

Operation Manual

***Electronic Applicator Models
25 & 55 Gallon Preservative Applicator
For Round and Small Square Balers***



HarvestTec[®]

EST. 1976

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Introduction

Congratulations and thank you for purchasing a Harvest Tec Electronic Preservative Applicator system. Read this manual carefully to ensure correct steps are followed to operate the applicator system. This applicator is designed to apply Harvest Tec buffered propionic acid. **Use of alternative products may cause complications and voids warranty.** Complications may include inaccurate readings from the pressure gauge and damage to system components.

Electronic Preservative Applicator systems are compatible with Optional Crop Eye Forage Indicator kit 474A which are designed to pause and restart the spray pump based on forage intake at the baler pickup. Use of crop eyes will assist in the conservation of chemical when tying bales and when at the end of wind rows.

This operations manual includes the steps to properly run the applicator and advises of safety precautions. Read this manual carefully to learn how to operate the equipment correctly. Failure to do so 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 of Harvest Tec directly for additional assistance. If you are in need of parts for the system please see the parts breakdown included in the installation manual, and contact your local dealer or Harvest Tec directly to order parts.

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

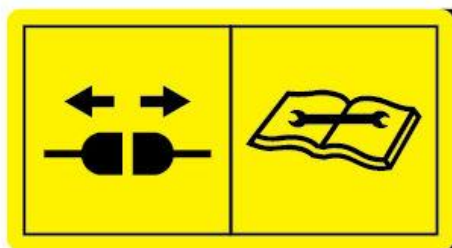
Safety

Carefully read and follow all safety information in this manual and decal signs 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 or by contacting Harvest Tec directly. Refer to the system installation manual for correct part numbers.

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

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 Descriptions



Number 1

Spraying hazard. Disconnect power before servicing the applicator

Part no. DCL-8003



Number 2

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

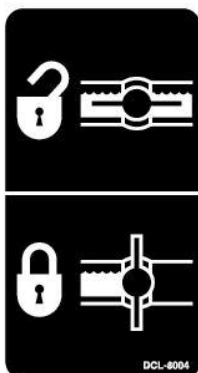
Part no. DCL-8001



Number 3

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

Part no. DCL-8000



Number 4

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

Part no. DCL-8004

Preparing the Applicator for Operation

With the applicator system properly installed on the baler (refer to installation manual if needed), follow the steps below to prepare for operating the applicator both safely and correctly.

Filling the Tank

Read the label of the product being filled into the tank to determine what individual protective measures need to be taken. **Note- Not all applicator systems include the drain/fill line tank kit**

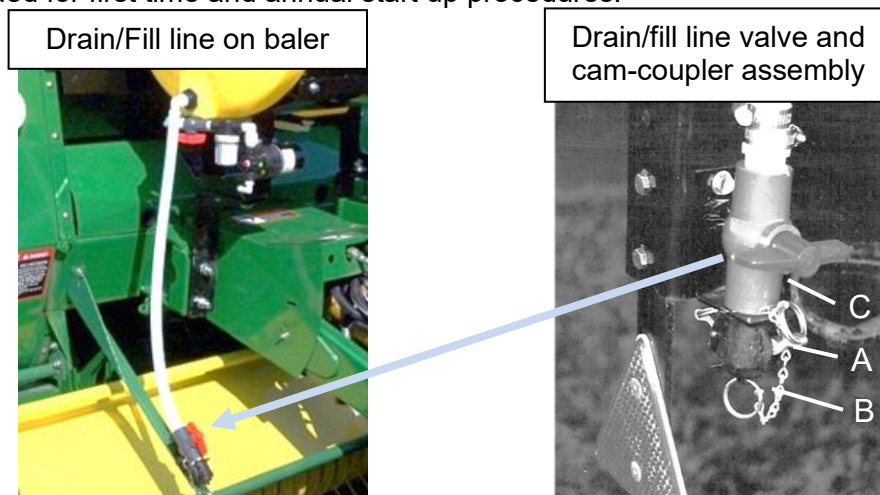
Models 431 & 441 (without drain/fill line kit)

Clean the tank lid area and unscrew the lid. Transfer product from the container into the tank.

Models 431, 434, 440, 442 & 448 (with drain/fill line kit)

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 (12v, 4gpm); model 9215 (110v, 4gpm); or model 9214 (12v, 15gpm) High Output transfer pumps are recommended for use.

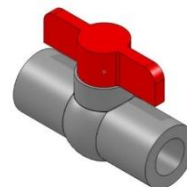
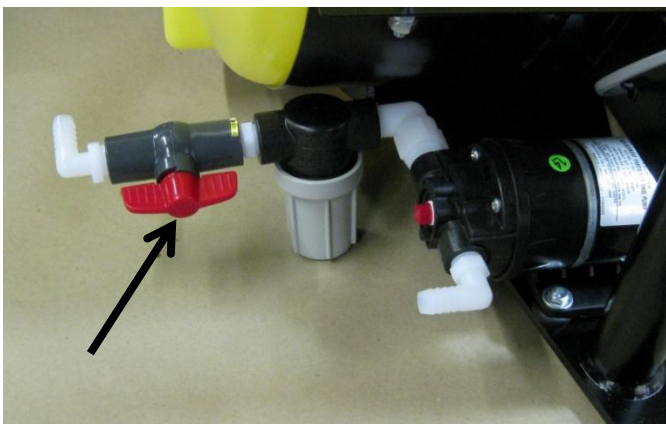
Water is recommended for first time and annual start up procedures.



