

# OWNER'S MANUAL

## *Model 450-M* *55 Gallon Automatic Preservative Applicator*

HARVEST  
TEC *Equipment and Products  
for Quality Hay.*

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#010-0450M

**REVISED 1-08**

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## **INTRODUCTION**

Congratulations on purchasing a Harvest Tec Model 450 applicator. This applicator is designed to apply Harvest Tec buffered propionic acid. The model 450 base kit includes the following parts: Tank, Frame, Pumps, Hose, Baler Mounted Processor, Touch Screen Display, Moisture Sensors, and Miscellaneous Hardware. The applicator can be installed on most balers with the proper installation kit. Before installing the unit on the baler, make sure you have the proper installation kit. (See the chart below.) If you are unsure about your installation kit contact your dealership for specifications. For your convenience we have included a parts break down for the model 450 applicator. If something goes wrong, bring this manual into the dealership so they can order the correct parts for you. Ordering the correct part number is very important. It will save you time, money, and your crop

## **INSTALLATION KIT REFERENCE CHART**

<b><u>BALER MAKE</u></b>	<b><u>BALER MODEL</u></b>	<b><u>INSTALLATION KIT</u></b>
CASE	2001 AND OLDER SQUARE BALERS (TWO TIE)	4485B
HESSTON, MASSEY NEW IDEA, AND CHALLENGER	ALL CONVENTIONAL SQUARE BALERS (TWO TIE)	4485B
HESSTON	4690S AND 4690N	4502B
FREEMAN	THREE TIE BALERS	4506B
NEW HOLLAND	BB 900 AND 585	4507B

## **TOOLS NEEDED**

- Standard wrench set
- Standard socket set
- Standard screw driver or 5/16" nut driver
- Side cutter
- Hose cutter
- Crescent wrench
- Hammer
- Metal drilling and cutting tools
- Center Punch

## **INSTALLATION OF APPLICATOR**

### **1. INSTALLATION OF TANK**

Place tank (005-9203) onto saddle (001-4703). Make sure side tank fitting is placed to the baler's left side when looking at it from the front. Attach straps (001-4402) to saddle using 5/16" x 4" bolts. Make sure to double nut all four bolts.

### **2. INSTALLATION OF MOUNTING BRACKETS**

#### **NEW HOLLAND THREE TIE**

Attach legs part #001-4703B to the tank saddle with 3/8 x 1" bolts, flat and lock washers. The legs will attach on top of the bale chamber in front of the hydraulic compression area. (Figure 1) You will need to drill four 1/2 inch holes on top of the chamber to mount the tank and frame. Clamp legs on top of the bale chamber, mark the holes and drill. The 1/2 x 1 3/4" inch allen head carriage bolts will be inserted through the bale chamber along with flat washers so that the carriage head will be inside of the chamber. Secure the allen head carriage bolts with 1/2 nuts, flat and lock washers.

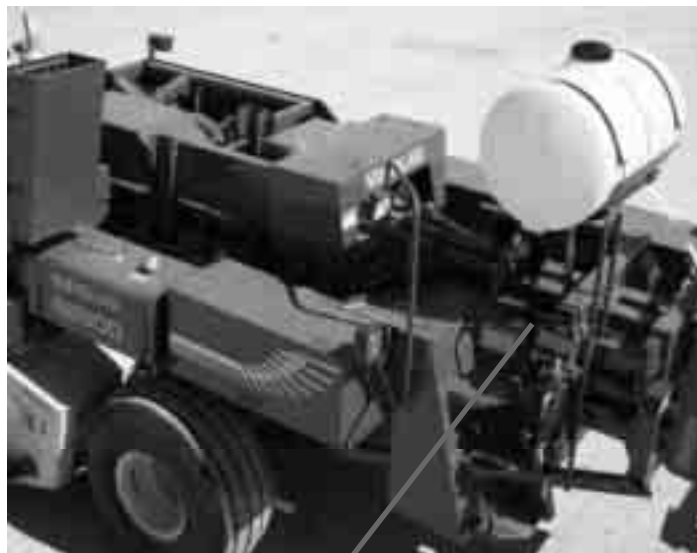


Figure 1

## HESSTON THREE TIE, HESSTON AND CASE INLINE TWO TIE

Attach legs part #001-4703B to the tank saddle with 3/8 x 1" bolts, flat and lock washers. The legs will attach on top of the bale chamber in front of the hydraulic compression area. (Figure 1) You will need to drill four 1/2 inch holes on top of the chamber to mount the tank and frame. Clamp legs on top of the bale chamber, mark the holes and drill. The 1/2 x 1 3/4" inch allen head carriage bolts will be inserted through the bale chamber along with flat washers so that the carriage head will be inside of the chamber. Secure the allen head carriage bolts with 1/2 nuts, flat and lock washers.



Figure 1



## FREEMAN THREE TIE

Attach legs part #001-4703B to the tank saddle with 3/8 x 1" bolts, flat and lock washers. The legs will attach on top of the bale chamber in front of the hydraulic compression area. (Figure 1) You will need to drill four 1/2 inch holes on top of the chamber to mount the tank and frame. Clamp legs on top of the bale chamber, mark the holes and drill. The 1/2 x 1 3/4" inch allen head carriage bolts will be inserted through the bale chamber along with flat washers so that the carriage head will be inside of the chamber. Secure the allen head carriage bolts with 1/2 nuts, flat and lock washers.



Figure 1



Figure 1

### 3. INSTALLATION OF THE PUMP PLATE

#### FOR ALL BALERS



Figure 1



Figure 2



Figure 3

1. Locate the two mounting holes as shown in Figure 1.
2. Connect the pump plate mounting bracket (001-4646C), shown in Figure 2, using two 3/8 x 1 1/4 bolts, nuts, locks, and flat washers to the saddle.
3. Attach the pump plate holder (001-4646D) to pump plate mounting bracket (001-4646C) using four 3/8 x 3/4 flange head bolts. Figure 3.

**The Baler Mounted Processor and pump heads must be pointing down. Failure to mount the pump plate assembly in this specified direction will void all warranty of the Baler Mounted Processor and pumps.**

#### 4. INSTALLATION OF DRAIN/FILL KIT

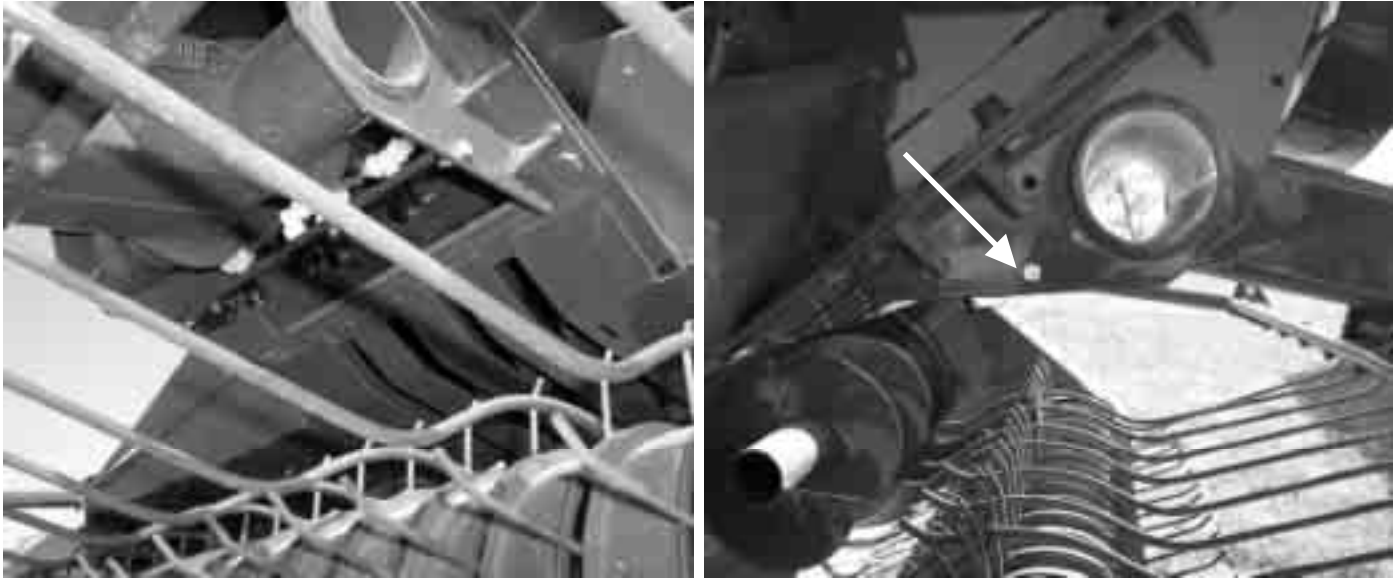
Thread 3/4" elbow fitting into end of tank. (003-EL3434) Run 3/4" hose from the elbow down the frame to the bottom of the baler. Drill 1/4" holes to accept the valve holder bracket and use 5/16" x1 1/4" self-tapping screws. Connect valve assembly to other end of hose. Place hose clamps on both ends. Secure hose to frame using cable locks.





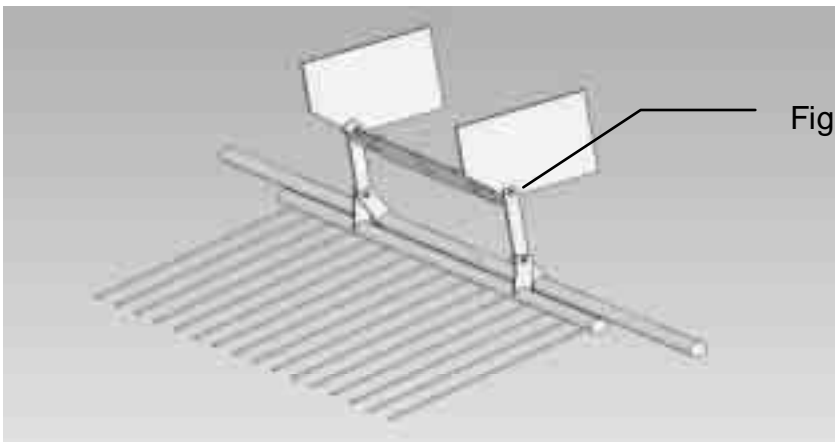
## 5. PLACEMENT OF SPRAY NOZZLE ASSEMBLY

### 4485B FOR ALL IN-LINE CASE-IH AND HESSTON BALERS



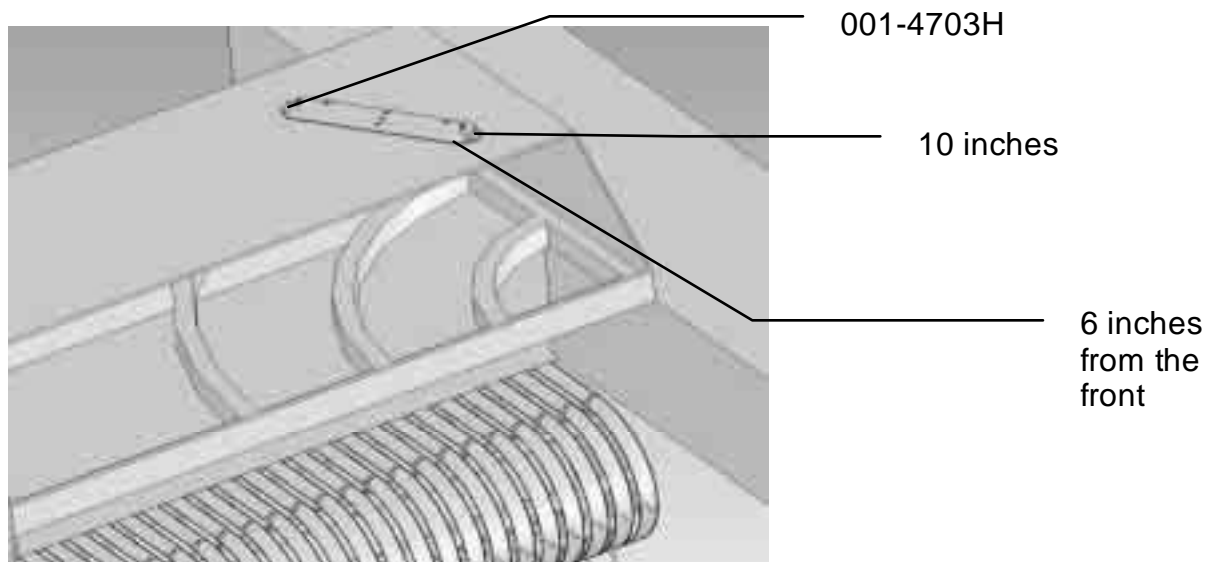
Locate the nozzle holder (001-4722) under the tongue behind the flywheel. Use one existing hole on the right and two existing bolt holes on the left to secure the nozzle holder.

