors are present and the hopper is empty, alarms will be generated

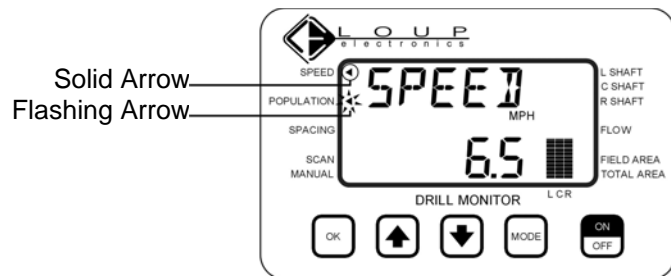
immediately following start-up. To silence the alarm, press . Bargraphs in the lower right hand corner will continue to flash until the hopper is filled.

## Basic Navigation

The use of the  or  buttons will allow movement from one function to the next. A solid indicator arrow on the side of the display will be lit indicating the displayed function.

Under certain circumstances multiple arrows may be displayed. When the monitor is in an alarm state a flashing arrow will appear next to the function that is in alarm. A solid arrow will remain at the displayed function.

The graphic to the right illustrates the display reading SPEED with an alarm on POPULATION.



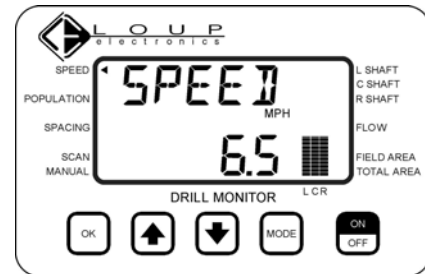
## Step-by-Step Navigation


Details of the individual readout functions are illustrated in the following section.

### Speed

When the SPEED function is displayed the top line will read SPEED. The bottom line will read the speed in MPH.

*To receive an accurate speed readout, you must do a ground speed calibration (see pg.7 for more details).*




Press the  to display POPULATION.

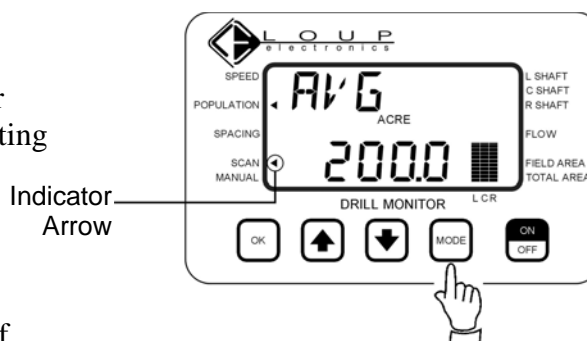
## Population


When the POPULATION function is displayed the top line of the display will read the Seed Sensors (ROW 1, ROW 2, etc.), MIN (the row that is applying the least amount of seed), MAX (the row that is applying the most seed) and AVG (average population for all sensors).



The bottom line will read the number of seeds per acre (i.e. 200.0 = 200,000 seeds/acre).

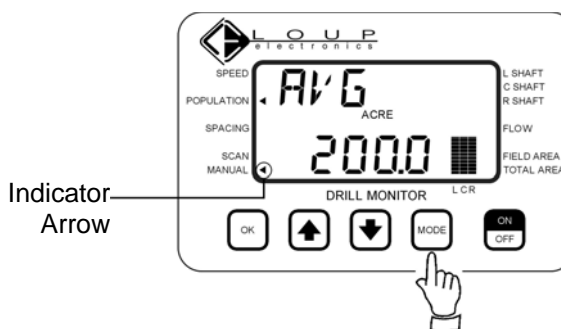
Press  once to review the population of the connected counting sensors. Notice the indicator arrow that appears in the lower left corner indicating the monitor is in SCAN Mode.

In SCAN Mode the monitor will automatically display each of the individual Seed Sensors (ROW 1, ROW 2, etc.), MIN (the row that is applying the least amount of seed), MAX (the row that is applying the most seed) and AVG (average population for all sensors) on a timed delay.




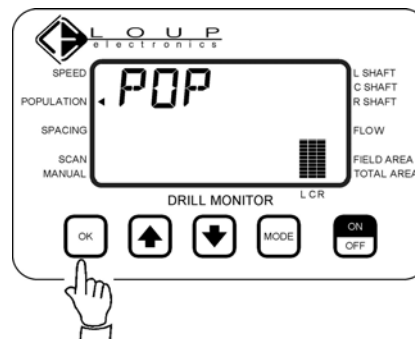
Press  again to hold the display on an individual row or to watch the average only. Notice the indicator arrow moves to MANUAL.

Use the  or  buttons to change the display to the ROW that you would like to display.



To exit POPULATION press .


Use the  to display SPACING.




## Spacing

When the SPACING function is displayed the top line of the display will read the Seed Sensors (ROW 1, ROW 2, etc.), MIN (the row that is applying the most seed), MAX (the row that is applying the least amount of seed) and AVG (average seed spacing for the entire machine). The bottom line will read the number of seeds per foot.

*The button pushing routine for SPACING is identical to that of the POPULATION function.*


Press  once to review the Seed Spacing of the connected counting sensors. Notice the indicator arrow that appears in the lower left corner indicating the monitor is in SCAN Mode.

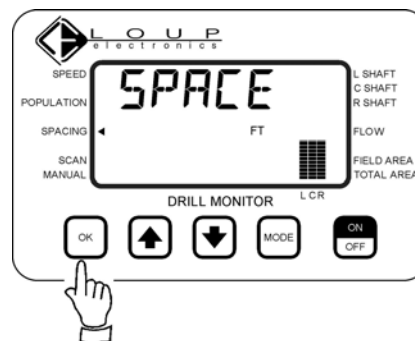
In SCAN Mode the monitor will automatically scroll through each of the individual Seed Sensors (ROW 1, ROW 2, etc.), MIN (the row that is applying the most seed), MAX (the row that is applying the least amount of seed) and AVG (average population for the entire machine) on a timed delay.

Press  again to hold the display on an individual row or to watch the average only. Notice the indicator arrow has moves to MANUAL.

Use the  or  buttons to change the display to the ROW that you would like to look at.

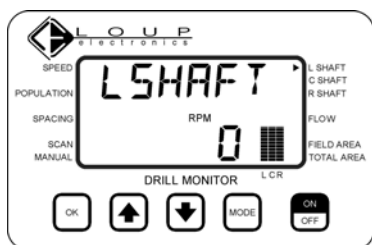
To exit SPACING press .

Use the  to display LSHAFT

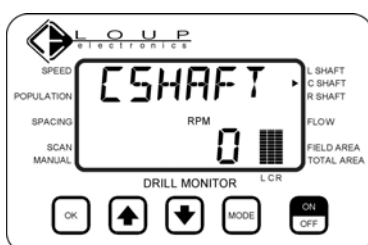


## Shaft

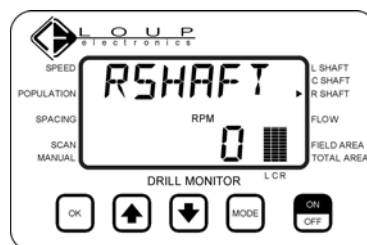
The Drill Monitor is capable of monitoring 3 shaft sensors, Left (L SHAFT), Center (C SHAFT), and Right (R SHAFT). When each respective shaft position is displayed the top line will indicate the shaft. The bottom line will display the revolutions per minute (RPM).



Left Shaft

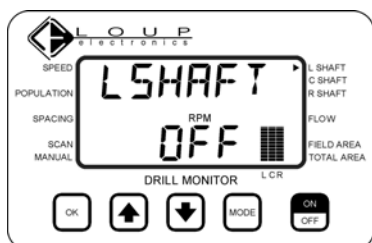


Center Shaft

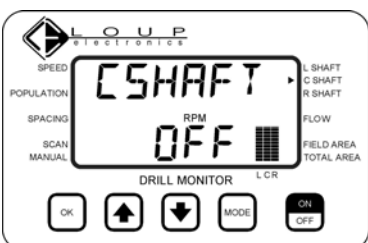


Right Shaft

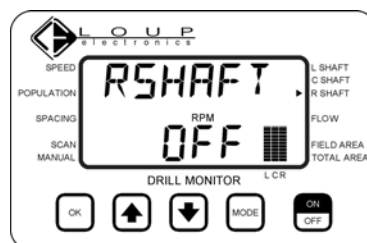
If you do not have any Shaft sensors the bottom line of the display will read OFF.



Left Shaft



Center Shaft

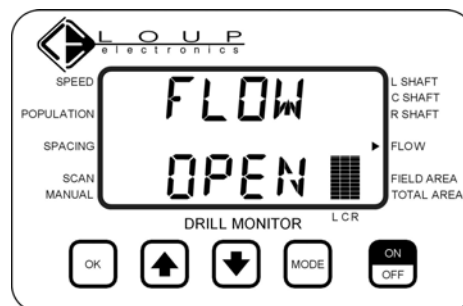


Right Shaft

## Flow

The FLOW function is specifically used for blockage monitoring with the use of blockage sensors. Blockage Sensors are small sensors strapped to the tube to determine *flow only*. This function does not have any applicability to Population Sensors.

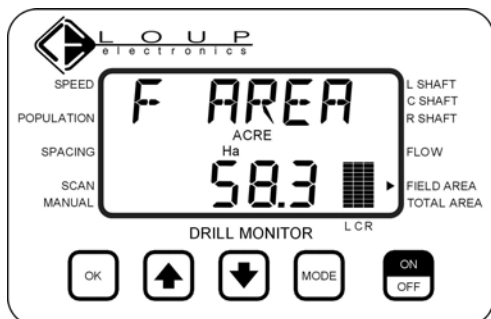
During normal operation, the display will simply read FLOW OPEN.



