

# Operation Manual

## **MODEL 547C** ***55 Gallon Automatic Preservative Applicators***



*Equipment and Products  
for Quality Hay.™*

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## Introduction

Thank you for purchasing the Harvest Tec Model 547C Preservative Applicator System.. The 547C Applicators are designed to apply a buffered propionic acid on to the forage crop as it is being baled. The 547C applicators will adjust the rates based on the moisture and tonnage of the crop being harvested. This manual will take you through the steps of operation of the applicator and also point out all safety precautions that need to be made while using the applicator. Read this manual carefully to learn how to operate the equipment correctly. Failure to do this can result in personal injury or equipment malfunction. If you are unsure about operating the system after consulting this manual, contact your local authorized dealership for additional assistance. If you are in need of parts for the system please see your Installation Manual and contact your local authorized dealer to order the parts. This applicator is designed to apply Harvest Tec buffered propionic acid.

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

## Model Reference Chart

Baler make	Baler Model	Model	Installation kit	Tank size
Roll Belt Round Baler	RBX & RB series four feet wide	547	547C	55 gallon

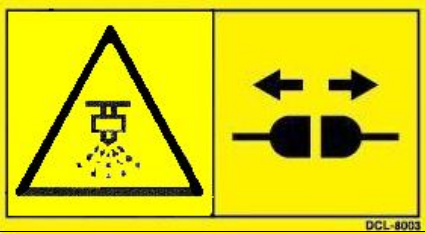

## Safety

Carefully read all the safety signs in this manual and on the applicator before use. Keep signs clean and in good working order. Replace missing or damaged safety signs. Replacement signs are available from your local authorized dealer. See your installation manual for 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 Decal Descriptions

 DCL-8003	Number 1 Spraying hazard. Disconnect power before servicing the applicator Part no. DCL-8003
 DCL-8002	Number 2 Falling hazard. Do not step in this area. Part no. DCL-8002



Number 3

Use caution when working around chemicals. **Wear all protective equipment according to the label of the product.**

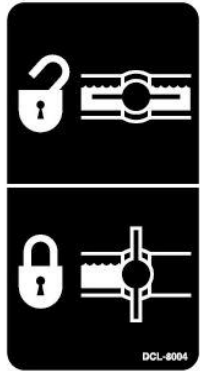
Part no. DCL-8001



Number 4

Read and understand the operator's manual before using or working around the equipment.

Part no. DCL-8000



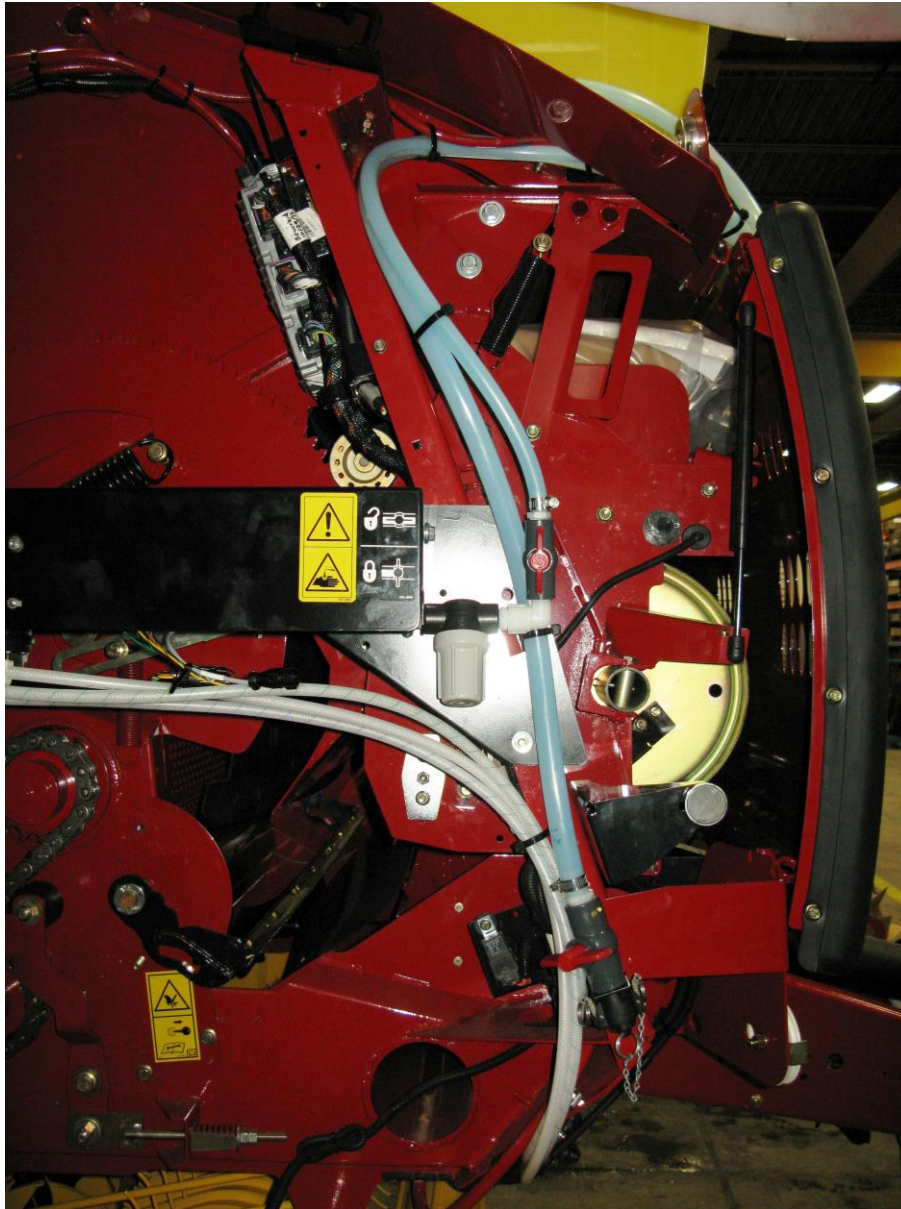
Number 5

Open (unlocked) and closed (locked) position of the ball valve.

Part no. DCL-8004

## Safety Decal Locations

### Model 547C





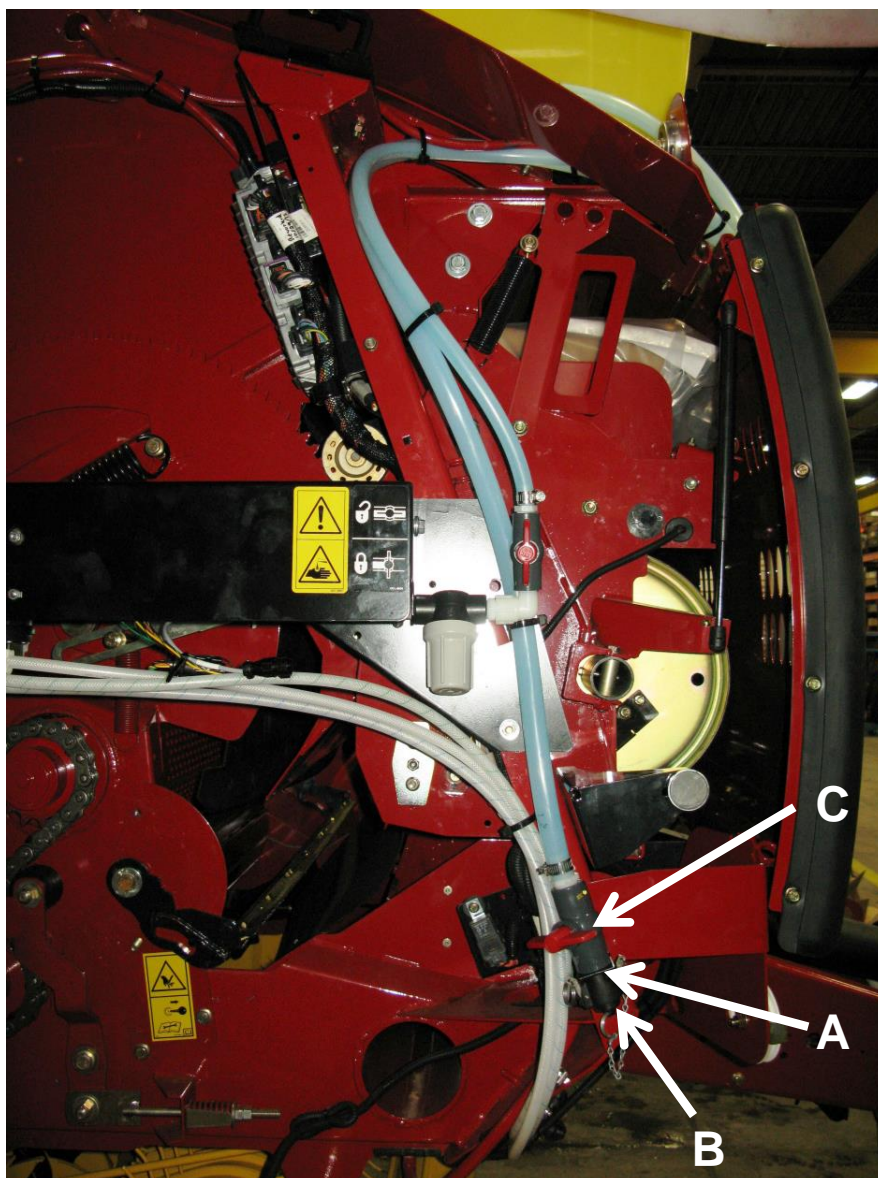
## Preparing the Applicator for Operation

After the applicator has been installed on the baler, follow the below steps to prepare for operating the applicator both safely and correctly.

### Filling the Tank

Read the label of the product being filled into the tank to determine what individual protective measures need to be taken. Locate the drain/fill line on the baler. Open the cam-couplers (A) and remove the protective plug (B). Insert the male coupler (found on transfer pump) into the female cam and close the cams (A). To open the ball valve (C) turn the handle so it is vertical. After the ball valve has been turned on switch the pump to the On position. Monitor the level on the tank visually and shut off the pump before over filling. Once the pump is turned off, close the ball valve and remove the male coupler. The handle of the ball valve (C) will be horizontal when closed. Reinstall the protective plug and close the cams. The Harvest Tec model 9212 transfer pump is recommended for this process.

Water is recommended for first time and annual start up procedures.

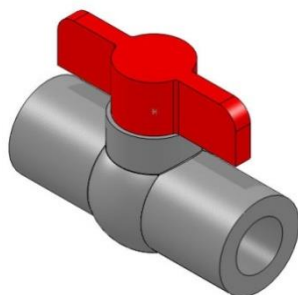




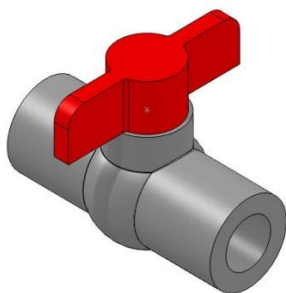
## Operation of the Main Ball Valve

The ball valve should be closed at all times when the applicator is not being used. The valve should also be closed when any service work is being done to the baler or applicator.

The valve is located next to the pump and by the applicator tank.



Valve open



Valve closed

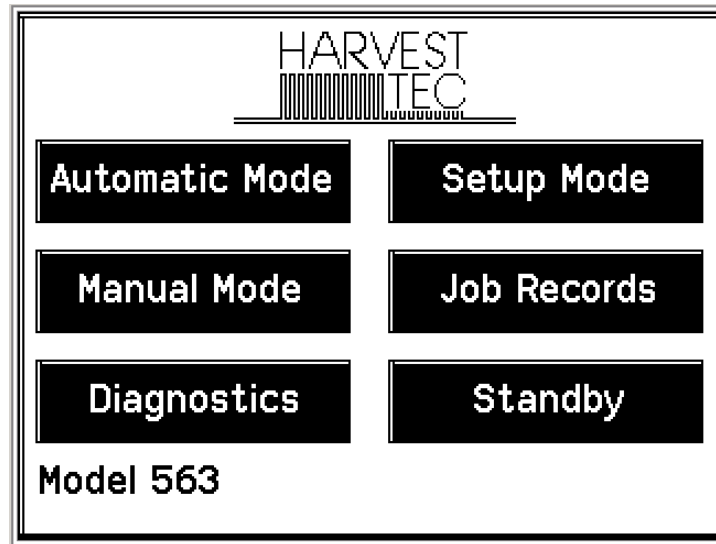
## Connecting the Power Harness

The power harness that supplies power from the tractor battery to the applicator pump has a disconnect at the hitch. Connect the two together for operation. Always disconnect before servicing the applicator or baler.

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

## Description of Screens and Menus of the Harvest Tec Monitor

This system is calibrated for use with Harvest Tec buffered propionic acid. The use of other products can cause application problems and damage to system components. It is designed to apply rates of 32 – 632 pounds of acid per hour and will read moisture levels of 10 to 32 percent. The 563 monitor allows you to set your bale weight, single bale formation time, moisture levels and application rates. The Automatic Mode will automatically adjust the application rates as the moisture levels change. Manual Mode will allow you to control the application rates on the go.



**AUTOMATIC MODE** This operating mode automatically adjusts preservative application as you bale. The following items are displayed in the mode while baling: Moisture, Baling Rate, Application Rate (actual and target), Last Bale Average Moisture, Ton Baled, and Pounds of Product Used.

**MANUAL MODE** This operating mode allows the three different pumps to be turned on at a fixed rate as you bale. The following items are displayed in the mode while baling: Moisture, Baling Rate, and Application Rate (actual only), Last Bale Average Moisture, Tons Baled, and Pounds of Product Used. This mode can also be used to prime the pumps.

**SETUP MODE** 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: Application Rate, Baling Rate, Chamber Style, Language, US or Metric units, and turn on/off the optional Hay Indicators.

**DIAGNOSTICS** Allows operator to automatically check performance and output of pumps as well as set the date and time and calibrate the touch screen. The installed software versions can also be viewed here.