### 4502B FOR HESSTON THREE TIE BALERS



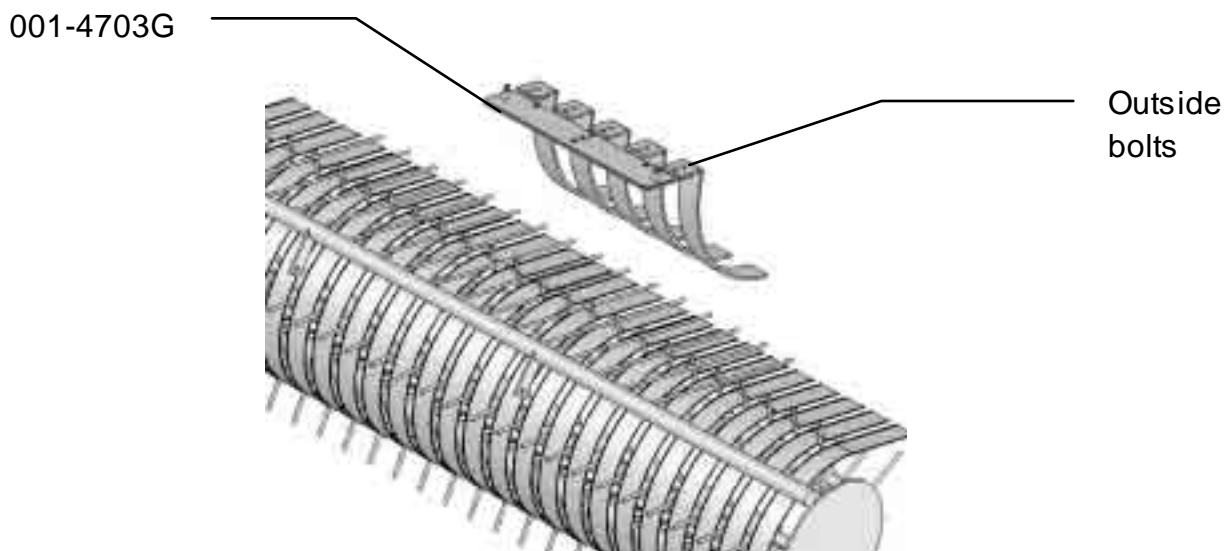
The shield for your baler will mount in the throat of the baler as shown above. Remove nut and bolt on both sides of baler. (Figure 1). Install shield holders (001-4703) with 1/2 x 2" bolts, nuts, locks and flat washers. Do not tighten these bolts until the shield is properly aimed. Aim the shield at bottom of the pickup head at the point where stuffer fingers connect with hay (between the two augers) and make sure the bushing is not removed. Once the shield is in place the nuts may be tightened down.

## 4506B FOR FREEMAN THREE TIE BALERS



The shield for your baler will mount on top of the sheet metal directly above the pickup head shown in the picture above. Mount shield holder (001-4703H) on top of metal 6 inches from the front of the baler and 10 inches from the side of the baler. Attach this holder with  $\frac{1}{4}$  x 1  $\frac{1}{4}$ " self-tapping bolts. Place shield of top of holder and rotate the shield to a 45-degree angle. Mark the location of the next holder's position and install. Five holes will need to be drilled below the tips using a  $\frac{3}{4}$ " holesaw or bit.

## 4507B FOR NEW HOLLAND THREE TIE BALERS



The shield for your baler will mount on the wrap guard as shown in the picture above. Remove the two outside bolts on each side of the wrapper guard. Place bracket 001-4703G so pins are facing up and bolt through with  $\frac{3}{8}$  x 1  $\frac{1}{2}$ " into bracket 001-4703G, through wrap guard, and into threaded holes on baler frame that the bolts were removed from.

## 6. INSTALLATION OF PLUMBING

### A. Intake

Use the 003-EL3412 on the bottom of the tank to route 1/2" line (002-9001) to the 003-A1212 fitting on the ball valve already attached to the pump plate. Attach hose clamps (003-9003) on both of the fittings.

### B. Discharge for Conventional Two Tie Square Balers

The three-1/4" hose assembly will be used to attach the pumps to the spray shield. The pump order is from closest to the filter bowl 1,2 and 3. Pump 1 will attach to the main nozzles that have two tips – attach clear hose to silver tips. Pumps 2 and 3 will attach to the auxiliary nozzles, pump 2: green hose to green tip, pump 3: blue hose to blue tip.

### C. Discharge for Three Tie Balers

The three-1/4" hose assembly will be used to attach the pumps to the spray shield. The pump order is from closest to the filter bowl 1,2 and 3. Pump 1 will attach to the main nozzles that have two tips – attach clear hose to white tips. Pumps 2 and 3 will attach to the auxiliary nozzles, pump 2: green hose to green tip, pump 3: blue hose to red tip.

## 7. INSTALLATION OF STAR WHEELS

### FOR THREE TIE BALERS

The pair of star wheels will need to mount on the top as close to the knotters as possible and at least 3/8" away from any metal. They will need to maintain a safe distance away from the twine.

The star wheels will require two holes to be drilled per block, when drilling make sure to keep the wheel square to the bale chamber. Any angle will cause stress on the wheel and will eventually cause the wheel to work itself out of the block. A template can be found in the back of the manual to help with the placement of the star wheel.

Use the supplied 5/16" allen head carriage bolts and place the carriage head inside of the bale chamber followed by lock and nut. Next attach the star wheels to the bolts followed by the twine diverters 001-4644 and 001-4645. Finally secure the entire block using nuts, locks, and flat washers.

Remove the four screws holding the plastic cover and attach one wire eye loop per star wheel through the grommet and tighten down with the nut attached to the swivel. Reinstall the cover and run the wires up to the pump plate. You will need to use zip ties to attach the wires so as to not interfere with normal baler use.

It is recommended to attach the star wheels on bottom of the bale chamber on all Hesston and Case two tie balers. The star wheels will mount with no twine diverters.



Freeman  
Balers



Hesston and New  
Holland Balers

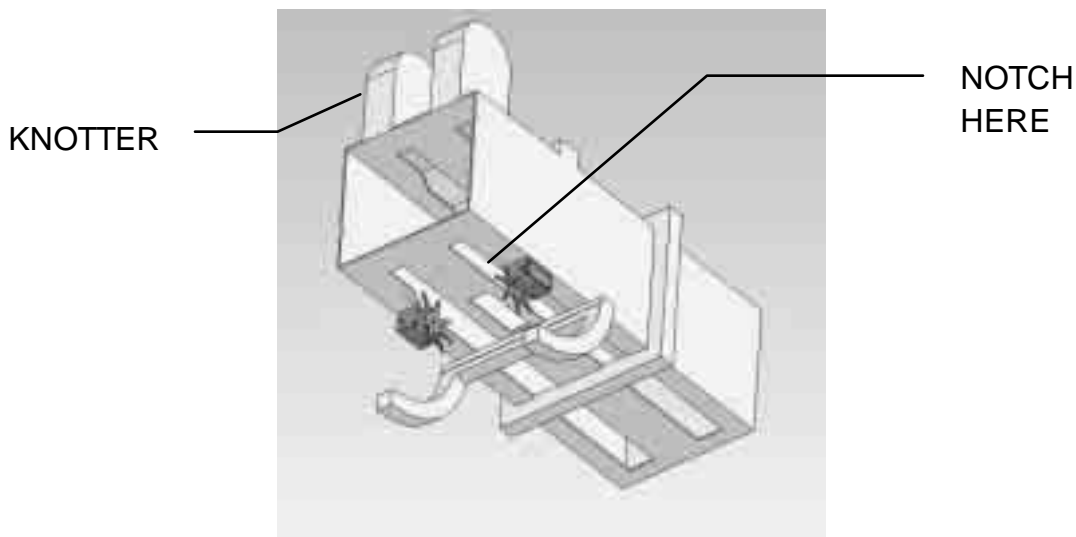
## FOR TWO TIE BALERS

The pair of star wheels will need to mount on the bottom side as close to the front of the bale chute as possible and at least 3/8" away from any metal. They will need to maintain a safe distance away from the twine.

The star wheels will require two holes to be drilled per block, when drilling make sure to keep the wheel square to the bale chamber. Any angle will cause stress on the wheel and will eventually cause the wheel to work itself out of the block. Hesston inline balers require a notch cut on the bottom of the bale chamber to mount the star wheels as close to the front of the chamber as possible. Use template in back of manual to aid in installation.

Use the supplied bolts and place the carriage head inside of the bale chamber followed by lock and nut. Next attach the star wheels to the bolts followed by flat washer, lock washer and nut.

Remove the four screws holding the plastic cover and attach one wire eye loop per star wheel through the grommet and tighten down with the nut attached to the swivel. Reinstall the cover and run the wires up to the pump plate. You will need to use zip ties to attach the wires so as to not interfere with normal baler use.



HESSTON BALERS

## 8. POWER CABLE AND MAIN WIRING HARNESS INSTALLATION

1. Locate the power harness.
2. Connect the power harness (006-4640A) to the battery (12 volt) using the red wire as the positive side and the black wire as the negative.



