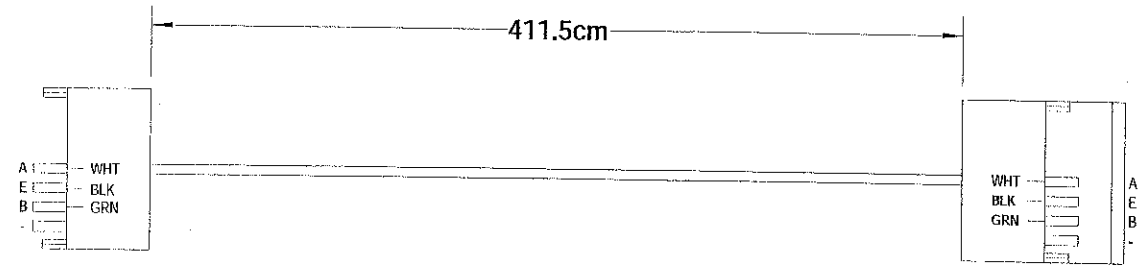
10.3 MONITOR & CLUTCH CABLE LAYOUTS (CONT'D)

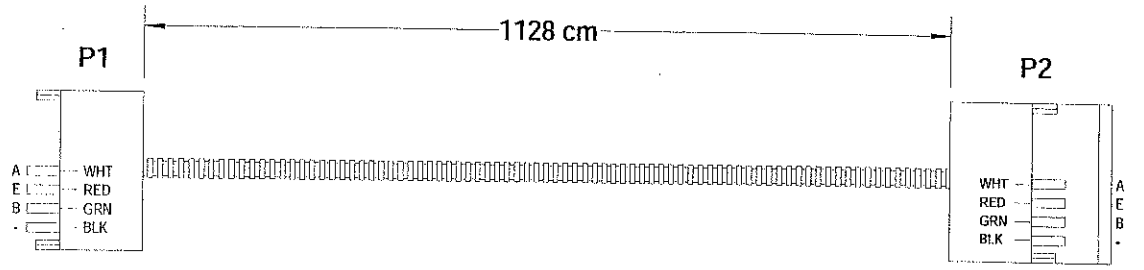


4 PIN MALE BRYLITE CONNECTOR FROM MONITOR EXT. CABLE

4 PIN FEMALE BRYLITE CONNECTOR TO A/S HARNESS

Figure 10.23 149 Cultivator Extension Cable

31205004R00.CAD
NOV. 29/01

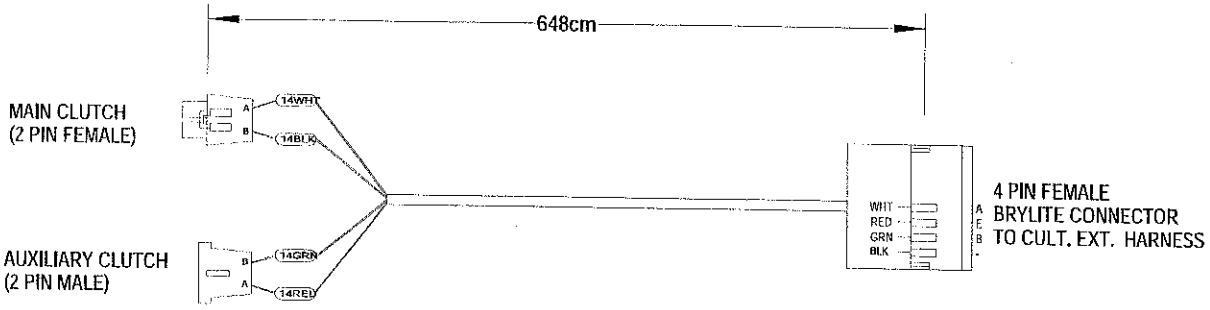


4 PIN MALE BRYLITE CONNECTOR FROM ELECTRIC CLUTCH

4 PIN FEMALE BRYLITE CONNECTOR TO MAGNETIC CLUTCH

Figure 10.24 149 Clutch Extension Cable

AS07827R00.CAD
NOV. 29/01



4 PIN FEMALE BRYLITE CONNECTOR TO CULT. EXT. HARNESS

Figure 10.25 149 Clutch Switch Extension Cable

31206528R00.CAD
NOV. 29/01

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, 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.

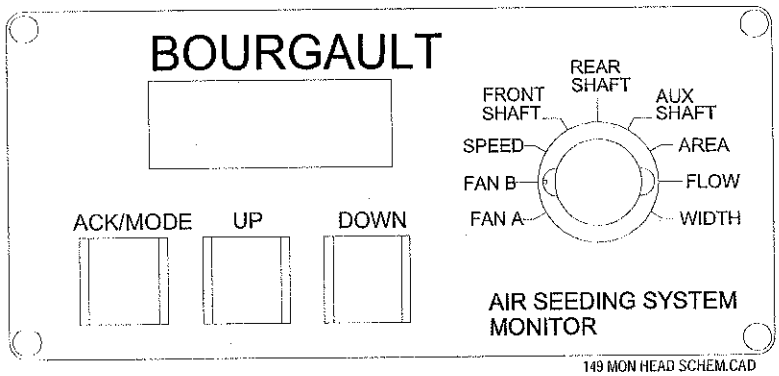


Figure 4.26 Front Panel of Model 149 Monitor

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

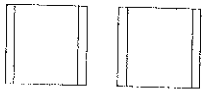
Figure 4.27 Front Panel of Model 149 Monitor

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.