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

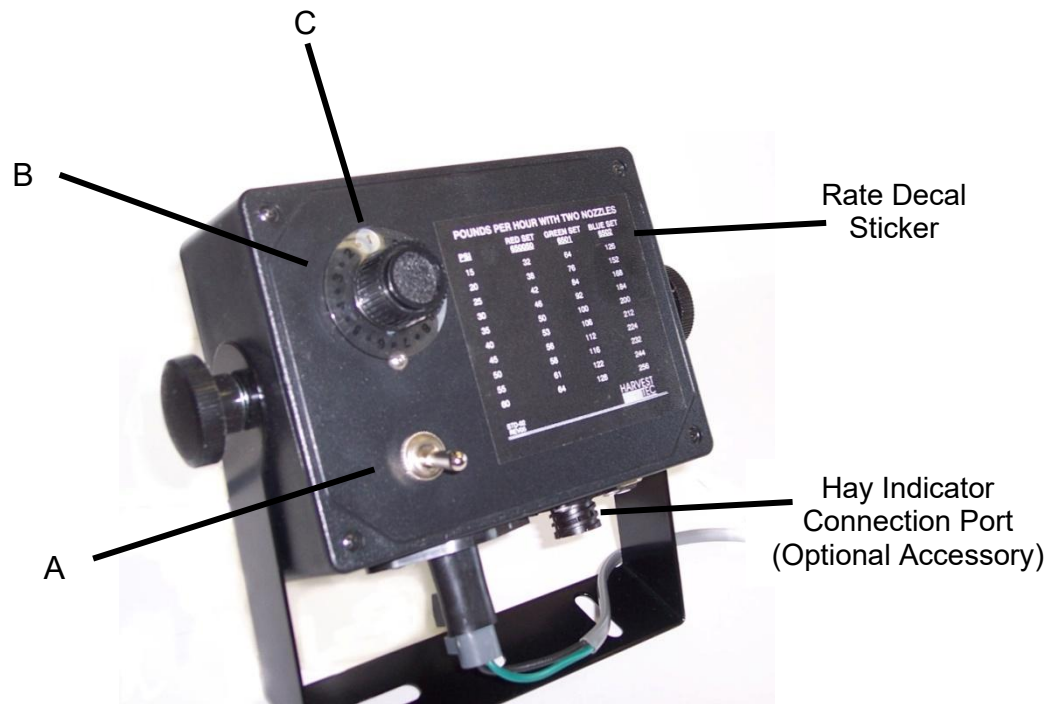
Connecting the Power Harness

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.

Operation of the Control – 457 Control Box (030-0457)

Understanding and Using the Control

The model 457 control is pictured below. The toggle switch (A) is used to supply and cut off power to the pump. With the switch in down (shown) the pump power is off. Lift the switch up to supply power. The dial (B) is used to adjust the pressure to the tips when the pump is running. The numbers on the dial are to be used only as a general reference. The PSI indicated on the system gauge determines the exact flow. Apply the rate decal sticker (included with applicator kit) to the front of the control box. The message light (C) will always be illuminated when the power is on. If the light ever blinks during operation please reference the “Message Light” section below.



Message Light

The LED under the speed dial will be illuminated when the applicator is running under normal situations. If the light blinks on and off while in use, see the information below to interpret the message.

Slow steady on and off blink: The system is attached to hay indicators (474A) or a foot switch is activated. This message means that the pump is being paused. Light will turn to constant once the baler is back in the windrow and hay indicators are no longer pausing the pump.

Two quick blinks: The pump motor or pump harness is shorted.

Three quick blinks: Pump motor is over the current limit (10 amps).

Four quick blinks: Power is under current from a bad connection.

Control box must have the on/off switch toggled to clear the message after the fault has been fixed to clear.

First Time and Annual Start Up

Fill the tank with 5 gallons of water. Turn on the power to the system by pushing the toggle switch up. There may be a slight buzzing of the control box motor that is heard- this is normal. Turn the dial on the control box until the pressure gauge starts to climb. Turning the dial clockwise will increase pressure. Turning the dial counterclockwise will decrease pressure. With the applicator spraying at about 30 PSI, check for leaks at all fittings and hose connections. Once comfortable with the operation of the controls, the applicator can be manually adjusted by the operator to apply the desired amount of chemical to be applied.

Field Operation

Calibration

There are three things needed to be known when calibrating your applicator.

- (A) Tons per hour being baled.
- (B) Application rate, or how many pounds of product needed to apply for a given ton per hour.
- (C) Which tips to use and at what pressure to set the gauge.

