

# APPLI-PRO®

# EZ

Super Low Volume  
Application System



## Operation & Installation Manual

EZ-OPR  
6/18



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## **Introduction**

The **Appli-Pro® EZ Application System** was built for Pioneer Hi-Bred International, Inc. by a leading agricultural manufacturer. The EZ is an integrated system, designed and calibrated specifically for Pioneer® brand products. 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 install and 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 unique system was developed to offer you the following advantages:

- Appli-Pro EZ treats up to 250 or 500 tons with 20 liter tank
- Simple design with reliable components
- Well suited for small operations
- Tank size: 20 Liter

## **Tools**

- 7/16" Wrench and Sockets
- 1/2" Wrench and Sockets
- 9/16" Wrench and Sockets
- Hose Cutter
- Side Cutter
- Flat Screw Driver
- Drill and Bits

## 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.

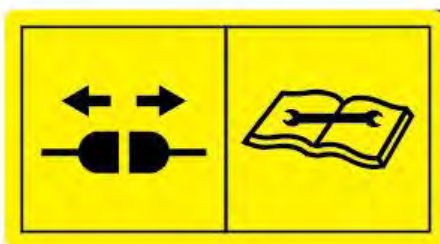
Keep your applicator in proper working condition. Unauthorized modifications to the applicator may impair the function and/or safety of the machine.

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

## Safety Sign Locations



## Safety Signs



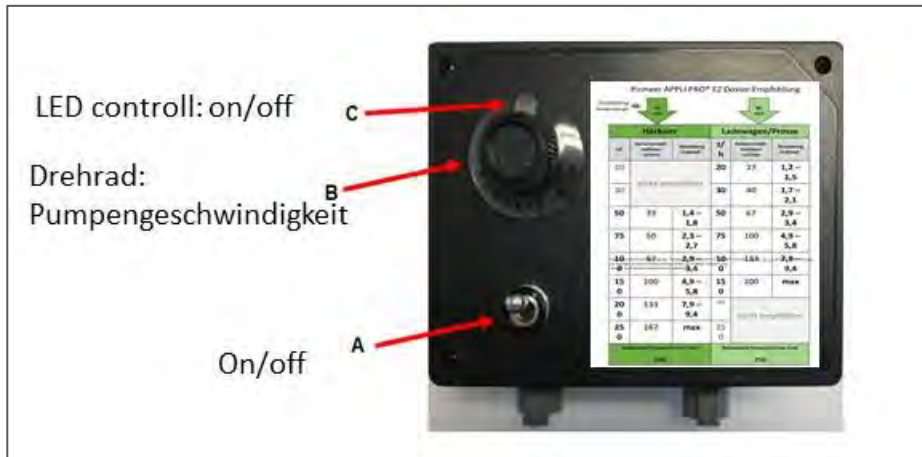
Number 1  
Spraying hazard. Disconnect power before servicing the applicator  
Part no. DCL-8003



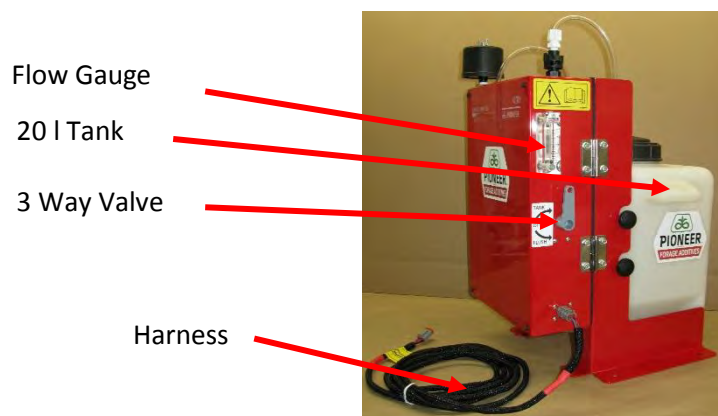
Number 2  
Read and understand the operator's manual before using or working around the equipment.  
Part no. DCL-8000

# Components:

## Control unit



## Pump housing

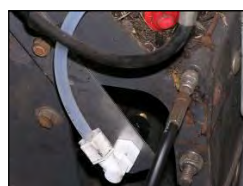


Inside view

## Power harness



## Tip

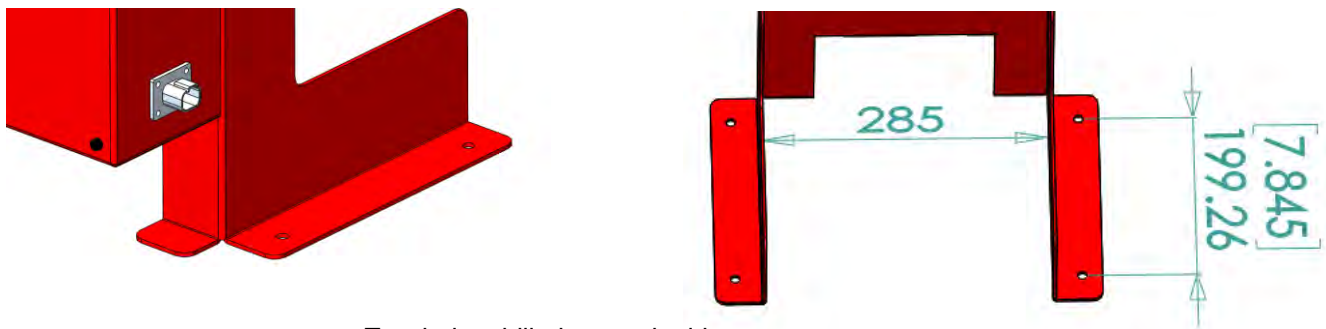


## Installation of Applicator:

### Position on chopper

1. It is recommended for chopper forage harvesters to mount the EZ on the right fender of the harvester. **Note:** Make sure you can see the flow gauge from the operator's platform and opening of pump housing should be guaranteed.
2. After finding a sturdy mounting location for the EZ on the fender, use the mounting bracket as a template and drill (4) 7/16" diameter holes to mount the EZ.