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,

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,

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";

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;

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;

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";

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

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;

or "rbin" for the rear Air Seeder tank.

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;

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 of meters to the first decimal point.

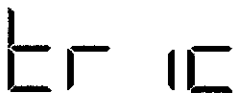
Example: **40.0** for 40 feet

12.2 for 12.2 meters.

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

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

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



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 ;

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

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

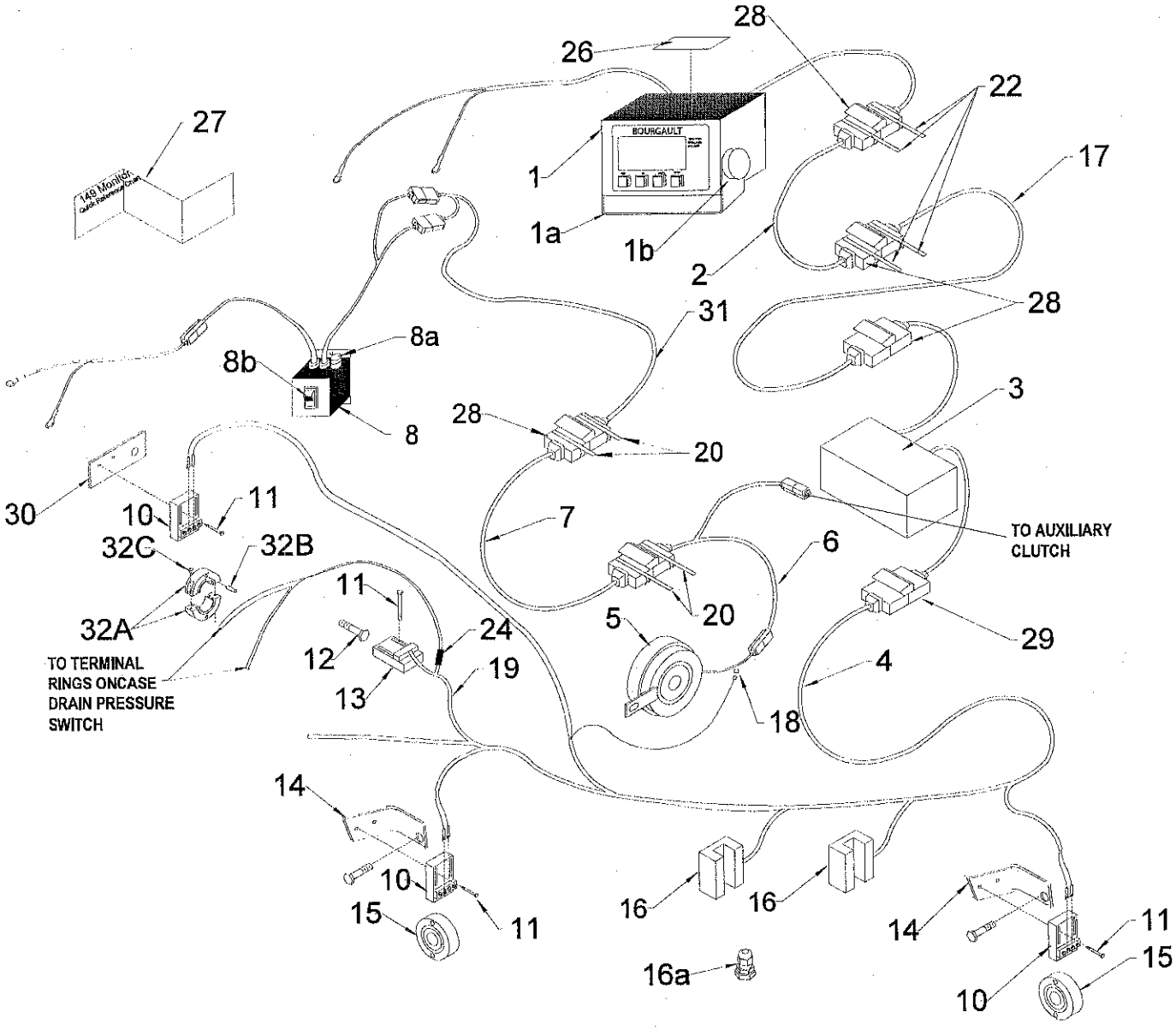
WHEN THE GROUND DRIVE CLUTCH IS DISENGAGED, AREA ACCUMULATION IS NOT COUNTED.

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".

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";

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.


