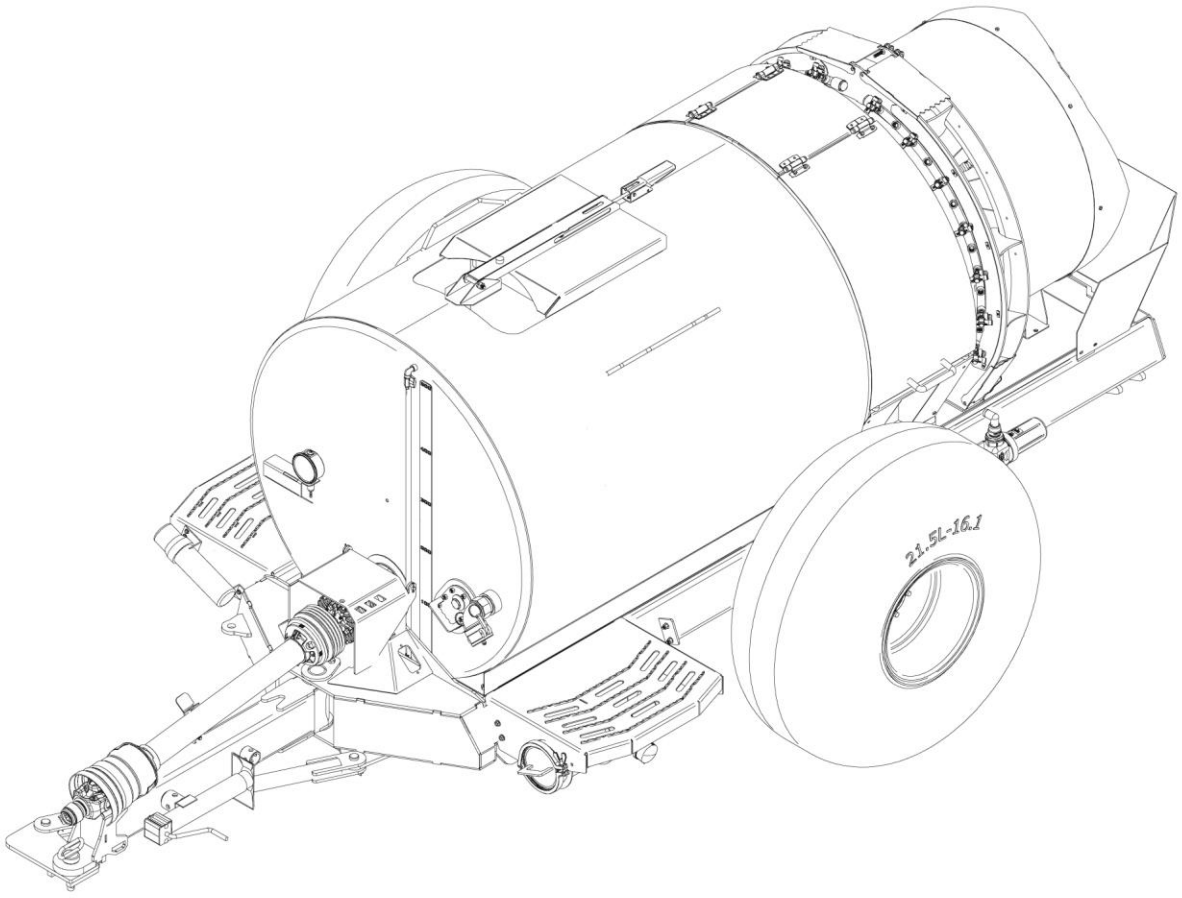
OWNER'S MANUAL

FLOWCORE
SPRAYERS



Rev A

VALLEY TOOL
MANUFACTURING COMPANY

2507 Tully Rd.
Hughson, CA 95326 USA

800-426-5615
FlowCore.com

Table of Contents

Introduction

NOTE TO OWNER Thank you for your purchase of the Flowcore Air Blast Sprayer from Valley Tool & Mfg. This manual has been prepared so that you will be able to successfully operate and care for your machine. Please take the opportunity to review and understand the contents of this manual as it contains information vital to operating your sprayer safely, optimally, and dependably for years to come. If additional information is required, contact your local dealer.

ATTENTION Safety is fundamental to the design of your Flowcore Sprayer. All shielding, adjustments, and maintenance features were included to facilitate safety and ease of use. By following and understanding the contents of this manual, it will lead to a safer work environment. All equipment should be operated by an operator trained to run the equipment. Valley Tool & Mfg. reserves the right to make improvements or additions to its products without any obligation to install these new additions to previously manufactured product.

ABOUT VALLEY TOOL Valley Tool & Mfg. is a manufacturing company that proudly designs and manufactures the Vrisimo, RockHound, BrushHound and Flowcore brand of Mowers, Shredders and Sprayers. Located in Hughson CA. Valley Tool is an innovator in the agricultural market, having built a reputation among growers as their first choice for agriculture equipment. Valley Tool provides growers in the United States, Mexico, and Canada with the equipment they need to get the job done.

Warranty Information

Valley Tool & Mfg. warrants Valley Tool Products against defects in materials and workmanship when used normally in accordance with Valley Tool's published guidelines for a period of TWO (2) YEARS from the date of original retail purchase by the end-user purchaser ("Warranty Period"). Valley Tool's published guidelines include but are not limited to information contained in technical specifications, user manuals and service communications.

This Warranty does not apply to any non-Valley Tool branded hardware products, even if packaged or sold with Valley Tool hardware. Manufacturers, suppliers other than Valley Tool & Mfg. may provide their own warranties to you; please contact them for further information. Valley Tool & Mfg. does not warrant that the operation of the Valley Tool Product will be uninterrupted or error-free. Valley Tool & Mfg. is not responsible for damage arising from failure to follow instructions relating to the Valley Tool product's use.

Only authorized and approved parts, component, attachments, and equipment will keep the warranty enforced. Any damage that results from not following defined recommendations including handling chemicals, powers, liquids, application of said sprayer, improper maintenance and installation, and other applications outside the realm of its intended design parameters, will void the warranty. All equipment damages due to loose bolts and/or fasteners is the responsibility of the purchaser and/or operator. Any returns will be FOB (Freight on Board) back to Valley Tool for assessment and/or repairs.

Valley Tool warrants Valley Tool Product for manufacturing defects and faulty parts, at the discretion of Valley Tool & Mfg. who will either repair or replace part if within the warranty period. "There are no understandings, representations or warranties of any kind, expressed or implied, statutory or otherwise, including but without limitation to the implied warranties of merchantability and fitness for a particular purpose not expressly set forth."

The use of any attachment, equipment, part or component on this product that has not been approved by or authorized by Valley Tool and Manufacturing may void this warranty in its entirety, if (in Valley Tool & Manufacturing's judgement) use of said component caused or contributed to the damage to owners Valley Tool product. Nothing contained in this paragraph shall be construed as warranty condition that the buyer must use replacement parts or components made by Valley Tool and Manufacturing or its suppliers.

In the event that, notwithstanding the terms of this agreement, it is determined by a court of competent jurisdiction that a warranty has been given by Valley Tool & Manufacturing to the buyer with respect to the speed, capacity, or other like performance characteristics of said equipment, Valley Tool and Manufacturing liability for breach thereof shall be limited to accepting return of such equipment FOB plant of distribution, refunding any amounts paid thereon by the buyer (less depreciation at the rate of 15% per year if the buyer has used said equipment for more than 30 days) and canceling any balance still owing on the equipment.

Disclaimer of Consequential Damages: Valley Tool and Manufacturing in no event shall be liable whether in warranty, contract, strict liability in tort or negligence for consequential or incidental damages arising out of or in connection with this agreement, including and without limitations to loss of profits, income, crops , production, increased cost of operation, spoilage or damage to material or other commercial loss arising in connection with the sale, installation, use of, inability to use, or the repair or replacement of Valley Tool and Manufacturing's products, except as herein provided. Claims under this warranty shall be deemed waived unless filed within thirty days from date buyer discovered, or by reasonable inspection, could have discovered any claimed breach of the foregoing warranty. Any cause of action for breach of the foregoing warranty shall be brought within one year from date the alleged breach was discovered or could have been discovered, whichever occurs first.

Warranty Restrictions

The following items shall be included in the Valley Tool two-year warranty, provided that the original PTO slip clutch assembly delivered with each model is used on that machine:

Parts Covered under the Valley Tool two-year warranty.

1) Centrifugal Pump

Parts **Not** Covered under Valley Tool Warranty includes but is not limited to…

2) PTO Shaft: Manufacturer's Warranty Applies
3) Gearbox: Manufacturer's Warranty Applies
4) Driveline: Manufacturer's Warranty Applies
5) Electric Valves: All electronic controls, solenoids, and control panels are only covered by the manufacturer's warranty.

If any of these items are to be submitted for a warranty claim, the clutch assembly must be verified or returned with the defective item.

Electronically Operated Controls

Any electronics employed on said sprayer will be covered only by the original equipment manufacturer; Valley Tool will not be responsible for acquired electronics and associated application employed on the sprayer.

PTO Slip Clutch Assembly

The PTO slip clutch assembly is an integral part of the Sprayer. Its specific purpose is to protect the tractor and the rest of the machine from abnormal use or misuse by the operator. It is expected that the clutch assembly mentioned above will be subject to normal wear during the life of the machine. For this reason, it is designed to be rebuilt and reused several times (many users never have to rebuild this assembly). The assembly is a sophisticated unit, and as such, the rebuilding of it must be done in a timely and proper manner. All of the parts must be assembled correctly and the rebuilt unit properly run-in before using.

