Operation Manual

Model 600RB

Moisture Sensor Kit for Round Balers

HARVEST TEC
Equipment and Products for Quality Hay.™

P.O. Box 63 • 2821 Harvey Street • Hudson, WI 54016
800-635-7468 • www.harvesttec.com

600RB OPR
12/15

(intentionally blank)

600RB Operation Manual Table of Contents

Introduction

Thank you for purchasing the Harvest Tec 600RB Moisture Monitor System. This system is designed to monitor the moisture and tonnage of the forage crop. The 600RB Moisture Monitor System offers these advantages:

1. Operation coordinated with baler operation
2. Less cab clutter providing better visibility, when using a tractor with VT
3. Ease of use with all information on one screen
4. Records kept together
5. System is ready for future updates.

The 600RB Moisture Monitor kit includes the following parts: Dual Channel Processor (DCP), Moisture Sensors, Harnesses and Miscellaneous Hardware. For your convenience a parts break down for the model 600RB is included in the back of this manual. If you do have questions bring this manual into the dealership. They can assist you in ordering the correct replacement parts.

Right and Left sides are determined by facing in the direction of forward travel.

System Requirements

If your tractor does not have an ISOBUS Monitor
you will need the Touch Screen Display
PN 030-5670A

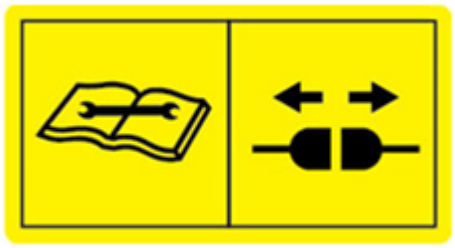
Safety

Carefully read all the safety signs in this manual and on the applicator before use. Keep signs clean and visible. Replace missing or damaged safety signs. Replacement signs are available from your local authorized dealer. See your installation manual under the replacement parts section for the correct part numbers.

Keep your applicator in proper working condition. Unauthorized modifications to the applicator may impair the function and/or safety of the machine.

Carefully read and understand all of the baler safety signs before installing or servicing the baler. Always use the supplied safety equipment on the baler to service the applicator.

Safety Decals

	Number 1 Disconnect power before servicing. Part no. DCL-8003
	Number 2 Read and understand the operator's manual before using or working around the equipment. Part no. DCL-8000

Connecting Power and Communication Harness

The harnesses are located at the front of the baler near the hitch and at the back of the tractor near the drawbar (Figure 1). Make sure all connection wires are free between the hitch of the baler and the back of the tractor, especially when tractor is turning away.

WARNING: Stop tractor engine and shift to park or neutral, set brakes and remove key before exiting.

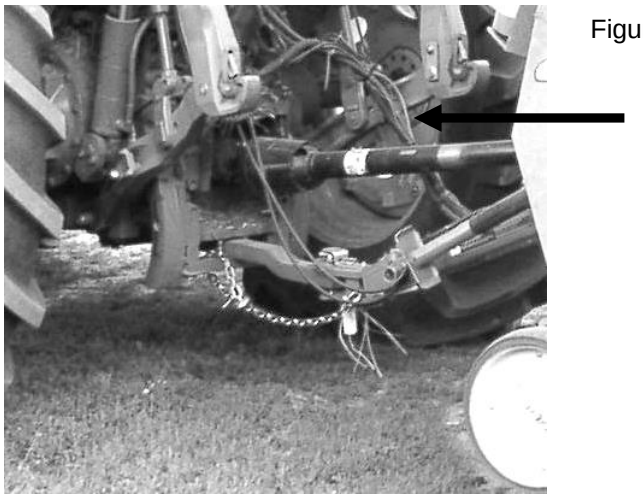


Figure 1

Operation of the ISOBUS Monitor

The ISOBUS Monitor selections are made utilizing a combination of soft keys, number menus, or a scroll wheel on the upper right side of the actual monitor depending on which ISOBUS Monitor you have.

At any time after the initial Start Up/Power On the **Uploading Data** status bar should begin to fill. Please refer to your ISOBUS Monitor manual to verify how this upload is displayed.

Once the upload has completed you can toggle between the tractor display and the Harvest Tec functions by pushing the **Next Implement** key (Figure 2). This key may have circling arrows or arrows forming a triangle.

Figure 2

Screens and Menus Descriptions for ISOBUS Monitor

The 663 monitor will allow you to set your bale size, weight, single bale formation time, and view moisture levels. The moisture information can be viewed in manual mode or automatic mode.

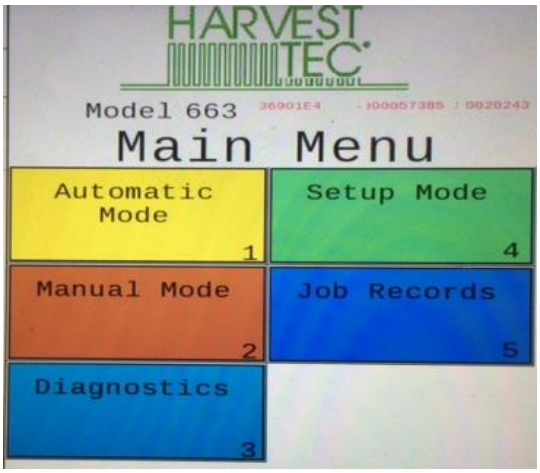


Figure 3

Main Menu Screen

Listed below are the Main Menu Options.

Automatic Mode (1) This operating mode automatically adjusts preservative application as you bale (with a preservative system). The following items are displayed in the mode while baling: Moisture, Baling Rate, Application Rate (actual and target), Last Bale Average Moisture, Tons Baled, and Pounds of Product Used.

Manual Mode (2) This operating mode allows the three different pumps to be turned on at a fixed rate as you bale (with a preservative system). The following items are displayed in the mode while baling: Moisture, Baling Rate, Application Rate (actual only), Last Bale Average Moisture, Tons Baled, and Pounds of Product Used.

Diagnostics (3) Allows operator to set date and time. Installed software versions can also be viewed here.

Setup Mode (4) This mode allows the operator to customize the applicators settings for their baler and baling needs. This mode allows changes to be made to the following areas: Language, US or Metric units, and turn on/off the optional Hay Indicators.

Job Records (5) Keeps track of up to 300 plus jobs with total product used, average moisture content, highest moisture content, tons baled, date of baling, and total number of bales made. Individual bales are also able to be viewed and the records can also be downloaded to a USB drive in this mode.

Screen Menus

Use the below listed screen menus to navigate through all of the operation screens. Navigation through the screens is accomplished by using the touch screen of the controller and pressing.

Automatic Mode:

Figure 4

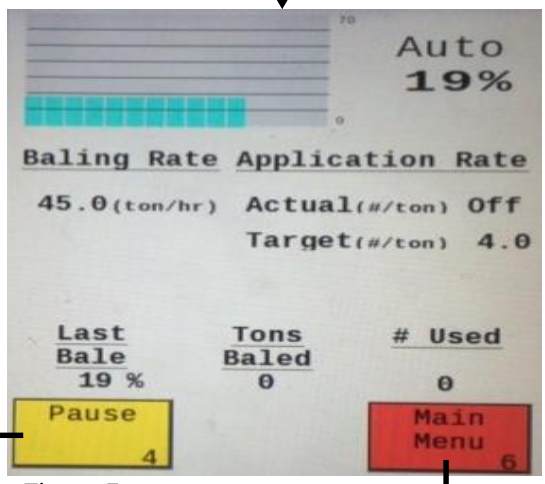


Figure 5

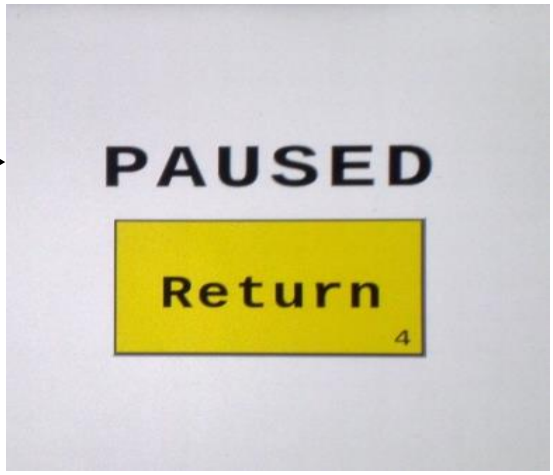


Figure 6

Manual Mode:

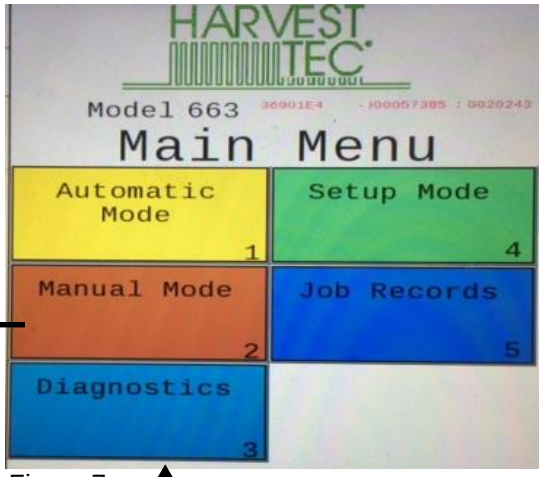


Figure 7

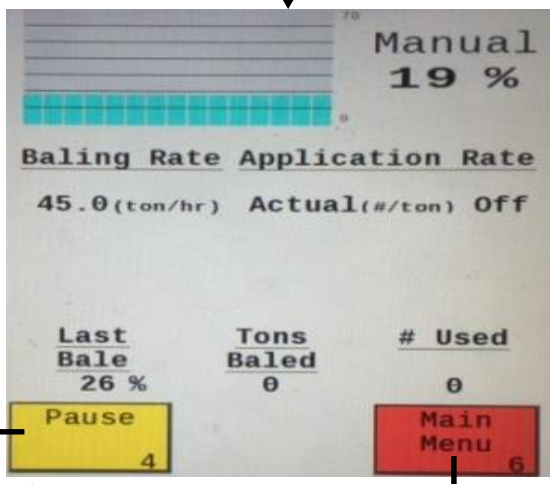


Figure 8

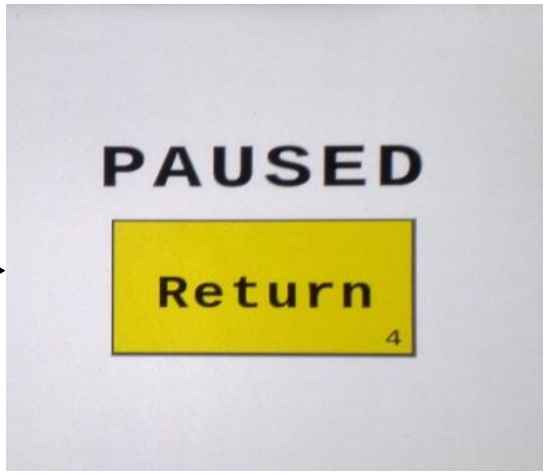


Figure 9

Diagnostics:

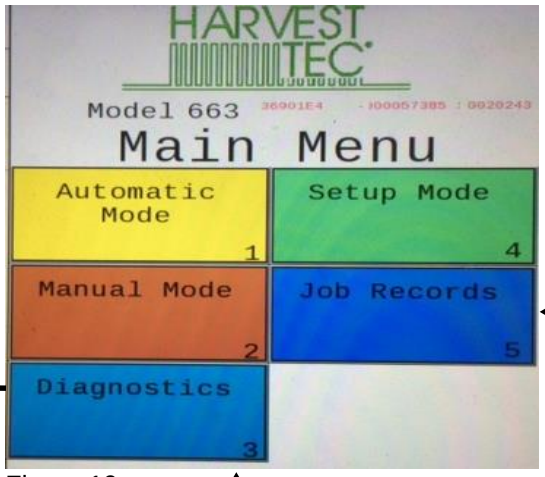


Figure 10

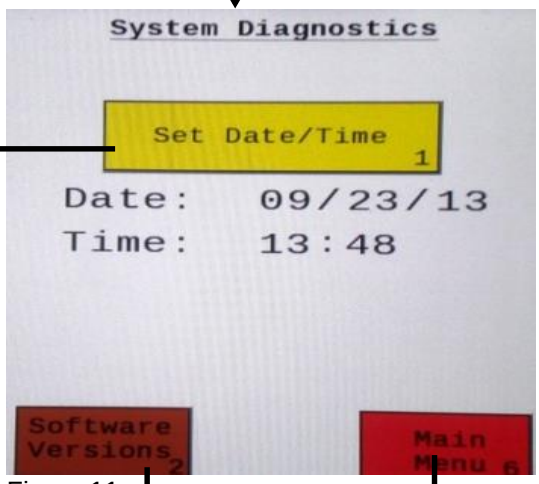


Figure 11

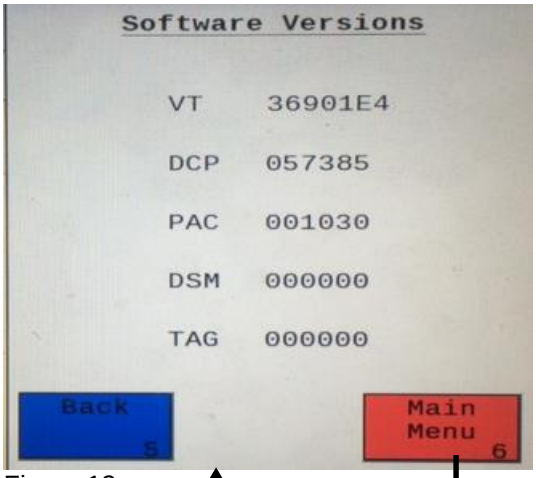


Figure 12

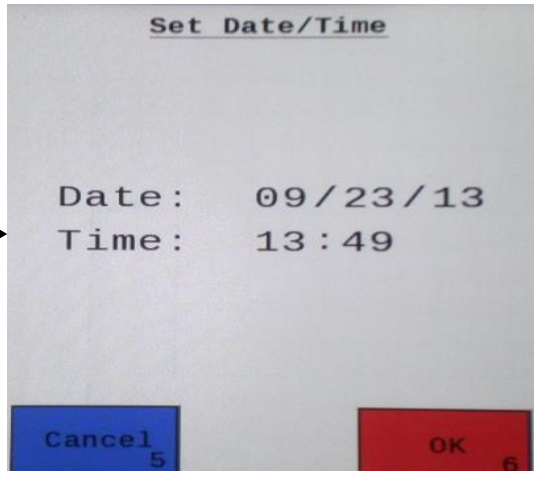


Figure 13

Setup Mode:

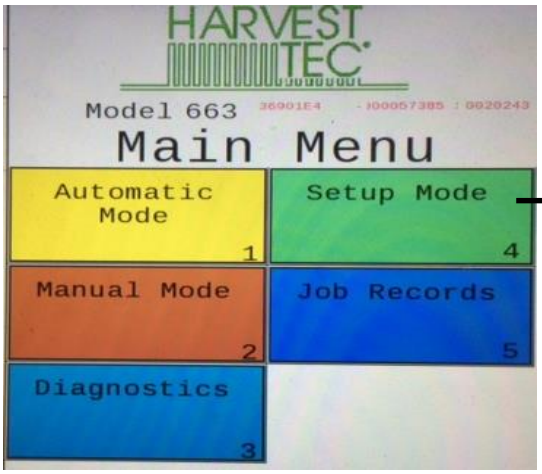


Figure 14

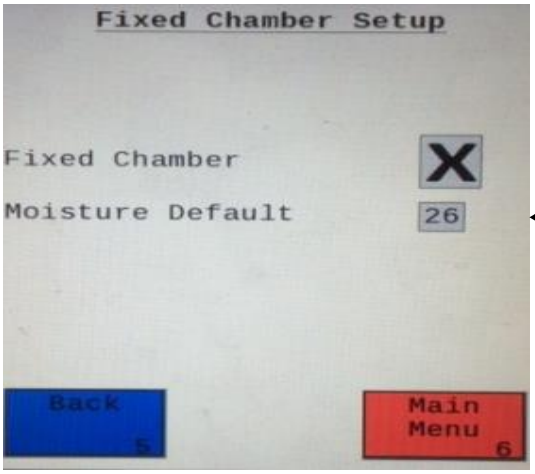


Figure 15

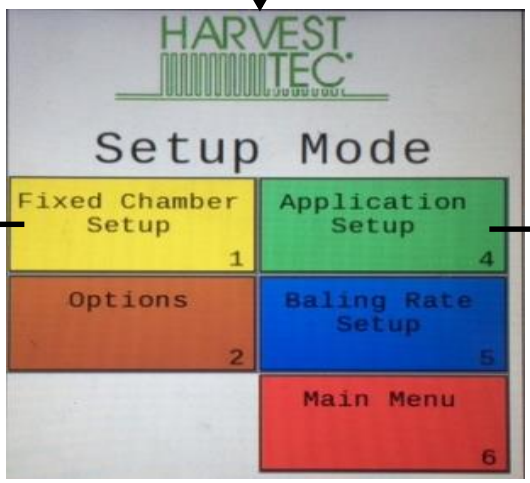


Figure 16

Figure 17

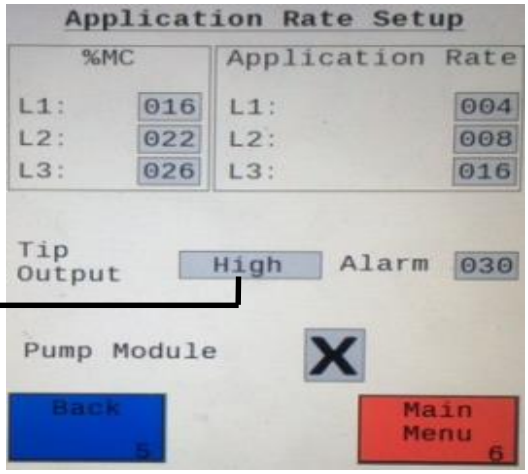


Figure 18

Setup Mode (continued)

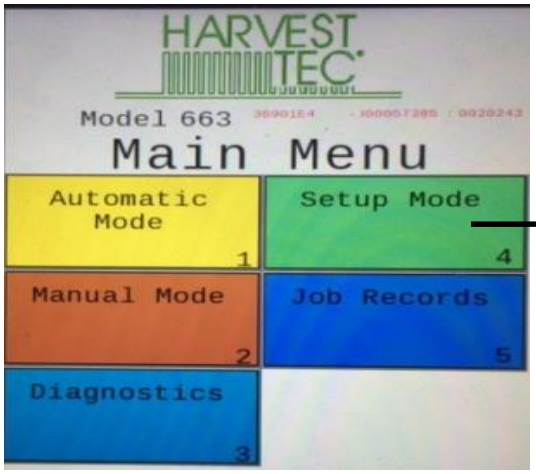


Figure 19

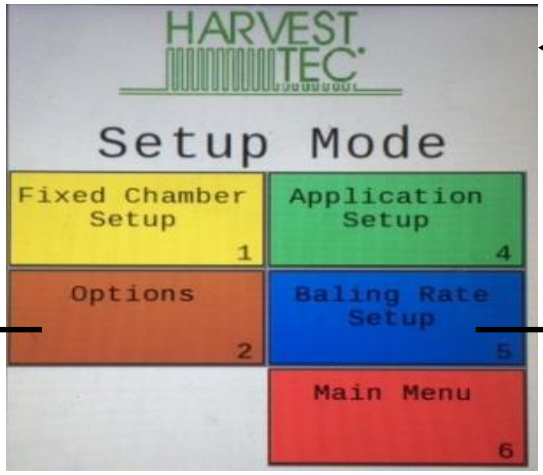


Figure 20

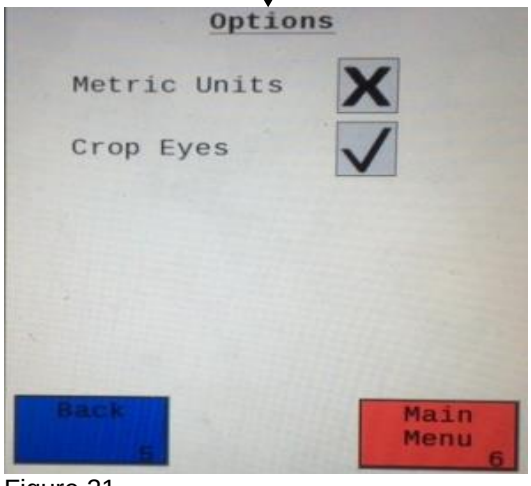


Figure 21

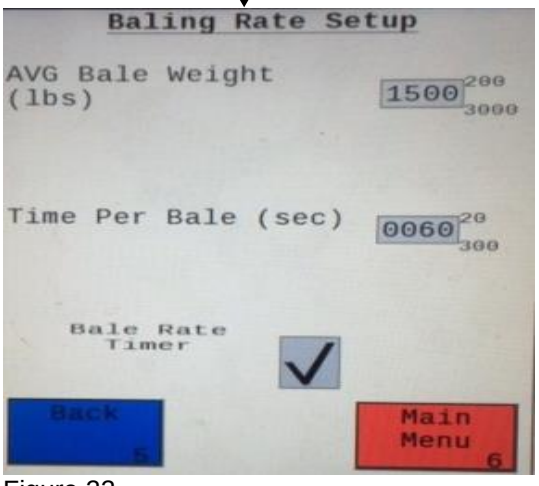


Figure 22

Job Records:

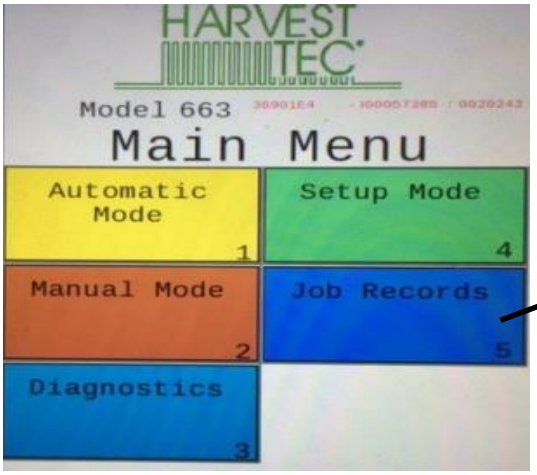


Figure 23

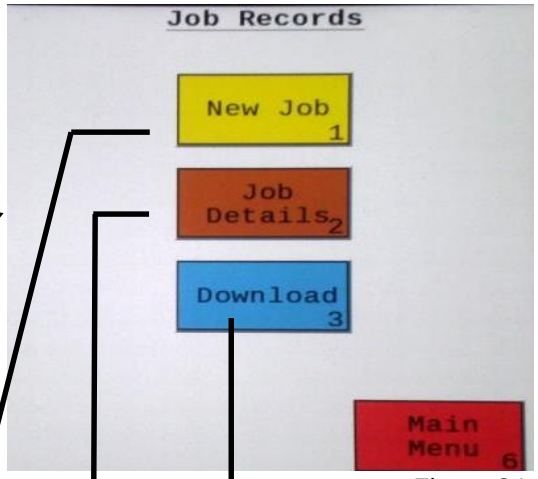


Figure 24

Figure 25

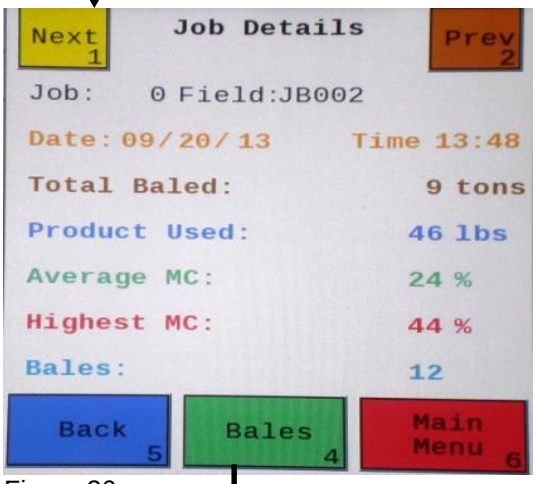


Figure 26

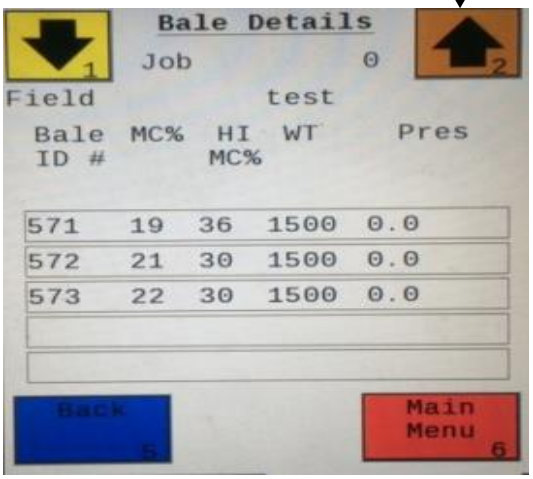


Figure 27

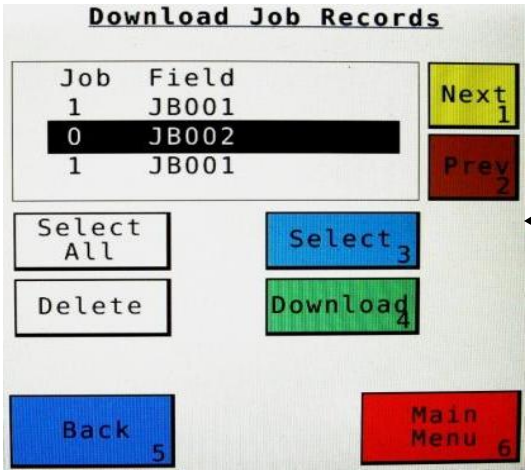


Figure 28

Setting Up Application and Bale Weight Parameters

In the **SETUP MODE** you will set your initial application rate and baling rate.

Application Rate Setup

After pushing the **SETUP MODE** key in the **MAIN MENU** screen, Figure 29 screen will show on the display:

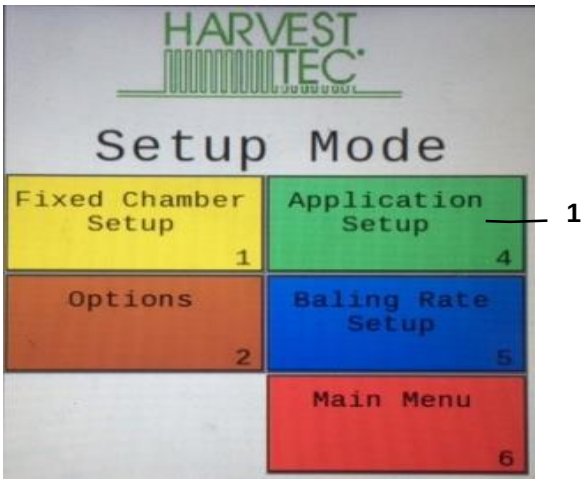


Figure 29

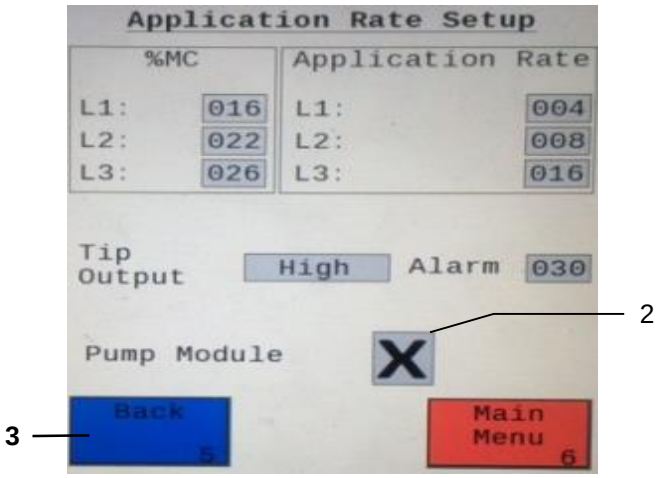


Figure 30

1. On this screen the operator will press the **APPLICATION SETUP** key.
2. The **Pump Module** needs to be turned **OFF** with a 600RB system as there is no preservative option.
3. Next press the **Back** key found on the bottom left hand side of the screen to return to **SETUP MODE** screen or press the **MAIN MENU** key on the bottom right hand side of the screen to return to the opening screen.

Operating Instructions

Automatic Mode or Manual Mode allow you to view the moisture, baling rate, and tons baled information will

Automatic Mode

After pushing the **AUTOMATIC MODE** or key in the **MAIN MENU** screen, the following screen will appear:

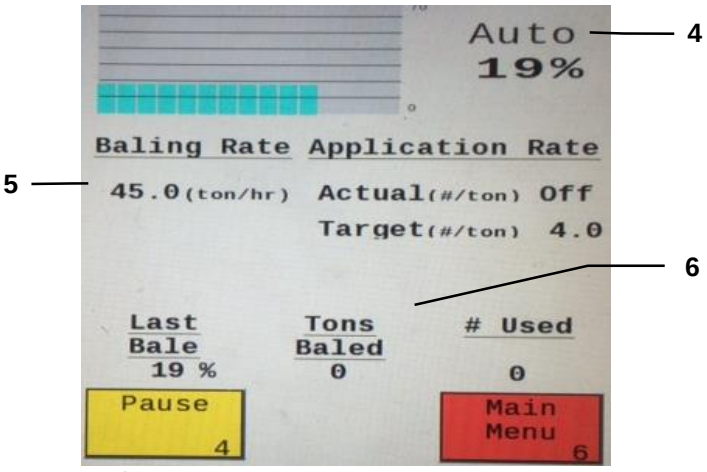


Figure 32

4. The moisture content is shown in the upper right hand corner.
5. Baling Rate will be shown on the left.
6. The totals on the bottom of the screen show the **Last Bale %** (moisture), **Tons Baled** and **# Used** (pounds of product used) for the current job. # Used will read zero with a 600RB. These numbers will reset to zero when a new Job Record is started. If operating with Bale Rate Sensors OFF total Tons Baled will be zero.

Manual Mode

After pushing the **MANUAL MODE** key in the **MAIN MENU** screen, the following screen should appear:

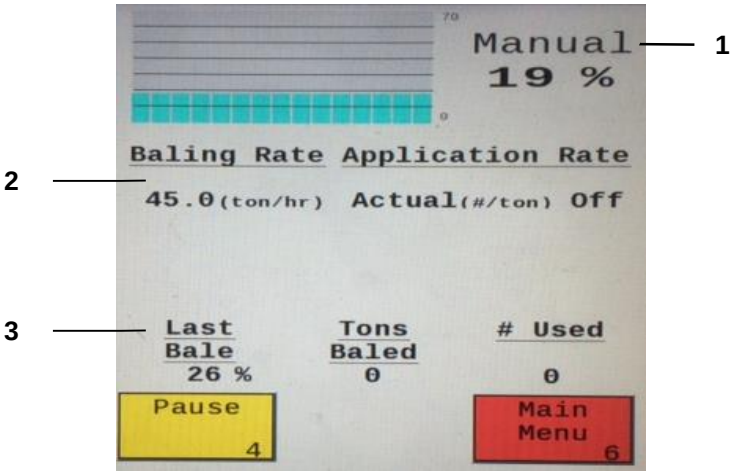


Figure 33

1. The moisture content is shown in the upper right hand corner.
2. Baling rate is shown on the left.
3. The Totals at the bottom of the screen show the total **Last Bale %** (moisture), **Tons Baled** and **# Used** (pounds of product used) for the current job. # Used will read zero with a 600RB. These numbers will reset to zero when a new Job Record is started. If operating with AUTO Bale Rate sensors OFF total tons baled will be zero.