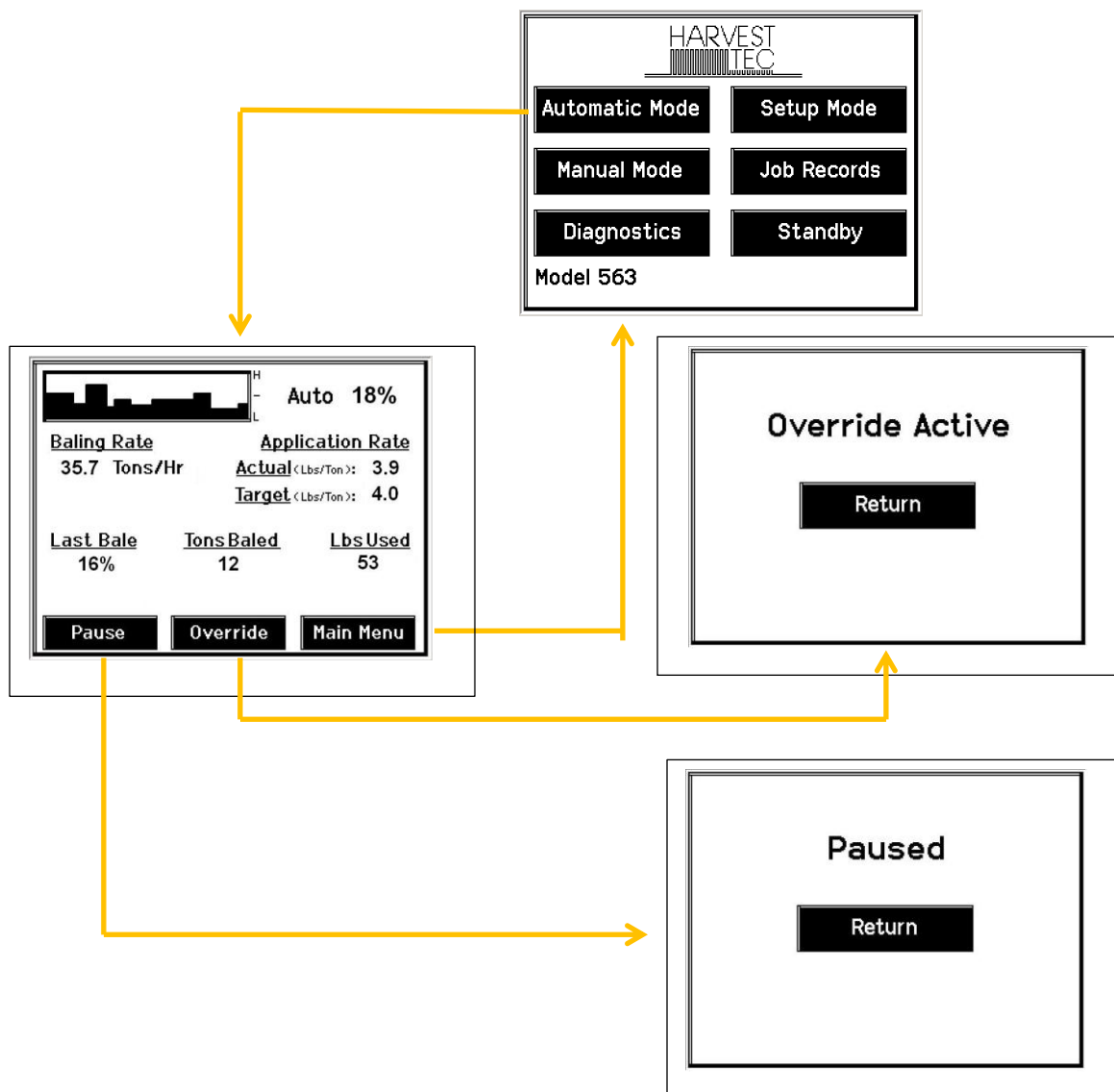
**JOB RECORDS** Keeps track of up to 300 jobs with total product used, average moisture content, highest moisture content, tons baled, date of baling, and total number of bales made. Individual bales are also able to be viewed and the records can also be downloaded to a USB drive in this mode.

**STANDBY** Powers down the display only. The application unit will not fully power down unless the keyed power is turned off. Press anywhere on the screen to power back on (with the key on).

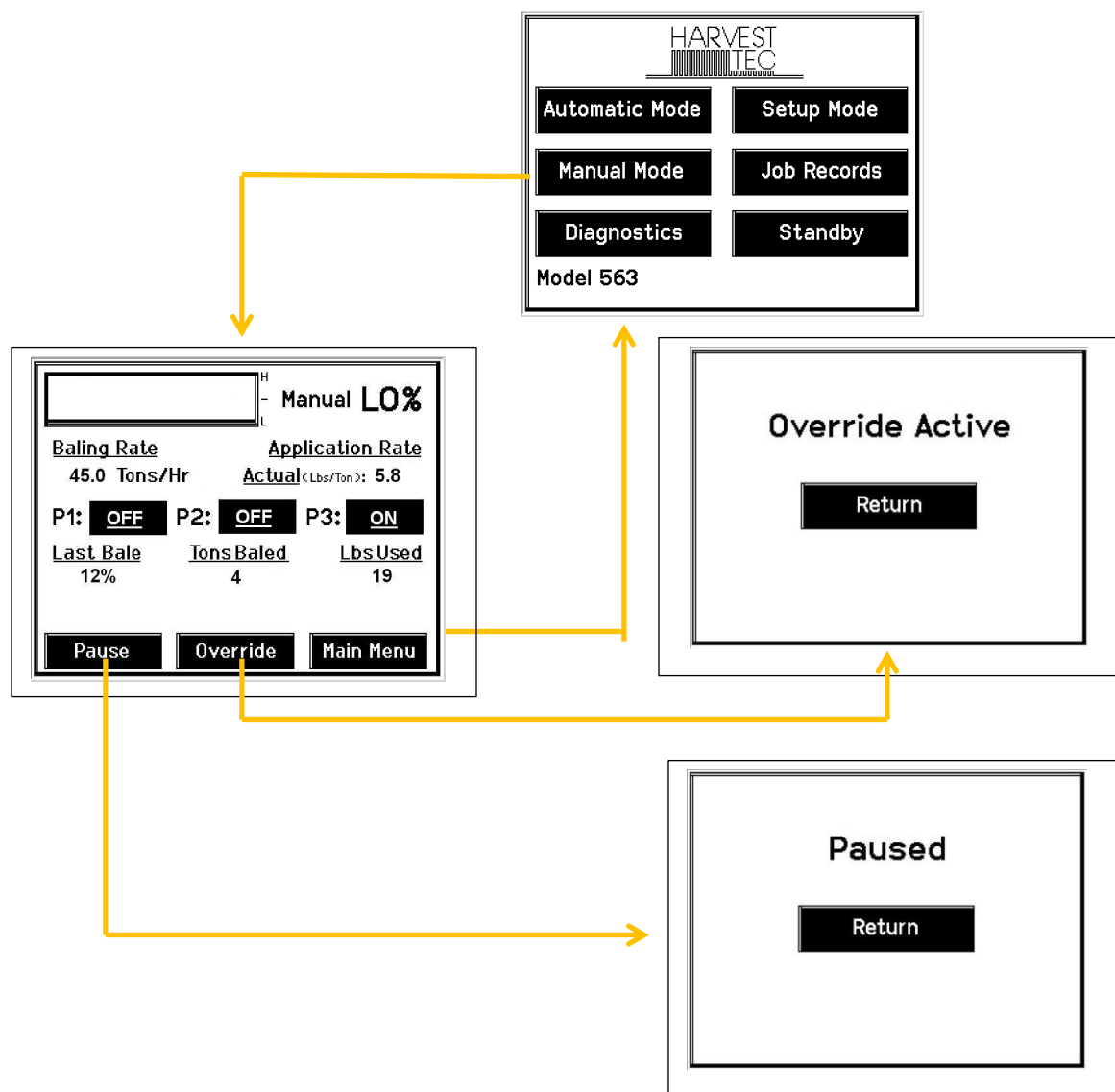
## Screen Menus

Use the screen menus shown below to navigate through all of the operation screens.

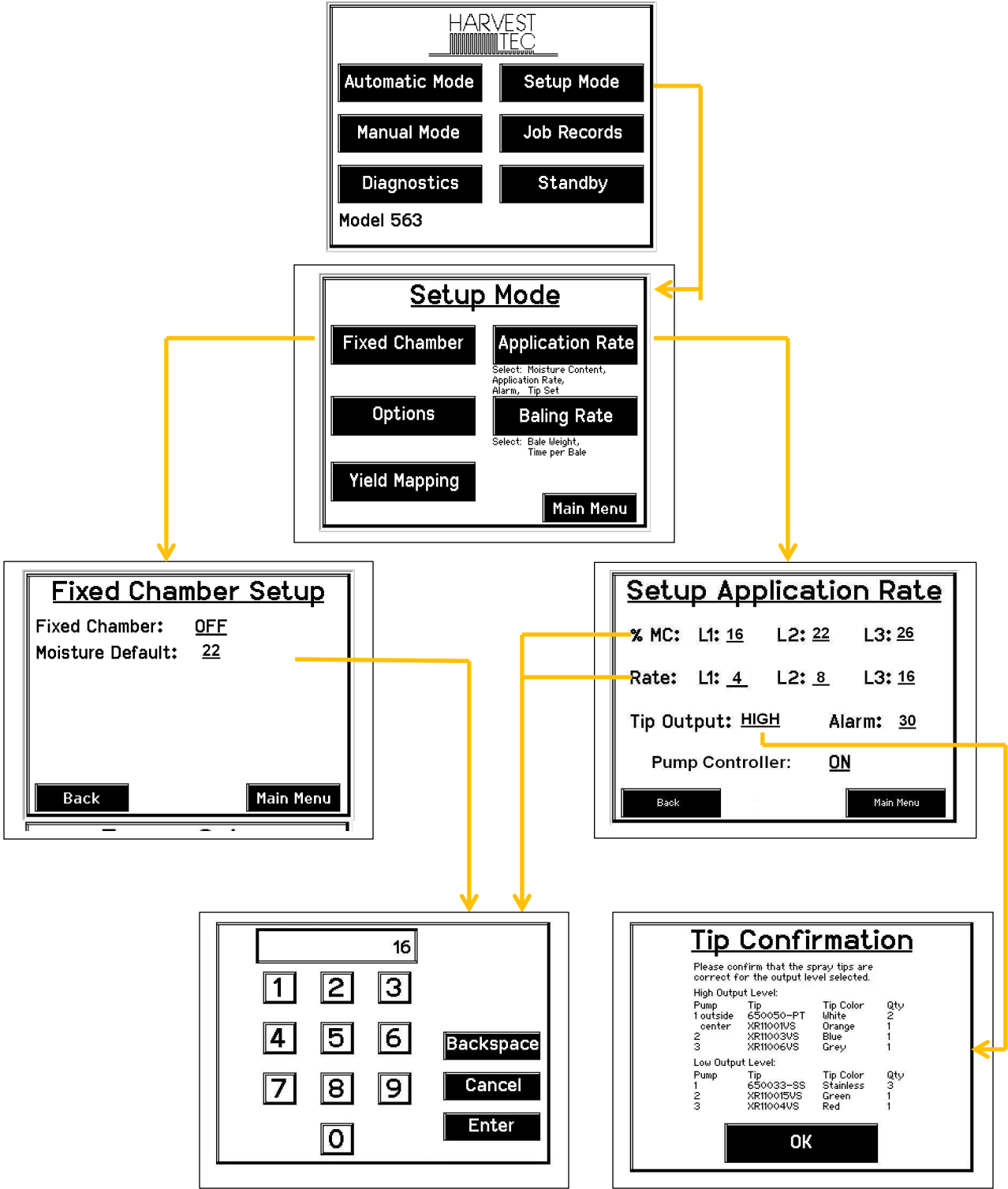
### Automatic Mode:



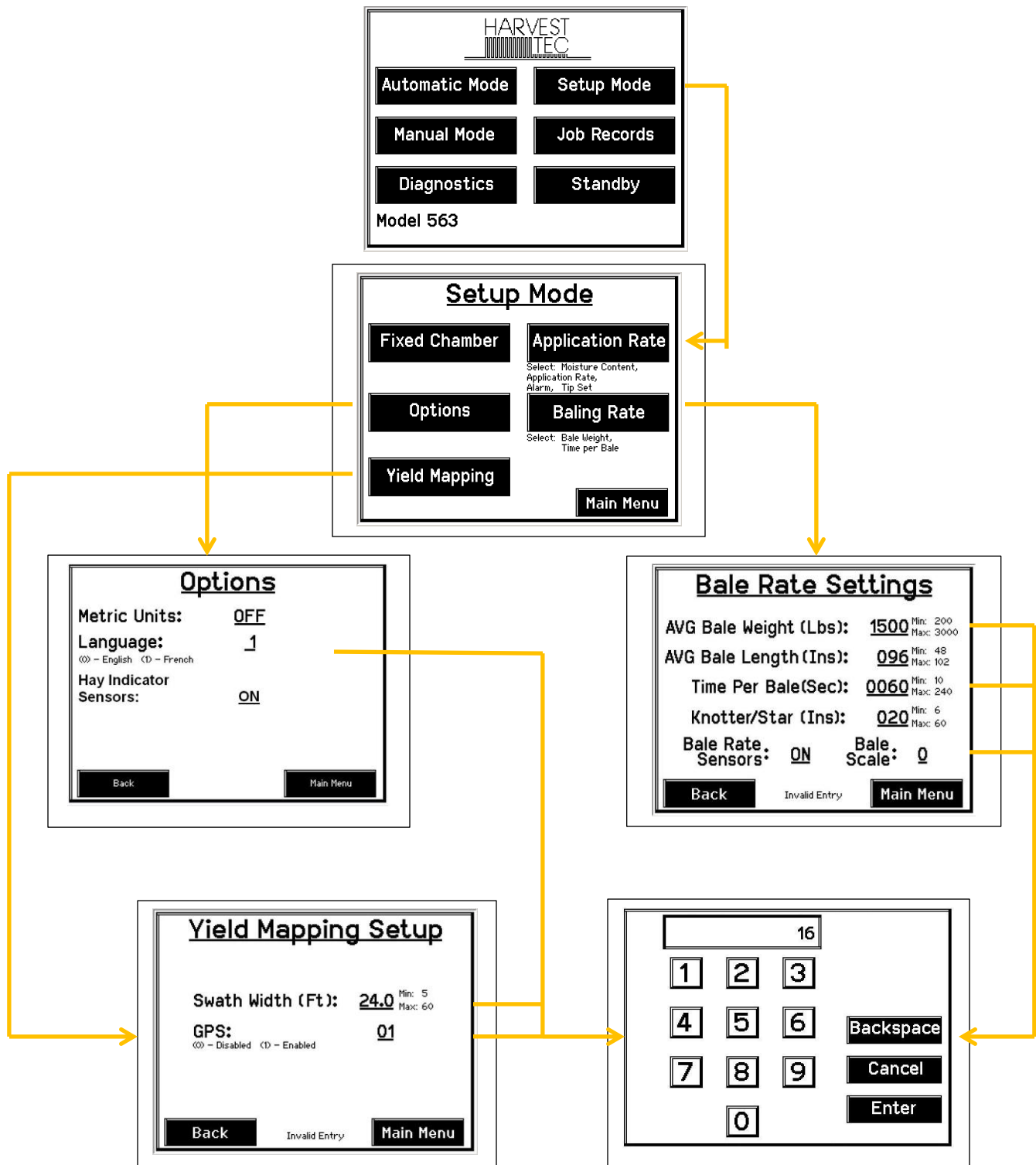
## Manual Mode:



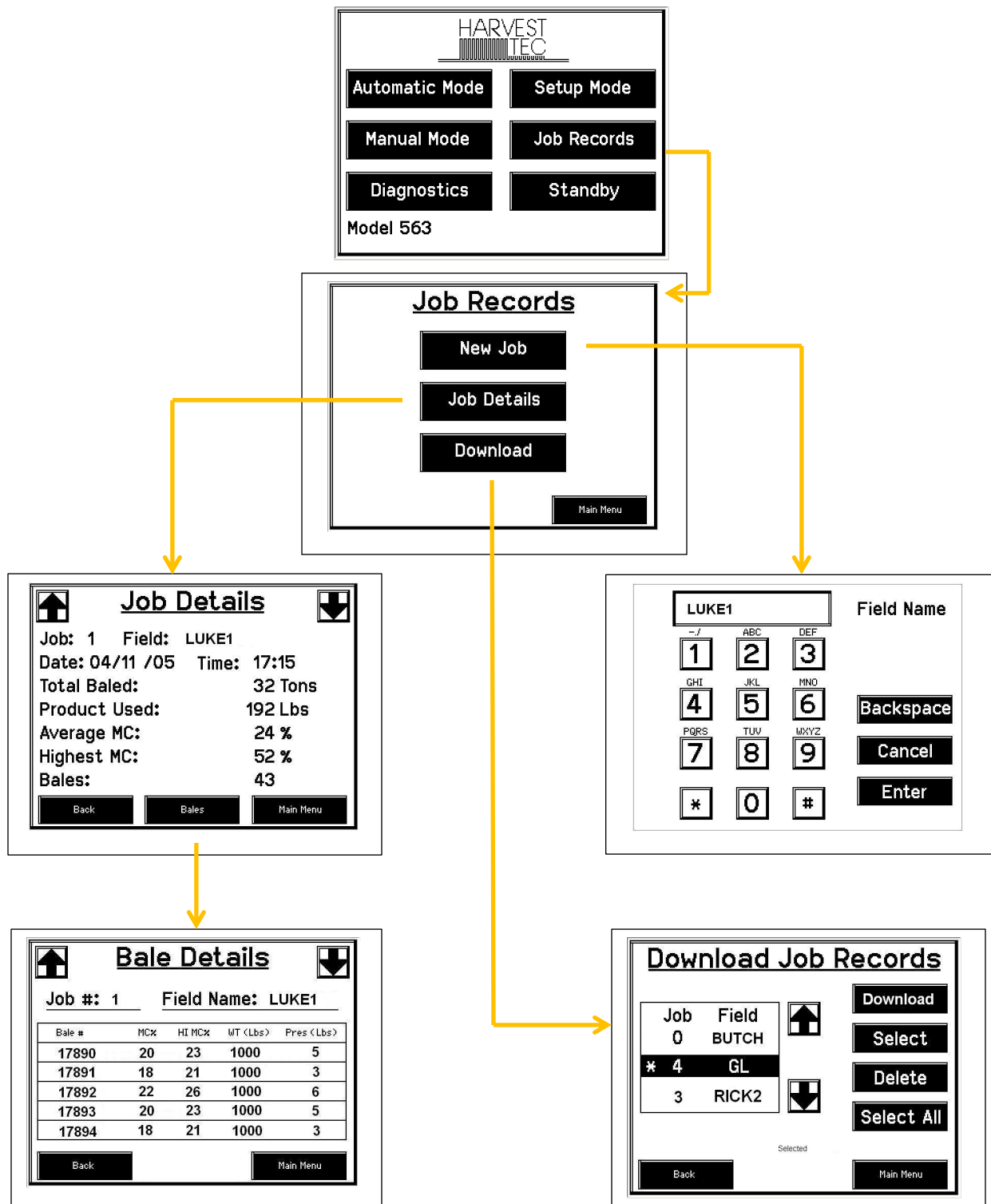
Setup Mode:



## Setup Mode continued:

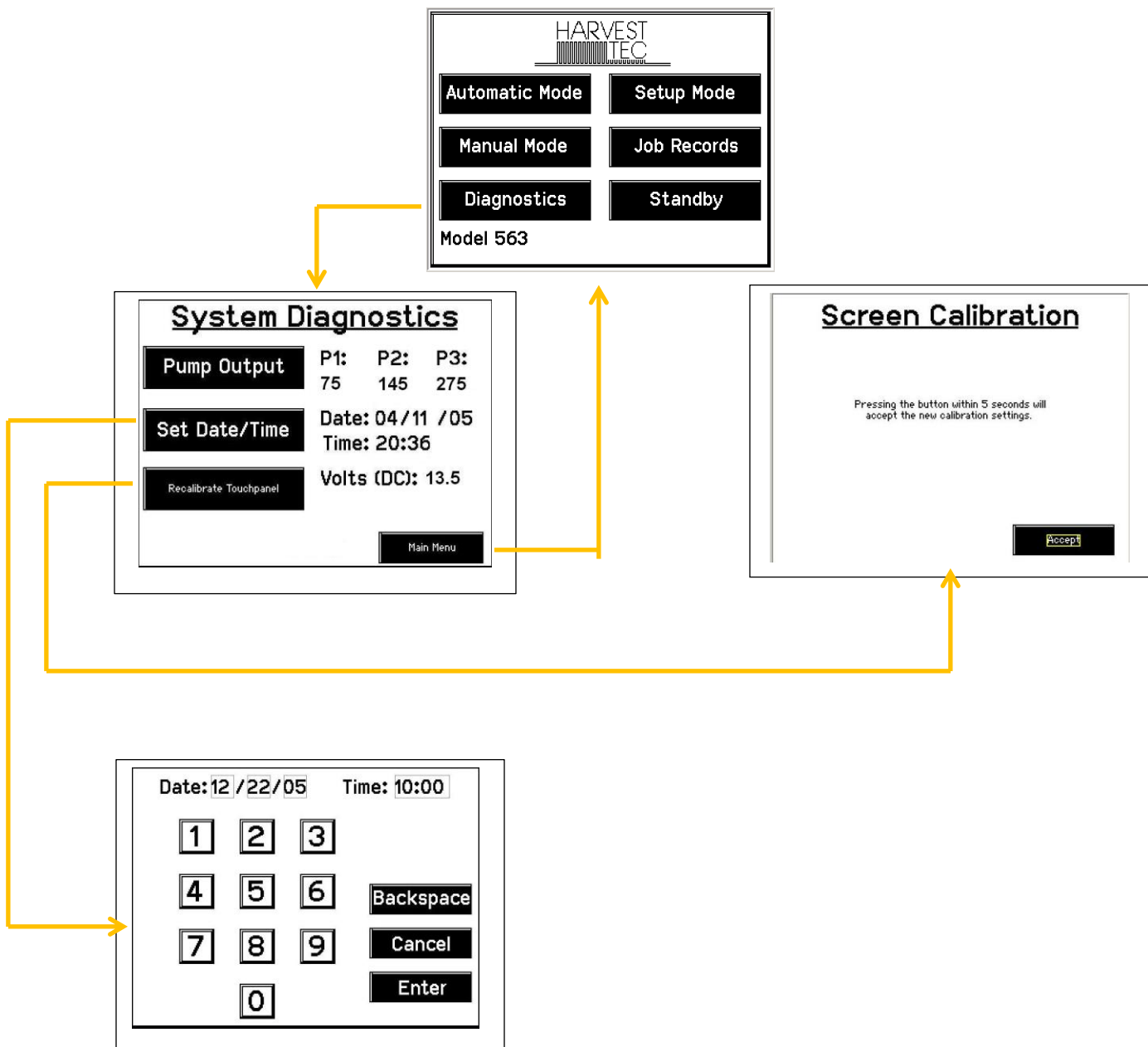


## Job Records:





## Diagnostics:

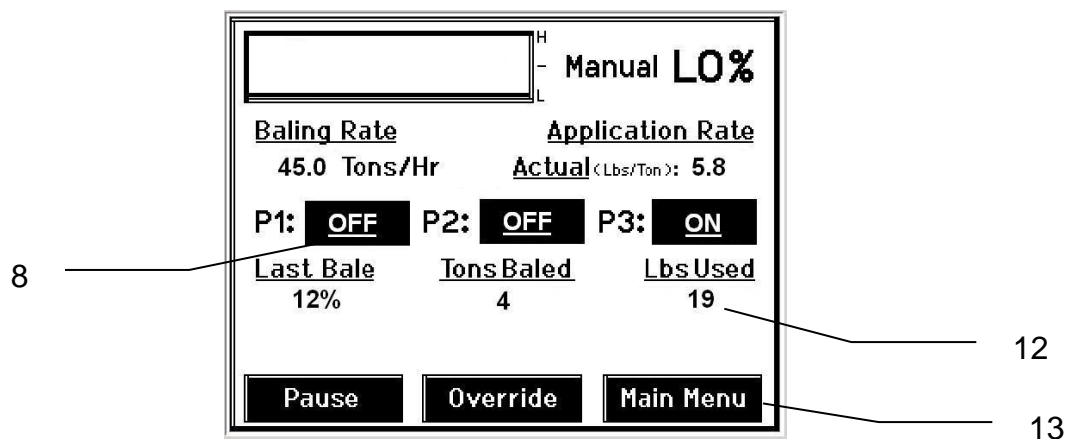


## First Time and Annual Startup Instructions

### AFTER INSTALLATION THE UNIT MUST BE CHECKED BEFORE FIELD OPERATION!

#### Check and Prime the Pumps

1. Put 10 gal of water in tank and turn main ball valve on.
2. Inspect for any leaks or drips at this time. If any are found tighten or replace area or fitting.
3. **Turn controller on** (push anywhere on the screen followed by pressing on the **Press to Start** key).
4. Press the SETUP MODE key. (**See page 19**) Disable the Bale Rate Timer. Bale Rate Timer will now say **OFF**. Confirm the AVG Bale Weight is 1500 lbs. and EST Baling Time is 60 sec. Press the MAIN MENU key to return to the opening screen.
5. Press the MANUAL MODE key.
6. The screen shown below should appear.
7. The rates listed below are for Harvest Tec buffered propionic acid. Other products will need to be collected and weighed to assure proper performance is achieved.



#### 8. NOTE: THE SYSTEM COMES WITH THE HIGH TIPS ALREADY INSTALLED ON THE SPRAY SHIELD. TEST SYSTEM WITH TIPS YOU WILL USE MOST OFTEN.

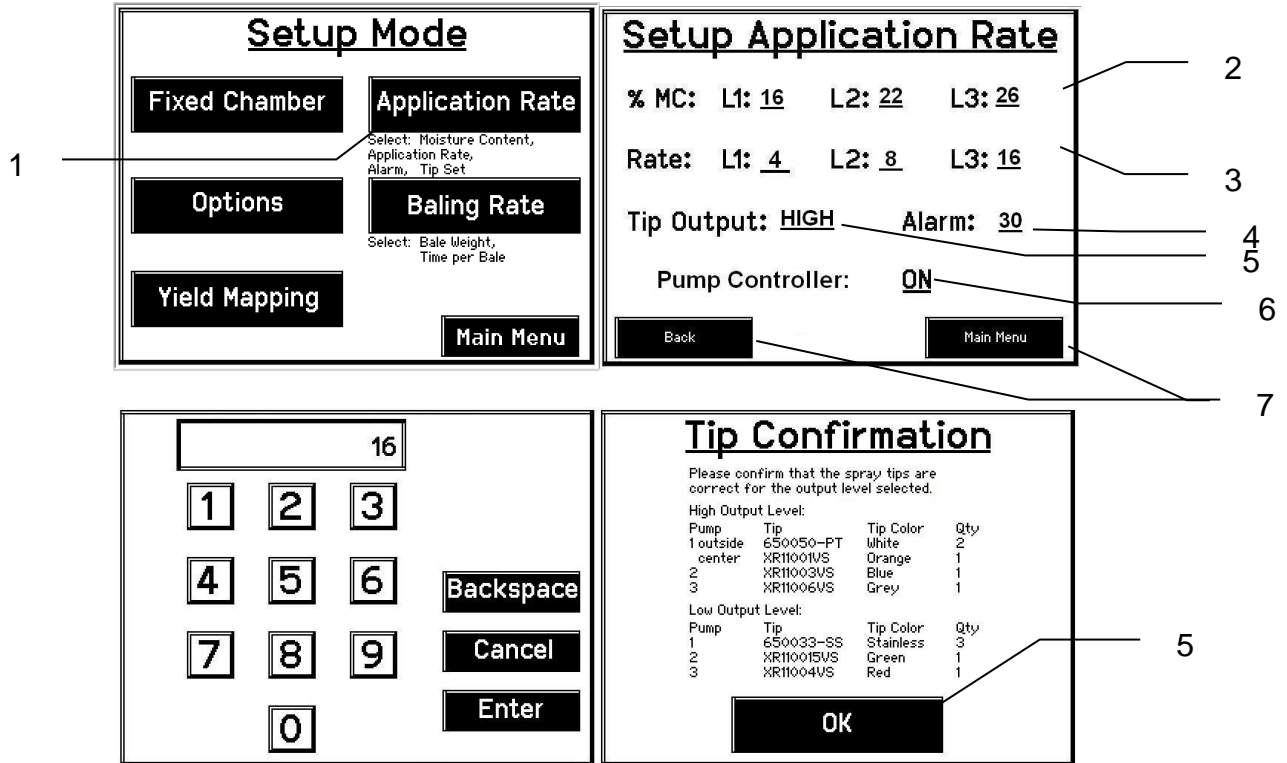
- **With low tips in:** Turn pump 1 on (P1). To do this, press the underlined area on the screen which says OFF. The application rate should then read between .7 – 1.2 Lbs/Ton. Ideally, at 13.5 volts, the rate would read 1.0 Lbs/Ton.
  - Repeat the process for pumps 2 and 3 (P2 and P3). The application rate should read between 1.7 – 2.4 Lbs/Ton and 2.5 – 3.5 Lbs/Ton respectively. Ideally, at 13.5 volts, the rate for pump 2 would be 2.0 Lbs/Ton; pump 3 would be 3.0 Lbs/Ton.
  - **With high tips in:** Turn pump 1 on (P1). To do this, press the underlined area on the screen which says OFF. The application rate should then read between 1.3 – 1.9 Lbs/Ton. Ideally, at 13.5 volts, the rate would read 1.6 Lbs/Ton.
9. Repeat the process for pumps 2 and 3 (P2 and P3). The application rate should read between 2.6 – 3.6 Lbs/Ton and 4.9 – 6.8 Lbs/Ton respectively. Ideally, at 13.5 volts, the rate for pump 2 would be 3.1 Lbs/Ton; pump 3 would be 5.8 Lbs/Ton.
  10. This process will also be used to prime the pumps whenever needed.
  11. While running pumps check for a good spray pattern out of the respective tips and verify that no parts of the system are leaking.
  12. While doing these tests the Volume Used on the bottom of the screen should be counting up, this verifies that the flow meter is functioning.
  13. Press the MAIN MENU key to return to the initial startup screen.

## Setting Up System for Initial Use

In this mode you will setup your initial application rate and baling rate.