Delivery Checklist

Prior to acceptance of your equipment, review and confirm that every item outlined in the delivery checklist is completed. Check and mark off the items outlined in the delivery checklist below with your sales representative. Make sure you fully understand the operation, adjustment and safety rules as outlined in the operator's manual. The sales representative is responsible for going over this form with the owner and operator of this attachment. This form also serves as **your warranty registration**. Fax the completed form to **(209) 882-9001**.

Customer Information

Attachment Information

Dealer

Delivery Checklist:

- ☐ Check to make sure sprayer is completely lubricated.
- ☐ Buyer is shown all grease fittings and proper gear oil height.
- ☐ Oil in gearbox checked for proper level and weight.
- ☐ All bolts checked for tightness.
- ☐ All hitch pins and retainer bolts in place.
- ☐ All safety shields in place.
- ☐ PTO shaft checked for proper length.
- ☐ Procedures for attaching sprayer to tractor demonstrated to end user.
- ☐ Starting procedures explained to end user.
- ☐ Operation guidelines as outlined in this manual explained to end user.
- ☐ All adjustment procedures explained to end user.
- ☐ All safety precautions thoroughly read and understood.
- ☐ Calibration explained to end user.
- ☐ Electric/hydraulic valve control explained to end user.

The signature below indicate that both the sales representative and the end user have gone over the above checklist and all topics have been covered thoroughly.

Buyer Signature _____ Date _____

Sales Rep. Signature _____ Date _____

E-mail: sales@valleytoolmfg.com

Constant Velocity Assembly (Junction)

Lubrication is critical. Please refer to the Adjustments and Maintenance section for instructions. Contact your dealer for specific information and assistance if you find a need to rebuild or replace these units.

Safety

Owner's Responsibility | Read this owner's manual completely and comprehensively; understand all necessary steps and practical preparation for personal protection in safely preparing and then applying any chemical spraying for projected time and crops to be sprayed. This includes proper wear and use of chemical suits; use of correct chemical resistant gloves, appropriate masks and filters, the use during spraying of eye and ear protection, appropriate boots that meet specs, and an appropriate apron when mixing and filling the tank hopper with desired chemicals for required applications.

Operational Safety

- It is the **Owners** responsibility to provide proper training to all equipment operator's in the appropriate language.
- Use OSHA approved eye, ear, head protection to protect equipment operator/s and any nearby persons.
- Wear appropriate personal protective equipment as required by local regulations
- Avoid wearing any loose clothing. Loose clothing can snag on moving equipment and components.
- **Never** use drugs or alcohol before or during the operation of this machine and Valley Tool equipment.
- Only operate this machine, power unit, and any connected equipment if it is in working order and regularly maintained.
- All guards and safety devices need to be in place and in working order before operating this machine.
- Never leave any equipment running and unattended.
- Never allow children or other persons near the equipment during operation. 100 ft minimum clearance required if not the operator.
- Never operate this machine when environmental conditions obstruct the operators view. This can include but is not limited to foggy, dusty, rainy, or windy conditions. Be vigilant of changing environmental conditions during operation and stop operations when necessary.
- Avoid sharp turns. Sharp turns can cause hard knocking coming from the driveline and reduce the life of your drivetrain components to the point of failure.
- Be aware of (sloshing) liquid moving inside the tank as you operate the machine. This movement may cause the machine to become unstable and create a dangerous operating condition that can cause a rollover of the machine.
- When attaching power unit to the machine, do so on an even level surface.
- **Do not** operate this machine on inclines as this may cause the machine to lose balance and roll over.
- Be aware that equipment may be wider than the tractor so practice caution when operating this machine to avoid hitting anything that is in the path of the equipment.
- Stay away from high speed air outlets.
- Pay attention to all decals.
- Any maintenance done on the machine should be done only in the off or non-energized position and level surface with plenty of free space surrounding the machine.
- Keep away from rotating components when machine is running. This includes but is not limited to fans, belts, rotating drums, joints/connectors, and driveline components. Failing to do so can cause you to be entangled.
- Secure long and/or loose hair to avoid entanglement with moving parts.

- Drive at a safe operating speed. Limit speed when approaching turns, slopes ditches, drop-offs, or obstructing debris.
- **Safety is the primary goal when operating all Valley Tool equipment. Have standard operating procedures in place with your operator to limit risk and increase safety.**

Maintenance Safety

Review your owner's manual thoroughly before attempting any maintenance operations on this machine.

- Before starting any equipment, inspect all fasteners, connectors, and mount points to ensure that there are no loose components.
- Before attempting to adjust, lubricate or clean the machine; disengage the PTO and shutoff all equipment.
- When working under the machine, approved jack stands must be used to guard against motion
- Wear proper personal protective equipment when performing maintenance.
- When working with the plumbing system, be aware there can be chemicals in the line that may leak or fall on your skin or clothing

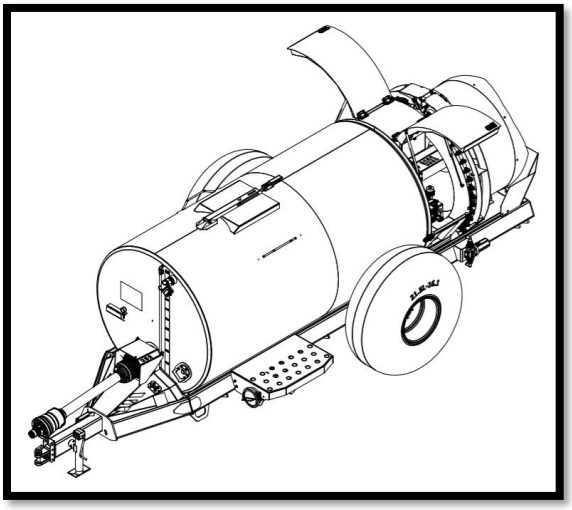
Chemical Safety

Follow all EPA guidelines when mixing chemicals in the sprayer:

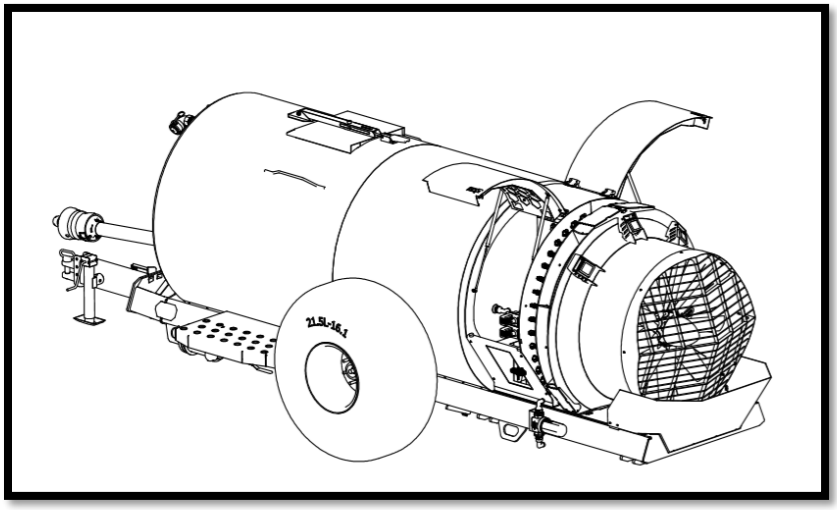
- Do not smoke, eat or wear contacts while handling chemicals. Wash hands before and after handling of chemicals and surfaces where chemicals may have come in contact.
- Wear protective clothing and equipment such as goggles, respirator, gloves, spray suit, hats, boots and long pants during mixing and applications of pesticides.
- Know the sign and symptoms of chemical poisoning. Review the MSDS for the given chemicals used in your application.
- Properly mix chemicals as defined by manufacturers chemical application instructions.
- Pesticides are dangerous when mishandled; be thoroughly knowledgeable of types of chemicals used/equipment being tasked.
- Proper ratio when making diluted chemical mix added to the tank.
- Always clean the tank in the field and properly dispose of cleaning solution. Damage that results from improper cleaning will not be covered under warranty.
- List chemical used in tank as required by local regulations
- Always rinse your gloves thoroughly, then wash your hands thoroughly before eating, drinking, smoking, and/or going to the bathroom.
- Never ever rub your eyes when handling spray materials
- Always treat clothing that had chemicals spilled on as contaminated.
- Make sure phone number to poison control center is available.