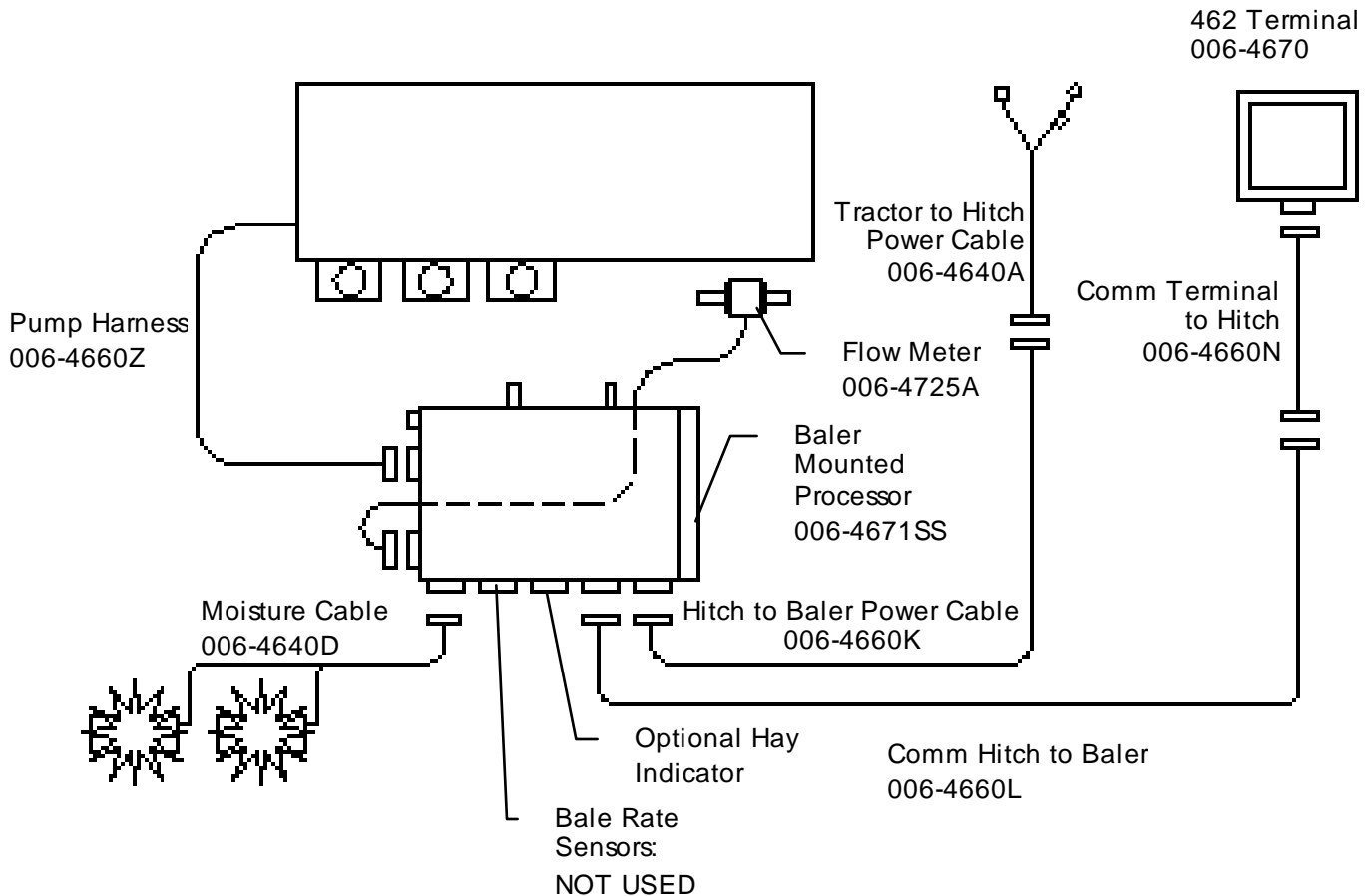
**A) The power harness must be connected to the battery!** The unit will draw more amps than convenience outlets can handle. Any modifications of the power harness will void systems warranty. **CALL HARVEST TEC BEFORE ANY MODIFICATIONS!**

**B) This unit will not function on positive ground tractors.**

**C) If the unit loses power while operating it will not keep track of accumulated pounds of product used.**

3. The power harness (006-4640A) will run from the tractor battery to the hitch. The power harness (006-4660K) will connect to the tractor power harness (006-4640A) at the hitch. Run the Communication harness (006-4660N) from the cab to the hitch. This wire will connect to the Communication harness (006-4660L). These wires will run together to the Baler Mounted Processor (006-4671SS).
4. Connect Flow Meter (006-4725A) to the Baler Mounted Processor.
5. Connect Pump Harness (006-4660Z) the Baler Mounted Processor.
6. If you have the optional Hay Indicator kit connect it to the Baler Mounted Processor.
7. Attach moisture cable (006-4640D) to Baler Mounted Processor.
8. Install Baler Mounted Processor in pump plate using 5/16" lock, nut and flat washers.

### SYSTEM WIRING DIAGRAM



## **INSTALLATION OF CONTROL**

INSTALL THE MOUNTING BRACKET FOR THE CONTROL IN THE CAB.

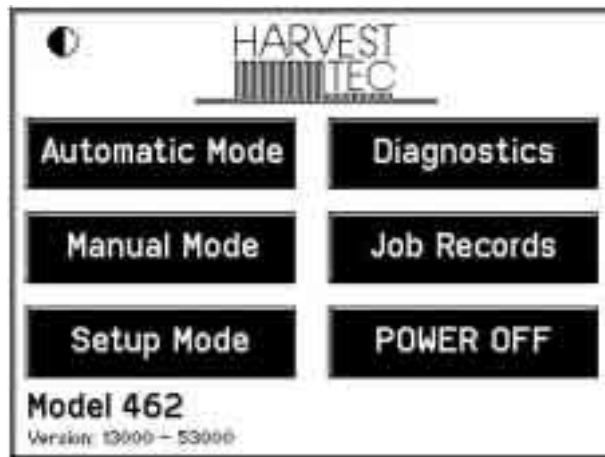
Use the four mounting screws to mount the round base in a convenient area in your cab or on your fender. If unit is mounted on fender it will need to be removed at night and stored in a clean and dry area.

Use the ram mount swivel-positioning nut to tighten the entire assembly. Adjust it so that you can view the entire screen and be able to use the touch screen without interfering with other tractor functions.

Connect communication wire (006-4660N) to the bottom of the terminal.

## 9. DESCRIPTION OF BUTTONS

This system is calibrated for use with Harvest Tec buffered propionic acid. It is designed to apply rates of 16 to 300 pounds (7 to 130 litres) of acid per hour for conventional square, and 32 to 440 pounds (14 to 175 litres) of acid per hour for three tie, and read moisture levels of 10 to 32 percent. The 462 monitor will allow you to set your bale weight, single bale formation time, moisture levels and application rates. The Automatic Mode option will automatically adjust the application rates as the moisture level changes. Manual Mode will allow you to control the application rates on the go. To turn the display on, press anywhere on the right side of the screen.



**AUTOMATIC MODE** This mode allows you to use all of the applicators features such as adjusting preservative application on the go and counting total pounds of product used.


**MANUAL MODE** Allows operator to manually turn pumps on and off. This mode also has moisture content displayed. Use this mode to prime pumps.

**SETUP MODE** This mode allows the operator to adjust bale rate and application rate settings and view or change tip selection.

**DIAGNOSTICS** Allows operator to automatically check performance and output of pumps as well as set the date and time.

**JOB RECORDS** Keeps track of up to 63 jobs with total product used, average moisture content, tons baled, and date of baling.

**POWER OFF** This key turns the unit off. Press anywhere on the right side of the screen to turn the unit on.

 **CONTRAST** This button is your contrast control. Press this button to lighten the screen. When the screen reaches its lightest point, pressing again will return to the darkest setting. Fine tuning the contrast can be accomplished by turning the knob on the bottom right side of the enclosure.

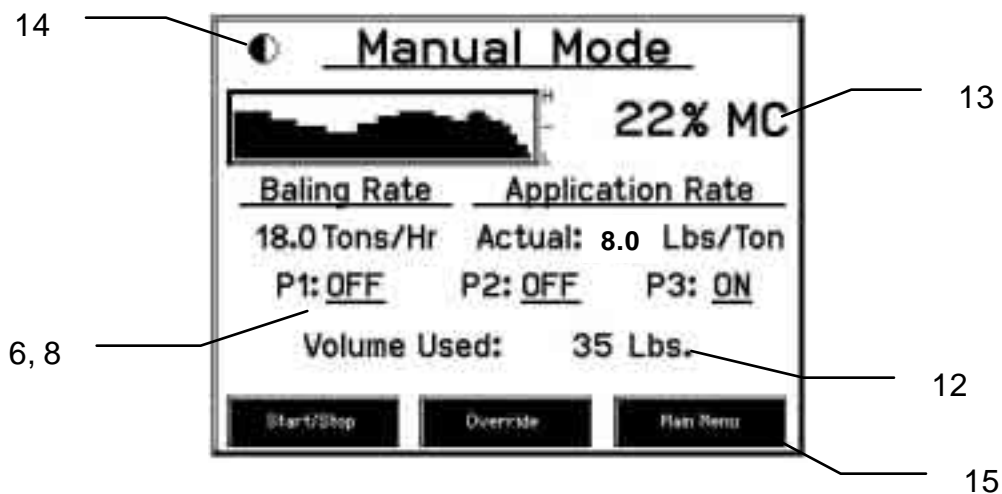


## 10. FIRST TIME AND ANNUAL START UP INSTRUCTIONS

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

### CHECKING AND PRIMING 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 pushing the "Press to Start" key.
4. Press the SETUP MODE key. (**See page 19**) **Select Sensors are: OFF** to disable bale rate sensors. Make sure the AVG Bale Weight is 100 lbs (45kg) and the AVG Baler Length is 36 in (91 cm) and EST Baling Time is 10 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.



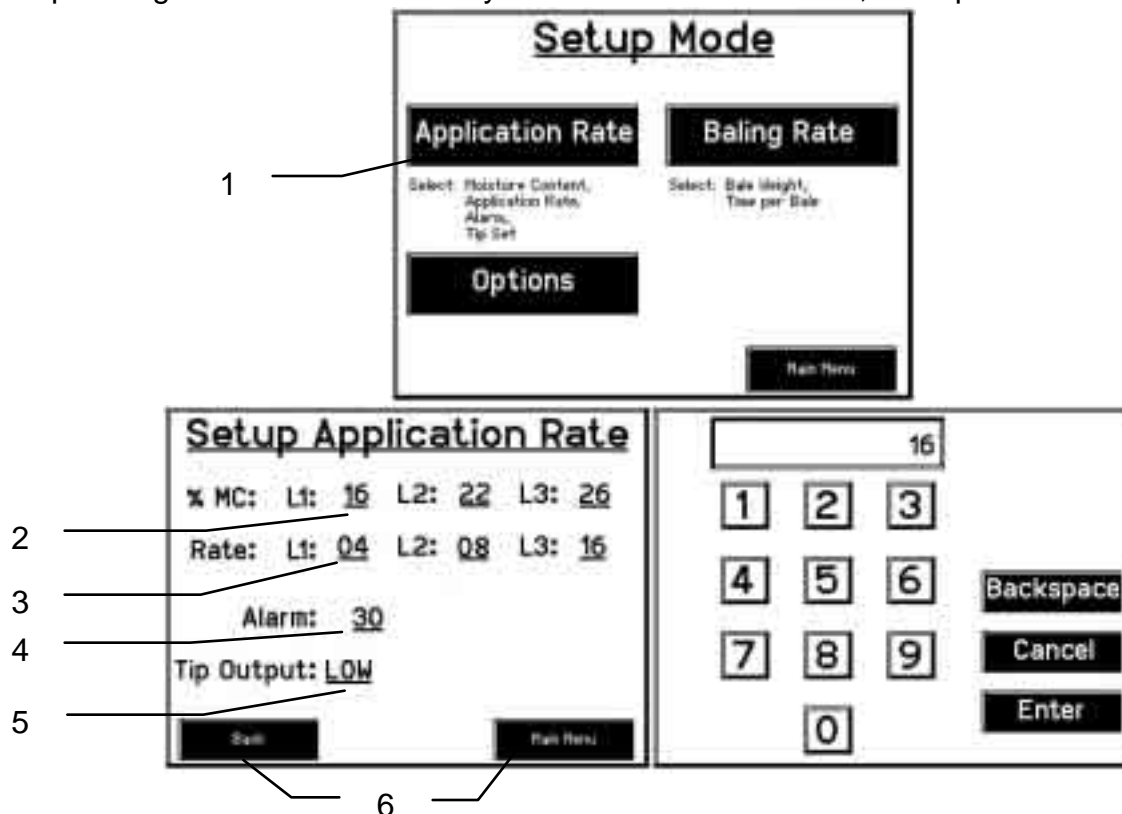
7. **For Conventional Square balers:** Turn pump 1 on (P1). To do this press the underlined area on the screen which says OFF. The application rate should then read between 1.2 – 1.6 Lbs/Ton (0.5 – 0.7 L/MT). Ideally, at 13.5 volts, the rate would read 1.4 Lbs/Ton (0.6 L/MT).
8. Repeat the process for pumps 2 and 3 (P2 and P3). The application rate should read between 3.6 – 5.0 Lbs/Ton (1.5 – 2.1 L/MT) and 6.7 – 9.3 Lbs/Ton (2.8 – 3.9 L/MT) respectively. Ideally, at 13.5 volts, the rate for pump 2 would be 4.3 Lbs/Ton (1.8 L/MT); pump 3 would be 8.0 Lbs/Ton (3.4 L/MT).
9. **For Three Tie:** 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 1.8 – 2.6 Lbs/Ton (0.8 – 1.1 L/MT). Ideally, at 13.5 volts, the rate would read 2.2 Lbs/Ton (0.9 L/MT).
10. Repeat the process for pumps 2 and 3 (P2 and P3). The application rate should read between 3.6 – 5.0 Lbs/Ton (1.5 – 2.1 L/MT) and 9.7 – 13.4 Lbs/Ton (4.1 – 5.6 L/MT) respectively. Ideally, at 13.5 volts, the rate for pump 2 would be 4.3 Lbs/Ton (1.8 L/MT); pump 3 would be 11.4 Lbs/Ton (4.8 L/MT).
11. **This process will also be used to prime the pumps whenever needed.**
12. While running pumps check for a good spray pattern out of the respective tips and verify that no parts of the system are leaking.
13. 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.
14. In order to check moisture reading, have an assistant grab the star wheels. The moisture should read between 17-25 percent depending on how moist their hands are.
15. This button is your contrast control. Press this button to lighten the screen. When the screen reaches its lightest point, pressing again will return to the darkest setting.
16. Press the MAIN MENU key to return to the initial start up screen.