A. Determining Tons per Hour - Conventional Small Square Balers (Two-Tie)

1. Bale for 3 minutes.
2. Count the number of bales made in those 3 minutes.
3. Weigh several bales to determine/estimate the average weight of the bales being made.
4. Use the Bale Rate Chart below to determine the tons you are harvesting per hour.

Example: You baled 11 bales in three minutes. After weighing some of the bales you found the average bale weight to be 55 lbs. Using the following chart cross reference 11 bales and 55lbs and you will find the rate to be 6.0 tons per hour.

CONVENTIONAL BALE RATE CHART (TONS PER HOUR)

BALES MADE IN 3 MINUTES	WEIGHT PER BALE								
	40#	45#	50#	55#	60#	65#	70#	75#	80#
9	3.6	4.0	4.5	5.0	5.4	5.8	6.3	6.7	7.2
10	4.0	4.0	5.0	5.5	6.0	6.5	7.0	7.5	8.0
11	4.4	5.0	5.5	6.0	6.6	7.1	7.7	8.2	8.8
12	4.8	5.4	6.0	6.6	7.2	7.8	8.4	9.0	9.6
13	5.2	5.8	6.5	7.1	7.8	8.4	9.1	9.7	10.4
14	5.6	6.3	7.0	7.7	8.4	9.1	9.8	10.5	11.2
15	6.0	6.7	7.5	8.2	9.0	9.7	10.7	11.2	12.0
16	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.0	12.8
17	6.8	7.6	8.5	9.3	10.2	11.0	11.9	12.7	13.6
18	7.2	8.1	9.0	9.9	10.8	11.7	12.6	13.5	14.4
19	7.6	8.5	9.5	10.4	11.4	12.3	13.3	14.2	15.2
20	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0

A. Determining tons per hour - Small Square Balers (Three-Tie)

1. Bale for three minutes.
2. Count the number of bales made in those three minutes.
3. Weigh several bales to determine/estimate the average weight.
4. Use the bale rate chart below to determine the tons you are baling per hour.

Example: You baled 11 bales in three minutes. After weighing some of the bales you found the average bale weight to be 90 lbs. Using the following chart cross reference 11 bales and 90lbs and you will find the rate to be 9.9 tons/hr.

Bales Made in Three Minutes	Three Tie Bale Rate Chart (Tons per Hour)								
	Weight per Baler								
	70	75	80	85	90	100	110	120	130
6	4.2	4.5	4.8	5.1	5.4	6.0	6.6	7.2	7.8
7	4.9	5.3	5.6	6.0	6.3	7.0	7.7	8.4	9.1
8	5.6	6.0	6.4	6.8	7.2	8.0	8.8	9.6	10.4
9	6.3	6.8	7.2	7.7	8.1	9.0	9.9	10.8	11.7
10	7.0	7.5	8.0	8.5	9.0	10.0	11.0	12.0	13.0
11	7.7	8.3	8.8	9.4	9.9	11.0	12.1	13.2	14.3
12	8.4	9.0	9.6	10.2	10.8	12.0	13.2	14.4	15.6
13	9.1	9.8	10.4	11.1	11.7	13.0	14.3	15.6	16.9
14	9.8	10.5	11.2	11.9	12.6	14.0	15.4	16.8	18.2
15	10.5	11.3	12.0	12.8	13.5	15.0	16.5	18.0	19.5
16	11.2	12.0	12.8	13.6	14.4	16.0	17.6	19.2	20.8
17	11.9	12.8	13.6	14.5	15.3	17.0	18.7	20.4	22.1
18	12.6	13.5	14.4	15.3	16.2	18.0	19.8	21.6	23.4
19	13.3	14.3	15.2	16.2	17.1	19.0	20.9	22.8	24.7
20	14.0	15.0	16.0	17.0	18.0	20.0	22.0	24.0	26.0
21	14.7	15.8	16.8	17.9	18.9	21.0	23.1	25.2	27.3
22	15.4	16.5	17.6	18.7	19.8	22.0	24.2	26.4	28.6
23	16.1	17.3	18.4	19.6	20.7	23.0	25.3	27.6	29.9
24	16.8	18.0	19.2	20.4	21.6	24.0	26.4	28.8	31.2
25	17.5	18.8	20.0	21.3	22.5	25.0	27.5	30.0	32.5
26	18.2	19.5	20.8	22.1	23.4	26.0	28.6	31.2	33.8
27	18.9	20.3	21.6	23.0	24.3	27.0	29.7	32.4	35.1
28	19.6	21.0	22.4	23.8	25.2	28.0	30.8	33.6	36.4
29	20.3	21.8	23.2	24.7	26.1	29.0	31.9	34.8	37.7
30	21.0	22.5	24.0	25.5	27.0	30.0	33.0	36.0	39.0
31	21.7	23.3	24.8	26.4	27.9	31.0	34.1	37.2	40.3
32	22.4	24.0	25.6	27.2	28.8	32.0	35.2	38.4	41.6
33	23.1	24.8	26.4	28.1	29.7	33.0	36.3	39.6	42.9
34	23.8	25.5	27.2	28.9	30.6	34.0	37.4	40.8	44.2
35	24.5	26.3	28.0	29.8	31.5	35.0	38.5	42.0	45.5

A. Determining tons per hour - Round Balers

1. Time making 3 bales and average the time it takes to make each bale.
2. Determine/Estimate the weight of the bale.
3. Use the bale rate chart below to determine the tons you are baling per hour.