28
26
22
27
17
1
1a
1b
2
28
31
8a
8b
8
28
20
3
30
10
11
7
TO AUXILIARY CLUTCH
32C
32B
6
11
32A
5
20
29
24
12
19
4
TO TERMINAL RINGS ONCASE DRAIN PRESSURE SWITCH
13
18
14
16
16
14
11
10
15
11
16a
10
15

4.8 INSTALLING SWITCHES AND MONITOR (CONT'D)

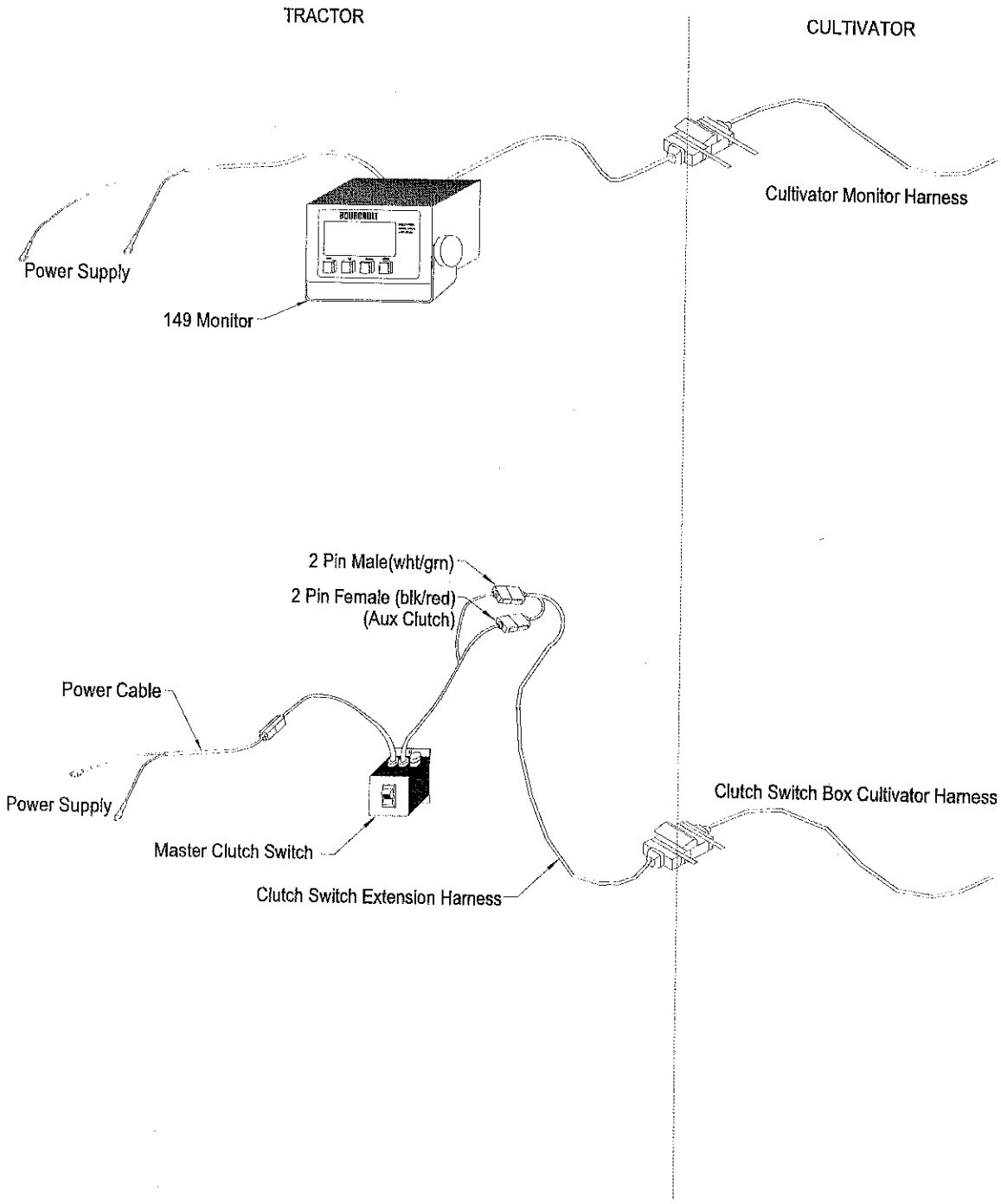


Figure 4.21 149 Monitor Wiring Diagram

2135MON149.CAD

4.8 INSTALLING SWITCHES AND MONITOR (CONT'D)

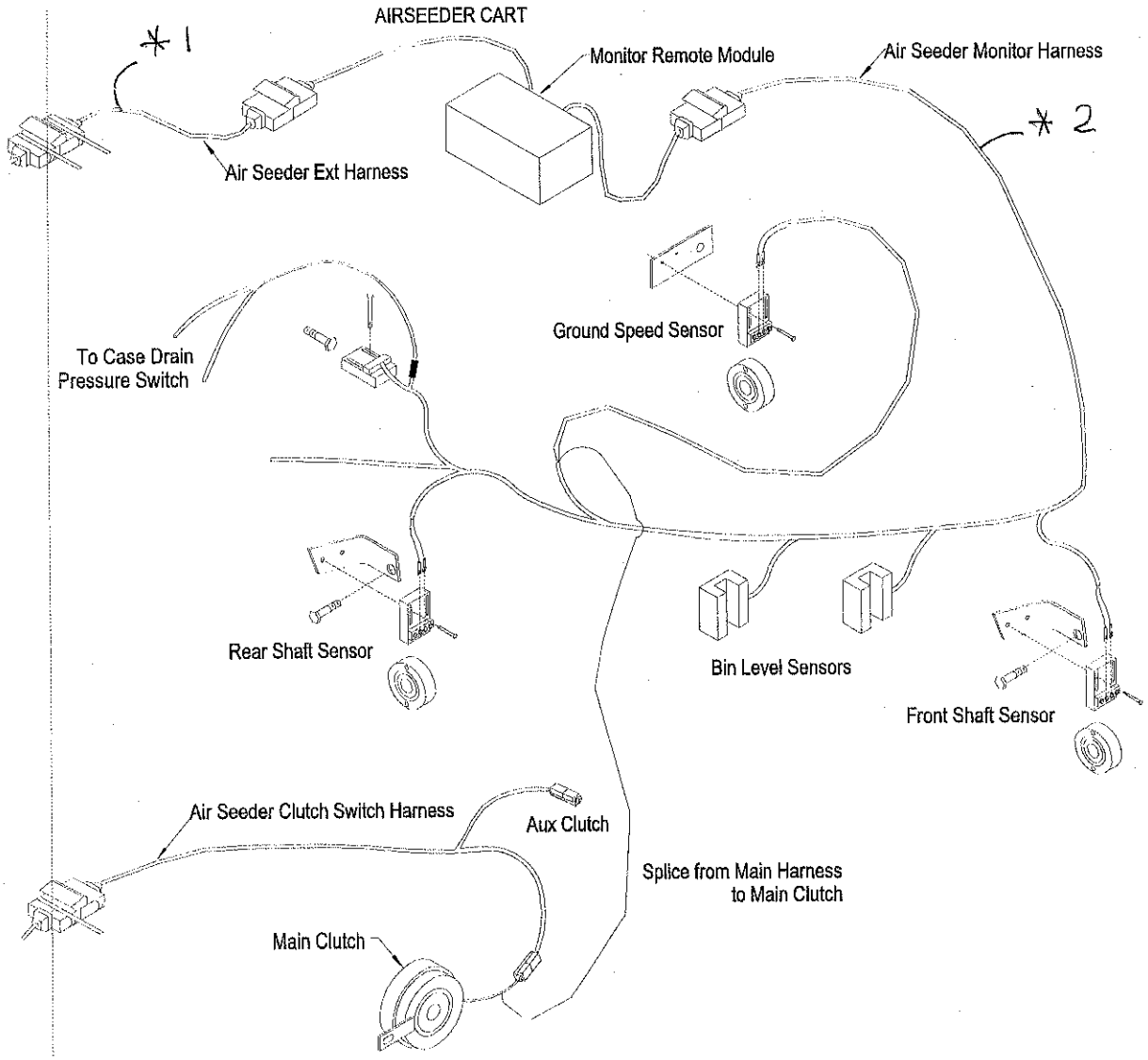
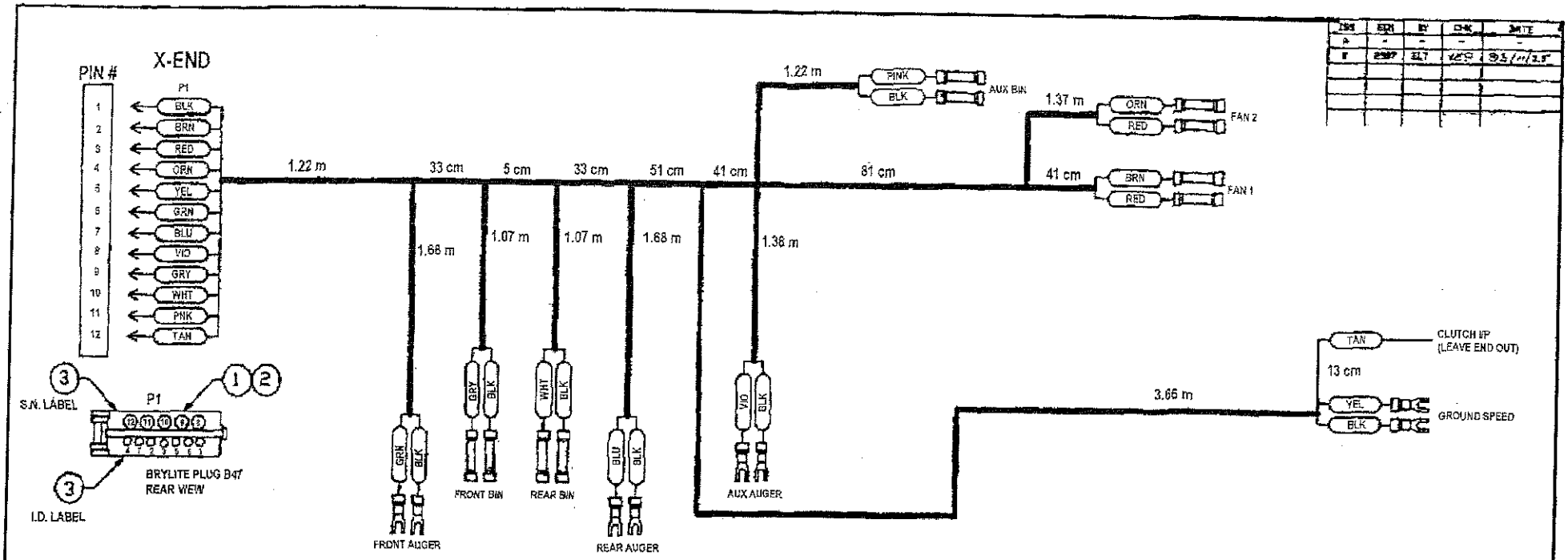