**NOTE: ENSURE THE FRAME IS MOUNTED WITH AT LEAST 11 7/32" (285mm) BETWEEN THE SIDES.**



Two holes drilled on each side

3. Secure the mounting bracket with four 3/8" or 10mm bolts, nuts, flat, and lock washers (not included).

## Installation of Applicator:

### Position on loading wagon/baler

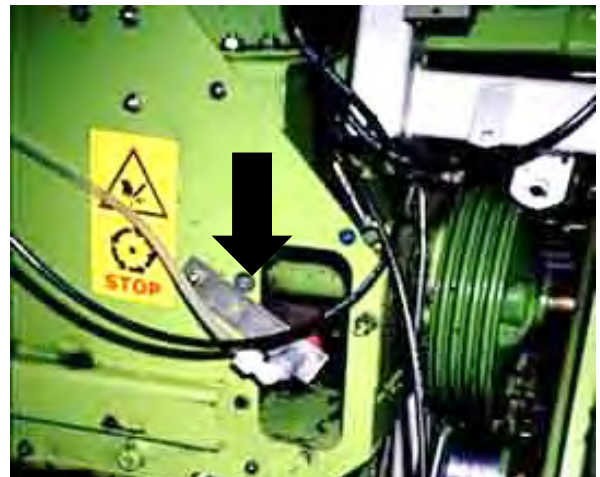
1. It is recommended for loading wagons and balers to mount the EZ on the front side of the harvester or on the drawbar. **Note:** Make sure you can see the flow gauge from the operator's platform and opening of pump housing should be guaranteed.
2. After finding a sturdy mounting location, use the mounting bracket as a template and drill (4) 7/16" diameter holes to mount the EZ.



## Recommended Spray Nozzle Positions on Chopper

### Claas Jaguar SPFH

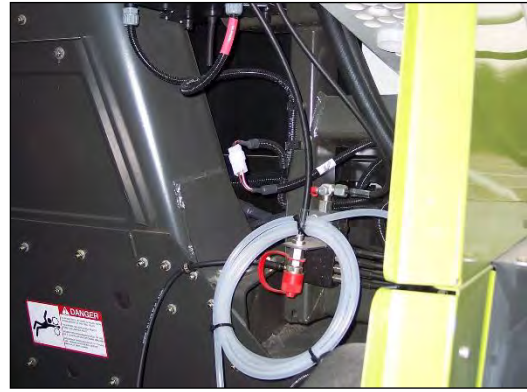
1. Locate the air intake on the back - side of the blower (right).
2. Loosen one bolt near intake hole. Connect strap to that bolt. Make sure spray tip is centered in opening.
3. Install spray tip, strainer, and tubing to nozzle strap.





## Claas Jaguar: 820 – 900

1. Install spray tip, strainer and tubing to nozzle strap.

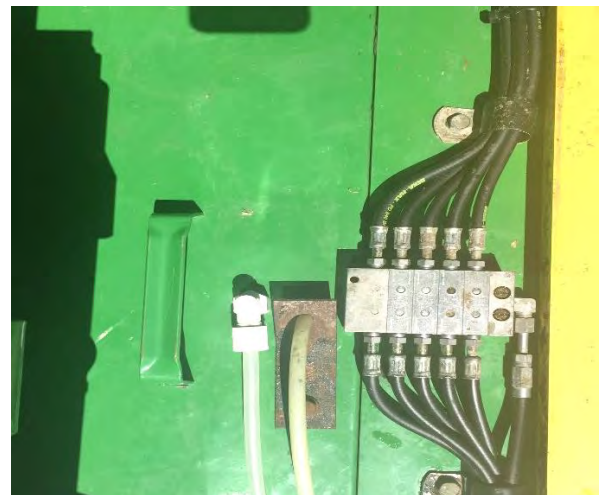


2. Loosen screw from blower and fix nozzle holder inside that hole, ensuring the central tip position inside the blower.



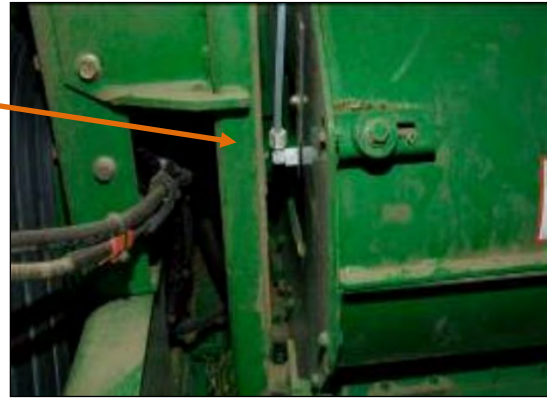
## John Deere SPFH (7000 Series)

1. Locate the accelerator.
2. Install spray tip, strainer and tubing to nozzle strap.
3. Without removing the nuts, place the nozzle strap over existing bolts and nuts (right). Fasten in place with additional nuts and lock-washers.