Example: You made 3 round bales and it took you an average of 2 minutes a piece to bale each of them. Your baler's operator manual tells you that an average bale made by your machine weighs 1000lb. (Remember if the hay is dry it will weigh less and if the hay is wet it will weigh more.) Using the chart below, cross-reference 2 minutes with 1000lb. and you will come up with 15 ton per hour.

Average time to make a bale (min.)	Round Baler (Tons per Hour)								
	Weight per Baler								
	600	800	1000	1200	1400	1600	1800	2000	2200
0.5	36.0	48.0	60.0	72.0	84.0	96.0	108.0	120.0	132.0
1	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0
1.5	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0
2	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0
2.5	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4
3	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0
3.5	5.1	6.9	8.6	10.3	12.0	13.7	15.4	17.1	18.9
4	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5
4.5	4.0	5.3	6.7	8.0	9.3	10.7	12.0	13.3	14.7
5	3.6	4.8	6.0	7.2	8.4	9.6	10.8	12.0	13.2
5.5	3.3	4.4	5.5	6.5	7.6	8.7	9.8	10.9	12.0
6	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
6.5	2.8	3.7	4.6	5.5	6.5	7.4	8.3	9.2	10.2
7	2.6	3.4	4.3	5.1	6.0	6.9	7.7	8.6	9.4
7.5	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8
8	2.3	3.0	3.8	4.5	5.3	6.0	6.8	7.5	8.3
8.5	2.1	2.8	3.5	4.2	4.9	5.6	6.4	7.1	7.8
9	2.0	2.7	3.3	4.0	4.7	5.3	6.0	6.7	7.3
9.5	1.9	2.5	3.2	3.8	4.4	5.1	5.7	6.3	6.9
10	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6

B. Determining the Rate of Chemical

The number of pounds of chemical required to be applied to a given ton of hay, depends on the moisture and the type of chemical used. The moisture of the hay is important in determining how much chemical to use. By knowing the moisture, you can make sure you are treating the hay correctly. Baling wetter hay will require the use of more chemical than when baling hay at dryer levels.

Under applying will likely end with spoilage of the crop. Over applying may waste money, however, the hay will be saved from spoilage. Some chemicals require different application rates to treat the same amount of hay. Refer to product label on the drum, or contact the manufacturer, to find the exact number of pounds required for a given hay moisture.

Harvest Tec electronic applicators come with a set of low, medium, and high tips. If your chemical requires rates other than what these tips deliver you will need to purchase them through your dealer.

C. Selecting Tips and Setting Pressure – for Small Square Balers

Once tons per hour and the amount of chemical needed for the moisture level has been determined, select the appropriate tips to use and determine your gauge settings.

1. Multiply the tons per hour by the amount of chemical required to determine the application rate.
2. Use the General Calibration Chart (for the number of tips used on your baler) on the following pages. Select the proper set of tips from the application rate chart and install them.
3. For selected tips, the system pressure gauge will need read and hold steady at the recommended PSI to achieve the indicated application rates.
4. Set the system pressure by manually adjusting the dial on the control box and by reading the pressure of the gauge to match the desired rates. Dial numbers are for reference only- Rate is determined by the indicated pressure of the gauge.

Example: You are baling at 12.5 tons per hour with your conventional square baler. The moisture you are baling at requires you to apply 8 pounds per ton. Multiplying 12.5 tons x 8 lbs = 100 lbs per hour is needed. Using the appropriate general calibration rate chart on the following pages (lbs/hr with two nozzles for this example baler), you will find that the medium (or pink set) of tips at 35 PSI will give the required output level.

Calibration Reminders

*Watch the pressure gauge, as the numbered setting will vary with tractor's electrical output, temperature and other factors.

*Check your application rate by measuring product used against actual tons baled.

Caution: Gauges can be damaged by over pressurization

Gauges failing to read below 10 PSI when disconnected from system (or system has not been used for 10+ hours) have been over pressurized. Once this has happened, gauge internals are damaged and unit will no longer read correctly. Damaged gauges will need to be replaced, they cannot be repaired.

Possible Causes of Gauge over pressurization

- Turning the system on when tips are plugged; Make sure tips are clean before turning on the system.
- Using too small of tips for the application rate that is needed; Be sure to calibrate the system using the correct tips to account for the tonnage and desired application rates that will be used during baling.

**REMEMBER, ONLY THE SYSTEM OPERATOR CAN CONTROL HOW MUCH PRODUCT IS APPLIED
AND THAT WILL DETERMINE IF YOUR HAY WILL KEEP**

C. Selecting Tips and Setting Pressure – for Round Balers

Once tons per hour and the amount of chemical needed for the moisture level has been determined, select the appropriate tips to use and determine your gauge settings.

