

Operation Manual

***Model 445, 451 & 450
25 & 55 gallon Automatic Preservative Applicator***



HayBoss™
G2

#010-0445-450-451-OPR
Revised 5/22

Introduction

Congratulations on purchasing a Harvest Tec Model 445, 450 & 451 applicator. The 445, 450 & 451 applicator is designed to apply a buffered propionic acid on to the forage crop as it is being baled. The 445, 450 & 451 applicator 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

<u>Baler make</u>	<u>Baler model</u>	<u>Model number</u>	<u>Installation kit</u>	<u>Tank size</u>
Case IH	SBX530, SBX540, SBX550, SB 531 – SB 551 square balers	445	4415B	25 gallon
John Deere	All small square balers	445	4410B	25 gallon
Massey Ferguson	124 / 128	445	4412B	25 gallon
New Holland	570, 575, 580 & BC 5060 – BC 5080 square balers	445	4415B	25 gallon
Case IH & New Holland & Others	Case IH SBX 520, SB 521 New Holland 200 & 300 series, 565, BC 5050 & all others	445	4409B	25 gallon
Case IH	SBX530, SBX540, SBX550, SB 531 – SB 551 Square balers	451	4415B	55 gallon
New Holland	570, 575, 580 & BC 5060 – BC 5080 Square balers	451	4415B	55 gallon
Case IH	2001 and older small square Balers (two tie)	450	4485B	55 gallon
Hesston, Massey, New Idea, & Challenger	All small square (two tie)	450	4485B	55 gallon
Hesston, Massey, New Idea, & Challenger	All three tie balers	450	4502B	55 gallon
Freeman	All three tie balers	450	4506B	55 gallon
New Holland	BB 900 & 585	450	4507B	55 gallon

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For AGCO part cross-reference visit: www.harvesttec.com/system.html

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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.

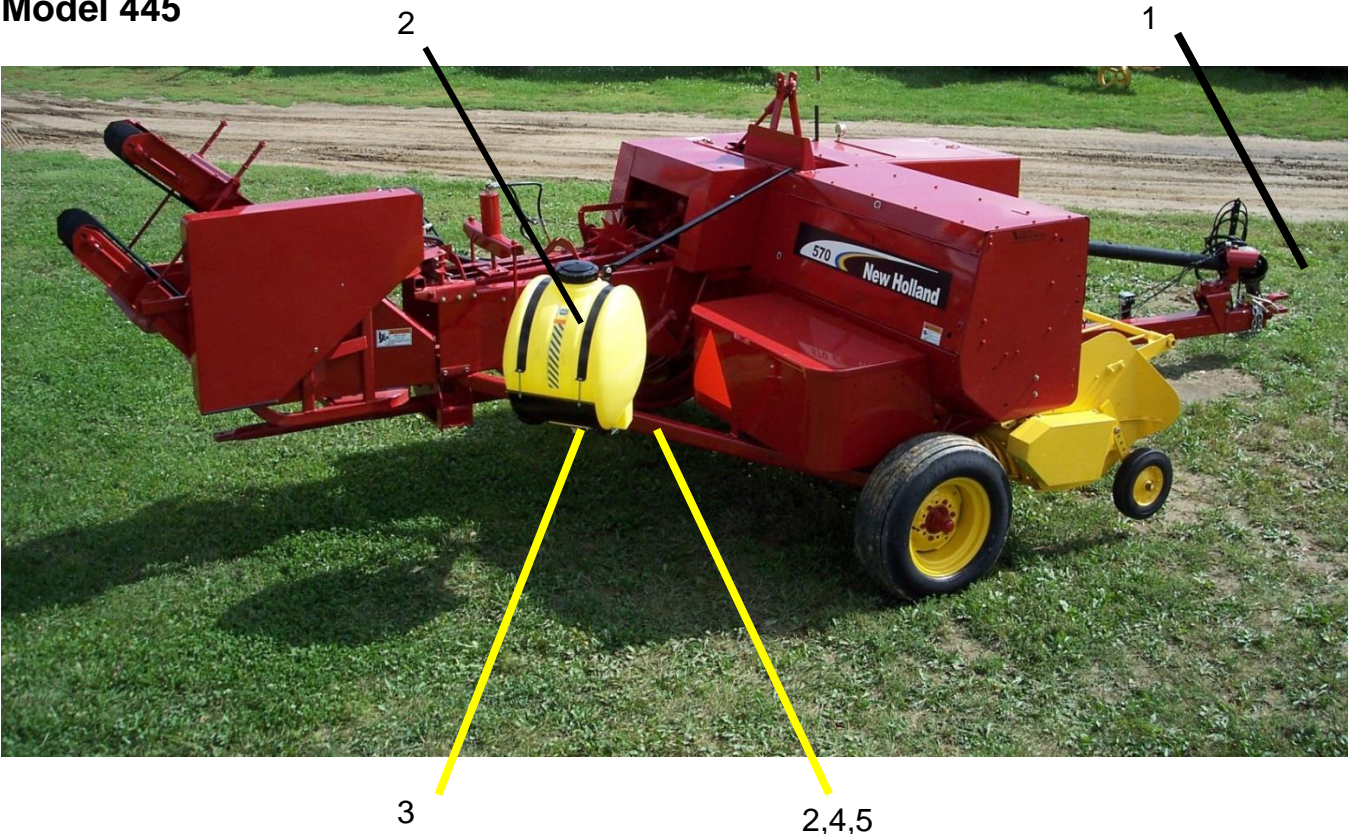
Carefully read and understand all of the baler safety signs before installing or servicing the baler. Always use the supplied safety equipment on the baler to service the applicator.

Safety sign locations

Model 450 & 451

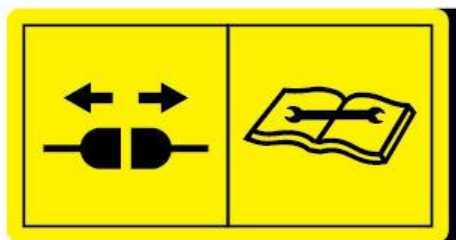


Model 445



For AGCO part cross-reference visit: www.harvesttec.com/system.html

Safety Signs – continued



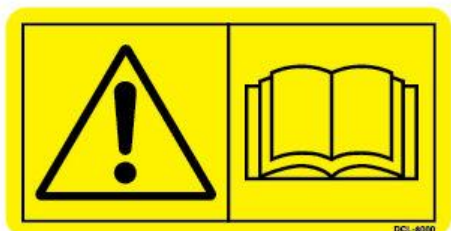
Number 1
Spraying hazard. Disconnect power before servicing the applicator
Part no. DCL-8003



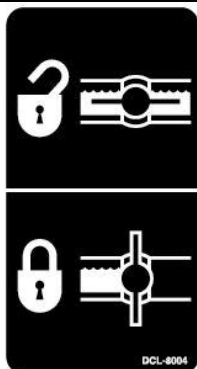
Number 2
Falling hazard. Do not step in this area.
Part no. DCL-8002



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

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.

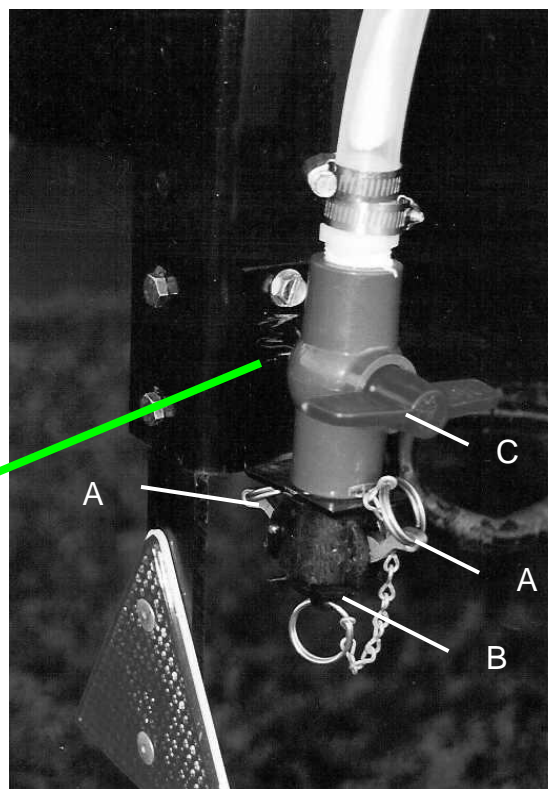
Filling the tank (Model 450 & 451):

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.



Drain/Fill line on the baler



Enlarged view of the drain/fill line valve and cam-coupler assembly.

Filling the tank (Model 445):

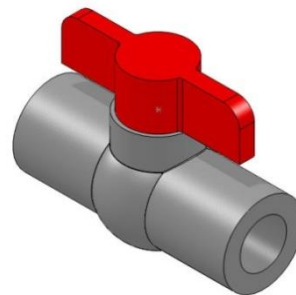
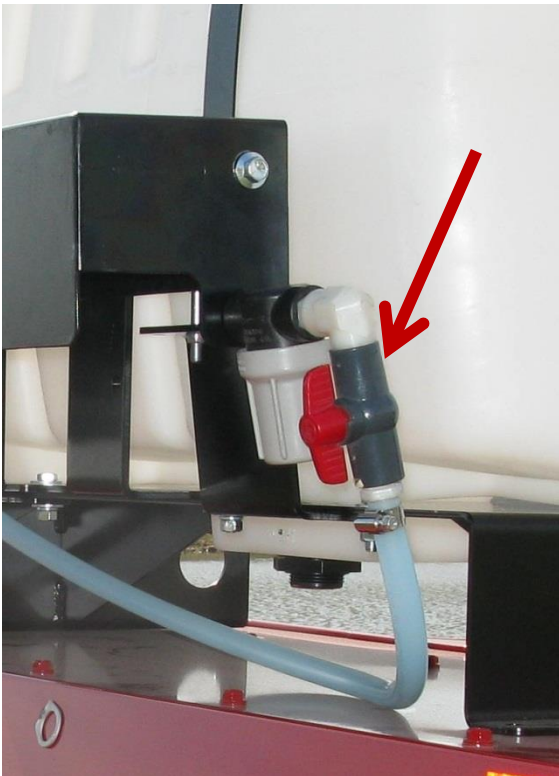
Read the label of the product being filled into the tank to determine what individual protective measures need to be taken. Clean the tank lid area and unscrew the lid. Transfer product from the container into the tank.

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

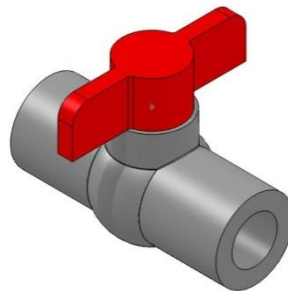
Operation of the main ball valve

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. The arrow below points at the valve.



Valve open



Valve closed

Connecting the power harness

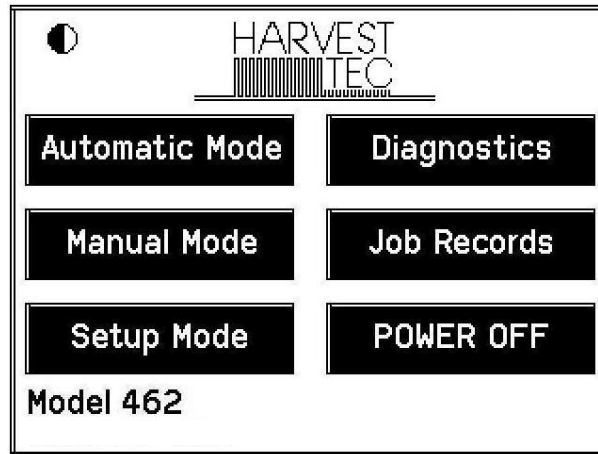
The power harness that supplies power from the tractor battery to the applicator pump has a disconnect at the hitch. Connect the two together for operation. Always disconnect before servicing the applicator or baler.

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

For AGCO part cross-reference visit: www.harvesttec.com/system.html

Description of Screens & 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 16 to 300 pounds of acid per hour 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 followed by pushing the "Press to Start" key.



Main Menu 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.