Diagnostics

After pressing the **DIAGNOSTICS** key in the **MAIN MENU** screen, the screen on the left should appear:

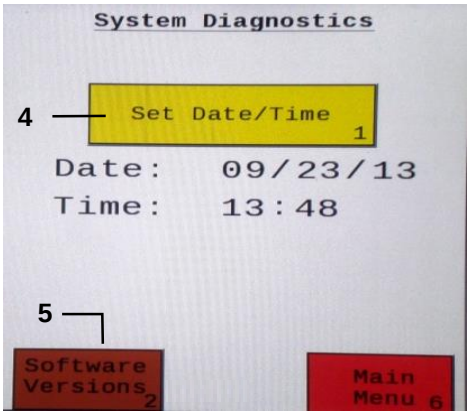


Figure 34

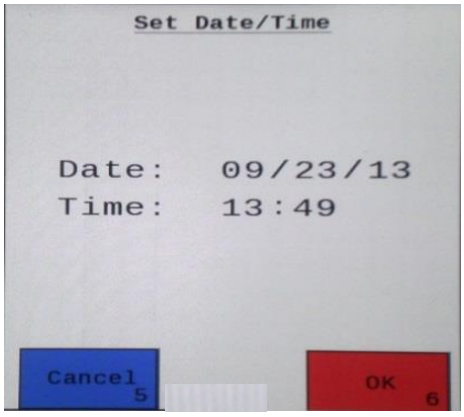


Figure 35

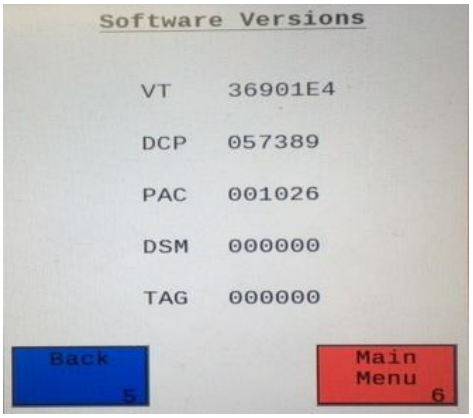


Figure 36

4. To set date and time select the **Set Date/Time**. In the next screen enter the date (month, day, year format) followed by time. When done select ENTER. NOTE: The clock uses military (or 24 hour time).
5. Select the **Software Versions** key to check all software versions of modules attached to the Dual Channel Processor (DCP).

Job Records

After pushing **JOB RECORDS** in the **MAIN MENU** screen, the left screen (Figure 36) will appear:

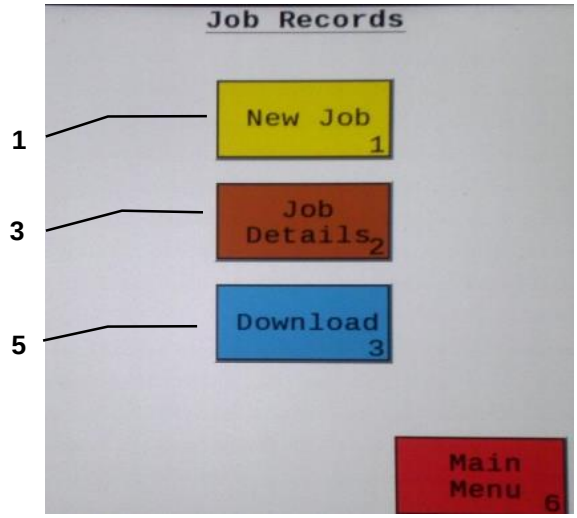


Figure 36

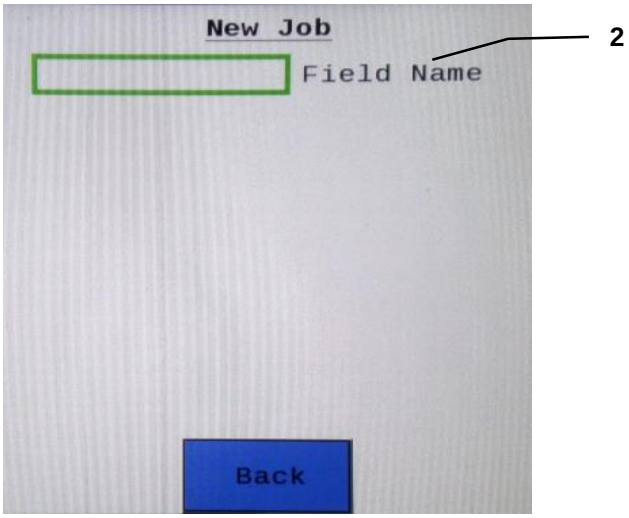


Figure 37

Figure 38

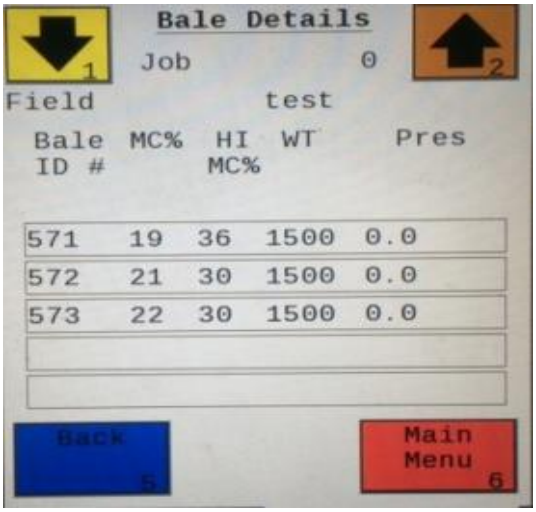


Figure 39

1. Selecting **New Job** will save all the previous bale records and open the **Field Name** screen.
2. Use the key pad in the **Field Name** screen (Figure 37) to enter up to an eight character field name. Use the asterisk key to move on to the next letter or number if they are identical. Use the pound sign as a space between the characters. When you have completed the field name press enter.
3. Pressing **Job Details** will open the Job Details screen. Use the **Next** and **Prev** icons to view the different jobs. Job: 0 will always be your current and open job record. Press **Back** to go to the **Job** Records screen or **Main Menu** for the main screen.
4. Selecting **Bales** at the center bottom of the screen will open a **Bale Details** screen. This screen lets you look at the individual bale records for the first five bales made. Use the **Next** and **Prev** icons to scroll through five bales at a time. Select **Back** to go to the **Job Details** screen or **Main Menu** for the main screen.

