

Operation Manual

Model 432, 438, 439 ***25 & 55 gallon Preservative Applicator***



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Introduction

Thank you and Congratulations on purchasing a Harvest Tec Model 438 or 439 applicator. This applicator is designed to apply a buffered propionic acid on to the forage crop as it is being baled. The applicator is designed to allow the operator to adjust the rate of preservative only when baler is stopped and the tractor shut down. The operator will need to change the rate of preservative for changes in moisture and tonnage. 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 the parts breakdown in the back of this 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>Base Kit</u>	<u>Installation kit</u>	<u>Tank size</u>
Case IH	SBX530 - SBX550 & SB531 – SB551 square balers	439	4415	25 gallon
Case IH	(2002 and older) all round balers	439	4484	25 gallon
Challenger	RB34, RB44, RB46, & RB56 round balers	439	4484	25 gallon
Hesston	All round balers	439	4484	25 gallon
John Deere	All small square balers	439	4410	25 gallon
John Deere	410-510 & 430-530 round balers	439	4484	25 gallon
John Deere	All 5, 6, & 7 series round balers	439	4483	25 gallon
John Deere	All 8 series round balers	439	4516	25 gallon
New Holland	570 - 580 & BC5060-BC5080 square balers	439	4415	25 gallon
New Holland	640-688 round balers	439	4486	25 gallon
New Holland	630-638 round balers	439	4484	25 gallon
Vermeer	Rebel series	439	4484	25 gallon
Case IH, New Holland and others	New Holland 200 – 300 SERIES, 565, BC 5050 & Case IH SBX 520, SB521 & all others	439	4409	25 gallon
Other	Round balers	439	4484	25 gallon
Case IH	All inline small square balers	438	4485	55 gallon
Challenger	All inline small square balers	432	4416	55 gallon
Hesston	All inline small square balers	432	4416	55 gallon
Massey Ferguson	All inline small square balers	432	4416	55 gallon
New Idea	All inline small square balers	438	4485	55 gallon

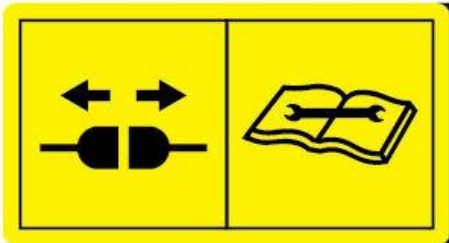
Safety

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

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

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

Safety Decals



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.**

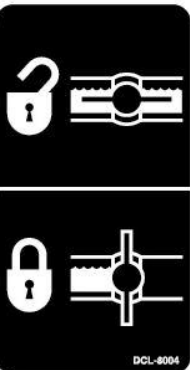
Part no. DCL-8001



Number 3

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

Part no. DCL-8000



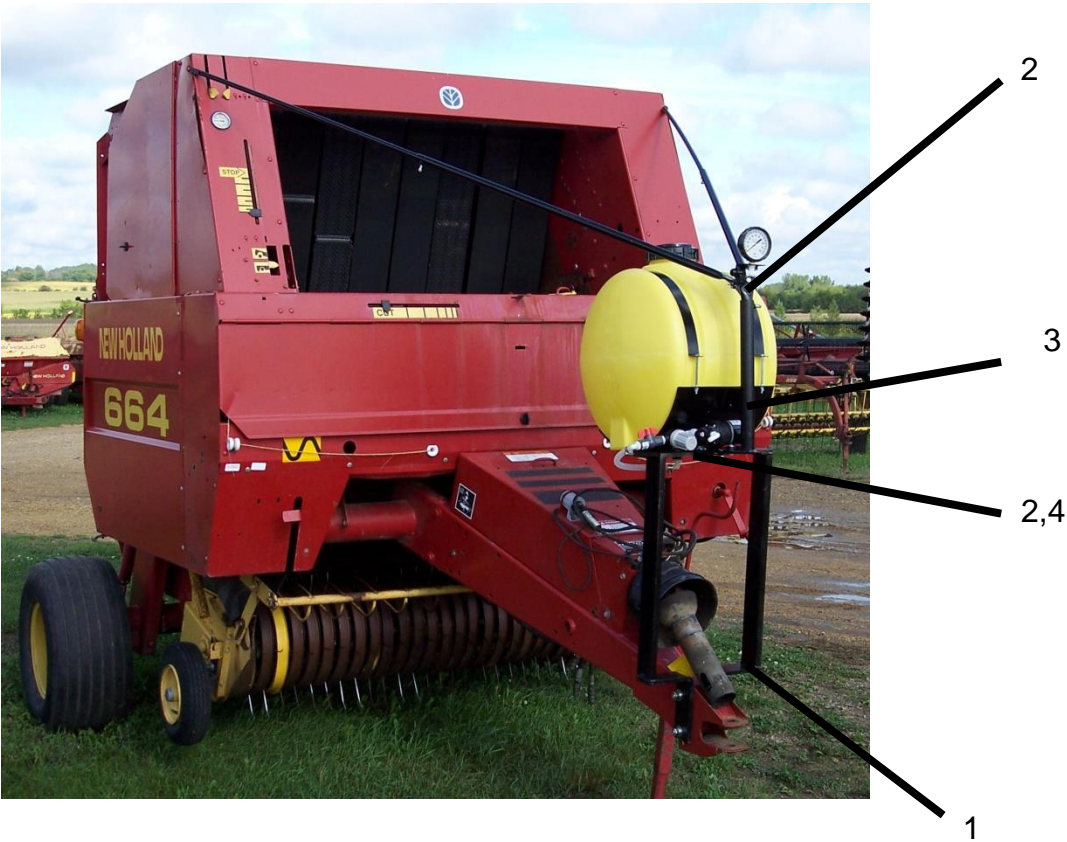
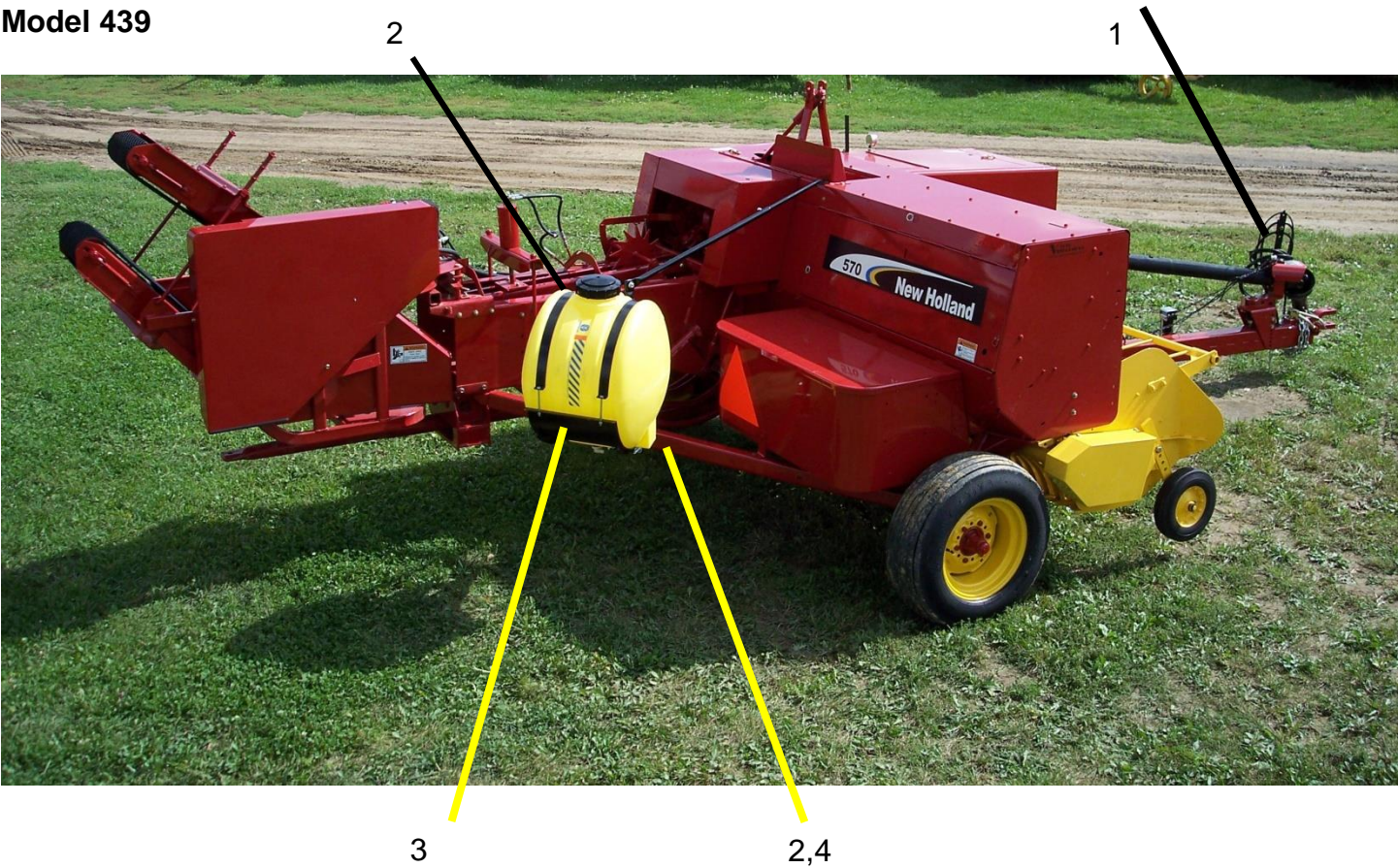
Number 4