### Application Rate

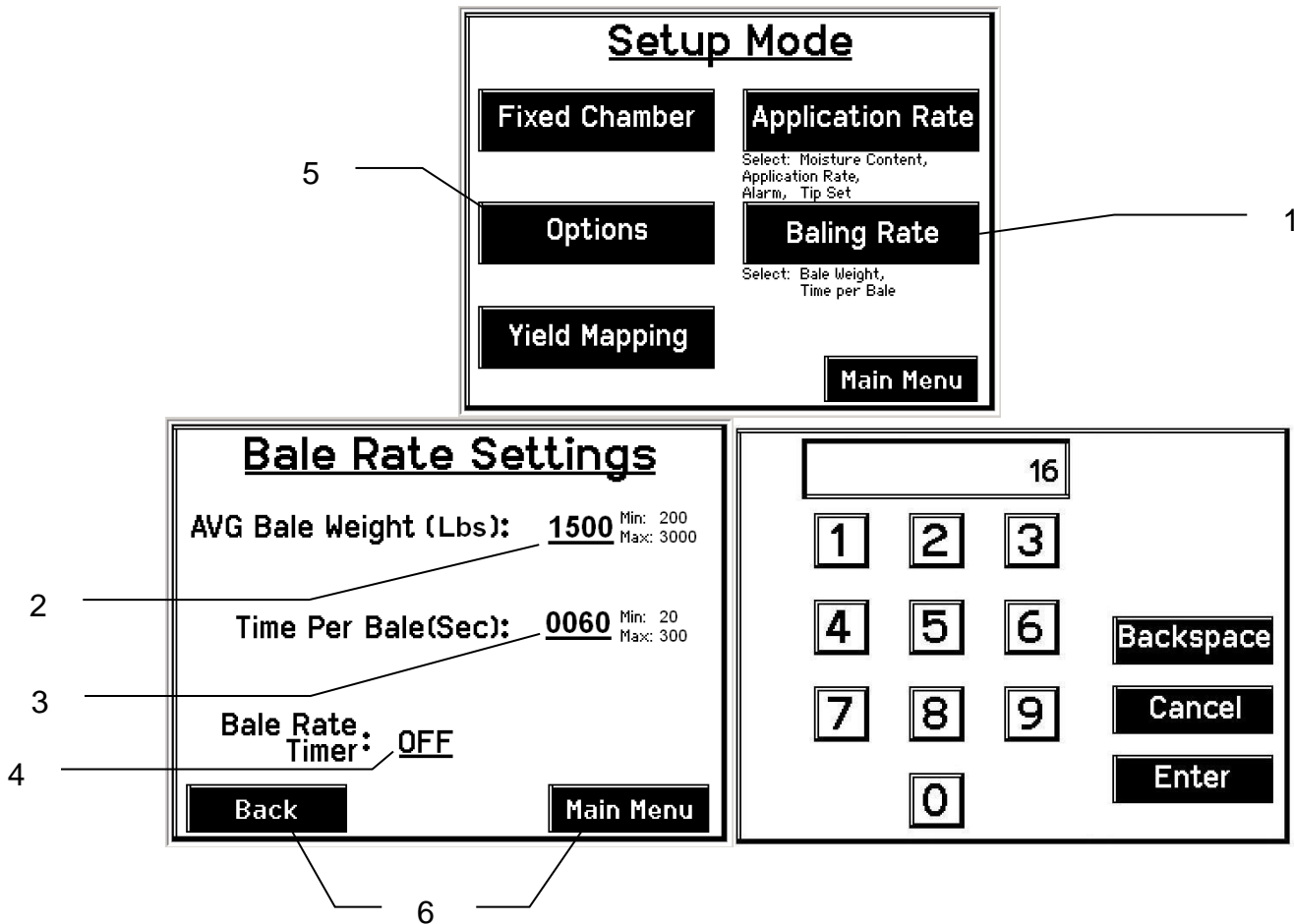
After pushing the **Setup Mode** key in the **Main Menu** screen, the top left screen should appear:



1. On this screen the operator will press the **Application Rate** key. Once pressed the **Setup Application Rate** screen will be shown. (Top right picture)
2. Press any of the underlined numbers to the right of **%MC** to adjust the numbers. The key pad shown on the lower left will display. **Remember level 1 must be lower than level 2 and level 2 must be lower than level 3.** Harvest Tec products recommend set points of 16, 22, and 26 % MC levels. These are preset from the factory. Press **Enter** to return to previous screen.
3. To change rate of chemical application, press any of the underlined numbers to the right of **Rate**. The key pad shown on the lower left will display. Remember level 1 must be lower than level 2 and level 2 must be lower than level 3. Harvest Tec products recommend rates of 4, 8, and 16 lbs/ton. These rates are preset from the factory. Press **Enter** to return to previous screen. **IT IS THE OPERATORS RESPONSIBILITY TO FOLLOW THE RECOMMENDATIONS OF THE PRESERVATIVE. ONLY THE OPERATOR CAN SET TO APPLY AT THE PROPER RATE.**
4. To set the alarm press on the underlined area and set the level at which you want the alarm to activate. To turn the alarm off, set level above 35.
5. **To change the tip output setting to either low or high**, press the underlined word to the right of Tip Output:. In the TIP CONFIRMATION screen the operator can verify and change tip selection. After the tips have been verified or changed, press the OK key to return to the previous screen.
6. The Pump Controller needs to be turned **ON** for the pumps and flow meter to function.
7. Press the **Back** key found on the bottom left of the screen to return to the **Setup Mode** screen or press **MAIN MENU** key on the bottom right hand figure of the screen to return to the opening screen.

## Baling Rate Settings

After pushing the SETUP MODE key in the Main Menu screen, the top screen should appear:

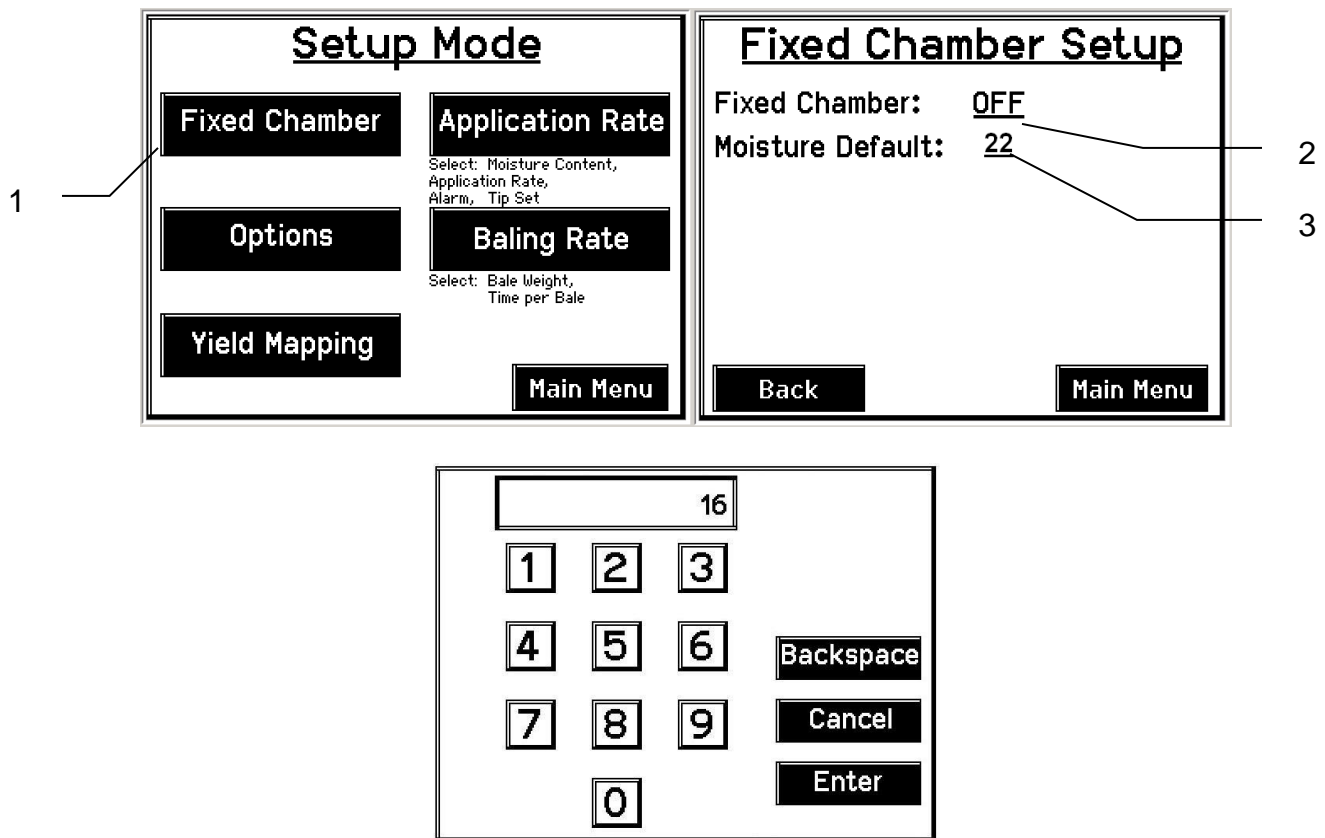


1. On this screen the operator will press the BALING RATE key. This screen is shown on the bottom left side picture shown above.
2. Press the underlined number to the right of AVG Bale Weight (lbs): to adjust the weight of your bales. The key pad shown on the right side will display. Press any number combination in this screen within the min/max limits. Press the ENTER key to save this information. The information will remain until it is changed again.
3. Press the underlined number to the right of Time Per Bale (Sec): to adjust the time it takes to make a bale. The key pad shown on the right side will display. Press any number combination in this screen within the min/max limits. Press the ENTER key to save this information. The information will remain until it is changed again. Recommended.
4. If the unit will be run with the Bale Rate Timer: **ON (recommended)**, the system looks at your inputted bale weight and the interval of time of the baler door opening. When the Bale Rate Timer is **ON**, the applicator will calculate your tons per hour. If the unit will be run with the Bale Rate Timer: **OFF** (as shown above), a constant tons per hour (your inputted bale weight and time) will be used. Press the underlined word to toggle between on or off. **With the Bale Rate Timer: ON, the bales made must be within 50 percent of the default time. If your field variations do not allow this turn the Bale Rate Timer: OFF and set for the lowest time per bale.**
5. Press the OPTION key to adjust the touchscreen between metric and standard units and languages. The Hay Indicators can also be turned on or off in this screen. Press the ON or OFF next to EOR.
6. Next press the BACK key found on the bottom left hand figure of the screen to return to SETUP MODE screen or press the MAIN MENU key on the bottom right hand of the screen to return to the opening screen.

## Fixed Chamber

### Attention: This section is only used for Fixed Chamber Balers.

After pushing the SETUP MODE key in the Main Menu screen, the top screen should appear:



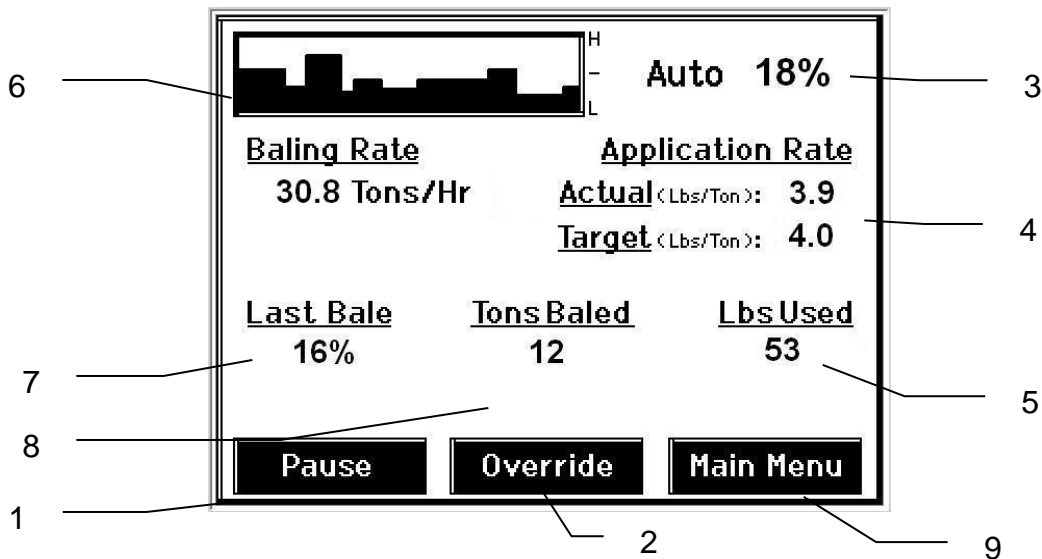
1. On this screen the operator will press the FIXED CHAMBER key. This screen is shown on the left side picture shown above.
2. Press the underlined OFF next to Fixed Chamber to cycle between ON and OFF.
3. To adjust the Moisture Default press the underlined number. The key pad shown on the bottom will display. Press any number combination in this screen within the min/max limits. Press the ENTER key to save this information. The information will remain until it is changed again. The moisture default number needs to be set for the highest moisture that will be found in the bale. The moisture default will be the moisture setting used for the first half of the bale formation. During the second half of the bale formation the system will utilize the moisture discs to adjust the moisture reading every three seconds.
  - a. The first half of the next bale will use the moisture information read from the previous bale, until the moisture discs can take a reading and adjust accordingly; during the second half of bale.
4. The Bale Rate Timer needs to always be set to ON when operating in Fixed Chamber mode. If no end of bale sensor is found within a time frame, an error message, will display on the screen notifying you that the sensor was not found. Verify that the sensor is installed and not damaged. See Installation of Bale Rate Timer Sensor.
5. If the Bale Rate Timer is set to OFF and in Fixed Chamber mode the system will **only** use the default moisture level for the entire bale and the tons/hour that is set up in the Baling Rate screen. Once the Bale Rate Timer is set to ON the system will return to normal operation.