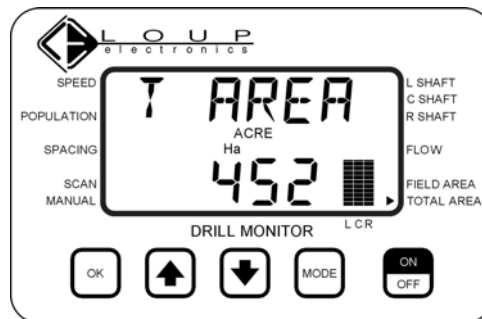
This function must be calibrated periodically to avoid false BLOCK readings. Refer to the BLOCKAGE CALIBRATION on pg. 10 for more details.

## Field Area/Total Area

The drill monitor has two Area counters; FIELD AREA and TOTAL AREA. The field area will accumulate by tenths of an acre/hectare. The TOTAL AREA will accumulate in whole acres or hectares only.



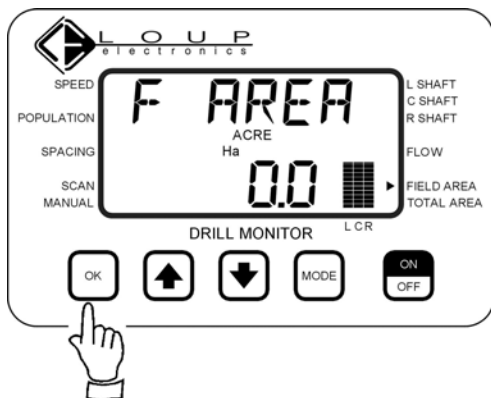
Field Area



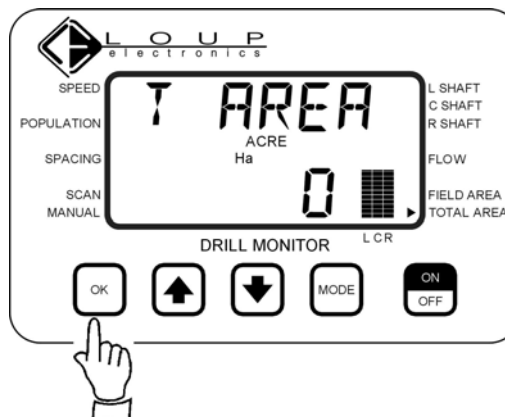
Total Area

## Resetting Area Counters

To reset each of the area displays press and hold  until bottom display reads zero. Resetting the FIELD AREA will reset FIELD AREA only. Resetting the TOTAL AREA will reset both the FIELD AREA and TOTAL AREA.



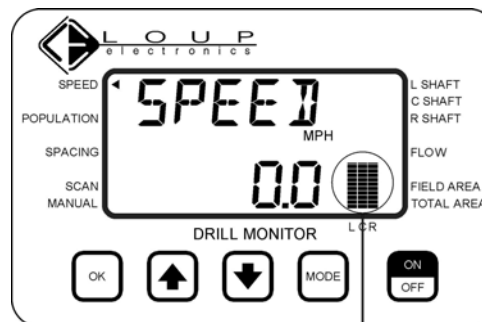
Field Area



Total Area

## Hopper

The Drill Monitor is capable of monitoring 3 Hopper sensors. These are displayed using bargraphs at the lower right corner of display; Left (L), Center (C), and Right (R). If there are no hopper sensors available the bargraphs will not be shown.



Hopper Bargraphs  
(L,C,R)



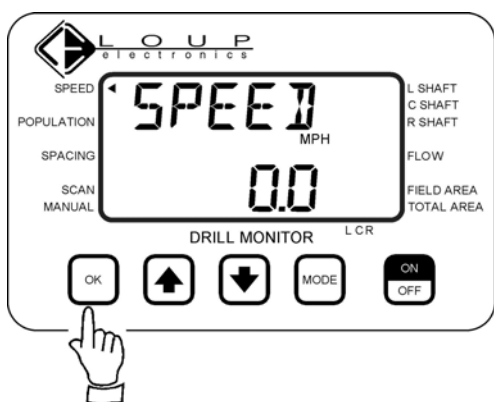
## Ground Speed Calibration

With each new system a ground speed calibration must be completed to insure accurate population readings, accurate area totals and accurate ground speed readings. To complete the calibration, measure out a course of 400 feet, preferably on level ground with a start and finish point. The drill will be in the down position throughout this procedure.

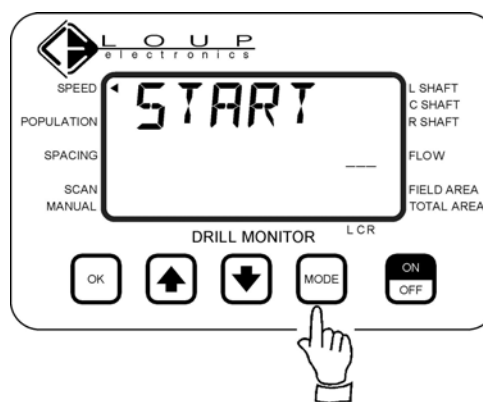
*Note:* During the calibration the monitor is looking for the number of pulses from the drill mounted sensor or in the case of radar, the number of radar pulses. The monitor will not display 400 when the speed calibration has been completed, however it will display the pulses counted in 400 feet.

To complete the ground speed calibration follow the steps below.

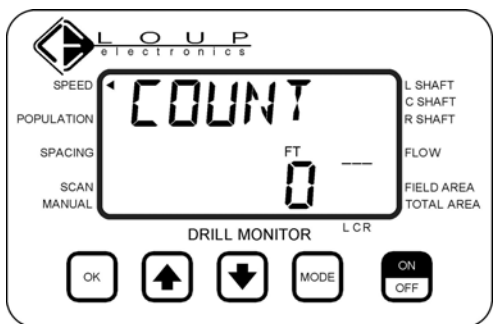
- 1) Drive to the start point and turn the monitor on.



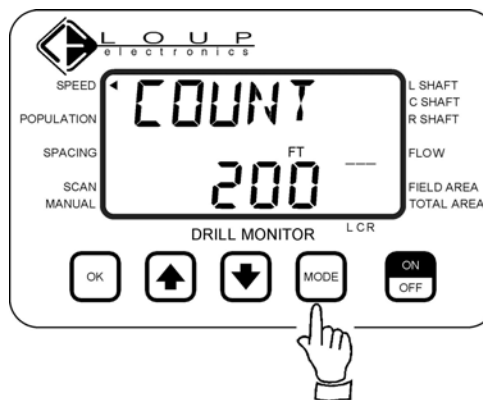
- 2) Select the SPEED Function then press and hold the **OK** key until the display changes.



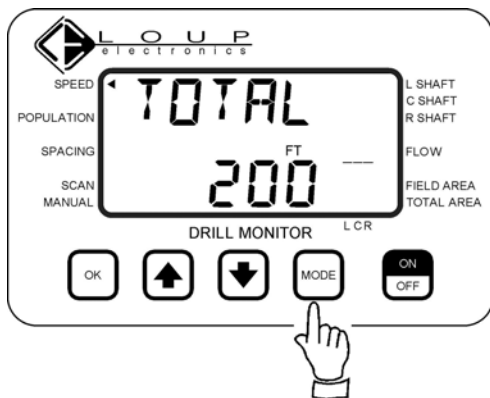
- 3) The display now reads START. Press the **MODE** button once.



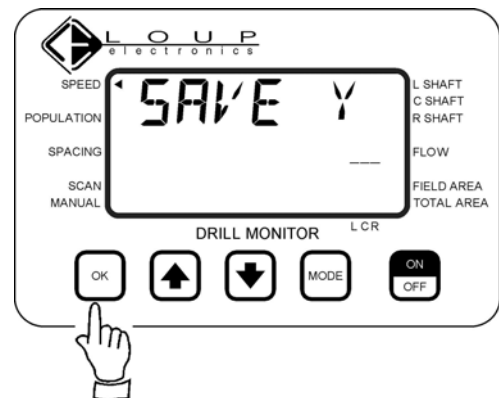
- 4) The display now reads COUNT. With the implement in the down position, drive the 400ft course stopping at the finish point.



- 5) Press the **MODE** button once. *(The number shown is for illustration purposes only.)*



6) The display now reads TOTAL. Press the **MODE** button once.  
*(The number shown is for illustration purposes only.)*





7) The display now reads SAVE Y. Press and hold the **OK** button until the display changes to complete the calibration.


## Blockage Calibration

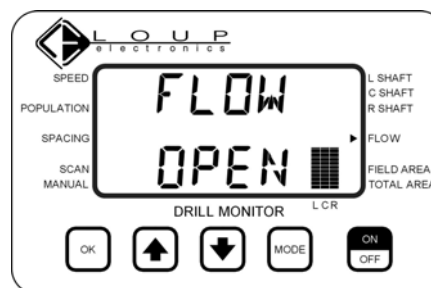
With systems that include blockage sensors (single sided sensor detecting seed flow only) a blockage calibration must be done periodically to set the alarm point in the monitor. The calibration must be completed while seeding at normal speed and normal rates.

*Note:* If a blockage calibration is attempted when blockage sensors are not being used the monitor will power off.

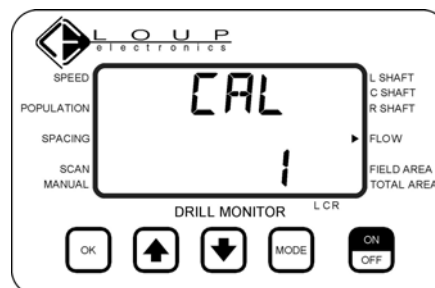
To complete the blockage calibration, follow the steps below.

1) Move the indicator arrow to the FLOW position by using the  or . The monitor will read FLOW OPEN.


2) Press and Hold  while seeding until the monitor says CAL.

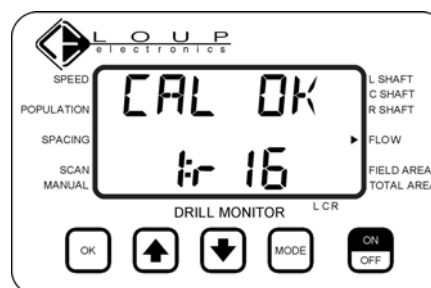


3) Continue normal seeding. The Top Line will continue to read CAL as the bottom line will show the row number being calibrated.