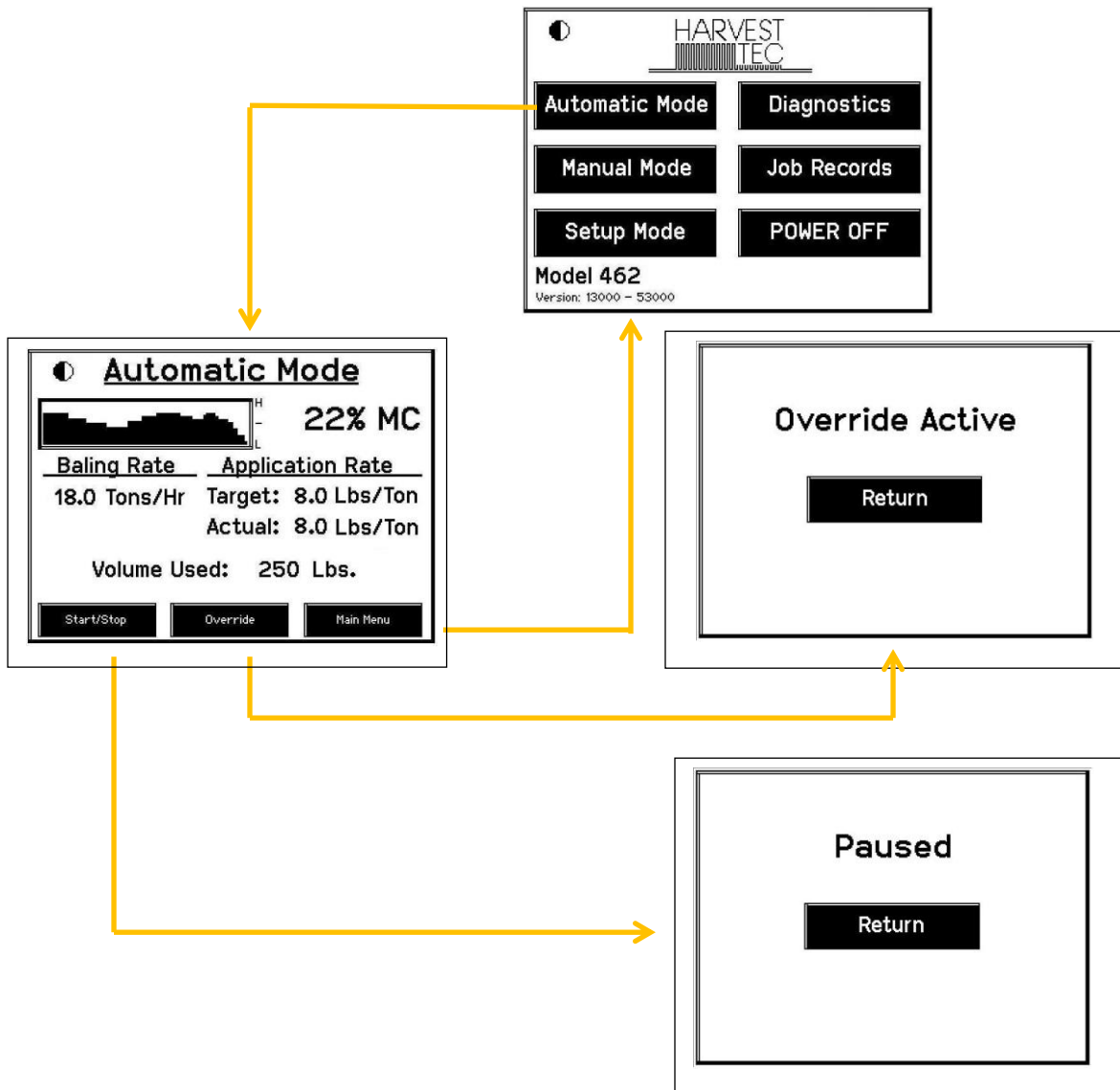
CONTRAST This button is your contrast control. Press this button to lighten the screen. When the screen reaches its lightest point, pressing again will return to the darkest setting. Fine tuning the contrast can be accomplished by turning the knob on the bottom right side of the enclosure.

For AGCO part cross-reference visit: www.harvesttec.com/system.html

Screen Menus

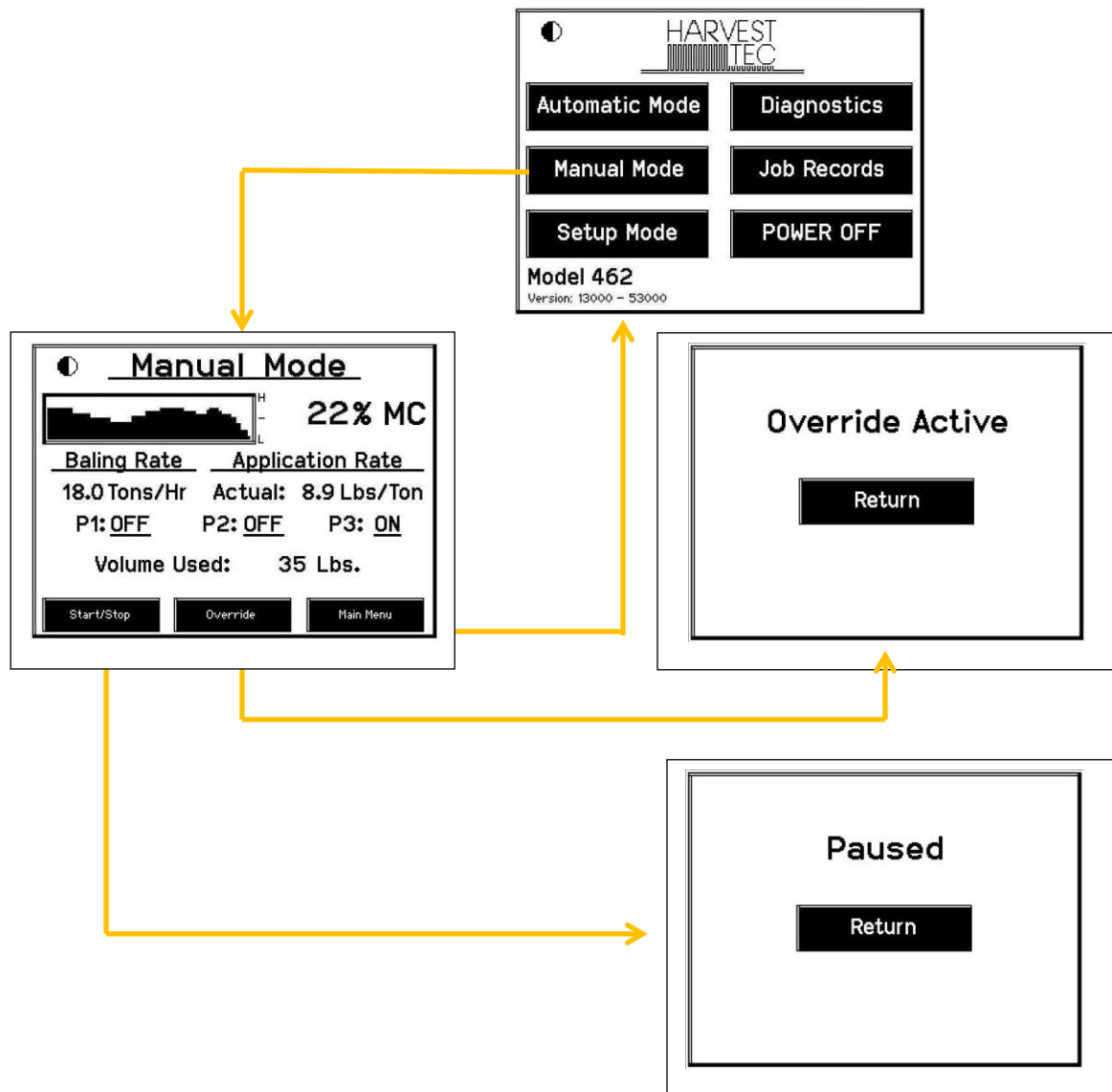
Use the below listed screen menus to navigate through all of the operation screens.

Automatic Mode:



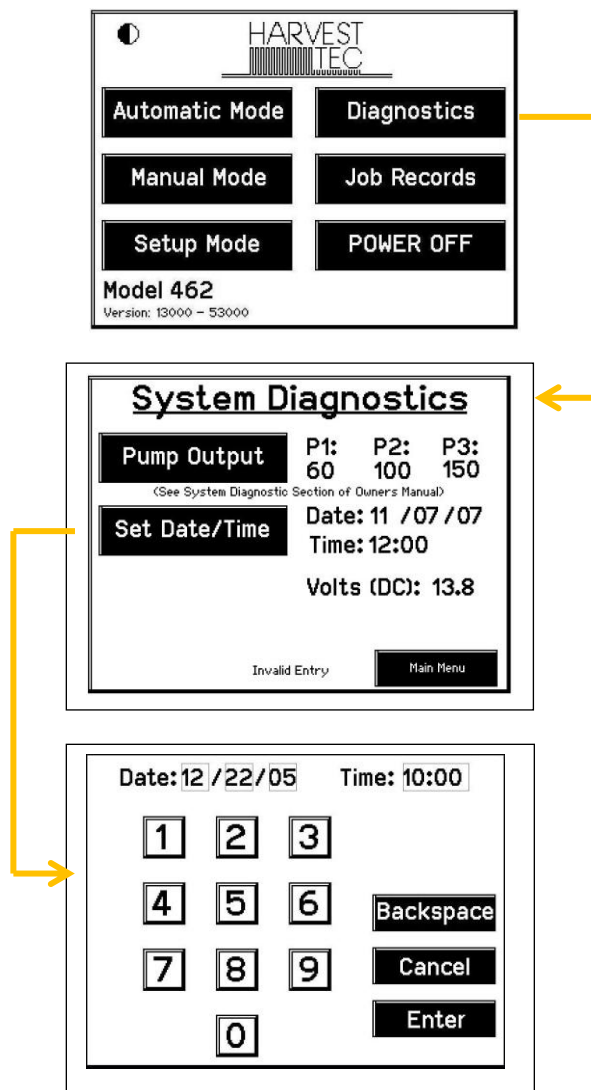
For AGCO part cross-reference visit: www.harvesttec.com/system.html

Manual Mode:



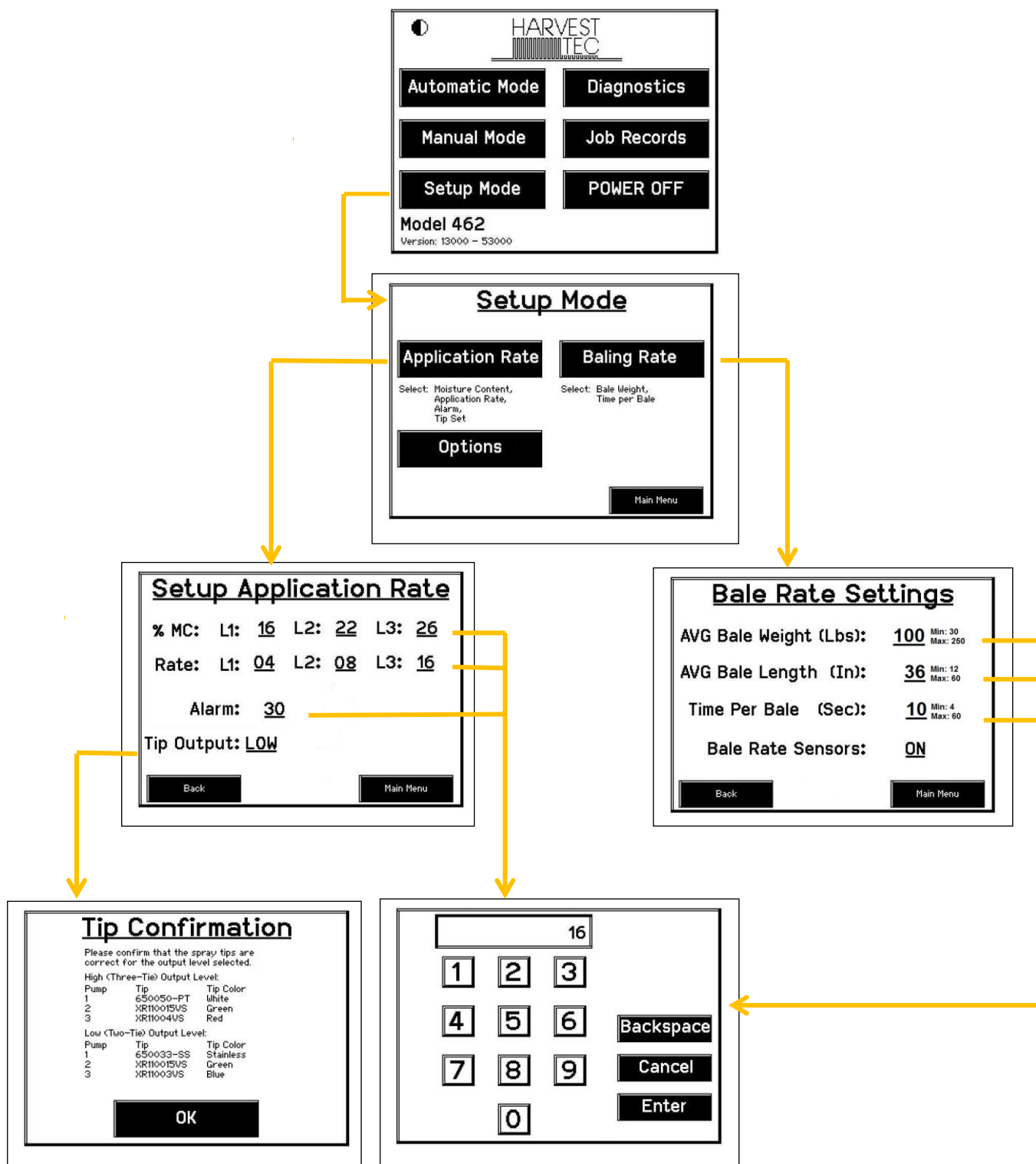
For AGCO part cross-reference visit: www.harvesttec.com/system.html