## Operating Instructions

Auto mode will automatically apply product based on hay moisture content sensed by the moisture discs, the tons per hour measured by the Bale Rate Timer, and the operator's presets. (See SETTING UP SYSTEM FOR INITIAL USE to change any of these settings). **Manual mode will apply preservative to the hay at a fixed rate regardless of the moisture content.**

### Automatic Mode

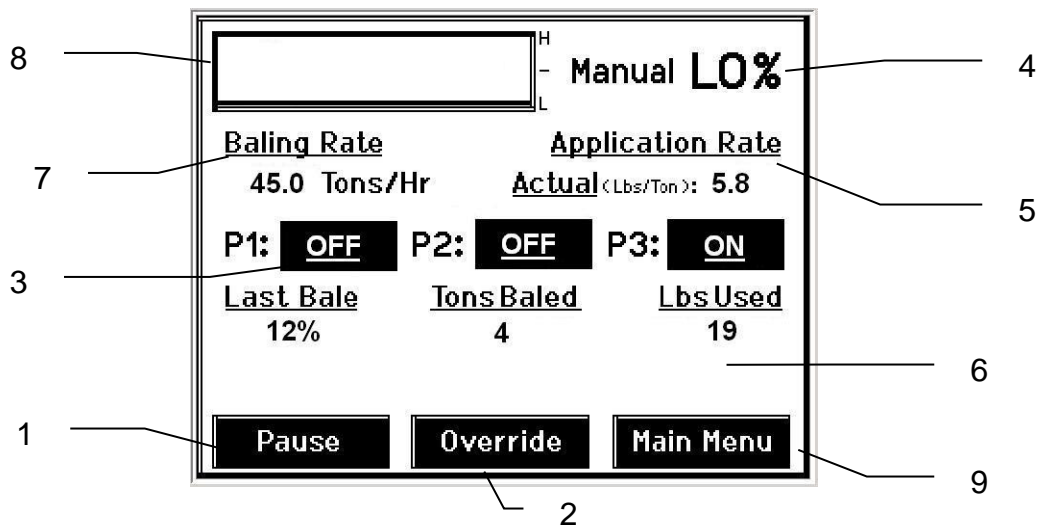
After pushing the AUTOMATIC MODE key in the Main Menu screen, the following screen should appear:



1. Push the Pause key to stop application while in operation.
2. Push the OVERRIDE key to turn on all three pumps at the same time for full output of the system. Use this mode when going through a short area of wet crop.
3. The moisture content is shown in the upper right hand corner.
4. Baling Rate and Application Rate are shown in the middle. The operator sets the target application rate in the setup mode; the actual rate should be within +/- one pound when running. The baling rate is also calculated in the Setup Mode.
5. The Totals on the bottom of the screen show the total tons baled and pounds of product used for the current job. These numbers will reset to zero when a new Job Record is started. If operating with Bale Rate Timer: OFF total tons baled will be zero.
6. The graph shows the moisture trend from the past 90 seconds in 3 second intervals.
7. Last Bale shows the average moisture content for the last bale.
8. Any Status Alerts for the system will appear in this area. See the STATUS ALERTS section for information.
9. Press the MAIN MENU key to return to the opening screen

## Manual Mode

After pushing the MANUAL MODE key in the Main Menu screen, the following screen should appear:



1. Push the START/STOP key to pause the system while in operation.
2. Push the OVERRIDE key to turn on all three pumps at the same time for full output of the system. Use this mode when going through a short area of wet crop.
3. In Manual Mode you can turn the pumps on or off by pressing the underlined area next to the pump numbers. In Manual Mode (regardless of moisture, tons per hour or bale weight) the outputs of the pumps are fixed rates as follows:

### Low output tips:

Pump 1 = 45 LBS/HR  
Pump 2 = 90 LBS/HR  
Pump 3 = 135 LBS/HR

### High output tips:

Pump 1 = 75 LBS/HR  
Pump 2 = 140 LBS/HR  
Pump 3 = 265 LBS/HR

4. The moisture content is shown in the upper right hand corner.
5. Baling rate and Application rate are shown in the middle. The output of a pump can be checked by dividing the preset output (shown in step 3) by the displayed baling rate. For example, if you have the high output tips in and are running pump three, by itself, your output is 265 lbs/hr. Given the baling rate shown on the above screen (45 tons/hr), the application rate should be about 5.8 lbs/ton (265lbs/hr divided by 45 tons/hr).
6. Volume used shown at the bottom of the screen will show accumulated pounds of preservative used on the go. This number will reset at power down, but remains in the job record screen. **NOTE: Initial start-up requires pressing the New Job key in the Job Records screen in order for Volume Used accumulation to be recorded. This only needs to be done once on initial start-up of system and not every time the system is started for operation.** (See JOB RECORDS screen)
7. The baling rate is set in the SETUP MODE menu.
8. This graph shows the moisture trend from the last 90 seconds of baling (one reading every 3 seconds).
9. Press the MAIN MENU key to return to the opening screen.



## Job Records

After pushing the JOB RECORDS key in the Main Menu screen, the following screen should appear:

**Job Records**

1 — **New Job**

3 — **Job Details**

5 — **Download**

**Main Menu**

**LUKE1** **Field Name**

—/	ABC	DEF	
<b>1</b>	<b>2</b>	<b>3</b>	
GHI	JKL	MNO	
<b>4</b>	<b>5</b>	<b>6</b>	<b>Backspace</b>
PQRS	TUV	WXYZ	
<b>7</b>	<b>8</b>	<b>9</b>	<b>Cancel</b>
<b>*</b>	<b>0</b>	<b>#</b>	<b>Enter</b>

**Job Details**

Job: 1    Field: LUKE1

Date: 04/11 /05    Time: 17:15

Total Baled:            32 Tons

Product Used:            192 Lbs

Average MC:            24 %

Highest MC:            52 %

Bales:                    43

**Back**
**Bales**
**Main Menu**

**Bale Details**

Job #: 1    Field Name: LUKE1

Bale #	MC%	HI MC%	WT (Lbs)	Pres (Lbs)
17890	20	23	1000	5
17891	18	21	1000	3
17892	22	26	1000	6
17893	20	23	1000	5
17894	18	21	1000	3

**Back**
**Main Menu**

1. Pressing 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 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 up and down arrows to scroll through 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. Pressing Bales on the 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 up and down arrows to scroll through five bales at a time. Press Back to go to the Job Details screen or Main Menu for the main screen.

**Continued on the next page**

## Job Records continued

### Download Job Records

Job 0

Field BUTCH

---

\* 4 GL

---

3 RICK2

Download

Select

Delete

Select All

Selected

Back

Main Menu

Microsoft Excel - 563 Job Record Example.xls

1	A	B	C	D	E	F	G	H	I	J	K
2	JOB DATA										
3	FIELD	JOB #	AVG MC	HI MC	# USED	BALES	TONS	DATE/TIME			
4	BALE DATA										
5	FIELD	JOB #	AVG MC	HI MC	#/BALE	BALE ID	BALE WT	BALE TM	DATE/TIME		
6	31	2	17	19	6.7	5355401239	1800	60	25 AUG 10 12:23		
7	31	2	18	19	3.4	5355401240	1800	59	25 AUG 10 14:30		
8	31	2	17	19	3.9	5355401241	1800	68	25 AUG 10 14:33		
9	31	2	17	21	4.2	5355401242	1800	99	25 AUG 10 14:36		
10	31	2	18	20	3.8	5355401243	1800	64	25 AUG 10 14:40		
11	31	2	17	19	6.1	5355401244	1800	114	25 AUG 10 14:43		
12	31	2	17	18	2.1	5355401245	1800	65	25 AUG 10 14:45		
13	31	2	17	19	6.5	5355401246	1800	123	25 AUG 10 14:49		
14	31	2	16	18	3.1	5355401247	1800	100	25 AUG 10 14:53		
15	31	2	15	17	2.7	5355401248	1800	97	25 AUG 10 14:57		
16	31	2	15	17	1.4	5355401249	1800	99	25 AUG 10 15:00		
17	31	2	16	19	2.9	5355401250	1800	91	25 AUG 10 15:04		
18	31	2	16	18	2.8	5355401251	1800	95	25 AUG 10 15:07		
19	31	2	15	18	1.8	5355401252	1800	75	25 AUG 10 15:09		
20	31	2	14	17	1.8	5355401253	1800	85	25 AUG 10 15:13		
21	31	2	17	19	2.4	5355401254	1800	61	25 AUG 10 15:16		
22	31	2	17	18	3.5	5355401255	1800	65	25 AUG 10 15:19		
23	31	2	17	20	5.8	5355401256	1800	60	25 AUG 10 15:21		
24	31	2	15	18	4.1	5355401257	1800	105	25 AUG 10 15:49		
25	31	2	16	17	2.3	5355401258	1800	80	25 AUG 10 15:51		
26	31	2	16	17	3.2	5355401259	1800	77	25 AUG 10 15:54		
27	31	2	17	20	3.8	5355401260	1800	90	25 AUG 10 15:56		

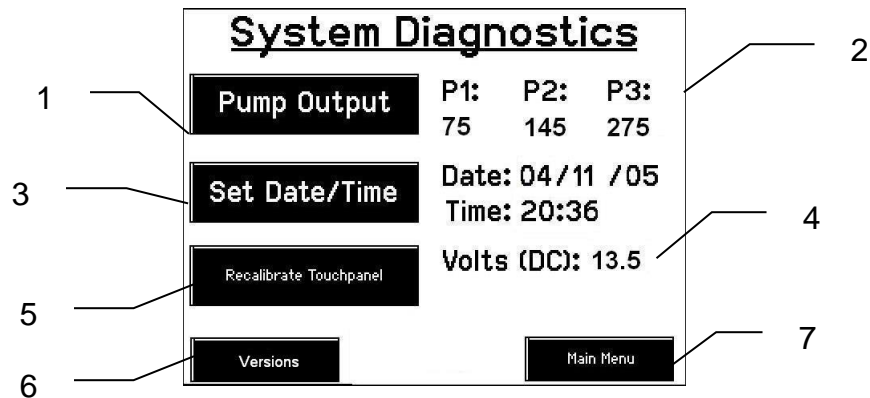
RYAH - Notepad

JOB DATA									
FIELD NAME	JOB NUMBER	AVG MC	HIGH MC	PRODUCT USED	TOTAL BALES	TOTAL TONS	DATE/TIME		
RYAH	00033	00016	00005	0000000397	00012	0000000004	29 DEC 08 12:51		
BALE DATA									
FIELD NAME	JOB NUMBER	AVG MC/BALE	HIGH MC/BALE	PRODUCT USED/BALE	BALE ID NUMBER	BALE WEIGHT			
RYAH	00033	00023	00024	0003	0847600718	01600	29 DEC		
RYAH	00033	00024	00024	0003	0847600719	01600	29 DEC		
RYAH	00033	00024	00024	0003	0847600720	01600	29 DEC		
RYAH	00033	00024	00024	0003	0847600721	01600	29 DEC		
RYAH	00033	00024	00024	0003	0847600722	01600	29 DEC		
RYAH	00033	00024	00024	0003	0847600723	01600	29 DEC		
RYAH	00033	00024	00024	0003	0847600724	01600	29 DEC		
RYAH	00033	00024	00024	0003	0847600725	01600	29 DEC		
RYAH	00033	00016	00016	0001	0847600726	01600	29 DEC		
RYAH	00033	00016	00016	0000	0847600727	01600	29 DEC		
RYAH	00033	00016	00016	0004	0847600728	01600	29 DEC		
RYAH	00033	00016	00016	0001	0847600729	01600	29 DEC		

- Pressing the Download key will open the Download Job Records screen. This screen lets you select jobs to download onto a USB drive. To download insert a USB drive into the port on the Precision Information Processor. Select the job(s) you would like to download using the up and down arrows to highlight the job(s), an asterisk will appear next to all selected jobs. Once all the 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.
- Pressing the Select key will select or unselect the highlighted job.
- Pressing the Select All key will select all jobs, except for the current job (0). To unselect press the Back key.
- The job record in excel will show as above. The Bale ID column will need to be adjusted for proper viewing.
- The job record in Notepad will show as above. You will need to move right to see all the information.

## Diagnostics

After pushing the DIAGNOSTICS key in the Main Menu screen, the following screen should appear:



The diagnostic mode will automatically check the pump output and performance of the three pumps. It is recommended to use this mode daily to ensure proper system performance.

### Acceptable ranges for output:

#### Low output tips:

Pump 1 = 38 - 53 LBS/HR  
Pump 2 = 76 - 105 LBS/HR  
Pump 3 = 115 - 160 LBS/HR

#### High output tips:

Pump 1 = 64 - 88 LBS/HR  
Pump 2 = 119 - 165 LBS/HR  
Pump 3 = 225 - 312 LBS/HR

1. Once the screen is displayed, press the PUMP OUTPUTS key.  
The machine will cycle all three of the pumps for 15 seconds. After the cycles are complete, the system will display a number next to each pump number.
2. **If the system displays within the listed range.**
  - A. The system is operating correctly.**If the system displays higher than the listed range, some common problems could be:**
  - A. Leak in line. Inspect lines thoroughly.
  - B. Tip missing. Check for lost or broken tip on spray shield.
  - C. Tip worn. Replace tip.
  - D. High tractor voltage.**If the system displays lower than the listed range, some common problems could be:**
  - A. Make sure there is preservative in the tank and ball valve is in the open position.
  - B. Air in lines. Pump will not prime. Check for leak in lines, or defective check valve.
  - C. Pump is working, but not producing desired output. Pump needs to be rebuilt.
  - D. Main filter plugged. Check filter by tank and clean if necessary.
  - E. Tip or tip screen plugged. Check both tip and tip screen and clean if necessary.
  - F. Kink in hose. Straighten or replace hose.
  - G. Voltage from tractor is low. Check power cord with multimeter for 12 volts at baler mounted processor. Clean connections on battery. Dielectric grease connections at baler mounted processor and at hitch connection.
  - H. Pump is defective. Rebuild pump if motor runs smoothly. Replace pump if motor is bad.
  - I. Defective flow meter. Only if all pumps run, product is applied, and all numbers read 0.
3. To set date and time, press the SET DATE/TIME key. In the next screen enter the date (month, day, year format) followed by the time. When done press the ENTER key. NOTE: The clock uses military (or 24 hour) time.
4. The voltage should be between 12.0 to 14.5 volts for the system to work properly. If voltage is not in this range check all power cord connections and the tractors charging system.
5. Press the Recalibrate Touchpad key to realign the screen keys to your preference. When the screen appears follow the directions and press accept when done.
6. Press the Versions key to check all software versions of modules attached to the PIP.
7. When done in this mode, press the MAIN MENU key.

## Maintenance

- If you are unsure how to perform any of the maintenance steps have your local authorized dealer perform the tasks.

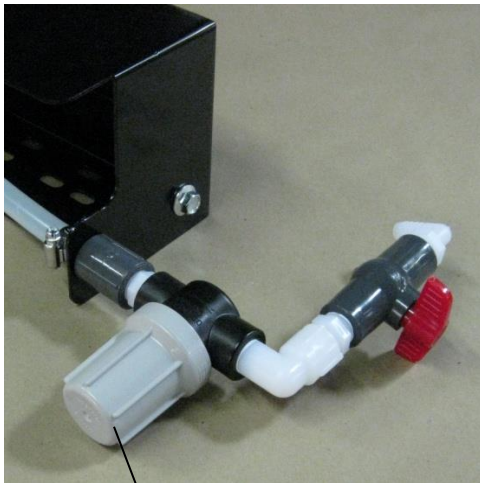
### Maintenance Schedule

	Daily	10 hrs	400 hrs	Weekly	Monthly	Season
Diagnostics	X					X
Filter bowl cleaning		X				X
Tips & tip screen cleaning		X				X
Tank lid cleaning		X				X
Dielectric grease connections					X	X
Rebuild pumps			X			
Battery connections				X		X
Check valves			X			
Visually inspect hoses				X		X

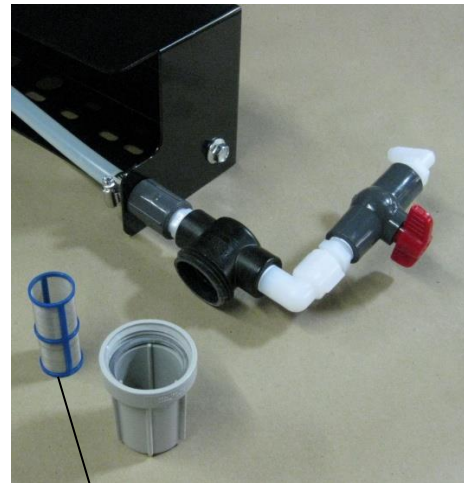
**Diagnostics:** Follow the instructions in this manual to run the Diagnostics mode.