## 11. SETTING UP SYSTEM FOR INITIAL USE

IN THIS MODE YOU WILL SETUP YOUR INITIAL APPLICATION RATE AND BALING RATE

### APPLICATION RATE

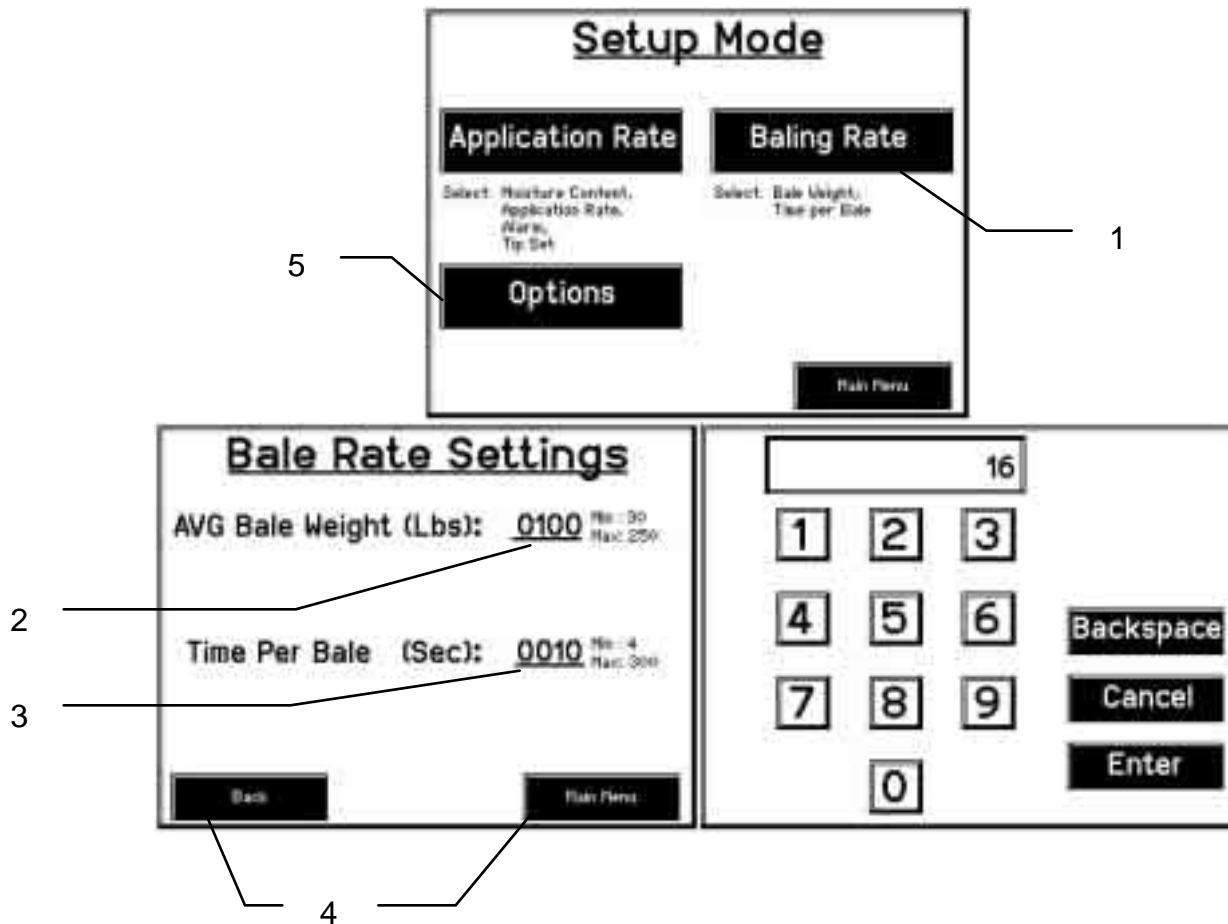
After pushing the SETUP MODE key in the Main Menu screen, the top screen should appear:



1. On this screen the operator will press the APPLICATION RATE key. Once pressed the SETUP APPLICATION RATE screen will be shown. (bottom left picture)
2. Press any of the underlined numbers to the right of %MC to adjust their figures. The key pad shown on the bottom right 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 the RATE:. The key pad shown on the bottom right 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 APPLY THE PROPER RATE.**
4. To set the alarm press on the underlined area. Set the level at which you want the alarm to activate. To turn the alarm off, set level above 35.
5. The TIP OUTPUT should always read LOW for small square two tie balers; only use HIGH for three tie balers. The TIP OUTPUT key allows the operator to select between high and low outputs.
6. Next press the BACK key found on the bottom left hand of the screen to return to the previous screen or press MAIN MENU key on the bottom right hand of the screen to return to the opening screen.

## BALING RATE

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



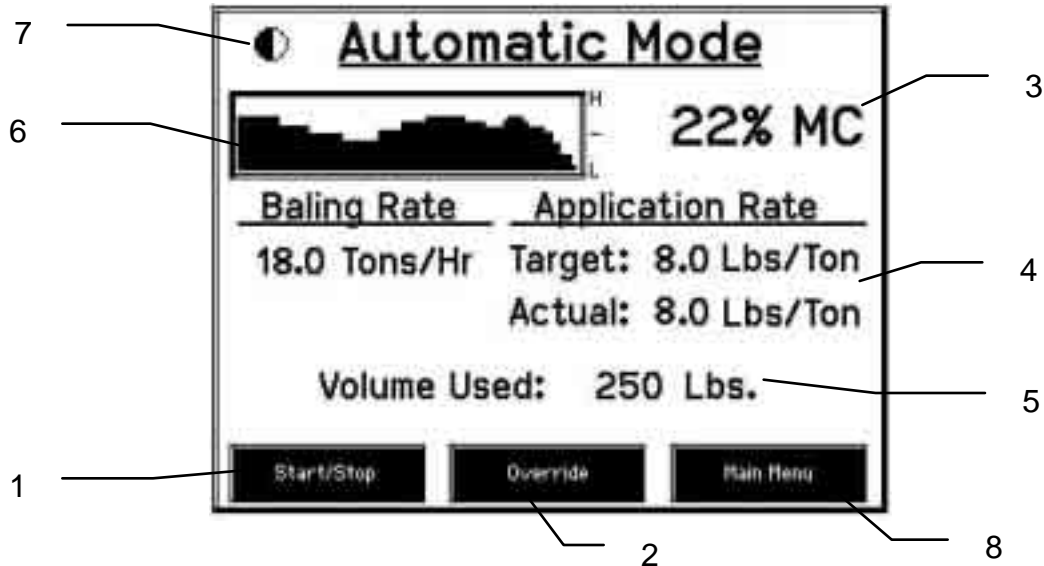
1. On this screen the operator will press the BALING RATE key. This screen is shown on the bottom left side picture shown above.
2. Press the underlined number to the right of AVG Bale Weight (Lbs): to adjust the weight of your bales. The keypad shown on the right side will display. Press any number 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 keypad 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.
4. 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.
5. Press the OPTION key to adjust the touchscreen between metric and standard units and languages.

## OPERATING INSTRUCTIONS

Auto mode will automatically apply product based on both hay moisture content sensed by the star wheels 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

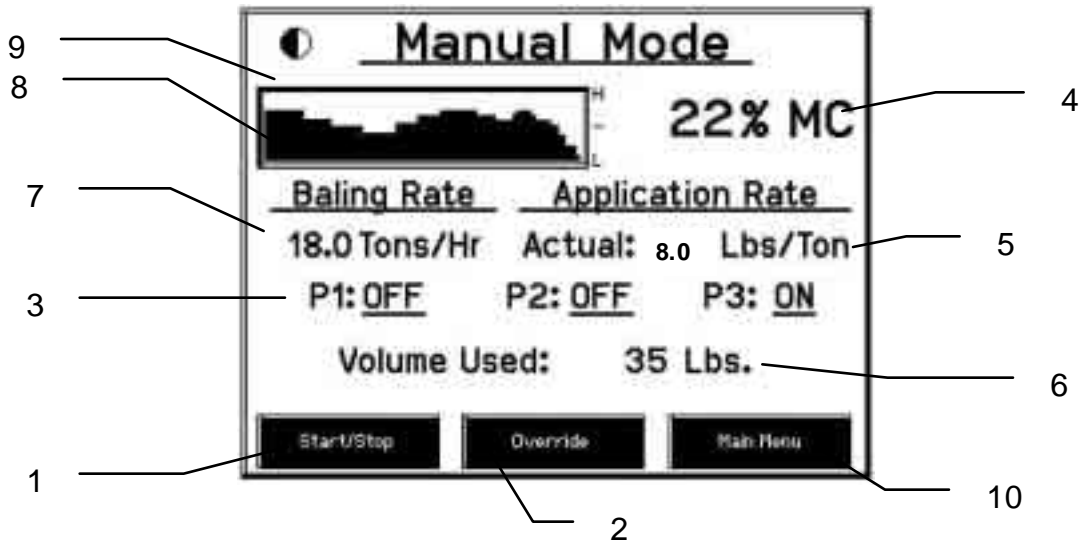
After pushing the AUTOMATIC MODE key in the Main Menu screen, the following screen should appear:



1. Push the START/STOP key to pause the unit 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 set in Setup Mode.
5. 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)**
6. The graph shows the moisture trend from the past 90 seconds in 3 second intervals.
7. This button is your contrast control. Press this button to darken the screen. When the screen reaches its darkest point, when the button is next depressed it will return to lightest setting.
8. 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 baling rate, moisture, or bale weight) the outputs of the pumps are fixed rates as follows:

### Pump outputs for Three Tie (High):

Pump 1 = 40 LBS/HR (17 L/HR)  
 Pump 2 = 75 LBS/HR (32 L/HR)  
 Pump 3 = 205 LBS/HR (86 L/HR)

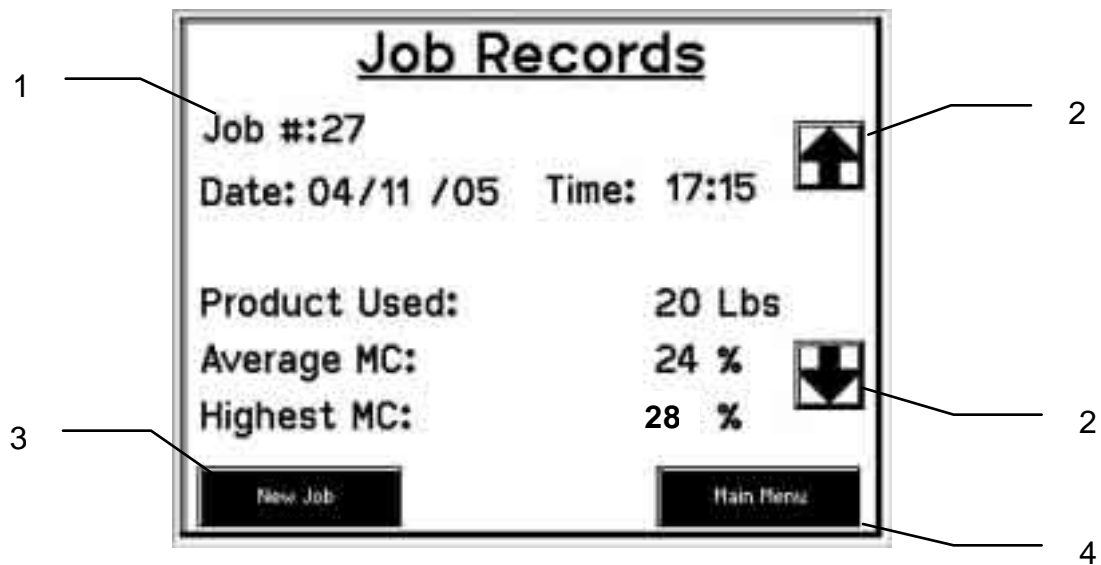
### Conventional Square (Low):

Pump 1 = 25 LBS/HR (11 L/HR)  
 Pump 2 = 75 LBS/HR (32 L/HR)  
 Pump 3 = 145 LBS/HR (61 L/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, above) by the displayed baling rate. For example, if you are running pump three, by itself for conventional square, your output is 145 lbs/hr (65 L/HR). Given the baling rate shown on the above screen of 18 tons/hr (16.3 MT/hr), the application rate should be about 8.0 lbs/ton (3.6 L/MT) (145 lbs/hr divided by 18 tons/hr).
6. Volume used shown at the bottom of the screen will show accumulated pounds (litres) 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 on the following page)
7. The baling rate is set in the Setup Mode menu.
8. The graph shows the moisture trend from the past 90 seconds of baling time (one reading every three seconds).
9. This button is your contrast control. Press this button to lighten the screen. When the screen reaches its lightest point, pressing again will return to the darkest setting.
10. Press the Main Menu key to return to the opening screen.

## JOB RECORDS

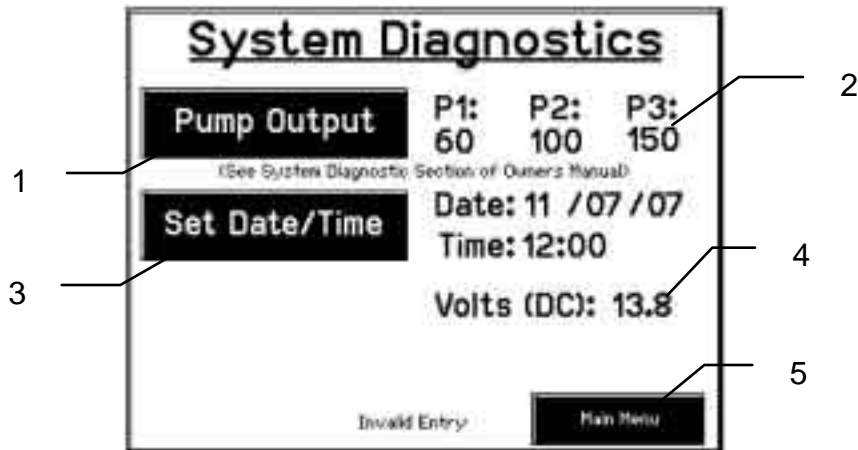
After pushing the JOB RECORDS key in the Main Menu screen, the following screen should appear:



1. The job number will be displayed in the top left corner and will move to the next job when the NEW JOB key is pressed. The current job being viewed will always read "Job #: 0". Product used and average moisture content will be reset when the NEW JOB key is pressed. The job records screen will store up to 63 jobs and will allow you to access previous jobs by using the up and down arrows found on the right side of the screen.
2. Scrolling through previous jobs is done by pressing the UP or Down keys.
3. **Every time the NEW JOB key is pressed the accumulated pounds on auto and manual modes will be reset to zero.** After 63 jobs have been stored, the next time the NEW JOB key is pressed the system will start over with job one and the old job will be replaced.
4. To return the opening screen, press the MAIN MENU key.  
**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.**

## 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 = 21 - 30 LBS/HR (9 - 13 L/HR)
- Pump 2 = 64 - 88 LBS/HR (27 - 37 L/HR)
- Pump 3 = 123 - 170 LBS/HR (52 - 72 L/HR)

#### High output tips:

- Pump 1 = 34 - 47 LBS/HR (14 - 20 L/HR)
- Pump 2 = 64 - 88 LBS/HR (27 - 37 L/HR)
- Pump 3 = 175 - 240 LBS/HR (73 - 101 L/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. When done in this mode, press the MAIN MENU key.

## **COMMON QUESTIONS ABOUT THE 462**

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

To turn the system ON simply press anywhere on the right side of the screen followed by pushing the press to start key. To turn the system OFF, return to the Main Menu screen and press the POWER OFF key.

### **1. 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 application rates and how much product is applied. See SETTING UP FOR INITIAL USE for a detailed explanation of this process.

### **2. The unit is stuck in the MC% screen.**

In the MC% 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.

### **3. 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.

### **4. 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 inputted 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.

### **5. 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.

### **6. 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 star wheel connection. One of the first places to check is inside the white star wheel block. Check to see if the electronic swivel is in the star wheel shaft and check to see that the star wheel shaft is not working out of the block. Also, check all star wheel wires and connectors to see if there is a continuity or grounding problem.



## **MAINTENANCE**

1. Clean the tip strainers and main strainer every 10 hours of operation or more frequently if required.
2. 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.
3. Although the pump can run dry, extended operation of a dry pump will increase wear. Watch the preservative level in the tank.
4. Cover the automatic cab terminal on open station tractors if left outside.
5. Pump performance may start to decline after 400 hours (1500 acres on conventional balers) of use. Rebuilding pumps is a simple procedure if the motor is not damaged. Order pump rebuilding kit #007-4581 for the automatic unit.
6. If you are using bacterial inoculants, flush your system daily after every use.
7. Clean tank cap every 10 hours of operation.

### **Maintenance Schedule**

	<b>Daily</b>	<b>10 hrs</b>	<b>400 hrs</b>	<b>Weekly</b>	<b>Monthly</b>	<b>Season</b>
<b>Diagnostics</b>	X					X
<b>Filter bowl cleaning</b>		X				X
<b>Tip screen cleaning</b>		X				X
<b>Tank cap cleaning</b>		X				X
<b>Dielectric grease connections</b>					X	X
<b>Rebuild pump</b>			X			
<b>Battery connections</b>				X		X
<b>Check valves</b>			X			
<b>Visually inspect hoses</b>				X		X

## **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. During spring start-up, if the pump is frozen turn off the power immediately to avoid burning the motor out. The pump head can be disassembled and freed or rebuilt in most cases.
7. Disconnect power from the system.
8. Remove display from the tractor and store in a warm, dry place.

## **TROUBLE SHOOTING CHECKS:**

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>SOLUTION</b>
Pump will not run.	1. No voltage to Baler Mounted Processor.	1. Check for short, low voltage, and replace fuse if necessary.
	2. Pump locked up.	2. Clean or rebuild pump if motor is OK.
	3. Damaged wire.	3. Repair damaged wire.
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 outlet 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 star wheels and baler mounted processor.	1. Reconnect wire.
	2. Low power supply to baler mounted processor.	2. Check voltage at box. (Min of 12 volts required.) See Diagnostics section of manual.
	3. Wet hay over 32% moisture	
	4. Ground contact with one or both star wheels and baler mounted processor.	4. Reconnect.
	5. Short in wire between star wheels and baler mounted processor.	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 baler mounted processor.
	2. Wiring short in signal to baler mounted processor.	2. Inspect wire and replace if necessary.
	3. Clog in meter.	3. Back flush with water. <b>DO NOT USE AIR.</b>

Product shown is more than actual product used.	1. High voltage supplied to the meter.	1. Check voltage at baler mounted processor. 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.
System leaks product out of tips after shutdown.	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 always displays "End of Row Pause".	1. Flow meter connector plug is plugged into Hay Indicator port on Baler Mounted Processor.	1. Switch ports.
Display will not power up.	1. Display connector plug and bale rate sensors plug are switched on the Baler Mounted Processor.	1. Switch plugs.

## **BACKUP FUSE**

The Model 462 is equipped with a backup system if your display is not functioning. This function is intended for use only as a temporary means for application and not as a way to apply preservative over multiple fields or for a lengthy amount of time. The baler mounted processor has a location for a backup fuse on the same side as the pump and flowmeter harness that bypasses all other system inputs and applies preservative using one pump (Pump Three) at a constant lbs/hour shown below. These values are based upon an input voltage of 13.5 DC. Insert at least a 10 amp up to 20 amp fuse (3 AG style) into the backup fuse port to activate the bypass. The system will not turn off or pause until the fuse is removed. The main fuse must also be functional for the backup fuse to work.