Sprayer Overview

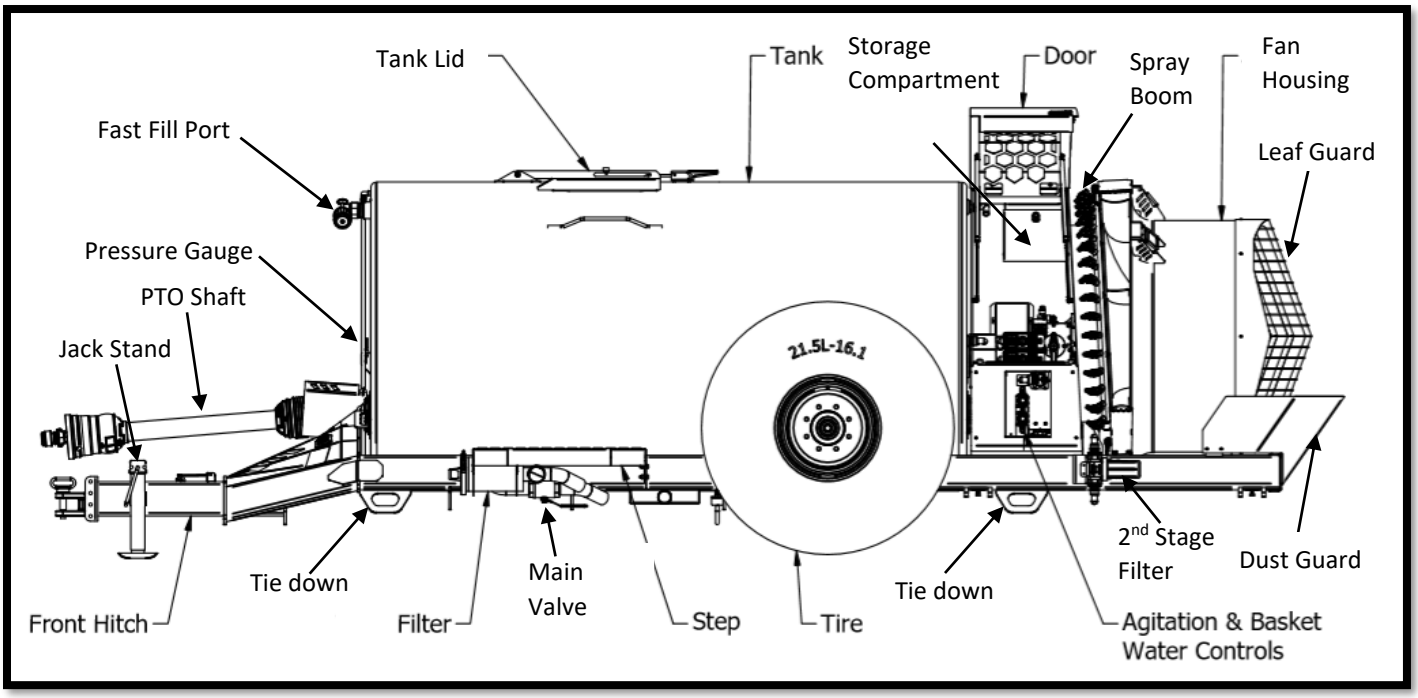
The Flowcore Orchard Sprayer is composed of multiple systems that interact to provide efficient spraying capability. The following images will provide an overview of all major systems that will be encountered when operating the machine.



Front-Side Profile of Flowcore Sprayer

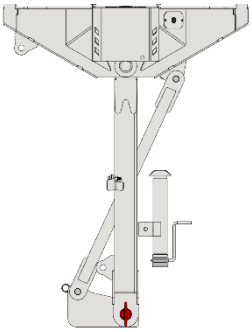


Back-Side Profile of Flowcore sprayer

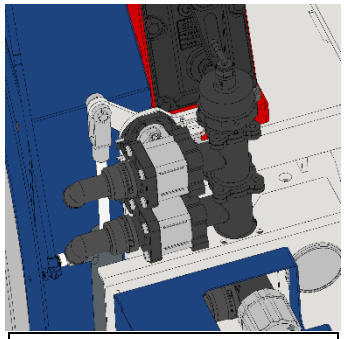


Flowcore Side Profile

Sprayer Options Overview

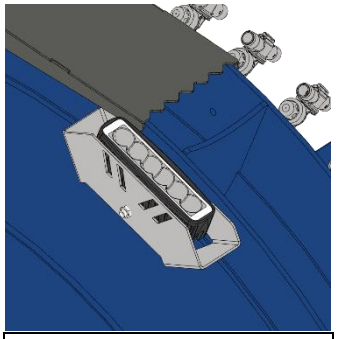


The Turning Hitch provides greater flexibility in turning sharper corners. The smaller turning radius allows for more maneuverability between crop rows.



Hydraulic controls allow you to control your sprayer booms without the need of our standard electrical control box.

Tires can be interchanged from our standard size configuration to narrow and high floatation variant's to address any issues with row spacing or soil compaction.



Night Spray Kit provides you with additional light to spray at night.

Maintenance Schedule

System	Description and Time	Product Type
Gearbox	Check Daily; Replace Oil Yearly	SAE 80W-90, API GL-5 Limited Slip Gear Oil
Pulley Belts	Replace after 300 hours of operation	
Bearings	Grease after 300 hours	XHP222 – Lithium Complex Grease
Pulleys	Replace after 4,000 hours of operation. Check Daily; • Correct Tension • Cuts and/or Fraying in Belt	See Parts List
Plumbing	Flush out before storing	
Wheel Bearings	Re-pack bearings every 2 years or 2000 hours	XHP222 – Lithium Complex Grease
PTO - Drivetrain	Daily Before Running. • Bearing Support Properly Torqued • Friction Clutch shows no signs of damage • Clearance between drivetrain shaft and tank. • No Obstructions in drivetrain.	XHP222 – Lithium Complex Grease
CV Joints	Daily Before Running.	XHP222 – Lithium Complex Grease
Storage / Frost Protection	Drain Plumbing Before Winter or Freezing Temperatures. • Drain Pump • Left and Right Boom Filter • Main Filter Canister	
Pump	Check Daily. • Leaks in fittings and hoses • Cracks in pump housing • Low Pressure in Pump Seal Gauge	
Tank	Daily Before Running. • Leaks at all hose points	

	• Any cracks or leaking in basket area. **Clean tank with water when changing chemicals or completing a job.**	
Fans	Daily Before Running. • Cracks or broken blades • Excessive debris	
Nozzle	Daily Before Running. • Check for loss of pressure • Free of debris.	

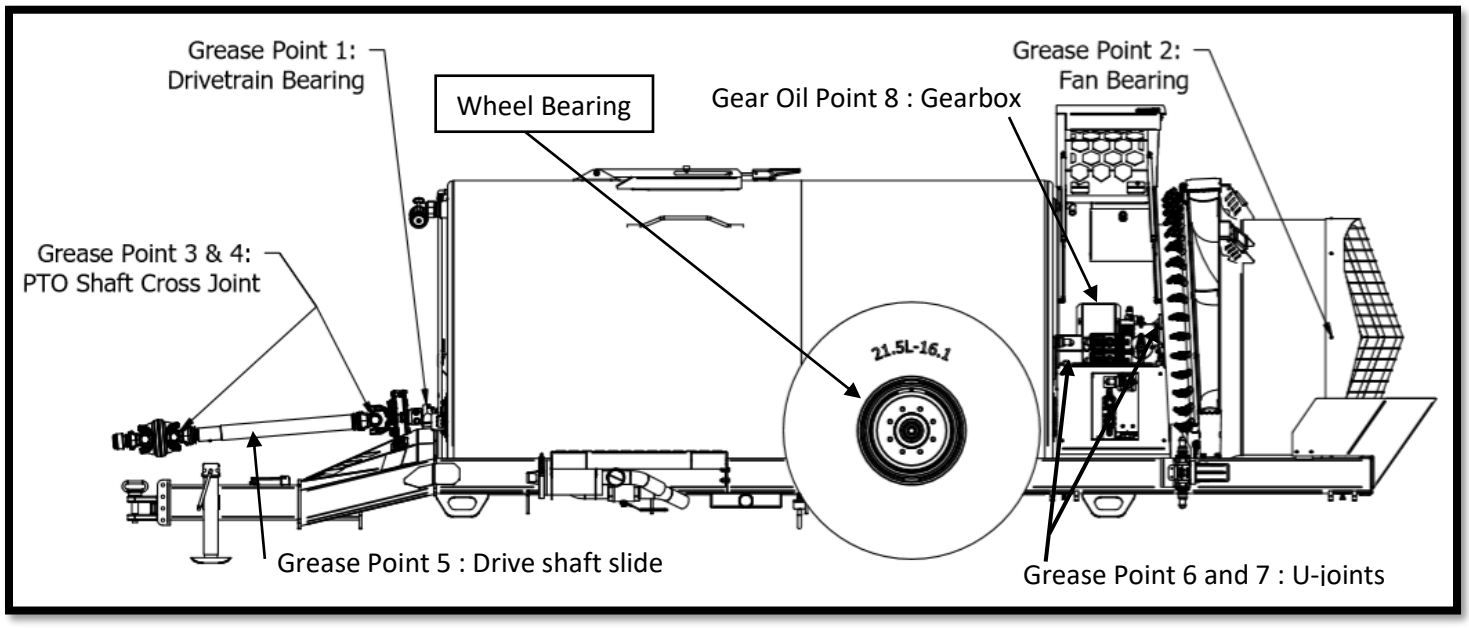
⚠ DANGER

Never run the pump without proper guarding over the belt section. Always secure base of the pump to frame before operating. Always guard any moving components before running.

⚠ WARNING

Do not adjust or over tighten your fasteners during operation. Always stop your machine completely when adjusting.

Lubrication Locations

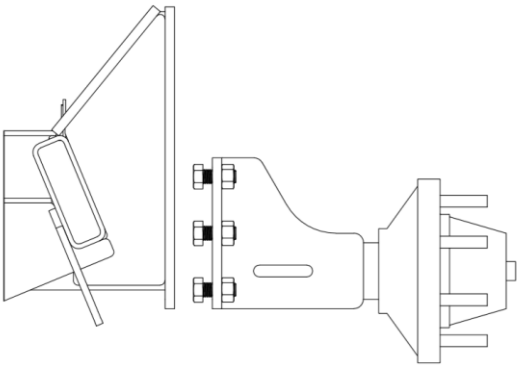


Axle Height Adjustment

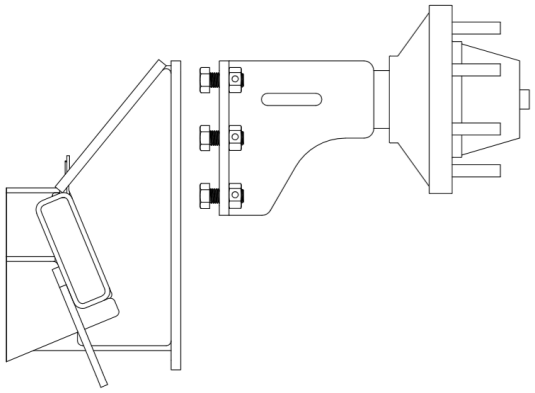
The Flowcore sprayer can be raised or lowered to allow different ride heights.