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

Part no. DCL-8004

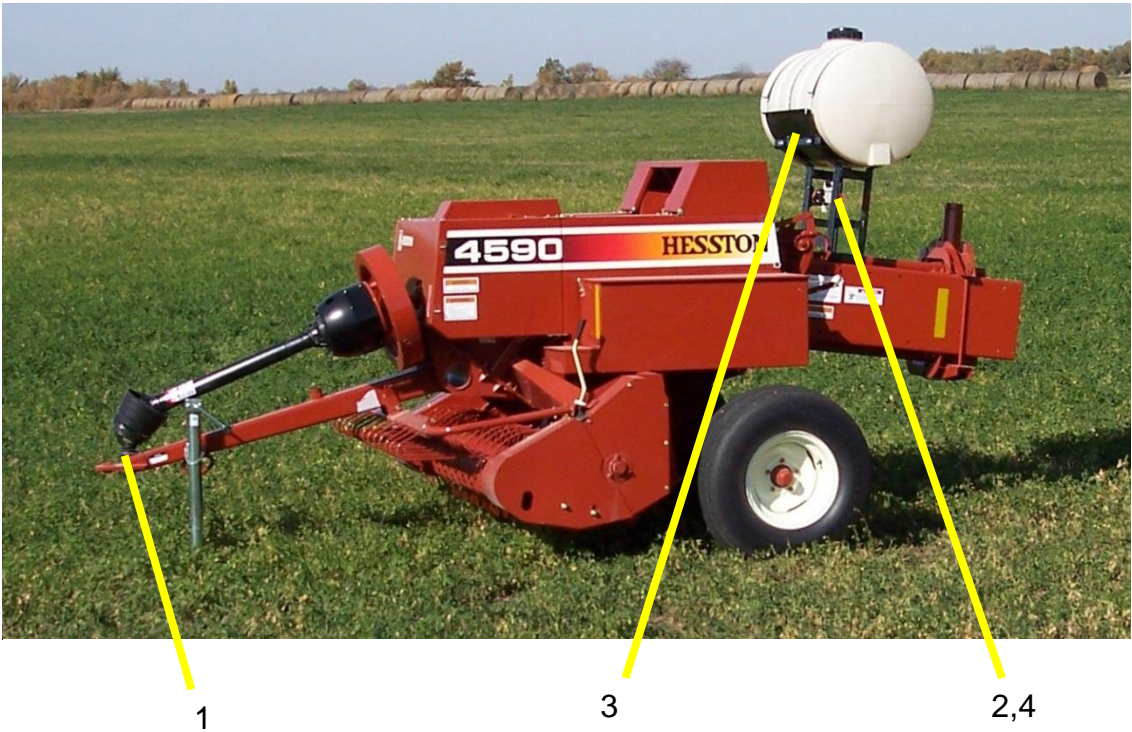
Safety Decal Locations

Model 439



Model 439

Model 432, 438



Preparing the applicator for operation

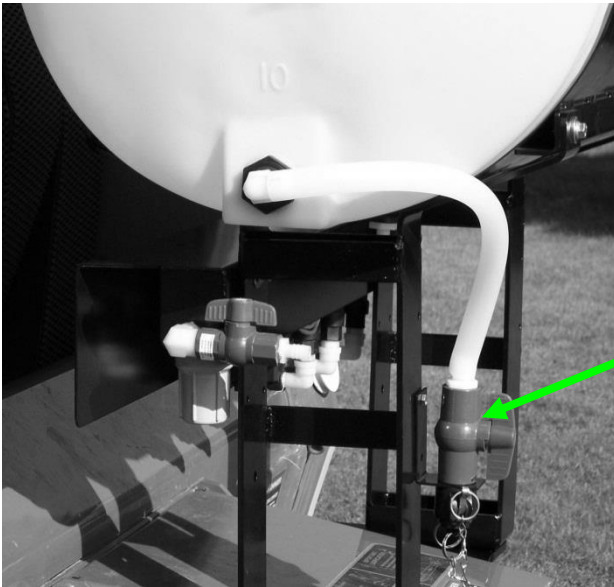
After the Applicator has been installed on the baler, follow the below steps to prepare for operating the applicator both safely and correctly.

Filling the tank:

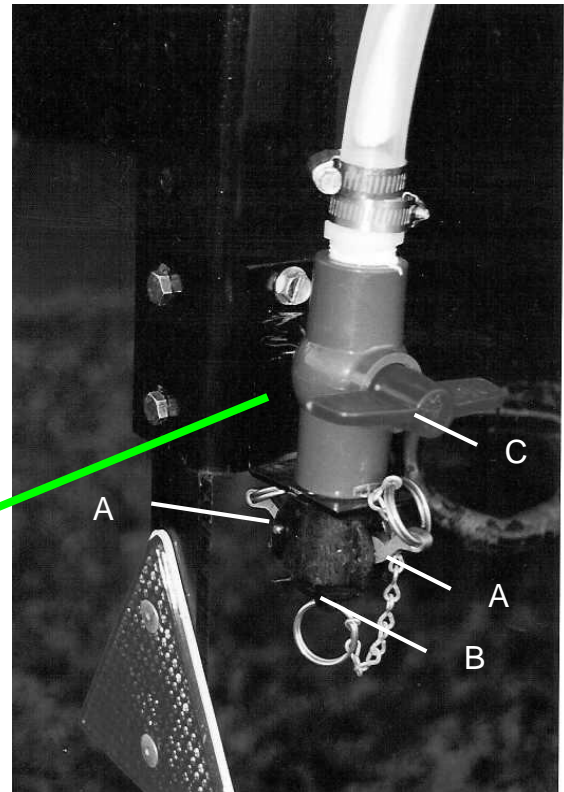
Model 432, 438

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 439

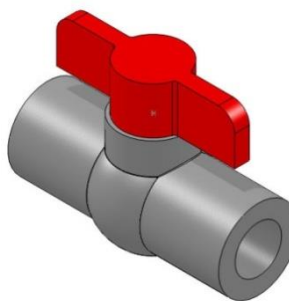
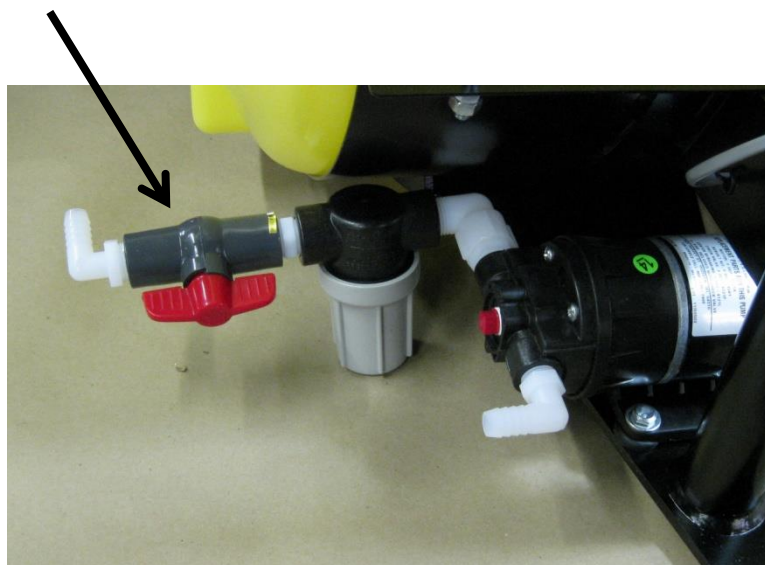
Read the label of the product being filled into the tank to determine what individual protective measures need to be taken. Clean the tank lid area and unscrew the lid. Transfer product from the container into the tank.

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

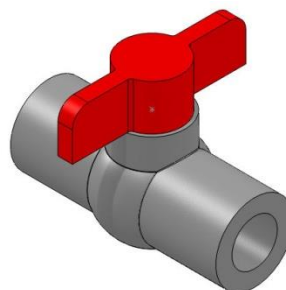
Operation of the main ball valve

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



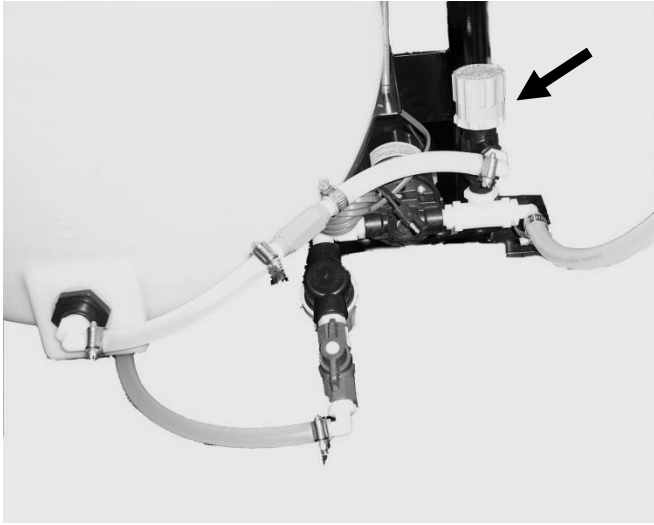
Valve closed

Connecting the power harness

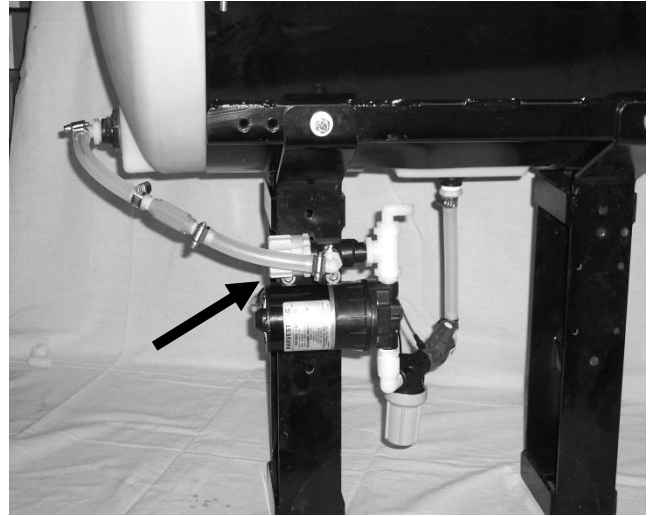
The power harness that supplies power from the tractor battery to the applicator pump has a disconnect at the hitch. Connect the two together for operation. Always disconnect before servicing the applicator or baler.

Operation of the pressure regulator

The pressure regulator is located next to the pump. To adjust the regulator the tractor and baler need to be turned off. Loosen the jam nut under the adjustment knob. Turn the knob clockwise to increase pressure and counter clockwise to decrease pressure. Lock the jam nut after the adjustment has been made.



Regulator on model 439



Regulator on model 432. 438

First time and annual start up

After familiarizing yourself with the pressure regulator, fill the tank with 5 gallons of water. Turn on the power to the pump by pushing the toggle switch up. You might hear the buzzing of the motor. Once the water starts to spray check the system for leaks. When you are comfortable with the operation of the applicator you can set to apply the amount of chemical needed for the current field conditions.

Field Operation

Calibration

There are three things that you need to know when calibrating your applicator. First you need know how many tons per hour you bale. Second you need to know the rate, or how many pounds of product to apply for a given tons per hour. Finally you need to know what tips to use and at what pressure to set the gauge.

Determining tons per hour for small square balers

1. Bale for three minutes.
2. Count the number of bales made in those three minutes.
3. Weigh several bales to determine the average weight.
4. Use the bale rate chart on the following page 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 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

Determining tons per hour for round balers

1. Time 3 bales and average the time it takes to make a bale.
2. 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

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. The wetter the hay the more product is needed, the dryer the hay the less product is needed. By knowing the moisture, you can make sure you are treating the hay correctly. Under applying will save money but spoilage most likely occurs. Over applying will waste money however, the hay will be saved. Some chemicals require more or less to treat the same amount of hay. To find the exact number of pounds required, for a given hay moisture, refer to the label on the drum or contact the manufacture. Harvest Tec applicators come with low, medium, and high sets of tips. If your chemical requires rates other than what these tips deliver you will need to purchase them through your dealer.

Selecting tips and setting pressure for round balers

Once you have determined your tons per hour and the amount of chemical needed for the moisture you are applying at, you can select your tips and determine your gauge settings.

1. Multiply the tons per hour by the amount of chemical required for the moisture you are applying at. This sum will give you the application rate.
2. Select the proper set of tips from the application rate chart and install them. (Pg.17)
3. For the tips you have selected, you will need to keep the gauge at the recommended PSI to achieve the proper application rate.
4. Set the pressure by adjusting the dial on the control box and by reading the pressure of the gauge to match the desired rates. The numbers on the dial are for reference only. Rate is determined by watching the pressure gauge.

Example: You are baling at 22 tons per hour with your round baler. The moisture that you are baling at requires you to apply 8 pounds per ton. Multiply the 22 tons x 8lbs. = 176lbs. per hour. Using the chart, lbs/hr with three nozzles, on page 17, you will notice the green set of tips at 35 PSI will give you that output.

