

## 10.3 MONITOR &amp; CLUTCH CABLE LAYOUTS (CONT'D)

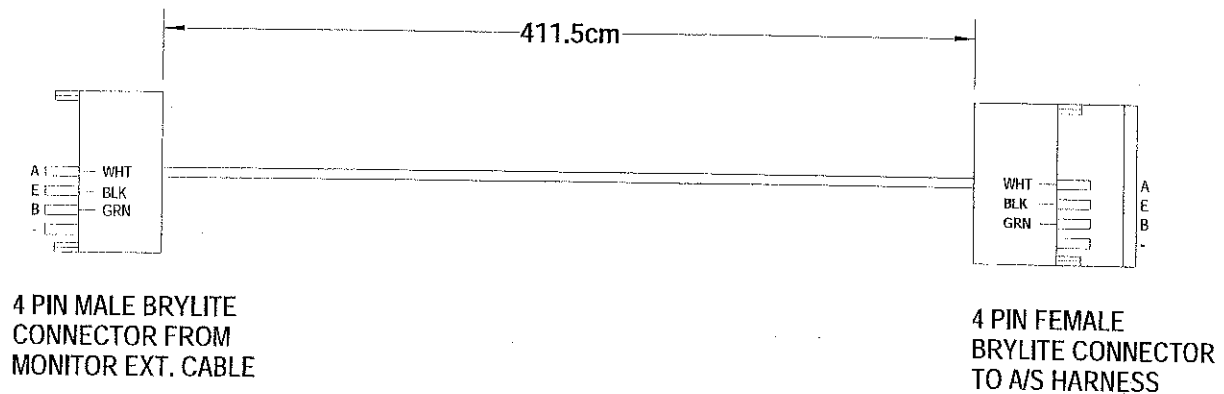


Figure 10.23 149 Cultivator Extension Cable

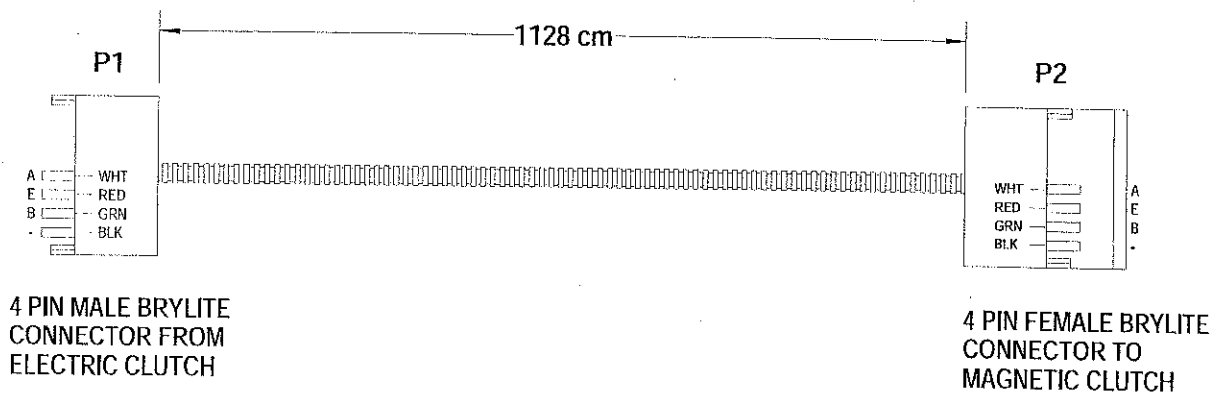
31205004R00.CAD  
NOV. 29/01

Figure 10.24 149 Clutch Extension Cable

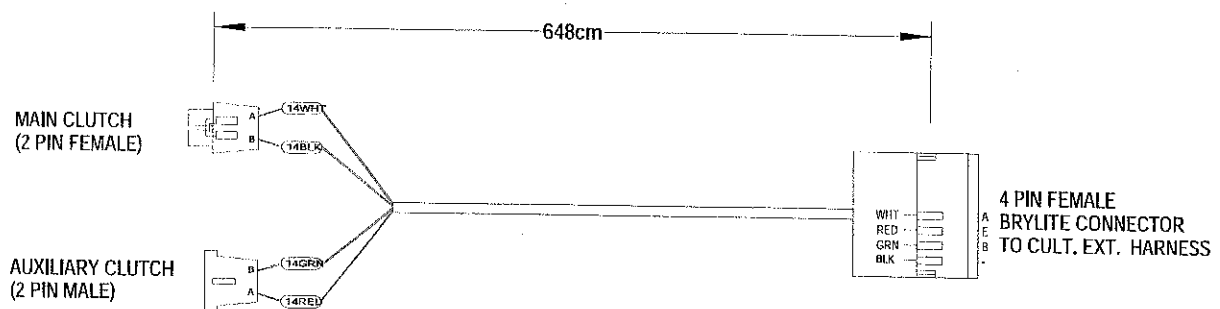
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Figure 10.25 149 Clutch Switch Extension Cable

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## 4.11 149 MONITOR PREPARATION

Each operator should review this section of the manual at the start of each season and periodically during the season as required to remain familiar with monitor operation. Review the applicable section when using the monitor and Air Seeder.

Information is collected by the information collection unit and is relayed to the display/control unit where it is displayed for the operator.

The display/control unit (monitor) is packaged in a black aluminium housing. The front panel contains a five digit liquid crystal display, a nine position rotary function select switch, and three push buttons; ACK/MODE (Acknowledgment/Mode), UP and DOWN. Refer to Figure 4.6 & 4.26.

A continuous alarm will sound upon detection of a low fan or auger shaft speed, a low bin level. While the alarm is sounding, the display will indicate which fault condition(s) is/are present. Pressing the ACK/MODE button briefly, will silence the alarm, and the display will return to its normal display. Every ten seconds each present fault condition is briefly displayed. When a fault is corrected, the message for that fault will no longer be displayed.

The operator has the ability to set certain user limits of the monitor's operation. The limits that can be set are:

- Pulses per revolution, low alarm point, high alarm point for either fan;
- Pulses per mile of ground speed sensor;
- Pulses per revolution for each auger shaft;
- The number of blockage modules connected to the monitor;
- The width of the cultivator;
- English or metric units.

These user limits (parameters), as well as the accumulated and field area, are stored in nonvolatile memory. This means that the information will be retained when the monitor is shut off.

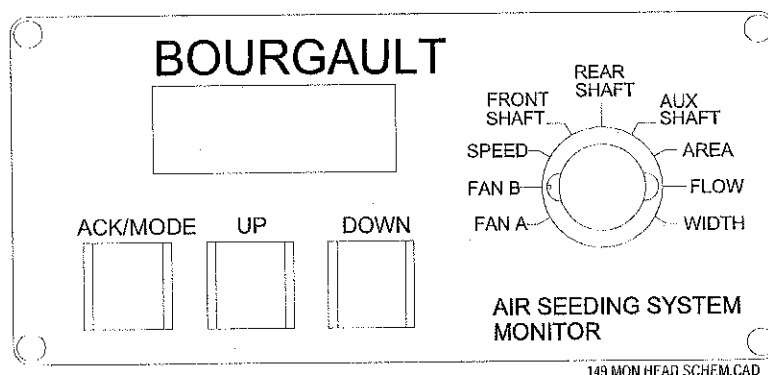


Figure 4.26 Front Panel of Model 149 Monitor

## 4.11 149 MONITOR PREPARATION (CONT'D)

### 4.11.1 ROTARY FUNCTION SELECT SWITCH

The rotary selector switch has nine positions. The switch is used to select what is to be displayed.

| SWITCH POSITION | DISPLAY                        | OPERATIONAL LIMITS               |
|-----------------|--------------------------------|----------------------------------|
| FAN A           | Fan A rpm                      | Pulses/Revolution; Hi/Lo Alarms  |
| FAN B           | Fan B rpm                      | Pulses/Revolution; Hi/Lo Alarms  |
| SPEED           | Ground Speed                   | Pulses/Revolution; (Manual/Auto) |
| FRONT SHAFT     | Front Metering Auger Shaft rpm | Pulses/Revolution                |
| REAR SHAFT      | Rear Metering Auger Shaft rpm  | Pulses/Revolution                |
| AUX SHAFT       | Auxiliary Metering Shaft rpm   | Pulses/Revolution                |
| AREA            | Field / Accumulated Area       | Application Rate; Area/Weight    |
| FLOW            | Blockage Module Status         | Enable; Test/Calibrate Modes     |
| WIDTH           | Cultivator Width / Units       | Cultivator Width; Units Select   |

Figure 4.27 Front Panel of Model 149 Monitor

In addition, each switch position determines which limits may be set. Refer to Figure 4.26 & 4.27.

### 4.11.2 SETTING THE OPERATIONAL LIMITS - OVERVIEW OF METHOD

Ensure the drive clutch is disengaged before setting monitor limits. To view or change any of the user limits (parameters), the rotary switch must first be set to the function that is to be changed. Then the ACKNOWLEDGE/MODE (ACK/MODE)



button is pressed continuously for five seconds. While the button is held, the monitor will give five short beeps and one long beep. This indicates parameter changing mode has been entered. A message indicating which parameter is

being accessed is displayed briefly (this message will be displayed periodically throughout the parameter changing mode as a reminder). Now the display will show the parameter, and allow it to be modified using the UP or DOWN buttons.



Once the desired value is displayed, pressing the ACK/MODE button again for five seconds will cause the parameter to be stored in nonvolatile memory. The display will then revert to showing the monitored function.

### IMPORTANT

IF THE ROTARY SWITCH POSITION IS CHANGED WITHOUT SAVING THE PARAMETERS AS DESCRIBED ABOVE, THE CHANGES WILL **NOT** BE SAVED AFTER THE MONITOR IS TURNED OFF.