	<b>Tip Set</b>	<b>Output (lbs/hour)</b>
<b>462</b>	High	180
	Low	150

## WIRING DIAGRAMS

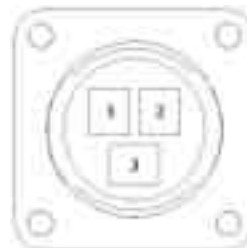
### A. Main power connector mounted on battery

Pin 1	Red	+ 12 V input from tractor supply
Pin 2	Black	Ground from tractor supply
Pin 3	Not used	



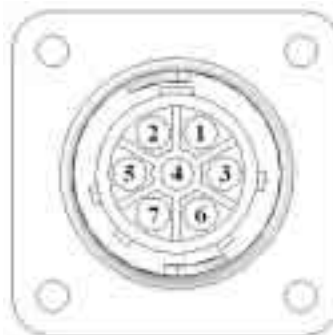
### B. Main power connector mounted on BMP

Pin 1	Red	+ 12 V input from tractor supply
Pin 2	Black	Ground from tractor supply
Pin 3	Not used	



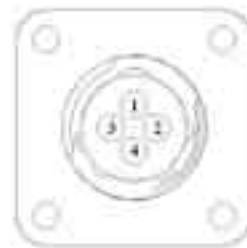
### C. Pump connection colors

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 BMP

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 BMP

*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. Bale rate sensors on BMP**

Pin1	Brown	Sensor power
Pin2	Black	Signal for front prox. sensor
Pin3	Blue	Sensor ground
Pin4	Black	Signal for back prox. sensor



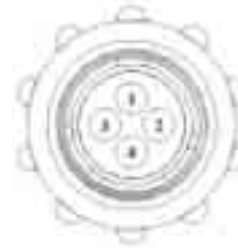
**G. Star wheel connector mounted on BMP**

Pin 1	Brown	Star wheel input 1
Pin 2	Blue	Star wheel input 2
Pin 3	Brown	Diagnostic 1
Pin 4	Blue	Diagnostic 2
Pin 5	Silver	Shield
Pin 6	Silver	Shield
Pin 7	Not used	
Pin 8	Not used	
Pin 9	Not used	



**H. Communication harness display to hitch**

Pin 1	Red	Power to display
Pin 2	Black	Ground to display
Pin 3	Blue	Comm channel OH
Pin 4	Orange	Comm channel OL

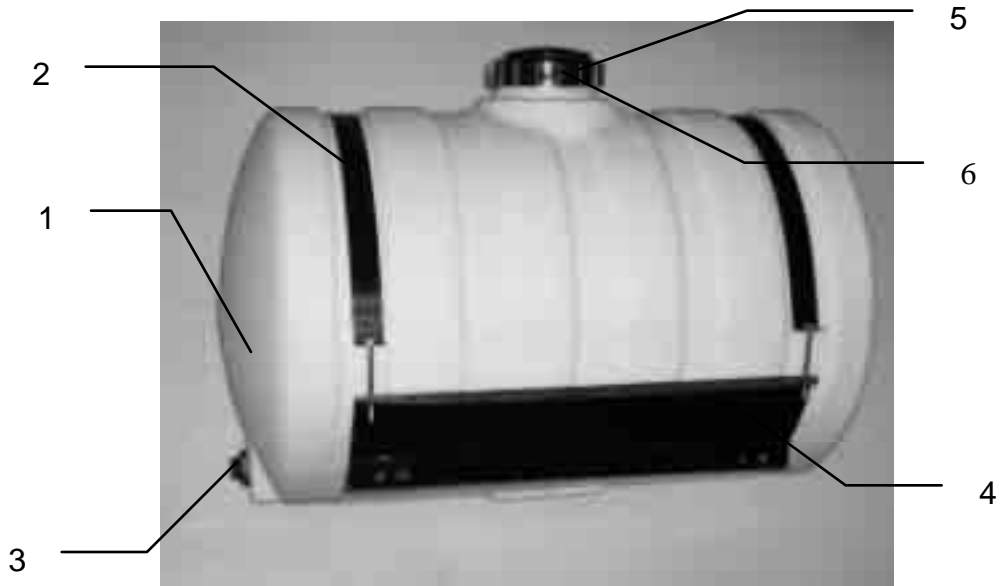


**I. Communication harness hitch to baler mounted processor**

Pin 1	Red	Power to display
Pin 2	Black	Ground to display
Pin 3	Blue	Comm channel OH
Pin 4	Orange	Comm channel OL



# HARVEST TEC MODEL 450 BASE KIT



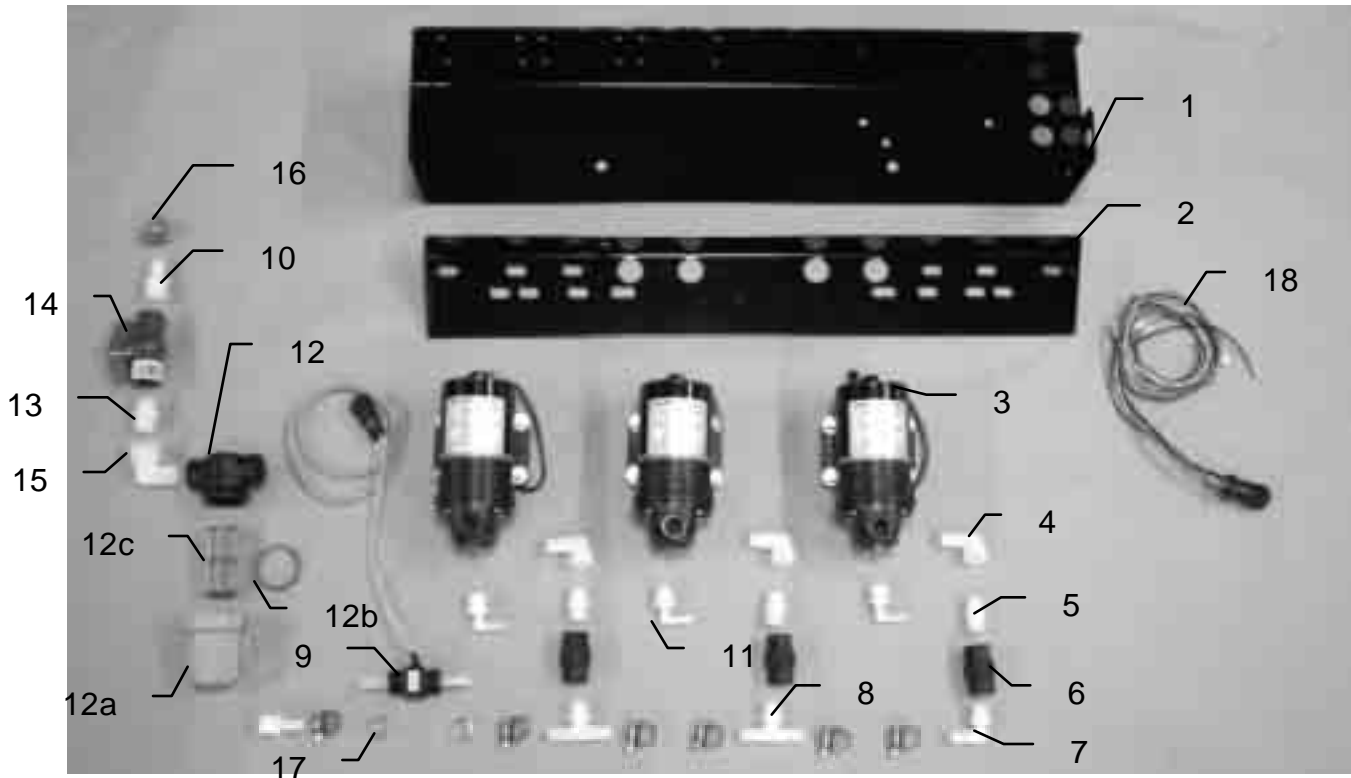
<u>Ref#</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Tank	005-9023	1
2	Straps	001-4402	2
3	Tank Fitting	005-9100	2
4	Saddle	001-4703	1
5	Tank Cap	002-9022C	1
6	Tank Gasket	002-9022CG	1

# PARTS BREAKDOWN FOR DRAIN FILL KIT



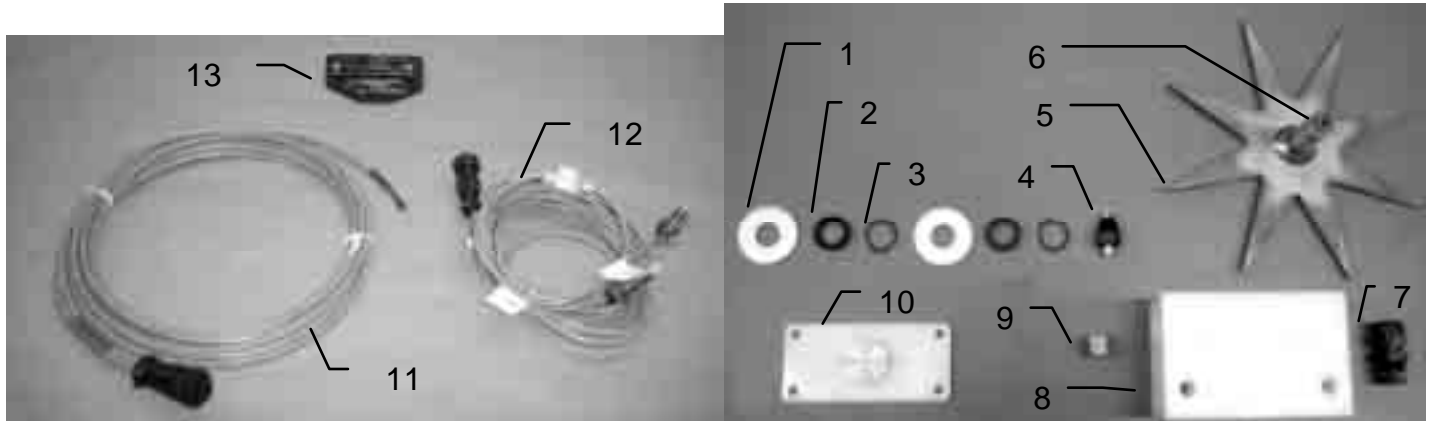
<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Straight Fitting	003-A3434	1	5	Male Coupler	002-2205G	1
2	Elbow	003-EL3434	1	6	Valve Holder	001-6702H	1
3	Hose Clamps	003-9004	2	7	Ball valve	002-2200	1
4	Female Coupler	002-2204A	1	8	Jiffy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

# PARTS BREAKDOWN FOR PUMP PLATE

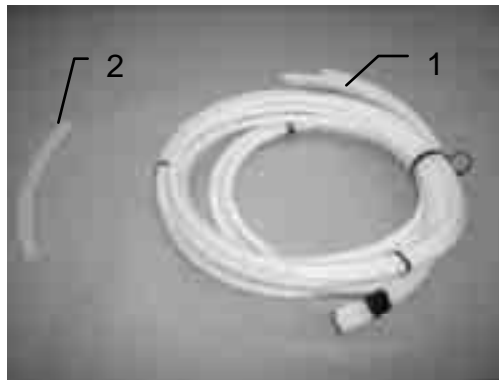


<u>Ref#</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Pump plate	001-4646D	1
2	Mounting Bracket	001-4646C	1
3	Pump	007-4120H	3
4	Street elbow fitting	003-SE38	3
5	Nipple fitting	003-M3838	3
6	Check valve	002-4566F	3
7	Elbow fitting	003-EL3812	1
8	Tee fitting	003-T3812HB	2
9	Flow meter assembly	006-4725A	1
10	Straight fitting	003-A1212	2
11	Elbow fitting	003-EL3814	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 (1 per pump)	007-4581	1
NP	Not Pictured		