Calibration reminders

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

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

REMEMBER, ONLY YOU CAN CONTROL HOW MUCH PRODUCT IS APPLIED AND THAT WILL DETERMINE IF YOUR HAY WILL KEEP!!!

Selecting tips and setting pressure for small square balers

Once you have determined your tons per hour and the amount of chemical needed for the moisture you are applying at, you can select your tips and determine your gauge settings.

1. Multiply the tons per hour by the amount of chemical required for the moisture you are applying at. This sum will give you the application rate.
2. Select the proper set of tips from the application rate chart and install them. (Pg.15-16)
3. For the tips you have selected, you will need to keep the gauge at the recommended PSI to achieve the proper application rate.
4. Set the pressure by adjusting the dial on the control box and by reading the pressure of the gauge to match the desired rates. The numbers on the dial are for reference only. Rate is determined by watching the pressure gauge.

Example: You are baling at 12.5 tons per hour with your conventional square baler. The moisture that you are baling at requires you to apply 8 pounds per ton. Multiply the 12.5 tons x 8lbs. = 100lbs. per hour. Using the chart, lbs/hr with two nozzles, on page 16, you will notice the medium or pink set of tips at 35 PSI will give you that output.

Calibration reminders

- *Watch the pressure gauge, as the setting will vary with tractor's electrical output, temperature and other factors.
- *Check your application rate by measuring product used against actual tons baled.

REMEMBER, ONLY YOU CAN CONTROL HOW MUCH PRODUCT IS APPLIED AND THAT WILL DETERMINE IF YOUR HAY WILL KEEP!!!

GENERAL CALIBRATION CHART FOR ONE NOZZLE

Use the following chart for install kit 4415

POUNDS PER HOUR WITH ONE NOZZLE

	BLUE TX-SS-4	INCLUDED IN KIT		
		LOW ORANGE TX-SS-6	MEDIUM BLUE TX-SS-12	HIGH YELLOW TX-SS-26
PSI				
15	21	32	64	105
20	25	38	76	120
25	28	42	84	135
30	30	46	92	145
35	33	50	100	165
40	35	53	106	174
45	37	56	112	185
50	38	58	116	195
55	40	61	122	200
60	42	64	128	210

GALLONS PER HOUR WITH ONE NOZZLE

	BLUE TX-SS-4	INCLUDED IN KIT		
		LOW ORANGE TX-SS-6	MEDIUM BLUE TX-SS-12	HIGH YELLOW TX-SS-26
PSI				
15	2.4	3.6	7.2	11.9
20	2.6	4.2	8.6	13.6
25	3.2	4.6	9.4	15.3
30	3.4	5.2	10.4	16.4
35	3.8	5.6	11.2	18.7
40	4.0	6.0	12.0	19.7
45	4.2	6.2	12.8	21.0
50	4.4	6.6	13.4	22.1
55	4.6	7.0	14.0	22.7
60	4.8	7.2	14.8	23.8

GENERAL CALIBRATION CHART FOR TWO NOZZLES

Use the following chart for install kits 4409, 4410, 4416 & 4485

POUNDS PER HOUR WITH TWO NOZZLES

	INCLUDED IN KIT				
	SILVER	LOW SILVER	MEDIUM PINK	HIGH ORANGE	RED
	<u>T650033-SS</u>	<u>T650050-SS</u>	<u>T6501-PT</u>	<u>T6502-PT</u>	<u>T6503-PT</u>
PSI					
15	21	32	64	128	192
20	25	38	76	152	228
25	28	42	84	168	252
30	30	46	92	184	276
35	33	50	100	200	300
40	35	53	106	212	318
45	37	56	112	224	336
50	38	58	116	232	348
55	40	61	122	244	366
60	42	64	128	256	384

GALLONS PER HOUR WITH TWO NOZZLES

	INCLUDED IN KIT			
	SILVER	SILVER	PINK	ORANGE
	<u>T650033-SS</u>	<u>T650050-SS</u>	<u>T6501-PT</u>	<u>T6502-PT</u>
PSI				
15	2.4	3.6	7.2	14.4
20	2.6	4.2	8.6	17.2
25	3.2	4.6	9.4	18.8
30	3.4	5.2	10.4	20.8
35	3.8	5.6	11.2	22.4
40	4.0	6.0	12.0	24.0
45	4.2	6.2	12.8	25.6
50	4.4	6.6	13.4	26.8
55	4.6	7.0	14.0	28.0
60	4.8	7.2	14.8	29.6

GENERAL CALIBRATION CHART FOR THREE NOZZLES

Use the following chart for all install kits 4483, 4484, 4486, & 4400C

POUNDS PER HOUR WITH THREE NOZZLES

	YELLOW 650067 650033	INCLUDED IN KIT			BLACK XR11004 6503	CENTER OUTSIDE
		RED	GREEN	BLUE		
		XR11001 650050	XR110015 6501	XR11002 6502		
PSI						
15	53	64	112	192	320	
20	63	76	133	228	380	
25	70	84	147	252	420	
30	77	92	161	276	460	
35	84	100	175	300	N/A	
40	89	106	186	318	N/A	
45	94	112	196	336	N/A	
50	97	116	203	348	N/A	
55	102	122	214	366	N/A	
60	107	128	224	384	N/A	

GALLONS PER HOUR WITH THREE NOZZLES

	YELLOW 650067 650033	INCLUDED IN KIT			BLACK XR11004 6503	CENTER OUTSIDE
		RED	GREEN	BLUE		
		XR11001 650050	XR110015 6501	XR11002 6502		
PSI						
15	5.2	7.3	12.9	22.0	31.9	
20	5.6	8.4	15.1	24.1	42.2	
25	6.3	9.5	16.7	28.3	47.3	
30	7.0	10.6	18.6	31.0	52.2	
35	7.5	11.3	19.7	33.5	N/A	
40	8.0	12.0	21.0	36.0	N/A	
45	8.4	12.6	22.3	38.3	N/A	
50	8.9	13.2	23.6	40.7	N/A	
55	9.3	13.8	24.5	42.5	N/A	
60	9.7	14.4	25.6	44.4	N/A	

GENERAL CALIBRATION CHART FOR JOHN DEERE 8 & 9 SERIES

Use the following chart for install kits 4516

POUNDS PER HOUR WITH TWO NOZZLES

	YELLOW 800067	INCLUDED IN KIT			BLACK XR11001
		RED XR11001	GREEN XR11002	BLUE XR11003	
PSI					
15	53	64	112	192	320
20	63	76	133	228	380
25	70	84	147	252	420
30	77	92	161	276	460
35	84	100	175	300	N/A
40	89	106	186	318	N/A
45	94	112	196	336	N/A
50	97	116	203	348	N/A
55	102	122	214	366	N/A
60	107	128	224	384	N/A

GALLONS PER HOUR WITH TWO NOZZLES

	YELLOW 800067	INCLUDED IN KIT			BLACK XR11005
		RED XR11001	GREEN XR11002	BLUE XR11003	
PSI					
15	5.2	7.3	12.9	22.0	31.9
20	5.6	8.4	15.1	24.1	42.2
25	6.3	9.5	16.7	28.3	47.3
30	7.0	10.6	18.6	31.0	52.2
35	7.5	11.3	19.7	33.5	N/A
40	8.0	12.0	21.0	36.0	N/A
45	8.4	12.6	22.3	38.3	N/A
50	8.9	13.2	23.6	40.7	N/A
55	9.3	13.8	24.5	42.5	N/A
60	9.7	14.4	25.6	44.4	N/A

Maintenance

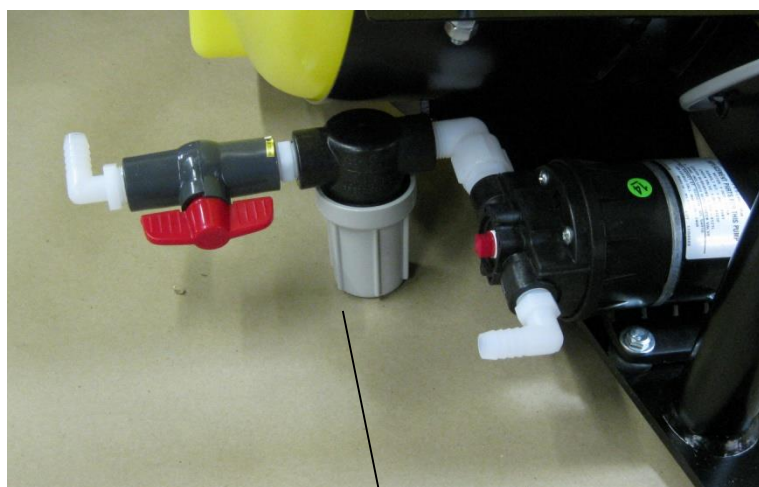
- If you are unsure how to perform any of the maintenance steps have your local authorized dealer perform the tasks.

Maintenance Schedule

	Daily	10 hrs	400 hrs	Weekly	Monthly	Season
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 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 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.

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.

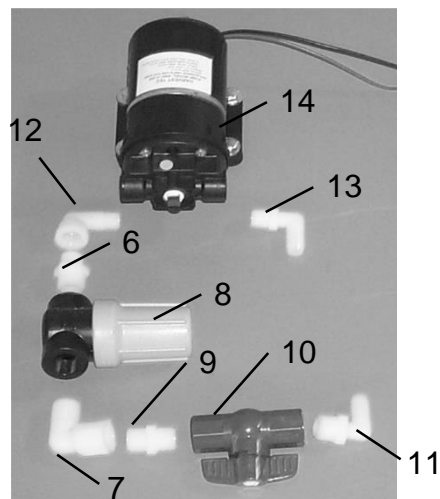
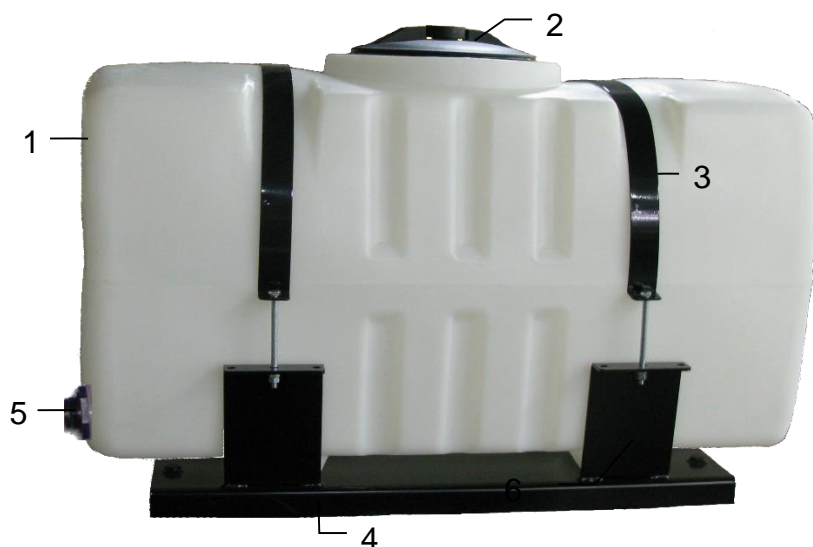
Winter Storage

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.