### 4.11.3 SETTING THE FAN PARAMETERS

1. **Pulses per Revolution** - When the rotary switch is in the FAN A position, pressing the ACK/MODE button for five seconds will cause the display to show "PLSE" briefly.

PLSE

Then a number representing the number of pulses that are generated per revolution of the fan. This value is variable (can be changed) from "0" through "3" using the UP and DOWN buttons. A setting of "0" means that the fan rpm meter is off and no fan alarm will sound.

*Set the fan pulses per revolution to 1.*

## 4.11 149 MONITOR PREPARATION (CONT'D)

2. **Low RPM Alarm** - When the ACK/MODE button is pressed again, the display will show "FAnL" briefly,

FAnL

and then show the fan's low alarm point, in rpm. Using the UP or DOWN buttons, the alarm point for low fan rpm may now be changed.

*Set the fan's low alarm point to 3000 rpm.*

3. **High RPM Alarm** - When the ACK/MODE button is pressed again, the display will show "FAnH" briefly,

FAnH

and then show the fan's high alarm point, in rpm. Using the UP or DOWN buttons, the alarm point may now be changed.

*Set the fan's high alarm point to 5000 rpm.*

4. Repeatedly pressing the ACK/MODE button will cycle through the pulses per revolution setting and the alarm points.
5. After the pulses per revolution parameter and the fan's high and low alarms are set, press the ACK/MODE button continuously for five short beeps and one long beep to save these limits in nonvolatile memory. The display will show "0" if the fan is not operating, or the current fan rpm if the fan is in operation.
6. **Fan Alarm Display** - If the fan rpm is higher or lower than the limits set, an alarm will sound. The display will show "FAnA";

FAnA

or "FAnb" (if a second fan is being used). Refer to the "MONITOR ALARMS" section for more information.

### 4.11.4 SETTING PULSES PER MILE

1. When the rotary switch is in the SPEED position, ground speed in either m.p.h. or k.p.h. is displayed. K.p.h. is obtained by selecting metric units in the WIDTH position. See **Setting Cultivator Width and Selecting English or Metric Units**. Pressing the ACK/MODE switch for five seconds will cause the display to show "PLSE" briefly;

PLSE

and then the number of ground speed pulses required to go one mile (the same number of pulses per mile is also used when operating the monitor with metric units). This value may be changed using the UP or DOWN buttons.

#### TIRE STYLE

#### PULSES PER MILE

|  |      |
|--|------|
| 12.5 x 16 Rib Implement (Goodyear).....    | 2081 |
| 12.4 x 16 AWT (Goodyear) .....             | 1928 |
| 16.5L x 16.1 Softrac (Goodyear) .....      | 1760 |
| 16.5L x 16.1 Traction Lug (Goodyear) ..... | 1700 |

2. Pressing the ACK/MODE button continuously for five short beeps and one long beep to save these limits in nonvolatile memory.

## 4.11 149 MONITOR PREPARATION (CONT'D)

### 4.11.5 SETTING THE STATUS OF METERING AUGERS AND BIN LEVEL SENSORS

The low level Air Seeder tank sensor and metering auger shaft sensors installed on the same tank work together. If the shaft sensor for the rear tank has been turned off, the low level tank sensor for the rear tank will be turned off as well. When a metering auger sensor is off, it will generate no alarms.

1. When the rotary switch is set to either Front Shaft, Rear Shaft, or Auxiliary Shaft (for the optional third tank), pressing the ACK/MODE button for five seconds will cause the display to show "PLSE" briefly;

PLSE

then display a number from "0" to "4". A "0" indicates that the selected shaft/tank combination has been turned off, while "1" through "4" indicate the number of pulses generated per revolution of the shaft. The operator may change the setting using UP or DOWN buttons.

#### IMPORTANT

FOR ANY SHAFT/TANK COMBINATION THE OPERATOR WISHES TO BE LEFT **ON**, SET THE PULSES PER REVOLUTION TO "1".  
FOR ANY SHAFT/TANK COMBINATION THAT IS DESIRED TO BE **OFF**, SET PULSES PER REVOLUTION TO "0".

2. Press the ACK/MODE button continuously for five short beeps and one long beep to save these limits in nonvolatile memory. The display will show either the shaft speed, or "OFF" if the shaft was disabled.

3. **Metering Shaft Alarm** - Under normal operating conditions, an alarm will be generated whenever there is more than 15 seconds between shaft rotation pulses. If there is a problem indicated with the front metering shaft, an alarm will sound at the display will show "FSFt";

FSFt

or "rSFt" for a problem indicated with the rear metering shaft.

rSFt

#### IMPORTANT

SHAFT ALARM GENERATION WILL BE DELAYED BY 30 SECONDS IF EITHER GROUND SPEED IS BELOW 2 M.P.H. OR THE DRIVE CLUTCH IS OFF (OR BOTH). THIS DELAY IS INTENDED TO REDUCE NUISANCE ALARMS WHEN TURNING ON HEADLANDS.

4. **Bin Level Alarm** - To minimize nuisance alarms, the low level tank switch must be continuously open for 15 seconds before a bin alarm is generated. To indicate an empty tank, an alarm will sound and the display will show "Fbin" for the front Air Seeder tank;

Fb in

or "rbin" for the rear Air Seeder tank.

rb in

Refer to the MONITOR ALARMS section for more information.

## 4.11 149 MONITOR PREPARATION (CONT'D)

### 4.11.6 SETTING CULTIVATOR WIDTH AND SELECTING ENGLISH OR METRIC UNITS

1. **Cultivator Width** - When the rotary switch is set to WIDTH, pressing the ACK/MODE button for five seconds will cause the display to show "Lnth" briefly;

Lnth

then the cultivator width. Pressing the UP and DOWN buttons will cause the width to increase or decrease by 0.1 feet in English units, or 0.1m for metric units.

Enter the cultivator width in either feet or meters to the first decimal point.

Example: 40.0 for 40 feet

12.2 for 12.2 meters.

2. **Unit Measurements** - Pressing the ACK/MODE button again will briefly show "unit".

unit

Then either "Eng" will show, indicating English units are being used;

Eng

or "tric", indicating metric units are being used.

Er IC

Pressing the UP button will select English units, while the DOWN button will select metric units. These units will apply to ground speed, area accumulations, calibration rate calculations and cultivator width. Pressing the ACK/MODE button briefly causes the width setting mode to resume.

3. Press the ACK/MODE button continuously for five short beeps and one long beep to save these limits in nonvolatile memory. The display will return to showing cultivator width.

## 4.11 149 MONITOR PREPARATION (CONT'D)

### 4.11.7 AREA AND APPLICATION RATE MODES

The 149 monitoring system can accurately measure area once the cultivator width and ground speed pulses/mile have been entered.

1. When the rotary switch is set to AREA, the display will show either "Fxxx.x" indicating field area ;

F 0

or "Axxxx" indicating accumulated area in either acres or hectares.

A 0

Hectares are obtained by selecting metric units when in WIDTH mode.

2. Field Area is displayed in 0.1 acre or 0.1 hectare increments. Accumulated Area is displayed to the nearest acre or hectare. When in metric mode the, "F" or the "A", and decimal point, will flash to indicate that metric units are being used. Pressing the ACK/MODE button briefly will switch between the two areas. When showing Field area, pressing the UP and DOWN keys at the same time for five seconds will clear the Field area. When showing Accumulated area, pressing the UP and DOWN keys for five seconds will clear **BOTH** Field and Accumulated areas.
3. The field area is stored in nonvolatile memory. Field area will store to a maximum of 999.9 acres, accumulated areas to a maximum of 9999 acres. The display then resets back to zero and begins again. When displaying area in hectares, the display will reset at 404.7 Ha, and 4047 Ha, which is the metric equivalent of 999.9 and 9999 acres.

### IMPORTANT

THE ACCURACY OF AREA ACCUMULATION DEPENDS ON A NUMBER OF CONDITIONS SUCH AS THE AMOUNT OF OVERLAP AND TURNS ON THE HEAD LANDS. THE MONITOR ASSUMES THERE IS NO OVERLAP WHEN COUNTING ACRES. IT HAS BEEN DETERMINED THAT ON AVERAGE THERE IS ABOUT 8% OF OVERLAP. THIS WILL VARY BETWEEN OPERATORS.

If the operator experiences area readings that are persistently high, it is suggested that a false cultivator width be entered. This width would have to be determined by trial or calculation, but in any case will be less than the actual cultivator width.

### IMPORTANT

WHEN THE GROUND DRIVE CLUTCH IS DISENGAGED, AREA ACCUMULATION IS NOT COUNTED.

### 4.11.8 SETTING BLOCKAGE MODULE PARAMETERS

Bourgault Industries supply the hardware for line blockage sensing as an option. Set the rotary switch to FLOW. Press the ACK/MODE button for five beeps and one long beep will cause the display to show "bn 0".