Diagnostics:



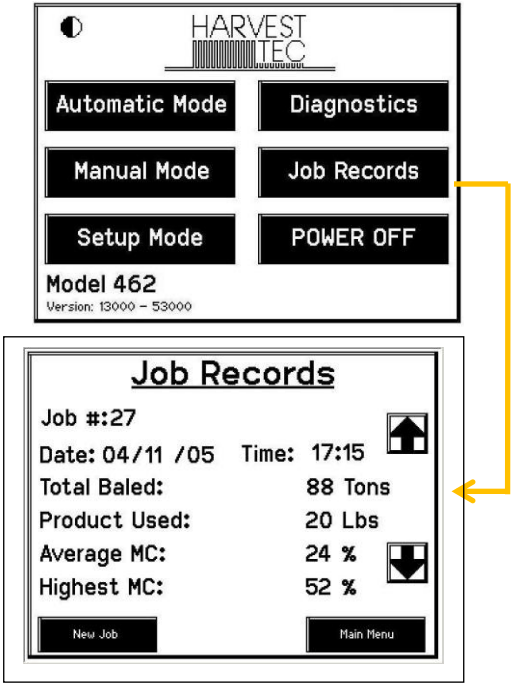
For AGCO part cross-reference visit: www.harvesttec.com/system.html

Setup Mode:



For AGCO part cross-reference visit: www.harvesttec.com/system.html

Job Records:

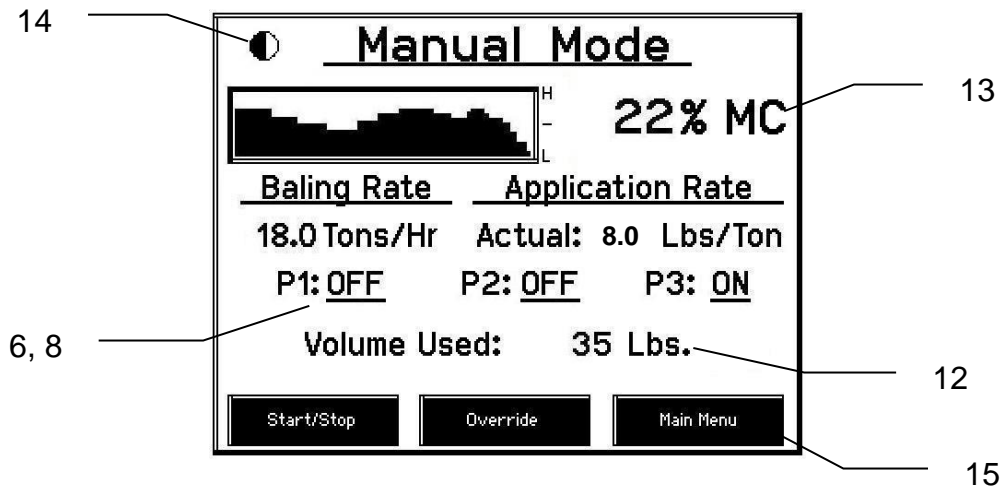


First time and annual startup instructions

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 17**) **Select Sensors are: OFF** to disable bale rate sensors. Make sure the AVG Bale Weight is 100 lbs and the AVG Baler Length is 36 in 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.



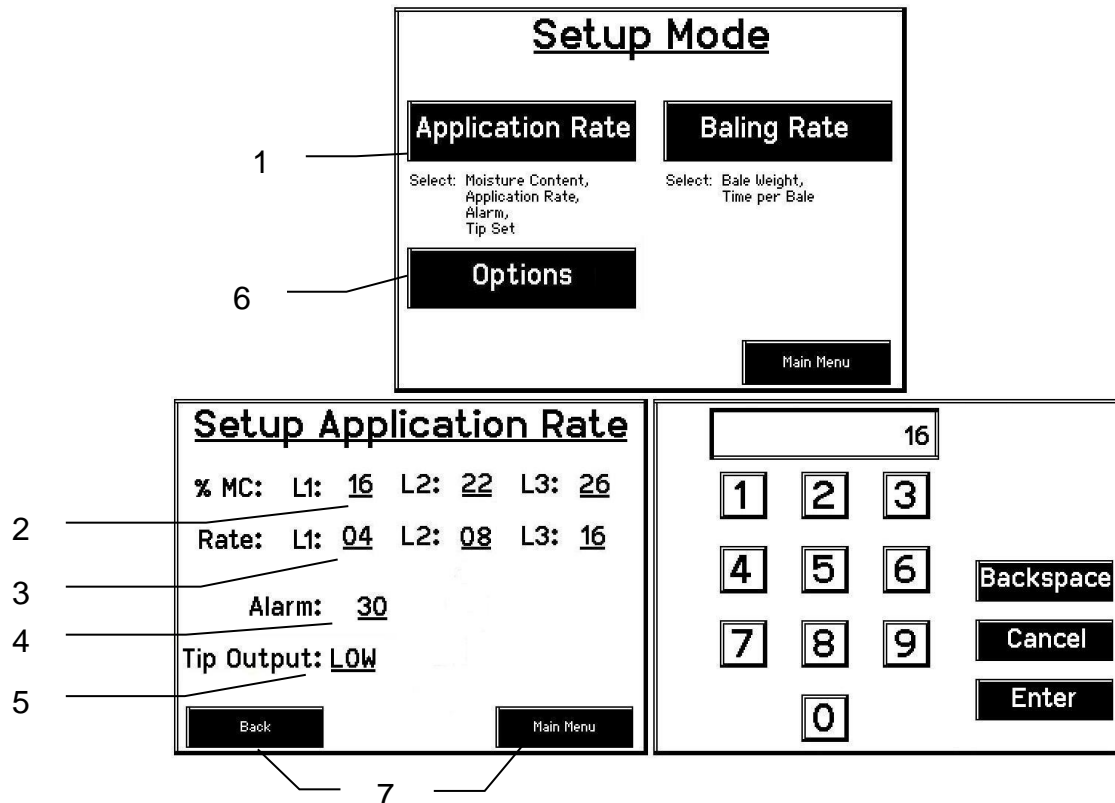
7. **For Conventional Square balers:** Turn pump 1 on (P1). To do this press the underlined area on the screen which says OFF. The application rate should then read between 1.2 – 1.6 Lbs/Ton. Ideally, at 13.5 volts, the rate would read 1.4 Lbs/Ton.
8. Repeat the process for pumps 2 and 3 (P2 and P3). The application rate should read between 3.6 – 5.0 Lbs/Ton and 6.7 – 9.3 Lbs/Ton respectively. Ideally, at 13.5 volts, the rate for pump 2 would be 4.3 Lbs/Ton and pump 3 would be 8.0 Lbs/Ton.
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. Ideally, at 13.5 volts, the rate would read 2.2 Lbs/Ton.
10. Repeat the process for pumps 2 and 3 (P2 and P3). The application rate should read between 3.6 – 5.0 Lbs/Ton and 9.7 – 13.4 Lbs/Ton respectively. Ideally, at 13.5 volts, the rate for pump 2 would be 4.3 Lbs/Ton and pump 3 would be 11.4 Lbs/Ton.
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.

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:

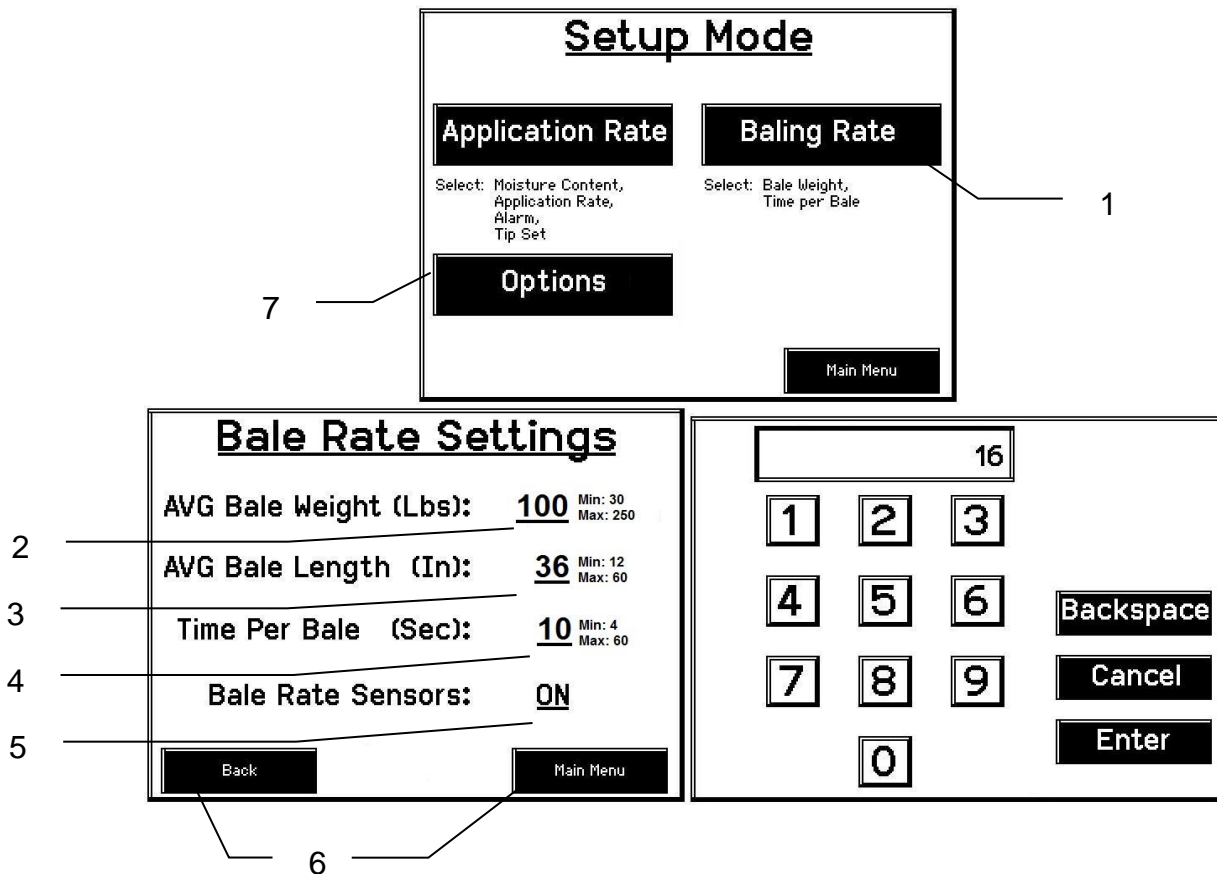


1. On this screen the operator will press the APPLICATION RATE key. Once pressed the SETUP APPLICATION RATE screen will be shown. (bottom left picture)
2. Press any of the underlined numbers to the right of %MC to adjust their figures. The key pad shown on the bottom right will display. Remember level 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 (2, 4, and 8 litres/tonne). 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 balers; only use HIGH for three tie balers. The TIP OUTPUT key allows the operator to select between high and low outputs.
6. Press the OPTION key to adjust the touchscreen between metric and standard units.
7. 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.