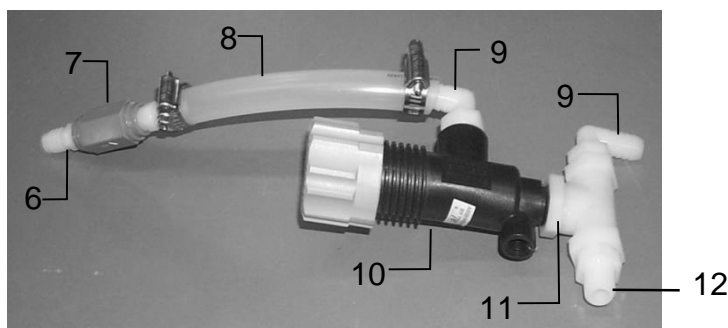
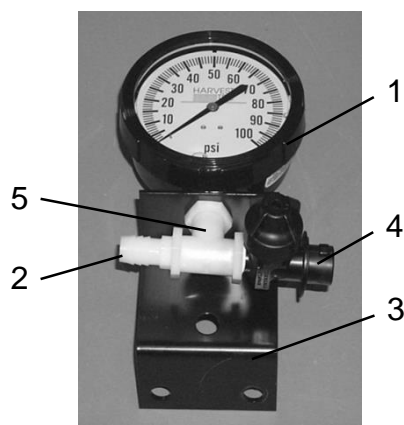
Troubleshooting

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>SOLUTION</u>
Pump will not run.	1. Pump locked up.	1. Clean or rebuild pump if motor is OK.
	2. Damaged wire.	2. Repair damaged wire.
	3. Vapor locked.	3. Loosen hose by check valve by nozzles or manifold and bleed air.
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. Electronic box out of adjustment.	2. Refer to box adjustment page.
	3. Pump worn or dirty.	3. Rebuild pump.
	4. Low supply voltage. (Pump requires 12v minimum)	4. Check voltage at connection with voltmeter.
	5. Bad gauge.	5. Gauge should read less than 10 PSI when not in use. Also tips should lose spray pattern below 10 PSI. Check accuracy.
Pump output varies.	1. Clogged or restricted inlet.	1. Clean
	2. Worn pump parts.	2. Rebuild pump.

Model 432 Base Kit

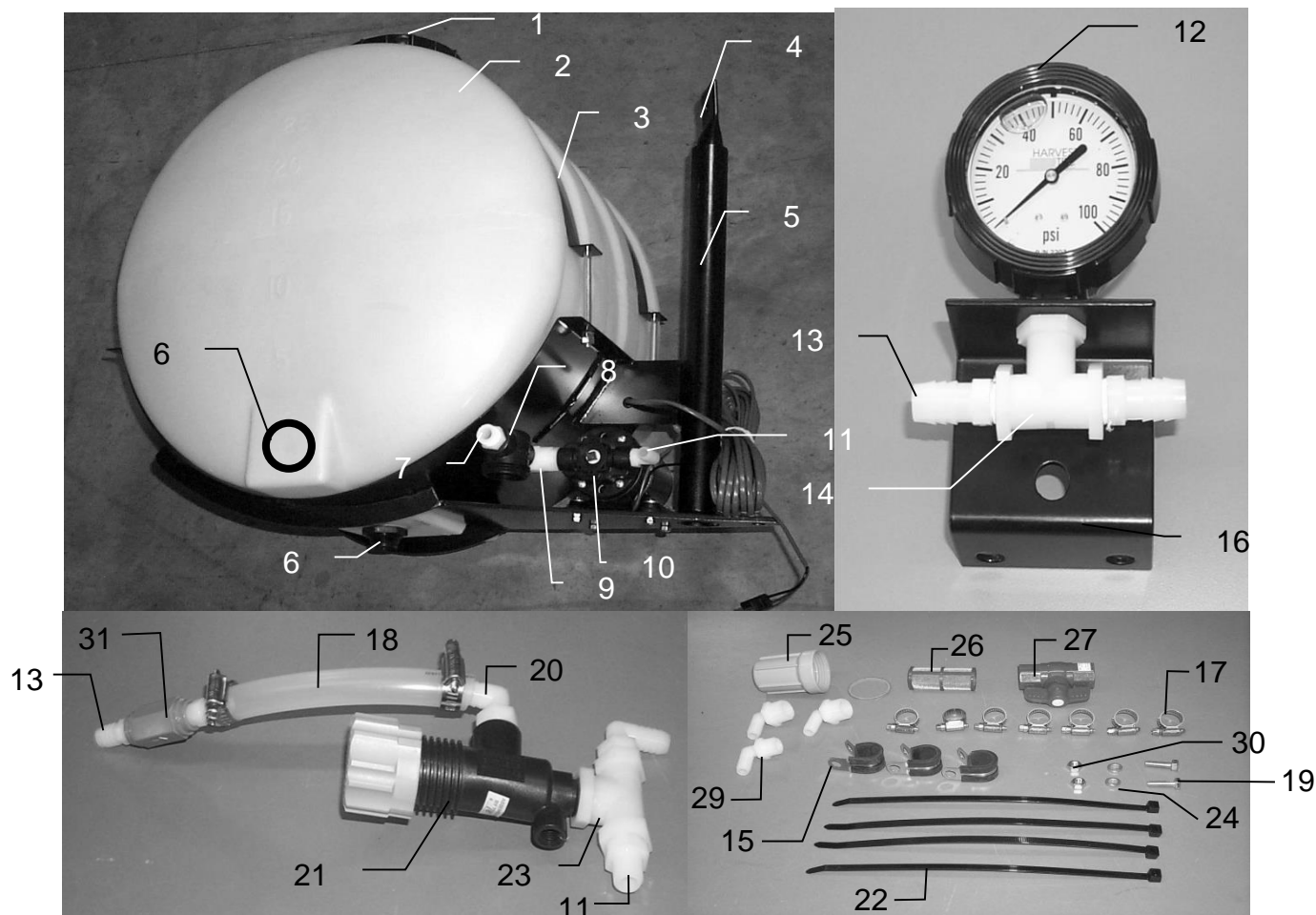


Ref	Description	Part#	Qty	Ref	Description	Part#	Qty
1	Tank	005-9203SQ	1	8	Filter bowl	002-4315-80	1
2	Tank lid	005-9022H	1	9	Nipple	003-M1212	1
3	Tank straps	001-4402	2	10	Ball valve	002-2212	1
4	Tank Saddle	001-4703X	1	11	Elbow	003-EL1212	1
5	Tank fitting	005-9100	2	12	Elbow	003-SE38	1
6	Nipple	003-M1238	1	13	Elbow	003-EL3812	1
7	Elbow	003-SE12	2	14	Pump	007-4120S	1



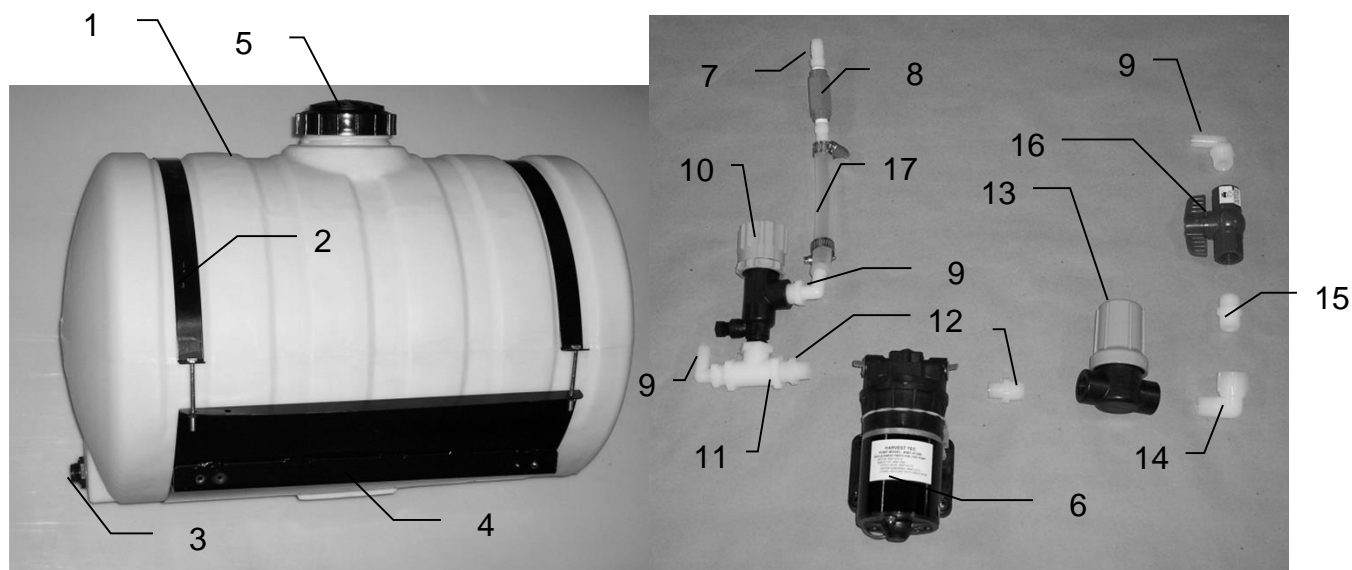
Ref #	Description	Part #	Qty	Ref #	Description	Part #	Qty
1	Gauge	002-2208Z	1	8	1/2" EVA Tubing	002-9001	21
2	Straight Fitting	003-A1212	1	9	Elbow Fitting	003-EL1212	3
3	Gauge Bracket	001-4714	1	10	Regulator	002-4716	1
4	Check Valve	004-1207V	1	11	Tee	002-TT12	1
5	Tee	004-TT14	1	12	Nipple	003-M1238	2
6	Straight Fitting	003-A1412	4				
7	Check Valve	002-4564F	1				

Model 439 Base Kit

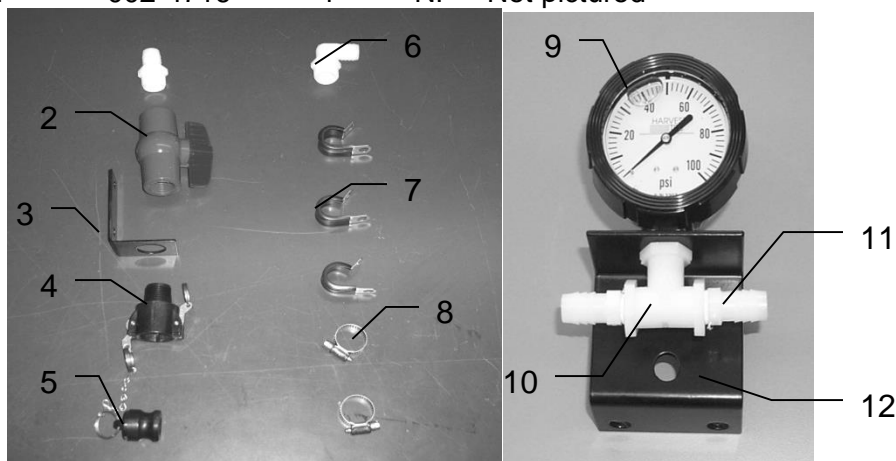


<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Tank lid 2000 or newer	005-9022C	1	16	Gauge bracket	001-4717	1
	Tank lid 1999 or older	005-9022A	1	17	Hose clamp	003-9003	9
2	25 gallon tank	005-9002	1	18	1/2" EVA tubing	002-9001	21
3	Tank straps	001-4402	2	19	5/16"x1" bolts		
4	Stub pipe	001-4403	1	20	Elbow fitting	003-EL1212	3
5	25 gallon saddle	001-4401	1	21	Regulator	002-4716	1
6	Tank fitting	005-9100	1	22	Cable ties		4
7	Nipple	003-M1212	1	23	Tee	002-TT12	1
8	Filter bowl	002-4315	1	24	5/16" lock		
9	Elbow fitting	003-SE12	1	25	Filter bowl only	003-4315F	1
10	Pump	007-4120S	1	26	Filter bowl screen	003-4315B	1
11	Nipple	003-M1238	2	27	Ball Valve	002-2212	1
12	Gauge	002-2207Z	1	28	Hose clamp	003-9003	9
13	Straight fitting	003-A1412	4	29	Elbow fitting	003-EL3412	2
14	Tee fitting	003-TT14	1	30	5/16" nuts		
15	Jiffy clips	008-9010	3	31	Check valve	002-4564F	1