Continued on the next page

Job Records (continued)

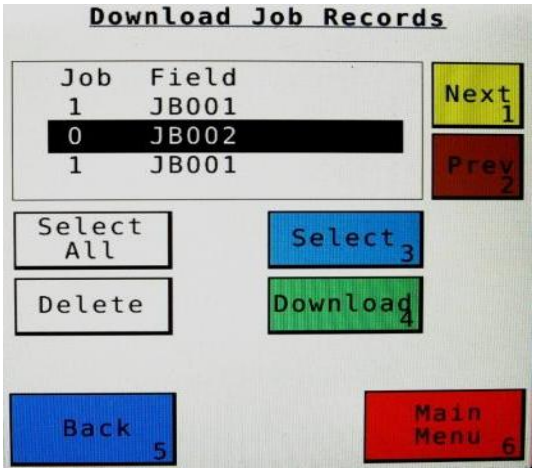


Figure 40

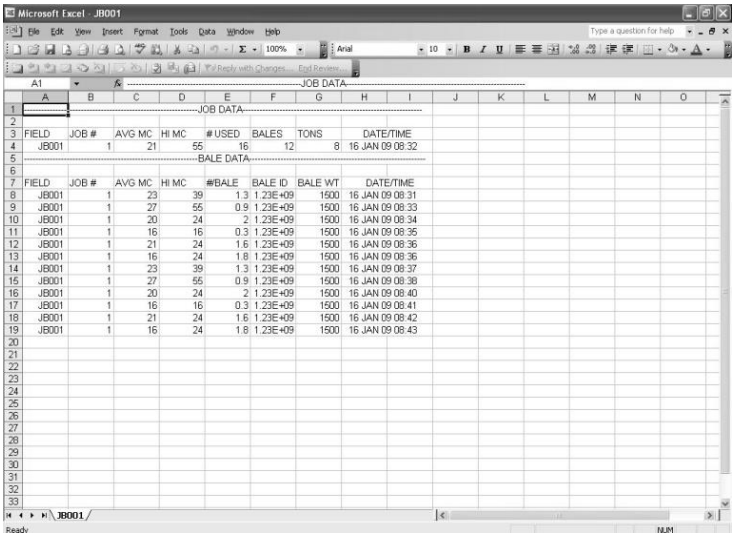


Figure 41

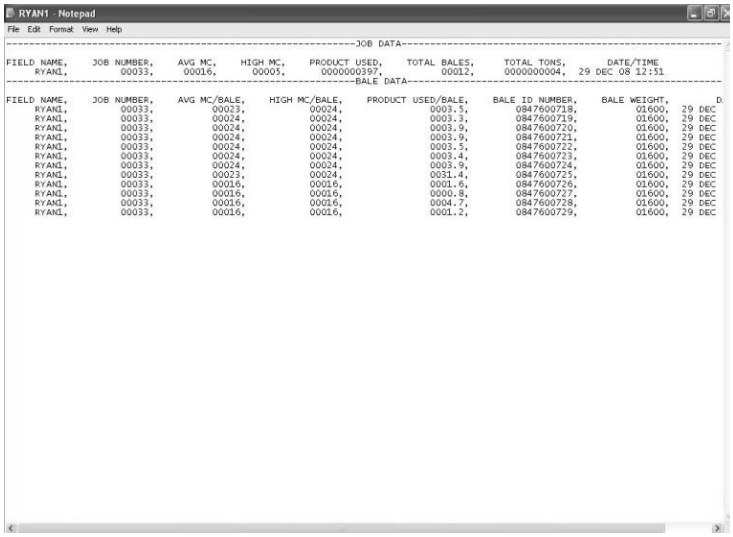


Figure 42

5. Selecting the **Download** key will open the Download Job Records screen (Figure 40). This screen lets you select jobs to download onto a USB drive. To download insert a USB drive into the port on the Dual Channel Processor. Select the job(s) you would like to download using the Next and Prev icons to highlight the job(s). Once the desired jobs are selected press the **Download** key. Press the **Download** key again to confirm. When the USB drive light goes off all the jobs selected will be saved. The jobs can then be opened on any computer with Excel or Notepad. To delete jobs highlight, select them and press **Delete** followed by pressing **Delete** again for confirmation. Press Back to go to the Job Records screen or Main Menu for the main screen.
6. Pressing the Select key will select or unselect the highlighted job.
7. Pressing the Select All key will select all jobs, except for the current job (0). To unselect press Back.
8. The job record in Excel will show as on the left above. The Bale ID column will need to be adjusted for proper viewing.
9. The job record in Notepad will show as on the right above. You will need to scroll right to see all the information.

Maintenance

Dielectric Grease Connections: Disconnect all harnesses on the applicator, clean the connections, and repack with dielectric grease.

Battery Connections: Follow the batteries safety warnings and clean the battery connections. If the connections cannot be cleaned, replace harness.

Winter Storage

Disconnect power from the Dual channel Processor (DCP).

Status Alerts

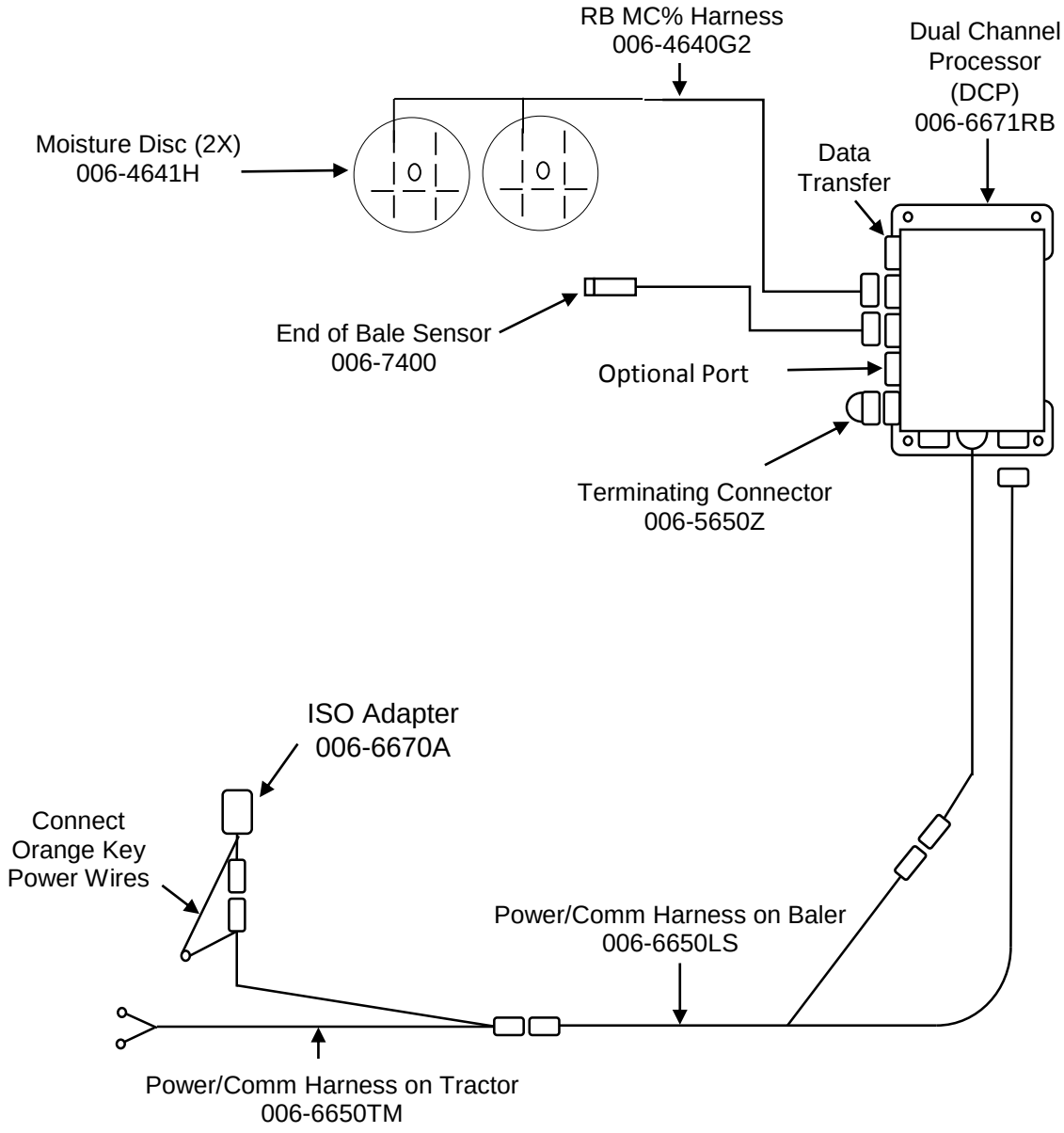
Two Status Alerts will appear on the Auto and Manual mode screens when the Job Records are approaching, or full of records.