4) When calibration is complete the top line will read CAL OK, the bottom line will display the module number and number of rows calibrated. This may take several minutes.

Press  once to resume the normal operate mode.



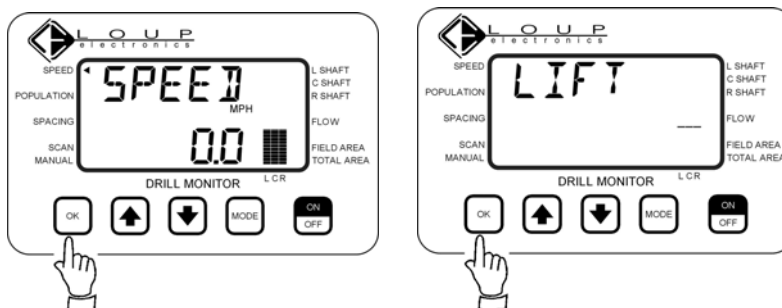
## Alarms

All alarms operate in a similar fashion: The alarm sounds and alarm information is displayed (either a single message or two alternating messages). In some cases, a triangular function indicator will flash as well. The alarms will persist until the alarm condition is fixed or until the operator acknowledges the alarm. After being acknowledged by the user, the indicator arrow will continue to flash until the alarm condition is fixed.

### Speed

A SPEED or LIFT alarm indicates that the implement has been out of motion for 30 seconds.

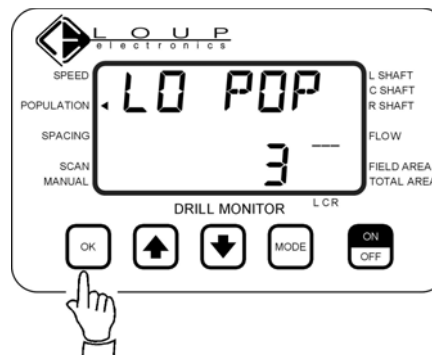
To silence the alarm press



### Population

A population alarm occurs when the seed rate has fallen below the set alarm point. The top line will read LO POP. The bottom line will display the row that is in alarm.

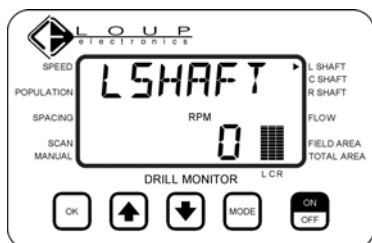
To silence the alarm press



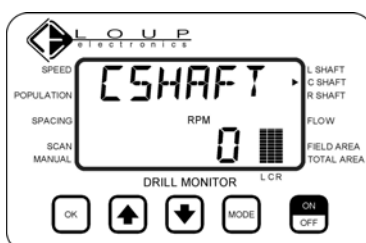
### Shaft

A shaft alarm occurs when the Shaft RPM has fallen below the set alarm point. The top line will display the shaft in alarm. The bottom line will display the RPM of the shaft that is in alarm.

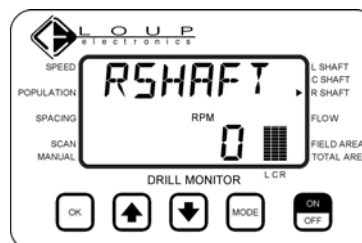
To silence the alarm press



Left Shaft



Center Shaft

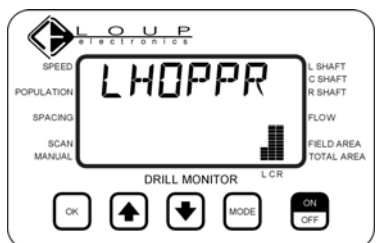


Right Shaft

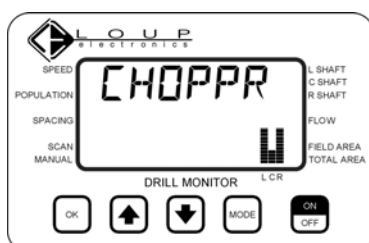
## Hopper

A hopper alarm occurs when the grain in the hopper has fallen below the hopper sensor indicating the hopper is near empty. The top line will display the hopper sensor in alarm. The corresponding bargraph in the lower right corner will begin to flash.

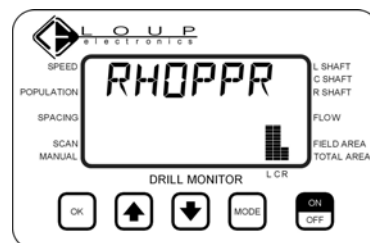
To silence the alarm press .



Left Hopper



Center Hopper

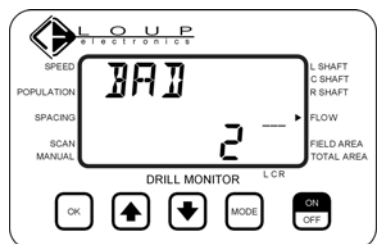


Right Hopper

## Blockage Alarms

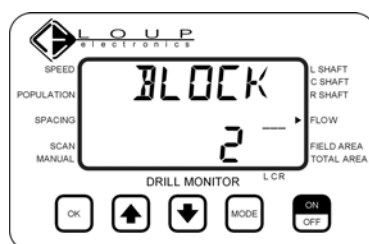
There are 3 different types of blockage alarms that may occur. To silence each of these alarms

press .



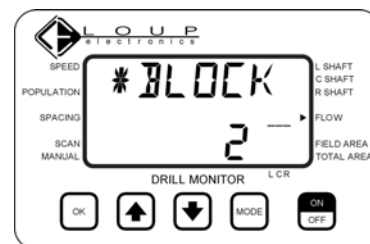
**BAD**

This is a warning. It means this run has failed the self test but does not mean that the sensor will not operate. Run a blockage calibration to check if sensor needs to be replaced.



**BLOCK**

The displayed row has stopped seeding. Clean out the run indicated by the display.



**\*BLOCK**

The sensor failed self-test and is indicating a blocked run. If there is no blockage in the tube, the sensor may have stopped working properly.


**If any of the listed alarms persist or if an alarm is displayed that is not listed above contact Loup Electronics.**

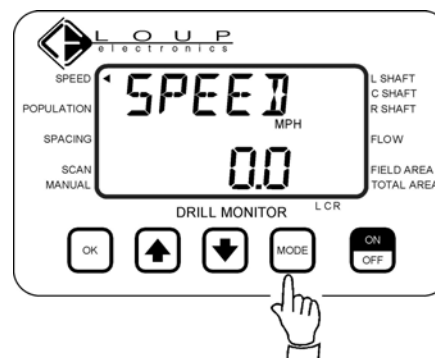
## Settings

In most cases, the settings for your Drill Monitor have been preset at the factory for your make and model of drill. However, occasionally these settings may need to be changed.



### SPEED

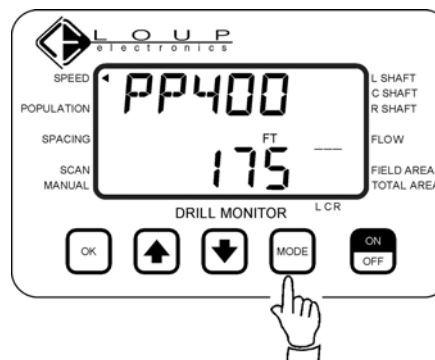
DISPLAY	FUNCTION	RANGE	COMMENTS
PP400	Pulses per 400 feet for ground speed shaft sensor	50 to 1000	Default setting using shaft sensor is 175. See Ground Speed Calibration for further instructions.
PPR	Pulses per revolution for ground speed sensor	1 to 16	Default setting is 4
RPP400	Pulses per 400 feet for Radar ground speed sensor	4000 to 26000	Default is 15151 (200,000 pulses per mile)


To enter the SPEED settings, press and hold  until the display reads PP400.




The PP400 number represents your ground speed calibration number for a drill mounted ground speed sensor.

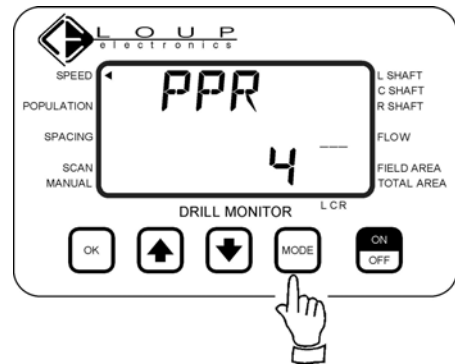
To change this number use the  or  to adjust accordingly. Making this number bigger will make your ground speed read slower. Making this number smaller will make your ground speed read faster.





To proceed to the next setting press  once.


PPR is the number of magnets located in the actuator that is mounted on the shaft of the implement. Generally, this number should not be changed.

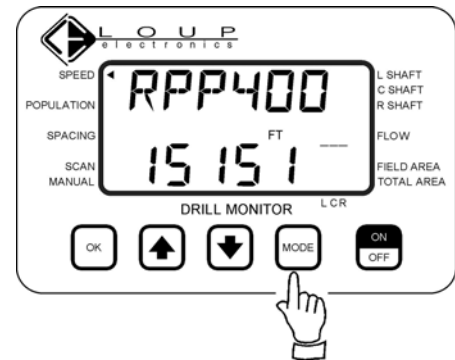
To proceed to the next setting press  once.




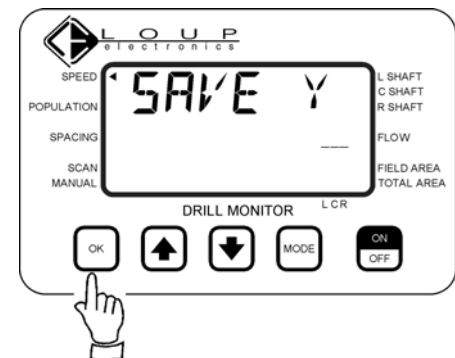
The RPP400 number represents your ground speed calibration number when using radar for ground speed.