### John Deere SPFH (8000 Series)

1. Locate the blower.
2. Install spray tip, strainer and tubing to nozzle strap.
3. Without removing the nuts, place nozzle strap over existing bolts and nuts (right). Fasten in place with additional nuts and lock-washers.



### Krone

1. Locate the right accelerator.
2. Install spray tip, strainer and tubing to nozzle strap.
3. Loose one screw from accelerator and place nozzle strap over existing bolts and nuts (right). Fasten in place with additional nuts and lock-washers. Ensure central tip position inside the blower.



### New Holland FX

1. Front Mount installation of nozzle. 50 – 60 cm above the feed rollers.
2. Install spray tip, strainer and tubing to nozzle strap.
3. Bolt the nozzle strap to the feed roll frame with the supplied hardware. Position the nozzle so it sprays directly in front of the feed rolls.



## New Holland FR

1. Locate the blower.
2. Install spray tip, strainer and tubing to nozzle strap.
3. Drill a hole to position the nozzle. Locate the nozzle inside the accelerator, fix outside and ensure central tip position.



## Chopper Systems not listed

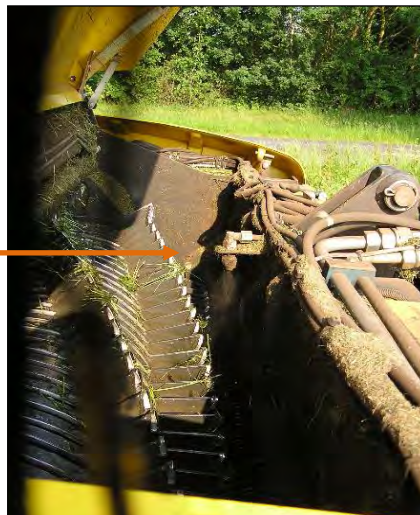
For best results on brands/models not mentioned, position nozzle to apply product prior to crop entering knives and blower.

## Recommended Spray Nozzle Positions on loading wagons/balers

For best results on loading wagons and balers, position nozzle to apply product prior to crop entering knives and rollings, best 50-60 cm above pick-up/swath)

### Option 1: inside (advantage under windy conditions - less drift)

1. Install spray tip, strainer and tubing to nozzle strap.
2. Bolt the nozzle strap to the feed roll frame with the supplied hardware. Position the nozzle so it sprays directly in front of the feed rolls (50-60 cm above pick-up.) - see picture.



## **Option 2: under the drawbar**

1. Install spray tip, strainer and tubing to nozzle strap.
2. Bolt the nozzle strap to the feed roll frame with the supplied hardware. Position the nozzle so it sprays directly in front of the feed rolls (50-60 cm above pick-up.) - see picture.



Nozzle position  
under the drawbar

## **Installation of Plumbing**

Care should be taken when routing the tubing on the machine. Considerations as you select a route for your tube: 1) be sure to avoid interference with moving parts or hot hydraulic lines that could damage the tubing, 2) route tubing in a way to prevent low spots (traps) in the line, 3) for best results the finished run should have a continual “down-flow” from the tank to the nozzle without any looping or coiling of additional tube. Cut tube to the length that you will need.

1. Locate the 20ft length of 1/4” EVA tubing.
2. Remove the compression nut on the end of the spray nozzle assembly.
3. Place the compression nut over one end of the tubing so 1/4” of it extends through the nut.
4. Begin to thread the compression nut back onto the spray nozzle assembly. Before the nut is tight, push the tubing in as far as possible. Tighten the nut the rest of the way.
5. Cut to length and locate female coupler from the parts bag. Secure coupler to tubing with a hose clamp. Place rubber o-ring into coupler. Attach the coupler to the EZ.
6. Secure tubing to machine with supplied jiffy clips.



To nozzle strap assembly.

## **Installation of Harness and Controls**

### Power / Communication Cable

1. Power harness with **orange** and **black eyeloops** is needed.
2. Attach the plug on the harness to the side plug of the EZ cabinet.
3. Run eyeloops down to the 12 volt battery. Check voltage with volt meter before attaching to machines batteries. Some machines have two battery compartments. One is 24 volts and the other is 12 volts. **DO NOT HOOK TO 24 VOLTS OR IT WILL DAMAGE THE ELECTRONICS OF BOTH THE EZ AS WELL AS THE HARVESTER.**
4. Connect the **orange** eye loop to the **positive** pole and the **black** eye loop to the **minus** pole.
5. Run the other end of the harness into the cab and connect to the 4-pin connector on the controller.

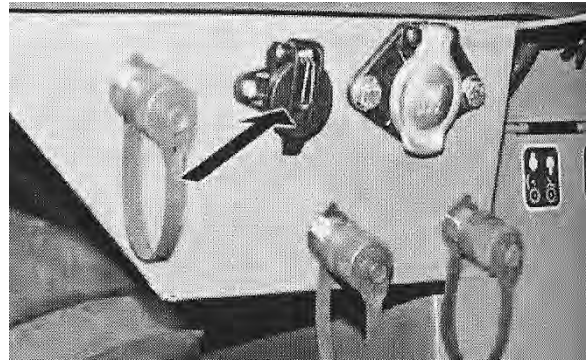
## **Installation of End-of-Row**

1. The EZ is designed to operate using the harvester's end-of-row capabilities for automatic on/off operation.
2. Connect 12V+ from your end-of-row switch to the **green pigtail** where the wiring harness connects to the controller with a quick disconnect.
3. The EZ will not start application until the machine is running with its head down, and the feed rolls are engaged.