Model 438 Base Kit

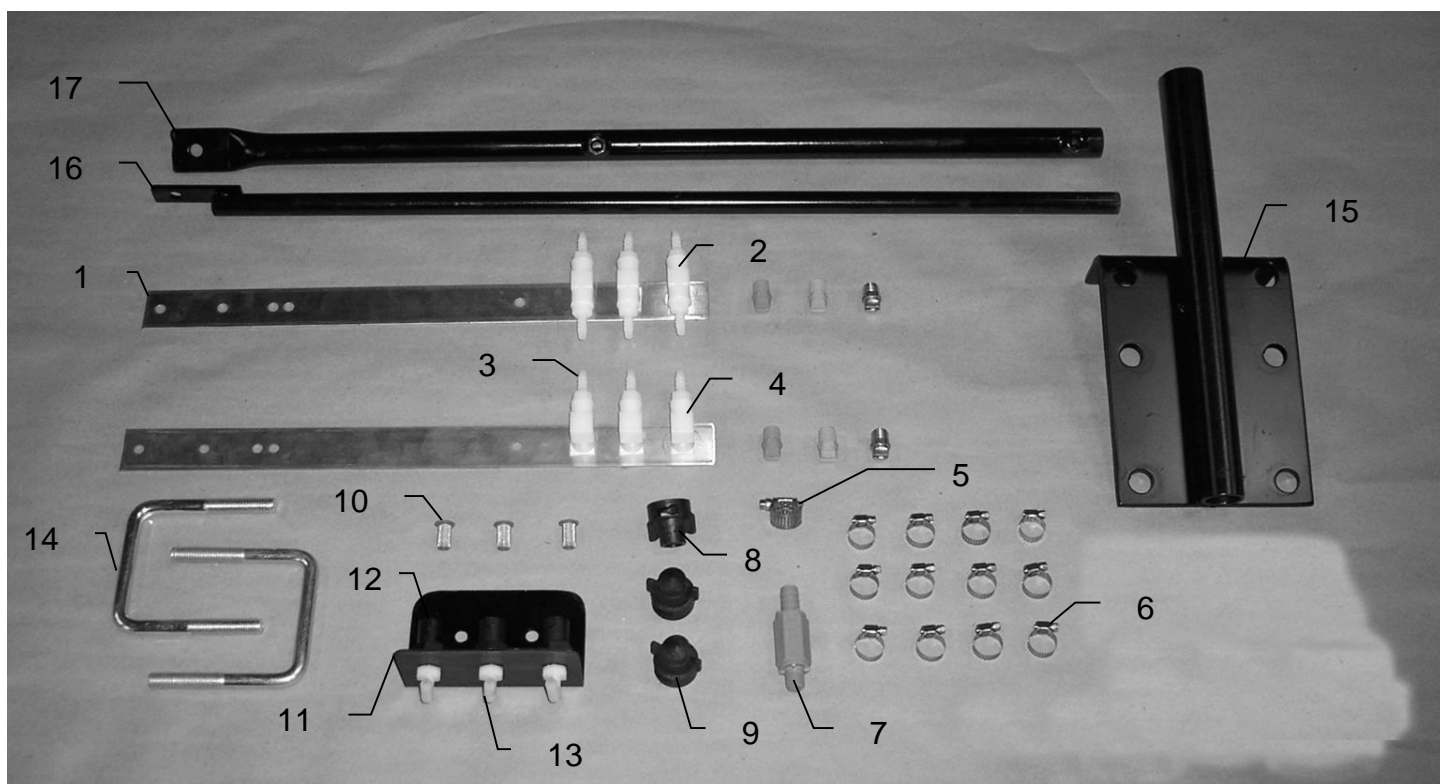


Ref	Description	Part #	Qty	Ref	Description	Part #	Qty
1	Tank	005-9203	1	11	Tee	003-TT12	1
2	Straps	001-4402	2	12	Nipple fitting	003-M1238	2
3	Tank fitting	005-9100	3	13	Filter bowl assembly	002-4315	1
4	Saddle	001-4703	1	14	Street elbow	003-SE12	1
5	Tank cap	005-9022C	1	15	Nipple fitting	003-M1212	1
	Tank gasket	005-9022CG	1	16	Ball valve	002-2212	1
6	Pump	007-4120S	1	17	Hose clamp	003-9003	2
7	Straight fitting	003-A1412	2	NP	Elbow fitting	003-EL3412	1
8	Check valve	002-4564F	1	NP	Straight fitting	003-A3412	1
9	Elbow fitting	003-EL1212	3	NP	Switch assembly	030-4724	1
10	Regulator	002-4716	1	NP	Not pictured		



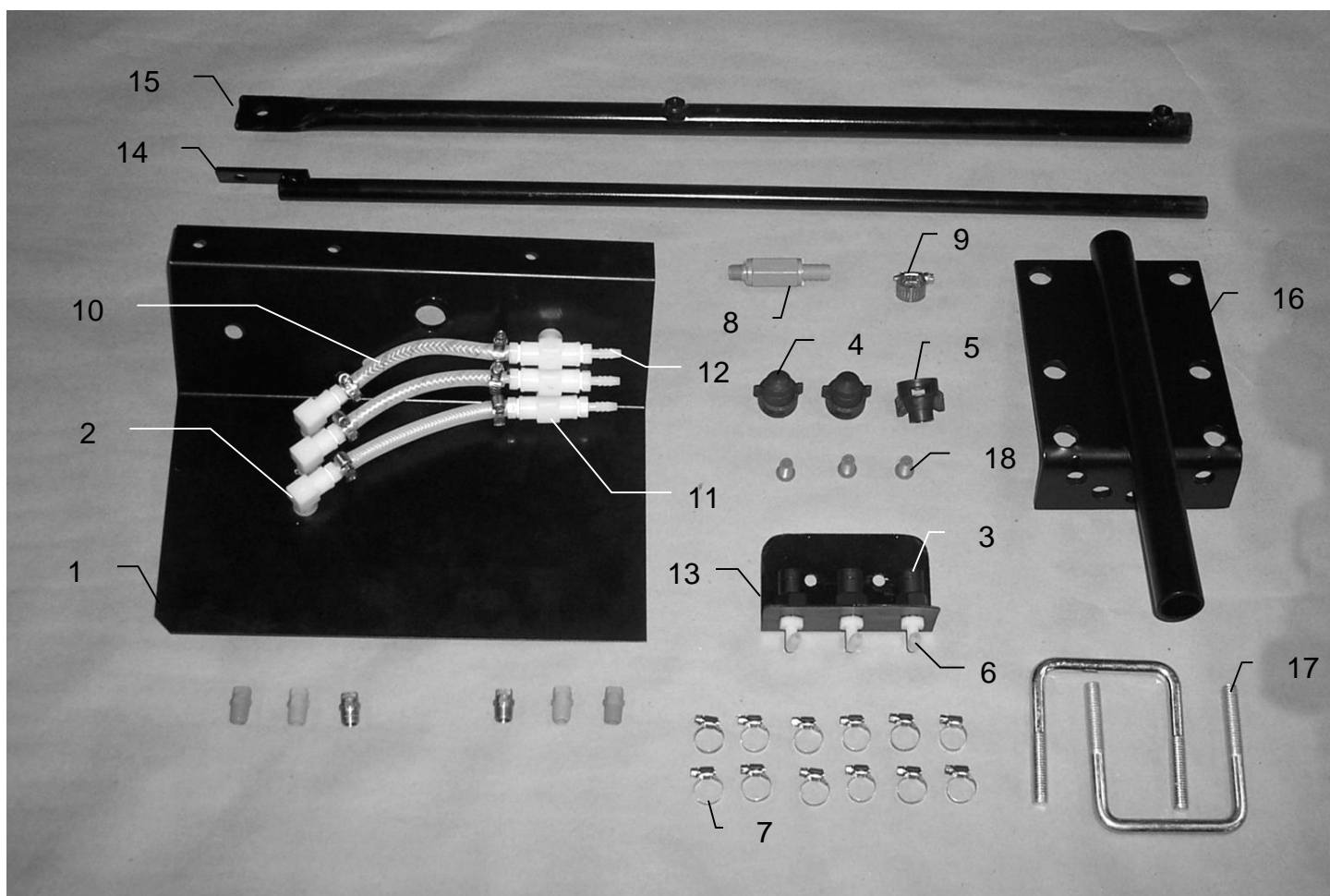
Ref	Description	Part #	Qty	Ref	Description	Part #	Qty
1	Straight fitting	003-A3434	1	10	Tee	003-TT14	1
2	Ball valve	002-2200	1	11	Straight Fitting	003-A1412	2
3	Valve holder	001-6702H	1	12	Gauge Bracket	001-4714	1
4	Female coupler	002-2204A	1	NP	Hose Clamp	003-9003	7
5	Male shut-off	002-2205G	1	NP	Pump Lead	006-4574	1
6	Elbow fitting	003-EL3434	1	NP	1/2" Hose	002-9001	20
7	Jiffy clip	008-9010	3	NP	3/4" Hose	002-9002	6
8	Hose clamp	003-9004	2	NP	Jiffy clip	008-9009	2
9	Gauge	002-2207Z	1	NP	Not Pictured		