Status Alert "**Bale Records: Less than 1K remaining**". The system is now approaching the maximum amount of records that can be saved. When this code appears, download and delete jobs in the Job Records menu. Follow the instructions in Job Records to accomplish this.

Status Alert "**Bale Records failed – Memory Full**". The system will no longer accept any new data until jobs in the Job Records menu are downloaded and deleted. Follow the instructions in Job Records to accomplish this.

Wiring Diagram for ISOBUS Compatible Tractor

A. Locate the tractor power/communication harness (006-6650TM).
B. On the back of the tractor run the power leads to battery and the communication lead to ISOBUS plug.
C. Connect the red power wire with the 50 amp fuse to the positive side of the battery (12 volt).
    a. The power harness must be connected to the battery! The unit will draw more amps than convenience outlets can handle. Any modifications of the power harness will void systems warranty. **CONTACT HARVEST TEC IF MODIFICATION IS REQUIRED!**
    b. This unit will not function on positive ground tractors.
    c. If the unit loses power while operating it will not record accumulated product used.
D. Connect the black ground wire to frame of tractor or negative side of battery (12 volt).
E. Connect the baler power and communication harness (006-6650LS) to the power port on the DCP and to the display port on the DCP (006-6671RB).
    a. When using Bluetooth Receiver (030-6672A) or optional Touch Screen Display (030-5670A). Connect either option to Communication Harness (006-6650TM) in place of the ISO adapter (shown below) and connect the keyed power wire to a keyed power source on tractor.
F. Install one terminating resistor to the pump controller connection on the DCP (006-5650Z).
G. Attach moisture cable (006-4640G2) to the DCP.
    a. Optional Harvest Tec Monitor (030-5670A) can be used in place of ISOBUS connection.



Pin Outs

Power/Comm Harness 006-6650TM at Hitch

Pin 1	Red	+12V Power to TSD
Pin 2	Red	+12V Power to DCP
Pin 3	Orange	Keyed Power
Pin 4	Gray	Shield
Pin 5	Green	HT Can Low
Pin 6	Yellow	HT Can Hi
Pin 7	Orange	Can1 Hi
Pin 8	Black	Ground from TSD
Pin 9	Black	Ground from DCP
Pin 10	Blue	Can1 Low

Power/Comm Harness 006-6650LS at Hitch

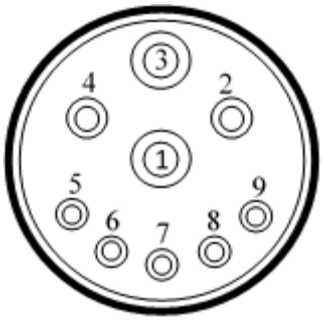
Pin 1	Red	+12V Power to TSD
Pin 2	Red	+12V Power to DCP
Pin 3	Orange	Keyed Power
Pin 4	Gray	Shield
Pin 5	Green	HT Can Low
Pin 6	Yellow	HT Can Hi
Pin 7	Orange	Can1 Hi
Pin 8	Black	Ground from TSD
Pin 9	Black	Ground from DCP
Pin 10	Blue	Can1 Low

Display Plug on Harness 006-6650TM at TSD

Pin 1	Red	+12V Power from DCP
Pin 2	Black	Ground from TSD
Pin 3	Yellow	HT Can Low
Pin 4	Gray	Shield
Pin 5	Green	HT Can Hi
Pin 6	Orange	Can1 Hi
Pin 7	Blue	Can1 Low

ISOBUS Plug 006-6670A Baler Side

Pin 1		N/A
Pin 2		N/A
Pin 3		120 OHM with Pin 5
Pin 4		N/A
Pin 5		120 OHM with Pin 3
Pin 6	Orange	Can1 Hi
Pin 7	Blue	Can1 Low

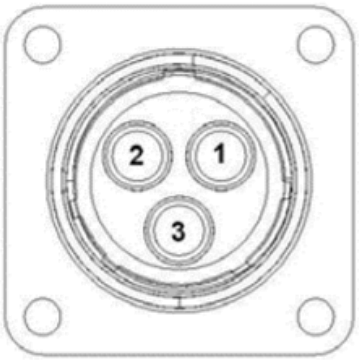


ISOBUS Plug Tractor Side

Pin 1		N/A
Pin 2		N/A
Pin 3		+12V Keyed Tractor Power
Pin 4		N/A
Pin 5		N/A
Pin 6		N/A
Pin 7		N/A
Pin 8	Orange	Can1 Hi
Pin 9	Blue	Can1 Low

Main Power Connector on DCP

Pin 1	Red	+12V Power from tractor
Pin 2	Black	Ground from tractor
Pin 3	Orange	Keyed power

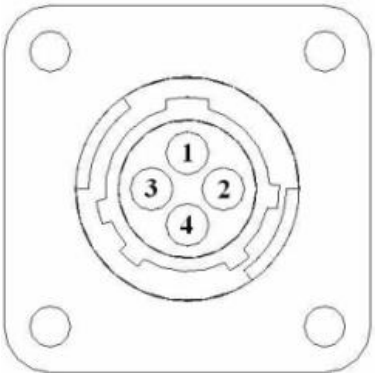


Star Wheel and Bale Rate Sensor connector on DCP

Pin 1	Blue	+12V Power
Pin 2	Orange	Ground
Pin 3	Black	Signal for sensor 1
Pin 4	White	Signal for sensor 2
Pin 5	N/A	
Pin 6	N/A	
Pin 7	N/A	
Pin 8	Violet	Star wheel input 1
Pin 9	Brown	Star wheel input 2

End of Bale sensor on DCP

Pin 1	Brown	Sensor Power
Pin 2	Blue	Sensor Ground
Pin 3	N/A	
Pin 4	Black	Signal from Sensor



Common Questions

1. **How do I turn the system on/off?**
   Turn the key in the tractor to the ON position. The ISOBUS Monitor will turn on, and the baler, on 600RB working screen tabs, will be viewable. Turn the system off by turning the tractor key OFF.

2. **How to get in the LBS/TON, MC%, and TONS/HR menus?**
   In the Main Menu press the SETUP MODE key. From this screen you can change your alarm settings and bale rate settings. See SETUP INSTRUCTIONS in the Operations Manual for a detailed explanation of this process.

3. **The moisture content displays "LO" or "HI" all the time.**
   When the moisture content display does not change frequently while baling, there is likely a faulty moisture disc connection. Check all moisture disc connectors to see if there is a continuity or grounding problem.

4. **Should the battery connections be removed before jump starting or charging a battery?**
   Yes. Anytime the tractor will have voltage going up rapidly the connections should be removed.

5. **What is the moisture range of the moisture pads?**
   The moisture pad sensors will read moisture levels from 7% up to 60%