⚠ DANGER

Before attempting to modify the spindle ride height, secure your sprayer frame with wood blocks to safely make any adjustments. By selecting one of the following options, you will lower the frame by the selected amount in inches. If you have high brush or other obstructions on the floor, they may hit the frame. Ensure that the underside of the frame will not be hitting any obstructions on the floor when moving or changing terrain. Ensure that spindle mount bolts are properly torqued. Always secure spindle assembly with all available mounting holes.



Maximum Ride Height



Minimal Ride Height

Spray Calibration

Purpose : This section will provide information regarding how to calibrate the Flowcore sprayer.

Key Definitions:

Spray Nozzle: The spray nozzle, is composed of two outlet tips. This nozzle allows you three selections. Enable nozzle 1, enable nozzle 2, close nozzle. This design allows you to have two available configurations for easy switching.

Spray Boom: The Flowcore sprayer comes with two booms. Spray nozzles are mounted to the boom.

Boom Filters: One filter is attached in line with each boom to remove small particles to limit clogging and damage to your spray tips. Each filter must be maintained overtime to limit clogging I the line.

Boom Valve (Hydraulic or electrically driven): These valves open and close flow of each boom. The valves are controlled hydraulically or electrically to control from the tractor which boom is running.

Spray Zone: Spray zones define are defined by different sections of a boom where you define different gpm and spray pattern requirements. For zone control spraying, you are attempting to try to limit waste associated with spraying canopies from nozzles that will either not hit the tree or will have limited coverage. In these instances, it is important that you provide more GPM per nozzle for the main nozzles and limit or shut off nozzles that will provide no functional use.

Step 0: Fundamental Calculations

The following may be used to calculate the GPM per nozzle to determine the required nozzle.

$$\text{GPM Per Nozzle} \Rightarrow \frac{2 \times \text{A (gpa)} \times \text{S (mph)} \times \text{RS (ft)}}{990 \times \text{N}}$$

Assumptions:

The Flowcore sprayer is expected to operate between 120-150 psi. A pressure regulating turn valve is available to modify the pressure to the water booms to the optimal condition desired for the sprayer.

All nozzles are the same.

Step 1: Identify Spray Parameters

M = Feed Rate (Gallons Per Minute)

S = Sprayer Speed (Miles Per Hour)

RS = Crop Row Width (Feet)

A = Target Sprayer Output (Gallons Per Acre)

N = Number of active nozzles to be used.

Example Calculation (Determine Nozzle Requirements)

Tractor Average Driving Speed: **S** = 4 Miles Per Hour

Crop Row Spacing: **RS** = 22 Feet

Target Sprayer Output: **A** = 150 Gallons Per Acre

Active Nozzles: N = 36

Given				Find
A	**S**	**RS**	**N**	**GPM**
150	**4**	**22**	**36**	**?**

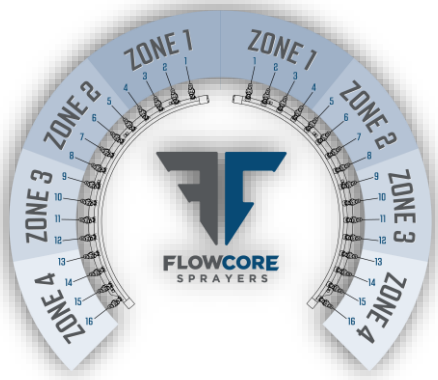
$$0.74 \Rightarrow \frac{2 \times 150 \times 4 \times 22}{990 \times 36}$$

GPM per Active Nozzle (M) = 0.74 GPM

Total Feed Rate (TFR) = M x N = 0.74 X 36 = 26.6 GPM

Once target GPM per nozzle is found, we can define our target pressure for operation. The Flowcore can produce up to 150 psi of total line pressure on the booms. This can be modified with the pressure regulator valve inside the sprayer. Given the **target Water pressure** and **GPM per nozzle**, we can now specify a nozzle tip.

Spray Calibration : Zone Control



Step 0: Fundamental Calculations

Complete the results of the previous calculation to get the desired Total system GPM. With your given canopy coverage requirements, we can solve for zone gpm.

$$\text{Z-GPM} \Rightarrow \frac{\text{TFR (gpm)} \times \text{SZ}}{\text{NZ} \times 100}$$

Assumptions:

The Flowcore sprayer is expected to operate between 120-150 psi. A pressure regulating turn valve is available to modify the pressure to the water booms to the optimal condition desired for the sprayer.

All nozzles are the same.

Step 1: Identify Spray Parameters

TFR = Total Feed Rate (GPM) Found in previous page.

TZ = Total Number of Zones

SZ = Spray Coverage for a Given Zone (%)

NZ = Total Number of Nozzles for a given Zone

Given				Find
TFR	**TZ**	**SZ**	**NZ**	**GPM**
26.6	**3**	**SEE TABLE**	**SEE TABLE**	**?**

Example Calculation (Determine Nozzle Requirements)

Given Results from previous calculation:

Given				Find	
A	**S**	**RS**	**N**	**GPM**	**TGPM**
150	**4**	**22**	**36**	**0.74**	**26.6**

Three Zones:

Zone	Feed Rate Percent	Number of Nozzles in Zone	Total Zone GPM	Calculate Target Per Nozzle GPM
1	20	8	?	?
2	50	18	?	?
3	30	10	?	?
Total	100 %	36	**26.6**	

Solve for Zone

Zone	Feed Rate Percent	Number of Nozzles in Zone	Total Zone GPM	Calculate Target Per Nozzle GPM
1	20	8	5.36	0.67
2	50	18	13.32	0.74
3	30	10	8.00	0.80
Total	100 %	36	**26.6**	

Mount Overview

Purpose:

This section will provide you with information regarding mounting

Key Definitions:

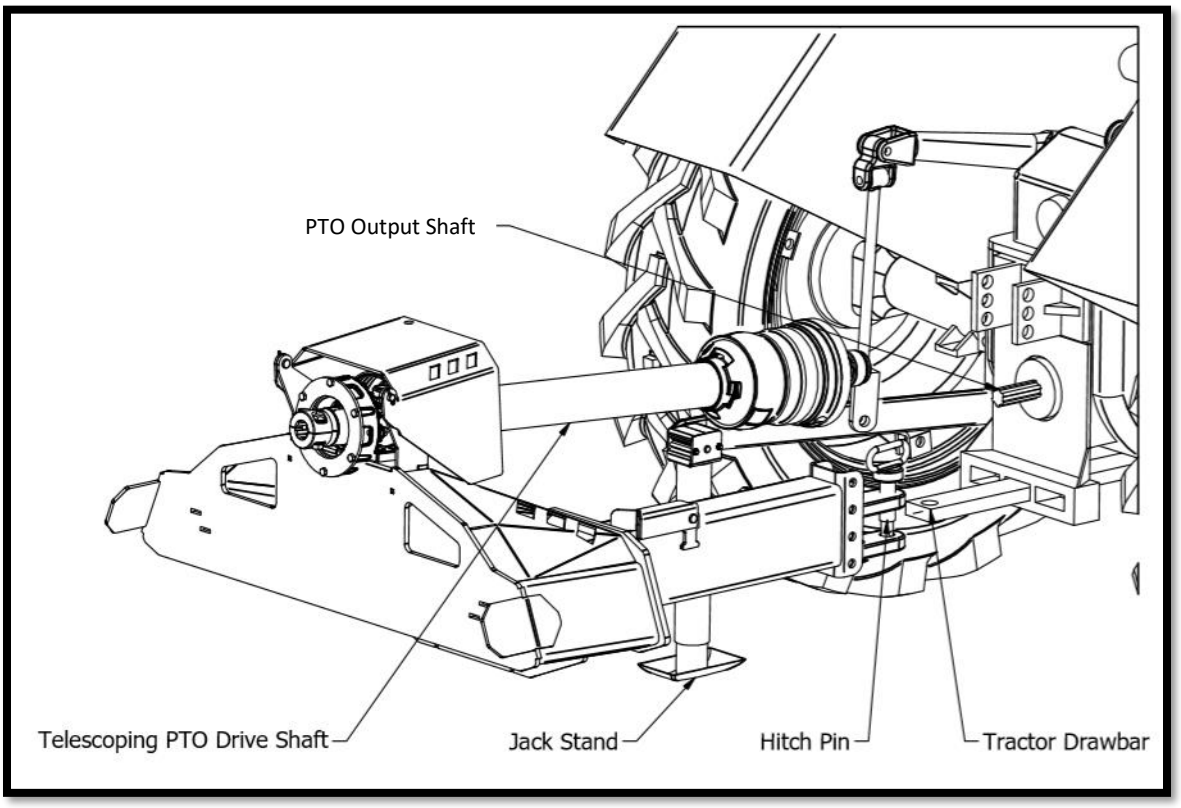
Tractor Drawbar: A category 2 drawbar is used to connect the front hitch of the Flowcore sprayer to the tractor through a pin connection

PTO Output Shaft: Most tractors come with a male PTO spline output. The Flowcore PTO shaft is meant to connect to a 1-3/8IN Z6 spline output from the tractor and run at 540 RPM.

Telescoping PTO Drive Shaft: The Flowcore comes with a telescoping PTO drive shaft. This shaft will connect the PTO output to the main driveshaft on the Flowcore sprayer. A Friction clutch is included as well to limit the amount of torque and limit risk due to overloading the sprayer to improper torque levels.

Hitch Pin: The hitch pin joins the sprayer front hitch to the tractor drawbar.

Jack Stand: The Flowcore sprayer comes with a jack located on the hitch to help support the hitch from touching the ground. The jack is used when mounting and unmounting from the tractor.



Tank Overview

Purpose:

This section will provide information regarding how to properly mix chemical material.