To change this number use the  or  to adjust accordingly. Making this number bigger will make your ground speed read slower. Making this number smaller will make your ground speed read faster.

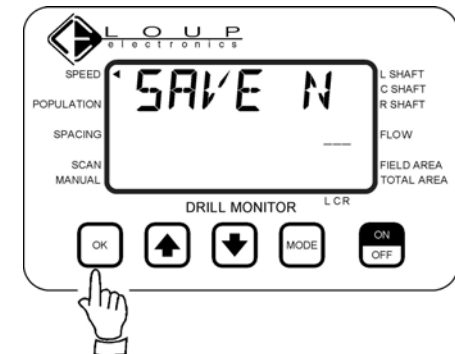
To proceed to the next setting press  once.



To save the changes and exit settings press and hold  until the display changes.



To exit settings without saving, press  once then press  once.



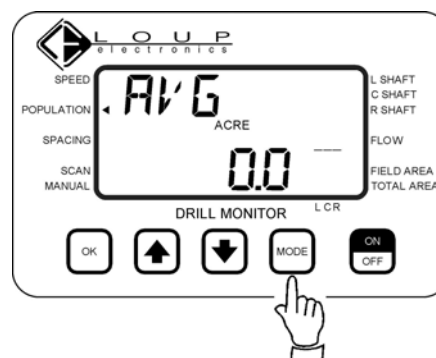
## POPULATION

DISPLAY	FUNCTION	RANGE	COMMENTS
ALARM	Low seed rate alarm point	0 to 9999.0	Numbers are displayed in thousands. Default is 50.0
RSPACE	Row spacing	0 to 99.9 inches	This needs to be set properly for Population and Spacing displays to display correct values. Default is 7.5 in.
TYPE	Choose the type of implement	1 to 3	Type 1 is a Conventional Drill Type 2 is an Air Seeder at low seed population. Type 3 is an Air Seeder at high seed population.
POPADJ	Population Adjustment	-99 to +99 %	Increases/decreases Population and Spacing by this amount Default is 0%


To enter the POPULATION settings, press and hold



until the display changes.

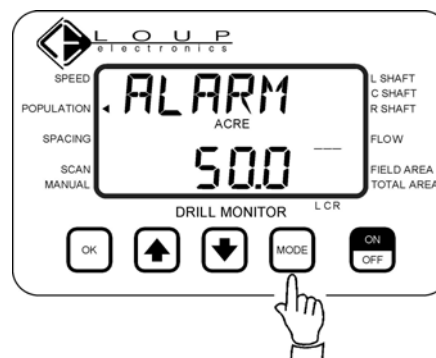



ALARM is the Low Population Alarm point (50.0 =

50,000 seeds/acre). To change this number use  or





to adjust accordingly.




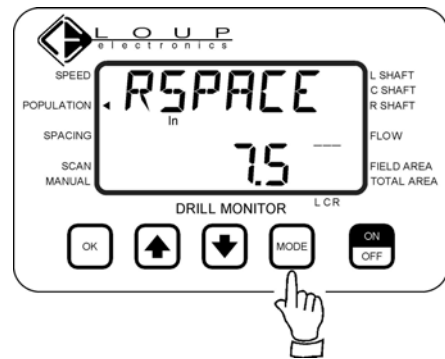
To proceed to the next setting press  once.





RSPACE is the implement row spacing. This number must be correct to receive accurate population readings.


To change this number use the  or  to adjust accordingly.

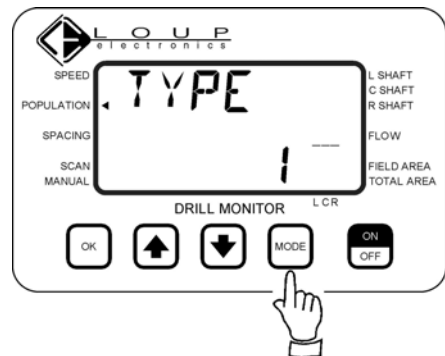
To proceed to the next setting press  once.





TYPE refers to the type of drill and the seeding rate.


To change this number use the  or  to adjust accordingly.

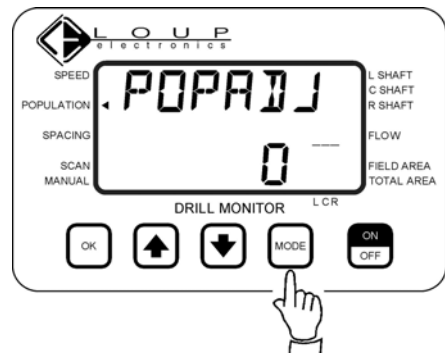
To proceed to the next setting press  once.




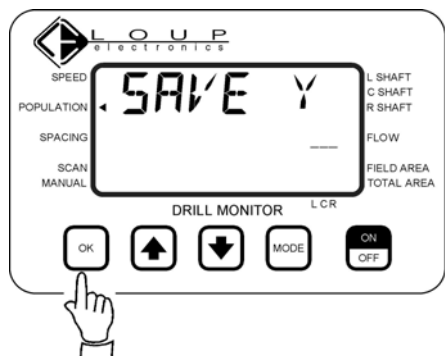
POPADJ refers to Population Adjust. This setting allows adjustments of the population readings by a specific %.



To change this number use the  or  to adjust accordingly.

To proceed to the next setting press  once.



To save the changes and exit settings press and hold  until the display changes.




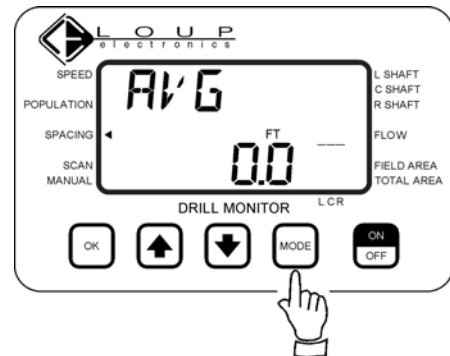
To exit settings without saving, press  once then press  once.





## SPACING


DISPLAY	FUNCTION	RANGE	COMMENTS
SELECT	Select readout for Spacing function	0 or 1	0 selects Seeds per Foot readout. 1 selects Seed Spacing in inches
POPADJ	Population Adjustment	-99 to +99 %	Increases/decreases Population and Spacing by this amount Default is 0%

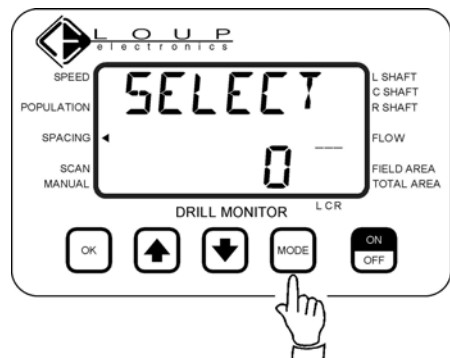
To enter the SPACING settings, press and hold  until the display changes.





SELECT represents the display properties (0 = Seeds/Ft; 1 = Seed Spacing in inches).


To change this number use the  or  to adjust accordingly.

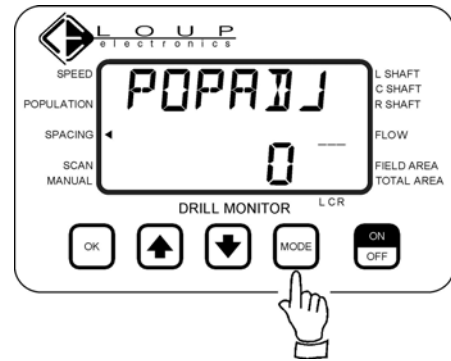
To proceed to the next setting press  once.




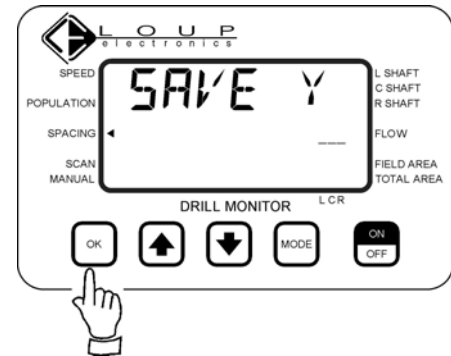
POPADJ refers to Population Adjust. This setting allows adjustments of the population readings by a specific %.



To change this number use the  or  to adjust accordingly.

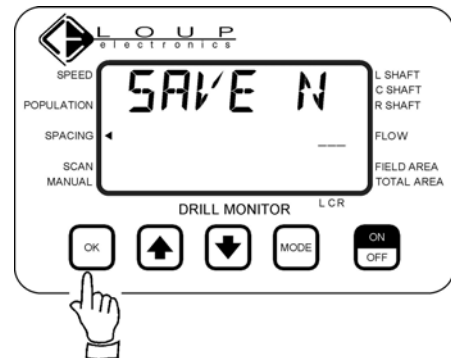
To proceed to the next setting press  once.



To save the changes and exit settings press and hold  until the display changes.



To exit settings without saving, press  once then press  once.



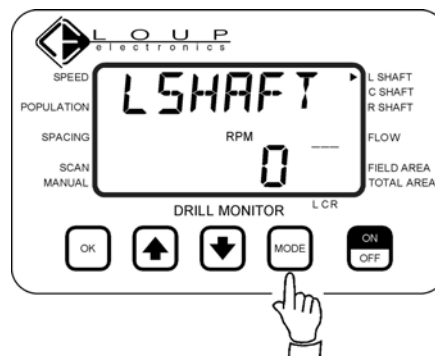
## LEFT SHAFT

DISPLAY	FUNCTION	RANGE	COMMENTS
PULSES	Pulses per revolution on shaft sensor	0 to 16	Set to 0 to disable alarm monitoring for this shaft. Default pulses/rev: 2
LOSHFT	Low shaft alarm	0 to 999.5	0.5 rpm increment/decrement Default alarm point: 4 rpm
LEVEL	Alarm point for low hopper level	0 to 100 %	Set to 0 to disable alarm monitoring for this hopper. Default level: 20%
LIFT Y/N	Enable or disable the monitoring of the lift switch	Y/N	Set to Y to enable the monitoring of the Lift switch.