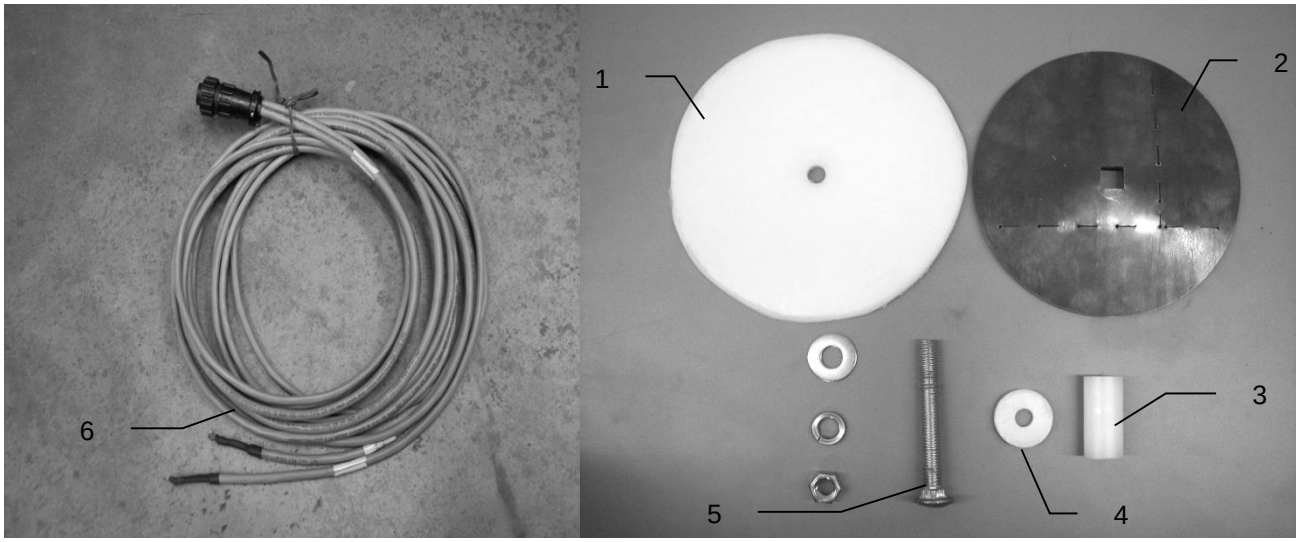
6. **Can dielectric grease be used when connecting harnesses?**
   Yes. Using dielectric grease will assist with good harness connections through the system.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Moisture reading errors (high or low)	1. Wire disconnected or bad connection between moisture disc and DCP	1. Reconnect wire.
	2. Low power supply to DCP	2. Check voltage at box. Min of 12V
	3. Wet hay over 60% moisture	
	4. Ground contact with one or both moisture discs and baler mounted processor.	4. Reconnect.
	5. Short in wire between moisture disc and DCP.	5. Replace wire.
	6. Check with hand tester	6. Contact Harvest Tec if no change
Moisture readings erratic.	1. Test bales with hand tester to verify that cab monitor has more variation than hand tester.	
	2. Check all wiring connections for corrosion or poor contact.	2. Apply dielectric grease to all connections.
	3. Check power supply at tractor. Voltage should be constant between 12V and 14V	3. Install voltage surge protection on tractors alternator.
Terminal reads under or over power.	1. Verify with multi-meter actual voltage. Voltage range should be between 12-14 volts.	1. Clean connections and make sure applicator is hooked to battery.
Bale rate displays zero.	1. Bale rate timer sensor error 2. Short in cable. 3. Damaged sensor.	1. Check, clean, tighten connections 2. Replace cable, Replace sensor.
Display will not power up.	1. Connection broke between the display and the DCP.	1. Check, clean, tighten connections 2. Replace cable.

	2. Short in display cable.	
Display is too dark or light	1. Change in temp or light	1. Use the monitors contrast control.
Display is locked up/froze.	1. CAN communication not responding. 2. Broke connection between the display and DCP.	1. Check connections at DCP and Pump controller including the terminating resistors. 2. Check, clean, and tighten connections. 3. Power unit down and restart after steps 1 & 2 are complete.
Display powers up when key is turned and will not go to the Main Menu screen.	1. CAN communication not responding. 2. Broke connection between the display and DCP.	1. Check connections at DCP and Pump controller including the terminating resistors. 2. Check, clean, and tighten connections. 3. Power unit down and restart after steps 1 & 2 are complete.
Display is locked up/froze and pumps continue to run.	1. CAN communication not responding. 2. Broke connection between the display and DCP.	1. Check connections at DCP and Pump controller including the terminating resistors. 2. Check, clean, and tighten connections. 3. Power unit down and restart after steps 1 & 2 are complete.
Display says PAC error	1. The DCP and Pump controller are not communicating. 2. Broke connection between display and DCP or PAC and DCP.	1. Check all connections at DCP and Pump controller including terminating resistors. 2. Check, clean, and tighten.
Can't select moisture / preservative information on baler run screen	DCP not selected in baler software	Select DCP for the moisture option in machine setup. See Communicating through ISOBUS Monitor section in operation manual
Warning: HT system type conflicts with machine setup	CNH Baler ECU recognizes that a Harvest Tec system is installed, but system is not configured correctly.	DCP has to be reconfigured. Contact your dealership to send back to Harvest Tec for repair.
Job records are showing as symbols or incorrect values	The job file is corrupted on SD card	Write down all job record information the operator wishes to keep. Update the DCP software to the most current version available on the Harvest Tec website. Delete all existing jobs by selecting all in the download screen and pressing delete. Be sure to start a new job an verify it is saved by checking job details screen.
Obscure Values in auto / manual mode	The job file is corrupted on SD card	DCP needs to be sent to HT for repair
Can't download job records, stuck at "Saving to USB Stick"	One of more jobs are corrupted on SD card. If "saving to USB" is displayed, some jobs have been downloaded correctly.	DCP needs to be sent to HT for repair
Can't download job records, stuck at "Searching"	If searching is displayed then the first job is corrupted and download will not work.	DCP needs to be sent to HT for repair
No green baler sensors button in bale rate setup screen	DCP is not configured to communicate with baler	If baler is compatible, Harvest Tec can reconfigure DCP to correct setting. Contact your dealership to send back to Harvest Tec for repair.
"Cannot open USB" message when trying to download	DCP does not see a USB stick in the Data Transfer port	Make sure the operator has the USB in the DCP with good connect and not the VT port in the cab of the tractor.

Moisture Pad and Touch Screen Display Parts Breakdown



Ref	Description	Part	Qty
1	Plastic Pad	006-4641F	2
2	Moisture Disc	006-4641H	2
3	Plastic Bushing	006-4641G	2
4	Plastic Isolator	006-4641I	2
5	1/2X4 1/2” Carriage Bolt	Hardware	2
6	Moisture Cable	006-4640G2	1
1-5	Moisture Pad Assembly	030-4643	2

Optional Touch Screen Display (TSD)

Parts Breakdown for 600RB Series Control and Harnesses

Ref	Description	Part Number	Qty
1	End Of Bale Sensor	006-7400	1
2	Terminating Connector w/ green cap	006-5650Z	1
3	DCP Shield/Cover	001-5650X	1
4	DCP Main Control LS 600 AUTO	006-6671RB	1
5	DCP Baler Harness 15 FT	006-6650LS	1
6	DCP Tractor Harness	006-6650TM	1
7	Dust Plugs	006-5651PLUGS	1
8	Round Baler End of Bale Bracket	001-4648RB	1
9	Key Switch Wire	006-5650K	1
10	ISOBUS Tractor Plug	006-6670A	1
NP	End of Bale Ext. Harness	006-7400EXT	1

NOTES

NOTES

Warranty and Liability Agreement

Harvest Tec, Inc. will repair or replace components that are found to be defective within 12 months from the date of manufacture. Under no circumstances does this warranty cover any components which in the opinion of Harvest Tec, Inc. have been subjected to negligent use, misuse, alteration, accident, or if repairs have been made with parts other than those manufactured and obtainable from Harvest Tec, Inc.

Our obligation under this warranty is limited to repairing or replacing free of charge to the original purchaser any part that in our judgment shows evidence of defective or improper workmanship, provided the part is returned to Harvest Tec, Inc. within 30 days of the failure. Parts must be returned through the selling dealer and distributor, transportation charges prepaid.

This warranty shall not be interpreted to render Harvest Tec, Inc. liable for injury or damages of any kind, direct, consequential, or contingent, to persons or property. Furthermore, this warranty does not extend to loss of crop, losses caused by delays or any expense prospective profits or for any other reason. Harvest Tec, Inc. shall not be liable for any recovery greater in amount than the cost or repair of defects in workmanship.

There are no warranties, either expressed or implied, of merchantability or fitness for particular purpose intended or fitness for any other reason.

This warranty cannot guarantee that existing conditions beyond the control of Harvest Tec, Inc. will not affect our ability to obtain materials or manufacture necessary replacement parts.

Harvest Tec, Inc. reserves the right to make design changes, improve design, or change specifications, at any time without any contingent obligation to purchasers of machines and parts previously sold.

Revised 01/03/06