### ***A. John Deere 7000 Series (Not Used with Green Star)***

1. *The self-propelled forage harvester should have been ordered with code 6024 or you will need to order bundle B713547.*
2. Locate harness (AZ100126) that came with the Forage Harvester. It has a green wire (065), black wire (310) and red wire (122).
3. Connect green wire of harness to the green wire on tower end of Intell harness (006-4524M).
4. Red wire is not used. Terminate it so it doesn't spark. This wire will supply 12 VDC all the time.
5. Plug harness (AZ100126) into socket located underneath headlights on the right fender.

6. To operate unit using the machines input, press the Liquid Injection Pump Switch **ONCE** (located on right hand arm rest control panel). All of the following has to be present before the power is supplied to the sprayer:



- The road safety switch is in field operating mode.
- The forage harvester is traveling forward.
- The ground speed is greater than 1.25 mph.
- The feed rolls are turning in forward direction.

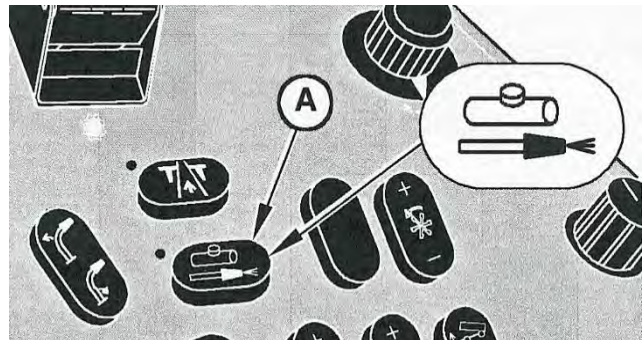
7. To allow EZ to run all of the time, press the Liquid Injection Pump Switch **TWICE**.  
**Note:** When the Liquid Injection Pump Switch is in standby mode, the tank indicator icon on the corner post will flash. When the pump is running, the icon will display solid. Also there is a light next to the switch that will light up when the switch is activated.

For more information refer to the 7000 Series Operators Manual.

### B. John Deere 6000 Series

1. The following John Deere parts are necessary:

- AL57901 Rocker switch
- Z52626 Lens insert
- RE11344 Plug

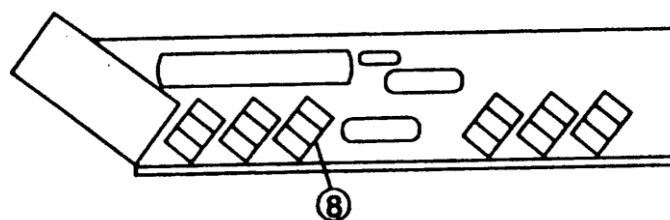


2. The switch is to be located in position 8 (shown below). Knock out the panel plug in position 8. Connect the switch to the connector labeled 534, (if the 534 label is not found, look for the connector having a brown wire #231). Snap the rocker switch into the panel with tank symbol forward and refer to the operator's manual for the switch operating information. The switch has three positions:

**(REAR) ON**

**(CENTER) OFF**

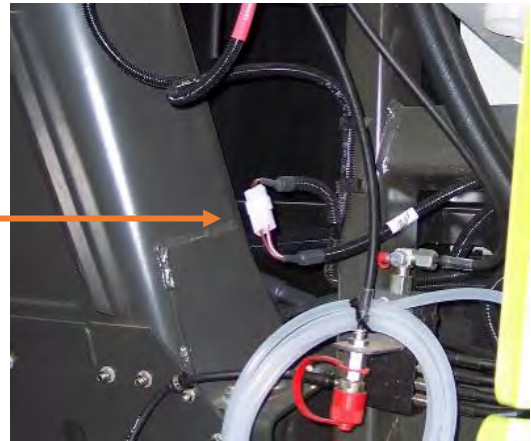
**(FRONT) ON WHEN FEED ROLLS ENGAGE**



3. Connect the green wire on the tower end of the Intell harness (006-4524M) to the center pole of the plug (RE11344 not included). Connect the plug to the socket behind the cab.

### C. Claas 830 - 990

1. The following Claas parts are required for the end of row function:
  - 2337950 Plug
  - 1787620 Plug pins
2. For Claas choppers (830 - 990), connect the green wire on the tower end of the Intell harness (006-4524M) to the "T" shaped plug hanging above blower next to the automatic oilier. The plug will have a brown and white wire leading into it. Connect the end of row wire to the white wire on the plug. The chopper will turn on the box when the feed rolls are engaged, head down, and the machine is moving forward.



### D. New Holland FX Series

1. The following New Holland part is required to utilize the end of row feature:
  - 86508819 PlugConnect a wire to the **green wire** on the tower end of the harness (006-4524M) and attach the other end to the center pole of the 86508819 plug with enough wire to reach out of the cab to the socket under the main fuse box behind the cab.