To enter the L SHAFT settings, press and hold



until the display changes.

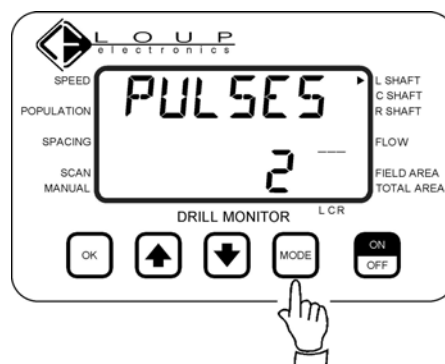


PULSES is the number of magnets located in the actuator that is mounted on the shaft of the implement. Generally, this number should not be changed.

To proceed to the next setting press



once.



LOSHFT refers to the Low Shaft Alarm point. If the RPM of the shaft falls below this set point an alarm will

sound. To change this number use the

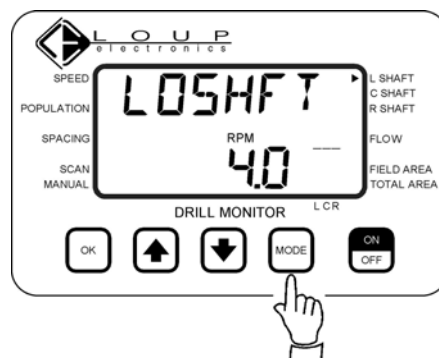



to adjust accordingly.


To proceed to the next setting press

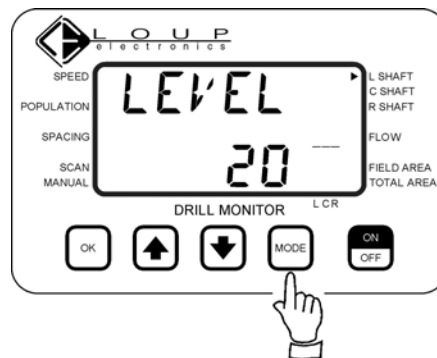


once.





LEVEL is the alarm for the corresponding hopper sensor (Left Hopper). To disable the hopper alarm use  to set this number to 0.

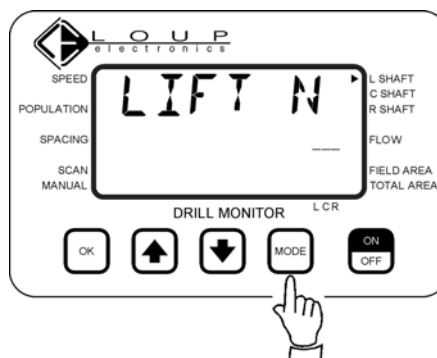
To proceed to the next setting press  once.




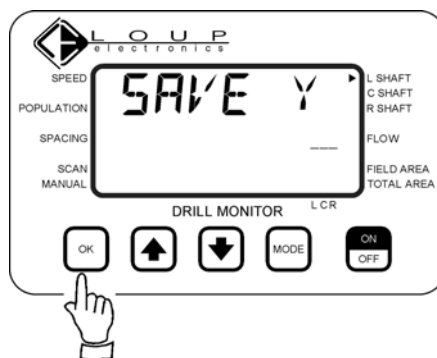
LIFT tells the monitor if a lift sensor is being used to determine when you are seeding and when you are not. The Lift Sensor is used when shaft rotation cannot be used for this application or a Variable Rate Air Seeder is being used.



If a Lift sensor is being used, press  once to change the display to LIFT Y.

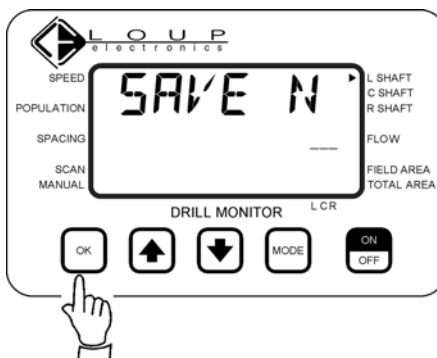
To proceed to the next setting press  once.



To save the changes and exit settings press and hold  until the display changes.



To exit settings without saving, press  once then press  once.



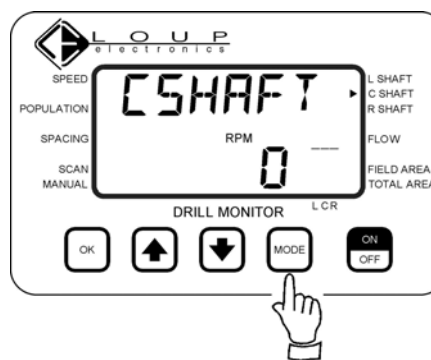
## Center Shaft, Right Shaft

DISPLAY 1	FUNCTION	RANGE	COMMENTS
PULSES	Pulses per revolution on s sensor	0 to 16	Set to 0 to disable alarm monitoring for the shaft. Default pulses/rev: 2
LOSHFT	Low shaft alarm	0 to 999.5	0.5 rpm increment/decrement Default alarm point: 4 rpm
LEVEL	Alarm point for low hopper level	0 to 100 %	Set to 0 to disable alarm monitoring for the hopper. Default level: 20%

To enter the CSHAFT or RSHAFT settings, press and hold



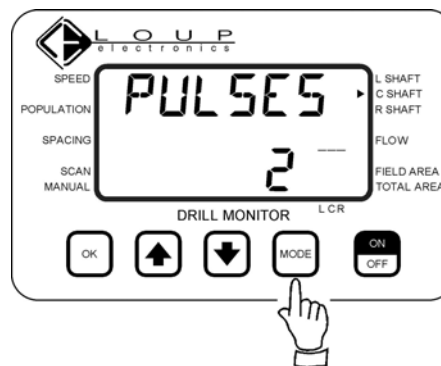
until the display changes.





PULSES is the number of magnets located in the actuator that is mounted on the shaft of the implement. Generally, this number should not be changed.



To proceed to the next setting press once.

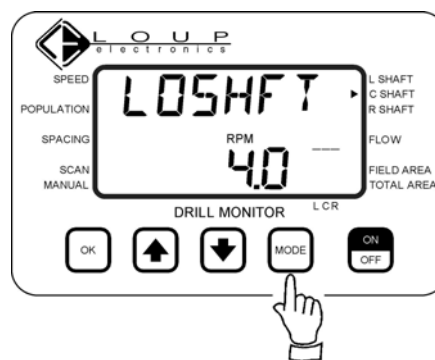



LOSHFT refers to the Low Shaft Alarm point. If the RPM of the shaft falls below this set point an alarm will


sound. To change this number use the  or  to adjust accordingly.

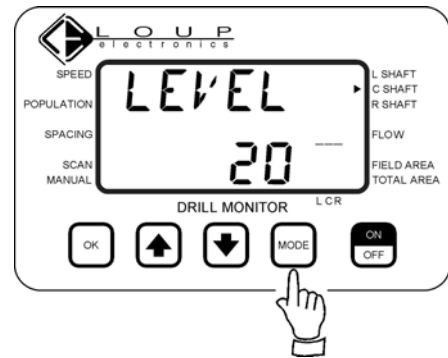



To proceed to the next setting press once.

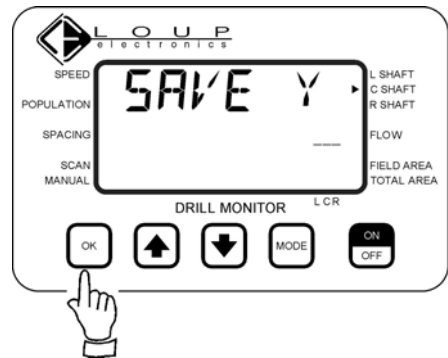




LEVEL is the alarm for the corresponding hopper sensor (Left Hopper). To disable the hopper alarm use  to set this number at 0.

To proceed to the next setting press  once.



To save the changes and exit settings press and hold  until the display changes.



To exit settings without saving, press  once then press  once.



## FLOW (Blockage Sensors)


The FLOW settings are applicable to systems that include blockage modules and optical blockage sensors (used to determine seed flow only).

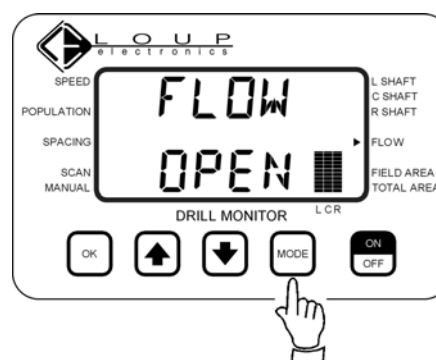
The FLOW settings have 2 possible set-up positions: INSTAL Y & INSTAL N


INSTAL Y contains the blockage module settings that allows setting the number of rows each blockage module is looking for (0 – 16). These settings are generally set at the factory.

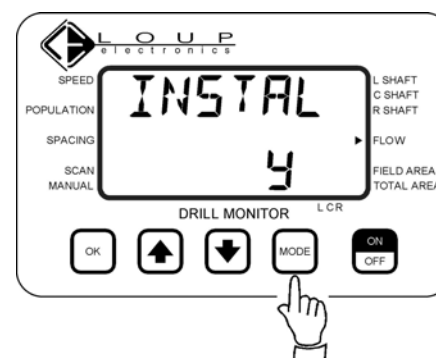
DISPLAY	FUNCTION	LIMITS	COMMENTS
INSTAL Y	Number of runs connected to each module	0 to 16	Default number of runs: 16. MODE advances to the next module. If module is not connected, this number is not used in the monitor.