**Filter Bowl Cleaning:** The filter bowl is located in front of the applicators tank and is connected to the ball valve. Before cleaning the filter bowl all personal protective equipment must be worn (Face shield or goggles, chemically resistant apron, boots, and gloves).

Verify that the ball valve located next to the pump is turned off. Locate the filter bowl on the side of the pump manifold (A). Unscrew the bottom section of the filter bowl and remove the strainer. (B) Clean off any debris and soak in warm water with a mild soap if necessary. Once the screen is clean reinstall by following the directions in reverse.



A



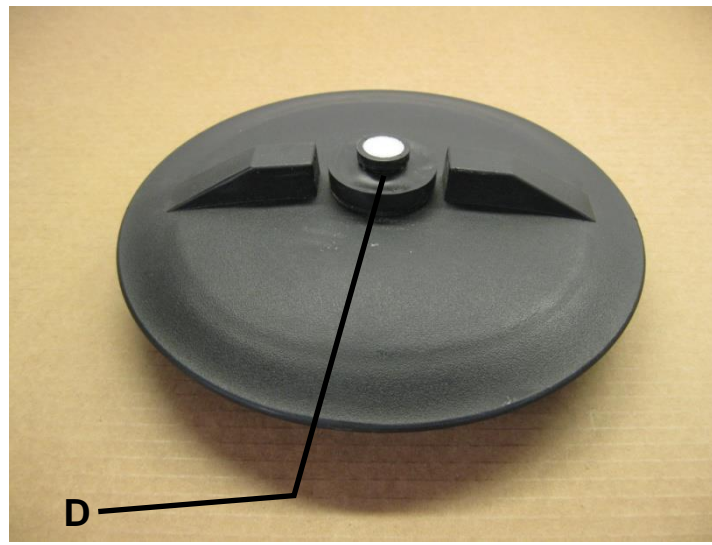
B

**Tips and Tip Screen Cleaning:** The spray shield assembly that holds the tips is located above the pickup head. Before cleaning the tips and screens all personal protective equipment must be worn (Face shield or goggles, chemically resistant apron, boots, and gloves).

Verify that the ball valve located next to the pumps turned off. Disconnect spray shield from hangers by removing the lynch pins or remove tips in place. Remove the tip, and screen. Some models may require a wrench to remove. Clean off any debris and soak in warm water with a mild soap if necessary. Once the tips and screens are cleaned reinstall by following the directions in reverse.

**Tank Lid Cleaning** Before cleaning the tank lid all personal protective equipment must be worn (Face shield or goggles, chemically resistant apron, boots, and gloves).

The tank lid is located on the top of the tank. Use the supplied handle on the tank to secure your person and use the other hand to remove any debris from the top of the tank. Unscrew the tank lid and bring down ground level. Use compressed air clean out the tank screen (D). If the screen cannot be thoroughly cleaned with compressed air, replace fitting (005-9022B3). Once the screen is cleaned reinstall the cover.



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

**Rebuild Pumps:** If Diagnostic or Manual mode show that the pumps are running lower than normal, a pump rebuild may be necessary. To do this rebuild the pump must be removed from the pump manifold. Pump rebuild is part no. 007-4581. A service pack that includes pump rebuilds and check valves is available from your local dealer.

Verify that the ball valve is turned off. Before working around the pumps all personal protective equipment must be worn (Face shield or goggles, chemically resistant apron, boots, and gloves). Remove pump from manifold. Follow rebuild instructions supplied with pump rebuild kit. Reinstall after rebuild is complete.

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

**Check Valves:** Before servicing the check valves all personal protective equipment must be worn (Face shield or goggles, chemically resistant apron, boots, and gloves).

Verify the ball valve is turned off before service the check valves. Replace the intake check valves by the pumps (002-4566F) and the discharge check valves by the tip (004-1207VB).

## **Miscellaneous Maintenance:**

1. Depending on the product being used, the system may need to be flushed with water at a regular interval (consult with manufacturer of the chemical.) If Harvest Tec product is being used, flushing is not necessary.
2. Although the pump can run dry, extended operation of a dry pump will increase wear. Watch the preservative level in the tank.
3. If you are using bacterial inoculants, flush your system daily after every use.

## **Winter Storage**

1. Thoroughly flush the system with water.
2. Remove the filter bowl and run dry until the water has cleared out of the intake side.
3. Remove the red plug from the bottom of the pump, drain, and run the pump for 30 seconds or until it is dry.
4. Drain all lines on the outlet side.
5. Never use oils or alcohol based anti-freeze in the system.
6. For spring start-up, if the pump is frozen, turn off the power immediately to avoid burning the motor out or blowing a fuse. The pump head can be disassembled and freed or rebuilt in most cases. Check the fuses after the pump has been freed.
7. Disconnect power from the Precision Information Processor.
8. Remove display from tractor and store in a warm, dry place.

## Common Questions

**1. How do I turn the system on/off?**

Turn the key in the tractor to the on position. If the unit is in Standby Mode, press anywhere on the screen. To turn off, press the Standby key, wait for the screen to power down and turn off the key.

**2. How to get in the LBS/TON, MC%, and TONS/HR screens?**

In the Main Menu press the SETUP MODE key. From this screen you can change your application rates and how much product is applied. See SETTING UP FOR INITIAL USE for a detailed explanation of this process.

**3. The unit is stuck in the Application Rate screen.**

In the Application Rate screen, level 1 must be less than level 2, and level 2 must be less than level 3. For example, if level 1 is set at 16, level 2 must be set at 17 or higher, and level 3 must be set higher than level 2.

**4. How does OVERRIDE work?**

Override turns on all three pumps at full output. The pumps will remain at full output until the operator turns these pumps off by pressing the OVERRIDE key again.

**5. The flow meter reading is more or less than the programmed level set in the box.**

Some variation in flow meter readings compared to the programmed set point is normal due to factory tolerances on the pump motors as well as varying tractor voltages input to the control box. The flow meter reading is an accurate measure of how much product is actually being applied. The set points then will need to be adjusted if you want to attain a different flow meter reading.

**6. Why don't all the pumps turn on even at higher application rates?**

The selections of what pumps turn on when are automatically controlled by the control box's flow rate look up chart. Thus, not all the pumps turn on at once and the combination of what pumps turn on when is automatically controlled by the software. If you want to make sure all three pumps are working, go to the Diagnostics screen and run pump outputs.

**7. 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. One of the first places to check is build up around the moisture discs and for grounding between the disc and the bale chamber. Also, check all moisture disc wires and connectors to see if there is a continuity or grounding problem.

**8. 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.

**9. How do I recalibrate the touch screen display?**

In the system diagnostics screen press the Recalibrate Touch screen key and follow the directions on the screen. Press accept when done.

**10. How can I turn the optional Hay Indicators on/off from the cab?**

In the Setup Mode screen press options. Press the on/off underlined area next to EOR sensor.



## Troubleshooting

Problem	Possible Cause	Solution
Pump will not run.	1. No voltage to PIP or Pump controller.	1. Check for short, low voltage, and replace fuse(s) if necessary.
	2. Pump locked up.	2. Clean or rebuild pump if motor is OK.
	3. Damaged wire.	3. Repair damaged wire.
	4. Fuse blown on Pump controller.	4. Replace fuse and check pump for short in wire or locked motor.
Pump runs but will not prime.	1. Air leak in intake.	1. Tighten fittings on intake side.
	2. Clogged intake.	2. Clean.
	3. Restricted outlet.	3. Check and clean tips.
	4. Check valve on the outlet is stuck closed.	4. Clean or repair check valve.
	5. Dirt inside pump.	5. Replace pump check valve.
Pump does not develop enough output.	1. Air leaks or clogs on inlet side.	1. Tighten or clean filter bowl assembly.
	2. Pump worn or dirty.	2. Rebuild pump.
Moisture reading errors (high or low)	1. Wire disconnected or bad connection between discs and PIP	1. Reconnect wire.
	2. Low power supply to PIP	2. Check voltage at box. (Min of 12 volts required.) See Diagnostics section of manual.
	3. Wet hay over 40% moisture	
	4. Ground contact with one or both discs and baler mounted processor.	4. Reconnect.
	5. Short in wire between moisture discs and PIP.	5. Replace wire.
	6. Check hay with hand tester to verify.	6. Contact Harvest Tec if conditions persist.
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 12 and 14 volts.	3. Install voltage surge protection on tractors alternator.
<b>Flow meter readings do not match up with product usage.</b>		
Product is less than actual product used.	1. Voltage supplied to meter is less than 6 volts.	1. Check for a min of 6 volts supplied at Pump controller.
	2. Wiring short in signal to Pump Controller.	2. Inspect wire and replace if necessary.
	3. Clog in meter.	3. Back flush with water. DO NOT USE AIR.
	4. Air in flow meter	4. Prime all pumps to remove air
	5. Using product other than Harvest Tec	5. Catch and weigh product to check outputs.
Product shown is more than actual product used.	1. High voltage supplied to the meter.	1. Check voltage at Pump controller. Max of 18 volts.
	2. Light interference with meter.	2. Reflection into meter can cause a high reading. Move meter or protect from sunlight.
	3. Air leak in intake.	3. Look for air bubbles in line. Replace line or other defective area that is allowing air into the system.
	4. Using product other than Harvest Tec	4. Catch and weigh product to check outputs.

System leaks product out of tips after shut down.	1. Dirty or defective check valves.	1. Clean or Replace.
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. See Diagnostics section of manual.
System does not pause at the end of a row.	1. Short in cable. 2. Damaged sensor. 3. Bad alignment of sensors	1. Replace cable. 2. Replace sensor 3. Check 474 manual for alignment instructions
Bale rate displays zero.	1. Bale rate sensors are reversed. 2. Short in cable. 3. Damaged sensor.	1. Switch the sensors next to the star wheel. 2. Replace cable. 3. Replace sensor.
Display will not power up.	1. Connection broke between the display and the PIP. 2. Short in display cable.	1. Check, clean, and tighten connections. 2. Replace cable.
Display is too dark or light	1. Change in temperature or light conditions.	1. Use the monitors contrast control.
Display is locked up/froze.	1. CAN communication not responding. 2. Broke connection between the display and PIP or Pump control and PIP.	1. Check connections at PIP 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 PIP or Pump control and PIP.	1. Check connections at PIP 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 PIP or Pump control and PIP.	1. Check connections at PIP 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.

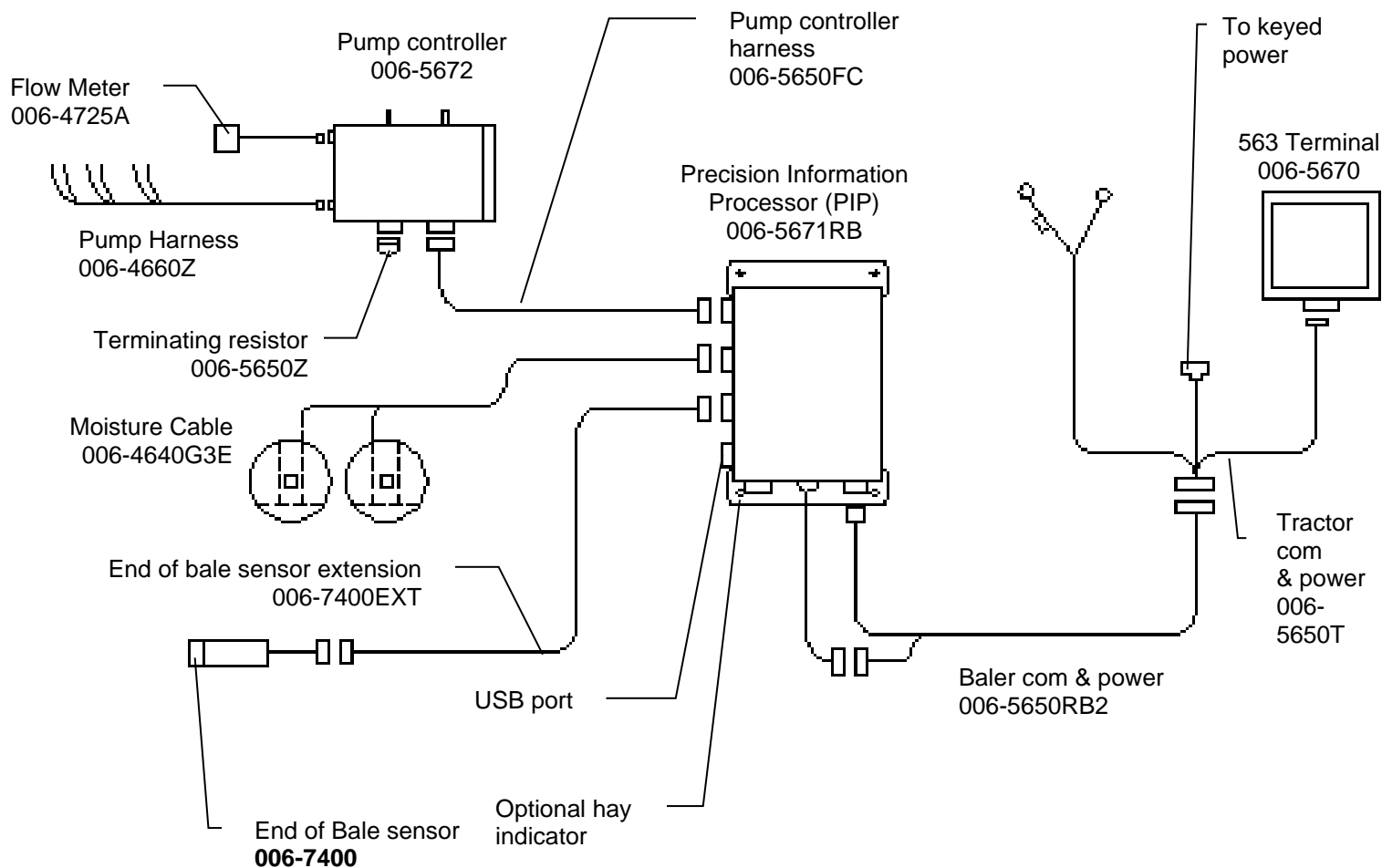
## Status Alerts

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 not accept any new data until jobs in the Job Records menu are downloaded and deleted. Follow the instructions in Job Records to accomplish this.