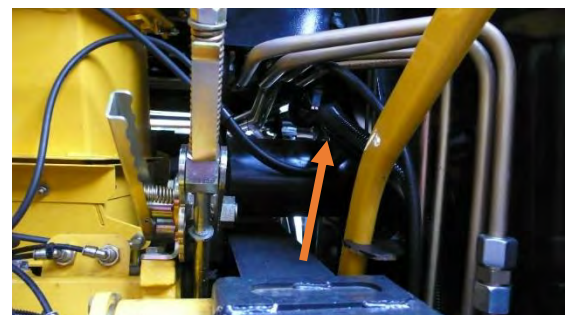


### E. New Holland FR Series

1. Depending on the year of the machine the plug will be found at the back of the machine on the right side above the rear axle (2009 & up) or behind the cab (2008 and older). The harness can also be traced to the cab and connected closer to the control box.
2. Connect a wire to the **green wire** on the tower end of the harness (006-4524M) to the white wire on the plug.



FR Series 2008 and older



FR Series 2009 and up

## **Preparing the Applicator for Operation**

### **Connect the power harness**

Attach one end of wire harness (006-4597H) to the side of the applicator. Connect other end to the control box. The power harness (006-4597P) that supplies power from the tractor battery to the applicator will be connected to the control box in the cab. Connect the two units together for operation. Always disconnect before servicing the applicator or forage harvester.

### **Fill the tank**

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.

**Attention:** Please keep care what kind of application base rate you will work with (recommendation chopper: 40 ml/t and loading wagon/baler: 80 ml/t - see application rate table).



## Operation of the Controls

### Understanding and using the control

The model 457 EZ control is pictured below. The toggle switch (A) is used to supply and cut off power to the pump and compressor. With the switch in the up position (shown) the power is on. Flip switch to down position to turn power off. The dial (B) is used to adjust the pump speed to increase or decrease flow of product to the tip when power is applied. Use the numbers on the dial only as reference. The flow gauge on the side of the applicator will be used to determine the exact flow. The message light (C) will always be illuminated when the power is on. If the light ever blinks during operation please reference the manual section “Message light”.

LED controll: on/off

Dial

On/off



### Message Light

The LED above the speed dial will be steady on when the applicator is running under normal situations. If the light blinks on and off use the below information for the message.

**Slow steady on and off blink:** The system is attached to the machine end of row. This message means that the pump is paused. The light will come on constant once the forage harvester is back in the windrow.

**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.

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

## Calibration for Forage Harvesters, Baggers and Silo Blowers

There are two steps that you need to know when calibrating your applicator: determining your ton/hour and using the flow gauge to set the correct pump output.

### Step 1

Time how long it takes to process a load. Determine how many tons are in a load by weighing it and use the chart below to determine the tons you are processing per hour.

Load size In Tons	Minutes to Process a Load																		
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
4	80	60	48	40	34	32	26	24	22	20	18	17	16	15	14	13	13	12	
6	120	90	72	60	51	48	39	36	33	30	27	26	24	23	21	20	19	18	
8	160	120	96	80	68	64	52	48	44	40	36	34	32	30	28	26	25	24	
10	200	150	120	100	85	80	65	60	55	50	45	43	40	38	35	33	32	30	
12	240	180	144	120	102	96	78	72	66	60	54	51	48	45	42	40	38	36	
14	280	210	168	140	119	112	91	84	77	70	63	60	56	53	49	46	44	42	
16	320	240	192	160	136	128	104	96	88	80	72	68	64	60	56	53	50	48	
18	360	270	216	180	153	144	117	108	99	90	81	77	72	68	63	59	57	54	
20	400	300	240	200	170	160	130	120	110	100	90	85	80	75	70	66	63	60	

Chart based on continuous feeding of machine

**Example:** It takes you 10 minutes to fill a wagon. You weigh the wagon and determine you are making a 10 ton load. Looking at the rate chart above, you see that you are chopping at 60 ton/hour.

### Step 2

Use the chart on the right for the required flow gauge reading to ensure the correct application harvesting rate.

Pioneer APPLI PRO® EZ Rate Chart					
Base Rate → 40 ml/t			Base Rate → 80 ml/t		
Chopper			Loading Wagon /Baler		
t/h	Flow Gauge ml/min	Dial -	t/h	Flow Gauge ml/min	Dial -
20	not recommended		20	27	1,2 – 1,5
30	not recommended		30	40	1,7 – 2,1
50	33	1,4 – 1,8	50	67	2,9 – 3,4
75	50	2,3 – 2,7	75	100	4,9 – 5,8
100	67	2,9 – 3,4	100	133	7,9 – 9,4
150	100	4,9 – 5,8	150	200	max
200	133	7,9 – 9,4	200	not recommended	
250	167	max	250	not recommended	
Treatable Tons/20 L Tank			Treatable Tons/20 L Tank		
500			250		

-use numbers on the dial only as reference (setting will vary with electrical output, temperature and other factors), the flow gauge on the side of the applicator will be used to determine the exact flow.

## Calibration Reminders

\*Watch the flow 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 processed.

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

## Maintenance

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

### Maintenance Schedule

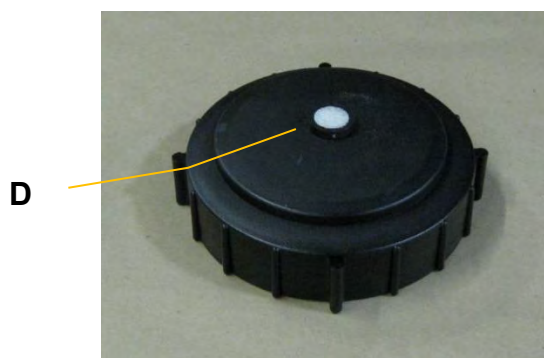
	Daily	10 hrs	400 hrs	Weekly	Monthly	Season
Flush system with water	X					X
Tip & tip screen cleaning		X				X
Tank lid cleaning		X				X
Dielectric grease connections					X	X
Rebuild pump			X			X
Battery connections				X		X
Visually inspect hoses				X		X

**Tip & tip screen cleaning:** Before cleaning the tips and screens all personal protective equipment must be worn. Refer to product label for equipment needed.