# PARTS BREAKDOWN FOR STAR WHEEL SENSOR, BALE RATE SENSOR, AND HOSES



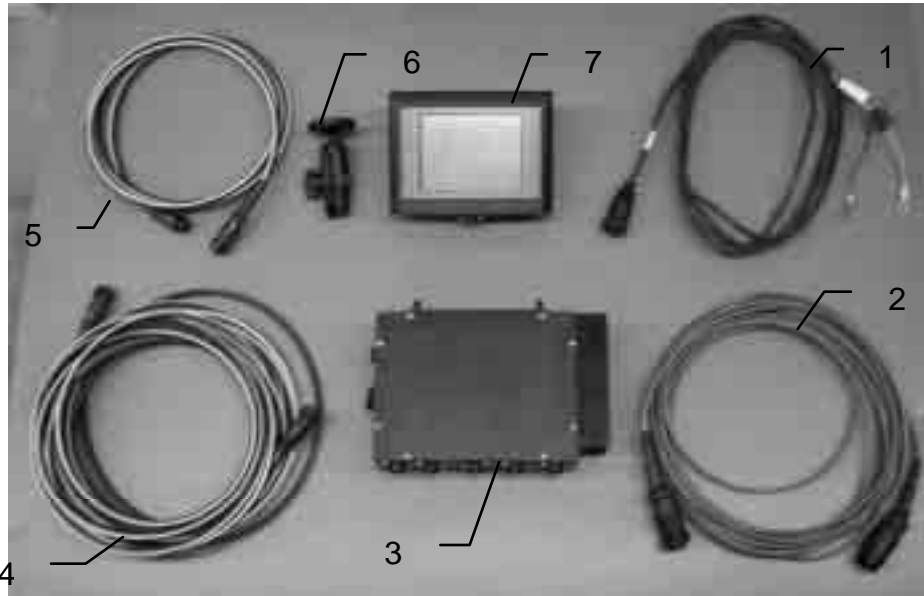
<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>	<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Washer		4	8	Star wheel block	006-4641A	2
2	Dust Seal		4	9	Plug Fitting	003-F38	2
3	Snap Ring		4	10	Block Cover	006-4641B	2
4	Swivel	006-4642A	2	11	Moisture cable	006-4640D	1
5	Star Wheel	006-4641C	2	12	Bale rate sensors	006-7202	1
6	Insert	006-4642B	2	13	Prox holder	001-4644SS	1
7	Wiring grommet	008-0821A	2	<b>1-10</b>	<b>Star wheel assembly</b>	<b>030-4642</b>	<b>2</b>



<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Triple weld hose (from pumps to tips)	002-9016	15ft
		002-9016B	15ft
		002-9016G	15ft
	Hose assembly (3 hose assembly)	030-9016SS	1
2	½" Hose (tank to filter)	002-9001	6ft

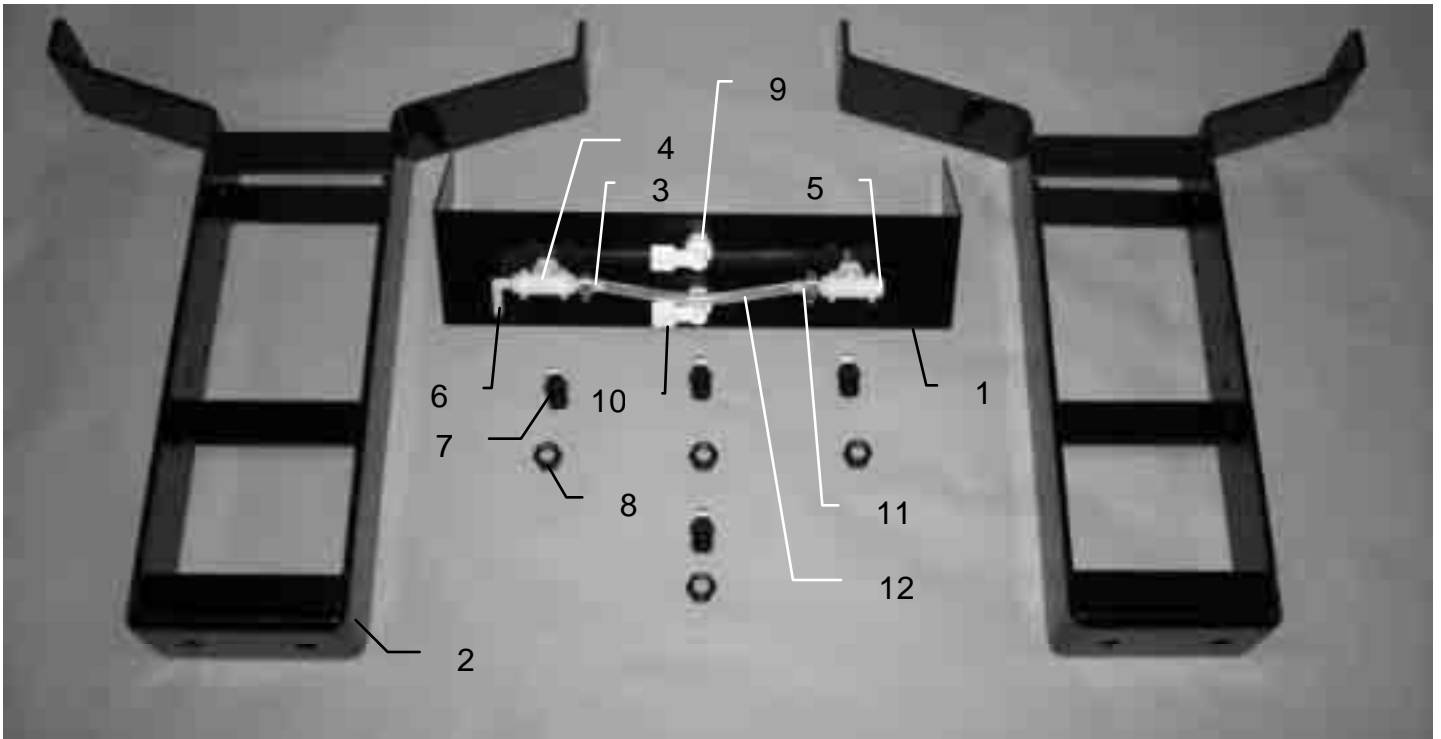


# PARTS BREAKDOWN FOR CONTROL BOX AND WIRING HARNESES



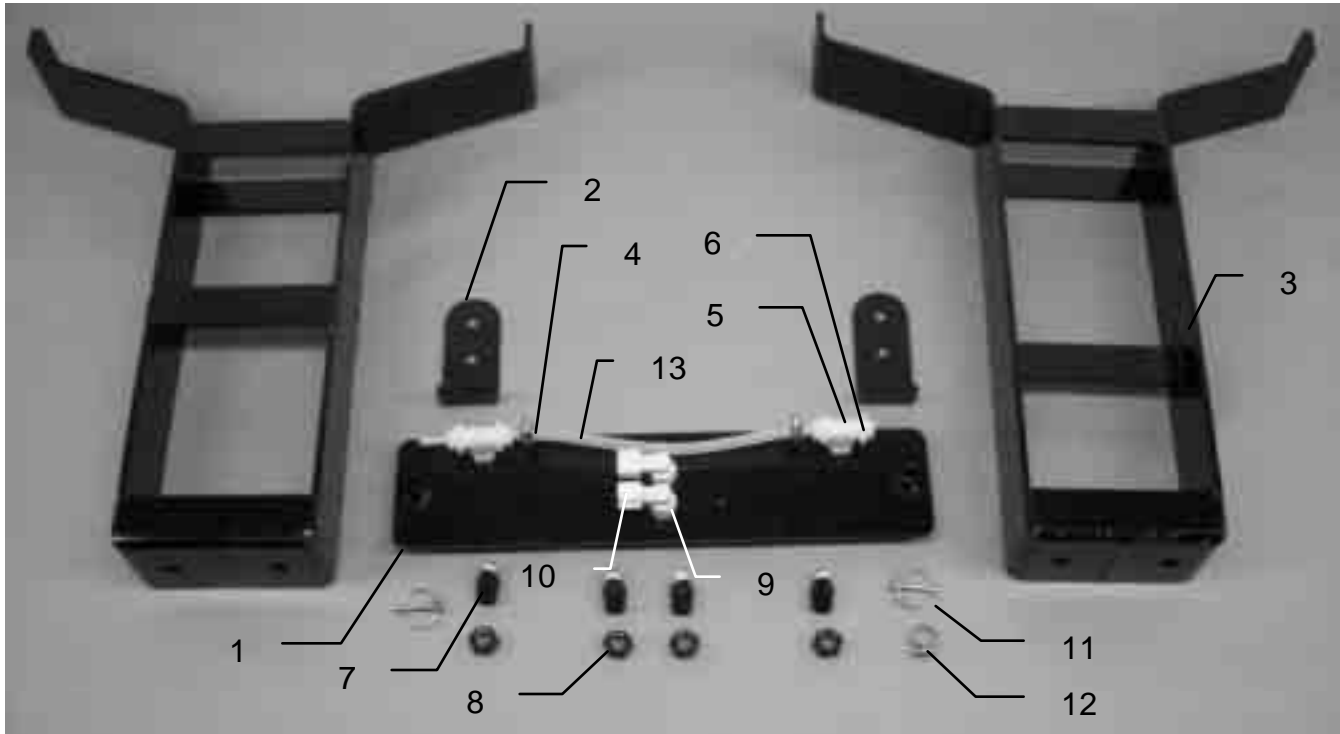
<u>Ref.</u>	<u>Description</u>	<u>Part#</u>
1	Power lead tractor	006-4640A
2	Power lead baler	006-4660K
3	Baler mounted processor	006-4671SS
4	Communication harness (baler)	006-4660L
5	Communication harness (tractor)	006-4660N
6	Ram mount	001-2012H
7	462 Terminal	006-4670

# HARVEST TEC MODEL 4485B INSTALLATION KIT FOR CASE & HESSTON INLINE SQUARE BALERS



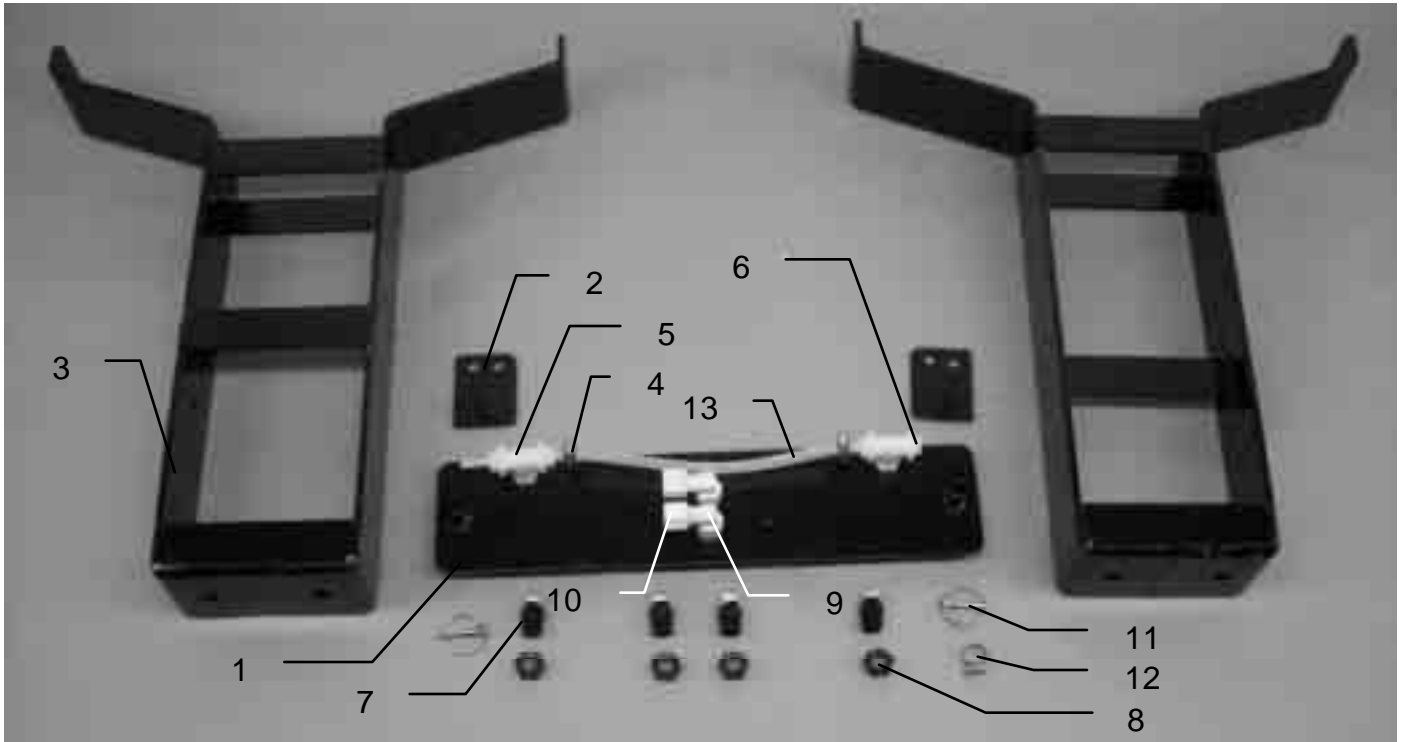
<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Spray shield	001-4722	1	NP	Tip	004-XR110015VS	1
2	Tank leg	001-4703B	2	NP	Tip	004-XR11003VS	1
3	Straight fitting	003-A1414	3	NP	Tip	004-650050-PT	2
4	Tee	003-TT14	2	NP	Tip Strainer	004-4213-200	4
5	Plug	003-F14	1				
6	Elbow	003-EL1414	1	NP	Not Pictured		
7	Nozzle body	004-4722	4				
8	Nozzle cap	004-4723	4				
9	Jaco elbow	004-JEL1414F	2				
10	Jaco nut	003-JN14	2				
11	Hose clamp	003-9002	3				
12	Hose	002-9006	1ft				