For AGCO part cross-reference visit: www.harvesttec.com/system.html

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 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 AVG Bale Length (In): to adjust the length 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.
4. Press the underlined number to the right of EST Baling Time (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.
5. If the unit will be run with the bale **sensors on**, then the bale weight and length will need to be inputted. When the **sensors are:** on, the applicator will calculate your tons per hour. When the **Sensors are:** 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.
6. Next press the BACK key found on the bottom left hand of the screen to return to the Setup Mode screen, or press the MAIN MENU key on the bottom right hand of the screen to return to the opening screen.
7. Press the OPTION key to adjust the touchscreen between metric and standard units and languages.

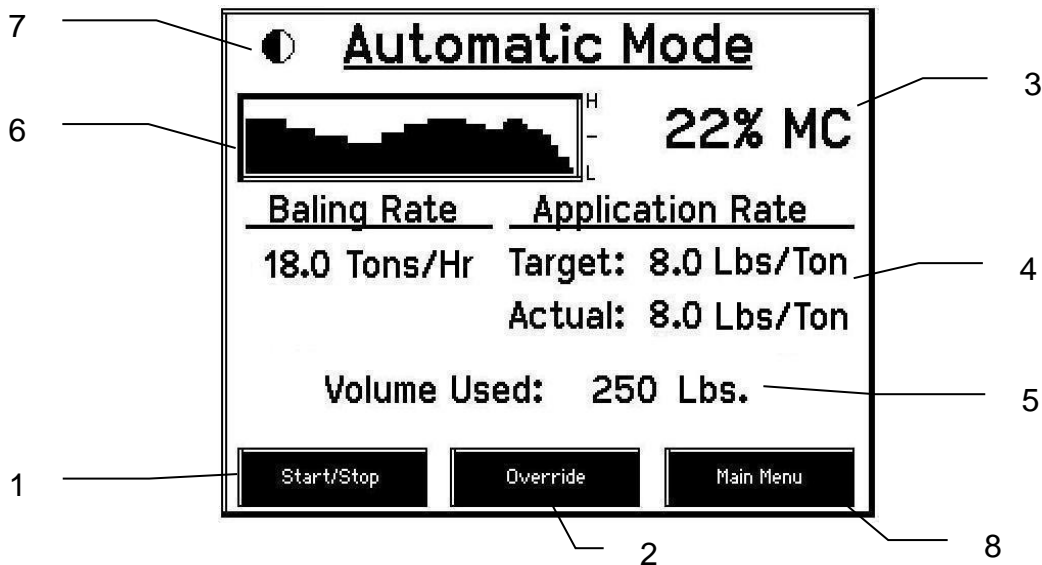
For AGCO part cross-reference visit: www.harvesttec.com/system.html

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

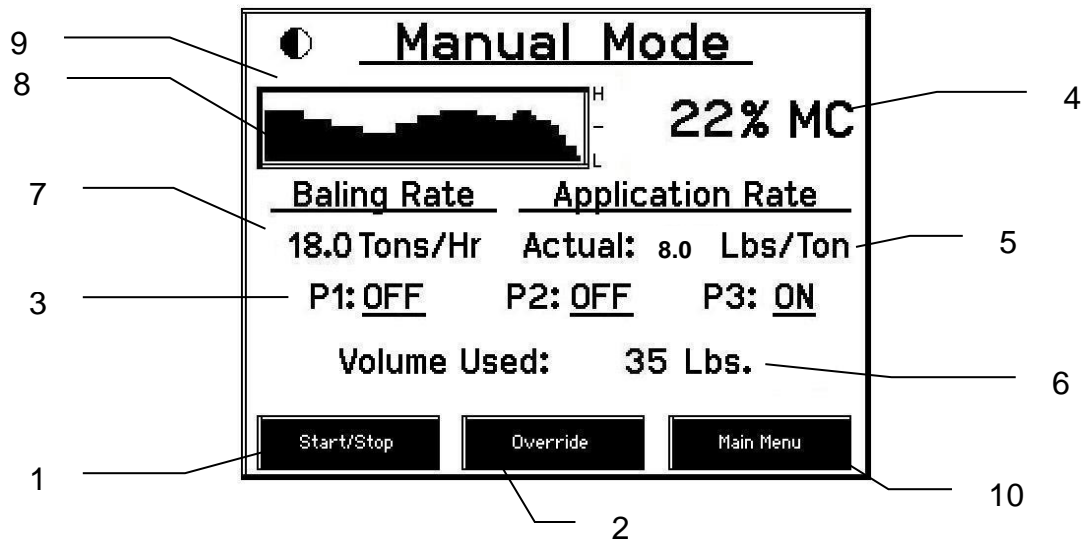
After pushing the AUTOMATIC MODE key in the Main Menu screen, the following screen should appear:



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 (litre) 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 (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 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 lighten the screen. When the screen reaches its lightest point, pressing again will return to the darkest 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
Pump 2 = 75 LBS/HR
Pump 3 = 205 LBS/HR

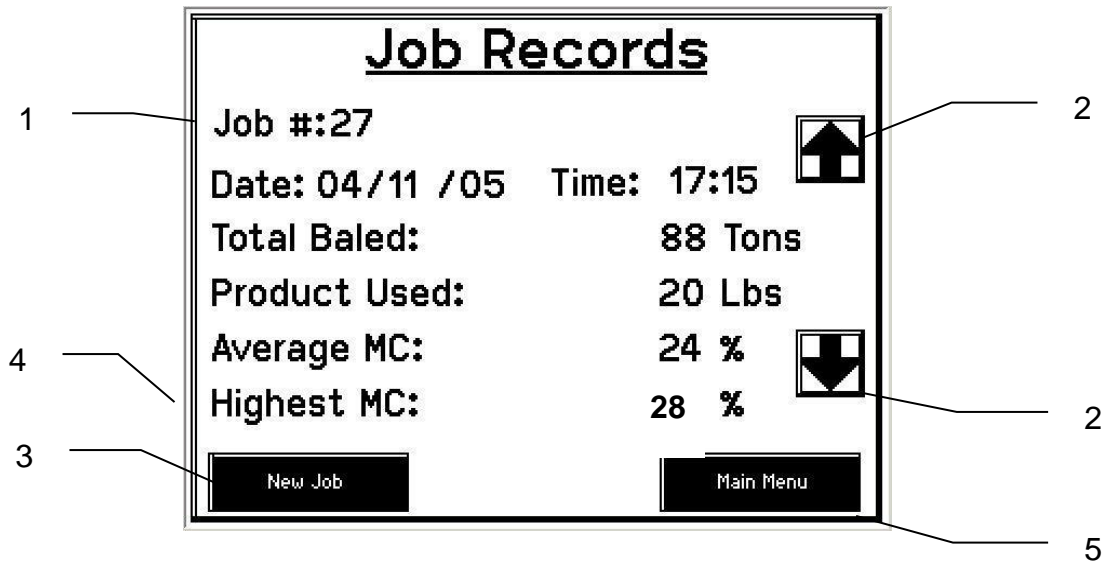
Conventional Square (Low):

Pump 1 = 25 LBS/HR
Pump 2 = 75 LBS/HR
Pump 3 = 145 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, 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. Given the baling rate shown on the above screen of 18 tons/hr, the application rate should be about 8.0 lbs/ton (145 lbs/hr divided by 18 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 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:

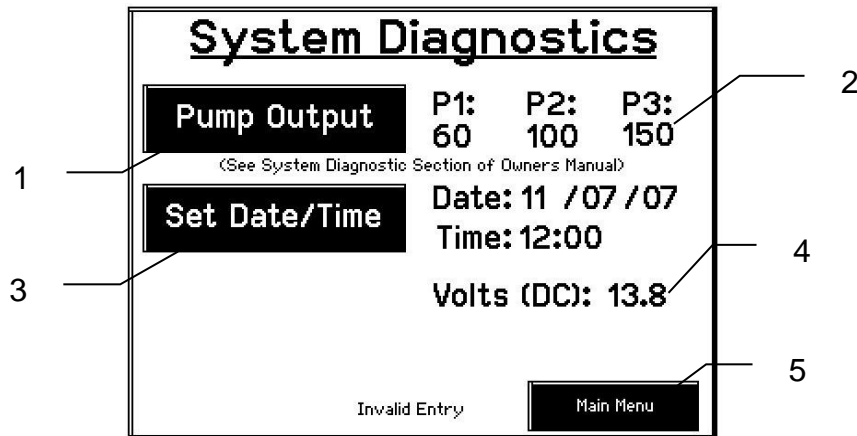


1. The job number will be displayed in the top left corner and will move to the next job when the NEW JOB key is pressed. The current job being viewed will always read "Job #: 0". Product used and average moisture content will be reset when the NEW JOB key is pressed. The job records screen will store 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. Highest moisture content will display moistures up to 33%. Any moisture recorded higher than 33 % will register only as 99%.
5. 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
Pump 2 = 64 - 88 LBS/HR
Pump 3 = 123 -170 LBS/HR

High output tips:

Pump 1 = 34 – 47 LBS/HR
Pump 2 = 64 – 88 LBS/HR
Pump 3 = 175 – 240 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. When done in this mode, press the MAIN MENU key.

For AGCO part cross-reference visit: www.harvesttec.com/system.html

Common questions about the 445, 450 & 451

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

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 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.

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 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.

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.

Trouble shooting checks:

Problem	Possible cause(s)	Solution(s)
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.
Flow meter readings do not match up with product usage.		
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. DO NOT USE AIR.
	4. Using product other than Harvest Tec	4. 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 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.
	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 always displays "End of Row Pause".	1. Flow meter connector plug is plugged into Hay Indicator port on Baler Mounted Processor.	1. Switch ports.
System does not pause at the end of a row.	1. Short in cable.	1. Replace cable.
Bale rate displays zero.	1. Bale rate sensors are reversed. 2. Short in cable.	1. Switch the sensors next to the star wheel. 2. Replace cable.
Display will not power up.	1. Display connector plug and bale rate sensors plug are switched on the Baler Mounted Processor. 2. Short in display cable.	1. Switch plugs. 2. Replace cable.
Display is too dark or light	1. Change in temperature or light conditions.	1. Use the monitors contrast control.
	2. Display and BMP not communicating.	2. Disconnect 12 volt power cable at hitch. DO NOT DISCONNECT DISPLAY CABLE. Wait 5 minutes and reconnect.
Display says waiting for BMP	1. Display and BMP not communicating.	1. Disconnect 12 volt power cable at hitch. DO NOT DISCONNECT DISPLAY CABLE. Wait 5 minutes and reconnect.

Backup fuse

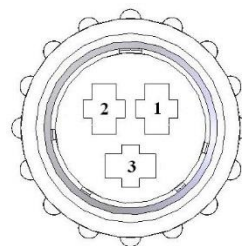
The Model 462 is equipped with a backup system if your display is not functioning. This function is intended for use only as a temporary means for application and not as a way to apply preservative over multiple fields or for a lengthy amount of time. The baler mounted processor has a location for a backup fuse on the same side as the pump and flow meter 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.

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

Wiring diagrams

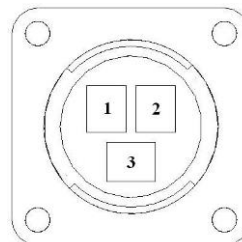
A. Main power connector mounted on battery

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



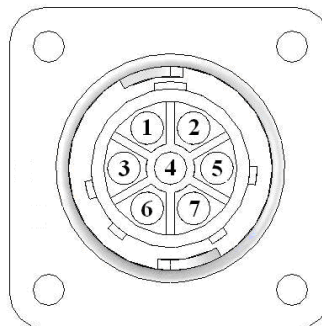
B. Main power connector mounted on BMP

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



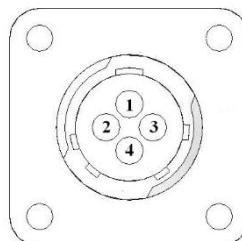
C. Pump connection colors

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

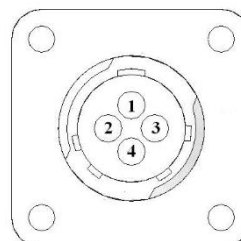
Pin 1	White	5 - 12 V (+) supply
Pin 2	Green	Ground
Pin 3	Brown	Signal
Pin 4	Black	Shield



E. Connector for Hay Indicator option on BMP

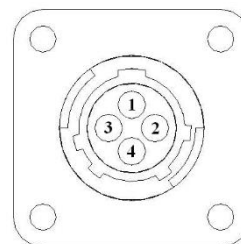
Note: Hay indicators are an option that will turn the system on and off automatically as hay enters the pickup of the baler.