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. Refer to product label for equipment needed.

The tank lid is located on the top of the tank. If tank lid cannot be removed from ground level, use a safe and secure platform to access the tank. Unscrew the tank lid and bring down ground level. Use compressed air clean out the tank screen (D). If the screen cannot be thoroughly cleaned with compressed air, replace fitting (005-9022B3). Once the screen is cleaned reinstall the cover.



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

### **Rebuild pump:**

- Squeeze tube – Replace squeeze tube at the beginning of each season (002-9011→ 30 Inches).
  - To replace the squeeze tube; the four front screws need to be removed from the pump. Remove the old tube and place one side of the tube through the top hole leaving an 8-inch section out of the tube. Use the supplied key to gently roll the tube into the pump and through the opposite top opening. Reinstall the four screws and install on the motor.
- Tip – Replace tip and screens at the beginning of each season.
- Check calibration.

**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.
  - a. The 3-way valve on the side of the machine will switch the system to drawing water out of the fresh water for a system flush at the end of each use.
2. Although the pump can run dry, extended operation of a dry pump will increase wear. Watch the inoculant level in the tank.



Figure 1. Valve set to draw from tank.



Figure 2. Valve set to flush

### **Winter Storage**

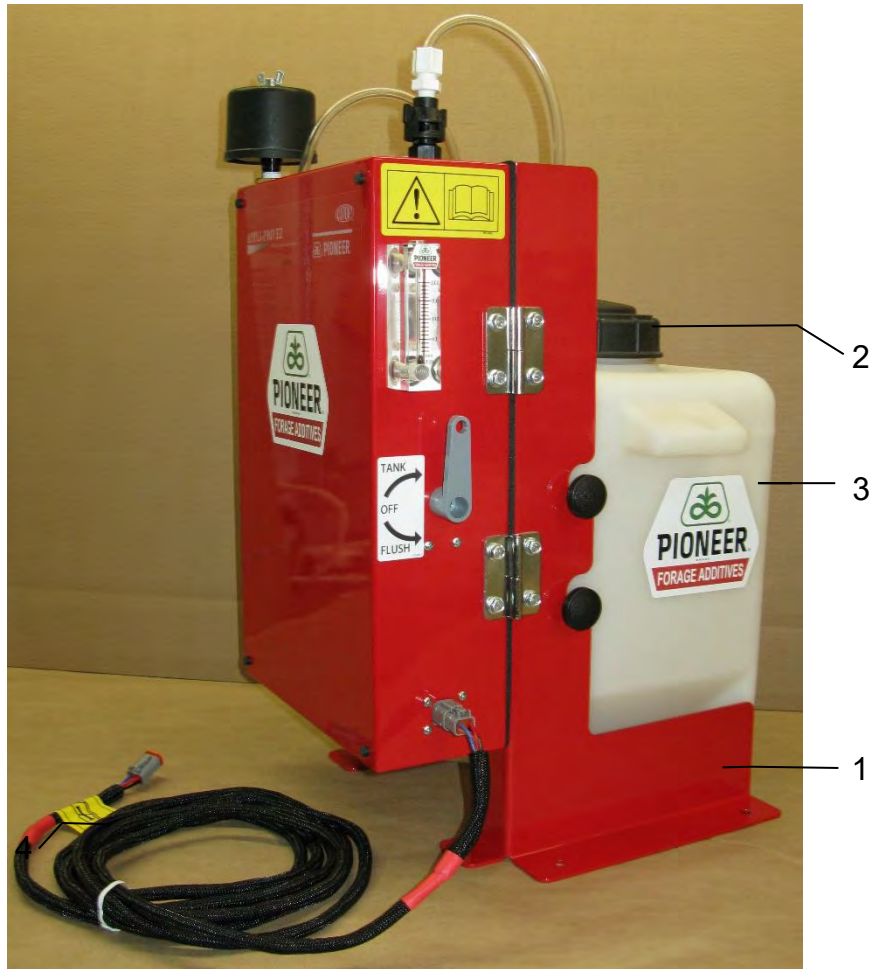
1. Thoroughly flush the system with water.
2. Drain all lines on the outlet side.
3. Never use oils or alcohol based anti-freeze in the system.
4. Remove control box from tractor and store in a warm, dry place.

## Troubleshooting

<u>Problem</u>	<u>Possible cause</u>	<u>Solution</u>
Squeeze Pump does not start	Fault in wiring	
Squeeze Pump will not prime	Air leak in intake	Replace pump tube
	Loose compression fitting from tank	Tighten nut on fitting 003-JA1414
	Missing rubber washer in female connector 004-1207H	Replace washer 004-1207W
Squeeze Pump runs but does not pump product	Pump hose is broke	Replace pump tube
	Plugged suction line	Flush line or replace if necessary
Compressor will not run	Faulty wiring	Check electrical connections
Message light blinks two times	Pump or wire harness shorted.	1. Check harness running to pump and verify no shorts or problems. 2. Check to see if pump motor is locked up. Repair or replace.
Message light blinks three times	Pump is drawing greater than 10 amps.	Check to see if motor is running correctly. Repair or replace.
Message light blinks four times	Undercurrent coming to control box.	Check all battery connections and connections running up to control box.
End of Row does not work	Fuse blown on harvester	Replace fuse
	Wire from harvester damaged or disconnected	Inspect wire or replace