Key Definitions:

Step: The Flowcore has two steps. One step is located on each side of the sprayer. Load material using these steps.

Lid: On the top of the tank there is a lid that may be opened to load material and fill the tank with water.

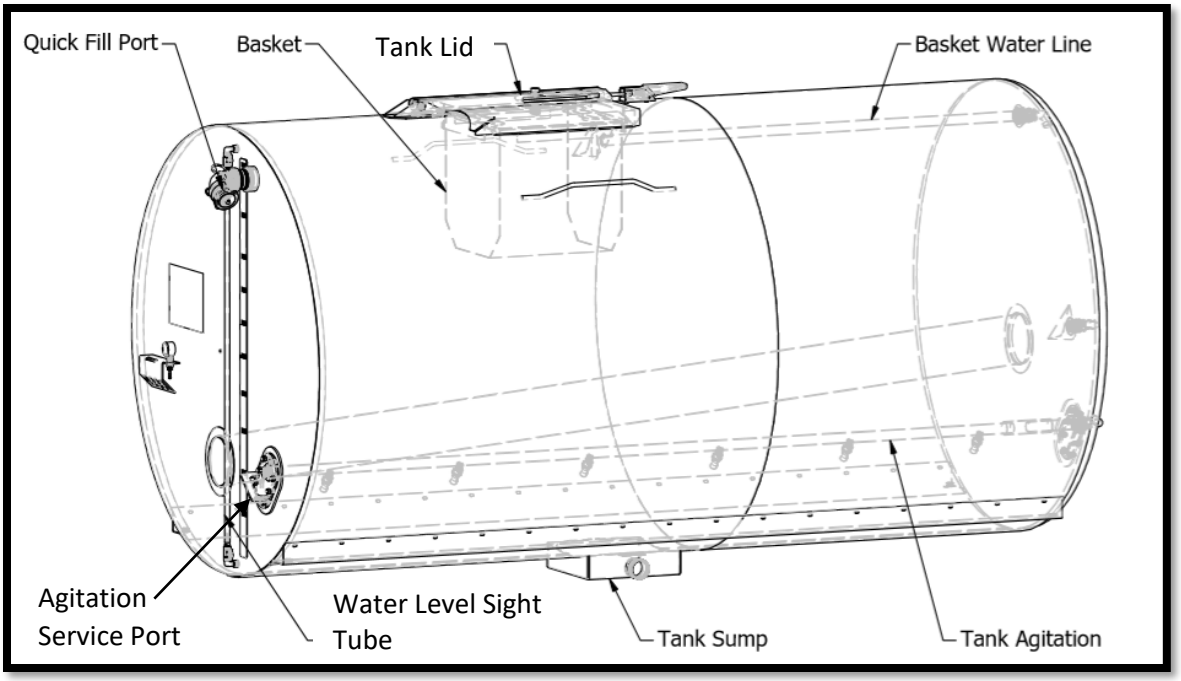
Basket: Chemicals may be placed inside the basket. During mixing, the chemicals will mix with fluid filling the basket. Use caution as material may splash. (PPE must be worn during mixing)

Tank Agitation Line: High volume jet agitation mix the water and chemical.

Water Level Sight Tube: The sight tube provides the ability to identify the water level inside of the tank without having to open the lid. Marking near the tube indicate the estimated number of gallons remaining in the tank until empty.

Tank Sump: Located below the tank, the sump provides an outlet for material to go from the tank to the main filter located under the step. The outlet section of the tank that leads to the 1st stage filter.

Quick Fill Port: This port allows you to hook up a hose and fill the tank using a camlock fitting.



There are multiple methods to properly fill and mix the tank. Consult a PCA, product labeling and local regulations

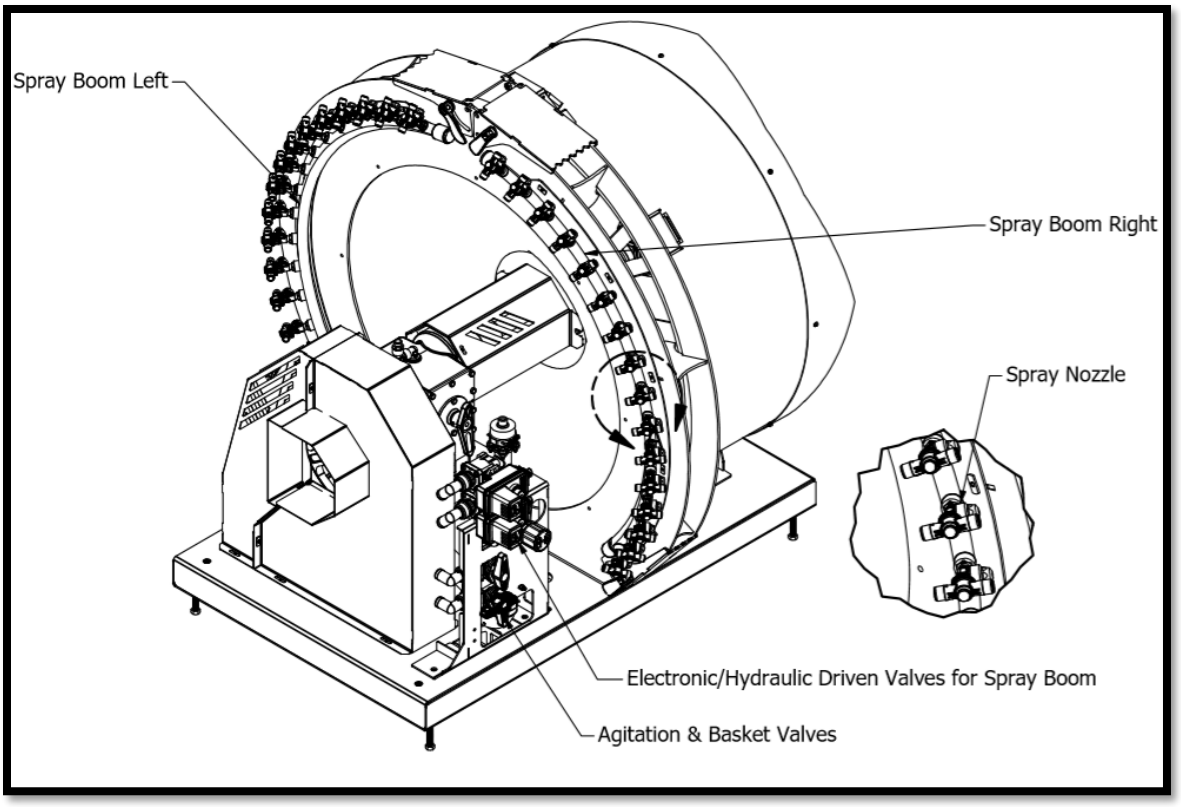
Operation

Spray Control (electric): With an electronic spray controls system, switches control the left and right nozzle booms.

Spray Control (hydraulic): These controls are available on many tractors, operated using the hydraulic remotes. Booms are actuated hydraulically, controlled within operator station hydraulic levers.

Gearbox: A Flowcore sprayer has a two-speed gearbox that is manually selected before starting your machine. A higher speed corresponds to having higher power requirements as faster speed provides more air output.

Spray Boom: Rollover nozzle valves are used on the Flowcore sprayers.



Before Starting:

Place the sprayer on leveled ground, chock the tires to limit unwanted movement. Lower and secure hitch jack stand. Empty the tank before starting.

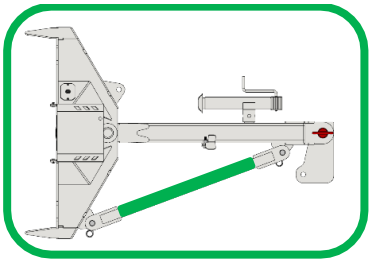
Turning Hitch Settings:

DANGER

Always Pin and secure hitch in the straight position before attaching hitch.

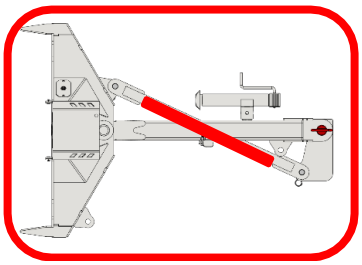
When to use:

Straight Hitch



- Transporting sprayer
- Mounting hitch to sprayer

Turn Hitch



- Regualar spraying operations

DANGER

Do not transport sprayer while in turn hitch setting.

Attaching Hitch

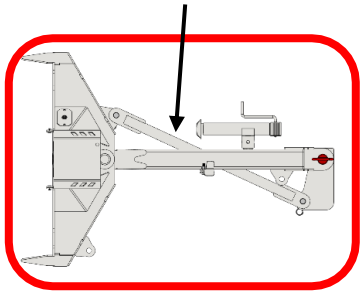
Straight Hitch:
Align the Flowcore hitch with the tractor drawbar. Pin the drawbar to the Flowcore hitch. Add safety pin.

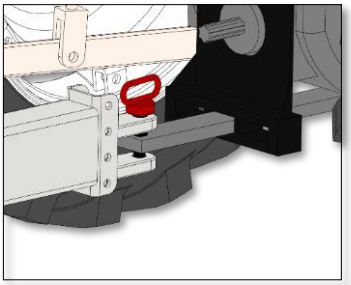
Turning Hitch:
When attaching the hitch, you must wedge the tractor category 2 drawbar as shown in the turning hitch underside photo. Pin the drawbar to the Flowcore hitch. Add safety pin.

After Successful Attachment:
Raise, stow, and positively pin the jack stand.