Harvest Tec Model 4409 Installation Kit



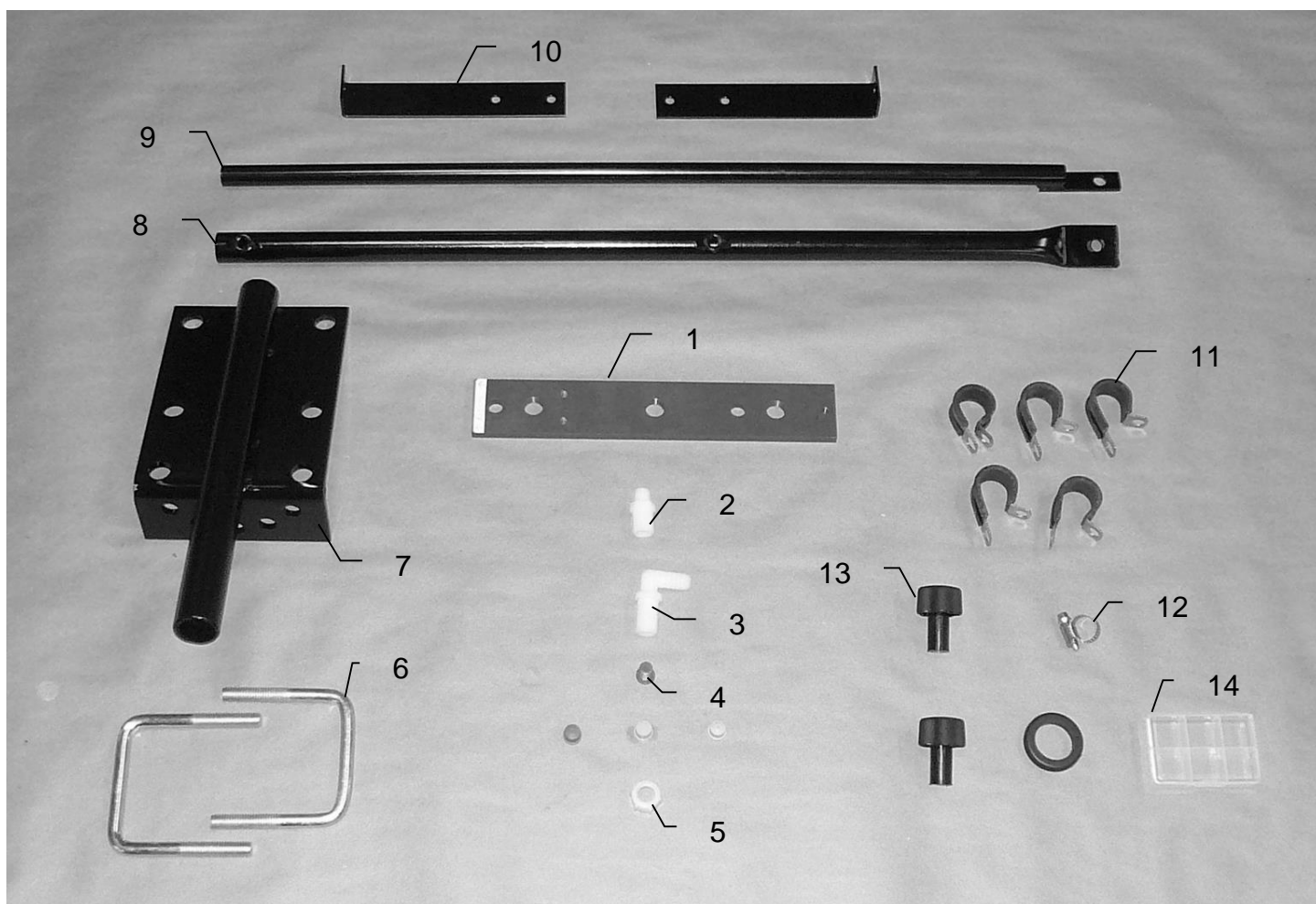
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1	Nozzle strap	001-4215	2	Tip	004-T650050-SS	2
2	Tee	003-TT14SQ	3	Tip	004-T6501-PT	2
3	Straight fitting	003-A1414	9	Tip	004-T6502-PT	2
4	Elbow	003-SE14F	3	Washer	004-1207W	3
5	Hose clamp	003-9003	1	Hose	002-9016	9 ft
6	Hose clamp	003-9002	12			
7	Check valve	002-4564X	1			
8	Female disconnect	004-1207H	1			
9	Shutoff cap	004-1207F	2			
10	Tip screen	004-1203-200	3			
11	Hose manifold	001-4720	1			
12	Female coupler	004-1207G	3			
13	Elbow	003-EL1414	3			
14	U bolt	001-4406A	2			
15	Mounting manifold	001-4406	1			
16	Inside reach rod	001-4405	1			
17	Outside reach rod	001-4404	1			

Harvest Tec Model 4410 Installation Kit



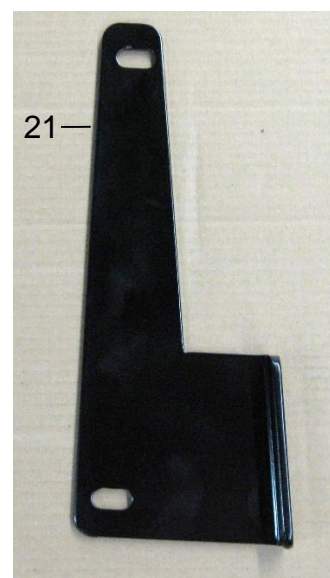
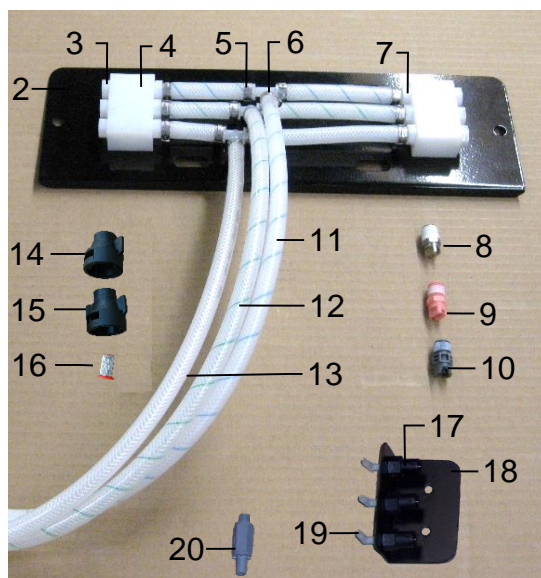
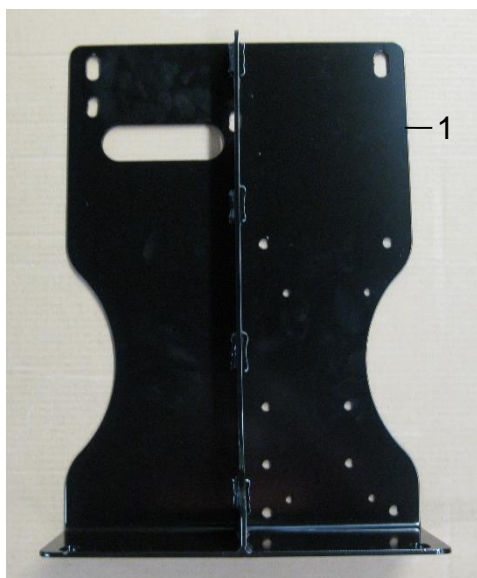
<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>		<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Spray shield	001-4426	1	NP	Tip	004-T650050-SS	2
2	Elbow	003-SE14F	3	NP	Tip	004-T6501-PT	2
3	Female coupler	004-1207G	3	NP	Tip	004-T6502-PT	2
4	Shutoff cap	004-1207F	2	NP	Washer	004-1207W	3
5	Female discount	004-1207H	1	NP	Not pictured		
6	Elbow	003-EL1414	3				
7	Hose clamp	003-9002	12				
8	Check valve	002-4564X	1				
9	Hose clamp	003-9003	1				
10	Hose	002-9016	9 ft				
11	Tee	003-TT14SQ	3				
12	Straight fitting	003-A1414	9				
13	Hose manifold	001-4720	1				
14	Inside reach rod	001-4405	1				
15	Outside reach rod	001-4404	1				
16	Mounting bracket	001-4406	1				
17	U bolt	001-4406A	2				
18	Tip strainer	004-1203-200	3				

Harvest Tec Model 4415 Installation Kit



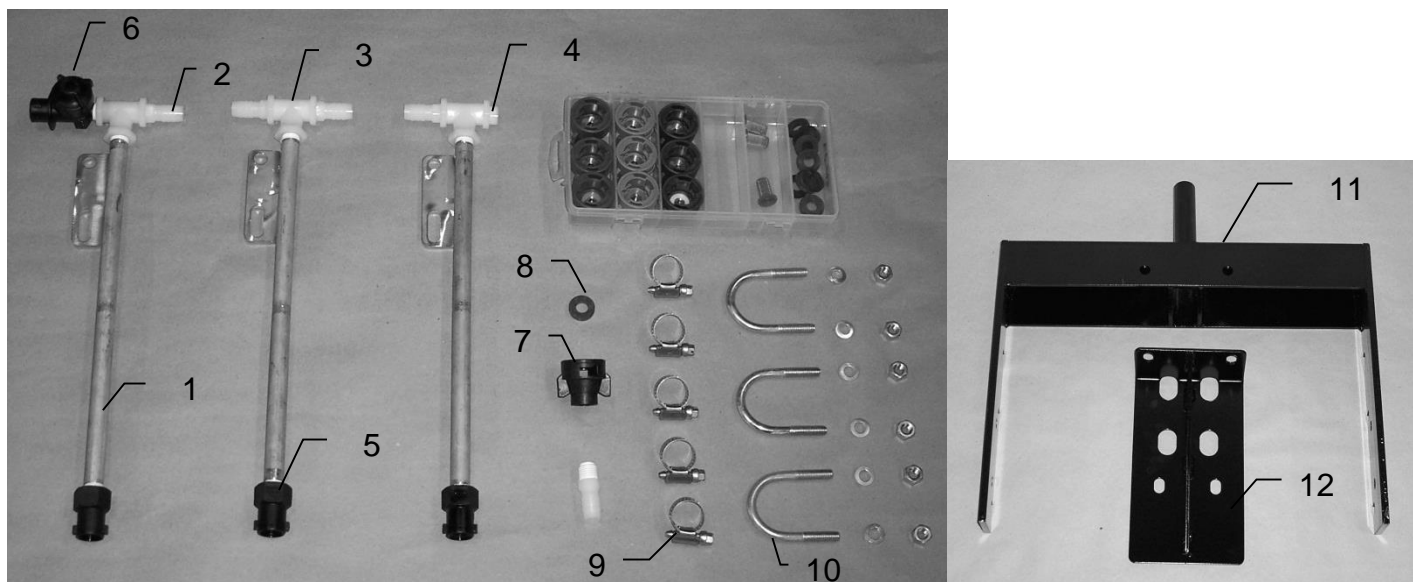
<u>Ref</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Spray shield	001-4425C	1	Tip	004-30HCX6	1
2	Drill guide	003-M3814NB	1	Tip	004-30HCX12	1
3	Elbow	003-EL3812NB	1	Tip	004-30FCX02	1
4	Tip strainer	004-4213-100	1			
5	Nozzle cap	003-BC12	1			
6	U bolt	001-4406A	2			
7	Mounting bracket	001-4406	1			
8	Outside reach rod	001-4404	1			
9	Inside reach rod	001-4405	1			
10	Bracket	001-4425B	2			
11	Jiffy clip	008-9010	5			
12	Hose clamp	003-9003	1			
13	Knob	008-0925	2			
14	Tip box	009-9001	1			