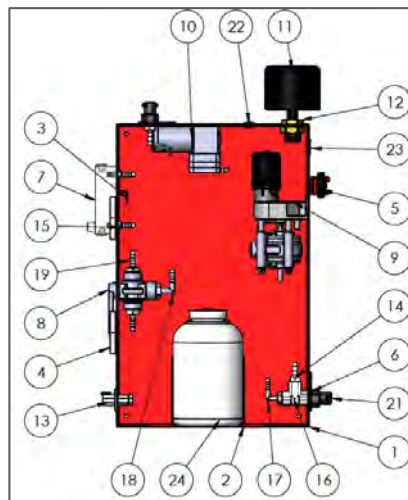
## Appli-Pro EZ Parts Breakdown

### 20 Liter Tank Unit Unit



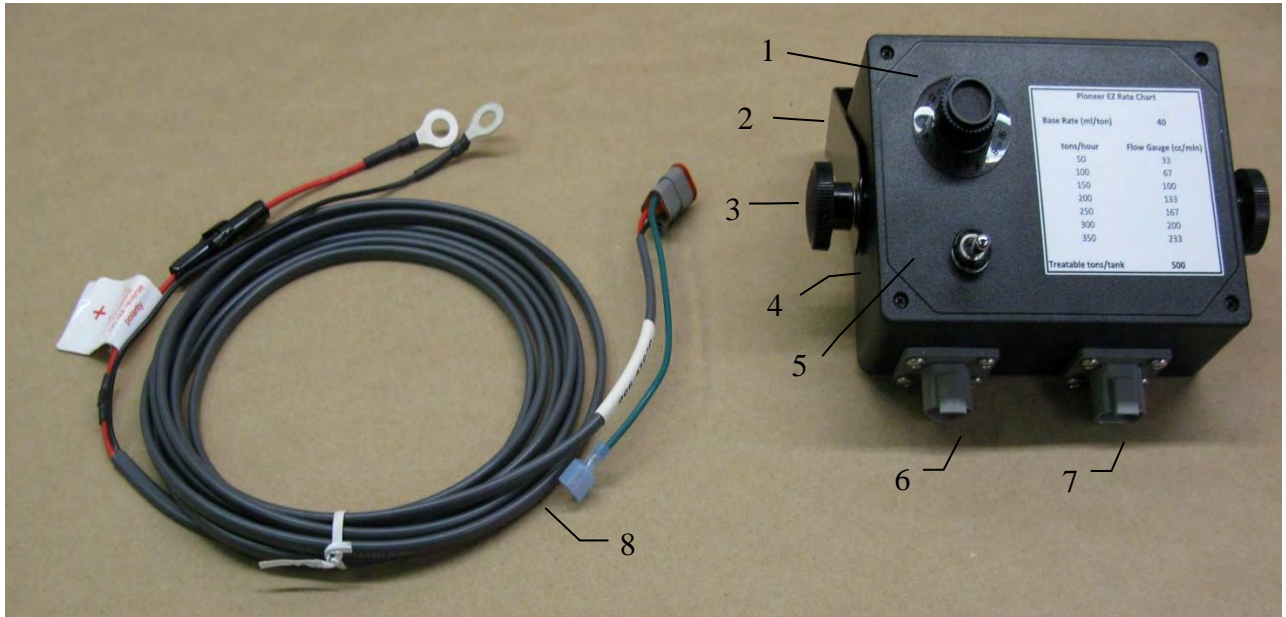
<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Mat-Code</u>
1	Base	001-4597T	1	40552
2	Tank Lid 6" with Breather	005-9022CX	1	
3	Tank 5 Gallon	005-9210	1	29871
4	Wire Harness	006-4597H	1	40559

## EZ Components



<b>Ref#</b>	<b>Description</b>	<b>Part #</b>	<b>Qty</b>	<b>Material Code</b>
1	Enclosure, Pioneer EZ	001-4597B	1	40547
2	Bottle Holder Bracket	001-4597H	2	40550
3	Light Holder Bracket	001-4597L	1	40551
4	Door Hinge	001-4597DH	2	40548
5	Door Latch	001-4597DL	1	40549
6	Black Stop	001-4594	2	29353
7	Gauge	002-4597FB	1	40554
8	Three Way Valve	002-2213	1	40553
9	Injection Motor	007-4511	1	40562
10	Compressor	007-4597C	1	40563
11	Air Filter	002-4522	1	29348
12	3/8" Bulk Head Fitting	005-9101B	1	30570
13	Power Harness	006-4597TH	1	40561
14	1/4"x1/4" Straight	003-A1414	2	
15	1/8" x 1/4" Fitting	003-A1814	2	
16	1/4" Tee	003-TT14	1	20150
17	1/4"x1/4" Elbow	003-EL1414	1	20137
18	3/8"x1/4" Elbow	003-EL3814	1	40556
19	3/8"x1/4" Fitting	003-A3814	2	40555
20	1/4" Male Union	003-M14	1	35884
21	1/4" Female	004-1207G	2	29354
22	Rubber Grommet	N/A	1	
23	Serial Number	N/A	1	
24	500 T Bottle		1	