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



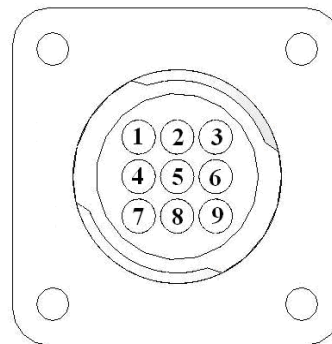
F. Bale rate sensors on BMP

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



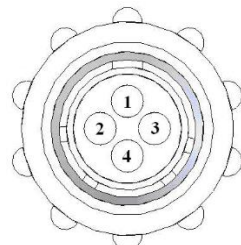
G. Star wheel connector mounted on BMP

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	



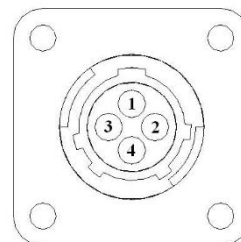
H. Communication harness display to hitch

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



Maintenance

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

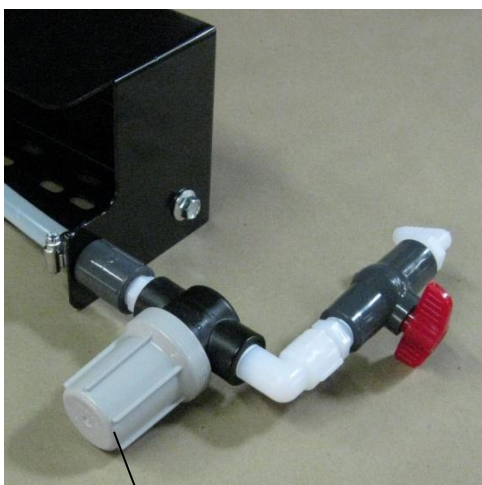
Maintenance Schedule

	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

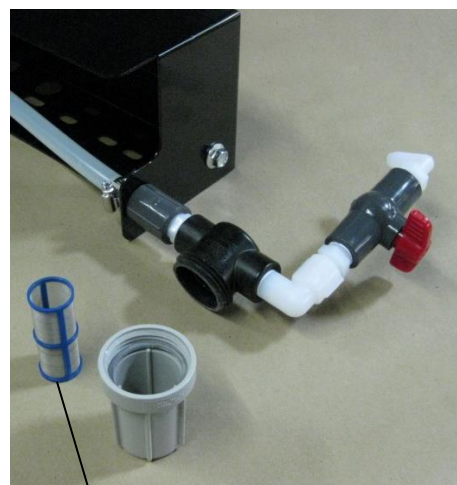
Diagnostics: Follow the instructions in this manual to run the Diagnostics mode.

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



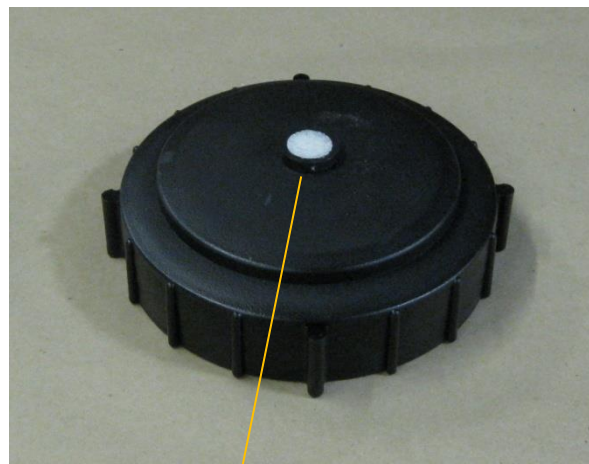
B

Tips & tip screen cleaning: 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 pump is turned off. Disconnect spray shield from hangers if possible or remove tips in place. Remove the tip, and screen. Some models may require a wrench to remove. Clean off any debris and soak tip and screen 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.



D

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).

For AGCO part cross-reference visit: www.harvesttec.com/system.html

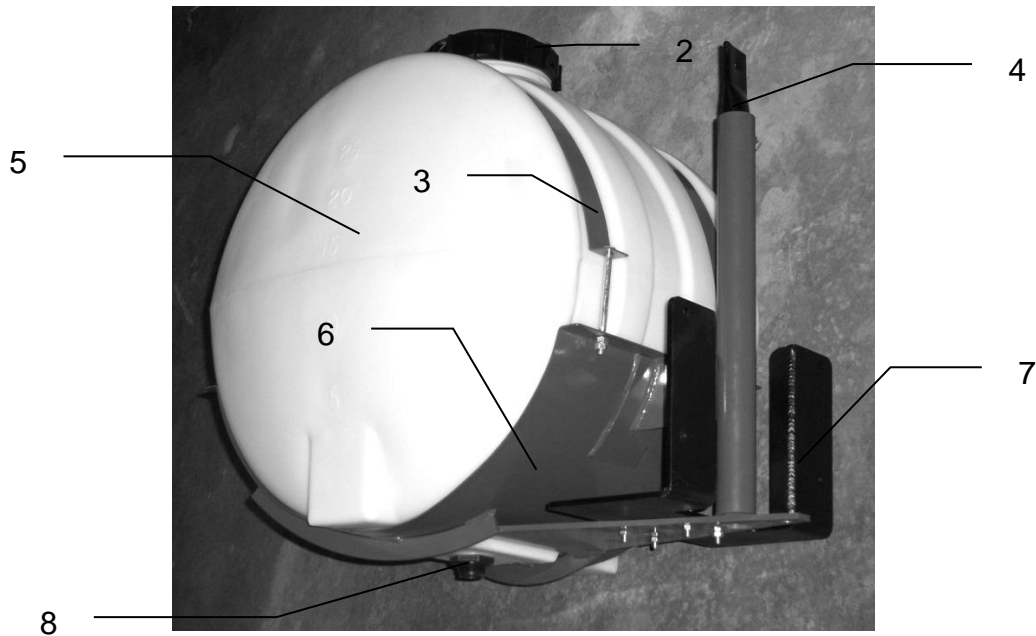
Miscellaneous maintenance:

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

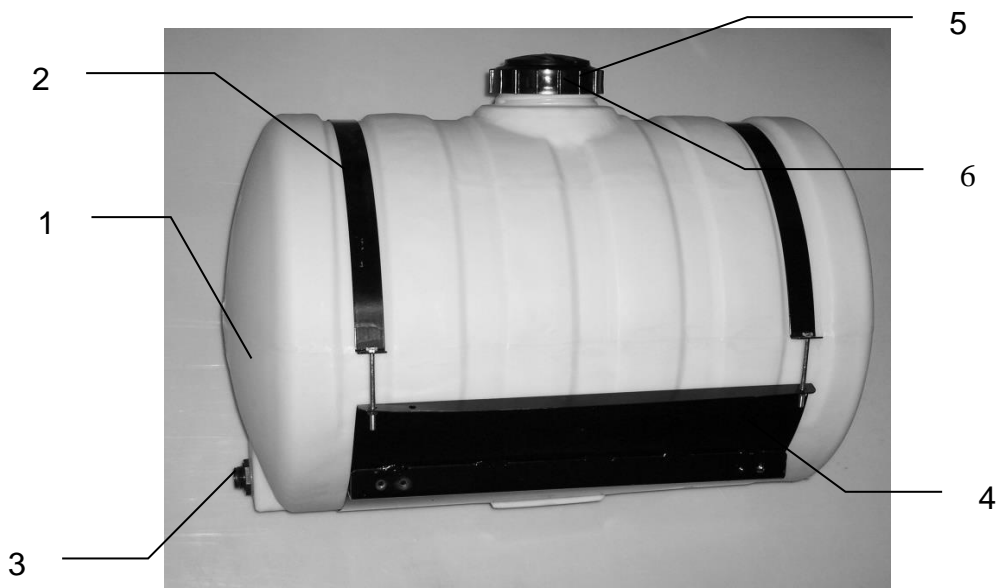
1. Thoroughly flush the system with water.
2. Remove the filter bowl and run dry until the water has cleared out of the intake side.
3. Remove the red plug from the bottom of the pump, drain, and run the pump for 30 seconds or until it is dry.
4. Drain all lines on the outlet side.
5. Never use oils 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.

Harvest Tec model 445 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	Tank Cap	005-9022C	1	5	Tank	005-9022	1
2	Tank Cap Gasket	005-9022CG	1	6	Saddle	001-4401	1
3	Tank Strap	001-4402	2	7	Mounting Bracket	001-4647	1
4	Stub Pipe	001-4403	1	8	Tank Fitting	005-9100	1

Harvest Tec model 450 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	Tank	005-9023	1	4	Saddle	001-4703	1
2	Straps	001-4402	2	5	Tank Cap	002-9022C	1
3	Tank Fitting	005-9100	2	6	Tank Gasket	002-9022CG	1
				NP	PIP mount	001-4703BPM	2

For AGCO part cross-reference visit: www.harvesttec.com/system.html

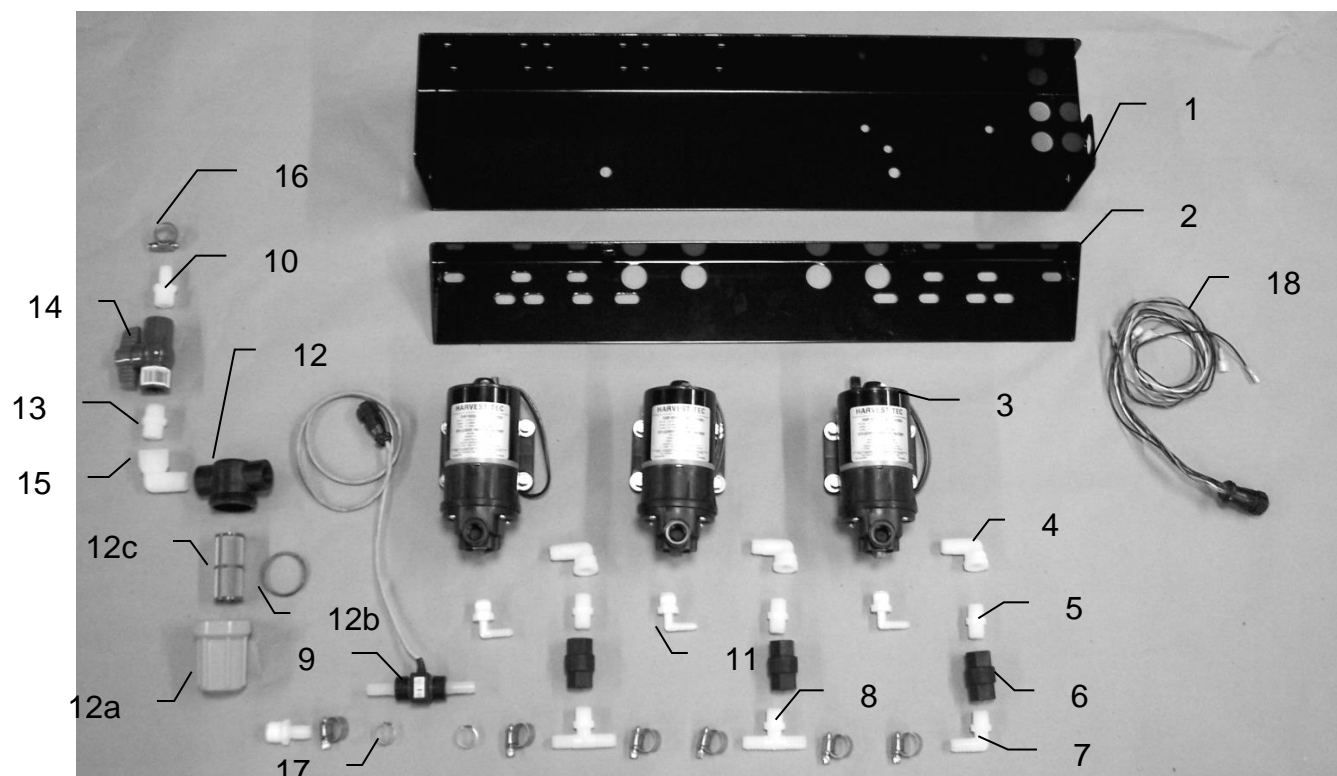
Harvest Tec model 451 base kit



<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Tank	005-9203SQ	1
2	Tank Saddle	001-4703C	1
3	Tank Straps	001-4402	2
4	Short Strap Base	001-4703CC	2
5	Tank fitting	005-9100	2
6	Mounting Bracket	001-4647	1
7	Door Latch	001-4703CL	1
8	Tank Lid	005-9022G	1
NP	Long Strap Base	001-4703CD	2
NP	Not Pictured		