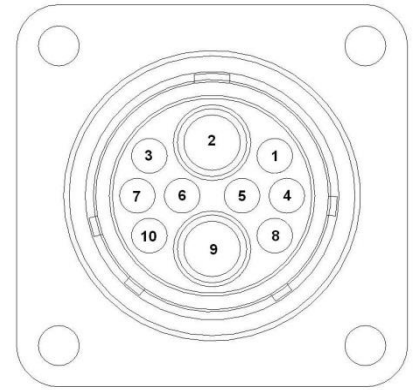
## System Wiring Diagram for the 500 Series



## Pin Outs

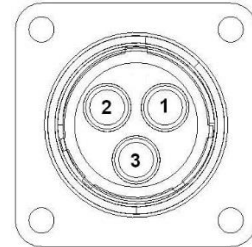
### A. Communication and power harness

Pin 1	Red	Can 12 volt
Pin 2	Red	Battery 12 volt
Pin 3	Orange	Keyed power
Pin 4	Not Used	
Pin 5	Yellow	Comm channel OL
Pin 6	Green	Comm channel OH
Pin 7	Not used	
Pin 8	Black	Can ground
Pin 9	Black	Battery ground
Pin 10	Not used	



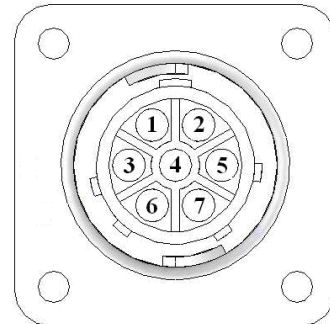
### B. Main power connector mounted on PIP

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



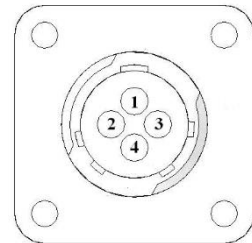
### C. Pump connection colors

Pin 1	Black with orange markings	Pump 1 ground
Pin 2	Black with green markings	Pump 2 ground
Pin 3	Black with yellow markings	Pump 3 ground
Pin 4	Not used	
Pin 5	Orange with black markings	Pump 1 positive
Pin 6	Green with black markings	Pump 2 positive
Pin 7	Yellow with black markings	Pump 3 positive



### D. Flow meter connection on Pump Controller

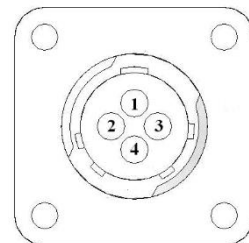
Pin 1	White	5 - 12 V (+) supply
Pin 2	Green	Ground
Pin 3	Brown	Signal
Pin 4	Black	Shield



### E. Connector for Hay Indicator option on PIP

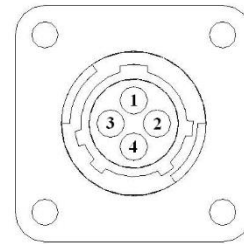
**Note: Hay indicators are an option that will turn the system on and off automatically as hay enters the pickup of the baler.**

Pin 1	Red	+12V
Pin 2	Black	Ground
Pin 3	White	Signal wire
Pin 4	Not used	



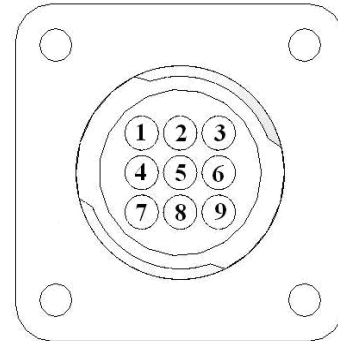
#### F. End of bale sensor on PIP

Pin1	Brown	<u>Sensor power</u>
Pin2	Blue	Sensor ground
Pin3	Not used	
Pin4	Black	Signal from sensor



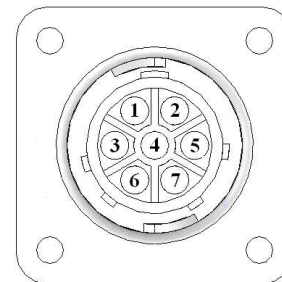
#### G. Moisture and Bale rate sensor connector on PIP

Pin 1	Not used	
Pin 2	Not used	
Pin 3	Not used	
Pin 4	Not used	
Pin 5	Silver	Shield
Pin 6	Silver	Shield
Pin 7	Not used	
Pin 8	Violet	Moisture input 1
Pin 9	Brown	Moisture input 2



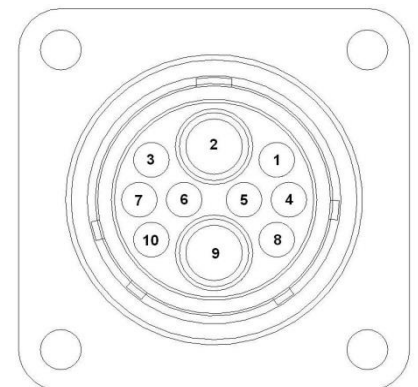
#### H. Display communication harness on PIP

Pin 1	Orange	Power to display
Pin 2	Blue	Ground to display
Pin 3	Green	Comm channel OH
Pin 4	Not used	
Pin 5	Yellow	Comm channel OL
Pin 6	Not used	
Pin 7	Not used	

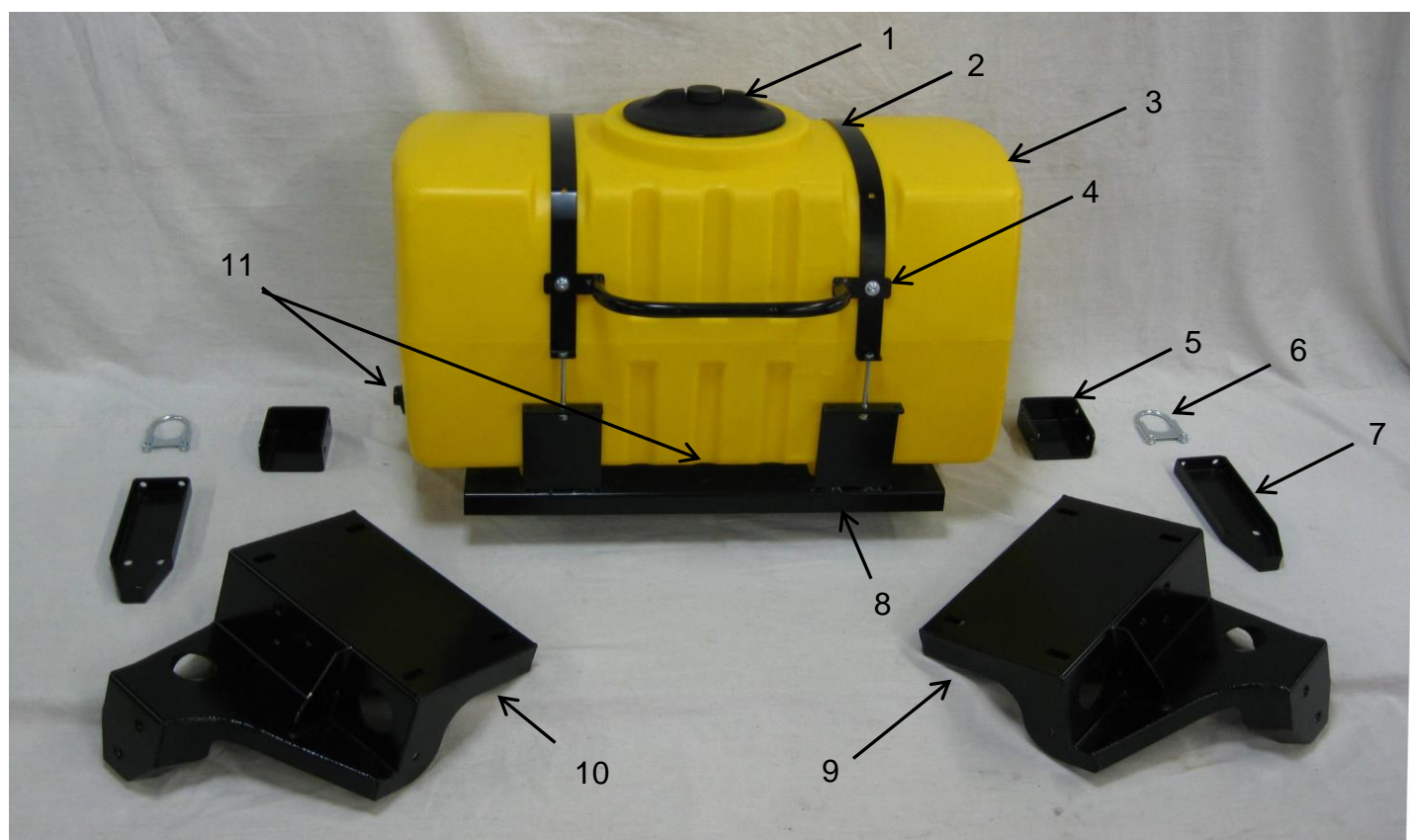


#### I. Communication harness on PIP and Pump Controller

Pin 1	Red	Can 12 volt
Pin 2	Red	Battery 12 volt
Pin 3	Grey	Shield
Pin 4	Green	Comm channel OH
Pin 5	Yellow	Comm channel OL
Pin 6	Blue	Comm channel IH
Pin 7	Orange	Comm channel IL
Pin 8	Black	Can ground
Pin 9	Black	Battery ground
Pin 10	Not used	

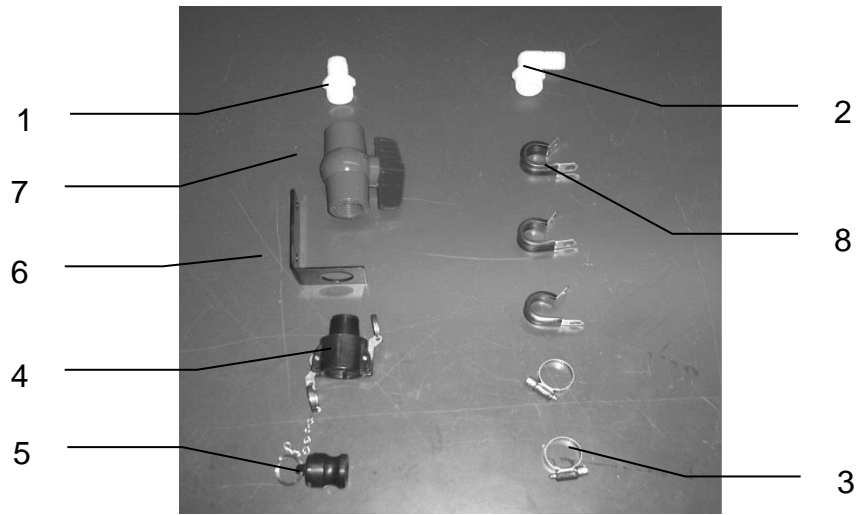


## Parts Breakdown for the Tank and Saddle Harvest Tec Model 547C Base Kit



<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	55 Gallon tank lid	005-9022H	1	7	Anchor Bracket	001-4703XA	2
2	Strap	001-4402	2	8	Saddle	001-4703X	1
3	Tank	005-9203SQ	1	9	Left Leg	001-4703XL	1
4	Handle	001-6707HRS	1	10	Right Leg	001-4703XR	1
5	Anchor Bracket Ext	001-4703XAX	2	11	Tank fitting	005-9100	2
6	U Clamp	001-4703XAB	2				

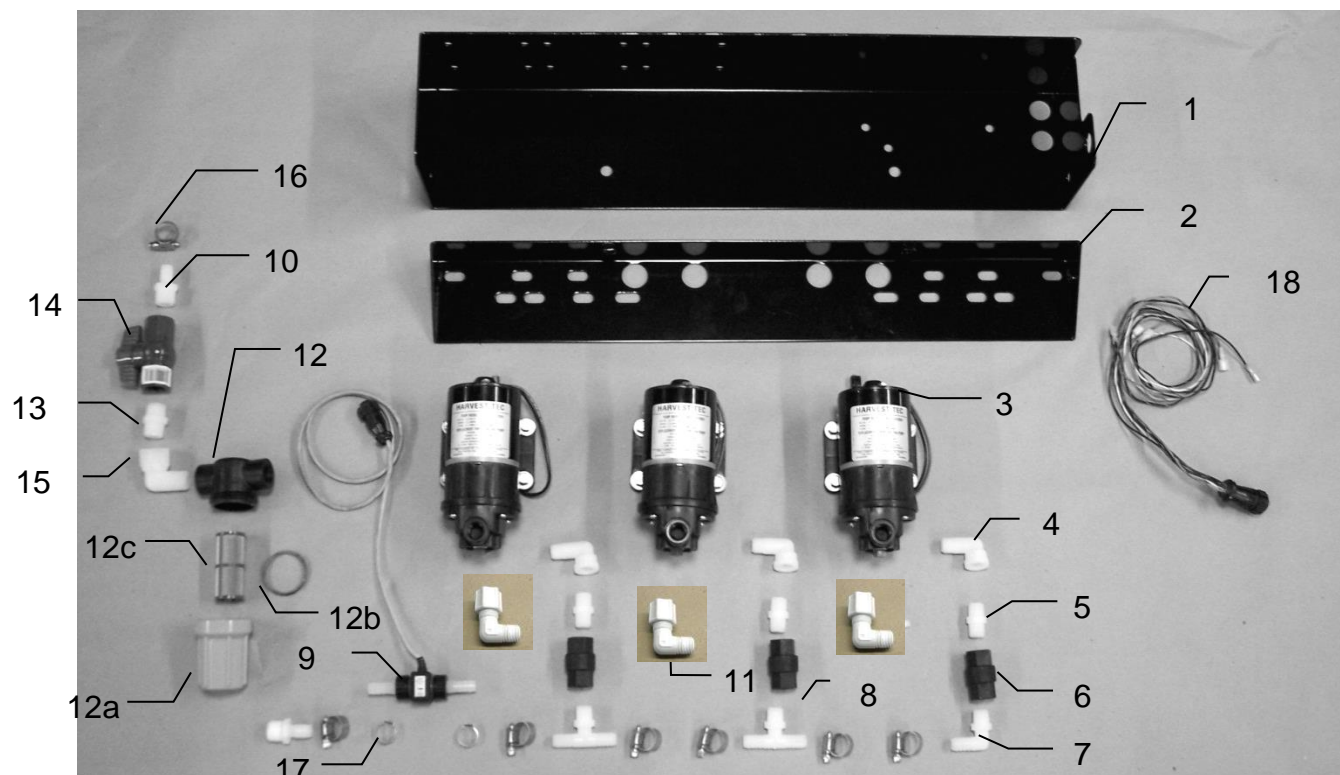
## Parts Breakdown for Drain Fill Kit



<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Straight Fitting	003-A3434	1	5	Male Coupler	002-2205G	1
2	Elbow	003-EL3434	1	6	Valve Holder	001-6702H	1
3	Hose Clamps	003-9004	2	7	Ball valve	002-2200	1
4	Female Coupler	002-2204A	1	8	Jiffy Clip	008-9010	3
				NP	3/4" Hose	002-9002	8ft