### Module Settings:

To enter the FLOW settings, press and hold  until the display reads INSTAL Y.






Press  once to enter the module settings.

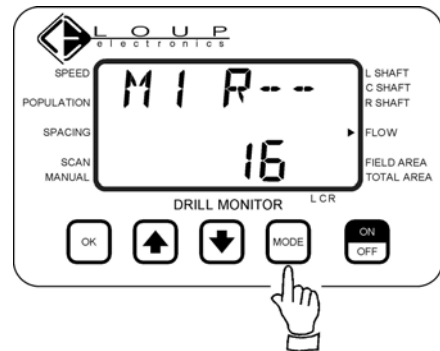






The top line of the display now reads M 1 R—(Module 1 Row). The bottom line is the number of sensors Module 1 is monitoring.

To change this number use the  or  to adjust accordingly.




To proceed to the next module press  once.

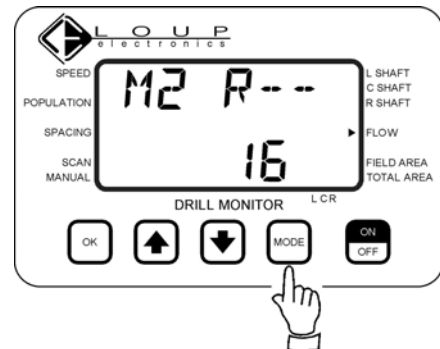


The top line of the display now reads M 2 R—(Module 2 Row). The bottom line is the number of sensors Module 2 is monitoring.


To change this number use the  or  to adjust accordingly.

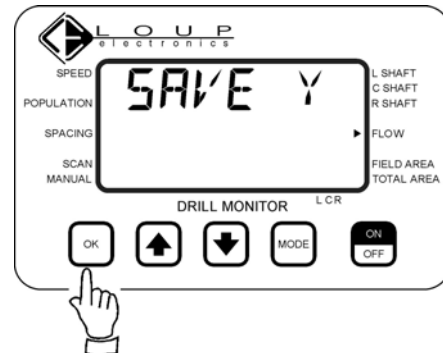
Continue through modules 3-7 in the same manner as



modules 1 & 2 using  to advance to the next module and the  or  to adjust the number of runs being monitored by the module.

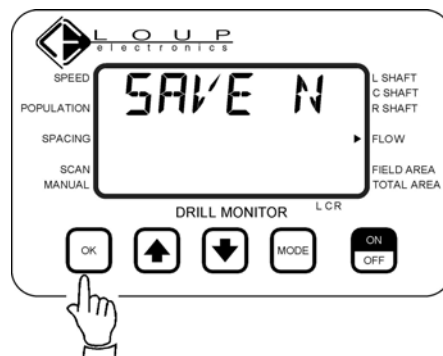


Following module 7 the monitor will display the save screen.

To save the changes and exit settings press and hold  until the display changes.



To exit settings without saving, press  once then press  once.



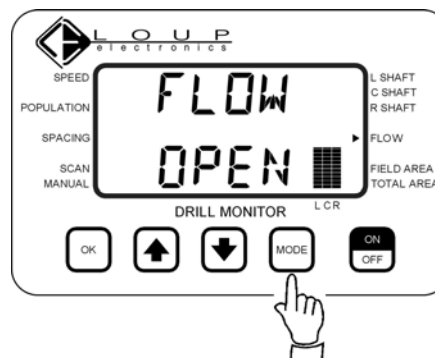
INSTAL N allows you to go to each individual sensor and turn it on and off.


DISPLAY	FUNCTION	LIMITS	COMMENTS
INSTAL N	Turn individual runs in the system ON & OFF.	ON or OFF	<p>UP/DOWN selects the Run.</p> <p>The OK key toggles between Enabling (ON) and Disabling (OFF) an individual run.</p> <p>MODE advances to the SAVE screen.</p> <p>Default state of the runs: Enabled (ON).</p>


### Sensor ON/OFF:

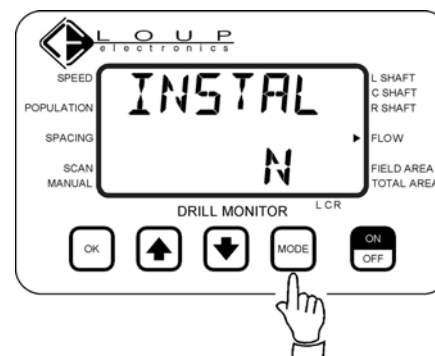
To enter the FLOW settings, position the indicator arrow at FLOW. The monitor will read FLOW OPEN.

Press and hold  until the display reads INSTAL Y.

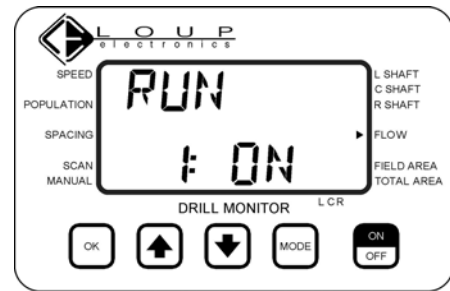




Press  once. The display now reads INSTAL N.

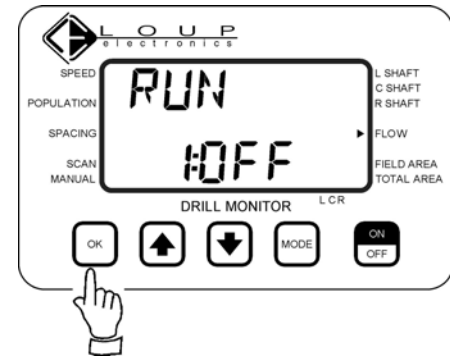
Press  once to enter the Sensor settings.




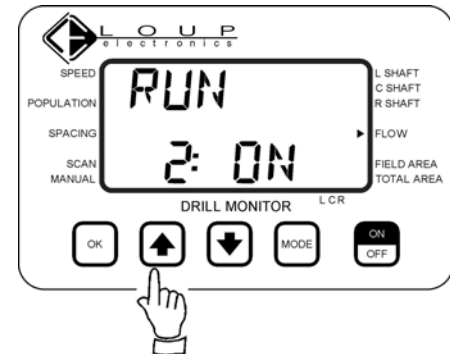
The top line of the display now reads RUN. The bottom reads the Run # and Status (1: ON).




To turn the run to off, press  once. Notice the display changes to OFF. To turn the run back on, press  again.



To advance to the next row, press .

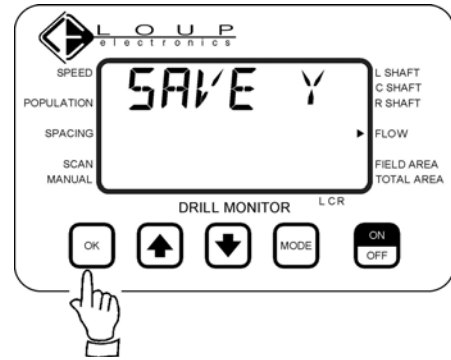


Once all necessary rows have been turned ON or OFF press  to advance to the save screen.

To save the changes and exit settings press and hold



until the display changes.



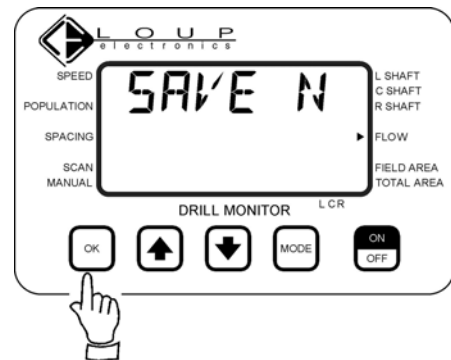
To exit settings without saving, press



press



once.



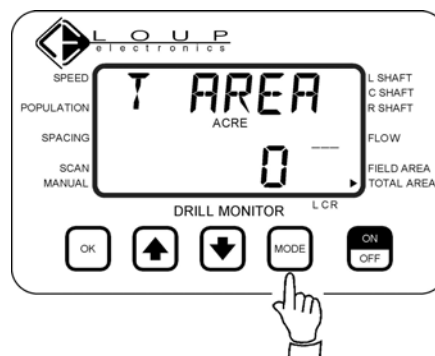
## FIELD AREA/TOTAL AREA

DISPLAY	FUNCTION	RANGE	COMMENTS
WIDTH	Implement width	0 to 100 ft (30.5 m)	Default is 15 ft (9.1 m)
UNITS	Units used for display	0 or 1	DOWN selects 0 for imperial units (default). UP selects 1 for metric units.



To enter the FAREA/TAREA settings, press and hold




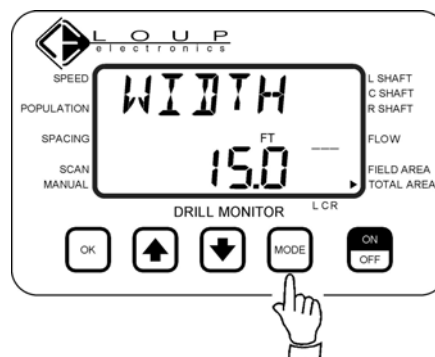
until the display changes.





WIDTH is the implement width in feet. To change this


number use the  or  to adjust accordingly. Adjusting this number will directly affect your acres.

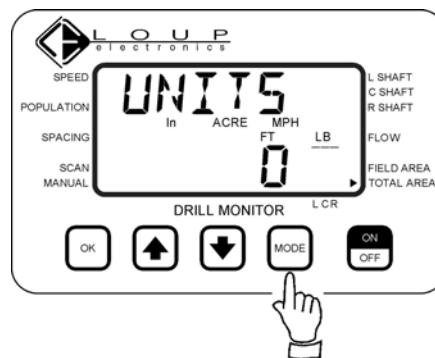
To proceed to the next setting press  once.



UNITS refer to the displayed units, 0=English or

1=Metric. To change this number use the  or  to adjust accordingly.

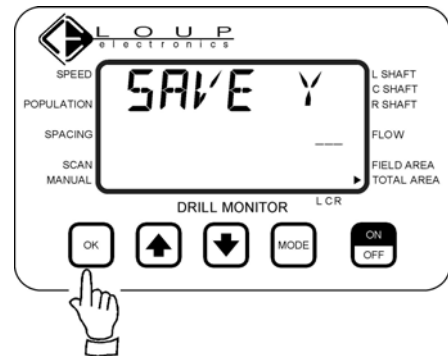
To proceed to the next setting press  once.



To save the changes and exit settings press and hold

OK

until the display changes.



To exit settings without saving, press

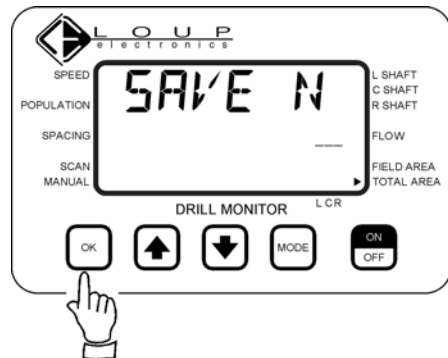


once then

press



once.

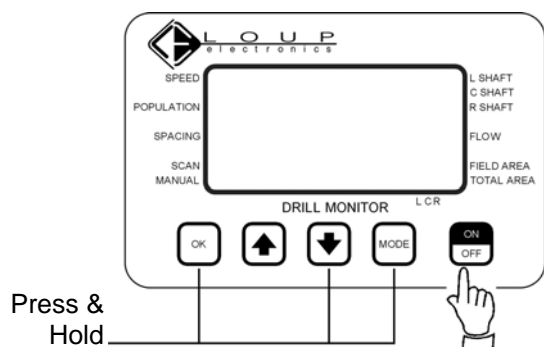


## Learn Mode

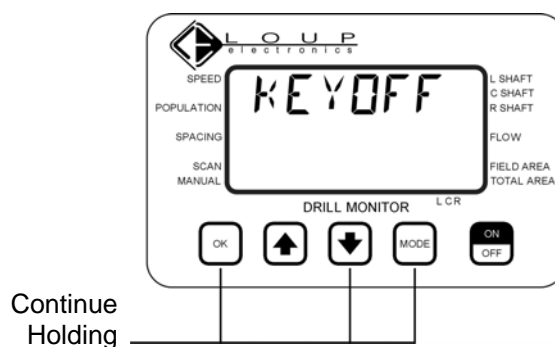
The learn mode is a one time programming routine that must be completed when the system configuration has changed by adding or removing sensors to an existing system.

Before entering the Learn Mode, be sure to unplug all the sensors that have a 3 pin connector i.e. Ground Speed Sensor, Shaft Sensors, Hopper Sensors, Population Sensors & Blockage Modules (Blockage Sensors have a 2-pin connector and can be plugged into their appropriate connection on the blockage harness).

To Begin:



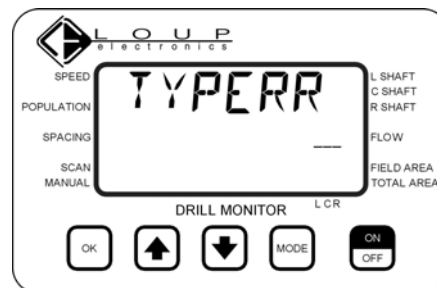
1) With the monitor OFF, Press & Hold the OK, Down Arrow & MODE buttons. Then turn the monitor ON



2) Continue to hold the OK, Down Arrow & MODE buttons until the display reads **KEYOFF**. Now release the buttons.

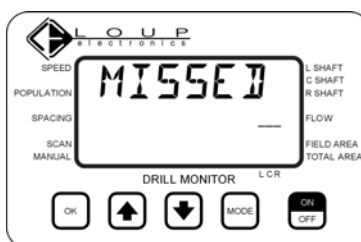
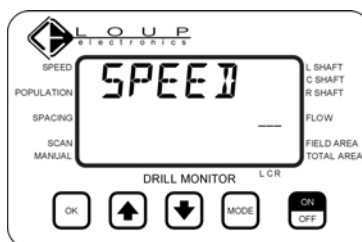
*Note: If during the Learn Mode you receive a TYPERR message, the monitor is “seeing” a type of sensor other than what is required for this function.*

*For example: If the monitor is displaying LSHAFT MISSED and a hopper sensor is plugged in this message will appear.*

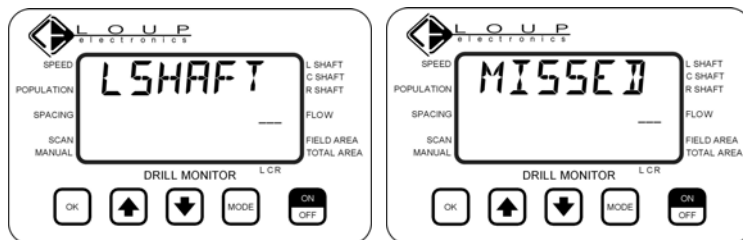


3) The display will now alternate SPEED & MISSED. At this time plug in the implement mounted speed sensor. If no speed sensor is on the drill press the OK button to skip SPEED.

Once the speed sensor has been accepted or skipped, the monitor will emit a single beep.



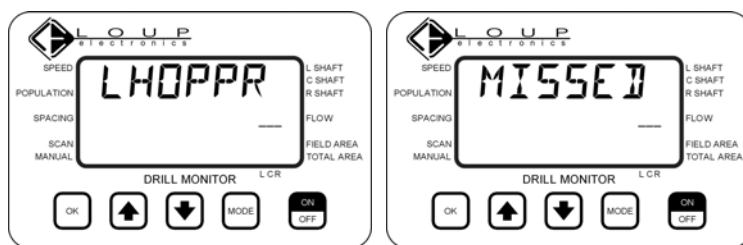
4) The display will now begin to alternate between LSHAFT & MISSED. Plug in the sensor that will be used as the Left Shaft Sensor. If no Left Shaft Sensor is being used, press the OK button to skip LSHAFT.



Once the Left Shaft sensor has been accepted or skipped, the monitor will emit a single beep.

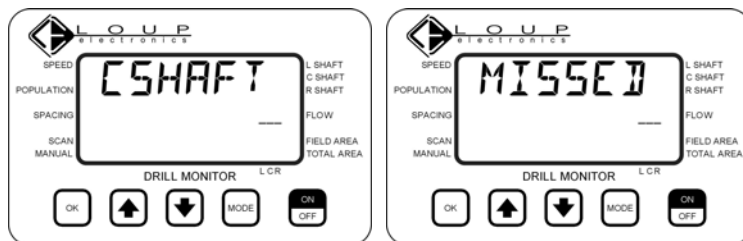
*Note:* The Left Shaft Sensor will either be monitoring the square shaft that runs the fluted seed cups of a conventional drill or is being used as a Lift Sensor on an Air Seeder.

5) The display will now begin to alternate between LHOPPR & MISSED. Plug in the sensor that will be used as the Left Hopper Sensor. If no Left Hopper Sensor is being used, press the OK button to skip LHOPPR.



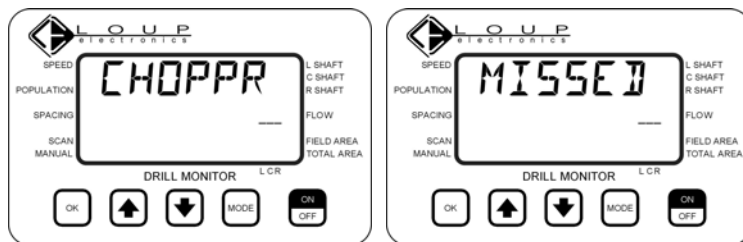
Once the sensor has been accepted or skipped, the monitor will emit a single beep.

6) The display will now begin to alternate between CSHAFT & MISSED. Plug in the sensor that will be used as the Center Shaft Sensor. If no Center Shaft Sensor is being used, press the OK button to skip CSHAFT.



Once the sensor has been accepted or skipped, the monitor will emit a single beep.

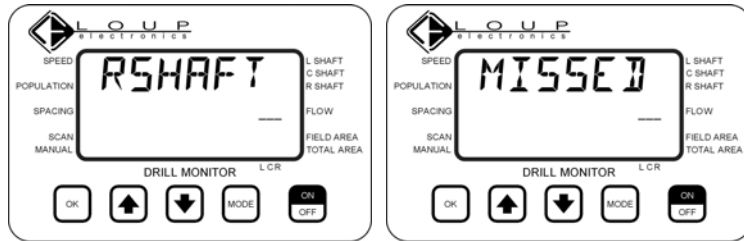
7) The display will now begin to alternate between CHOPPR & MISSED. Plug in the sensor that will be used as the Center Hopper Sensor. If no Center Hopper Sensor is being used, press the OK button to skip CHOPPR.



Once the sensor has been accepted or skipped, the monitor will emit a single beep.

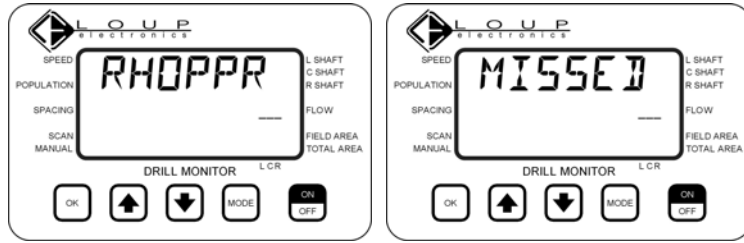


8) The display will now begin to alternate between RSHAFT & MISSED. Plug in the sensor that will be used as the Right Shaft Sensor. If no Right Shaft Sensor is being used, press the OK button to skip RSHAFT.