Figure 4.21 149 Monitor Wiring Diagram

2135MON149P2.CAD



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 STOP

Bourgault Part #3120-50-03

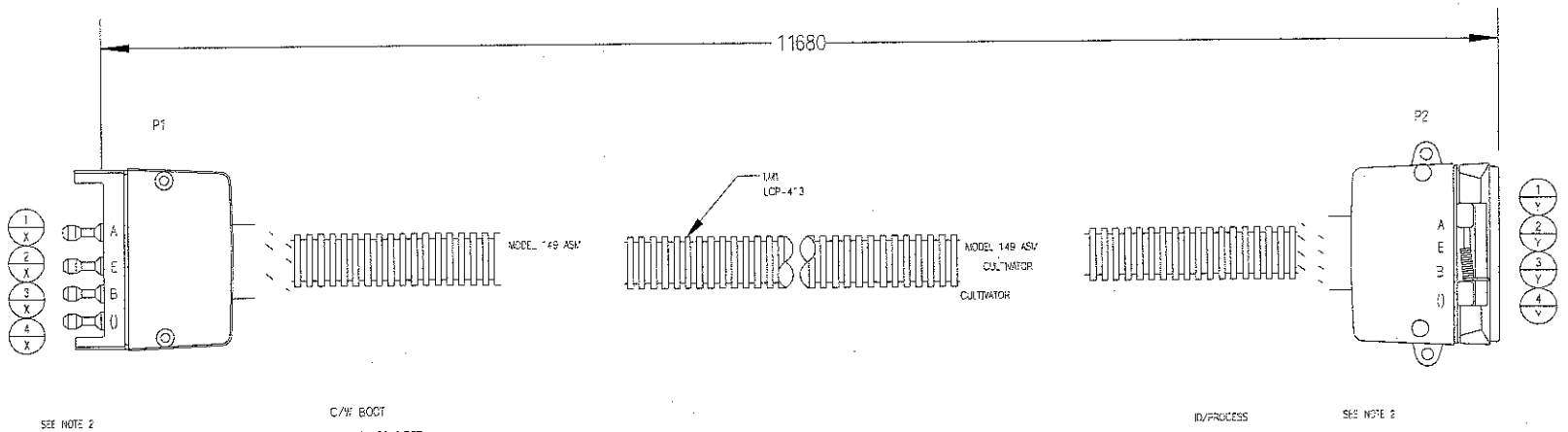
VANSCO ELECTRONICS LTD.

MODEL 149 AIR SEEDER MONITOR
SEEDER HARNESS

149701

ASSEMBLY

ISS	ECN	BY	CHK	DATE
A				



Bourgault Part # 3120-50-05

NOTES:
1) REFER TO CUT/TERM LIST FOR CIRCUIT DESCRIPTIONS.
2) ENCAPSULATE TERMINALS WITH DRAFT STOP (ITEM 2)
3) COIL & TIE EACH FINISHED CABLE ASY.

SCALE: NTS | UNITS: mm

TOLERANCES
(UNLESS OTHERWISE NOTED)

LINEAR DIMENSIONS.

0-150 ±10
150-3000 +20/-10
OVER 3000 +50/-30

WIRE STRIP: ±0.5
JACKET STRIP: ±5

REV	ECN	BY	CHK	DATE
04	43640	DAG		
03				
02				
01	430	ELT	ELT	1992-10-29
00	-	-	DWB	1992-10-29

VANSCO ELECTRONICS LTD.

BOURGAULT
MODEL 49 AIR SEEDER
MONITOR CULTIVATOR CABLE

ENG	DATE	MATERIAL No.:	AUTOCAD R14 FILE: DWG703A
DWB	1992-02-21	69997	149703
DWN	DATE		
DWB	1992-02-21		

THIRD ANGLE PROJECTION

SIZE: B | REV 04 | ISS: A | SHT 1 OF 2

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.