# HARVEST TEC MODEL 4502B INSTALLATION KIT FOR HESSTON THREE TIE BALERS



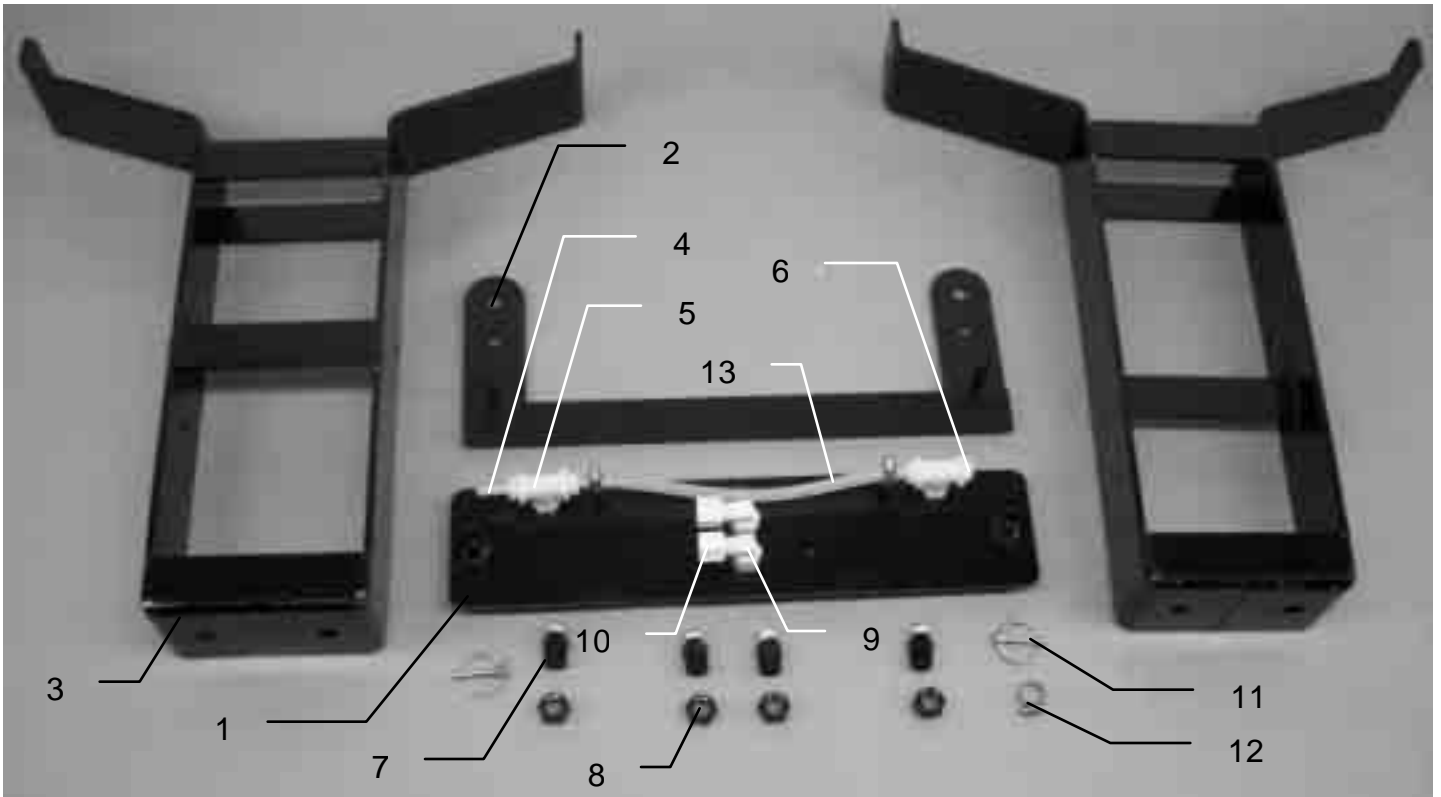
<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Spray shield	001-4703G	1	NP	Tip	004-XR110015VS	1
2	Shield holder	001-4703I	2	NP	Tip	004-XR11004VS	1
3	Tank leg	001-4703B	2	NP	Tip	004-650050-PT	2
4	Straight fitting	003-A1414	3	NP	Tip Strainer	004-4213-200	4
5	Tee	003-TT14	2				
6	Plug	003-F14	1	NP	Not Pictured		
7	Nozzle body	004-4722	4				
8	Nozzle cap	004-4723	4				
9	Jaco elbow	004-JEL1414F	2				
10	Jaco nut	003-JN14	2				
11	Lynch pin	008-4576	2				
12	Hose clamp	003-9002	3				
13	Hose	002-9006	2ft				

# HARVEST TEC MODEL 4506B INSTALLATION KIT FOR FREEMAN THREE TIE BALERS



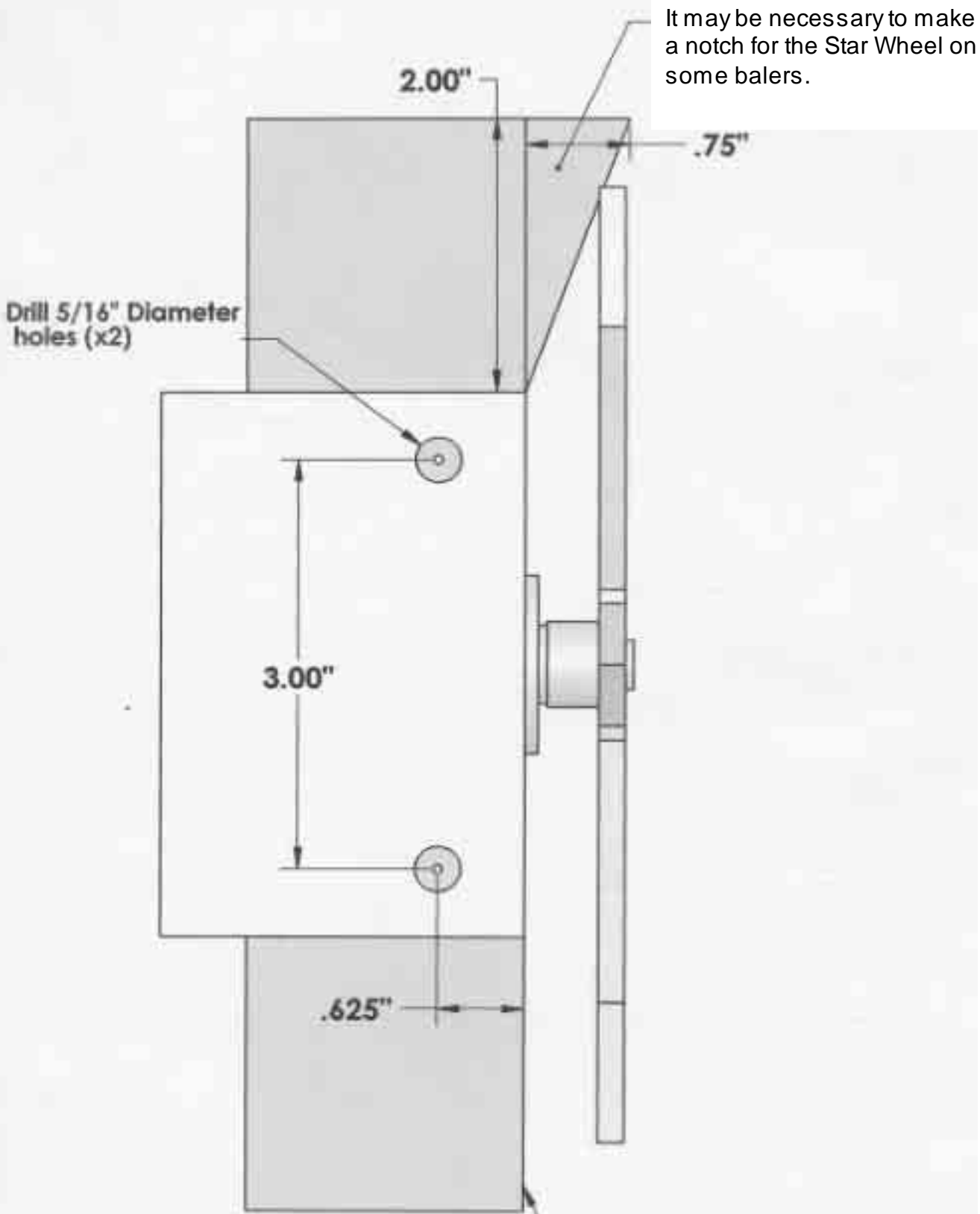
<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Spray shield	001-4703G	1	NP	Tip	004-XR110015VS	1
2	Shield holder	001-4703H	2	NP	Tip	004-XR11004VS	1
3	Tank leg	001-4703B	2	NP	Tip	004-650050-PT	2
4	Straight fitting	003-A1414	3	NP	Tip Strainer	004-4213-200	4
5	Tee	003-TT14	2				
6	Plug	003-F14	1	NP	Not Pictured		
7	Nozzle body	004-4722	4				
8	Nozzle cap	004-4723	4				
9	Jaco elbow	004-JEL1414F	2				
10	Jaco nut	003-JN14	2				
11	Lynch pin	008-4576	2				
12	Hose clamp	003-9002	3				
13	Hose	002-9006	2ft				

# HARVEST TEC MODEL 4507B INSTALLATION KIT FOR NEW HOLLAND 3 TIE BALERS



<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	Spray shield	001-4703G	1	NP	Tip	004-XR110015VS	1
2	Shield holder	001-4703J	1	NP	Tip	004-XR11004VS	1
3	Tank leg	001-4703B	2	NP	Tip	004-650050-PT	2
4	Straight fitting	003-A1414	3	NP	Tip Strainer	004-4213-200	4
5	Tee	003-TT14	2				
6	Plug	003-F14	1	NP	Not Pictured		
7	Nozzle body	004-4722	4				
8	Nozzle cap	004-4723	4				
9	Jaco elbow	004-JEL1414F	2				
10	Jaco nut	003-JN14	2				
11	Lynch pin	008-4576	2				
12	Hose clamp	003-9002	3				
13	Hose	002-9006	2ft				

# NOTES:



It may be necessary to make a notch for the Star Wheel on some balers.

Drill 5/16" Diameter holes (x2)

2.00"

.75"

3.00"

.625"

Edge of Star Wheel base should line up with the inside edge of bale chamber.

## **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.

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