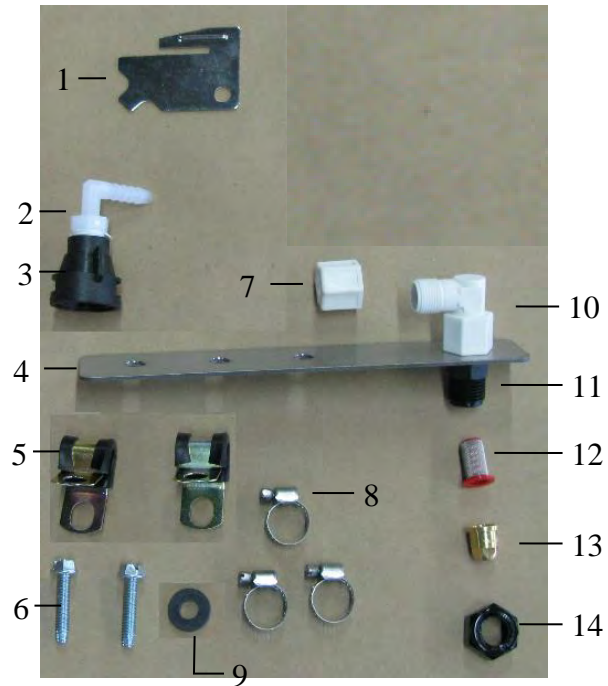
## Control Box



<u>Ref</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Material Code</u>
1	Speed dial	006-2022A	1	
2	U-bracket	001-2012E	1	20103
3	Control box knob	008-0923	2	20181
4	Control box enclosure	006-2015EZ1	1	
5	Control box cover	006-2015EZ2	1	
6	Box Plug (Power)	006-4597ICP	1	
7	Box Plug (Comm.)	006-4597ICH	1	
8	Power Lead	006-4597P	1	40560
NP	Circuit Board	006-2022P	1	

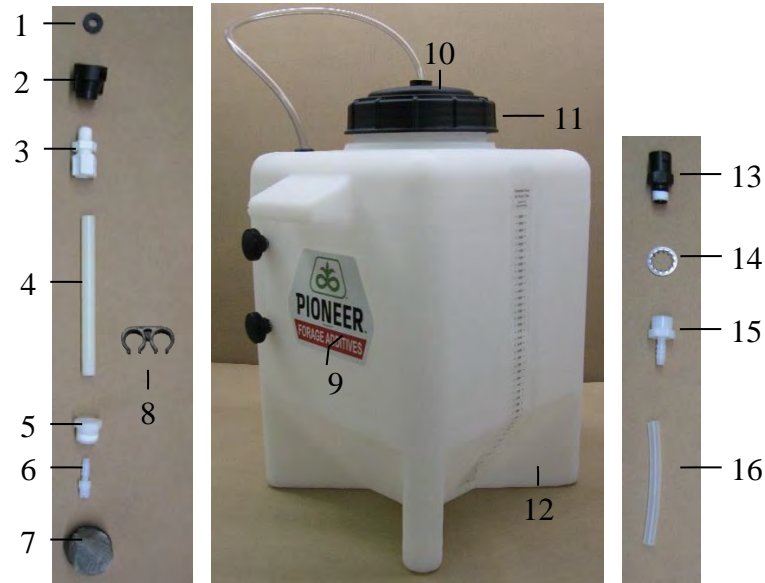


## Parts Bag



<u>Ref#</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Material Code</u>
1	Tube Installation Tool	007-4523	1	20176
2	1/4" x 1/4" Elbow	003-EL1414	1	20137
3	1/4" Female Disconnect	004-1207H	1	22849
4	Nozzle Holder	001-4216	1	20104
5	3/8" Jiffy Clip	008-9012	2	22873
6	1/4" x 1 1/4" Self-Tapping	HDR-TC-025-0125	2	25873
7	Jaco Nut	003-JN14	1	20142
8	Mini Hose Clamp	003-9002	3	20132
9	Washer	004-1207W	1	20156
10	Jaco Fitting	003-JEL1414F	1	22844
11	Nozzle Body	004-4722	1	22850
12	Tip Strainer	004-1203-50	1	22848
13	Tip	004-TX-10	1	22852
14	Nozzle Cap	004-4723	1	22851
NP	1/4" EVA Tubing	002-9006	20	

## 500 Treatable Ton Tank



<u>Ref #</u>	<u>Description</u>	<u>Part #</u>	<u>Qty</u>	<u>Material Code</u>
1	Washer	004-1207W	1	20176
2	Female Quick Connect	004-1207H	1	20137
3	Jaco Straight 1/4" HB x 1/4" NPT	003-JA1414	1	22849
4	Intake Tube	001-4542	1	20104
5	1/4" x 1/2" Reducer	003-RB1214	1	22873
6	1/8"MPT x 1/4"HB	003-A1814	1	25873
7	Screen	002-4752	1	20142
8	Tube Clip	008-9004	1	20132
9	Plastic Knob	008-0923	4	20156
10	Tank Cap	005-9022CX	1	22844
11	Gasket	005-9022CXG	1	22850
12	Tank	005-9210	1	22848
13	Nozzle Body	004-4710	1	22852
14	9/16" Interlocking Nut Washer	Hardware	1	22851
15	1/4" FPT x 1/4" HB Fitting	003-A1414F	1	
16	1/4" PVC Tubing	002-9014	5	20176
NP	1/8"FPT x 1/4"HB Fitting	003-A1814F	1	20137