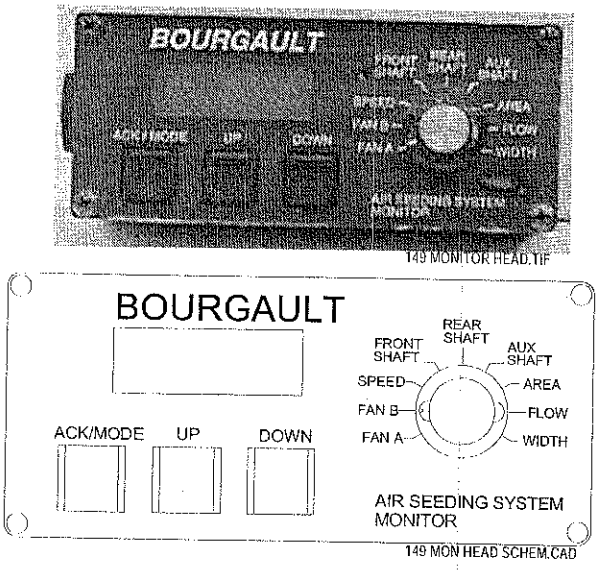


Figure 4.6 Model 149 Monitor

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 is was collected.

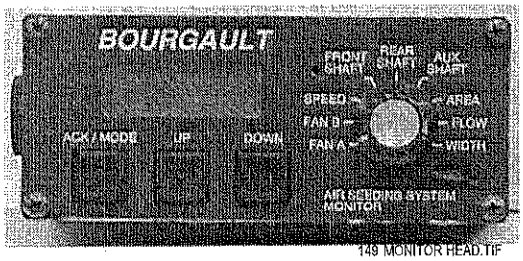
IMPORTANT

THE 101 MONITOR WILL ONLY DISPLAY *IMPERIAL UNITS.*

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.



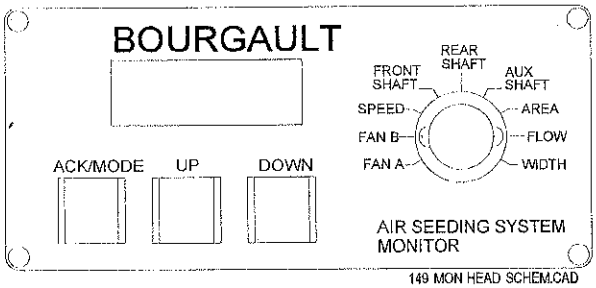


Figure 6.7 Model 149 Monitor

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.

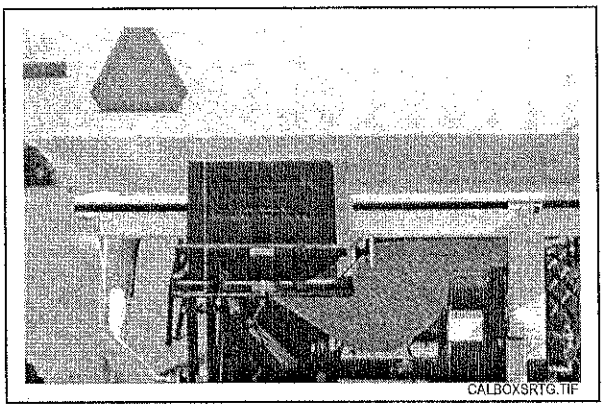


Figure 6.8 Calibration Boxes

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.

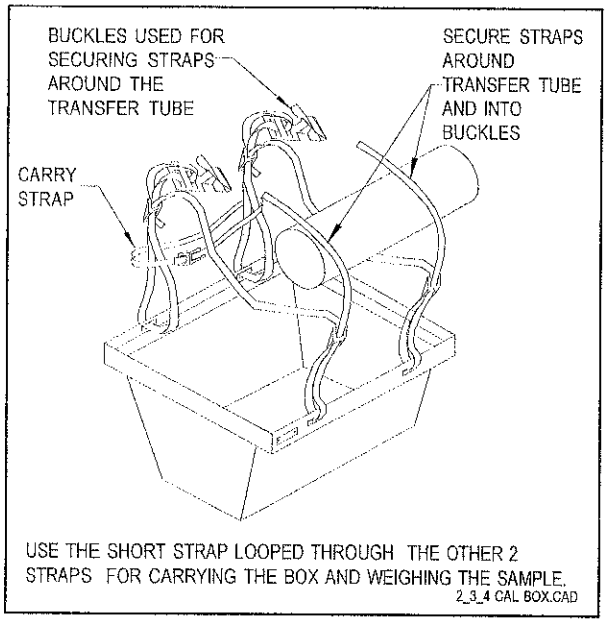


Figure 6.8 Calibration Box Mount

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

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";

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.

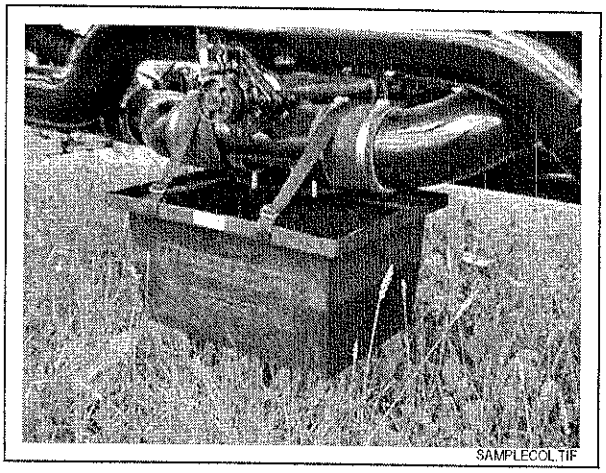


Figure 6.10 Sample Collection

6.2 FIELD CALIBRATION - 149 MONITOR (CONT'D)

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

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;

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;

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.