1. Multiply the tons per hour by the amount of chemical required to determine the application rate.
2. Use the General Calibration Chart (for the number of tips used on your baler) on the following pages. Select the proper set of tips from the application rate chart and install them.
3. For selected tips, the system pressure gauge will need read and hold steady at the recommended PSI to achieve the indicated application rates.
4. Set the system pressure by manually adjusting the dial on the control box and by reading the pressure of the gauge to match the desired rates. Dial numbers are for reference only- Rate is determined by the indicated pressure of the gauge.

Example: You are baling at 22 tons per hour with your round baler. The moisture you are baling at requires you to apply 8 pounds per ton. Multiplying the 22 tons x 8lbs. = 176 lbs. per hour is needed. Using the general calibration rate chart on the following pages appropriate for this example baler (lbs/hr with three nozzles), you will find that the green set of tips at 35 PSI will give you the required output level.

Calibration Reminders

*Watch the pressure gauge, as the numbered setting will vary with tractor's electrical output, temperature and other factors.

*Check your application rate by measuring product used against actual tons baled.

Caution: Gauges can be damaged by over pressurization

Gauges failing to read below 10 PSI when disconnected from system (or system has not been used for 10+ hours) have been over pressurized. Once this has happened, gauge internals are damaged and unit will no longer read correctly. Damaged gauges will need to be replaced, they cannot be repaired.

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**REMEMBER, ONLY THE SYSTEM OPERATOR CAN CONTROL HOW MUCH PRODUCT IS APPLIED
AND THAT WILL DETERMINE IF YOUR HAY WILL KEEP**

GENERAL CALIBRATION CHART FOR SYSTEMS USING ONE NOZZLE

This chart for installation kits: 4415 & 4415-SO

POUNDS PER HOUR WITH ONE NOZZLE

		INCLUDED IN KIT		
		LOW	MEDIUM	HIGH
		<i>Orange</i>	<i>Blue</i>	<i>Yellow</i>
		TX-SS-6	TX-SS-12	TX-SS-26
PSI	<i>Blue</i> TX-SS-4			
15	21 (9.5L)	32 (14.4L)	64 (28.8L)	105 (47.3L)
20	25 (11.2L)	38 (17.1L)	76 (34.2L)	120 (54L)
25	28 (12.6L)	42 (19L)	84 (37.8L)	135 (60.8L)
30	30 (13.5L)	46 (20.7L)	92 (41.4L)	145 (65.3L)
35	33 (14.5L)	50 (22.5L)	100 (45L)	165 (74.3L)
40	35 (15.8L)	53 (23.9L)	106 (47.7L)	174 (78.3L)
45	37 (16.7L)	56 (25.2L)	112 (50.4L)	185 (83.3L)
50	38 (17.1L)	58 (26.1L)	116 (52.2L)	195 (87.8L)
55	40 (18L)	61 (27.5L)	122 (54.9L)	200 (90L)
60	42 (19L)	64 (28.8L)	128 (57.6L)	210 (94.5L)

GALLONS PER HOUR WITH ONE NOZZLE

		INCLUDED IN KIT		
		LOW	MEDIUM	HIGH
		<i>Orange</i>	<i>Blue</i>	<i>Yellow</i>
		TX-SS-6	TX-SS-12	TX-SS-26
PSI	<i>Blue</i> TX-SS-4			
15	2.4 (9.1L)	3.6 (13.6L)	7.2 (27.2L)	11.9 (45L)
20	2.6 (9.8L)	4.2 (15.9L)	8.6 (32.5L)	13.6 (51.4L)
25	3.2 (12.1L)	4.6 (17.4L)	9.4 (35.5L)	15.3 (57.8L)
30	3.4 (12.9L)	5.2 (19.7L)	10.4 (39.3L)	16.4 (62L)
35	3.8 (14.4L)	5.6 (21.2L)	11.2 (42.3L)	18.7 (70.7L)
40	4.0 (15.1L)	6.0 (22.7L)	12.0 (45.4L)	19.7 (74.5L)
45	4.2 (15.9L)	6.2 (23.4L)	12.8 (48.4L)	21.0 (79.4L)
50	4.4 (16.7L)	6.6 (24.9L)	13.4 (50.7L)	22.1 (83.5L)
55	4.6 (17.4L)	7.0 (26.5L)	14.0 (52.9L)	22.7 (85.8L)
60	4.8 (18.2L)	7.2 (27.2L)	14.8 (55.9L)	23.8 (90L)

GENERAL CALIBRATION CHART FOR SYSTEMS USING TWO THREADED NOZZLES

This chart for installation kits: 4409, 4410, 4412, 4416, 4417, 4418, 4485,
4502, 4506, 4507, 4546 & 4547