For AGCO part cross-reference visit: www.harvesttec.com/system.html

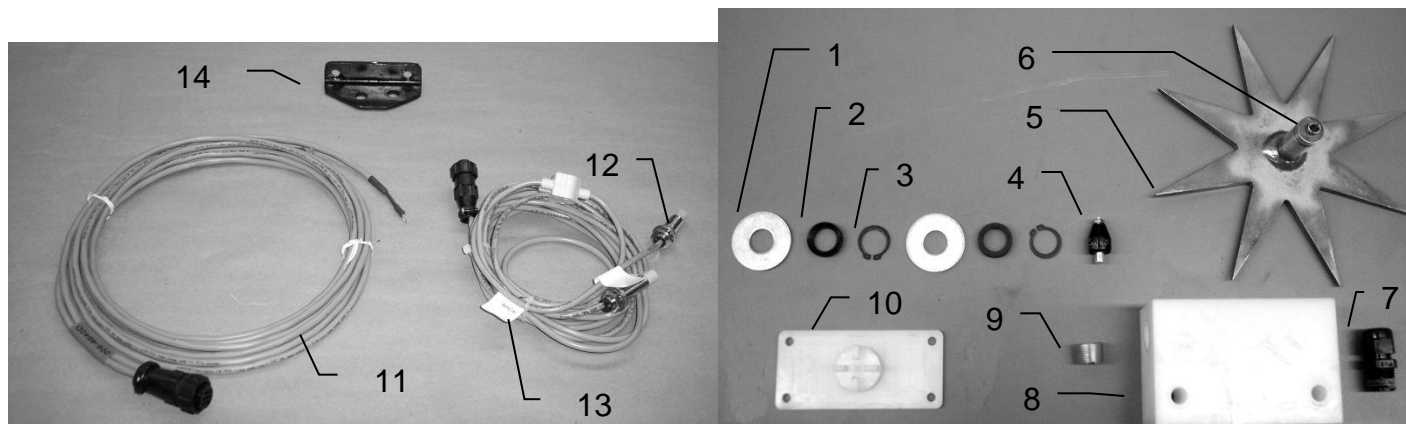
Parts breakdown for pump manifold



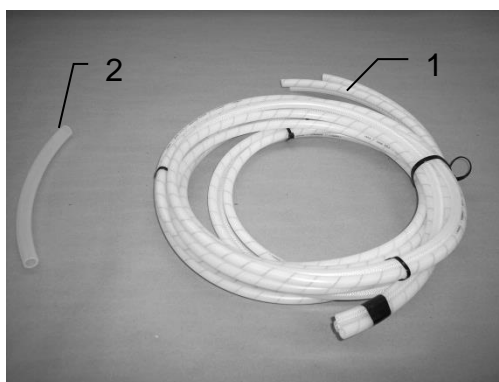
<u>Ref#</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Pump plate	001-4646D	1
2	Mounting Bracket	001-4646C	1
3	Pump	007-4120H	3
4	Street elbow fitting	003-SE38	3
5	Nipple fitting	003-M3838	3
6	Check valve	002-4566F	3
7	Elbow fitting	003-EL3812	1
8	Tee fitting	003-T3812HB	2
9	Flow meter assembly	006-4725A	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	2
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	Elbow	003-EL1212	1
NP	Union	003-M1212F	1
NP	Not Pictured		

For AGCO part cross-reference visit: www.harvesttec.com/system.html

Parts breakdown for star wheel sensor, bale rate sensor & hoses

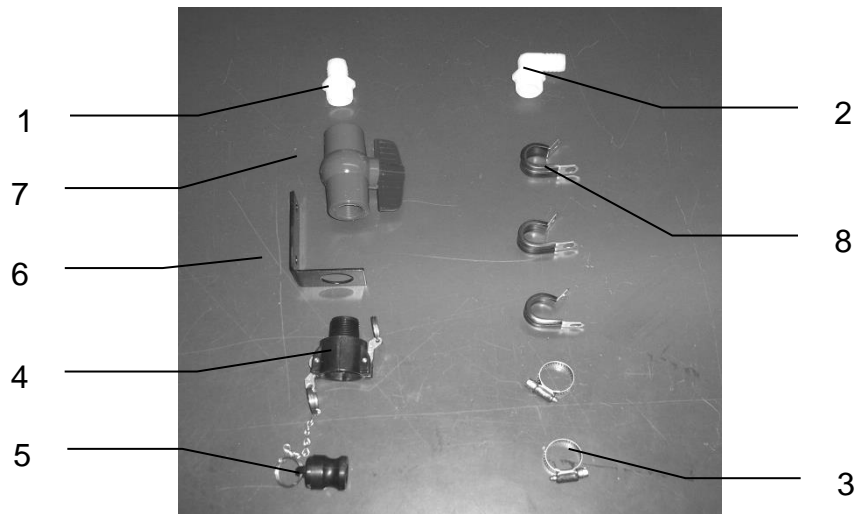


<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>	<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Washer (per side)	006-4642K	2	11	Moisture cable	006-4640K	1
2	Dust Seal (per side)	w/006-4642K	1	12	Bale rate sensor	006-7303S	2
3	Snap Ring (per side)	w/006-4642K	2	13	Bale rate sensor harness	006-7202H	1
4	Swivel	006-4642A	2	12-13	Bale rate sensor assembly	006-7202	1
5	Star Wheel	030-4641E	2	14	Bale rate sensor holder	001-4644SS	1
6	Insert	w/ Ref # 5	2	NP	Bale rate sensor extension	006-7400EXT	1
7	Wiring grommet	008-0821A	2				
8	Star wheel block	006-4641A	2				
9	Plug Fitting	003-F38	2				
10	Block Cover	006-4641B	2				
1-10	Star wheel assembly	030-4642	2				



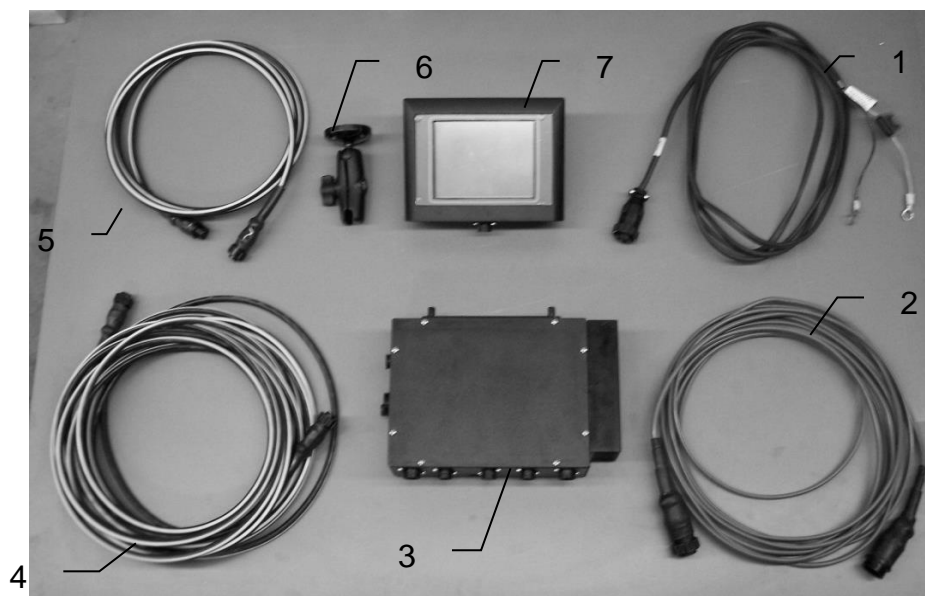
<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Triple weld hose (from pumps to tips)	002-9016	15ft
		002-9016B	15ft
		002-9016G	15ft
	Hose assembly (3 hose assembly)	030-9016SS	1
2	½" Hose (tank to filter)	002-9001	6ft

Parts breakdown for drain fill kit (model 451 & 450 only)



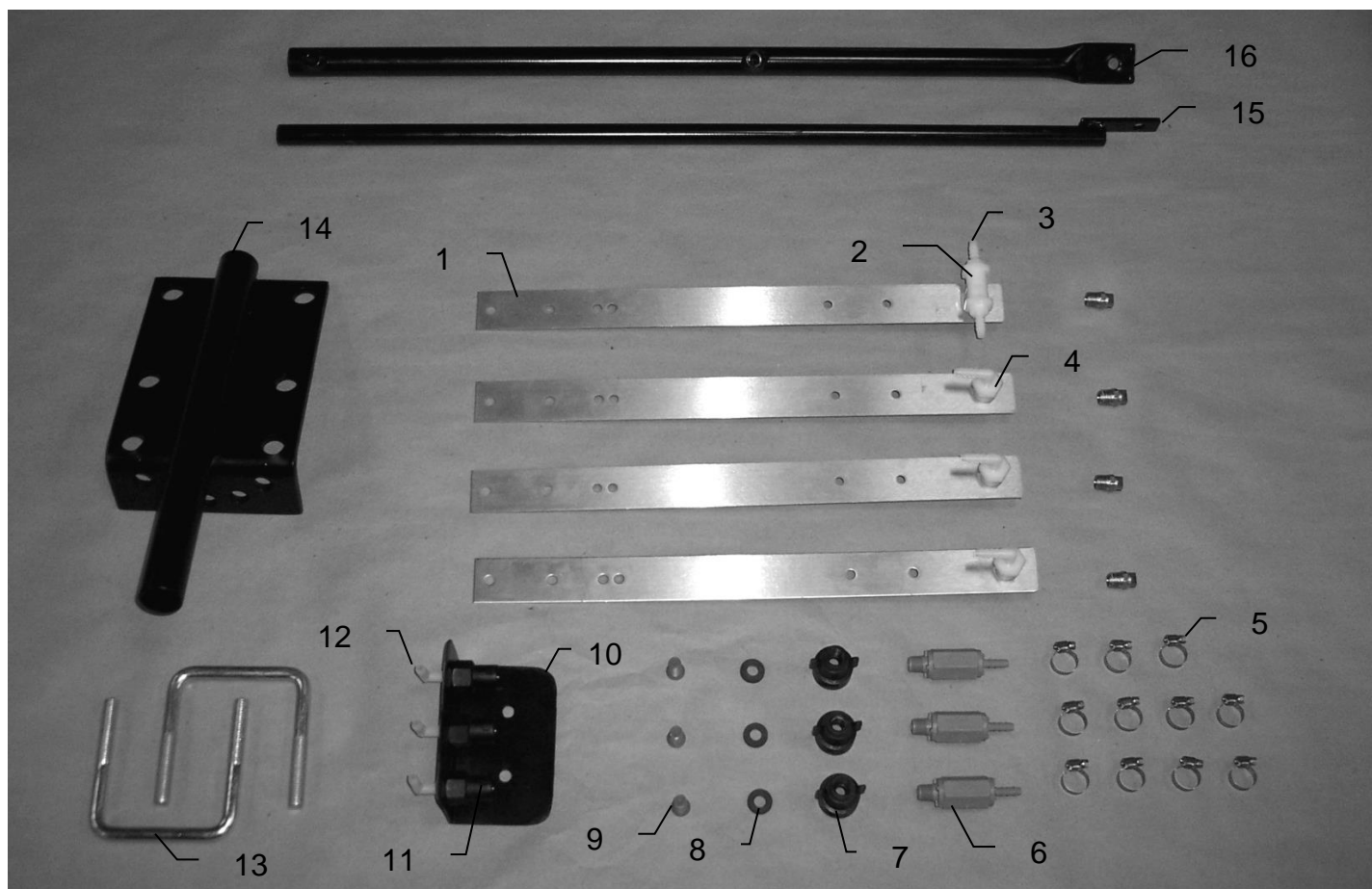
<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Straight Fitting	003-A3434	1	5	Male Coupler	002-2205G	1
2	Elbow	003-EL3434	1	6	Valve Holder	001-6702H	1
3	Hose Clamps	003-9004	2	7	Ball valve	002-2200	1
4	Female Coupler	002-2204A	1	8	Jiffy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

Parts breakdown for control box and wiring harnesses



<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
NP	Dust Plugs	006-4660PLUGS
NP	Suction cup mount	001-2012SCM

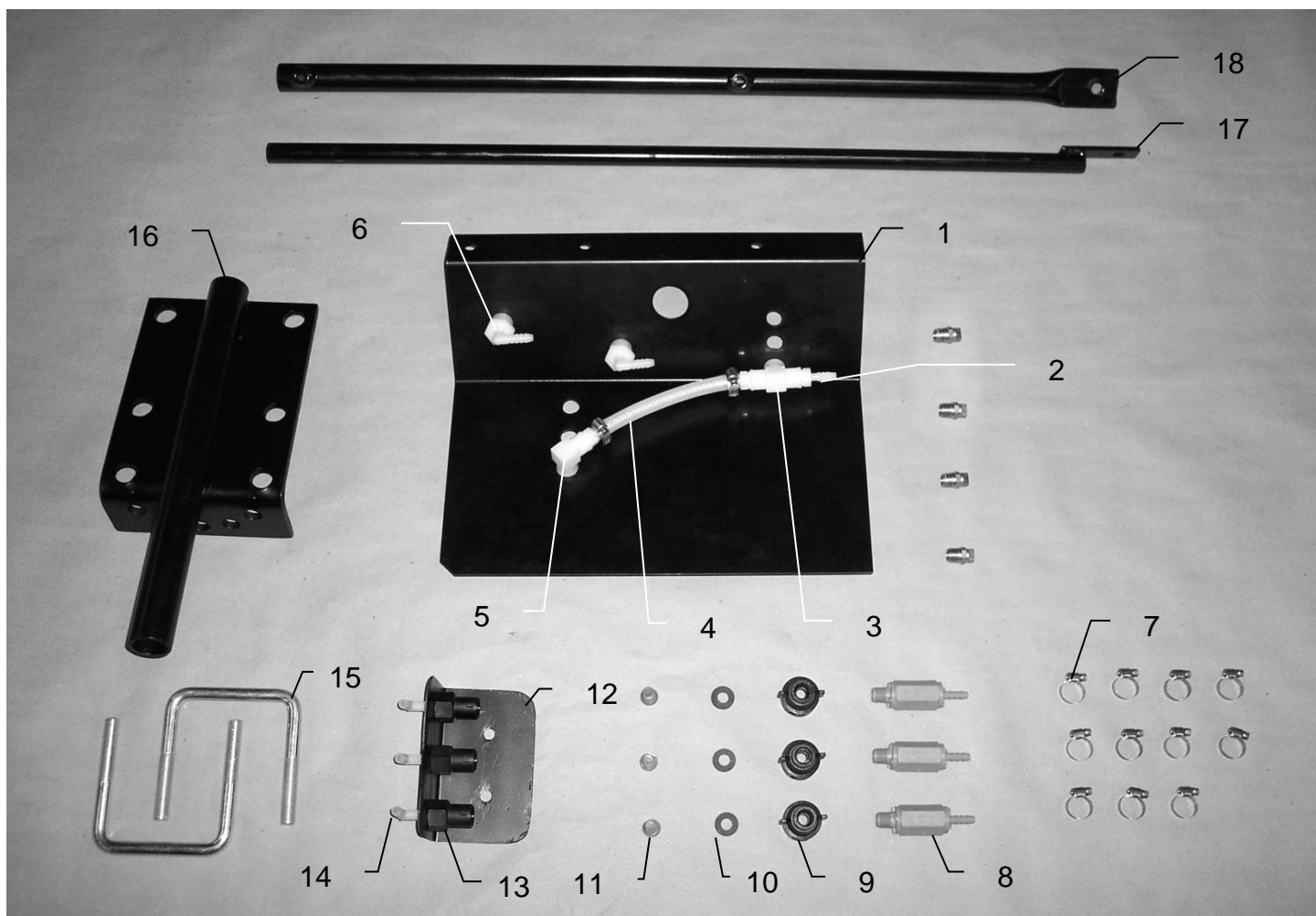
Harvest Tec model 4409B installation kit



<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Nozzle strap	001-4215	4	Tip	004-T650033-SS	2
2	Tee	003-TT14SQ	1	Tip	004-T110015-SS	1
3	Straight fitting	003-A1414	2	Tip	004-T11003-SS	1
4	Elbow	003-EL1414F	3	Hose	002-9016	9 ft
5	Hose clamp	003-9002	11			
6	Check valve	002-4564XB	3			
7	Female disconnect	004-1207H	3			
8	Washer	004-1207W	3			
9	Tip screen	004-1203-200	3			
10	Hose bracket	001-4720	1			
11	Female coupler	004-1207G	3			
12	Elbow	003-EL1414	3			
13	U bolt	001-4406A	2			
14	Mounting bracket	001-4406	1			
15	Inside reach rod	001-4405	1			
16	Outside reach rod	001-4404	1			

For AGCO part cross-reference visit: www.harvesttec.com/system.html

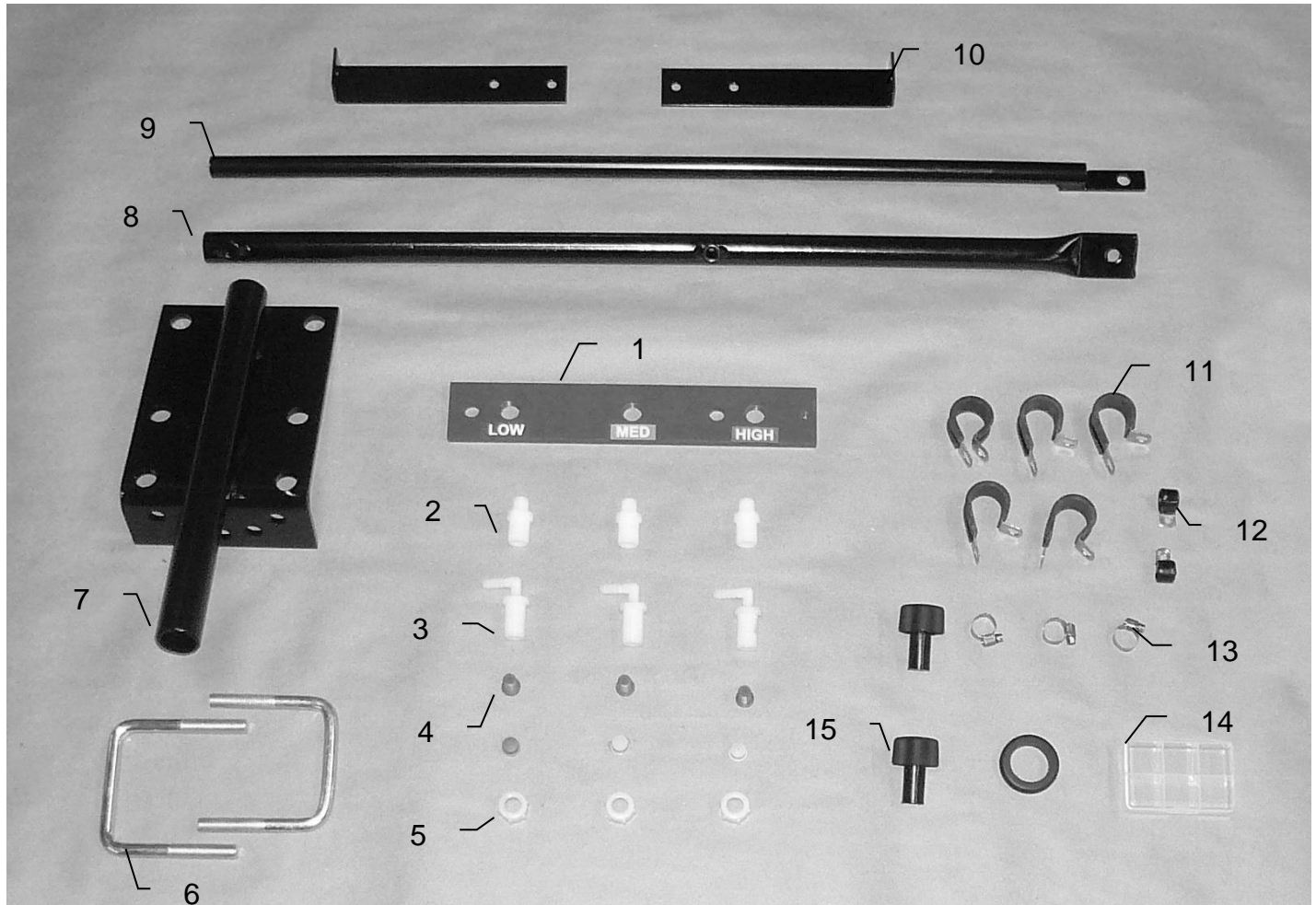
Harvest Tec model 4410B installation kit



<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Spray shield	001-4426	1	Tip	004-T650033-SS	2
2	Straight fitting	003-A1414	3	Tip	004-T110015-SS	1
3	Tee	003-TT14SQ	1	Tip	004-T11003-SS	1
4	Hose	002-9016	9 ft			
5	Elbow	003-SE14F	1			
6	Elbow	003-EL1414F	2			
7	Hose clamp	003-9002	11			
8	Check valve	002-4564XB	3			
9	Female disconnect	004-1207H	3			
10	Washer	004-1207W	3			
11	Tip strainer	004-1203-200	3			
12	Hose bracket	001-4720	1			
13	Female coupler	004-1207G	3			
14	Elbow	003-EL1414	3			
15	U bolt	001-4406A	2			
16	Mounting bracket	001-4406	1			
17	Inside reach rod	001-4405	1			
18	Outside reach rod	001-4404	1			

For AGCO part cross-reference visit: www.harvesttec.com/system.html

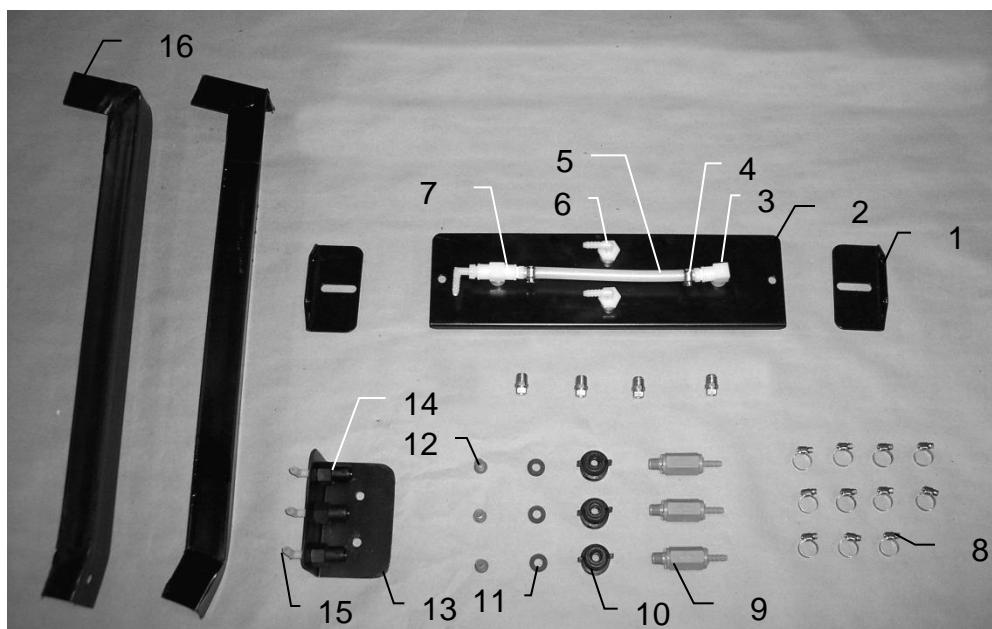
Harvest Tec model 4415B installation kit



<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Spray shield	001-4425C	1	Tip	004-30HCX4	1
2	Drill guide	003-M3814NB	3	Tip	004-30HCX9	1
3	Elbow	003-EL3814NB	3	Tip	004-30HCX18	1
4	Tip strainer	004-4213-100	3			
5	Nozzle cap	004-BC12	3			
6	U bolt	001-4406A	2			
7	Mounting bracket	001-4406	1			
8	Outside reach rod	001-4404	1			
9	Inside reach rod	001-4405	1			
10	Hose bracket	001-4425B	2			
11	Jiffy clip	008-9010	5			
12	Jiffy clip	008-9014	2			
13	Hose clamp	003-9003	3			
14	Tip box	008-9001	1			
15	Knob	008-0925	2			

For AGCO part cross-reference visit: www.harvesttec.com/system.html

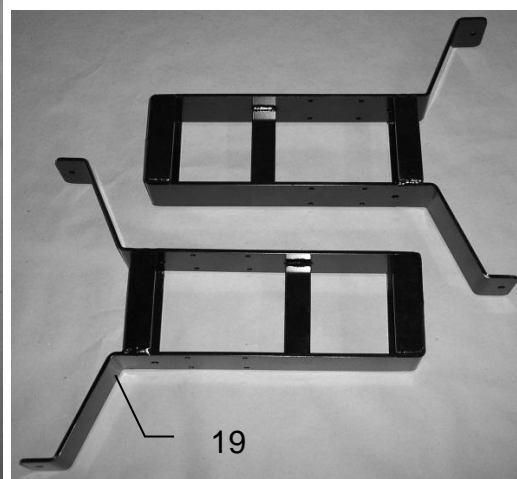
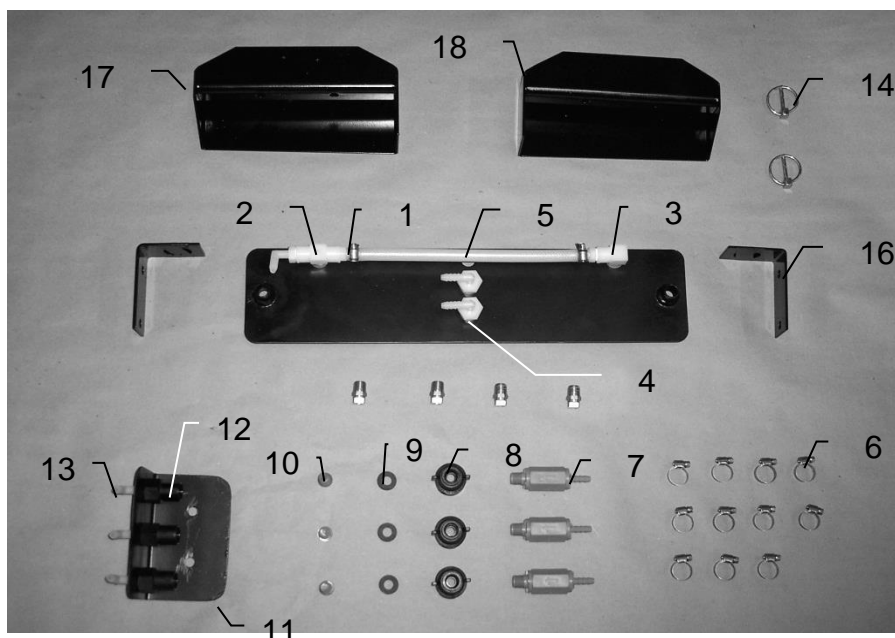
Harvest Tec model 4485B installation kit



<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	Shield holder	001-4424B	2		Tip	004-T650033-SS	2
2	Spray shield	001-4424A	1		Tip	004-T110015-SS	1
3	Elbow	003-SE14F	1		Tip	004-T11003-SS	1
4	Straight fitting	003-A1414	2				
5	Hose	002-9016	9 ft				
6	Elbow	003-EL1414F	2				
7	Tee	003-TT14SQ	1				
8	Hose clamp	003-9002	11				
9	Check valve	002-4564XB	3				
10	Female disconnect	004-1207H	3				
11	Washer	004-1207W	3				
12	Tip strainer	004-1203-200	3				
13	Hose bracket	001-4720	1				
14	Female coupler	004-1207G	3				
15	Elbow	003-EL1414	4				
16	Leg support	001-4424C	2				
17	Saddle leg	001-4703B	2				

For AGCO part cross-reference visit: www.harvesttec.com/system.html

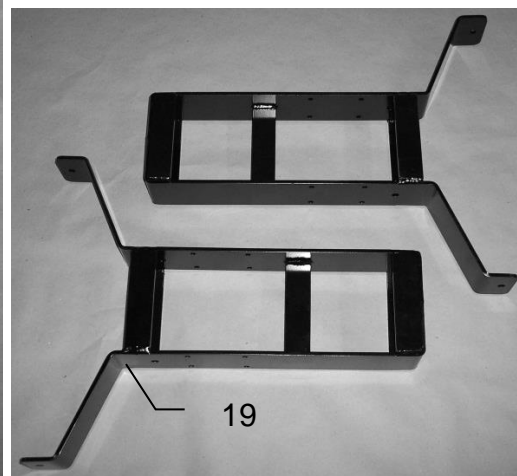
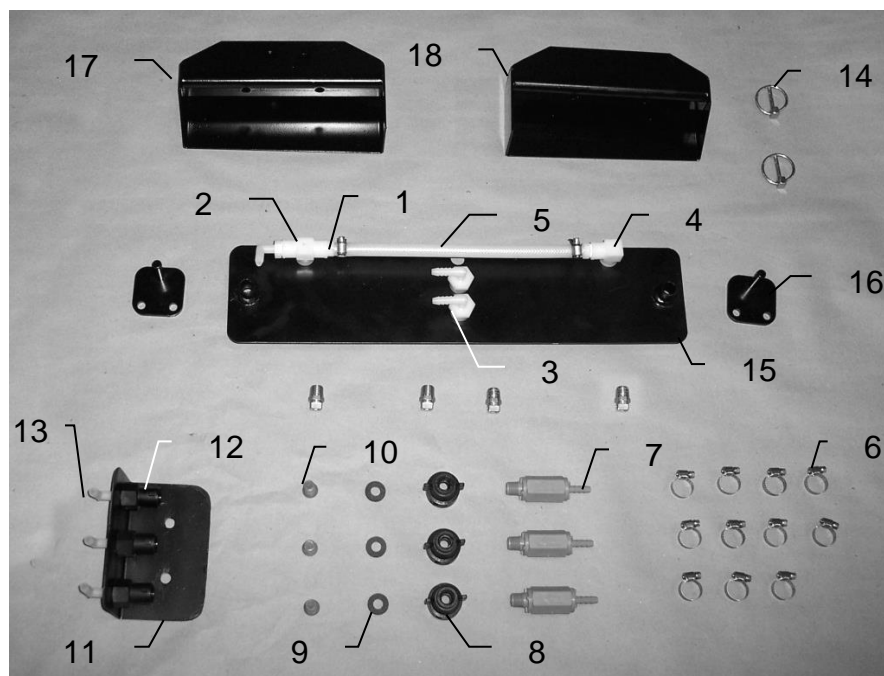
Harvest Tec model 4502B installation kit



<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>
1	Straight fitting	003-A1414	2	Tip	004-T650050-SS	2
2	Tee	003-TT14SQ	1	Tip	004-T110015-SS	1
3	Elbow	003-SE14F	1	Tip	004-T11004-SS	1
4	Elbow	003-EL1414F	2			
5	Hose	002-9016	9 ft			
6	Hose clamp	003-9002	11			
7	Check valve	002-4564XB	3			
8	Female disconnect	004-1207H	3			
9	Washer	004-1207W	3			
10	Tip strainer	004-1203-200	3			
11	Hose bracket	001-4720	1			
12	Female coupler	004-1207G	3			
13	Elbow	003-EL1414	4			
14	Lynch pin	008-4576	2			
15	Spray shield	001-4703G	1			
16	Shield holder	001-4703I	2			
17	Twine diverter (prox)	001-4644	1			
18	Twine diverter	001-4645	1			
19	Saddle leg	001-4703B	2			

For AGCO part cross-reference visit: www.harvesttec.com/system.html

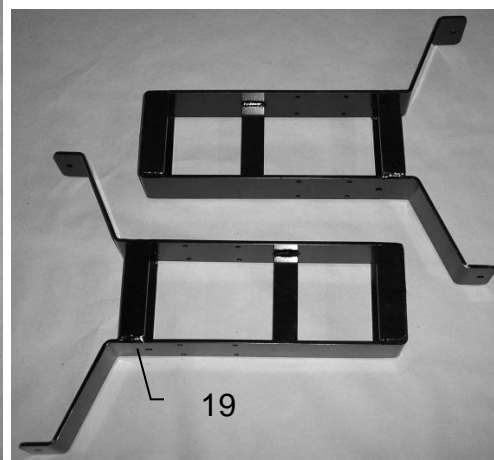
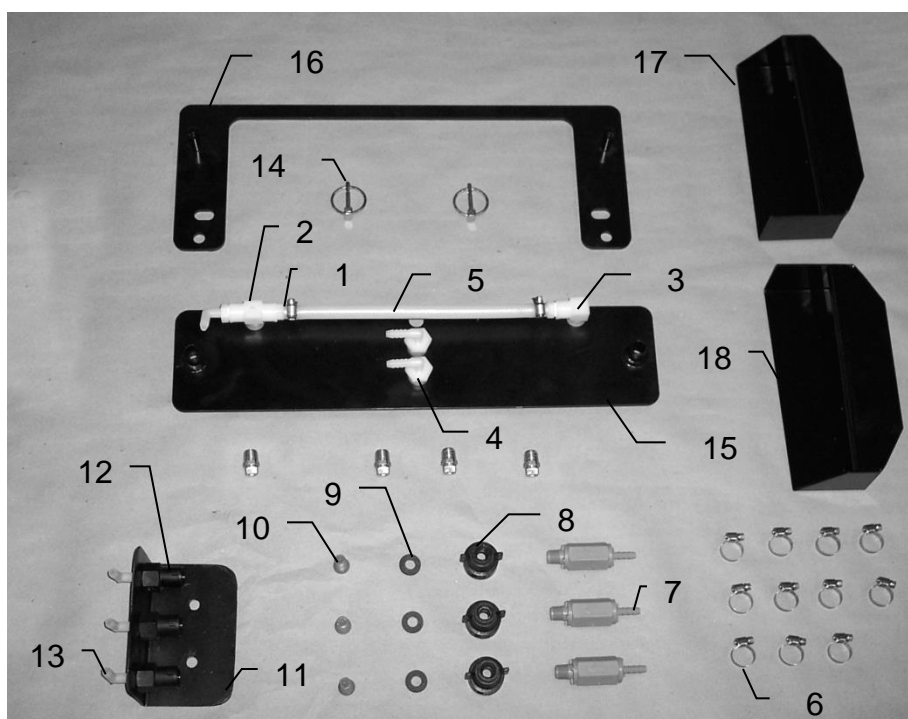
Harvest Tec model 4506B installation kit



<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Straight fitting	003-A1414	2	Tip	004-T650050-SS	2
2	Tee	003-TT14SQ	1	Tip	004-T110015-SS	1
3	Elbow	003-EL1414F	2	Tip	004-T11004-SS	1
4	Elbow	003-SE14F	1			
5	Hose	002-9016	9 ft			
6	Hose clamp	003-9002	11			
7	Check valve	002-4564XB	3			
8	Female disconnect	004-1207H	3			
9	Washer	004-1207W	3			
10	Tip strainer	004-1203-200	3			
11	Hose bracket	001-4720	1			
12	Female coupler	004-1207G	3			
13	Elbow	003-EL1414	4			
14	Lynch pin	008-4576	2			
15	Spray shield	001-4703G	1			
16	Shield holder	001-4703H	2			
17	Twine diverter (prox)	001-4644	1			
18	Twine diverter	001-4645	1			
19	Saddle leg	001-4703B	2			

For AGCO part cross-reference visit: www.harvesttec.com/system.html

Harvest Tec model 4507B installation kit



<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Straight fitting	003-A1414	2	Tip	004-T650050-SS	2
2	Tee	003-TT14SQ	1	Tip	004-T110015-SS	1
3	Elbow	003-SE14F	1	Tip	004-T11004-SS	1
4	Elbow	003-EL1414F	2			
5	Hose	002-9016	9 ft			
6	Hose clamp	003-9003	11			
7	Check valve	002-4564XB	3			
8	Female disconnect	004-1207H	3			
9	Washer	004-1207W	3			
10	Tip strainer	004-1203-200	3			
11	Hose bracket	001-4720	1			
12	Female coupler	004-1207G	3			
13	Elbow	003-EL1414	4			
14	Lynch pin	008-4576	2			
15	Spray shield	001-4703G	1			
16	Shield holder	001-4703J	1			
17	Twine diverter (prox)	001-4644	1			
18	Twine diverter	001-4645	1			
19	Saddle leg	001-4703B	2			

For AGCO part cross-reference visit: www.harvesttec.com/system.html

Notes:

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

For Technical assistance:

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