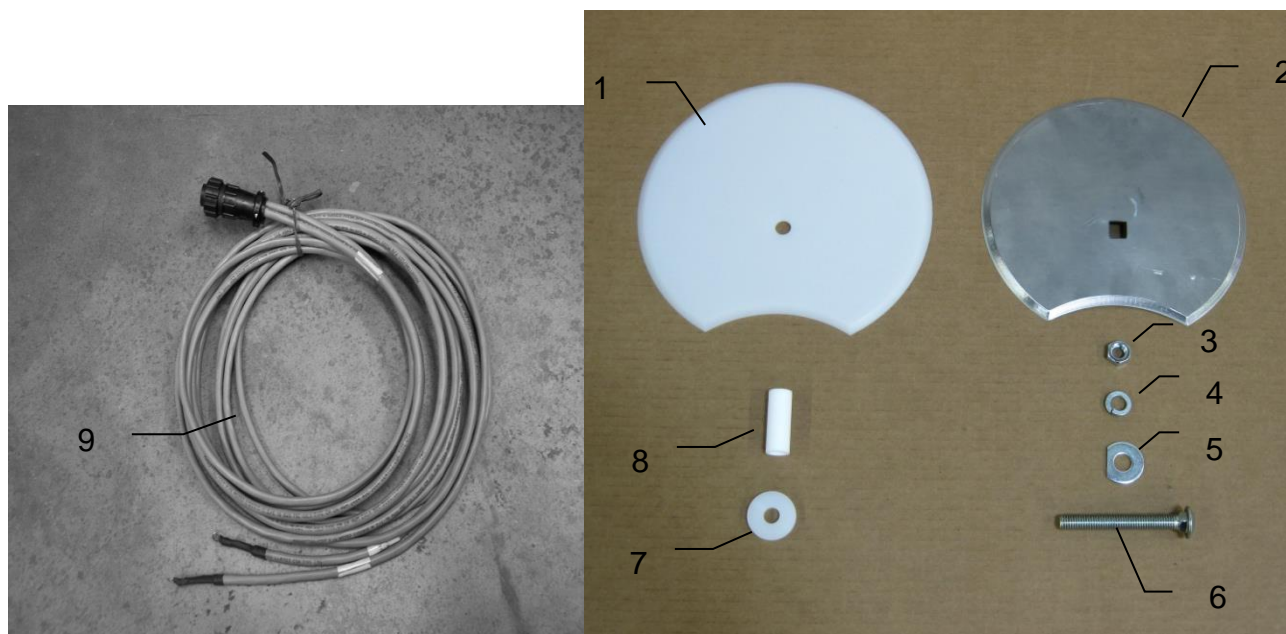


## Parts Breakdown for Pump Manifold

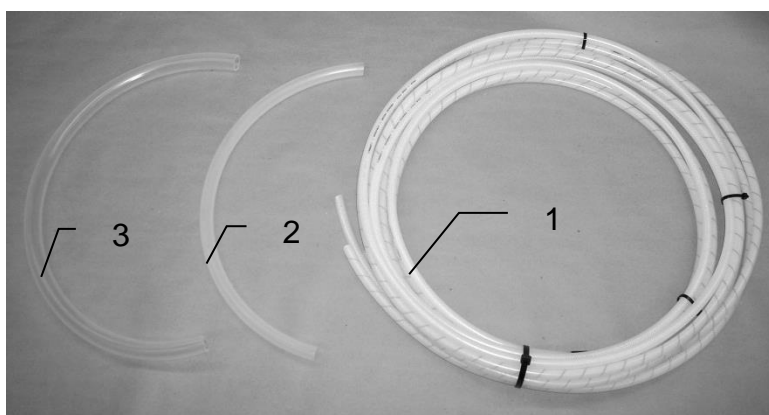


<u>Ref#</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Pump plate	001-4646D	1
2	Mounting Bracket	001-4646C	1
3	Pump	007-4120H	3
4	Street elbow fitting	003-SE38	3
5	Nipple fitting	003-M3838	3
6	Check valve	002-4566F	3
7	Elbow fitting	003-EL3812	1
8	Tee fitting	003-T3812HB	2
9	Flow meter assembly	006-4725A	1
10	Straight fitting	003-A1212	2
11	Elbow fitting	003-JEL1238	3
12	Filter bowl assembly	002-4315	1
12a	Filter bowl only	002-4315F	1
12b	Filter bowl gasket	002-4315D	1
12c	Filter bowl screen	002-4315B	1
13	Nipple fitting	003-M1212	1
14	Ball valve	002-2212	1
15	Street elbow fitting	003-SE12	1
16	Hose clamp	003-9003	7
17	Hose clamp (Flow Meter)	003-9005	2
18	Pump Cable	006-4660Z	1
NP	Pump rebuild kit	007-4581	1
	(1 per pump)		
NP	Elbow	003-EL1212	1
NP	Not Pictured		

## Parts Breakdown for Moisture Sensor Discs and Hoses

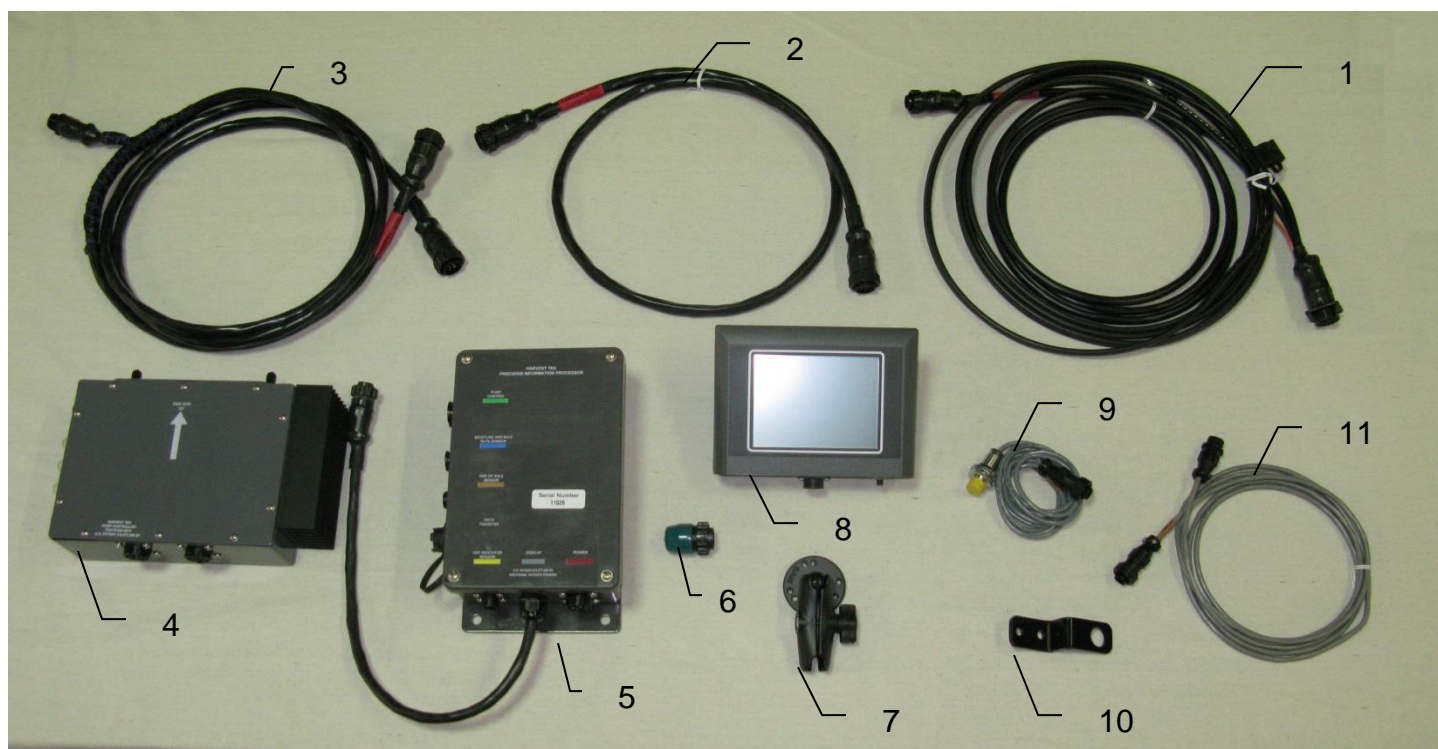


<u>Ref#</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	CNH RB Moisture Isolator	006-4641FX	2
2	CNH RB Moisture Disk	006-4641HX	2
3	1/2" JAN Nut		4
4	1/2" Lock		4
5	1/2" D Washer		6
6	1/2" x 4" Carriage Bolt		2
7	Sensor Bushing	006-4641G	2
8	Sensor Isolator	006-4641I	2
9	Moisture Cable	006-4640G3E	1



<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Triple Weld (pumps to tips)	002-9016	15ft
		002-9016B	15ft
		002-9016G	15ft
		030-9016RB	1
2	Hose assembly		
	1/2 Hose (tank to filter)	002-9001	6ft
3	3/4 Hose Drain Fill Line	002-9002	10ft

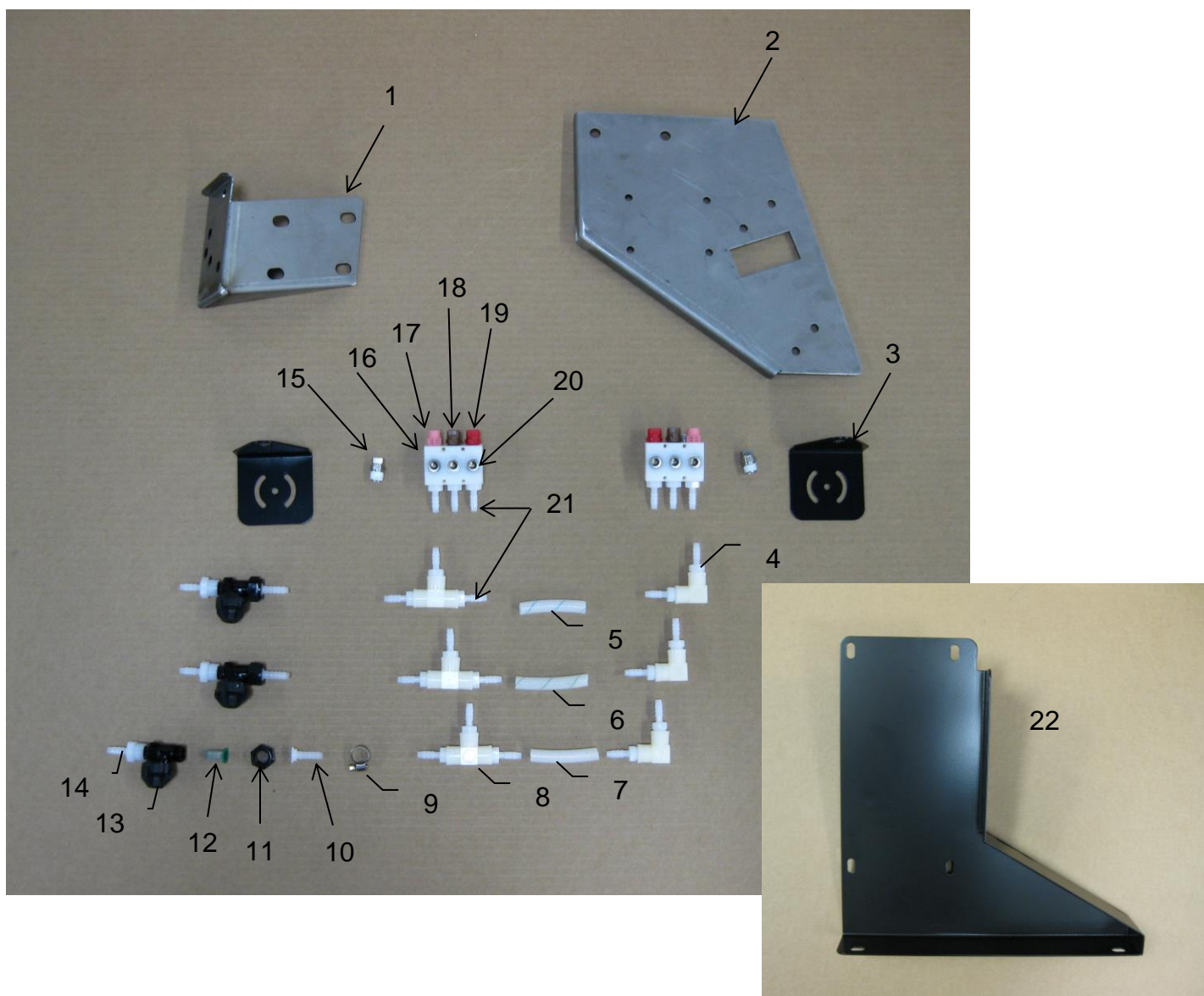
## Parts Breakdown for Control Boxes and Wiring Harnesses



<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Power & communication tractor	006-5650T	1
2	Pump controller harness	006-5650FC	1
3	Power & communication baler	006-5650RB2	1
4	Pump controller	006-5672	1
5	Precision Information Processor (PIP)	006-5671RB	1
6	Terminating resistor	006-5660Z	1
7	Ram mount	001-2012H	1
8	Display	006-5670	1
9	Bale rate timer	006-7400	1
10	Bale rate timer bracket	001-4648RB	1
11	Bale rate timer sensor extension	006-7400EXT	1
NP	Key switch wire	006-5650K	1
NP	Dust plug kit	006-5651PLUGS	1
NP	Not pictured		



## Harvest Tec Model 547C Installation Kit



<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Pump Plate Bracket	001-4703XF	1	15	Tip –Stainless	004-T800067-SS	2
2	Pump/Valve Mount	001-4703XE	1	16	Spray Shield Manifold	001-4435NSB	2
3	Spray Block Holder	001-4703XD	2	17	Tip –pink	004-T8001-PT	2
4	Elbow	003-SE14F	3	18	Tip –brown	004-T80015-PT	2
5	Hose-clear	002-9016	15 ft	19	Tip –red	004-T8003-PT	2
6	Hose-green striped	002-9016G	15 ft	20	Plug Allen SS	003-F14A	6
7	Hose-blue striped	002-9016B	15 ft	21	Fitting	003-A1414	21
8	Tee	003-TT14SQ	3				
9	Hose Clamp	003-9002	27	22	Comm RB Bracket 500 Series	001-4703XG	1
10	Fitting	003-A1414VB	3				
11	Nozzle cap	004-4723	3				
12	Tip Strainer	004-1203-100	3				
13	Check Valve	004-1207VB	3				
14	Fitting	003-A1414F	3				

## Selecting Tips-Reference Guide

The applicator is sent from the factory with High output tips installed. The tips used are determined by how many ton per hour you are baling. You can see this on either the automatic or manual screen.

1 – 7 Tons of hay per hour

- Too low a level for the system to apply at. Increase baling speed or rake more hay together. System will show over application when at these tonnages.

8 – 27 Tons of hay per hour (32 – 440 lbs of hay preservative per hour)

- Use low output tips
  - o For most 4 ft balers
    - Pump 1 = Qty 2      004-T800067-SS      80 degrees      Silver
    - Pump 2 = Qty 2      004-T8001-PT      80      Pink
    - Pump 3 = Qty 2      004-T80015-PT      80      Brown

21 – 40 Tons of hay per hour (84 – 632 lbs or hay preservative per hour)

- Use high output tips
  - o For most 5 ft balers
    - Pump 1 = Qty 2      004-T8001-PT      80 degrees      Pink
    - Pump 2 = Qty 2      004-T80015-PT      80      Brown
    - Pump 3 = Qty 2      004-T8003-PT      80      Red



## **Harvest Tec, LLC. Warranty and Liability Agreement**

Harvest Tec, LLC. 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, LLC. 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, LLC.

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, LLC. 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, LLC. 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, LLC. 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, LLC. will not affect our ability to obtain materials or manufacture necessary replacement parts.

Harvest Tec, LLC. 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 5/22

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