POUNDS PER HOUR WITH TWO THREADED NOZZLES

PSI	INCLUDED IN KIT				
	<i>Silver</i>	LOW <i>Silver</i>	MEDIUM <i>Pink/Gray</i>	HIGH <i>Orange/Gray</i>	<i>Red/Gray</i>
	T650033-SS	T650050-SS	T6501-PT	T6502-PT	T6503-PT
15	21 (9.5L)	32 (14.4L)	64 (28.8L)	128 (57.6L)	192 (86.4L)
20	25 (11.2L)	38 (17.1L)	76 (34.2L)	152 (68.L)	228 (102.6L)
25	28 (12.6L)	42 (19L)	84 (37.8L)	168 (75.6L)	252 (113.4L)
30	30 (13.5L)	46 (20.7L)	92 (41.4L)	184 (82.8L)	276 (124.2L)
35	33 (14.5L)	50 (22.5L)	100 (45L)	200 (90L)	300 (135L)
40	35 (15.8L)	53 (23.9L)	106 (47.7L)	212 (95.4L)	318 (143.1L)
45	37 (16.7L)	56 (25.2L)	112 (50.4L)	224 (100.8L)	336 (151.2L)
50	38 (17.1L)	58 (26.1L)	116 (52.2L)	232 (104.4L)	348 (156.6L)
55	40 (18L)	61 (27.5L)	122 (54.9L)	244 (109.8L)	366 (164.7L)
60	42 (19L)	64 (28.8L)	128 (57.6L)	256 (115.2L)	384 (172.8L)

GALLONS PER HOUR WITH TWO THREADED NOZZLES

PSI	INCLUDED IN KIT				
	<i>Silver</i>	<i>Silver</i>	<i>Pink/Gray</i>	<i>Orange/Gray</i>	<i>Red/Gray</i>
	T650033-SS	T650050-SS	T6501-PT	T6502-PT	T6503-PT
15	2.4 (9.1L)	3.6 (13.6L)	7.2 (27.2L)	14.4 (54.4L)	21.6 (81.6L)
20	2.6 (9.8L)	4.2 (15.9L)	8.6 (32.5L)	17.2 (65L)	25.8 (97.5L)
25	3.2 (12.1L)	4.6 (17.4L)	9.4 (35.5L)	18.8 (71.1L)	28.2 (106.6L)
30	3.4 (12.9L)	5.2 (19.7L)	10.4 (39.3L)	20.8 (78.6L)	31.2 (117.9L)
35	3.8 (14.4L)	5.6 (21.2L)	11.2 (42.3L)	22.4 (84.7L)	33.6 (127L)
40	4.0 (15.1L)	6.0 (22.7L)	12.0 (45.4L)	24.0 (90.7L)	36.0 (136.1L)
45	4.2 (15.9L)	6.2 (23.4L)	12.8 (48.4L)	25.6 (96.8L)	38.4 (145.2L)
50	4.4 (16.7L)	6.6 (24.9L)	13.4 (50.7L)	26.8 (101.3L)	40.2 (152L)
55	4.6 (17.4L)	7.0 (26.5L)	14.0 (52.9L)	28.0 (105.8L)	42.0 (158.8L)
60	4.8 (18.2L)	7.2 (27.2L)	14.8 (55.9L)	29.6 (111.9L)	44.4 (167.8L)

CALIBRATION CHART FOR SYSYSTEMS USING TWO QUICK-CONNECT NOZZLES

This chart for installation kits: 4482, 4516, 4517, 4538 & 4549

POUNDS PER HOUR WITH TWO QUICK-CONNECT NOZZLES

INCLUDED IN KIT					
	Yellow 800067	Red XR11001	Green XR11002	Blue XR11003	Black XR11001
PSI					
15	53 (23.9L)	64 (28.8L)	112 (50.4L)	192 (86.4L)	320 (144L)
20	63 (28.4L)	76 (34.2L)	133 (59.9L)	228 (102.6L)	380 (171L)
25	70 (31.5L)	84 (37.8L)	147 (66.2L)	252 (113.4L)	420 (189L)
30	77 (34.7L)	92 (41.4L)	161 (72.5L)	276 (124.2L)	460 (207L)
35	84 (37.8L)	100 (45L)	175 (78.8L)	300 (135L)	N/A
40	89 (40.1L)	106 (47.7L)	186 (83.7L)	318 (143.1L)	N/A
45	94 (42.3L)	112 (50.4L)	196 (88.2L)	336 (151.2L)	N/A
50	97 (43.7L)	116 (52.2L)	203 (91.4L)	348 (156.6L)	N/A
55	102 (45.9L)	122 (54.9L)	214 (96.3L)	366 (164.7)	N/A
60	107 (128L)	128 (57.6L)	224 (100.8L)	384 (172.8L)	N/A

GALLONS PER HOUR WITH TWO QUICK-CONNECT NOZZLES

INCLUDED IN KIT					
	Yellow 800067	Red XR11001	Green XR11002	Blue XR11003	Black XR11005
PSI					
15	5.2 (19.7L)	7.3 (27.6L)	12.9 (48.8L)	22.0 (83.2L)	31.9 (120.6L)
20	5.6 (21.2L)	8.4 (31.8L)	15.1 (57.1L)	24.1 (91.1L)	42.2 (159.5L)
25	6.3 (23.8L)	9.5 (35.9L)	16.7 (63.1L)	28.3 (107L)	47.3 (178.8L)
30	7.0 (26.5L)	10.6 (40.1L)	18.6 (70.3L)	31.0 (117.2L)	52.2 (197.3L)
35	7.5 (28.4L)	11.3 (42.7)	19.7 (74.5L)	33.5 (126.6L)	N/A
40	8.0 (30.2L)	12.0 (45.4L)	21.0 (79.4L)	36.0 (136.1L)	N/A
45	8.4 (31.8L)	12.6 (47.6L)	22.3 (84.3L)	38.3 (144.8L)	N/A
50	8.9 (33.6L)	13.2 (49.9L)	23.6 (89.2L)	40.7 (153.8L)	N/A
55	9.3 (35.2L)	13.8 (52.2L)	24.5 (92.6L)	42.5 (160.7L)	N/A
60	9.7 (36.7L)	14.4 (54.4L)	25.6 (96.8L)	44.4 (167.8L)	N/A

GENERAL CALIBRATION CHART FOR SYSTEMS USING THREE QUICK-CONNECT NOZZLES

This chart for installation kits: 442-SO, 4400C, 4481, 4483, 4484, 4486,
4502, 4503, 4504, 4505, 4506, 4507, 4508, 4523, 4524, 4526, 4531, 4543 & 4555

POUNDS PER HOUR WITH THREE QUICK-CONNECT NOZZLES

		INCLUDED IN KIT				CENTER OUTSIDE
		Yellow	Red	Green	Blue	Black
		650067	XR11001	XR110015	XR11002	XR11004
		650033	650050	6501	6502	6503
PSI						
15	53 (23.9L)		64 (28.8L)	112 (50.4L)	192 (86.4L)	320 (144L)
20	63 (28.4L)		76 (34.2L)	133 (59.9L)	228 (102.6L)	380 (171L)
25	70 (31.5L)		84 (37.8L)	147 (66.2L)	252 (113.4L)	420 (189L)
30	77 (34.7L)		92 (41.4L)	161 (72.5L)	276 (124.2L)	460 (207L)
35	84 (37.8L)		100 (45L)	175 (78.8L)	300 (135L)	N/A
40	89 (40.1L)		106 (47.7L)	186 (83.7L)	318 (143.1L)	N/A
45	94 (42.3L)		112 (50.4L)	196 (88.2L)	336 (151.2L)	N/A
50	97 (43.7L)		116 (52.2L)	203 (91.4L)	348 (156.6L)	N/A
55	102 (45.9L)		122 (54.9L)	214 (96.3L)	366 (164.7L)	N/A
60	107 (128L)		128 (57.6L)	224 (100.8L)	384 (172.8L)	N/A

GALLONS PER HOUR WITH THREE QUICK-CONNECT NOZZLES

		INCLUDED IN KIT				CENTER OUTSIDE
		Yellow	Red	Green	Blue	Black
		650067	XR11001	XR110015	XR11002	XR11004
		650033	650050	6501	6502	6503
PSI						
15	5.2 (19.7L)		7.3 (27.6L)	12.9 (48.8L)	22.0 (83.2L)	31.9 (120.6L)
20	5.6 (21.2L)		8.4 (31.8L)	15.1 (57.1L)	24.1 (91.1L)	42.2 (159.5L)
25	6.3 (23.8L)		9.5 (35.9L)	16.7 (63.1L)	28.3 (107L)	47.3 (178.8L)
30	7.0 (26.5L)		10.6 (40.1L)	18.6 (70.3L)	31.0 (117.2L)	52.2 (197.3L)
35	7.5 (28.4L)		11.3 (42.7)	19.7 (74.5L)	33.5 (126.6L)	N/A
40	8.0 (30.2L)		12.0 (45.4L)	21.0 (79.4L)	36.0 (136.1L)	N/A
45	8.4 (31.8L)		12.6 (47.6L)	22.3 (84.3L)	38.3 (144.8L)	N/A
50	8.9 (33.6L)		13.2 (49.9L)	23.6 (89.2L)	40.7 (153.8L)	N/A
55	9.3 (35.2L)		13.8 (52.2L)	24.5 (92.6L)	42.5 (160.7L)	N/A
60	9.7 (36.7L)		14.4 (54.4L)	25.6 (96.8L)	44.4 (167.8L)	N/A