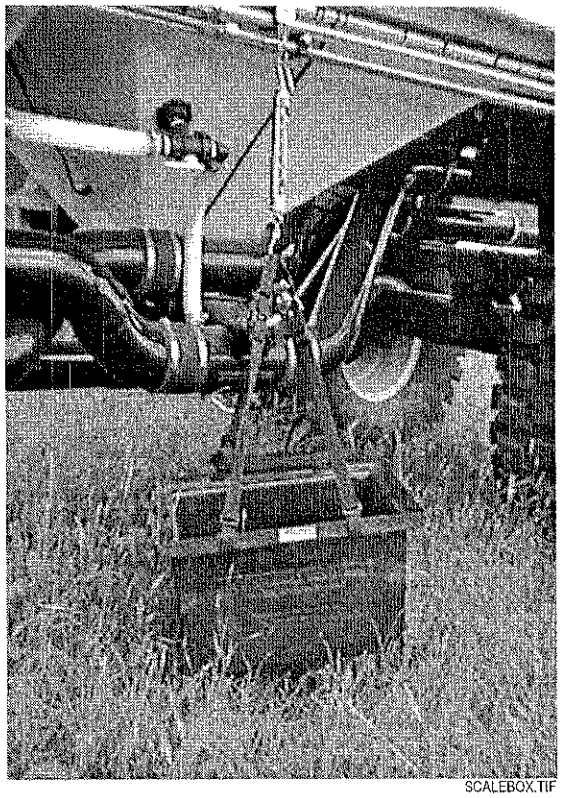


Figure 6.11 Weighing

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.

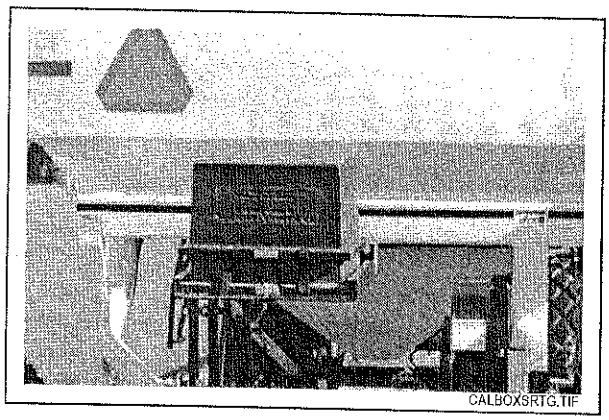


Figure 6.21 Calibration Boxes

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.

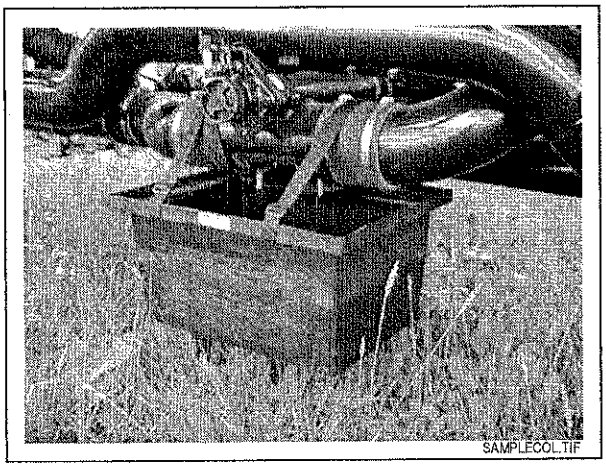


Figure 6.22 Sample Collection

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 1¼" (3.2cm) bore sprocket.

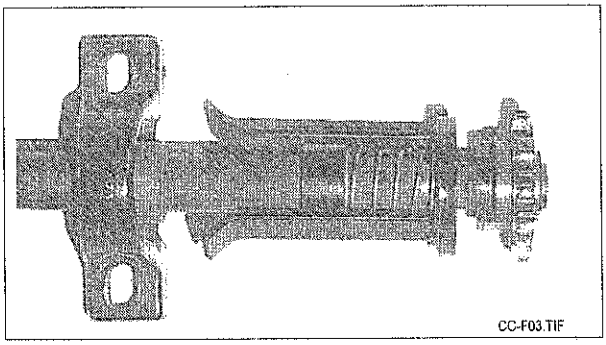


Figure 6.23 Clutch Disengaged

6. Install the Stationary Calibration Crank onto the calibration crank shaft and secure with a 3/8" x 1½" (9.5 mm x 38 mm) PTO pin.