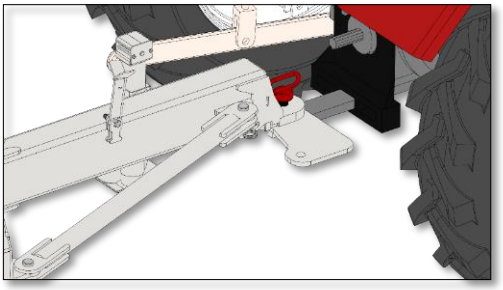
Once the tractor is secured to the sprayer hitch, you may now move the link assembly from the straight to turning position.

Pinned Link

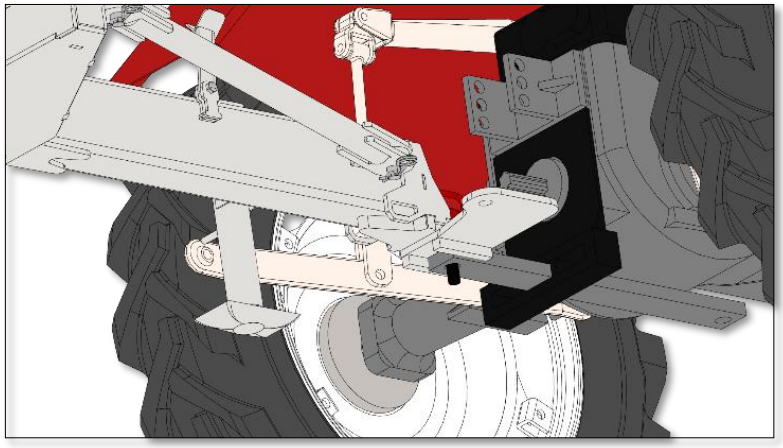




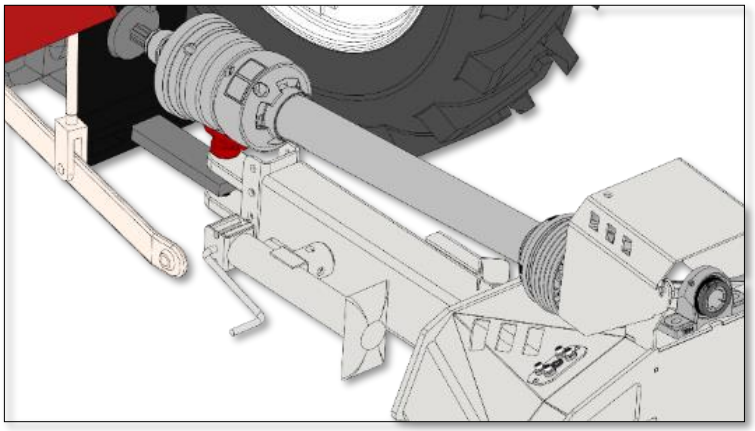
Straight Hitch



Turning Hitch



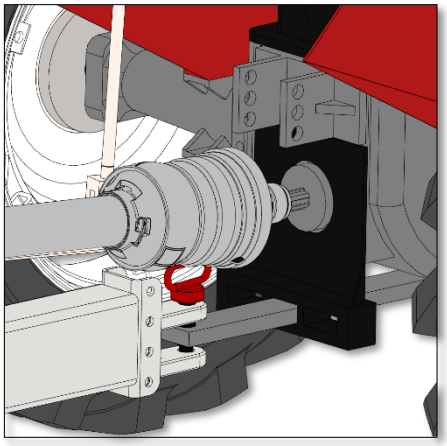
Turning Hitch Underside



Attaching PTO

To Tractor:

Align and insert the female PTO input with the male tractor PTO shaft.
Pull back on PTO connector to ensure ball is clicked in place.



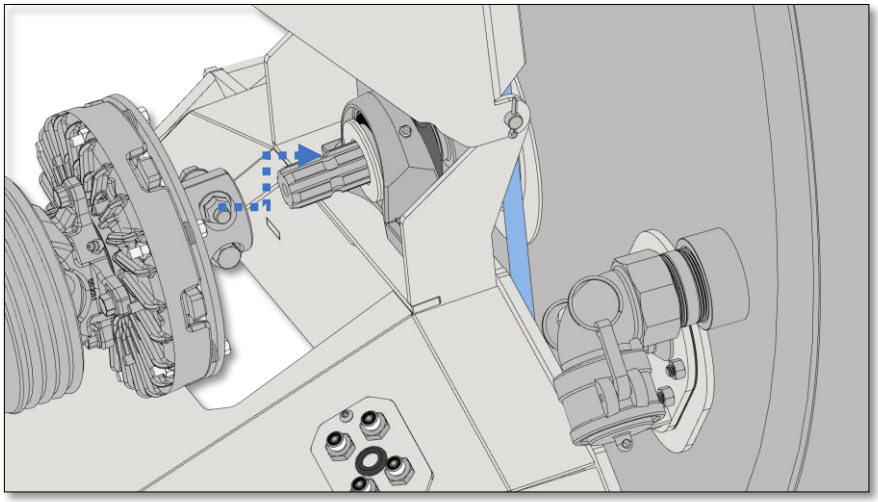
Tractor PTO connection

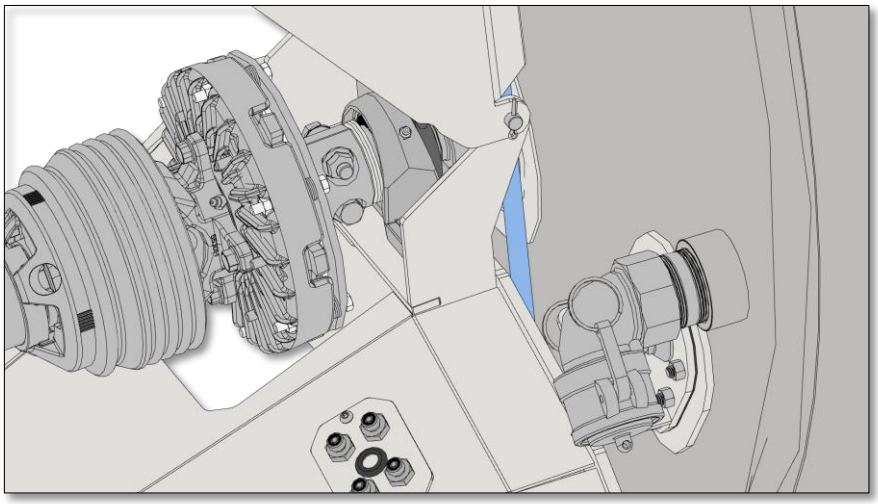
To Sprayer Driveline:

When attaching the PTO shaft, confirm that it aligns with the bearing drivetrain shaft. The bolts on the PTO shaft will have to align to the drivelines bolt cut away. Pull on the PTO connection. It should stay in place.

On completion:

- Reinstall all guards.
- Verify that sprayer drive line bolt connection (1-3/8 Z6 through bolts) is tight.





Turning Hitch Underside

Gearbox Speed Selection

Set the Speed:
When the handle The two speed gearbox can be changed by turning the handle from the center neutral position to either the high or low speed setting. Verify that gear is engaged fully before starting the machine.

Handle Settings:

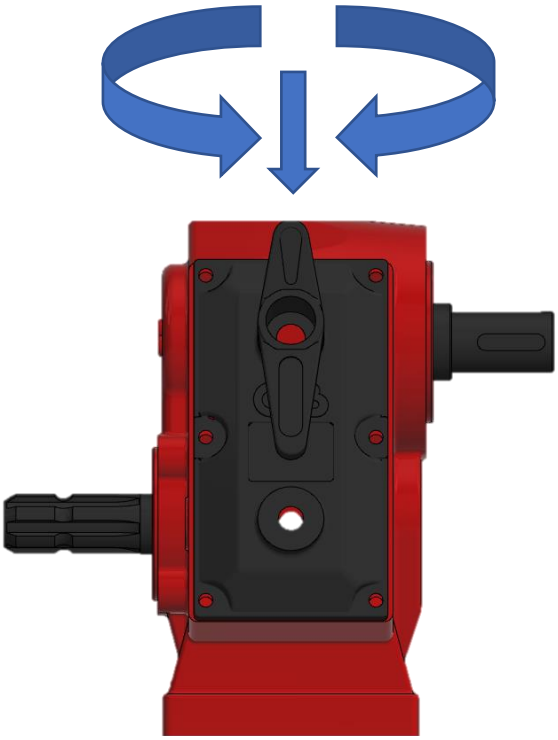
1. **Clockwise:** Speed 1
2. **Counter-Clockwise:** Speed 2
3. **Center:** Neutral

⚠ DANGER

Never attempt to change a gear speed while running. Tractor should **always** be off.

⚠ WARNING

The high-speed setting will generate more air and will require more power from the tractor. Ensure you have sufficient power available to run.



Gearbox High, Low Speed selection

Controls

Electric:

Connect the Electrical Control Box to your tractors 7 pin connection outlet.

Place and secure the electrical control box inside the cabin to prepare for spraying.