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

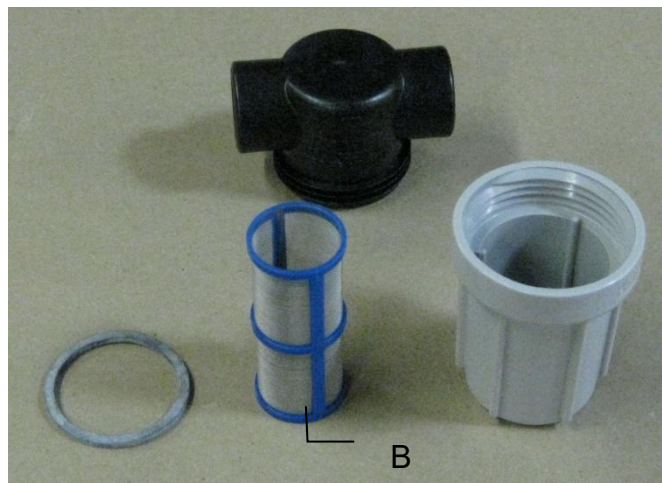
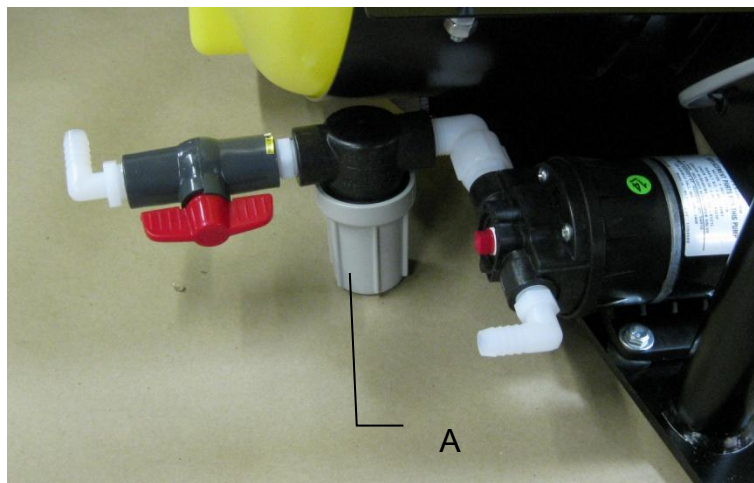
1. Depending on the product being used, the system may need to be flushed with water at a regular interval (consult with manufacturer of the chemical). If Harvest Tec product is being used, flushing is not necessary.
2. Although the pump can run dry, extended operation of a dry pump will increase wear.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

Maintenance Schedule:

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

Filter Bowl Cleaning: 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 mild soap if necessary. Once the screen is clean reinstall by following the directions in reverse.

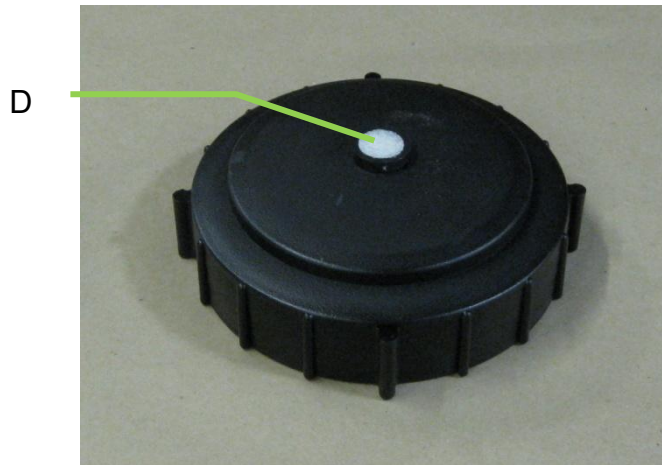


Tips & tip screen cleaning: Before cleaning the tips and screens all personal protective equipment must be worn (Face shield or goggles, chemically resistant apron, boots, and gloves).

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 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 (005-9022B5). Once the screen is cleaned reinstall the cover.



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

Rebuild Pump: If the pump is not working up to specifications a pump rebuild kit may fix the problems. Verify that the ball valve is turned off. Before working around the pump all personal protective equipment must be worn (Face shield or goggles, chemically resistant apron, boots, and gloves). Disconnect all pump fittings and remove pump from saddle. 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.

Winter Storage Harvest Tec buffered propionic hay preservative will not freeze and does not need to be removed from the applicator system for storage. Prior to storage, ensure that the tank, cap and gasket are in good condition and that there are no leaks in the system. Defects in the tank or tank cap can allow evaporation of the acid and allow for excess moisture to enter the system.

If preference is to drain the system for storage, follow these steps:

1. Turn off the ball valve that is located between the tank and the filter bowl.
2. Disconnect the filter bowl- use a clean bucket to catch any spilling preservative.
3. Place a clean bucket under the spray tips and remove spray tips and tip screens (if equipped).
4. With filter bowl removed, run the pump for a short duration to empty the lines.
5. Replace filter bowl and spray tips once lines are emptied.
6. Pour collected preservative back into the tank or store in a sealed container if tank has been drained.

If other products are used:

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. Drain all lines on the outlet side.
4. Never use oils, alcohol based anti-freeze or marine/RV anti-freeze in the system.
5. For spring start-up, if the pump is frozen, turn off the power immediately to avoid burning the motor or blowing a fuse. The pump head can be disassembled and freed or rebuilt in most cases.

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. If it is determined that a non-Harvest Tec manufactured product has been used inside the Harvest Tec applicator system where the failure occurred, then Harvest Tec reserves the right to deny the warranty request at their discretion. 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.

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