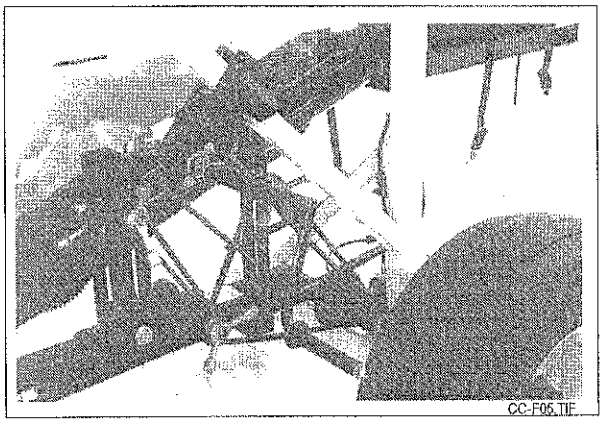


Figure 6.24 Calibration Crank

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";

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.

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;

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;

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 1¼" (32 mm) bore sprocket.

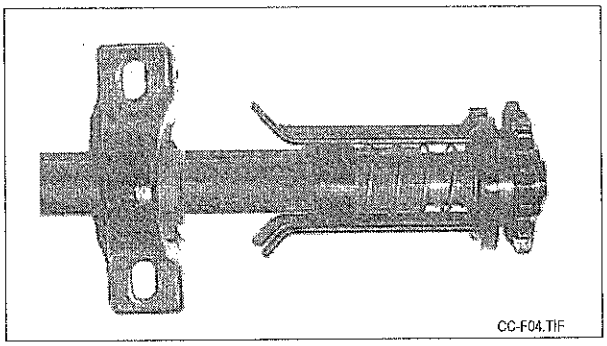


Figure 6.25 Clutch Engaged

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.

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

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.

10.3 MONITOR & CLUTCH CABLE LAYOUTS (CONT'D)

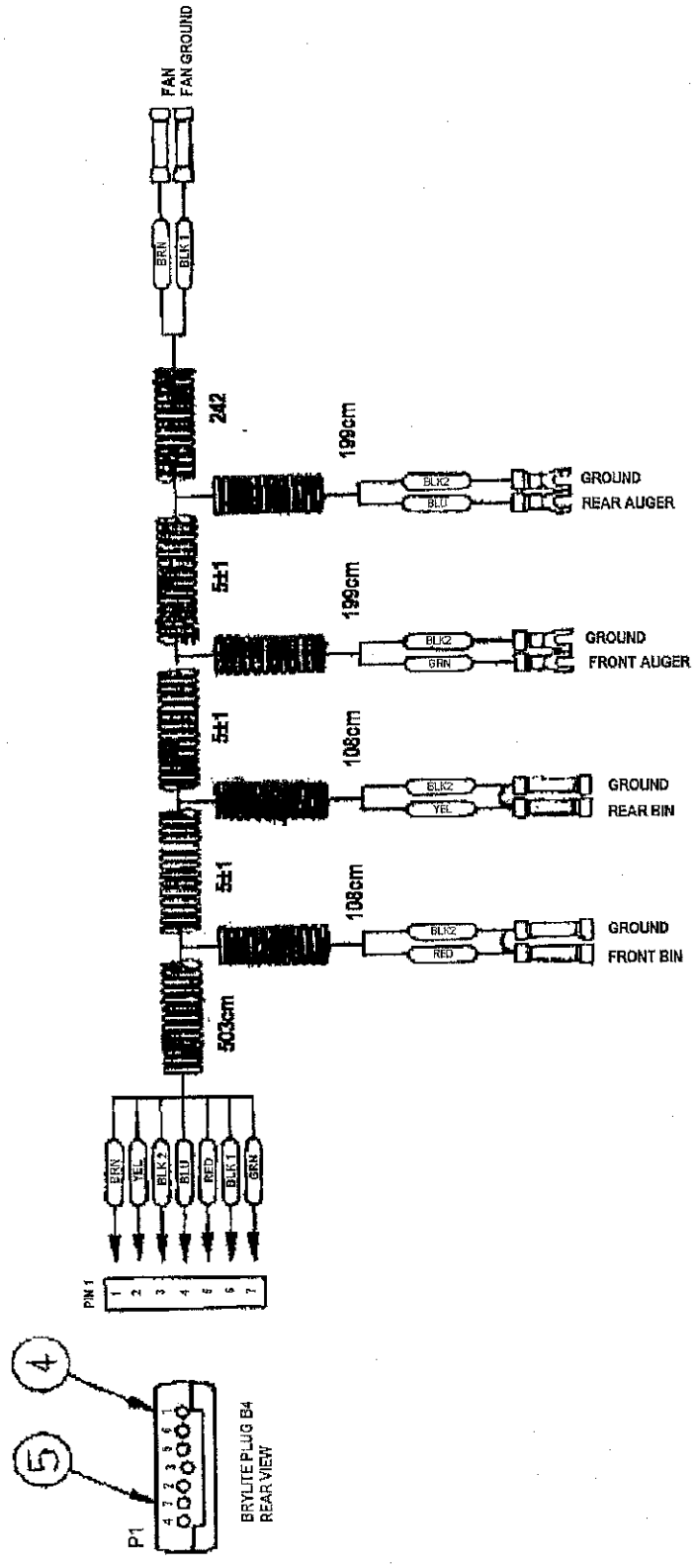

Figure 10.31 Switch Progressive Clutch

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