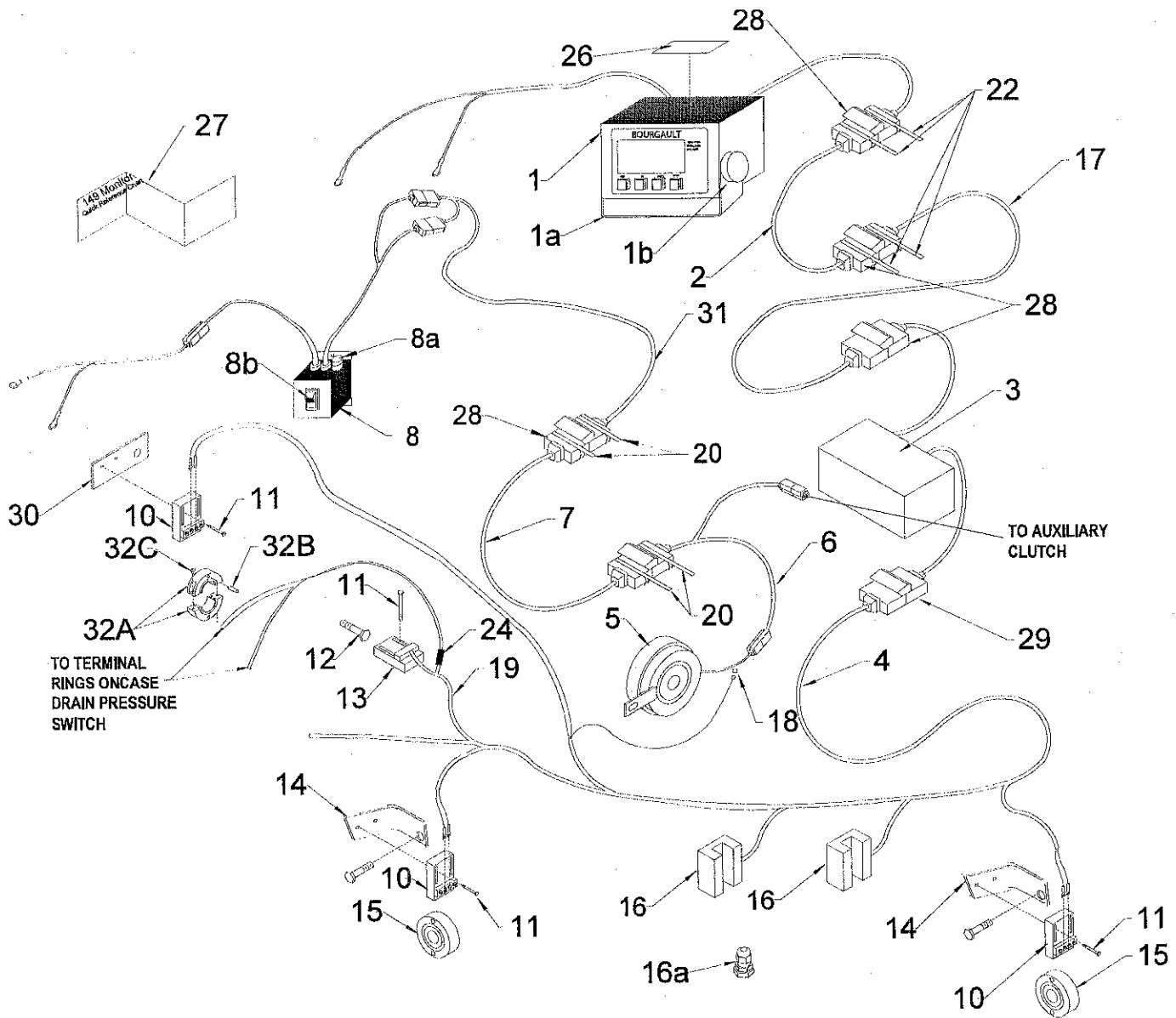
bn 0

If a number other than "0" is shown, push the UP or DOWN buttons until the value is 0. Press the ACK/MODE button. The display should now show "ty 0";

ty 0

If a number other than "0" is shown, push the UP or DOWN buttons until the value is 0. Press the ACK/MODE button for five beeps and one long beep to enter the value. This will turn off the blockage sensor and prevent false alarms.

## 149 MONITOR &amp; MAGNETIC CLUTCH





## 4.8 INSTALLING SWITCHES AND MONITOR (CONT'D)

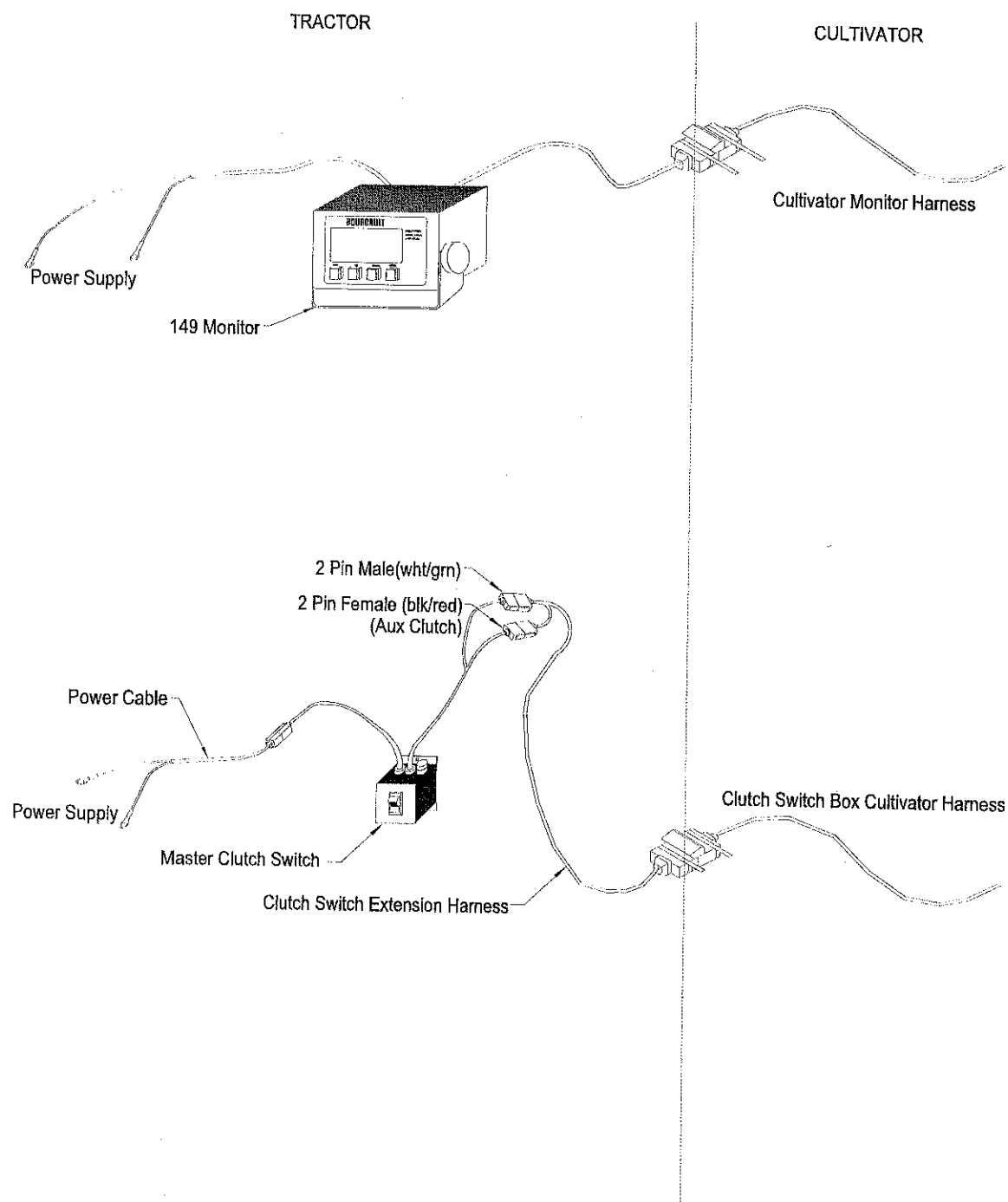


Figure 4.21 149 Monitor Wiring Diagram

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## 4.8 INSTALLING SWITCHES AND MONITOR (CONT'D)

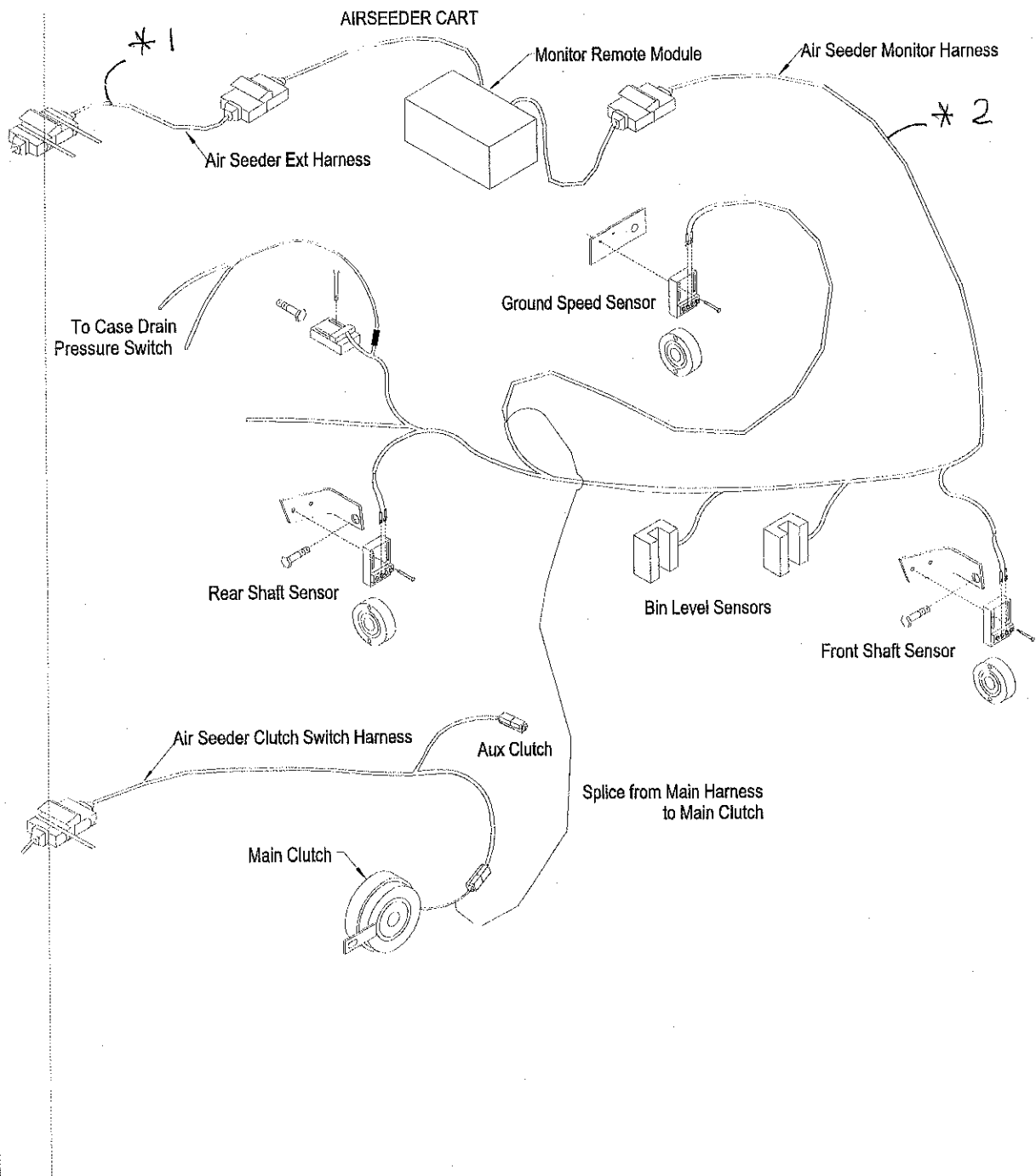
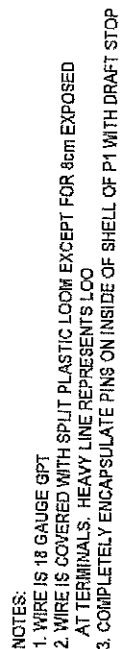


Figure 4.21 149 Monitor Wiring Diagram

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**NOTES:**

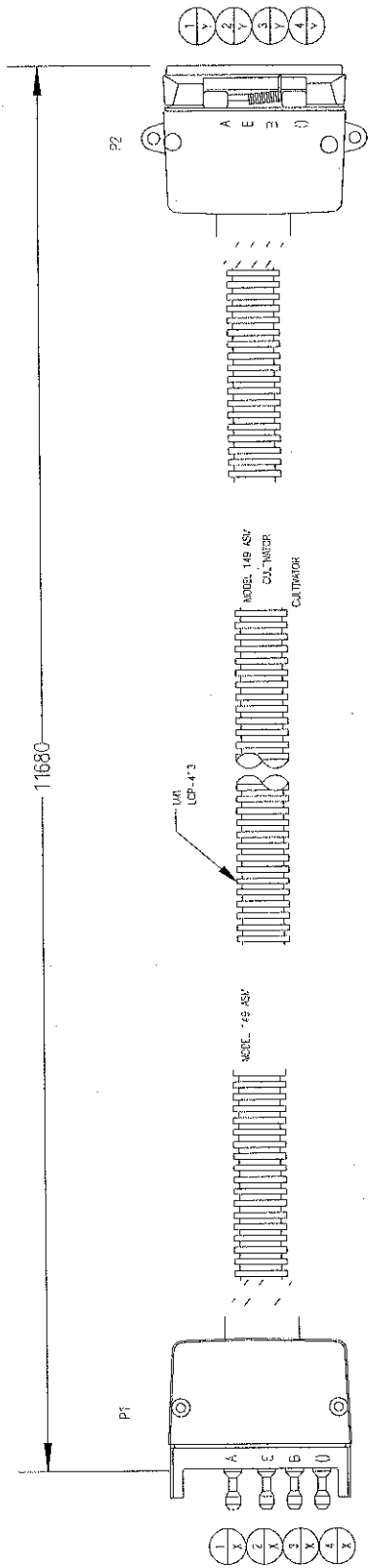
1. WIRE IS 18 GAUGE GPT
2. WIRE IS COVERED WITH SPLIT PLASTIC LOOM EXCEPT FOR 8cm EXPOSED AT TERMINALS. HEAVY LINE REPRESENTS LOO
3. COMPLETELY ENCAPSULATE PINS ON INSIDE OF SHELL OF P1 WITH DRAFT

**Bourgault Part #3120-50-03**

[illegible]

4-78 45356

| ISS | ECN | EFF | CHK | DATE |
|-----|-----|-----|-----|------|
| 1   |     |     |     |      |



SEE NOTE 2

IN/PROCESS

# Bourgault Part # 3120-50-05

|   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |                                      |  |  |  |  |  |  |  |  |  |
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| 0-150 ±10<br>150-3000 ±20/-10<br>OVER 3000 ±50/-30  |  |  |  |  |  |  |  |  |  | 04 42540 05G                            |  |  |  |  |  |  |  |  |  | 01 42C 01T 002-02-23 |  |  |  |  |  |  |  |  |  | 02 002-02-21                         |  |  |  |  |  |  |  |  |  |
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| 100 002-02-21   |  |  |  |  |  |  |  |  |  | 101 002-02-21                           |  |  |  |  |  |  |  |  |  | 102 002-02-21        |  |  |  |  |  |  |  |  |  | 103 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 104 002-02-21   |  |  |  |  |  |  |  |  |  | 105 002-02-21                           |  |  |  |  |  |  |  |  |  | 106 002-02-21        |  |  |  |  |  |  |  |  |  | 107 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 108 002-02-21   |  |  |  |  |  |  |  |  |  | 109 002-02-21                           |  |  |  |  |  |  |  |  |  | 110 002-02-21        |  |  |  |  |  |  |  |  |  | 111 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 112 002-02-21   |  |  |  |  |  |  |  |  |  | 113 002-02-21                           |  |  |  |  |  |  |  |  |  | 114 002-02-21        |  |  |  |  |  |  |  |  |  | 115 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 116 002-02-21   |  |  |  |  |  |  |  |  |  | 117 002-02-21                           |  |  |  |  |  |  |  |  |  | 118 002-02-21        |  |  |  |  |  |  |  |  |  | 119 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 120 002-02-21   |  |  |  |  |  |  |  |  |  | 121 002-02-21                           |  |  |  |  |  |  |  |  |  | 122 002-02-21        |  |  |  |  |  |  |  |  |  | 123 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 124 002-02-21   |  |  |  |  |  |  |  |  |  | 125 002-02-21                           |  |  |  |  |  |  |  |  |  | 126 002-02-21        |  |  |  |  |  |  |  |  |  | 127 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 128 002-02-21   |  |  |  |  |  |  |  |  |  | 129 002-02-21                           |  |  |  |  |  |  |  |  |  | 130 002-02-21        |  |  |  |  |  |  |  |  |  | 131 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 132 002-02-21   |  |  |  |  |  |  |  |  |  | 133 002-02-21                           |  |  |  |  |  |  |  |  |  | 134 002-02-21        |  |  |  |  |  |  |  |  |  | 135 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 136 002-02-21   |  |  |  |  |  |  |  |  |  | 137 002-02-21                           |  |  |  |  |  |  |  |  |  | 138 002-02-21        |  |  |  |  |  |  |  |  |  | 139 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 140 002-02-21   |  |  |  |  |  |  |  |  |  | 141 002-02-21                           |  |  |  |  |  |  |  |  |  | 142 002-02-21        |  |  |  |  |  |  |  |  |  | 143 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 144 002-02-21   |  |  |  |  |  |  |  |  |  | 145 002-02-21                           |  |  |  |  |  |  |  |  |  | 146 002-02-21        |  |  |  |  |  |  |  |  |  | 147 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 148 002-02-21   |  |  |  |  |  |  |  |  |  | 149 002-02-21                           |  |  |  |  |  |  |  |  |  | 150 002-02-21        |  |  |  |  |  |  |  |  |  | 151 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 152 002-02-21   |  |  |  |  |  |  |  |  |  | 153 002-02-21                           |  |  |  |  |  |  |  |  |  | 154 002-02-21        |  |  |  |  |  |  |  |  |  | 155 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 156 002-02-21   |  |  |  |  |  |  |  |  |  | 157 002-02-21                           |  |  |  |  |  |  |  |  |  | 158 002-02-21        |  |  |  |  |  |  |  |  |  | 159 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 160 002-02-21   |  |  |  |  |  |  |  |  |  | 161 002-02-21                           |  |  |  |  |  |  |  |  |  | 162 002-02-21        |  |  |  |  |  |  |  |  |  | 163 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 164 002-02-21   |  |  |  |  |  |  |  |  |  | 165 002-02-21                           |  |  |  |  |  |  |  |  |  | 166 002-02-21        |  |  |  |  |  |  |  |  |  | 167 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 168 002-02-21   |  |  |  |  |  |  |  |  |  | 169 002-02-21                           |  |  |  |  |  |  |  |  |  | 170 002-02-21        |  |  |  |  |  |  |  |  |  | 171 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 172 002-02-21   |  |  |  |  |  |  |  |  |  | 173 002-02-21                           |  |  |  |  |  |  |  |  |  | 174 002-02-21        |  |  |  |  |  |  |  |  |  | 175 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 176 002-02-21   |  |  |  |  |  |  |  |  |  | 177 002-02-21                           |  |  |  |  |  |  |  |  |  | 178 002-02-21        |  |  |  |  |  |  |  |  |  | 179 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 180 002-02-21   |  |  |  |  |  |  |  |  |  | 181 002-02-21                           |  |  |  |  |  |  |  |  |  | 182 002-02-21        |  |  |  |  |  |  |  |  |  | 183 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 184 002-02-21   |  |  |  |  |  |  |  |  |  | 185 002-02-21                           |  |  |  |  |  |  |  |  |  | 186 002-02-21        |  |  |  |  |  |  |  |  |  | 187 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 188 002-02-21   |  |  |  |  |  |  |  |  |  | 189 002-02-21                           |  |  |  |  |  |  |  |  |  | 190 002-02-21        |  |  |  |  |  |  |  |  |  | 191 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 192 002-02-21   |  |  |  |  |  |  |  |  |  | 193 002-02-21                           |  |  |  |  |  |  |  |  |  | 194 002-02-21        |  |  |  |  |  |  |  |  |  | 195 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 196 002-02-21   |  |  |  |  |  |  |  |  |  | 197 002-02-21                           |  |  |  |  |  |  |  |  |  | 198 002-02-21        |  |  |  |  |  |  |  |  |  | 199 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 200 002-02-21   |  |  |  |  |  |  |  |  |  | 201 002-02-21                           |  |  |  |  |  |  |  |  |  | 202 002-02-21        |  |  |  |  |  |  |  |  |  | 203 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 204 002-02-21   |  |  |  |  |  |  |  |  |  | 205 002-02-21                           |  |  |  |  |  |  |  |  |  | 206 002-02-21        |  |  |  |  |  |  |  |  |  | 207 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 208 002-02-21   |  |  |  |  |  |  |  |  |  | 209 002-02-21                           |  |  |  |  |  |  |  |  |  | 210 002-02-21        |  |  |  |  |  |  |  |  |  | 211 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 212 002-02-21   |  |  |  |  |  |  |  |  |  | 213 002-02-21                           |  |  |  |  |  |  |  |  |  | 214 002-02-21        |  |  |  |  |  |  |  |  |  | 215 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 216 002-02-21   |  |  |  |  |  |  |  |  |  | 217 002-02-21                           |  |  |  |  |  |  |  |  |  | 218 002-02-21        |  |  |  |  |  |  |  |  |  | 219 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 220 002-02-21   |  |  |  |  |  |  |  |  |  | 221 002-02-21                           |  |  |  |  |  |  |  |  |  | 222 002-02-21        |  |  |  |  |  |  |  |  |  | 223 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 224 002-02-21   |  |  |  |  |  |  |  |  |  | 225 002-02-21                           |  |  |  |  |  |  |  |  |  | 226 002-02-21        |  |  |  |  |  |  |  |  |  | 227 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 228 002-02-21   |  |  |  |  |  |  |  |  |  | 229 002-02-21                           |  |  |  |  |  |  |  |  |  | 230 002-02-21        |  |  |  |  |  |  |  |  |  | 231 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 232 002-02-21   |  |  |  |  |  |  |  |  |  | 233 002-02-21                           |  |  |  |  |  |  |  |  |  | 234 002-02-21        |  |  |  |  |  |  |  |  |  | 235 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 236 002-02-21   |  |  |  |  |  |  |  |  |  | 237 002-02-21                           |  |  |  |  |  |  |  |  |  | 238 002-02-21        |  |  |  |  |  |  |  |  |  | 239 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 240 002-02-21   |  |  |  |  |  |  |  |  |  | 241 002-02-21                           |  |  |  |  |  |  |  |  |  | 242 002-02-21        |  |  |  |  |  |  |  |  |  | 243 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 244 002-02-21   |  |  |  |  |  |  |  |  |  | 245 002-02-21                           |  |  |  |  |  |  |  |  |  | 246 002-02-21        |  |  |  |  |  |  |  |  |  | 247 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 248 002-02-21   |  |  |  |  |  |  |  |  |  | 249 002-02-21                           |  |  |  |  |  |  |  |  |  | 250 002-02-21        |  |  |  |  |  |  |  |  |  | 251 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 252 002-02-21   |  |  |  |  |  |  |  |  |  | 253 002-02-21                           |  |  |  |  |  |  |  |  |  | 254 002-02-21        |  |  |  |  |  |  |  |  |  | 255 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 256 002-02-21   |  |  |  |  |  |  |  |  |  | 257 002-02-21                           |  |  |  |  |  |  |  |  |  | 258 002-02-21        |  |  |  |  |  |  |  |  |  | 259 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 260 002-02-21   |  |  |  |  |  |  |  |  |  | 261 002-02-21                           |  |  |  |  |  |  |  |  |  | 262 002-02-21        |  |  |  |  |  |  |  |  |  | 263 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 264 002-02-21   |  |  |  |  |  |  |  |  |  | 265 002-02-21                           |  |  |  |  |  |  |  |  |  | 266 002-02-21        |  |  |  |  |  |  |  |  |  | 267 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 268 002-02-21   |  |  |  |  |  |  |  |  |  | 269 002-02-21                           |  |  |  |  |  |  |  |  |  | 270 002-02-21        |  |  |  |  |  |  |  |  |  | 271 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 272 002-02-21   |  |  |  |  |  |  |  |  |  | 273 002-02-21                           |  |  |  |  |  |  |  |  |  | 274 002-02-21        |  |  |  |  |  |  |  |  |  | 275 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 276 002-02-21   |  |  |  |  |  |  |  |  |  | 277 002-02-21                           |  |  |  |  |  |  |  |  |  | 278 002-02-21        |  |  |  |  |  |  |  |  |  | 279 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 280 002-02-21   |  |  |  |  |  |  |  |  |  | 281 002-02-21                           |  |  |  |  |  |  |  |  |  | 282 002-02-21        |  |  |  |  |  |  |  |  |  | 283 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 284 002-02-21   |  |  |  |  |  |  |  |  |  | 285 002-02-21                           |  |  |  |  |  |  |  |  |  | 286 002-02-21        |  |  |  |  |  |  |  |  |  | 287 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 288 002-02-21   |  |  |  |  |  |  |  |  |  | 289 002-02-21                           |  |  |  |  |  |  |  |  |  | 290 002-02-21        |  |  |  |  |  |  |  |  |  | 291 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 292 002-02-21   |  |  |  |  |  |  |  |  |  | 293 002-02-21                           |  |  |  |  |  |  |  |  |  | 294 002-02-21        |  |  |  |  |  |  |  |  |  | 295 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 296 002-02-21   |  |  |  |  |  |  |  |  |  | 297 002-02-21                           |  |  |  |  |  |  |  |  |  | 298 002-02-21        |  |  |  |  |  |  |  |  |  | 299 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 300 002-02-21   |  |  |  |  |  |  |  |  |  | 301 002-02-21                           |  |  |  |  |  |  |  |  |  | 302 002-02-21        |  |  |  |  |  |  |  |  |  | 303 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 304 002-02-21   |  |  |  |  |  |  |  |  |  | 305 002-02-21                           |  |  |  |  |  |  |  |  |  | 306 002-02-21        |  |  |  |  |  |  |  |  |  | 307 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 308 002-02-21   |  |  |  |  |  |  |  |  |  | 309 002-02-21                           |  |  |  |  |  |  |  |  |  | 310 002-02-21        |  |  |  |  |  |  |  |  |  | 311 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 312 002-02-21   |  |  |  |  |  |  |  |  |  | 313 002-02-21                           |  |  |  |  |  |  |  |  |  | 314 002-02-21        |  |  |  |  |  |  |  |  |  | 315 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 316 002-02-21   |  |  |  |  |  |  |  |  |  | 317 002-02-21                           |  |  |  |  |  |  |  |  |  | 318 002-02-21        |  |  |  |  |  |  |  |  |  | 319 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 320 002-02-21   |  |  |  |  |  |  |  |  |  | 321 002-02-21                           |  |  |  |  |  |  |  |  |  | 322 002-02-21        |  |  |  |  |  |  |  |  |  | 323 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 324 002-02-21   |  |  |  |  |  |  |  |  |  | 325 002-02-21                           |  |  |  |  |  |  |  |  |  | 326 002-02-21        |  |  |  |  |  |  |  |  |  | 327 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 328 002-02-21   |  |  |  |  |  |  |  |  |  | 329 002-02-21                           |  |  |  |  |  |  |  |  |  | 330 002-02-21        |  |  |  |  |  |  |  |  |  | 331 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 332 002-02-21   |  |  |  |  |  |  |  |  |  | 333 002-02-21                           |  |  |  |  |  |  |  |  |  | 334 002-02-21        |  |  |  |  |  |  |  |  |  | 335 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 336 002-02-21   |  |  |  |  |  |  |  |  |  | 337 002-02-21                           |  |  |  |  |  |  |  |  |  | 338 002-02-21        |  |  |  |  |  |  |  |  |  | 339 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 340 002-02-21   |  |  |  |  |  |  |  |  |  | 341 002-02-21                           |  |  |  |  |  |  |  |  |  | 342 002-02-21        |  |  |  |  |  |  |  |  |  | 343 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 344 002-02-21   |  |  |  |  |  |  |  |  |  | 345 002-02-21                           |  |  |  |  |  |  |  |  |  | 346 002-02-21        |  |  |  |  |  |  |  |  |  | 347 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 348 002-02-21   |  |  |  |  |  |  |  |  |  | 349 002-02-21                           |  |  |  |  |  |  |  |  |  | 350 002-02-21        |  |  |  |  |  |  |  |  |  | 351 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 352 002-02-21   |  |  |  |  |  |  |  |  |  | 353 002-02-21                           |  |  |  |  |  |  |  |  |  | 354 002-02-21        |  |  |  |  |  |  |  |  |  | 355 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 356 002-02-21   |  |  |  |  |  |  |  |  |  | 357 002-02-21                           |  |  |  |  |  |  |  |  |  | 358 002-02-21        |  |  |  |  |  |  |  |  |  | 359 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 360 002-02-21   |  |  |  |  |  |  |  |  |  | 361 002-02-21                           |  |  |  |  |  |  |  |  |  | 362 002-02-21        |  |  |  |  |  |  |  |  |  | 363 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 364 002-02-21   |  |  |  |  |  |  |  |  |  | 365 002-02-21                           |  |  |  |  |  |  |  |  |  | 366 002-02-21        |  |  |  |  |  |  |  |  |  | 367 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 368 002-02-21   |  |  |  |  |  |  |  |  |  | 369 002-02-21                           |  |  |  |  |  |  |  |  |  | 370 002-02-21        |  |  |  |  |  |  |  |  |  | 371 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 372 002-02-21   |  |  |  |  |  |  |  |  |  | 373 002-02-21                           |  |  |  |  |  |  |  |  |  | 374 002-02-21        |  |  |  |  |  |  |  |  |  | 375 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 376 002-02-21   |  |  |  |  |  |  |  |  |  | 377 002-02-21                           |  |  |  |  |  |  |  |  |  | 378 002-02-21        |  |  |  |  |  |  |  |  |  | 379 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 380 002-02-21   |  |  |  |  |  |  |  |  |  | 381 002-02-21                           |  |  |  |  |  |  |  |  |  | 382 002-02-21        |  |  |  |  |  |  |  |  |  | 383 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 384 002-02-21   |  |  |  |  |  |  |  |  |  | 385 002-02-21                           |  |  |  |  |  |  |  |  |  | 386 002-02-21        |  |  |  |  |  |  |  |  |  | 387 002-02-21                        |  |  |  |  |  |  |  |  |  |
| 388 002-02-21   |  |  |  |  |  |  |  |  |  | 389 002-02-21                           |  |  |  |  |  |  |  |  |  | 390 002-02-21        |  |  |  |  |  |  |  |  |  | 391 002-02-21                        |  |  |  |  |  |  |  |  |  |
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## 4.6 CONTROLS (CONT'D)

### 4.6.4 MODEL 149 MONITOR

The front panel of the Model 149 monitor contains a five digit liquid crystal display, a nine position rotary function select switch, and three push buttons; ACK/MODE (Acknowledgment/Mode), UP and DOWN.

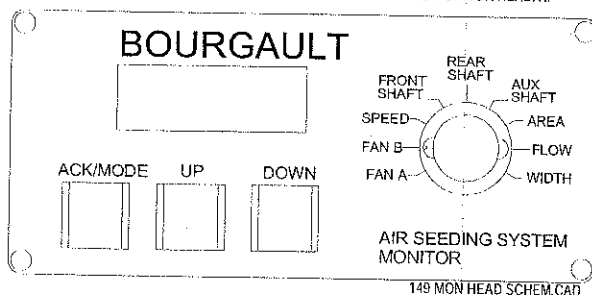
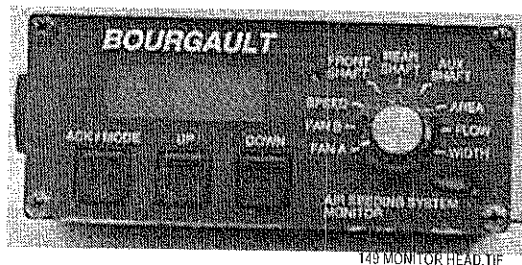


Figure 4.6 Model 149 Monitor

A continuous alarm will sound upon detection of a low fan or auger shaft speed, a low bin level. While the alarm is sounding, the display will indicate which fault condition(s) is/are present. Pressing the ACK/MODE button briefly, will silence the alarm, and the display will return to its normal display.

Every ten seconds each present fault condition is briefly displayed. When a fault is corrected, the message for that fault will no longer be displayed.

The operator has the ability to set certain user limits of the monitor's operation. The limits that can be set are:

- Pulses per revolution, low alarm point, highalarm point for either fan;
- Pulses per mile of ground speed sensor;
- Pulses per revolution for each auger shaft;
- The number of blockage modules connected to the monitor;
- The width of the cultivator;
- English or metric units.

These user limits (parameters), as well as the accumulated and field area, are stored in nonvolatile memory. This means that the information will be retained when the monitor is shut off.

### 4.6.5 277 AIR SEEDER MONITOR

This control box contains the microprocessor that monitors, displays and controls the specified parameters for the Air Seeder and its operation. It uses a multiplex data communication system to monitor all the sensors on the machine. A nonvolatile memory is used in the monitor so the memory is always retained even if the power is disconnected.

Refer to the 277 Operator's Manual for operational instruction.

## 6.2 FIELD CALIBRATION - 149 MONITOR

The meter rate mode (CALIBRATION RATE) is used to accurately calculate the application rate, which is obtained by dividing the weight of a sample of material by the area over which it was collected.

### IMPORTANT

THE 101 MONITOR WILL ONLY DISPLAY **IMPERIAL UNITS**.

#### 1. Preparation:

- Select and install the sprockets for the product and rate you desire.
- Inspect metering augers, tanks and transfer lines for rust and obstructions. Clean if rusty and remove obstructions.

- Load the tanks with clean, dry product.
  - If moisture has condensed in the tanks, run sufficient dry product through each tank to absorb the water and dry the tank. When dry, add sufficient clean dry product for the calibration.
  - At the beginning of the season or when the machine is new, apply product for 5 to 10 acres (2 to 4 hectares) to remove any rust and polish all the surfaces to establish a uniform and consistent flow pattern. With uniform and consistent material flow patterns, an accurate calibration will be obtained.
- Ensure that the metering auger chamber is full of product before beginning the calibration.

### IMPORTANT

ALWAYS CALIBRATE - RATES DISPLAYED ON THE SPROCKET CHARTS ARE AVERAGE RATES ONLY. CALIBRATE FOR ACCURATE RESULTS.

- Remove the cleanout covers from the bottom of the augers.
- Calibration boxes:
  - Remove the calibration boxes from their storage position at the back of the frame.

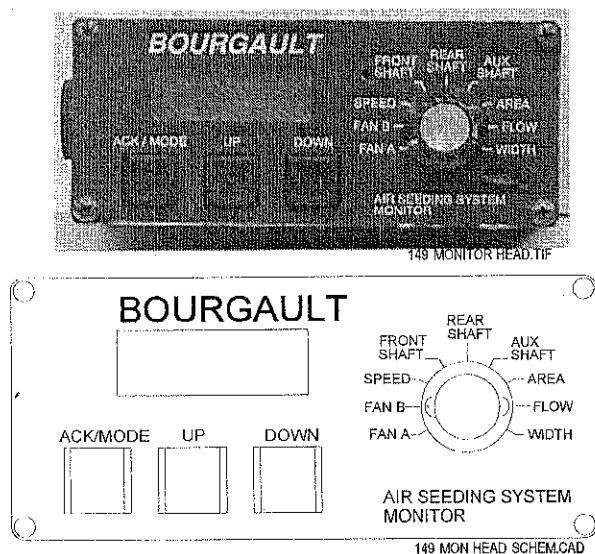


Figure 6.7 Model 149 Monitor

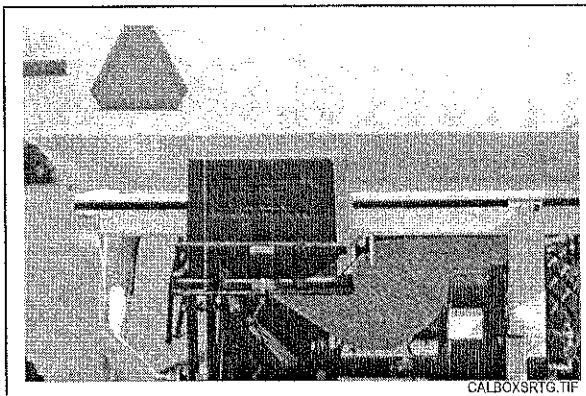


Figure 6.8 Calibration Boxes

## 6.2 FIELD CALIBRATION - 149 MONITOR (CONT'D)

- b. Attach the weigh scale to the anchor hook.
- c. Hang a calibration box from the weigh scale and zero the scale. By zeroing the weigh scale, the scale reading will be the product weight. Ensure boxes are the same weight.
- d. Use the straps and buckles to attach the calibration boxes directly under the auger cleanout ports. Secure straps over transfer line on each side of cleanout port.
5. Turn the selector knob on the face of the monitor to the AREA position. Press the ACK/MODE button continuously for five short beeps and one long beep to initiate the calibration rate mode. The monitor should now display "0r00";

0r00

which is a measure of the application area precise to 1/100 of an acre. Turn on the electric clutch and run a test to achieve between 20 to 35 lbs (9 to 14 kgs) of product.

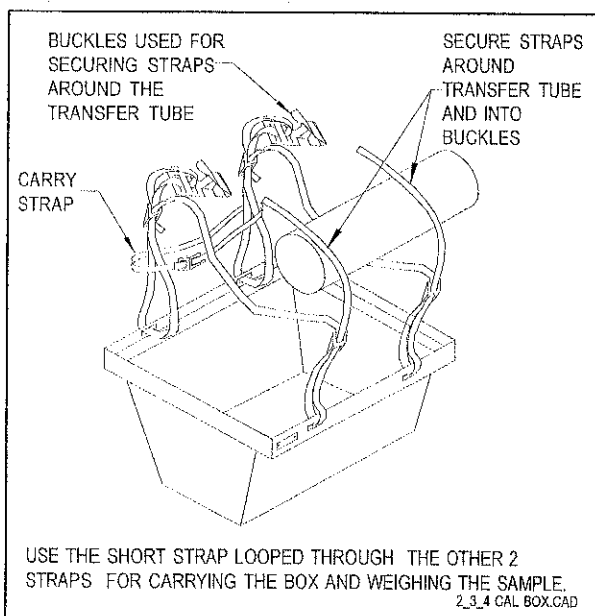


Figure 6.8 Calibration Box Mount

4. Ensure that the implement width and pulses per mile have been entered this season. Refer to *Section 4.11.1.4* for procedure.

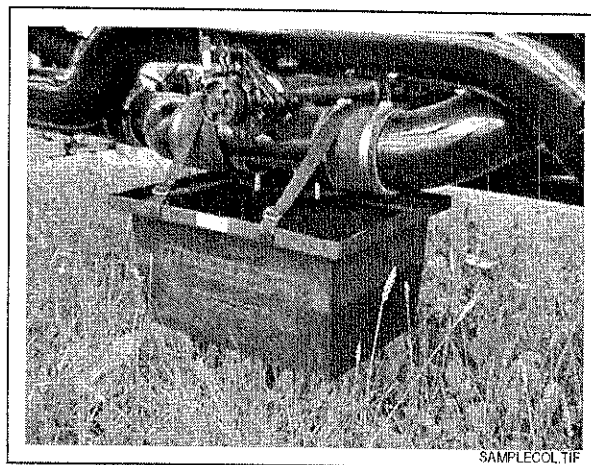


Figure 6.10 Sample Collection

## 6.2 FIELD CALIBRATION - 149 MONITOR (CONT'D)

6. Weigh the sample, press the ACK/MODE button briefly and "00.00" will be displayed.

00.00

Enter the sample weight in "pounds.100th" of a pound (100th of a pound goes up in increments of .05 lbs by pressing UP and DOWN buttons until the desired number is achieved).

Example: 1st increment .05, next .10, next .15, etc.

7. Pressing the ACK/MODE button again will cause the display to show "rAtE" briefly;

rAtE

then the application rate (the entered weight divided by the application area) will be displayed in pounds per acre.

8. To determine the application rate of the second sample for the same run, press the ACK/MODE button briefly, and enter the second sample's weight. Pressing the ACK/MODE button again will cause the display to show "rAtE" briefly;

rAtE

then the application rate (the entered weight divided by the application area) for the second sample will be displayed in pounds per acre.

9. Press the ACK/MODE button and hold it for 5 seconds to return to area accumulation display.

### NOTE

WHEN IN CALIBRATION MODE THE MONITOR WILL **NOT** COUNT FIELD OR ACCUMULATED AREAS.



Figure 6.11 Weighing



## 6.4 STATIONARY CALIBRATION - 149 MONITOR

The optional Stationary Calibration Crank Kit is available for all 2135 Series Air Seeders. The kit allows the operator to perform a stationary or static calibration of the Air Seeder before performing a field calibration or rolling check.

The kit is easily assembled in the field. The existing main wheel drive shaft is removed and replaced with a new shaft and a manual clutch collar to engage and disengage the Stationary Calibration Crank.

### 1. Preparation:

- a. Select and install the sprockets for the product and rate you desire.
- b. Inspect metering augers, tanks and transfer lines for rust and obstructions. Clean if rusty and remove obstructions.
- c. Load the tanks with clean, dry product.
  - i. If moisture has condensed in the tanks, run sufficient dry product through each tank to absorb the water and dry the tank. When dry, add sufficient clean dry product for the calibration.
  - ii. At the beginning of the season or when the machine is new, apply product for 5 to 10 acres (2 to 4 hectares) to remove any rust and polish all the surfaces to establish a uniform and consistent flow pattern. With uniform and consistent material flow patterns, an accurate calibration will be obtained.
- d. Ensure that the metering auger chamber is full of product before beginning the calibration.

### IMPORTANT

**ALWAYS CALIBRATE** - RATES DISPLAYED ON THE SPROCKET CHARTS ARE AVERAGE RATES ONLY. CALIBRATE FOR ACCURATE RESULTS.

2. Remove the cleanout covers from the bottom of the augers.
3. **Calibration boxes:**
  - a. Remove the calibration boxes from their storage position at the back of the frame.

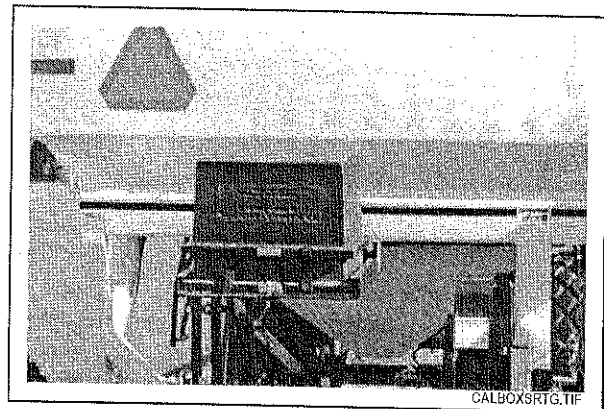


Figure 6.21 Calibration Boxes

- b. Attach the weigh scale to the anchor hook.
- c. Hang a calibration box from the weigh scale and zero the scale. By zeroing the weigh scale, the scale reading will be the product weight.

## 6.4 STATIONARY CALIBRATION - 149 MONITOR (CONT'D)

- d. Use the straps and buckles to attach the calibration boxes directly under the auger cleanout ports. Secure straps over transfer line on each side of cleanout port.

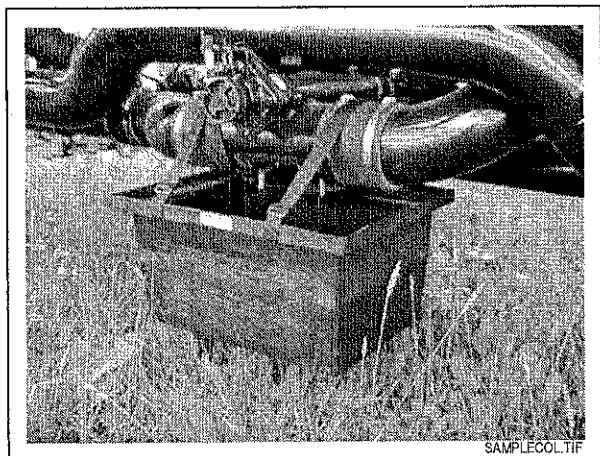


Figure 6.22 Sample Collection

4. Review monitor operation and be sure that implement width and pulses per mile have been properly entered. Refer to Section 4.11.1.4.
5. Refer to Figure 6.23. **Disengage** the manual clutch collar at the drive wheel by pulling the manual clutch collar back about 1" (2.5cm) and turning it a quarter turn. Ensure that the manual clutch collar is firmly seated on the shoulder of the air seeder drive shaft, not the milled 1/4" (3.2cm) bore sprocket.

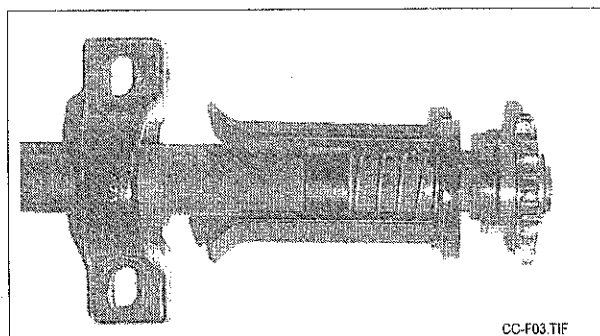


Figure 6.23 Clutch Disengaged

6. Install the Stationary Calibration Crank onto the calibration crank shaft and secure with a 3/8" x 1 1/2" (9.5 mm x 38 mm) PTO pin.

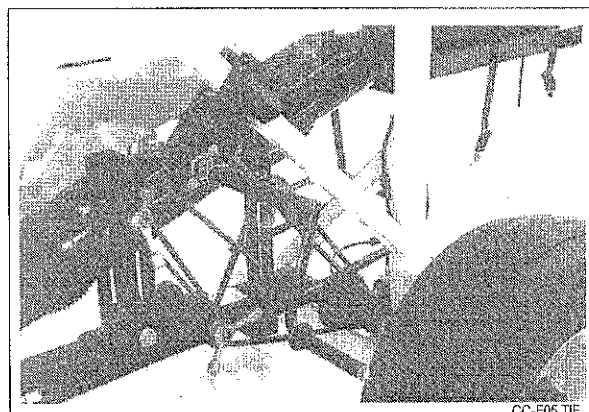


Figure 6.24 Calibration Crank

7. Turn the crank **Counter Clockwise** one (1) revolution per second. It is very important to turn the Stationary Calibration Crank at a constant speed, to simulate field travel.
8. Turn the selector knob on the face of the monitor to the AREA position. Press the ACK/MODE button continuously for five short beeps and one long beep to initiate the calibration rate mode. The monitor should now display "0r00";

0r00

which is a measure of the application area precise to 1/100 of an acre.

9. Turn the crank **Counter Clockwise** one (1) revolution per second. It is very important to turn the Stationary Calibration Crank at a constant speed, to simulate field travel.

## 6.4 STATIONARY CALIBRATION - 149 MONITOR (CONT'D)

### NOTE

SMALL AMOUNTS OF PRODUCT DO NOT PROVIDE THE ACCURACY OF LARGER AMOUNTS WHEN CALIBRATING. WHEN CALIBRATING LOW RATE PRODUCTS, IT WILL BE NECESSARY TO TURN THE CRANK MORE TO METER OUT 20 TO 30 LBS. (9 TO 14 KGS) OF PRODUCT FOR THE CALIBRATION.

10. Stop when the auger with the highest application rate has metered out 20 to 30 lbs. (9 to 14 kgs) of product into its calibration box. Proceed to Step 13.
11. Close the cleanout cover to the completed metering auger.
12. Turn the crank again until 20 to 30 lbs. (9 to 14 kgs) of product has been metered into the next calibration box. Close the cleanout cover to the completed metering auger.
13. Weigh the sample, press the ACK/MODE button briefly and "00.00" will be displayed.

00.00

Enter the sample weight in "pounds.100th" of a pound (100th of a pound goes up in increments of .05 lbs by pressing UP and DOWN buttons until the desired number is achieved)

Example: 1st increment .05, next .10, next .15, etc.

14. Pressing the ACK/MODE button again will cause the display to show "rAtE" briefly;

rAtE

then the application rate (the entered weight divided by the application area) will be displayed in pounds per acre.

15. To determine the application rate of the second sample for the same run, press the ACK/MODE button briefly, and enter the second sample's weight. Pressing the ACK/MODE button again will cause the display to show "rAtE" briefly;

rAtE

then the application rate (the entered weight divided by the application area) for the second sample will be displayed in pounds per acre.

16. Press the ACK/MODE button and hold it for 5 seconds to return to area accumulation display.

### IMPORTANT

WHEN IN CALIBRATION MODE THE MONITOR WILL **NOT** COUNT FIELD OR ACCUMULATED AREAS.

## 6.4 STATIONARY CALIBRATION - 149 MONITOR (CONT'D)

17. Refer to Figure 6.25. After Stationary Calibration is complete **engage** the manual clutch collar by turning the calibration crank until the manual clutch collar is firmly seated over the milled  $1\frac{1}{4}$ " (32 mm) bore sprocket.

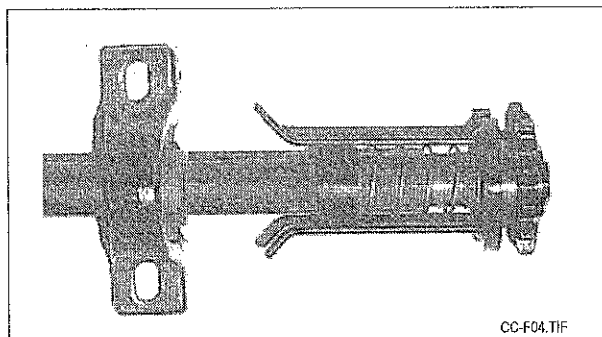


Figure 6.25 Clutch Engaged

18. Remove the calibration crank and secure it in the holder provided.

### IMPORTANT

DO NOT LEAVE THE CALIBRATION CRANK ON THE CALIBRATION SHAFT OR THE MANUAL CLUTCH COLLAR DISENGAGED DURING OPERATION! DAMAGE TO THE UNIT WILL RESULT!

19. Return calibration boxes to their storage place on the back of the frame and secure.
20. Install and secure all the metering auger cleanout covers.
21. Activate drive clutch(es) to place system in its normal operating mode.
22. It is recommended that a field (rolling) calibration be done to verify the results from the static calibration.

### IMPORTANT

OPERATION OF THE AIR SEEDER WITH THE MANUAL CLUTCH COLLAR DISENGAGED WILL RESULT IN DAMAGE TO THE MECHANISM.

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## 6.5 CALIBRATION CHECK

Although both the field and yard calibrations work well in practice, it is recommended that a test be done to verify the result of the calibration. Below are two checks that can be performed.

### A. Use a known amount of product.

1. Place a known amount of product in the tank. For example; 200 lbs (90 kg). Better accuracy is obtained with larger amounts of product.
2. Be sure the metering auger chamber is full before starting the verification check.
3. Record the number of field acres shown on the monitor.
4. Calculate the number of acres the product is supposed to cover at the desired application rate.
5. Apply the product, making certain to stop before the tank is completely empty.
6. Record the number of field acres the monitor now shows. Subtract the field acres that were recorded in Step 3 from the new figure. This will give the total number of acres done for this test.
7. Remove the remaining product from the tank into one of the calibration boxes. Weigh the amount of product in the box. Subtract the weight of the remaining product from the total that was placed in the tank. This is the total weight of product that was applied.

### IMPORTANT

RECORD THE NUMBER OF FIELD ACRES DISPLAYED ON THE MONITOR BEFORE EMPTYING THE REMAINING PRODUCT FROM THE TANK. TURNING THE CRANK ON THE OPTIONAL STATIONARY CALIBRATION KIT ACCUMULATES ACRES AND WOULD AFFECT THE ACCURACY OF THE VERIFICATION CHECK.

8. Calculate the rate of application from the weight of product applied and acres covered during the test. Compare the result with the application rate used in Step 4.
9. If there is a significant difference between calculated and actual seeding rates, refer to the

Product Metering section of Troubleshooting for possible solutions.

### B. Use a known distance.

1. Fill tanks with clean dry product. Be sure to use a loading screen.
2. Select and install QCS sprockets as per chart. Apply product for 1-2 acres (0.4-0.8 hectares) to polish augers.
3. Remove metering auger cleanout covers, and position calibration boxes under open cleanouts.
4. Mark a distance of 200ft (60 m) in the field. Tow unit at field speed, with clutch engaged for the full 200ft (60 m). (For rates over 200 lb/acre (225 kg/ha), tow for 100ft (30 m))
5. Weigh product sample and use the formula below to calculate the actual rate in lbs/acre. (Note: If the distance travelled is 100ft (30 m), replace 435.6 with 217.8 in the formula.

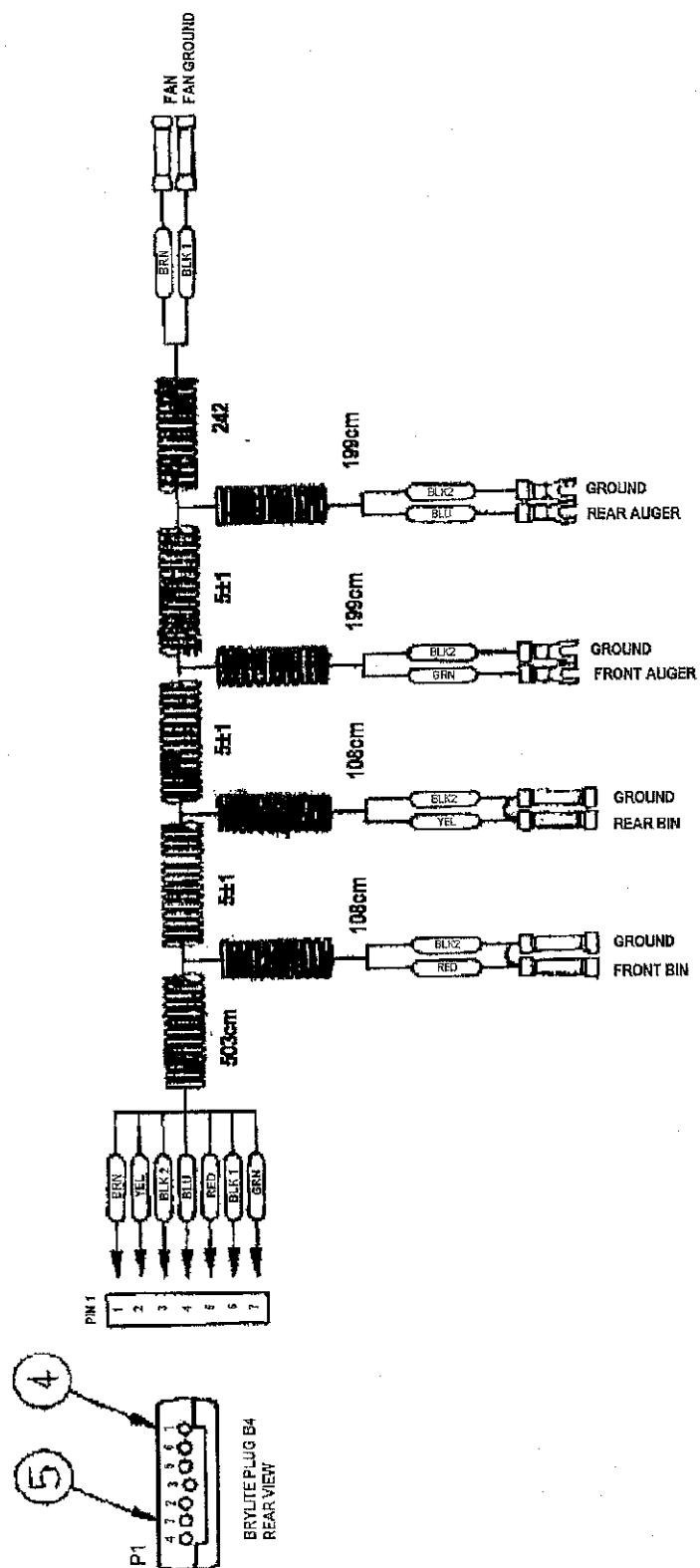
|  |
|--|
| $\text{ACTUAL RATE} \begin{matrix} \text{(LBS/ACRE OR} \\ \text{KG/HA)} \end{matrix} = \frac{\text{WEIGHT OF SAMPLE PRODUCT (LBS OR KGS)} \times 435.6}{\text{SEEDING IMPLEMENT WIDTH (FT OR M)}}$ |
|--|

## 6.6 OVERLAPPING (APPLICATION ERROR)

The monitor accumulates, records and displays actual distances, areas and weights of the machine. However, in actual field operation, there is always some overlap because operators do not want to "skip" or "miss" any part of the field. On the average, approximately 8% of the field is overlapped by the tillage equipment.

The amount will vary depending upon the number of obstacles in the field and the width of the tillage implement. The acre accumulator in the monitor does not take into account overlap so it will always measure or accumulate more acres than actually covered. The more overlap, the higher the actual rate of application.

## Figure 10.31 Switch Progressive Clutch



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