Model 4416 Installation Kit



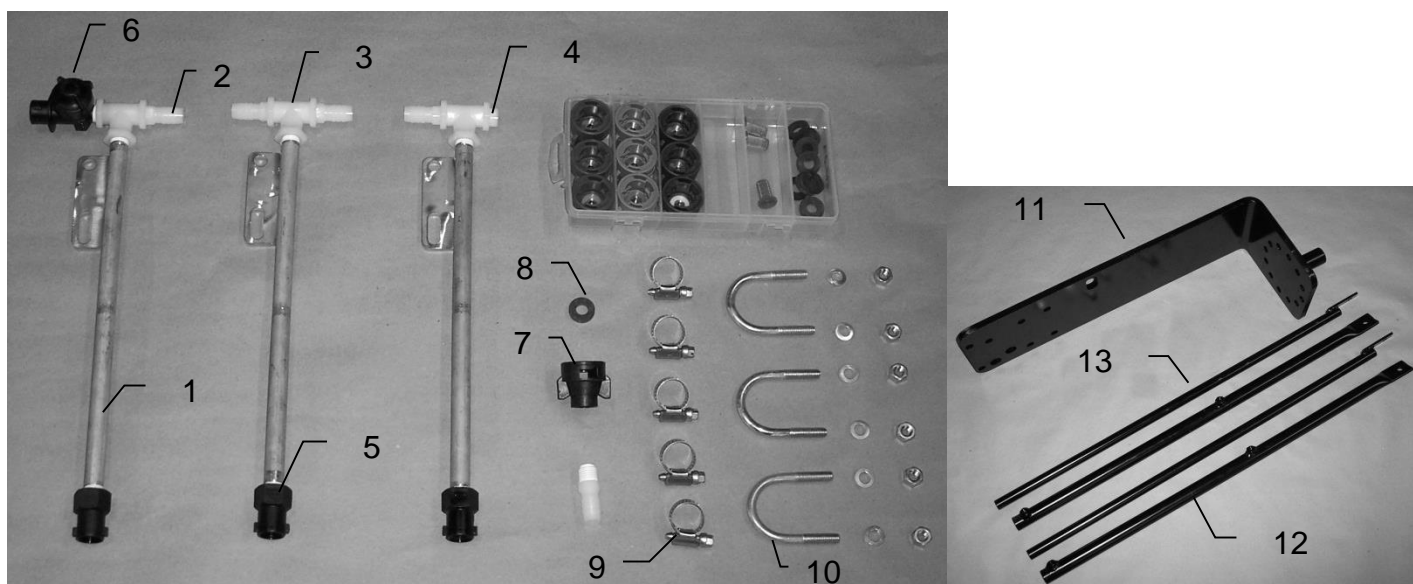
<u>Ref</u>	Description	Part #	<u>Qty</u>	<u>Ref</u>	Description	Part#	<u>Qty</u>
1	Saddle Legs	001-4703Q	2	14	1/4" Female Disconnect	004-1207H	1
2	Spray Shield	001-4424A2	1	15	Shut off cap	004-1207F	2
3	Plug	003-F14	6	16	Tip Strainer (200 mesh)	004-1203-200	3
4	Manifold Block	001-4435NSB	2	17	Female coupler	004-1207G	3
5	1/2" Otiker Clamp	003-9008	15	18	Hose bracket	001-4720	1
6	1/4" Tee	003-T1414	3	19	Elbow	003-EL1414	6
7	1/4" Straight fitting	003-A1414	3	20	Check valve	002-4564X	1
8	Stainless Tip (small)	004-T650050-SS	2	21	Kicker Bracket	001-4703QC	1
9	Pink Tip (med)	004-T6501-PT	2	NP	Spray Shield Holders	001-4424B	2
10	Orange Tip (large)	004-T6502-PT	2	NP	Mini Hose Clamp	003-9002	3
11	1/4" Hose (green)	002-9016G	4	NP	Hose Clamp #6	003-9003	1
12	1/4" Hose (blue)	002-9016B	4				
13	1/4" Hose (clear)	002-9016	4				

Harvest Tec Model 4483 Installation Kit



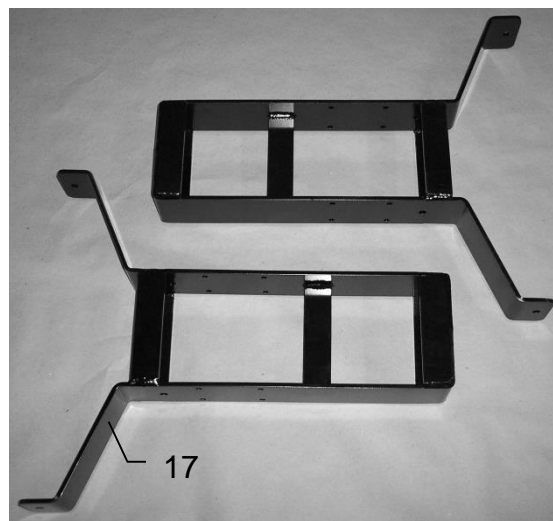
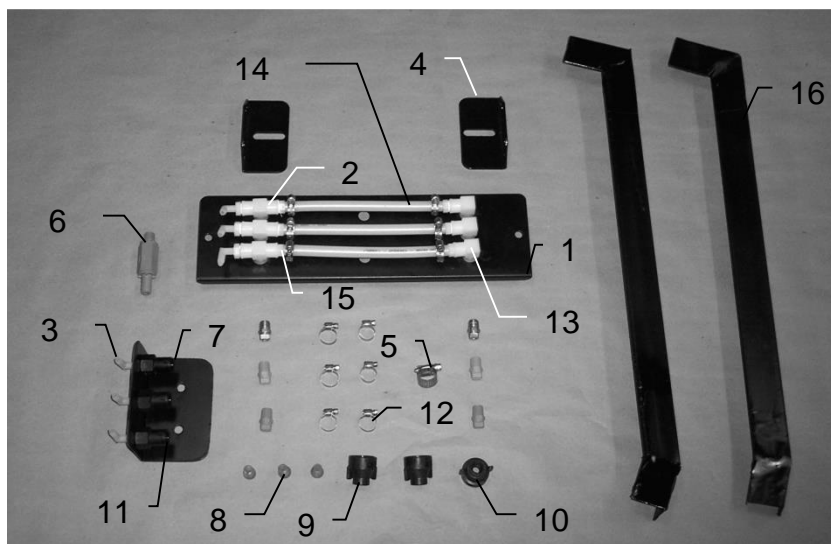
<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Nozzle tube	001-4714	3	Tip Kit (Complete)	030-9002	1
2	Straight fitting	003-A1412	5	Tip Kit Includes:		
3	Tee	003-TT14	3	Plastic Box	008-9000	1
4	Plug	003-F14	1	Red Cap	004-1207B	3
5	Nozzle Body	004-1207G	3	Outside Tip (Red Set)	004-650050-SS	2
6	Check valve	004-1207V	1	Inside Tip (Red Set)	004-XR11001VS	1
7	Female disconnect	004-1207H	1	Green Cap	004-1207A	3
8	Washer	004-1207W	1	Outside Tip (Green Set)	004-6501-SS	2
9	Hose clamp	003-9003	5	Inside Tip (Green Set)	004-XR110015VS	1
10	U-Bolt	001-4714UBS	3	Blue Cap	004-1207C	3
11	Mounting brkt	001-4411	1	Outside Tip (Blue Set)	004-6502-SS	2
12	Support bracket	001-4411A	1	Inside Tip (Blue Set)	004-XR11002VS	1
				Washer	004-1207W	9
				Tip Strainer	004-1203-100	3

Harvest Tec Model 4484 Installation Kit



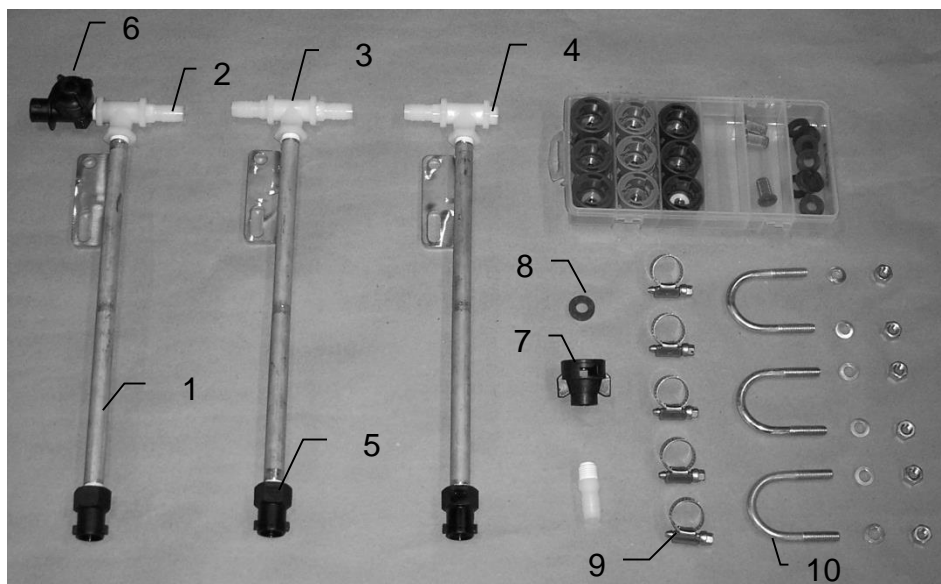
<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Nozzle tube	001-4714	3	Tip Kit (Complete)	030-9002	1
2	Straight fitting	003-A1412	5	Tip Kit Includes:		
3	Tee	003-TT14	3	Plastic Box	008-9000	1
4	Plug	003-F14	1	Red Cap	004-1207B	3
5	Nozzle Body	004-1207G	3	Outside Tip (Red Set)	004-650050-SS	2
6	Check valve	004-1207V	1	Inside Tip (Red Set)	004-XR11001VS	1
7	Female disconnect	004-1207H	1	Green Cap	004-1207A	3
8	Washer	004-1207W	1	Outside Tip (Green Set)	004-6501-SS	2
9	Hose clamp	003-9003	5	Inside Tip (Green Set)	004-XR110015VS	1
10	U-Bolt	001-4714UBS	3	Blue Cap	004-1207C	3
11	Mounting bracket	001-4418	1	Outside Tip (Blue Set)	004-6502-SS	2
12	Outside reach rod	001-4404	2	Inside Tip (Blue Set)	004-XR11002VS	1
13	Inside reach rod	001-4405	2	Washer	004-1207W	9
				Tip Strainer	004-1203-100	3