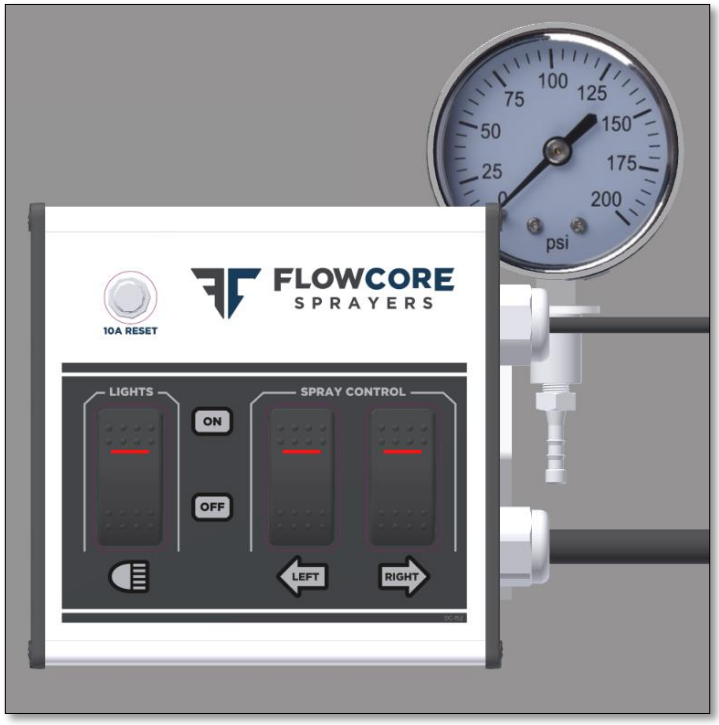
Control Box Overview:

Left: Controls flow coming from the Left Hand Boom
Right: Controls flow coming from the Right Hand Boom
Lights: Controls all powered lights connected to the system.
Note: When operating the sprayer, to enable sprayer controls. You must turn the Tractor head light switch to the on position. The light switch acts as the main power switch to the control box.

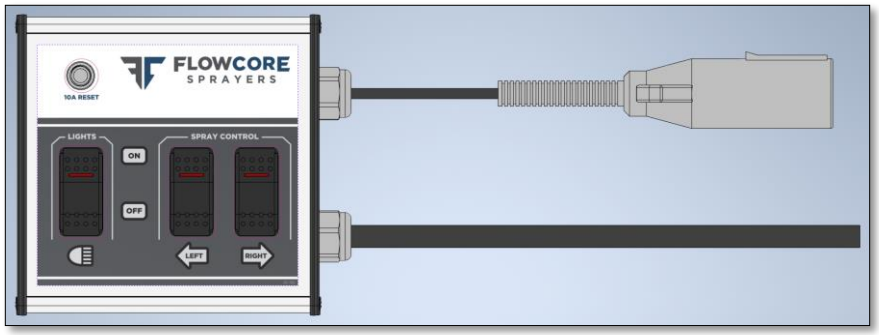
Hydraulic:

Two pairs of hydraulic hose line are provided. Each pair of hoses are indicated by a L and R tag. Plug each pair to the tractors remote hydraulic implement.

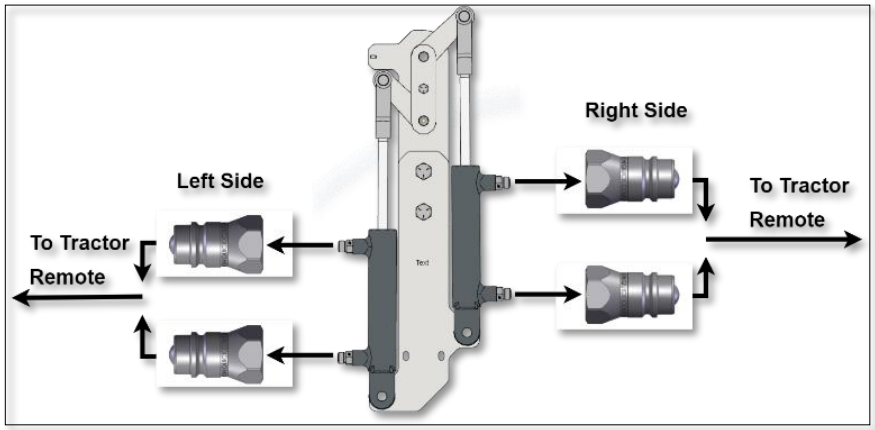
Connect the 7 pin trailer connector to your tractors electrical remote to power lights.



Electric Controls



7 pin connector



Hydraulic controls

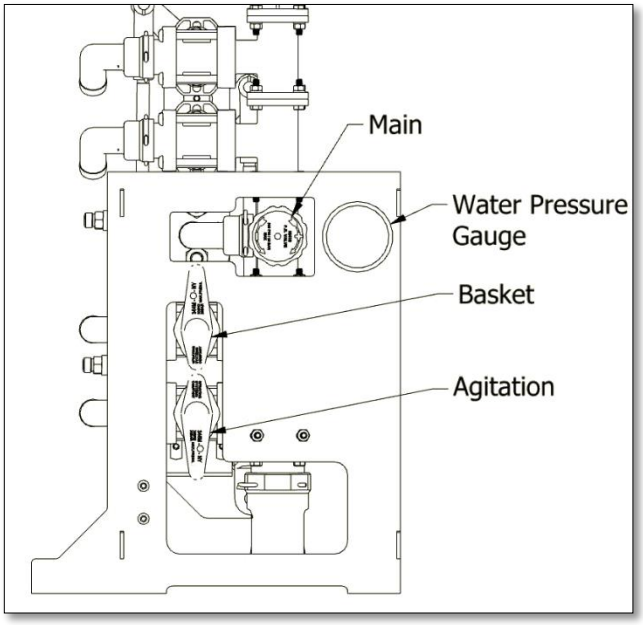
Valve Setup

Pre-Spray Valve Setup:
Fill the tank with water. Open the basket, agitation, and Main valve handle completely open.

Verify that there is water flow through the basket and agitation line in the tank by running the PTO at a slow rpm.

Check the pressure gauge and verify that pressure is not zero.

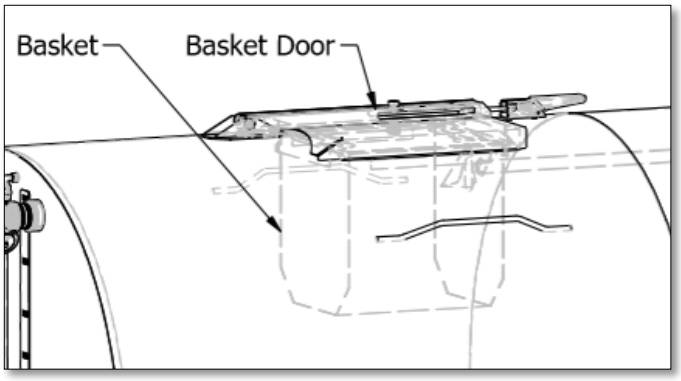
If pressure is zero, the pump may need to be bled. While running the PTO at a slow RPM, open the petcock valve located on the pump until no air is present from the valve.
Operate at low RPM to ensure that pump builds sufficient pressure to operate.



Valve set-up diagram

Tank

Load Material:
To load material onto the tank for the sprayer, open the tank lid. Deposit material into the basket under the lid.



Tank Lid

⚠ WARNING

Do not load material with the sprayer running.

Agitate Material:

Close the basket and begin to run the PTO at a slow RPM to begin agitating the material that was loaded. Provide enough time to fully mix basket material with the tank. Once this is complete, you may now shut off the basket valve completely.

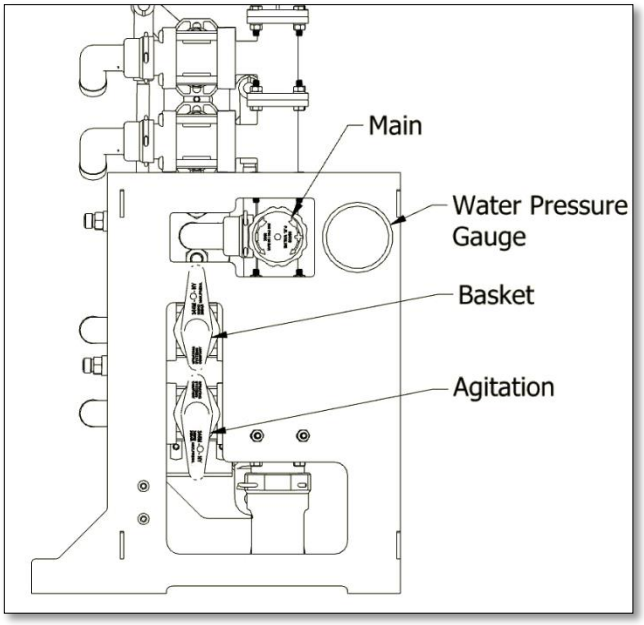
At this point , you will have the agitation and main valve completely open and ready for final sprayer checkout before running.

Run the sprayer at 540 RPM.
At this speed, pressure will buildup. At this speed, verify that you have the desired pressure. If not, you will need to adjust the pressure by adjusting the main pressure regulating valve. Pressure will build up as you start to close the valve. Once the pressure has been set. You can now begin spraying.

If pressure is too high, partially open the basket valve until the desired pressure is obtained.

If a situation arise that you run dry due to lack of water. On the next load, you may need to bleed the pump again.

On completion of spray operation, clean the tank with water and follow storage procedures on completion.



Valve set-up diagram

<u>Replacing the Belt</u>

Step 1:
Remove the PTO Shaft.

Step 2: Remove pulley belt guard with thumb screws.

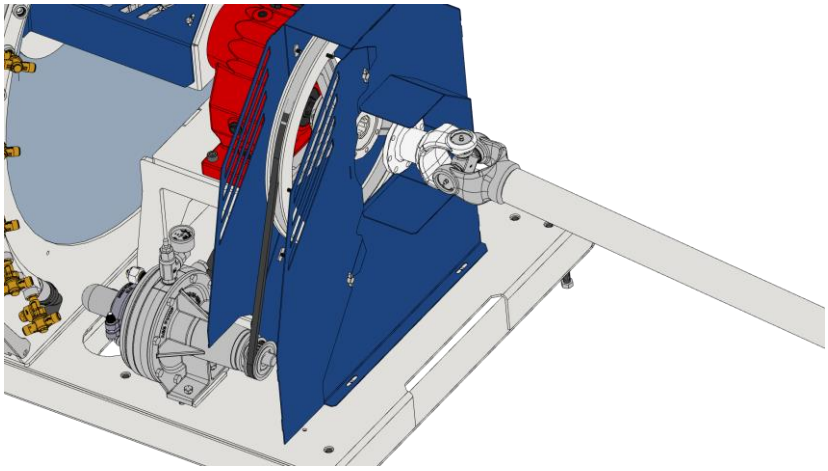
Step 3: Remove the two mounting bolts to the head bearing.