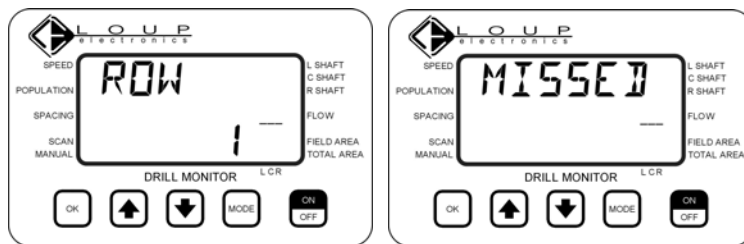
Once the sensor has been accepted or skipped, the monitor will emit a single beep.

9) The display will now begin to alternate between RHOPPR & MISSED. Plug in the sensor that will be used as the Right Hopper Sensor. If no Right Hopper Sensor is being used, press the OK button to skip RHOPPR.

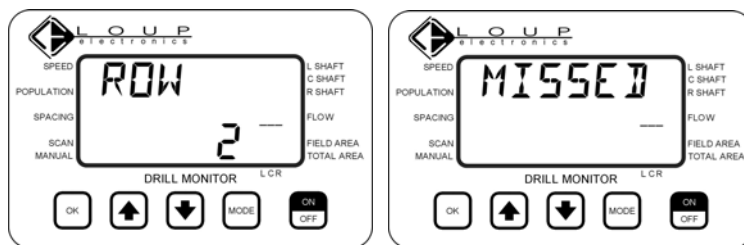


Once the sensor has been accepted or skipped, the monitor will emit a single beep.

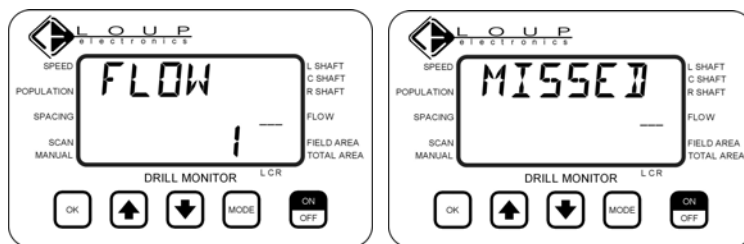
10) The display will now begin to alternate between ROW 1 & MISSED. Plug in the Population sensor that will be designated Row #1. Once the sensor has been accepted the monitor will emit a short beep and move on to ROW 2. Continue to Plug each of the population sensors in order.



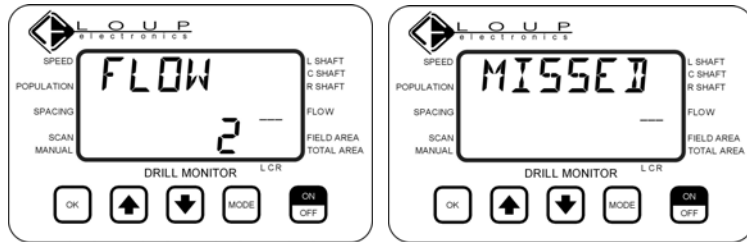
When all of the population sensors are plugged in, use the OK button to skip the remaining rows through ROW 24. If no Population Sensors are being used, press the OK button to skip ROW 1 to 24.



11) Once ROW 24 has been accepted or skipped the display will begin to alternate between FLOW 1 & MISSED. This is the module that works in conjunction with Blockage Sensors.

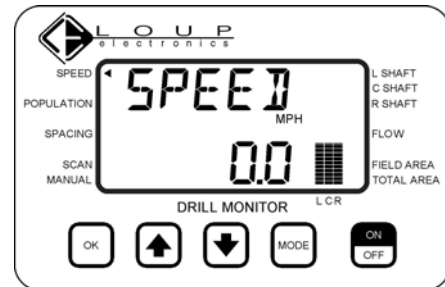


Plug in the Blockage Module that will designate Row #1. Once the Module has been accepted the monitor will emit a short beep and move on to FLOW 2. Continue to Plug each of the Blockage Modules in order.



When all of the Blockage Modules are plugged in, use the OK button to skip through FLOW 7. If no Blockage Modules are being used, press the OK button to skip FLOW 1 to 7.

**12)** Once FLOW 7 has been accepted or skipped the display will read SPEED 0.0. The Learn Mode is complete and monitor is in it's normal operate mode. It is best to turn the monitor off and then back on. The monitor should go through the normal start-up routine as shown on Page 2. This will ensure the Learn Mode was completed properly.



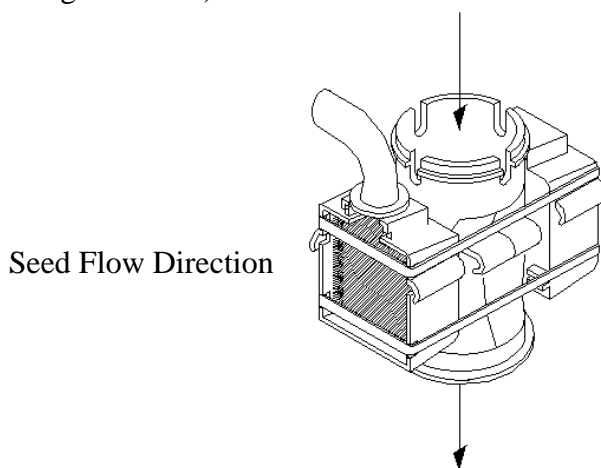
If when the monitor is turned on, the display reads MISSED or TYPERR, it will be necessary to reenter and complete the Learn Mode. If problems persist, contact Loup Electronics.

## **TROUBLE SHOOTING**

Below are some commonly asked questions and answers. If you are unable to find the answer to your question contact Loup Electronics for technical support.

**Problem:** Does it matter which way a population sensor is mounted?

**Solution:** It is recommended that the population sensor is mounted in a vertical position such that the cable is on top. However this is not always possible (i.e. Air Seeders). In such circumstances that vertical alignment is not possible, seed flow must travel in the cable side of the sensor and out the side opposite. (See Figure below)



**Problem:** The Monitor will not power on.

**Solution:** Check that the power cable is connected to a 12Volt power supply, with the Red wire connected to the +V and the Black wire connected to Ground (-).

**Problem:** LO POP and/or BLOCK alarms when making turns.

**Solution:** A) In cases where a shaft sensor is being used as the primary source of ground speed, the shaft that is being used may not stop when the drill is raised. In this case it will be necessary to move the sensor to a different shaft that is relative to ground speed and stops when the drill is lifted.

B) In cases where a clutch activated sensor is being used to determine the “in motion” characteristics of the implement, the wire connected to the clutch may not be connected properly. If the sensor is wired properly, check that the ‘LIFT’ has been turned on in the monitor (see SETTINGS/Left Shaft on pages 19 & 20).

**Problem:** The monitor is giving false BLOCK alarms.

**Solution:** Recalibrate the blockage sensors. A Blockage Calibration should be done periodically. Especially each time the variety of seed is changed. (See BLOCKAGE CALIBRATION, pg.9)

**Problem:** The Ground Speed on the Drill Monitor does not match the tractor.

**Solution:** A ground speed calibration must be done in order to get the proper speed reading. (See GROUND SPEED CALIBRATION, pg.8)

**Problem:** The ground speed fluctuates dramatically or no speed is being displayed at all.

**Solution:** Check the orientation of the drill mounted speed sensor in relation to the actuator on the shaft. Be sure the space between the sensor and the actuator does not exceed 1/4 inch. (See figure below)

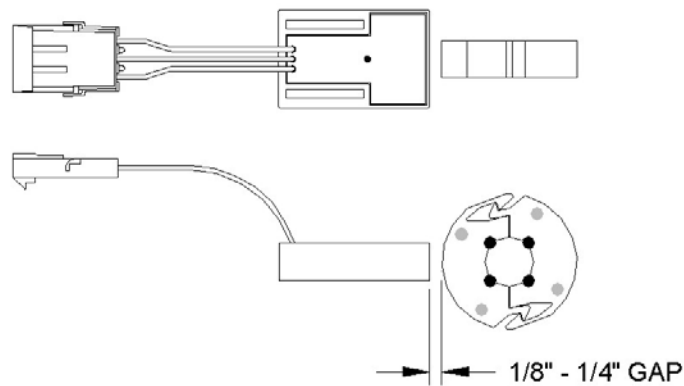


Figure 5. Shaft Sensor Orientation

In some circumstances the actuator has a tendency to move on the shaft due to vibration. This can be fixed by wrapping a tie wrap on either side of the actuator.

**Problem:** The monitor flashes “MISSESD” when the monitor is powered on.

**Solution:** A) Check that all connections leading to the monitor are plugged in.

B) Check that all sensor connections are plugged into the implement harness.

C) Check that the wire harness has not been broken.

**Problem:** The Monitor displays “COMERR”.

**Solution:** This error occurs when the monitor loses communication with 1 or more sensors. Check that all of your connections both at the sensor and leading to the monitor are plugged in. If all the connections are plugged in, check the wiring harness for any broken wires.

**Problem:** The Monitor displays “SYSERR”.

**Solution:** This error occurs when the wiring harness is broken or partially broken and the wires are shorted together. Inspect the harness and repair any broken wires.

## Power Requirements & Wire Harness

A 12 Volt power supply is required to power the monitor and sensors. The Red wire of the battery cable must be connected to the +V and the Black wire connected to Ground (-).

All the 'like' wires in the implement harness are shorted together, (all the white wires are connected together, all the black wires are connected together, and all the green wires are connected together). Thus there is continuity between all of the 'like' wires

Power connection: 2-pin Packard WeatherPak  
Pin A : +12 V(Red)  
Pin B : Ground (Black)

Sensor connection: 3-pin Packard WeatherPak  
Pin A : +12 V (White)  
Pin B : Ground (Black)  
Pin C : Data (Green)

Radar Connection: AMP CPC connector  
Pin 1 : Ground  
Pin 2 : Radar signal  
Pin 3 : +12 V to RADAR  
Pin 4 : Radar enable