Harvest Tec Model 4485 Installation Kit



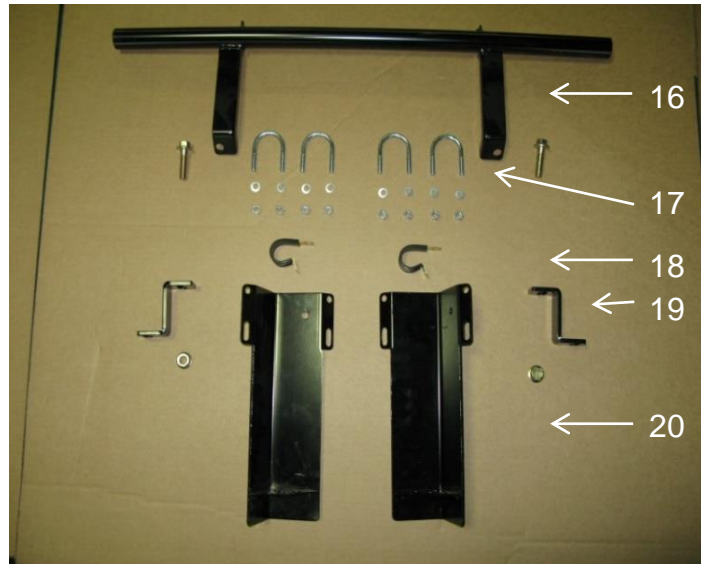
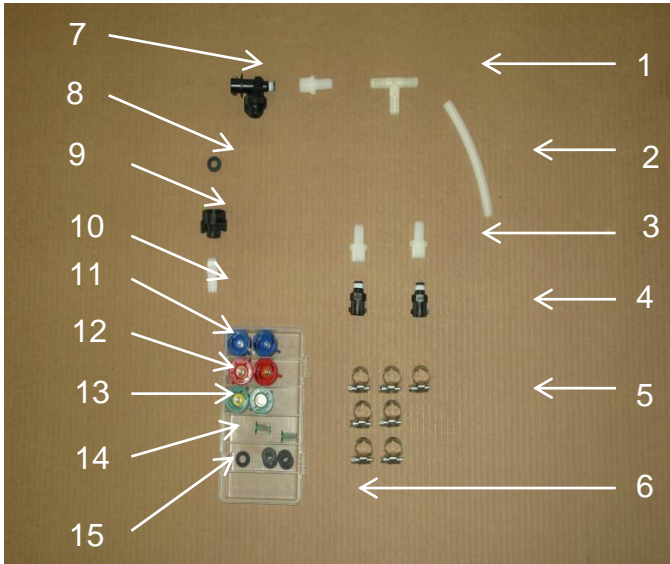
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1	Spray shield	001-4424A	1	NP	Tip	004-T650050-SS	2
2	Tee	003-TT14SQ	3	NP	Tip	004-T6501-PT	2
3	Elbow	003-EL1414	6	NP	Tip	004-T6502-PT	2
4	Shield holder	001-4424B	2	NP	Washer	004-1207W	3
5	Hose clamp	003-9003	1	NP	Not pictured		
6	Check valve	002-4564X	1				
7	Hose bracket	001-4720	1				
8	Tip strainer	004-1203-200	3				
9	Shutoff cap	004-1207F	2				
10	Female discount	004-1207H	1				
11	Female coupler	004-1207G	3				
12	Hose clamp	003-9002	12				
13	Elbow	003-SE14F	3				
14	Hose	002-9016	9 ft				
15	Straight fitting	003-A1414	3				
16	Leg supports	001-4424C	2				
17	Saddle leg	001-4703B	2				

Harvest Tec Model 4486 Installation Kit

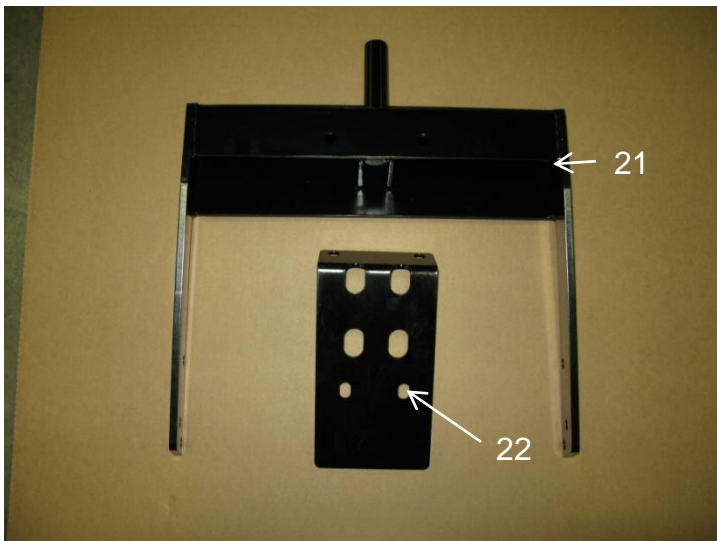


<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Description</u>	<u>Part#</u>	<u>Qty</u>
1	Nozzle tube	001-4714	3	Tip Kit (Complete)	030-9002	1
2	Straight fitting	003-A1412	5	Tip Kit Includes:		
3	Tee	003-TT14	3	Plastic Box	008-9000	1
4	Plug	003-F14	1	Red Cap	004-1207B	3
5	Nozzle Body	004-1207G	3	Outside Tip (Red Set)	004-650050-SS	2
6	Check valve	004-1207V	1	Inside Tip (Red Set)	004-XR11001VS	1
7	Female disconnect	004-1207H	1	Green Cap	004-1207A	3
8	Washer	004-1207W	1	Outside Tip (Green Set)	004-6501-SS	2
9	Hose clamp	003-9003	5	Inside Tip (Green Set)	004-XR110015VS	1
10	U-Bolt	001-4714UBS	3	Blue Cap	004-1207C	3
11	Mounting bracket	001-4420	1	Outside Tip (Blue Set)	004-6502-SS	2
12	Outside reach rod	001-4404A	2	Inside Tip (Blue Set)	004-XR11002VS	1
13	Inside reach rod	001-4405A	2	Washer	004-1207W	9
				Tip Strainer	004-1203-100	3

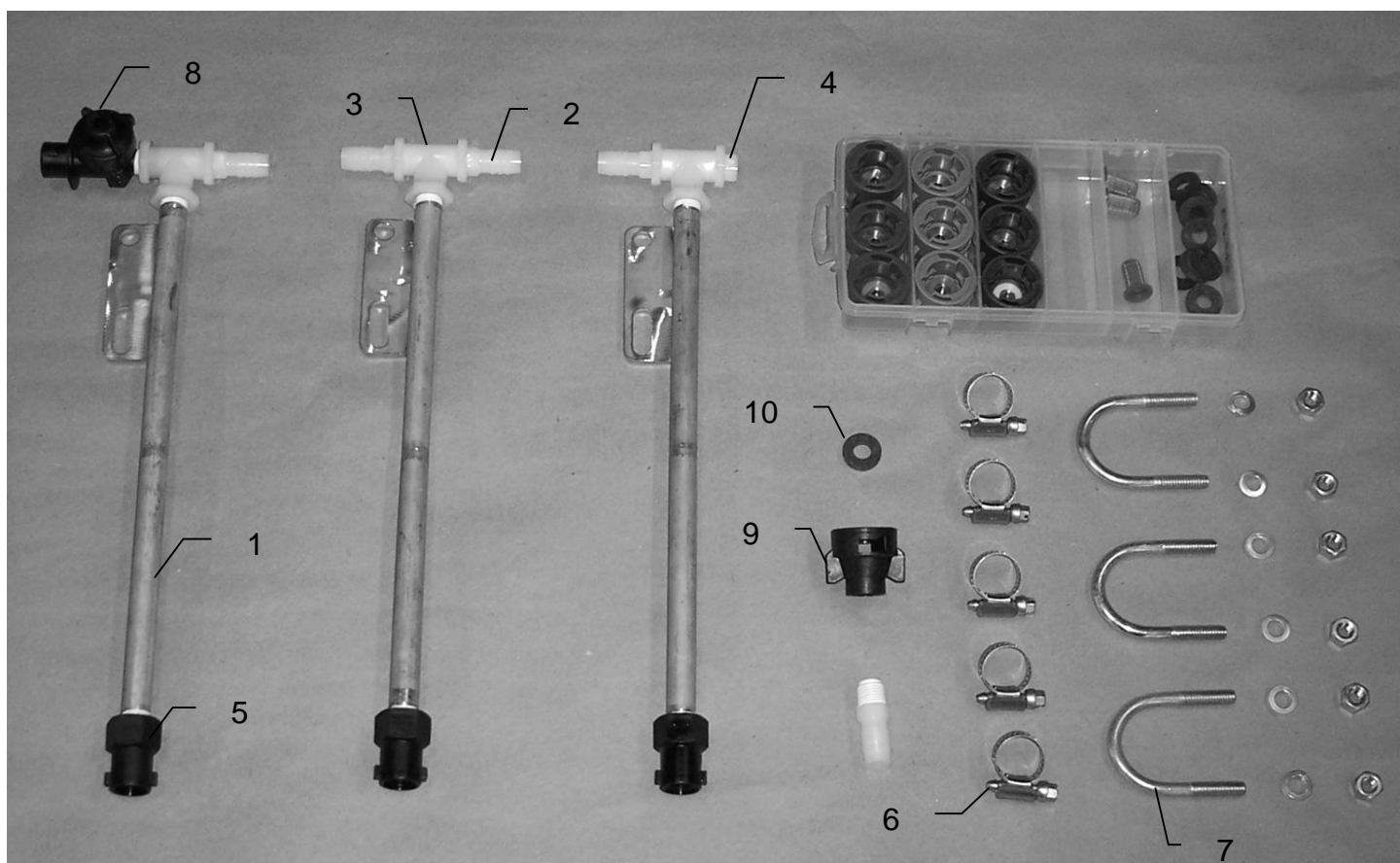
Harvest Tec Model 4516 Installation Kit FOR JOHN DEERE 8 & 9 SERIES ROUND BALERS



<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	Tee	003-T1212	1	14	Strainer	004-1203-100	2
2	Hose	002-9001	4 ft	15	Rubber Washer	004-1207W	6
3	Fitting	003-A1412F	3	16	Nozzle Holder	001-4703R	1
4	Fitting	004-4710	2	17	5/16" U-bolt	001-4714UBS	4
5	Hose Clamps	003-9003	7	18	Jiffy Clips	008-9009	2
6	PLANO BOX	008-9000	1	19	Spacer	001-4703NS	2
7	Check Valve	004-1207V	1	20	Nozzle Mount	001-4714J	2
8	Rubber Washer	004-1207W	6	21	Mounting Bracket	001-4411	1
9	Coupler	004-1207H	1	22	Support	001-4411A	1
10	Fitting	003-A1412	1				
11	Cap-blue	004-1207C	2	11a	TIP-blue	004-XR11003VS	2
12	Cap-red	004-1207B	2	12a	TIP-orange	004-XR11001VS	2
13	Cap-green	004-1207A	2	13a	TIP-yellow	004-XR11002VS	2



Harvest Tec Model 4400C 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 tube	001-4714	3	Tip Kit (Complete)	030-9002	1
2	Straight fitting	003-A1412	5	Tip Kit Includes:		
3	Tee	003-TT14	3	Plastic Box	008-9000	1
4	Plug	003-F14	1	Red Cap	004-1207B	3
5	Nozzle Body	004-1207G	3	Outside Tip (Red Set)	004-650050-SS	2
6	Hose clamp	003-9003	5	Inside Tip (Red Set)	004-XR11001VS	1
7	U-Bolt	001-4714UBS	3	Green Cap	004-1207A	3
8	Check valve	004-1207V	1	Outside Tip (Green Set)	004-6501-SS	2
9	Female disconnect	004-1207H	1	Inside Tip (Green Set)	004-XR110015VS	1
10	Washer	004-1207W	1	Blue Cap	004-1207C	3
				Outside Tip (Blue Set)	004-6502-SS	2
				Inside Tip (Blue Set)	004-XR11002VS	1
				Washer	004-1207W	9
				Tip Strainer	004-1203-100	3

Notes

Notes

WARRANTY AND LIABILITY AGREEMENT

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

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

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

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

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

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

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