- Do not loosen shaft lock collar

Step 4: Loosen water pump mount bolts.

Step 5: Loosen pulley flange. Pull the drivetrain shaft forward and create a gap for the belt to pass through.

Step 6: Replace the belt.



CV Joint flange removal

Step 7: With the new belt seated on the pump and main pulley, begin tension procedure.

Belt Tensioning:

To tension the belt, pull the pump away from the main pulley. A properly tensioned belt will have a deflection of no more than ½ in as shown in the diagram. If the belt is too loose or greater than ½ in, you will damage the belt. Secure pump mount bolts so the pump does not move.

Step 8: Once proper tension is achieved, reconnect the u-joint flange to the face of the main pulley. Use a star pattern when installing the bolts. Use the following torque for each bolt.

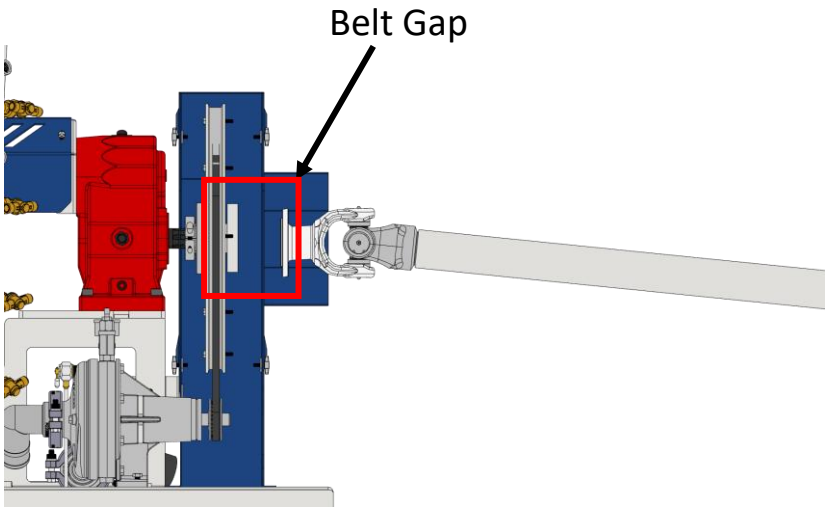
Bolt Size:
3/8-16 Length 1.5 in
Torque Requirements:
37 FT-LBS

Step 9: Reinstall and secure head bearing bolts.

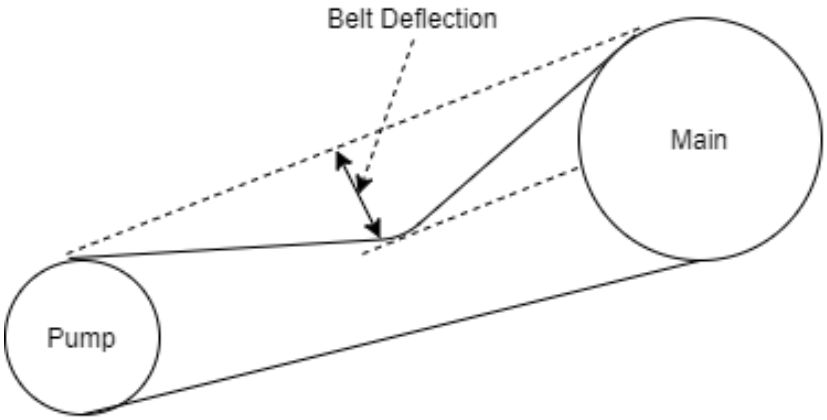
Step 10 : Reinstall the belt guard using thumbscrews.
Step 11 : PTO Shaft can be installed again. Verify that PTO shaft is properly bolted to the input drivetrain shaft input.

⚠ DANGER

Never attempt to service your machine with the PTO shaft installed. Tractor should **always** be off.



Belt gap after flange removal

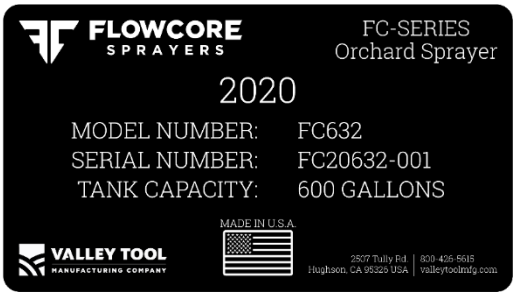


Belt Deflection Diagram

Frequently Asked Questions

Q: Where can I find my Flowcore serial number?

A: The serial number for your sprayer is stamped near the front hitch area. Below is an example of a serial plate.



Q: Where do I find replacement parts for my machine?

A: If a replacement part is needed, first contact your local Flowcore dealer. Please have the replacement part numbers you need and your serial number ready when you call. If your local dealer is unable to help, you may call the Valley Tool Parts Hotline. This hotline can provide you with replacement parts for your Flowcore machine.

Q: I smell burning rubber near my sprayer when I run it?

A: Shutoff the sprayer and disconnect the PTO shaft from your tractor as you will need to inspect your belts. Adjust tensioning on your belts. Excessive over or under tightening of the belt can cause heat built up and slipping causing the belt to prematurely fail. Minimize downtime by keeping an extra pair of belts

Q: I am noticing water leaks when I am using my sprayer?

A: Stop the machine and inspect all water connections for any leaking fluid. If a leak cannot be repaired by manually tightening the connection, then servicing may be required. Leaking chemical on the ground could cause issues with hazardous waste disposal, please check local lows regarding safe hazard disposal. Do not run your machine until you can run without leaking fluids from the system. Leaks can create hazard situations with chemical.

Q: How often should I replace my belts?

A: If you are experiencing repeated slipping or breakage of belts, try adjusting the level of tension. If this does not remedy the problem, replace the belt. Consider having an extra belt on hand so that downtime is minimized.

Q: What do I do if my belts are wearing out too fast and burning up?

A: First, check belt tension. Belts should have about 1/2" sway in them. Adjust tension accordingly. Also check the pulleys for debris, damage, or wear.

Q: Do I need to fill the gearbox with oil before I use the sprayer?

A: No, the gearbox comes full of oil. Verify proper oil level every time before running your Flowcore sprayer. Check for shaft seal leaks.

Q: When I am replacing gear oil, how much should I add?

A: When replacing gear oil, fill from the lower middle fitting, and when oil begins to come out, the box is full. Always

avoid overfilling.

Q: Is it possible to run the pump without water in the tank?

A: Yes, you can run dry temporarily. Over time seals will become damaged and cause seal leaks. Making it difficult to operate efficiently. It is best not to run the pump when running dry.

Q: How can I tell if the spray is reaching the top of the tree?

A: Driving with the sun at your back will help illuminate the spray. You can verify coverage using water soluble paper to identify droplet coverage for your given canopy.

Q: The pump pressure started out fine but now the pressure is low.

A: When the water level gets lower, try increasing the regulator pressure. Remember to decrease it again when the tank is full. Also be sure to check that the basket valve is closed. In windy conditions, it's important to verify if spray is hitting top of canopy.

Q: When turning into another row under full power the sprayer vibrates abnormally.

A: Make sure the PTO shaft is well lubricated and that the shaft length can increase and decrease easily.

Q: How can I determine my zone requirement to reduce material waste?

A: You can use ribbons on the nozzles and run the sprayer through you canopy without spraying material to get an idea of the flow lines as they hit the tree canopy. These ribbon flow lines can then be used with the spray profile that you select so that you can determine the ideal zone requirements. Zone requirements require readjustment over time due to tree growth. Re-evaluations should be done mid-season to ensure that proper spray material is being used. The type of plant you are spraying also affects your zone states.

Q: My neighbor uses a Flowcore Sprayer and he says that due to the efficiency he only uses 1/2 of the recommended spray material. Is this OK?

A: No, you should not deviate from the label recommendations or the recommendations of your pest advisor. When a range is specified, you may use the lower rate if your pest advisor agrees.

Q: I expected all my nozzles to spray, but a few do not spray anything?

A: Clogging due to debris in the water plumbing system can contribute to issues in efficiency flow out of the nozzles. Consider flushing out regularly the plumbing system without nozzles attached. Ensure all three filter sections are kept clean. Check all filters for any clumps that have formed due to chemical material. Clear any obstructions in the filter. Replace with spare parts, as necessary.

Q: Gauge is bouncing up and down

A: Tank is low or capturing air. Refill or operate at lower speed

Pre-Calibration Checklist

Pump and Lines

- ☐ valves should be checked/replaced
- ☐ all hoses and fittings sound
- ☐ pump flushed and spray discharge clear
- ☐ pump lubricated

Strainers and Nozzles

- ☐ all strainers from tank opening to nozzle strainers clean and unbroken
- ☐ all nozzles clean and unbroken
- ☐ each nozzle shut-off working

Regulators and Gauges

- ☐ all gauges true
- ☐ regulator and valve(s) move easily

Belts and Power Take-Off (PTO)

- ☐ All belts have proper tension and no wear
- ☐ PTO greased, connection zones checked and guard in place

Fan and Agitation

- ☐ Fan has no cuts or cracks or residue and is not loose around its collar

Orientation and Adjustment
Airflow and Direction

- ☐ volutes or deflectors adjusted to steer air into canopy
- ☐ air reduced in early season through lower RPMs and low gear
- ☐ ribbons used to determine which nozzles should be active

Spray Pressure Adjustment

- ☐ Sprayer pressure set to desired pressure
- ☐ each boom operating at desired pressure

Notes:

Notes: