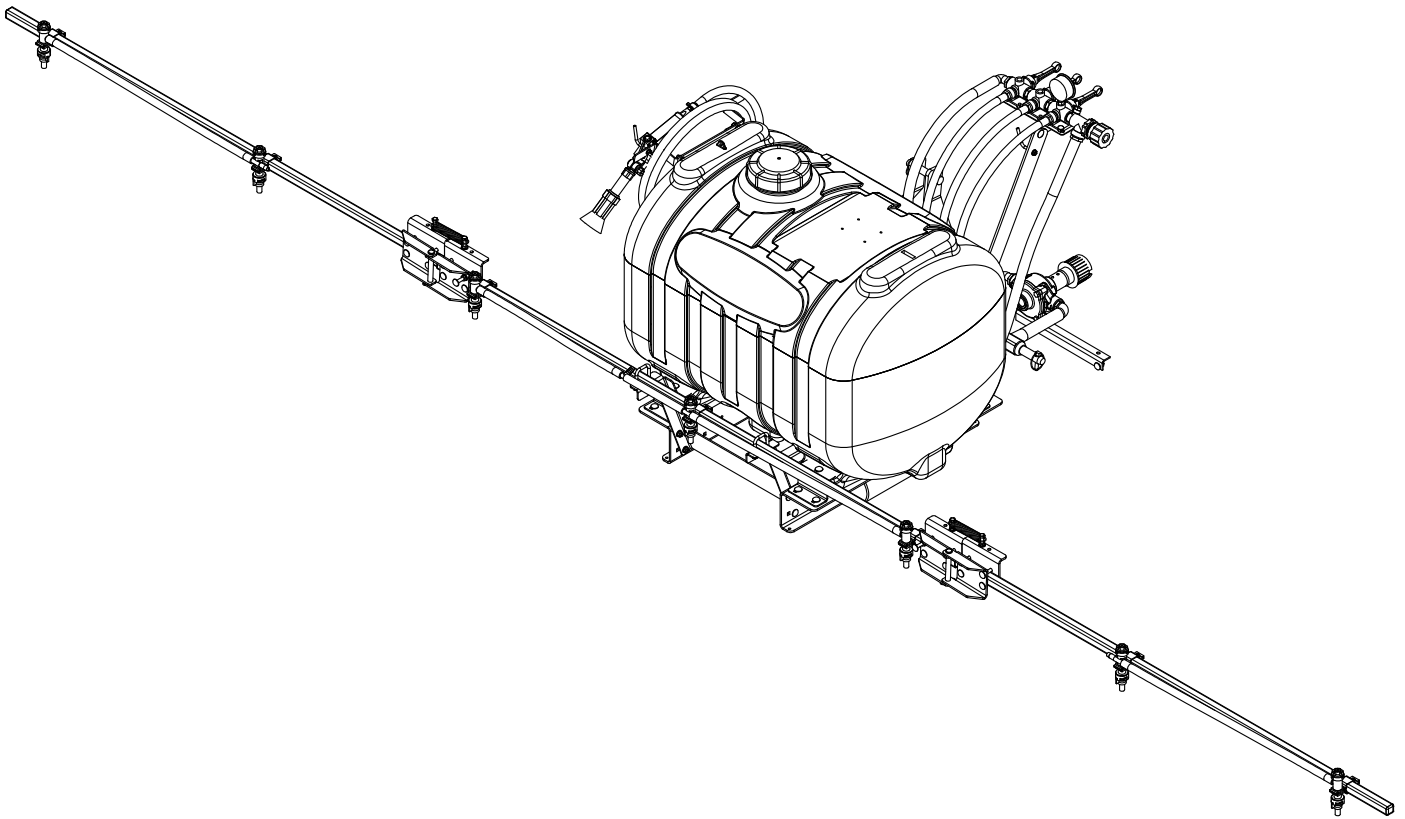


OPERATOR'S MANUAL

LIQUID SPRAYER

LS2006



LS2006

FRONTIER™

TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Frontier dealer. Read manual instructions and safety rules. Make sure all items on the Dealer’s Pre-Delivery and Delivery Check Lists in the Operator’s Manual are completed before releasing equipment to the owner.

TO THE OWNER:

Read this manual before operating your Frontier equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your selling dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Frontier dealer has trained mechanics, genuine Frontier service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Frontier service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Model: _____ **Date of Purchase:** _____

Serial Number: (see Safety Decal section for location) _____

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **NOTICE** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow thus symbol to avoid possible injury or death.



Indicates a hazardous situation that, if not avoided, will result in death or serious injury.



Indicates a hazardous situation that, if not avoided, could result in death or serious injury.



Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

IMPORTANT
or **NOTICE**

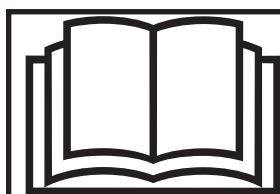
Is used to address practices not related to physical injury.

NOTE

Indicates helpful information.

TABLE OF CONTENTS

INTRODUCTION	4
SAFETY	4
Safety and Instructional Labels	8
ASSEMBLY	10
INSTALLATION	13
OPERATION	15
SERVICE	20
TROUBLESHOOTING	22
SPECIFICATIONS	23
Tractor Ballasting	24
Parts Diagrams	25
Bolt Torque Chart	44



This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that the manual is provided with the machine.

GENERAL INFORMATION

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may also be available in other languages. (See your Frontier dealer to order.)

The illustrations and data used in this manual were current at the time of printing but, due to possible in-line production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction of forward travel.

WARRANTY is provided as part of Frontier's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate or statement which you should have received from your dealer.

This warranty provides you the assurance that Frontier will back its products where defects appear within the warranty period. In some circumstances, Frontier also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to

change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

If you are not the original owner of this machine, it is in your interest to contact your local Frontier dealer to inform them of this unit's serial number. This will help Frontier notify you of any issues or product improvements.

Safety

Read Safety in Machine Operator's Manual
Read the general safety operating precautions in your machine operator's manual for additional safety information.

Operate Safely

- Read the machine and attachment operator's manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the machine and disengage the controls quickly.
- Do not let children or an untrained person operate machine.
- Make any necessary adjustments before you operate. Never attempt to make any adjustments while the engine is running, unless if recommended in adjustment procedure.
- Take all possible precautions when leaving the machine unattended. Shut off the engine before making any repairs, adjustments, or inspections. Lower the attachment, lock the parking brake, stop the engine, and remove the key.
- Look behind machine before you back up. Back up carefully.

- Do not let anyone, especially children, ride on machine or attachment. Riders are subject to injury such as being struck by foreign objects and being thrown off. Riders may also obstruct the operator's view, resulting in the machine being operated in an unsafe manner.
- Use only attachments and accessories approved by the manufacturer of this product.
- If the machine vibrates abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
- Always refer to the Storage section of the operator's manual for important details if storing this product for a long period of time.
- Keep people and pets out of the work area. Stop machine if anyone enters the area.
- If you hit an object, stop the machine and inspect it. Make repairs before you operate. Keep machine properly maintained and in good working order. Keep all shields and guards in place.
- Always inspect the sprayer completely before and after each use. Before pressurizing the system, check to be sure all fittings and hoses are tightly installed.
- Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
- Never use the sprayer during windy conditions.
- Always release pressure in the system before filling, cleaning or servicing the sprayer.
- Do not put nozzle tip or other sprayer parts to your lips to blow out dirt. Use compressed air.
- Install the recommended light kit when this equipment obscures the tractor's tail lamps or stop lamps when transported on the road. Contact your Frontier dealer to obtain the recommended light kit.

Parking Safely

1. Stop vehicle on a level surface, not on a slope.
2. Lock park brake.
3. Lower 3pt attachment to the ground.
4. Stop engine.
5. Remove key.
6. Before you leave the operator's seat, wait for engine and all moving parts to stop.

Mix and Handle Chemicals Safely

- Wear full cover clothing and wear protective goggles and rubber gloves to protect yourself while handling chemicals.
- Follow instructions on chemical container labels.
- Open all chemical containers carefully, using proper tools.
- Open, pour, weigh and mix chemicals in a well-ventilated area.
- Reserve all equipment used for the application of chemicals exclusively for that purpose.
- Prohibit all smoking, drinking and eating food in chemical-handling area.
- It is a good practice to take a soapy shower immediately after the using the sprayer to apply chemicals.
- Wash all clothing worn when using chemicals separately in the laundry after spraying is completed.

Read Chemical Container Label

- Chemicals can be dangerous. Improper selection or use can injure persons, animals, plants, soils or other property. Select the right chemical for the job and handle and apply with care.

- Read the instructions, precautions, and warnings on the container label before opening. Use the product strictly according to label directions for specific applications, in the amounts specified, at the times specified and only when needed.
- Keep the container closed tightly except when preparing the mix.
- Do not remove labels from chemical containers. Store all chemicals in their original containers.
- Do not mix chemicals unless stated on the container label.
- Store chemicals when not in use according to the container label.
- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
- Never lubricate, service or adjust the machine or attachment while it is moving. Keep safety devices in place and in working condition. Keep hardware tight.
- Keep hands, feet, clothing, jewelry, and long hair away from any moving parts, to prevent them from getting caught.
- Lower any attachment completely to the ground or to an existing attachment mechanical stop before servicing the attachment. Disengage all power and stop the engine. Lock park brake and remove the key. Let machine cool.
- Disconnect battery before making any repairs.
- Before servicing machine or attachment, carefully release pressure from any components with stored energy, such as hydraulic components and springs.
- Release hydraulic pressure by lowering attachment or cutting units to the ground or to a mechanical stop and move hydraulic control levers.
- Securely support any machine or attachment elements that must be raised for service work. Use jack stands or lock service latches to support components when needed.
- Never run engine unless park brake is locked.
- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Replace all worn or damaged safety and instruction decals.
- Check all hardware at frequent intervals to be sure the equipment is in safe working condition.

Handle Chemical Products Safely

- Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with Frontier equipment include pesticides, herbicides and fungicides.
- A Safety Data Sheet (SDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.
- The SDS should be obtained from the chemical dealer at the time of the chemical purchase.
- Check the SDS before beginning any job using a hazardous chemical. Know exactly what the risks are and how to do the job safely.
- Always wear recommended personal protection equipment.

Practice Safe Maintenance

- Only qualified, trained adults should service this machine.
- Understand service procedure before doing work. Keep area clean and dry.

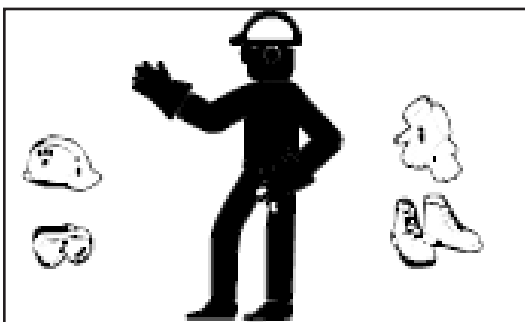
- Do not modify machine or safety devices. Unauthorized modifications to the machine or attachment may impair its function and safety.
- Local safety or insurance regulations may require additional safety equipment such as eye protection or a hard hat.

Transportation

- Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.
- Do not operate or transport on steep slopes.
- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Always comply with all state and local lighting and marking requirements.
- Install the recommended light kit when this equipment obscures the tractor's tail lamps or stop lamps when transported on the road. Contact your Frontier dealer to obtain the recommended light kit.

Storage

- Block equipment securely for storage.
- Keep children and bystanders away from storage area.



Wear Appropriate Clothing

- Wear close fitting clothing and safety equipment appropriate for the job.
- Certain operating conditions may dictate that the operator and any passenger wear appropriate safety equipment while operating the vehicle. Be prepared for any existing and potential conditions before operating machine.

- Always wear substantial footwear and long-legged pants. Do not operate the equipment when barefoot or wearing open sandals.
- Wear proper clothing and safety equipment while handling chemicals or using the sprayer. Refer to the SDS for the chemicals being used to be sure the proper personal protection equipment is being used.

Dispose of Chemicals Properly

- Proper disposal of excess spray material is very important. If you have excess tank solution, it is best to dilute it with water and apply it to the area you previously treated.
- Never dump solution into a drain or near a lake or stream.
- Chemicals containers should be triple-rinsed, with the rinse water added to the sprayer tank. Do not burn empty chemical containers. Dispose of containers at recycling centers.

Handling Waste Product and Chemicals

Waste products, such as, used oil, fuel, coolant, brake fluid, and batteries, can harm the environment and people:

- Do not use beverage containers for waste fluids someone may drink from them.
- See your local Recycling Center or authorized dealer to learn how to recycle or get rid of waste products.
- A Safety Data Sheet (SDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. The seller of the chemical products used with your machine is responsible for providing the SDS for that product.



SAFETY AND INSTRUCTIONAL LABELS
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
 Replace Damaged or Missing Labels Immediately!



1 - PN 5CS50910

CAUTION

1. Read and understand the Operator's Manual before using.
2. Tractor cab may not provide sufficient protection. See Tractor's Operator's Manual.
3. Stay away from chemicals, spray, and drift.
4. Before servicing or filling sprayer, lower all equipment to the ground, set the park brake, stop the engine, and remove the key.
5. Keep hands, feet, hair, and clothing away from moving parts.
6. Clear the area of bystanders before extending or folding booms.
7. Do not allow riders.
8. Keep others away.

ST50910

2 - PN 5CS50927



WARNING

To avoid injury from chemical hazards due to eye and skin contact, inhalation, and ingestion, wear personal protective equipment. Read and follow chemical manufacturer's labels and instructions.

ST50927

3 - 5CS50929

LS2006 60 GALLON LIQUID SPRAYER

Mfg Date: MM/DD/YYYY
 Mass (Empty): 109 - 230 Lbs (49 - 104 Kg)
 Mass (Laden): 651 - 793 Lbs (295 - 360 Kg)
 Tank Volume: 60 Gal (227 L)
 Max Working Pressure: 150 psi (10.3 Bar)
 Nominal Rotating Frequency: 540 RPM

ST50929

4 - Serial Number Tag

FRONTIER

Serial Number
 XXXXXXXXXXXXXXXXXXXX



60 GALLON LIQUID SPRAYER MODEL# LS2006

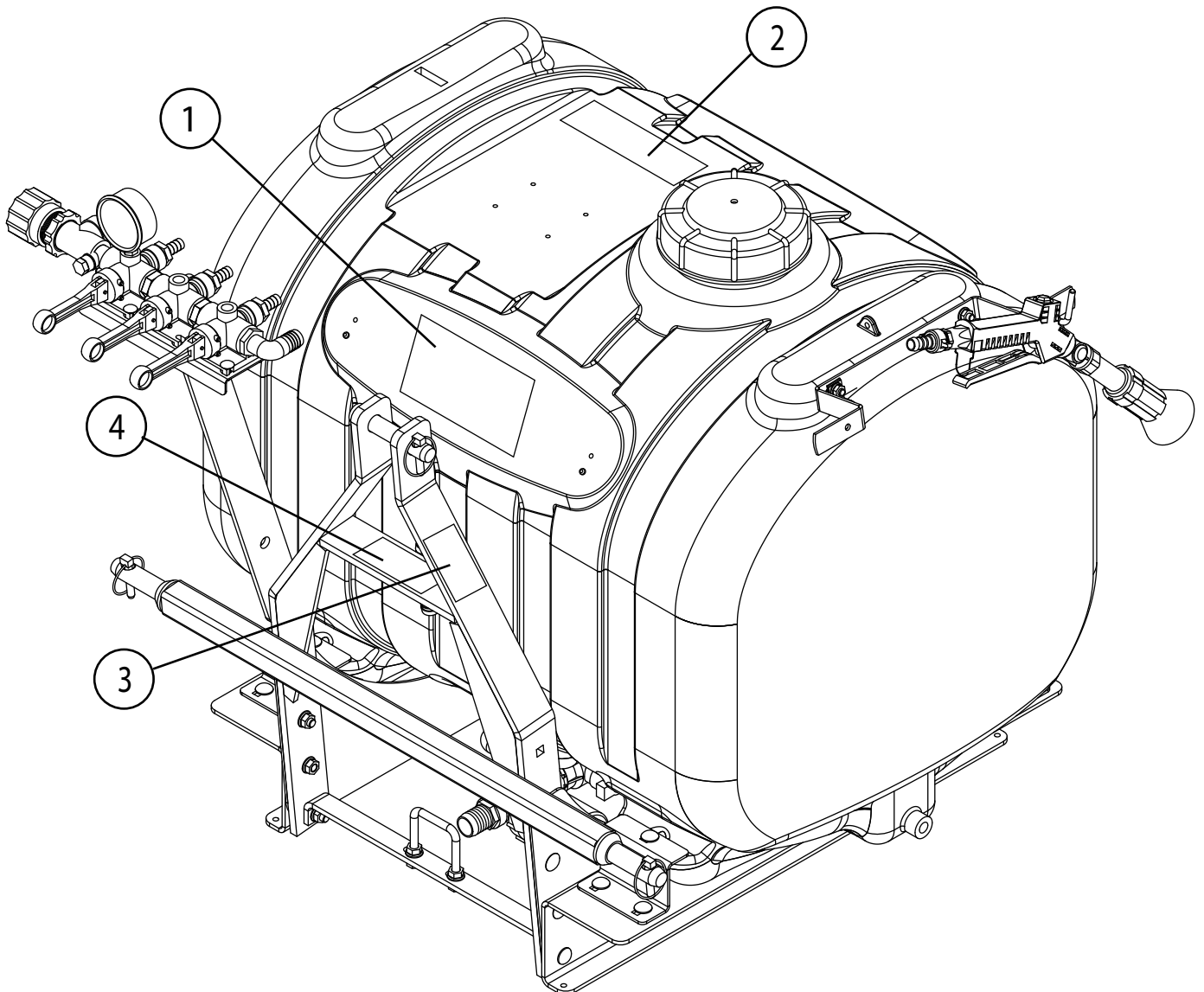
MADE IN USA
 DEERE & COMPANY, MOLINE, ILLINOIS, USA



SAFETY AND INSTRUCTIONAL LABELS
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
Replace Damaged or Missing Labels Immediately!



(Safety Decals continued from previous page)



ASSEMBLY

Dealer Set-Up Instructions

Assembly of this equipment is the responsibility of the Frontier dealer. It should be delivered to the owner completely assembled and adjusted for normal operating conditions.

In most cases the sprayer will be shipped completely assembled except for the boom and optional 100 ft hose reel kit.

Parts in Kit

Description	Qty
Sprayer Assembly	1
Boom Assembly	1
Hardware Kit	1

Hardware Kit

Description	Qty
Hose Clamp 1/2 in. (18ft boom only)	3
U-Bolt, 5/16 in. Square	3
Nut, 5/16 in.	6

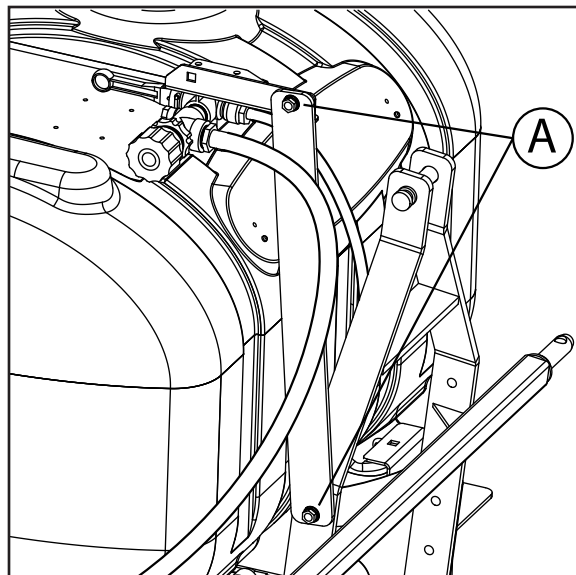
Remove Sprayer from Shipping Pallet

1. Remove plastic stretch wrap from sprayer and boom.
2. Remove hardware that used to secure sprayer to pallet and remove sprayer from pallet.
3. If options are supplied, remove these from the pallet.

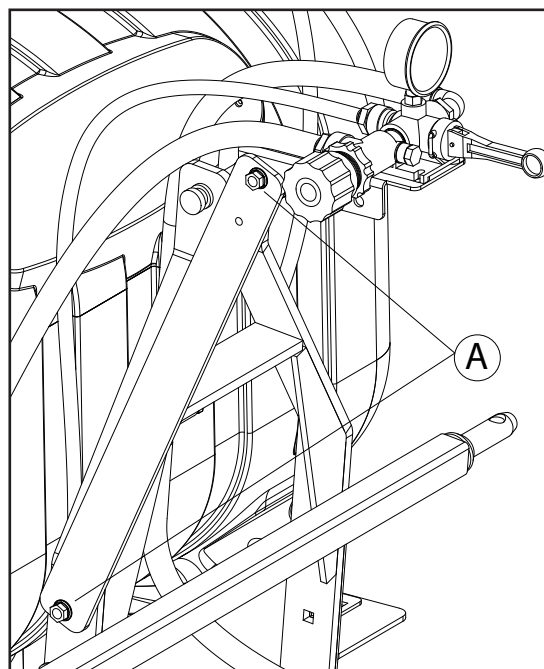
Control Valve Assembly

Control valve assembly is factory installed in a vertical position to protect it during shipping. This assembly should be re-positioned for optimal use and accessibility following these steps.

1. Carefully loosen bolts (A).

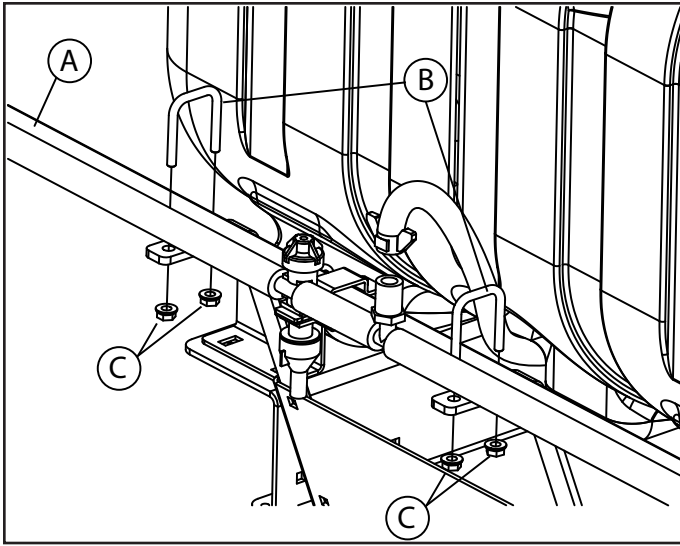


2. Rotate control valve to a position that can be reached from the seat. Tighten bolts (A).



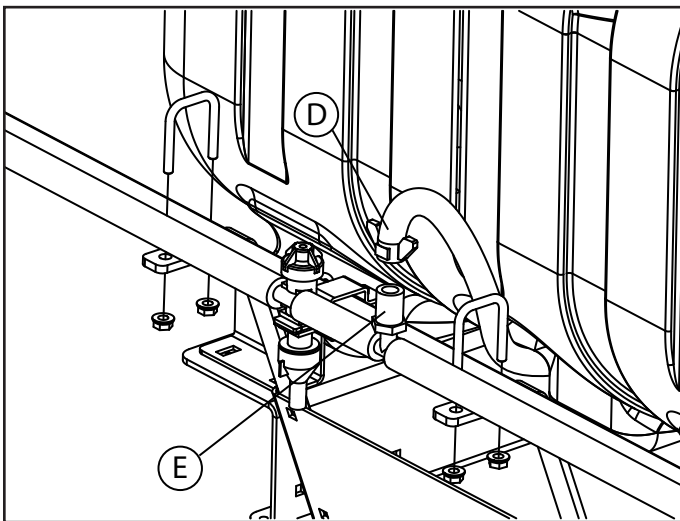
Install Boom

1. Center the boom (A) on the rear of the sprayer at the height desired.
2. Bolt to the boom support brackets using two 5/16 in. square U-bolts (B) and four 5/16 in. flange nuts (C).

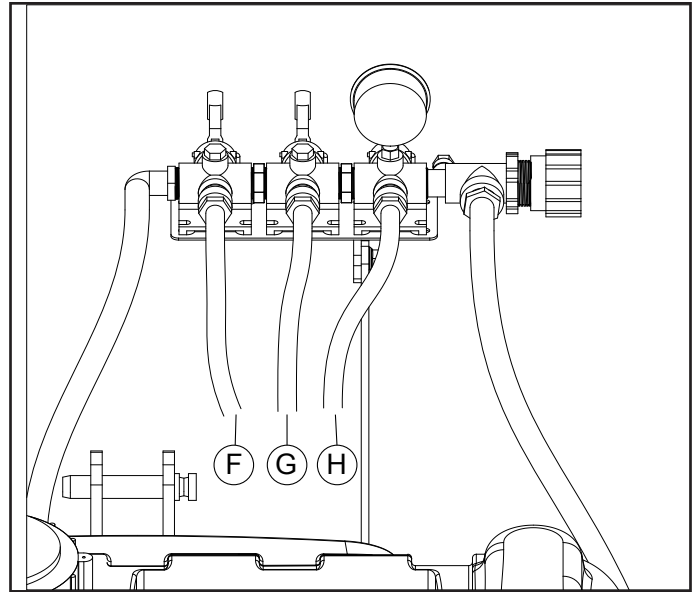


3. Connect hoses:

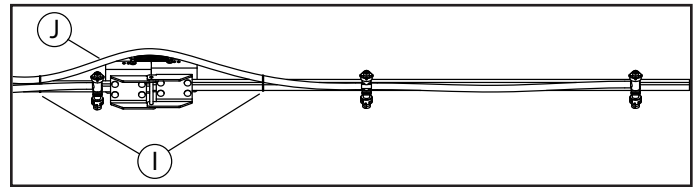
- *For 12 ft Boom and Boomless:*
 - Connect and tighten the wingnut on the hose (D) from the valve to the threaded fitting (E) in the center of the boom.



- *For 18 ft Boom:*
 - Connect the hoses from the valves to the appropriate sections of the boom. (F) to the left boom, (G) to the center boom and (H) to the right using 1/2 in. hose clamps.

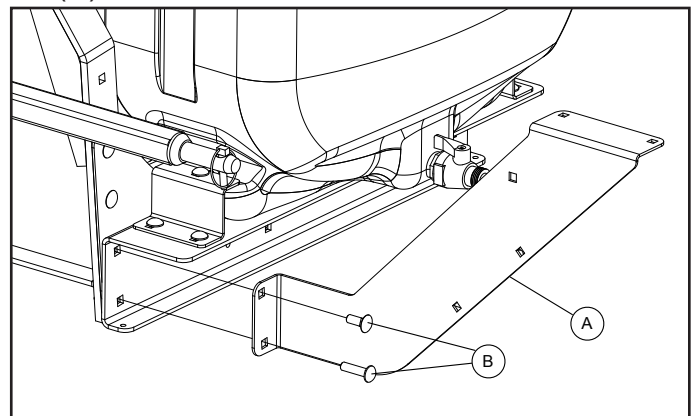


4. For the two outside booms, use wire ties (I) to secure hoses to the back of the booms about 1 foot away from the hinge on either side leaving all the slack (J) at the hinge. Be sure the hose does not kink when the boom is folded and does not interfere with spray.

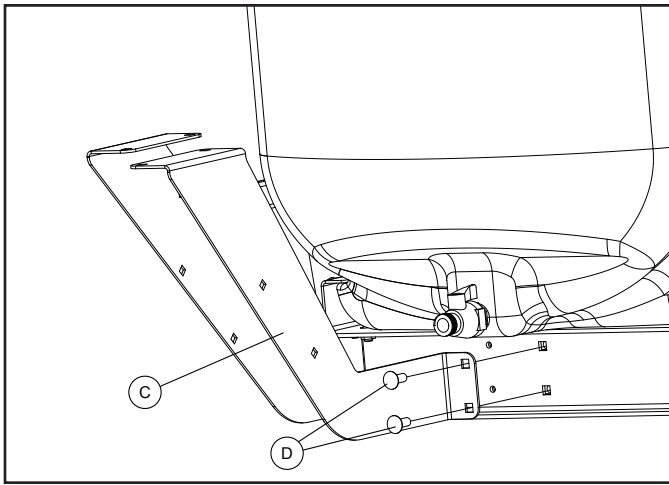


(Optional) Install 100 ft Hose Reel Kit

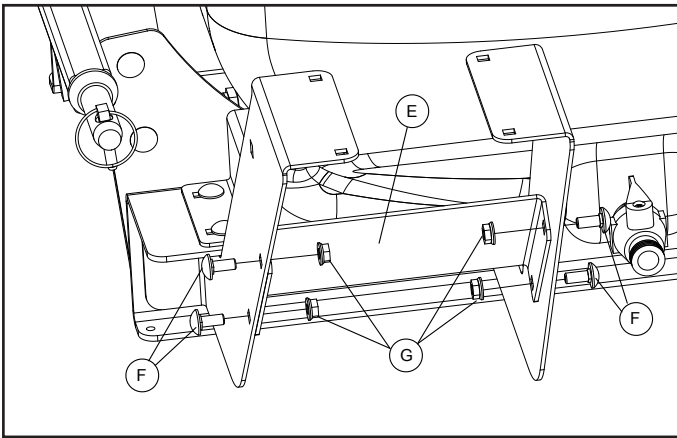
1. Install Front Mounting Bracket (A) to left side of sprayer frame using the existing hardware (B).



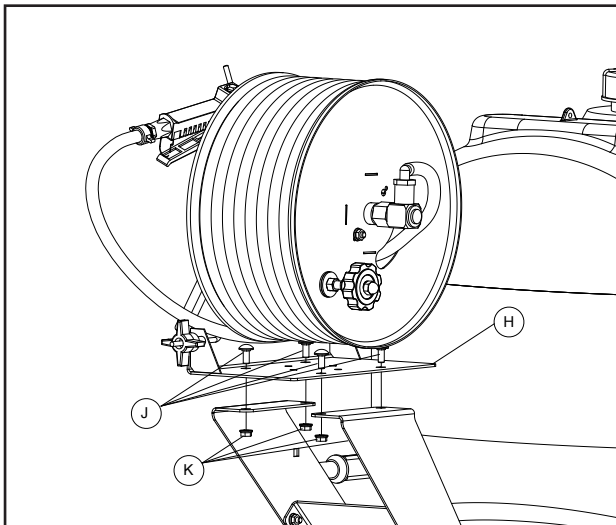
2. Install Rear Mounting Bracket (C) to left side of sprayer frame using the existing hardware (D).



3. Loosely Install Crossmember (E) using four 5/16" x 3/4" Carriage Bolts (F) and four 5/16" Flange Nuts (G) as shown.



4. Install Hose Reel Assembly (H) on top of Front and Rear Mounting Bracket using four 5/16" x 3/4" Carriage Bolts (J) and four 5/16" Flange Nuts (K) as shown.
5. Torque all fasteners to recommended torque. (See Torque Table section)



6. Attach free end of 1/2" hose from Hose Reel to Tee Fitting (L) and secure with 1/2" screw type hose clamp (M).



INSTALLATION

Sprayer Installation

Installing Ballast



CAUTION: Avoid Injury! Machine can become unstable when operating with attachment. Ballast is required when the attachment is installed.

- DO use PTO adapters

Compact Utility Tractors

See Specification Section for implement code and refer to Ballasting Machine in your tractor operator's manual to determine the number of front weights required to ballast the tractor.

Mounting the Pump

1. Connect pump to tractor PTO shaft.
2. Brace torque arm against solid member of tractor frame in the direction of PTO rotation.
DO NOT brace against the 3-point lift arms or any other moving parts.
3. Connect chain fairly tight to tractor frame in opposite direction.

Note: We recommend using the drawbar (if possible) and wrapping the chain as shown below.



Attaching Sprayer to Tractor

1. Park machine safely. (See Park Machine Safely in Safety section.)
2. Lower tractor's 3-pt hitch to lowest position.
3. Mount sprayer on 3-point hitch.

Attaching the Sprayer to Tractor with iMatch - Quick Hitch

1. Connect iMatch – Quick Hitch to tractor first following the iMatch – Quick Hitch installation instructions.
2. Install bushing set (sold separately), John Deer Part Number BW15056 or equivalent, to lower draft pins and top link pin on sprayer.
3. Lower the tractor's 3-pt hitch aligning the center hook of the iMatch – Quick Hitch just below the top link pin on the sprayer.
4. Ensure all three connection points are aligned.
5. Raise tractor's 3-pt hitch ensuring lower draft pins and top link are fully engaged with iMatch – Quick Hitch.
6. Close both levers on iMatch – Quick Hitch to lock lower draft pins in place. Levers are closed when they are folded down (horizontal position).

Removing and Storing Sprayer

Removing Sprayer from Tractor



CAUTION: Avoid Injury! When the attachment is removed, also remove any ballast that was added to the machine.

1. Park machine safely. (See Park Machine Safely in Safety section.)
2. Lower sprayer to the ground.
3. Empty the Sprayer Tank. (See Operation section.)
4. Disconnect sprayer from 3-point hitch.
5. Disconnect pump from PTO Shaft.
6. Store pump by hanging on hook by the chain so that the pump and hoses do not contact the ground.



1. Open drain valve and drain excess fluid into chemical disposal container. (See Dispose of Waste Properly in Safety section.)
2. Rinse tank, pump, spray wand and all hoses thoroughly with fresh clean water.
3. Repeat step 2 several times.
4. Allow tank to air dry.
5. Drain hoses and pump filter.
6. Check sprayer for worn or damaged parts. Replace parts as needed.
7. Tighten loose hardware.
8. Store sprayer in a place where it will not freeze.
9. Store pump by hanging on hook by the chain so that the pump and hoses do not contact the ground.

Store Sprayer Safely



CAUTION: Avoid Chemical Injury:

- Wear protective clothes, gloves and goggles when handling sprayer.
- Do not store sprayer with chemicals in tank.
- If sprayer comes in contact with your body, immediately follow directions on chemical container pertaining to spray material.

OPERATION

Sprayer Setup

Filling Sprayer Tank



CAUTION: Chemicals can be dangerous. Avoid injury to operator or bystanders.

- Read chemical container label for mixing and handling instructions. A Safety Data Sheet (SDS) should be supplied by the chemical dealer and provides proper safety information.
- Wear proper clothing and safety equipment while handling or applying spray chemicals.
- Prohibit all smoking, drinking, and eating around chemicals.
- When filling tank, never allow end of water hose to contact chemical mixture.

IMPORTANT: Avoid damage! Clean any spills immediately with clean water prior to operating sprayer.

1. Park machine safely. (See Park Machine Safely in Safety section.)
2. Lower tractor lift link so that the sprayer is firmly on the ground.
3. Clean area around tank filler cap to prevent tank contamination.
4. Remove tank filler cap and fill tank.
5. Install tank filler cap.

NOTE: The preferred location to fill the tank is from the front left corner.

Draining and Cleaning the Sprayer Tank

IMPORTANT: Avoid damage!

- Clean any spills. Proper disposal of excess spray is very important. Dilute it with water and apply it to area previously treated.
- Never dump excess into a storm drain or near a lake or stream.

1. The preferred method of cleaning is to dilute remaining material with water and apply it to the area previously treated.
 - If excess material remains, open drain valve and empty remaining material into an appropriate container for reuse or for disposal according to local regulations or as specified in the manufacturer's label.
2. Spray all inside surfaces of tank with low pressure garden hose to remove any remaining solution. Close drain valve and run clean water through the pump, hoses and boom applying those contaminated contents on previously treated area.
3. Rinse outside of sprayer tank thoroughly with fresh clean water. Rinse several times to make sure sprayer tank is clean and free of chemicals.
4. Once the tank is empty, wipe out inside of sprayer tank with a clean cloth or paper towel.
5. Close drain valve and filler cap.

Calibrating the Sprayer

When spraying with boom, sprayer must be calibrated to ensure proper spray coverage and to combat over-application or under-application. The calibration process consists of three steps:

- Calculate speed of tractor.
- Determine nozzle size and consult calibration chart for desired or instructed gallon per acre (GPA).
- Set pressure using relief valve.

Calculating the Speed

It is important to determine what speed the tractor will be traveling while spraying. Even if tractor has a speedometer, it is still recommended that speed be checked for accuracy. Perform the following steps to determine speed:

1. Measure a 200 or 300 foot distance on a field or surface similar to where sprayer will be used.
2. Drive tractor with half-full sprayer across measured distance at a constant and comfortable speed for spraying. There can be no changes in speed while measuring time.
3. When using a gear-driven tractor, select a gear where PTO is at or near 540 rpm. This is important for pump to provide adequate pressure to sprayer when spraying.
4. Determine amount of time, in seconds, it takes to travel the measured distance.
5. Speed can be determined by entering data into the following equation:
6. $\text{speed (mph)} = (\text{distance (ft)} \times 60) / (\text{time (sec)} \times 88)$ or by consulting the following table:

Speed in MPH	Time (sec) required to travel a distance of:	
	200 ft	300 ft
1.0	136	205
1.5	91	136
2.0	68	102
2.5	55	82
3.0	45	68
3.5	39	56
4.0	34	51
4.5	30	45
5.0	27	41
5.5	25	37
6.0	23	34
6.5	21	31
7.0	19	29

NOTE: If using boomless nozzles, use the Boomless Nozzle Calibration Chart.

Useful Formulas

GPA = Gallons per Acre

GPM = Gallons per Minute

MPH = Miles per Hour

GAL/1000 sq ft = Gallons per 1000 sq ft

W = Nozzle spacing in inches

$\text{GPM Per Nozzle} = \text{GPA} \times \text{MPH} \times \text{W} / 5940$

$\text{GPM Per Nozzle} = \text{GAL}/1000 \text{ sq ft} \times \text{MPH} \times \text{W} / 136$

$\text{GPA} = 5940 \times \text{GPM (Per Nozzle)} / \text{MPH} \times \text{W}$

$\text{GPA} = \text{Gallons per 1000 sq ft} / 0.023$

$\text{GAL}/1000\text{ft}^2 = 136 \times \text{GPM (Per Nozzle)} / \text{MPH} \times \text{W}$

NOTE: Replace worn tips that have a streaky or uneven pattern.

Determining Nozzle Size and Using Calibration Chart

12.5 FT AND 18 FT BOOM CALIBRATION CHART						
Tip Size	PSI	GPM one nozzle	GPA (20" spacing)			
			4 MPH	5 MPH	6 MPH	8 MPH
AIC11004	30	0.35	17.3	14.0	11.5	8.7
	40	0.40	20.0	16.0	13.2	9.9
	50	0.45	22.0	18.0	14.7	11.1
	60	0.49	24.0	19.3	16.0	12.1

The spray nozzles on your sprayer are AIC11004, which match up with the calibration chart. Refer to the calibration chart. Using tractor speed, nozzle size, and desired gallons per acre (GPA), calculate pressure (psi) necessary to achieve your GPA. It is important to note that lower pressure settings will result in less spray drift.

Example:

Assume tractor speed is determined to be 4 mph, nozzles are red (AIC11004), and desired GPA is 40 GPA. The calibration charts shows that you should set sprayer's pressure at about 20 psi in order to apply 40 GPA.

Boomless Calibration

Right and Left Nozzles: 1/4XP20

Center Nozzle: 1/4TTJ08

BOOMLESS CALIBRATION CHART FOR 24" HEIGHT						
PSI	Cap. 3 Nozzle GPM	Spray Width "ft"	GPA			
			4 MPH	6 MPH	8 MPH	10 MPH
20	3.7	23.0	12.0	8.0	6.1	4.9
30	4.2	25.0	12.9	8.6	6.5	5.2
40	4.8	28.0	13.7	9.1	6.8	5.5

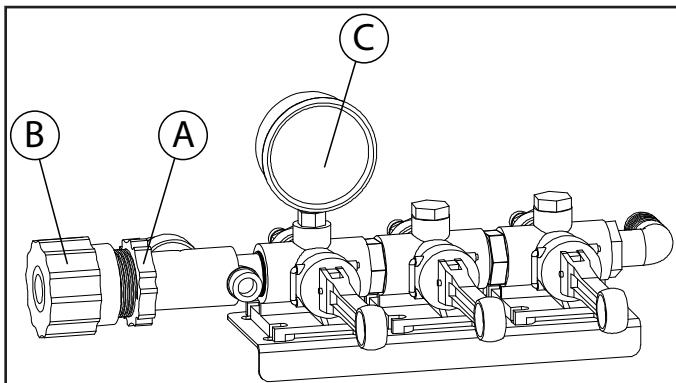
BOOMLESS CALIBRATION CHART FOR 36" HEIGHT						
PSI	Cap. 3 Nozzle GPM	Spray Width "ft"	GPA			
			4 MPH	6 MPH	8 MPH	10 MPH
20	3.7	25.0	11.5	7.6	5.7	4.7
30	4.2	28.0	11.9	7.9	5.9	4.8
40	4.8	30.0	1.2	8.2	6.1	4.9

Adjusting the Sprayer Pressure

NOTE: All calibration needs to be done with clean water.

Once correct pressure setting has been determined, the sprayer must be adjusted to that pressure setting. Before adjusting sprayer's pressure, it is important to set tractor rpm at rate that was used to determine tractor speed.

1. Loosen lock ring (A) and adjust knob (B) to desired pressure. Pressure is displayed on gauge (C).
2. Once desired pressure is achieved tighten lock ring (A).
3. Sprayer is now calibrated.



Operating the Sprayer

Pump Safety Precautions



CAUTION: Chemicals can be dangerous. Avoid injury to operator or bystanders.

- Read chemical container label for mixing and handling instructions. A Safety Data Sheet (SDS) should be supplied by the chemical dealer and provides proper safety information. Wear proper clothing and safety equipment while handling or applying spray chemicals.
- Prohibit all smoking, drinking, and eating around chemicals.
- When filling tank, never allow end of water hose to contact chemical mixture.

IMPORTANT: Avoid damage! Clean any spills immediately with clean water prior to operating sprayer.

- Do not pump flammable or explosive fluids such as gasoline, fuel oil, or kerosene.
- Do not pump acids (i.e. acid fertilizer) with cast pump. For acid fertilizer application use the Silver Series pump with Teflon rollers. Frontier part number 5CS43649.
- Do not run pump dry! Do not pump faster or above maximum recommended speed and pressure (1200 rpm, 300 psi).
- Do not pump liquids at temperatures higher than recommended maximum temperature (60°C, 140°F).
- Disengage PTO, release all pressure and drain all liquids before servicing pump.

Spraying with the Boom

1. Calibrate the sprayer to achieve the desired gallons per acre (GPA). Refer to Calibrating the Sprayer and the Calibration Chart to determine the correct pressure settings.
2. Connect pump PTO coupler to PTO shaft.
3. Fill tank with water to set pressure and test

for leaks.

4. Prepare to spray by turning section control valves to OFF.
5. Start tractor and engage PTO. For adequate spraying pressure and tank agitation, PTO should be running at or near 540 rpm. Ensure pump is primed and there are no leaks in any lines.
6. Use relief valve to adjust sprayer pressure to pressure rating determined during sprayer calibration. When opening control valve, it may be necessary to adjust pressure again.
7. Ensure that tractor PTO is disengaged. Fill tank with amount of water and chemicals recommended by chemical being used. After filling tank, engage pump and allow ample amount of time for jet agitator to mix water and chemicals.

NOTE: Do not start sprayer operation until chemicals and water are mixed for the recommended time listed on the chemical instructions.

8. At spraying location, unfold the boom at locations away from hinges.
9. Engage PTO, and make sure pressure setting is correct. While spraying, maintain a constant level of speed and rpm (rates determined when calibrated).
10. When complete, fold boom back into transport position.

Boom Section Control 12.5 ft and Boomless

The Boom is divided into 3 sections of spray tips. Right, Center and Left. The Left and Right sections can be turned on and off by turning the corresponding in-line valve on the boom.

12.5 ft Boom Spray Width

- 30 inches - Both left and right sections OFF.
- 90 inches - Either left or right section OFF.
- 150 inches - Both left and right sections ON.

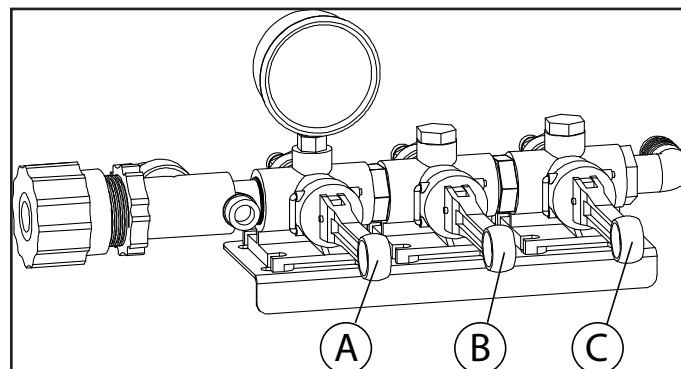
Boomless Spray Width

- 2.5 ft - Both left and right sections OFF.
- 12 ft - Either left or right section OFF.
- 24 ft - Both left and right sections ON.

Boom Section Control 18 ft Boom

The Boom is divided into 3 sections of spray tips. Right, Center and Left. Each section can be turned ON and OFF individually using the boom section control valves.

1. To turn a section ON move the corresponding handle to the horizontal position.
2. To turn a section OFF move the handle to the down position.
 - Right Section (A), Center Section (B), Left Section (C)

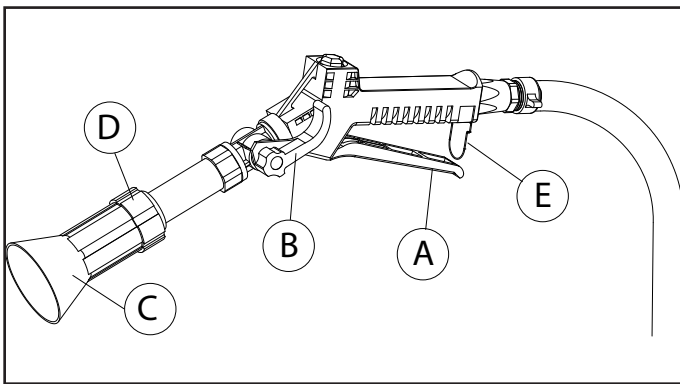


Spraying with the Spray Nozzle



CAUTION: Avoid Injury! DO NOT use spray gun while tractor is in motion.

1. Turn all Section Control Valves to OFF.
2. Squeeze the handle (A) to spray.
3. Adjust mist to stream using lever (B).
4. Spray guard (C) can be adjusted by loosening (D) and sliding spray guard to desired position. The spray guard is intended to keep over-spray off your hands.
5. Flip handle lock (E) forward to lock handle in ON position.



SERVICE

Servicing Sprayer

Servicing Sprayer Safely



CAUTION: Chemicals can be dangerous. Avoid injury to operator or bystanders.

- Read chemical container label for mixing and handling instructions. A Safety Data Sheet (SDS) should be supplied by the chemical dealer and provides proper safety information.
- Wear proper clothing and safety equipment while handling or applying spray chemicals.
- Do not put the nozzle tips or other parts to your lips to blow out dirt.
- If spray comes in contact with your body, immediately follow directions on chemical container pertaining to spray material.

Servicing the Pump

Follow all pump safety precautions and warnings. Following these guidelines will help to ensure many years of smooth and trouble-free sprayer operation.

- Flush pump out with fresh water after every use.
- Winterize pump to prevent freezing and corrosion.
- Refer to Winterizing Sprayer for instructions.
- Change seals and rollers if pump is leaking or has a noticeable decrease in performance.

Winterizing Sprayer

It is important to winterize sprayer to avoid damage from freezing and corrosion before temperatures reach freezing levels.



CAUTION: Avoid injury! Do not use standard antifreeze. Standard antifreeze can be harmful to humans, animals, crops and the environment.

1. Empty and rinse tank.
2. Put one to two gallons of RV nontoxic antifreeze in tank.
3. Engage pump and spray with boom and subsequently spray gun (if applicable). Ensure that antifreeze has been pumped through entire system, including all spray nozzles.
4. Store sprayer in a dry location away from elements.

Placing Sprayer Back in Service after Winterizing

1. Flush sprayer with fresh water to clean out all antifreeze and any other buildup.
2. Do a thorough inspection of all components before spraying.

Cleaning Spray Tips



CAUTION: Avoid injury!

- Wear protective clothes, gloves and goggles when handling sprayer.
- Do not put the nozzle tips or other parts to your lips to blow out dirt.
- If spray comes in contact with your body, immediately follow directions on chemical container pertaining to spray material.

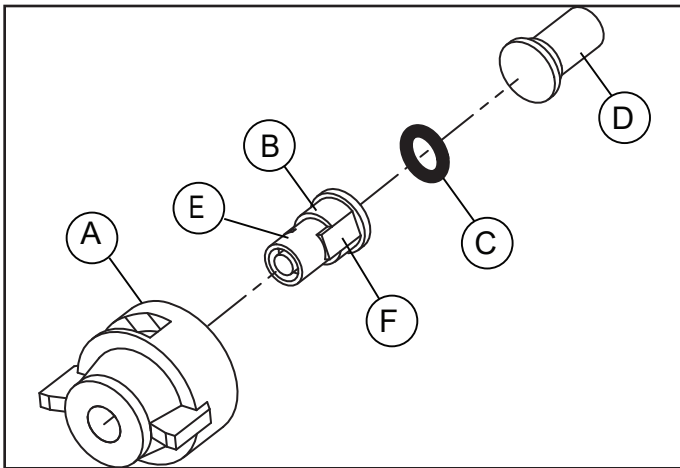
1. Remove spray nozzle (A) from sprayer.
2. Remove the spray tip (B) and gasket (C) from the spray nozzle (A).
3. Remove the screen (D) from the nozzle socket on the boom. Replace the screen if damaged.

IMPORTANT: Avoid damage! Do not use a wire to clean the opening (E) in the spray tip.

1. Wash the screen (D) and spray tip (B) in a nonflammable solvent.
2. Align the flat side (F) of the spray tip with the flat on the opening of the spray nozzle (A), and install the spray tip into the nozzle.

NOTE: Verify that the opening (E) in the spray tip is pointing down when the nozzle assembly is installed on the nozzle socket.

3. Install the screen (D) into the nozzle socket on the boom.
4. Install nozzle assembly on the nozzle socket.



NOTE: Due to normal wear, Teejet® recommends replacing sprayer nozzles after every spraying season. Nozzle replacement will ensure accurate spraying performance.

Cleaning and Replacing Filter

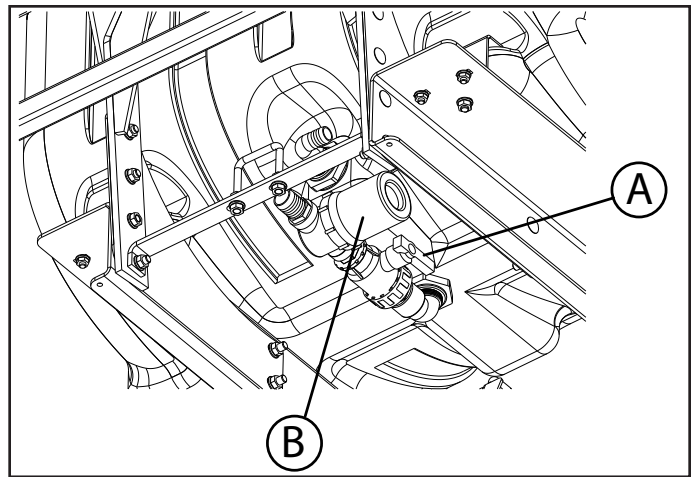


CAUTION: Chemicals can be dangerous. Avoid injury to operator or bystanders.

- Do not put the nozzle tips or other parts to your lips to blow out dirt.
- If spray comes in contact with your body, immediately follow directions on chemical container pertaining to spray material.

NOTICE: Spray material captured in hoses may leak out when filter is removed. Clean the area immediately after servicing.

1. Turn all Section Control valves to OFF.
2. Turn shut off valve (A) to OFF Position (away from filter) under tank.
3. Unscrew filter Housing (B) and remove filter.
4. To clean filter flush with clean water and reinstall filter. Ensure filter housing (B) is tight.
5. Turn shut off valve (A) to ON Position (towards filter) and check for leaks around filter housing.



Quality Service

Frontier Quality Continues with Quality Service

Frontier provides a process to handle your questions or problems, should they arise, to ensure that product quality continues with your Frontier dealer's parts and service support.

Follow the steps below to get answers to any questions you may have about your product.

1. Refer to the appropriate attachment, machine or equipment operator's manuals.
2. Contact your Frontier dealer with unanswered questions.

TROUBLESHOOTING

Troubleshooting Sprayer

Using the Troubleshooting Chart

If you are experiencing a problem that is not listed in this chart, see your authorized dealer for service.

When you have checked all the possible causes listed and you are still experiencing the problem, see your authorized dealer.

Troubleshooting Chart

IF	CHECK
Pump Losses Suction	Clean pump suction screen. Check tank fill level. Fill tank. Clean or replace pump. Check for loose pump fittings.
Pump Capacity Decreased	Clean pump suction screen. Clean spray nozzle(s). Selection lever is not completely turned on, or is in the OFF position.
Poor Spray Pattern	Clean spray nozzles. Adjust nozzle height. Align spray tips with boom.
Pump Does Not Work	Clean debris from pump.

SPECIFICATIONS

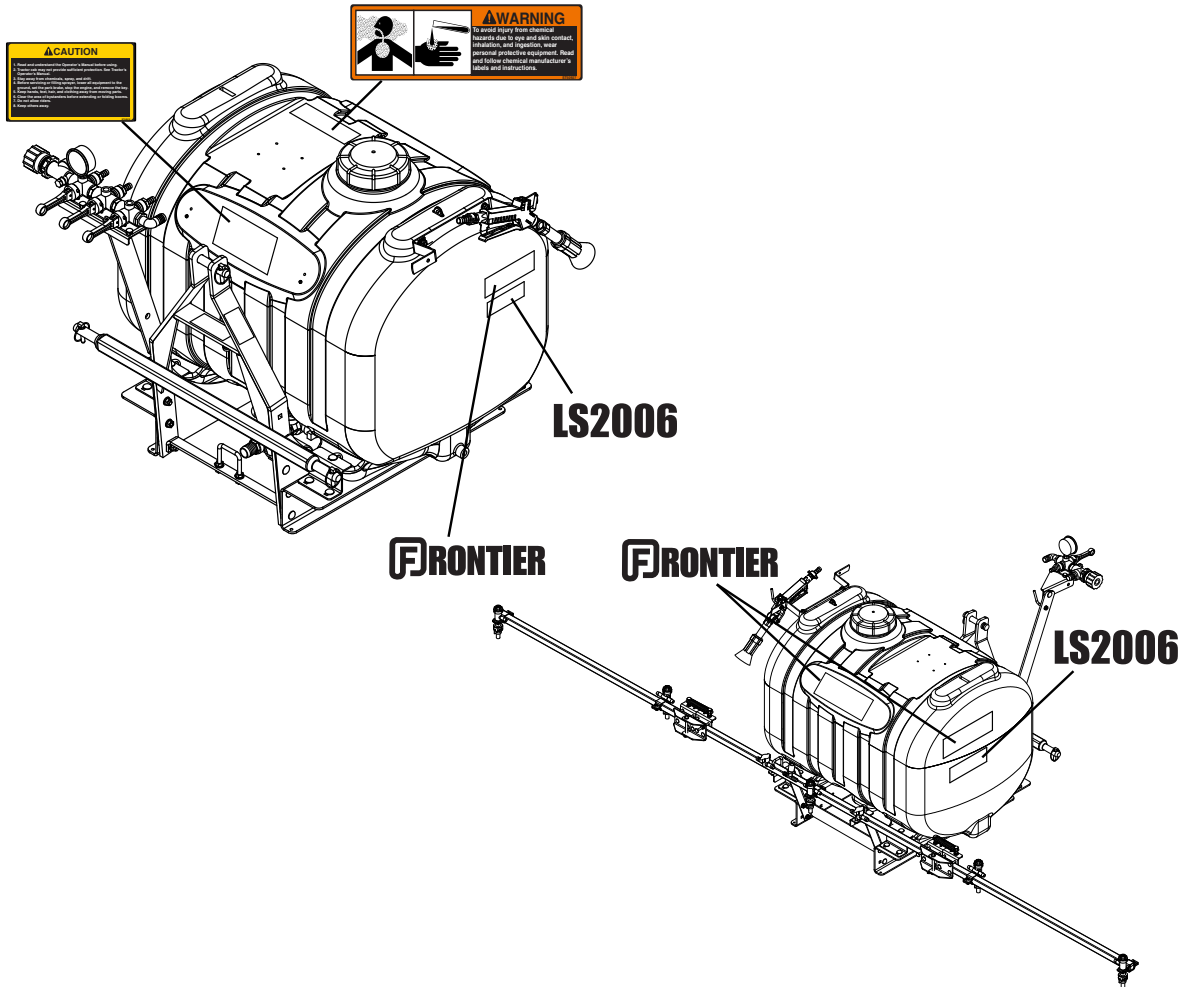
		Boom Option		
		12.5 ft	18 ft	Boomless
Capacity	Sprayer Tank	60 gal (227 L)		
Dimension	Working Width	12.5 ft (3.8 m)	18 ft (5.5 m)	24 ft (7.3 m)
	Transport Width	52 in (132 cm)	77 in (196 cm)	35 in (89 cm)
	Transport Length	43 in (109 cm)	45 in (114 cm)	39 in (99 cm)
	Transport Height	40 in (102 cm)	40 in (102 cm)	40 in (102 cm)
Weight	Empty Weight	109 - 230 Lbs (49 - 104 Kg)		
	Laden Weight	651 - 793 Lbs (295 - 360 Kg)		
Tractor Requirement	Hitch Compatibility	CAT 1		
	Quick Hitch Compatability	Yes		
Pump	Pump A	Hypro 6 roller PTO Cast Iron (6500C)		
	Max Flow @ 540 RPM	9.7 gpm (36.7 l/min)		
	Max Pressure	300 psi (20.7 bar)		
	Pump B	Hypro 6 roller PTO Silver Cast (6500XL)		
	Max Flow @ 540 RPM	9.7 gpm (36.7 l/min)		
	Max Pressure	300 psi (20.7 bar)		
Boom	Type	Dry boom		N/A
	Hose Size	1/2 in (1.3 cm)	1/2 in (1.3 cm)	1/2 in (1.3 cm)
	Construction	Square tube		N/A
	Breakaway	Rear		N/A
	Fold	Manual		N/A
	Sections	3	3	3
Application System	Spray Tips			
	Qty	5	7	3
	Type	Air Induction, 110° Flat Spray		Flood
	Size	0.4 gpm (1.5 l/min)	0.4 gpm (1.5 l/min)	0.5 gpm (1.9 l/min)
	Spacing	30 in (76 cm)	30 in (76 cm)	N/A
	Nozzle Body	1/4 turn diaphragm with check valve		
	Control System			
	Pump Control	PTO		
	Pressure Control	Adjustable		
	Max Working Pressure	150 psi (10.3 bar)		
	Section Control	Inline Valves	6B Control Valves	Inline Valves
	Agitation	Jet Agitation		
	Spot Sprayer			
	Style	Spray Gun		
	Hose Length	30 ft (9.1 m)		
	Optional Hose Reel			
	Hose Length	100 ft (30.5 m)		

TRACTOR BALLASTING

Boom Options			Accessories	Full Tank	
Boomless	18 ft Boom	12.5 ft Boom	100 ft Hose Reel	Weight (lbs)	Implement Code
		X		668	35
		X	X	724	38
	X			691	37
	X		X	747	39
X				651	34
X			X	707	36

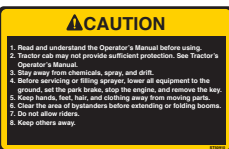
PARTS DIAGRAMS

Safety Decals Kit and Model Decals



- 1 - English
- 2 - French
- 3 - Spanish

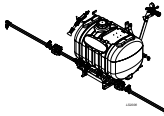
- 4 - English
- 5 - French
- 6 - Spanish




OPERATOR'S MANUAL

LIQUID SPRAYER

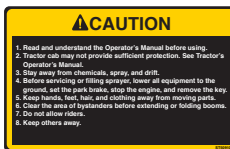
LS2006



FRONTIER




Operator's Manual and Safety Decal Kit



FRONTIER

Qty. 3



LS2006

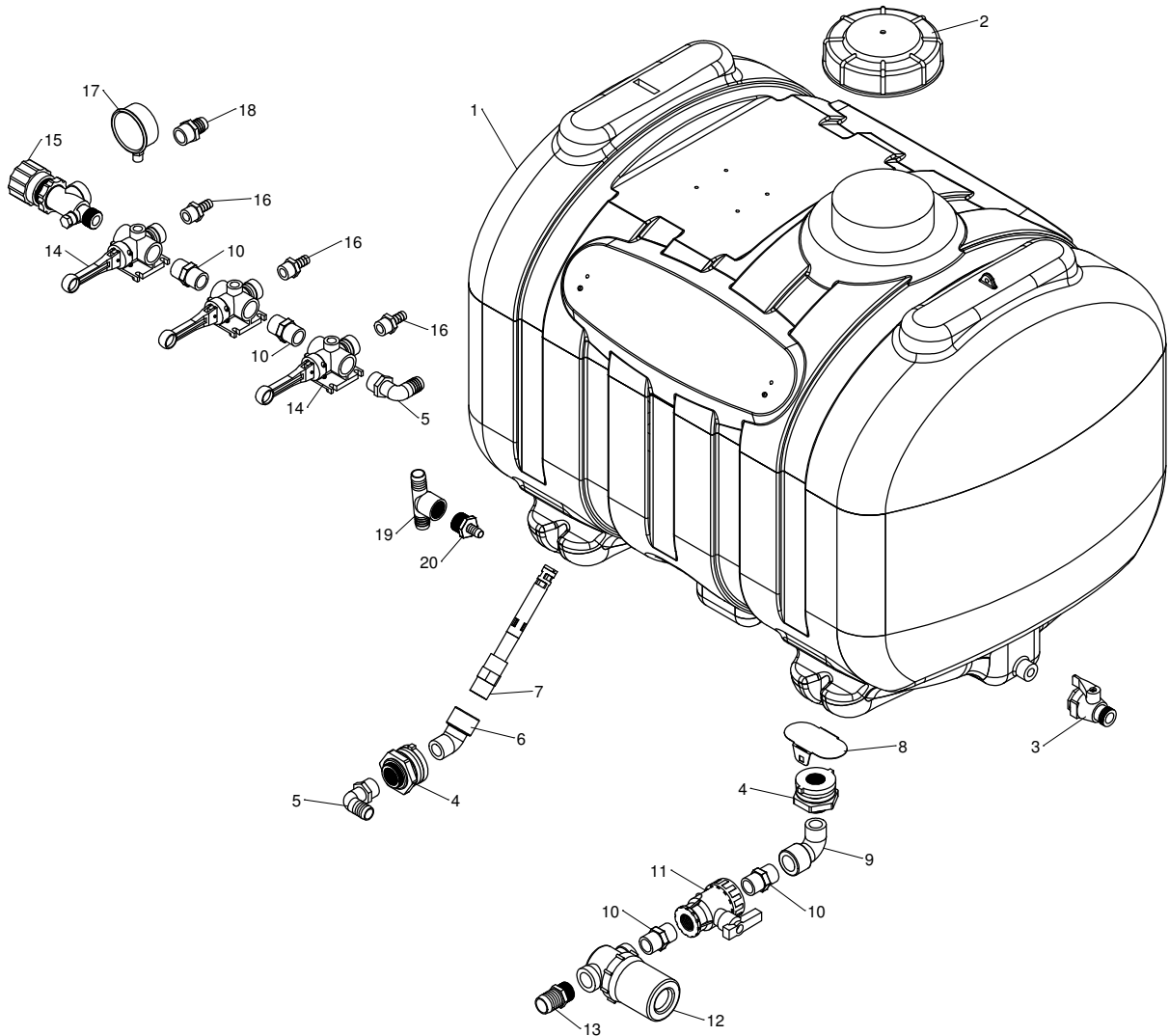
Qty. 2

Replacement Decal Kit

Safety Decals Kit and Model Decals

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	5CS0025	OM and Safety Decal Kit - English	1	Includes Operator's Manual, Caution Label and Warning Label
2	5CS0028	OM and Safety Decal Kit - French	1	
3	5CS0031	OM and Safety Decal Kit - Spanish	1	
4	5CS43994	Replacement Decal Kit - English	1	Includes Qty. 3 Frontier Decal, Qty. 2 Model Decal, Caution Label and Warning Label
5	5CS43995	Replacement Decal Kit - French	1	
6	5CS43996	Replacement Decal Kit - Spanish	1	

Plumbing

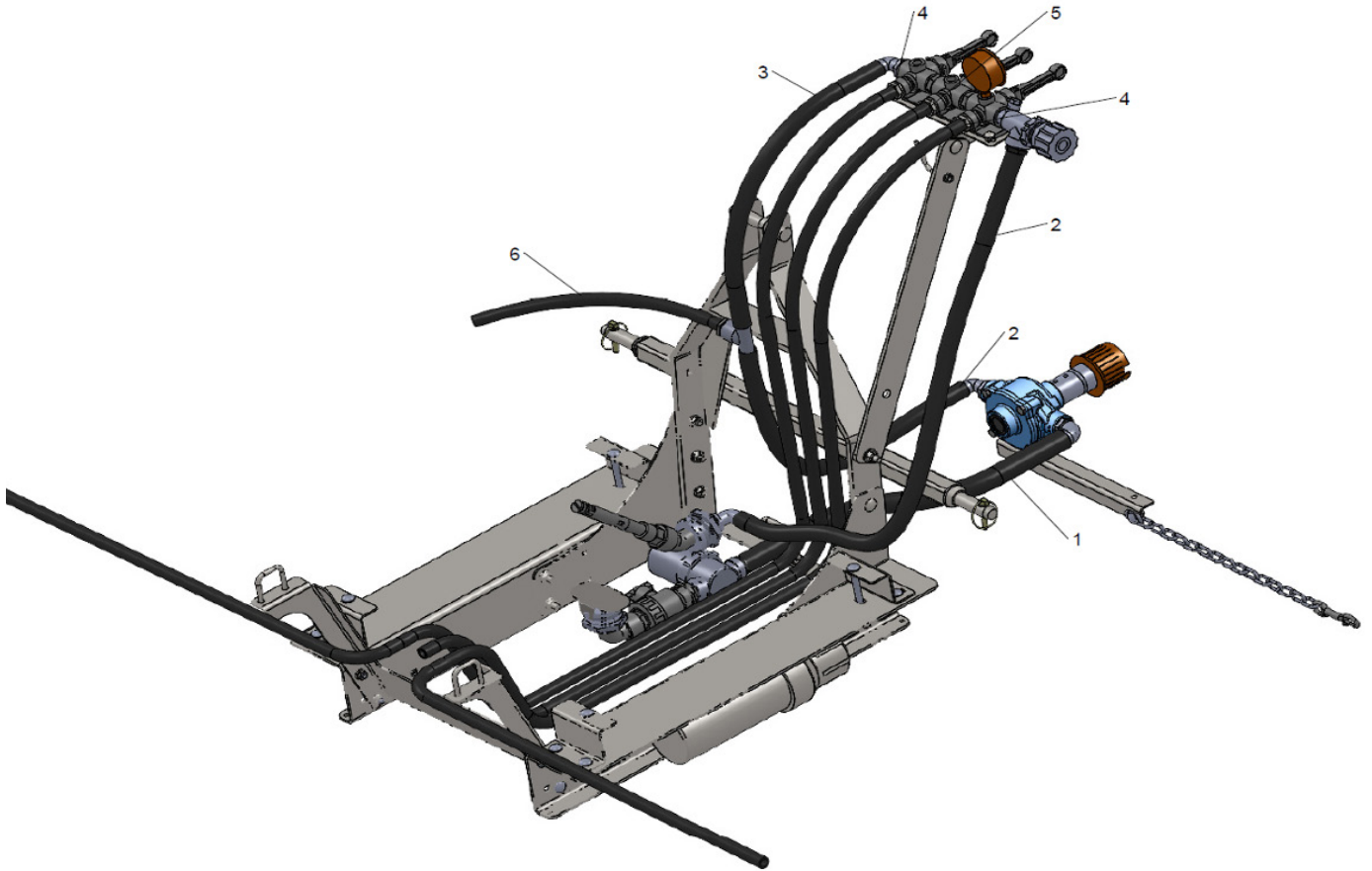


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	5CS43648	60 Gallon Tank	1	
2	5CS43175	Tank Lid 6"	1	
3	5CS43981	Garden Hose Shut-off Valve	1	
4	5CS43626	Tank Fitting 3/4"	2	
5	5CS43633	Elbow 3/4" MP - 3/4" barb	2	
6	5CS43660	45° Street Fitting 3/4"	1	
7	5CS43661	Jet Agitator	1	
8	5CS43739	Anti Vortex Plate	1	
9	5CS43627	Street Elbow 3/4"	1	

Plumbing

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
10	5CS43630	3/4" Pipe Nipple	4	QTY 4 for 18ft Boom, Qty 2 for 12.5 ft Boom & 24ft Boomless
11	5CS43629	Single Union Ball Valve	1	
12	5CS43631	Filter	1	
13	5CS43632	Fitting 3/4" MP - 1" Hose	1	
14	5CS43634	Control Valve	3	QTY 3 for 18ft Boom, Qty 1 for 12.5 ft Boom & 24ft Boomless
15	5CS43635	Relief Valve 3/4"	1	QTY 3 for 18ft Boom, Qty 1 for 12.5 ft Boom & 24ft Boomless
16	5CS43423	Fitting 1/2" Barb - 1/2 MP	3	
17	5CS43987	Gauge 160 PSI	1	
18	5CS43636	Fitting 3/4" MP - 3/4" barb	1	
19	5CS43640	Tee, 3/4" Hose - 3/4" Hose - 3/4" FP	1	
20	5CS43641	Fitting 3/4" MP - 1/2" Hose	1	

Hoses

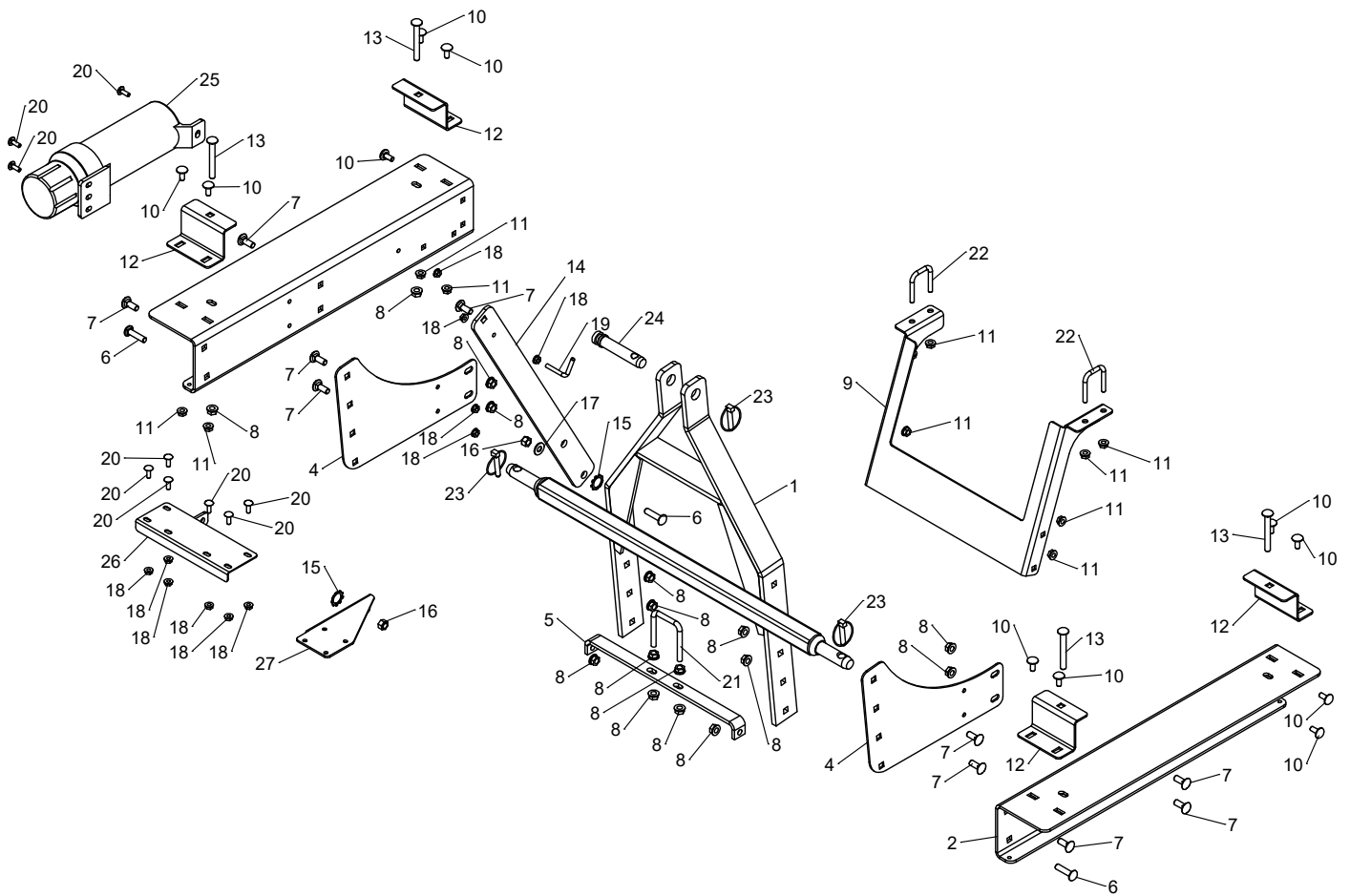


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1		1" Suction Hose	1	CTL 36", MF 5CS43657
2		3/4" Hose	2	CTL 36", MF 5CS43656
3		3/4" Hose	1	CTL 24", MF 5CS43656
4		1/2" Hose	2	CTL 114", MF 5CS43418
5		1/2" Hose	1	CTL 66", MF 5CS43418

Hoses

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
6		1/2" Hose	1	For 30 ft Hand Sprayer - CTL 360", MF 5CS43418 For 100 ft Hose Reel - CTL 1200" MF 5CS43418
-	5CS43652	Hose Clamp Screw Type 3/8" - 1/2"	6	Not Illustrated
-	5CS43653	Hose Clamp Screw Type 3/4"	6	Not Illustrated
-	5CS43654	Hose Clamp Screw Type 1"	2	Not Illustrated
-	5CS43426	1/2" barb fitting for wing nut	1	Installed on item 5 for 12.5 ft Boom and 24 ft Boomless
-	5CS43498	Plastic wing nut	1	Installed on item 5 for 12.5 ft Boom and 24 ft Boomless

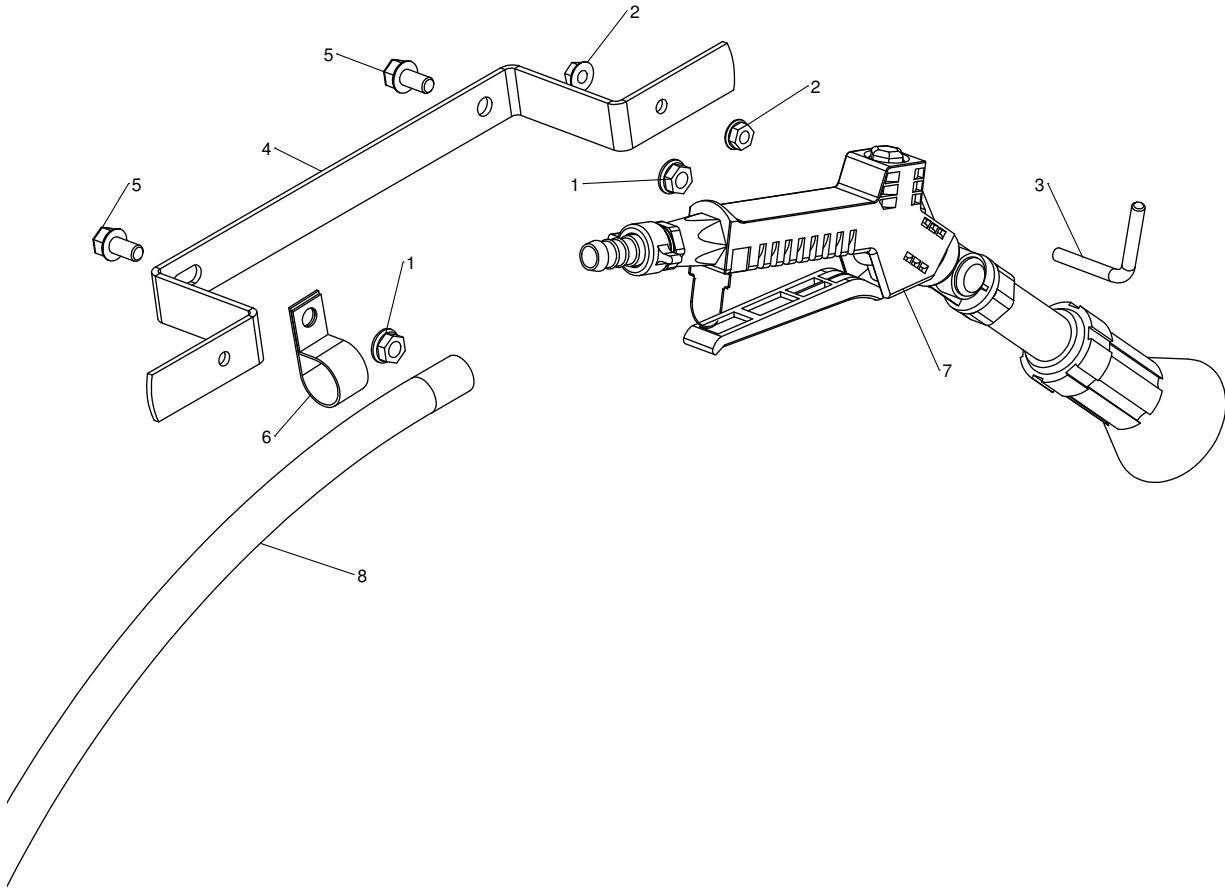
Frame



Frame

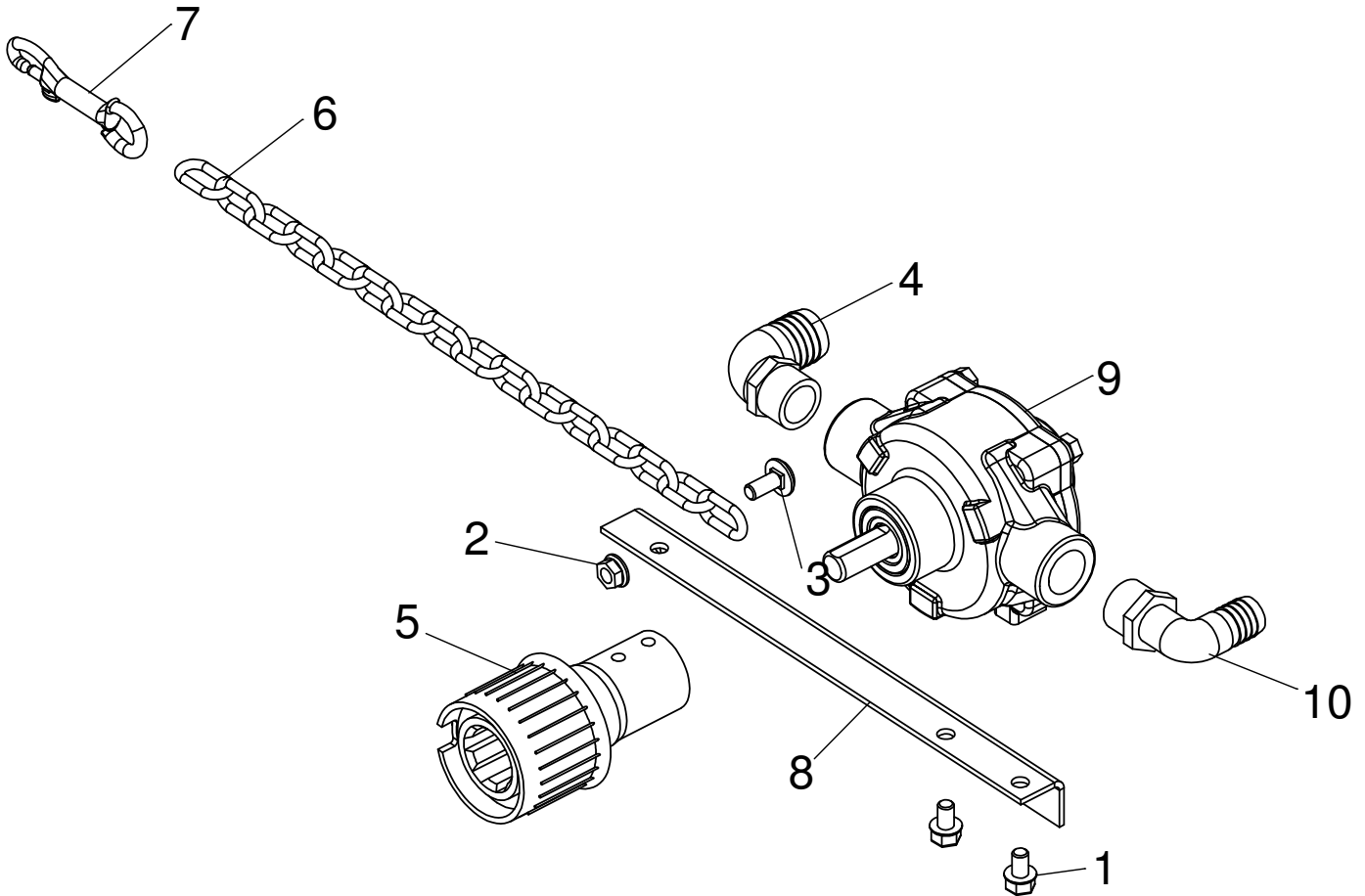
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	5CS61500	3 Point A Frame	1	
2	5CS43603	Channel Left	1	
3	5CS43602	Channel Right	1	
4	5CS43605	Front Brace	2	
5	5CS43618	Support	1	
6	03H1495	3/8" x 1-1/2" Carriage Bolt	3	
7	03H1500	3/8" x 1" Carriage Bolt	11	
8	E55662	3/8" Flange Nut	20	
9	5CS43883	Rear Crossmember	1	
10	03H1540	5/16" x 3/4" Carriage Bolt	12	
11	A22698	5/16" Flange Nut	16	
12	5CS43610	Tank Clamp	4	
13	03H2131	3/8" x 3" Carriage Bolt	4	
14	5CS43620	Control Mounting Post	1	
15	5CS65054	3/4" Star Lock Washer	2	
16	T11234	3/8" Nylock Nut	2	
17	T406296	3/8" Flat Washer	1	
18	N10217	1/4" Flange Nut	11	Qty 11 for 18ft Boom, Qty 8 for 12.5 ft Boom and 24 ft Boomless
19	5CS62008	1/4" Bent Pin	1	
20	03H1701	1/4" x 3/4" Carriage Bolt	9	Qty 9 for 18ft Boom, Qty 6 for 12.5 ft Boom and 24 ft Boomless
21	5CS60072	3/8" U-Bolt	1	
22	5CS43315	5/16" x 1-3/4" Square U-Bolt	2	
23	5CS43398	Lynch Pin	3	
24	5CS43399	Top Link Pin, Cat 1	1	
25	5CS43950	Manual Canister	1	
26	5CS43621	Triple Control Mount	1	18ft boom
27	5CS43619	Single Control Mount	1	For 12.5 ft Boom and 24ft Boomless

30 ft Hand Sprayer



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	A22698	5/16" Flange Nut	2	
2	N10217	1/4" Flange Nut	2	
3	5CS62008	1/4" Bent Pin	1	
4	5CS62006	Hose Hanger	1	
5	T58694	5/16" x 5/8" Flange Bolt	2	
6	5CS43663	Hose Holder 1/2"	1	
7	5CS43435	Sprayer Handgun	1	
8		1/2" Hose	1	CTL 360", MF 5CS43418
-	5CS43652	Hose Clamp Screw Type 3/8" - 1/2"	2	Not Illustrated

6 Roller PTO Pump

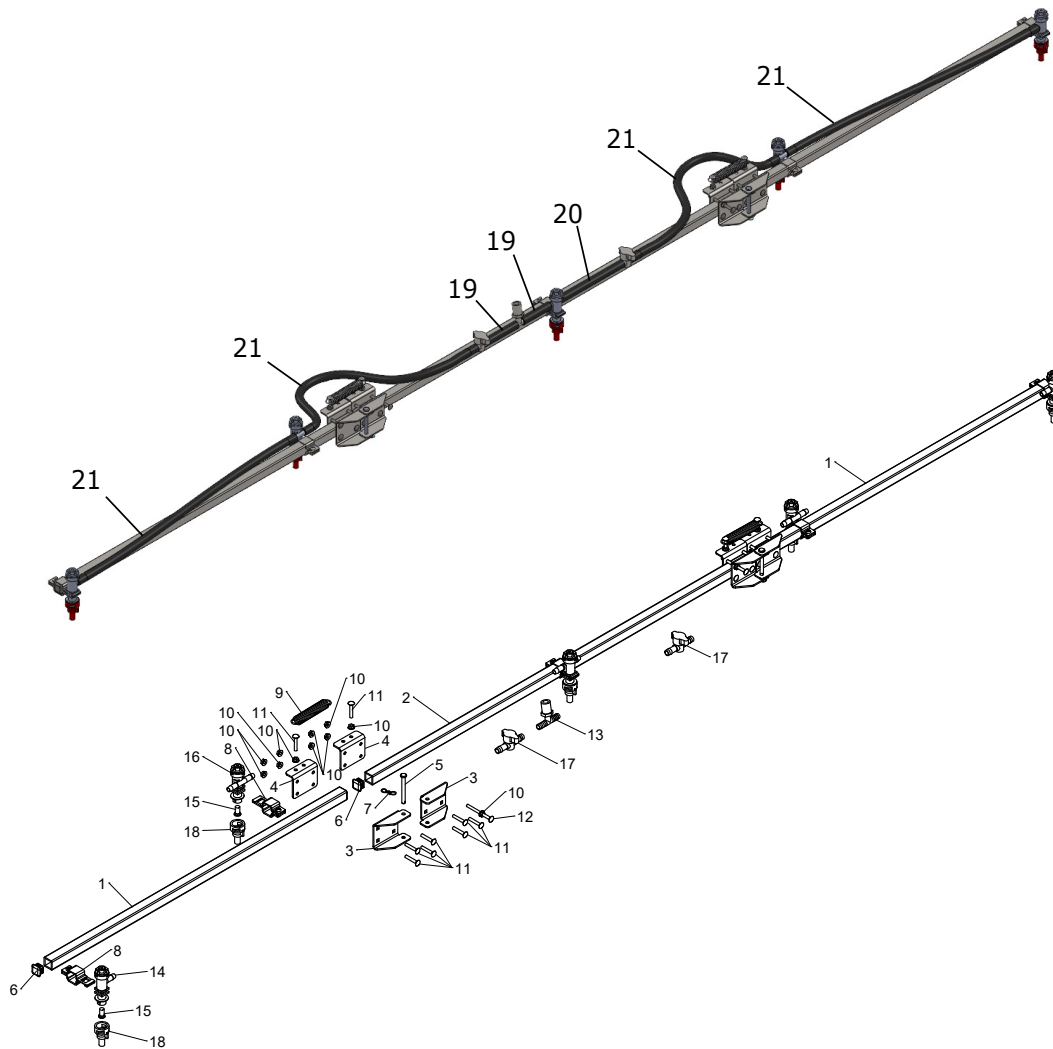


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	N167649	5/16" x 1/2" Flange Bolt	2	
2	A22698	5/16" Flange Nut	1	
3	03H1540	5/16" x 3/4" Carriage Bolt	1	
4	5CS43638	Elbow 3/4" MP - 1" barb	1	
5	5CS43639	PTO Quick Connect Adapter	1	

6 Roller PTO Pump

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
6	5CS50268	Chain 2/0 - 1.5 ft	1	
7	5CS43650	Chain Latch	1	
8	5CS43622	Pump Mount Angle	1	
9	5CS43637	Pump Cast 6 Roller	1	
9	5CS43649	Pump Silver Series 6 Roller	1	
10	5CS43633	Elbow 3/4" MP - 3/4" barb	1	

12.5' Folding Boom

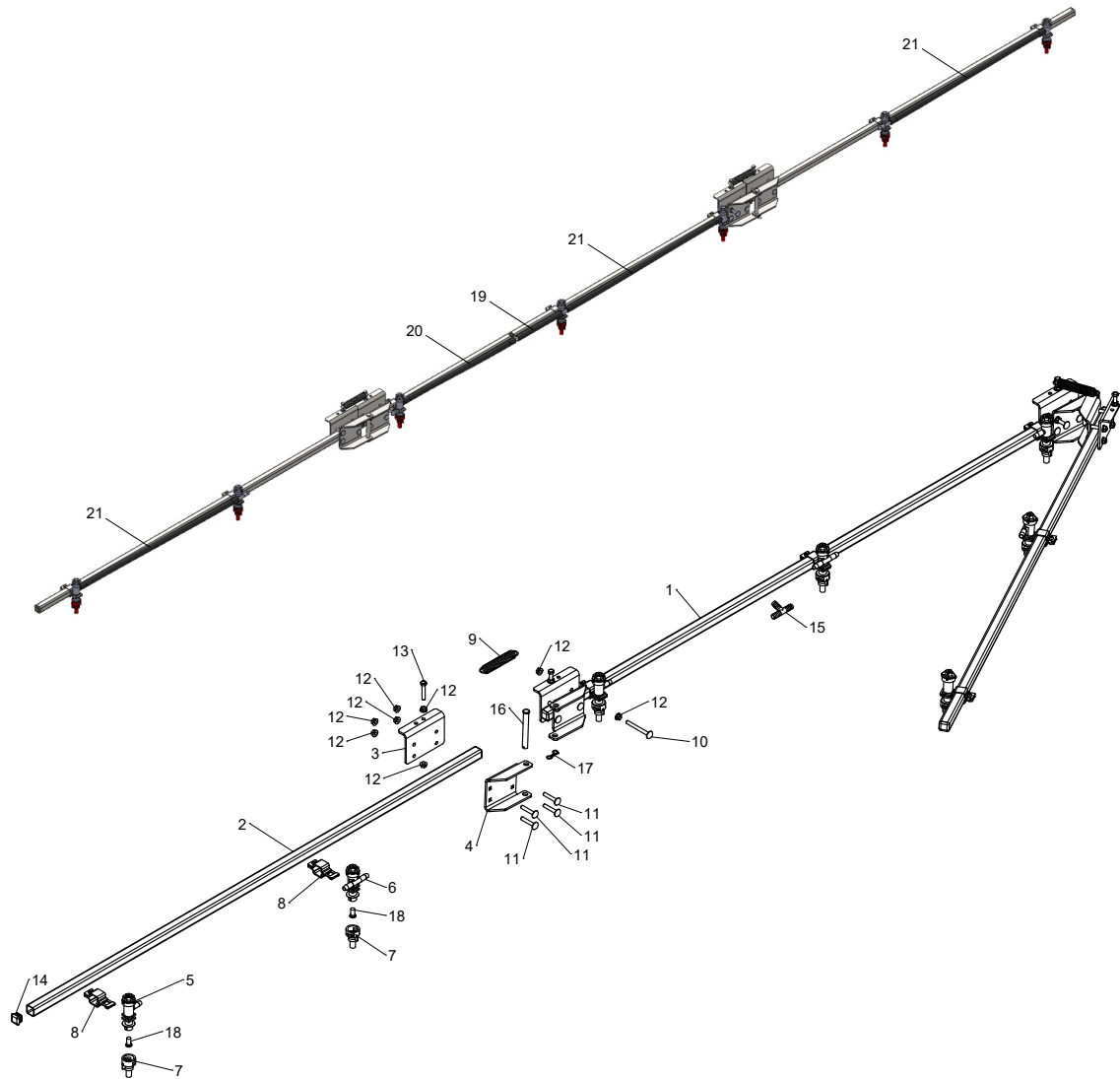


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	5CS60085	Side Boom Tube 37"	2	
2	5CS60083	Center Boom Tube 48"	1	
3	5CS43849	Boom Hinge Bracket	4	
4	5CS43389	Boom Hinge Backing Plate	4	
5	5CS43402	5/16" x 3" Clevin Pin	2	
6	5CS43401	Plastic End Cap 1"	6	
7	5CS43624	Small Bowtie Clip	2	
8	5CS43598	Square Tube Clamp 1"	5	
9	5CS43403	Spring 3/4" x 3-3/4" x .105	2	

12.5' Folding Boom

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
10	N10217	1/4" Flange Nut	26	
11	03H1810	1/4" x 1-1/2" Carriage Bolt	18	
12	FH325451	1/4" x 3" Carriage Bolt	2	
13	5CS43597	Tee 1/2" Barb - 1/2" NPT F	1	
14	5CS43658	Nozzle Body Single Hose 1/2"	2	
15	5CS43411	Spray Tip Screen	5	
16	5CS43595	Nozzle Body Dual Hose 1/2"	3	
17	5CS43736	In-line Valve 1/2"	2	
18	5CS43843	Air Induction Spray Tip 0.4 gpm	5	
19		1/2" Hose	2	CTL 2.5", MF 5CS43418
20		1/2" Hose	1	CTL 6", MF 5CS43418
21		1/2" Hose	4	CTL 19.25", MF 5CS43418
-	5CS43652	Hose Clamp Screw Type 3/8" - 1/2"	14	Not Illustrated

18' Folding Boom

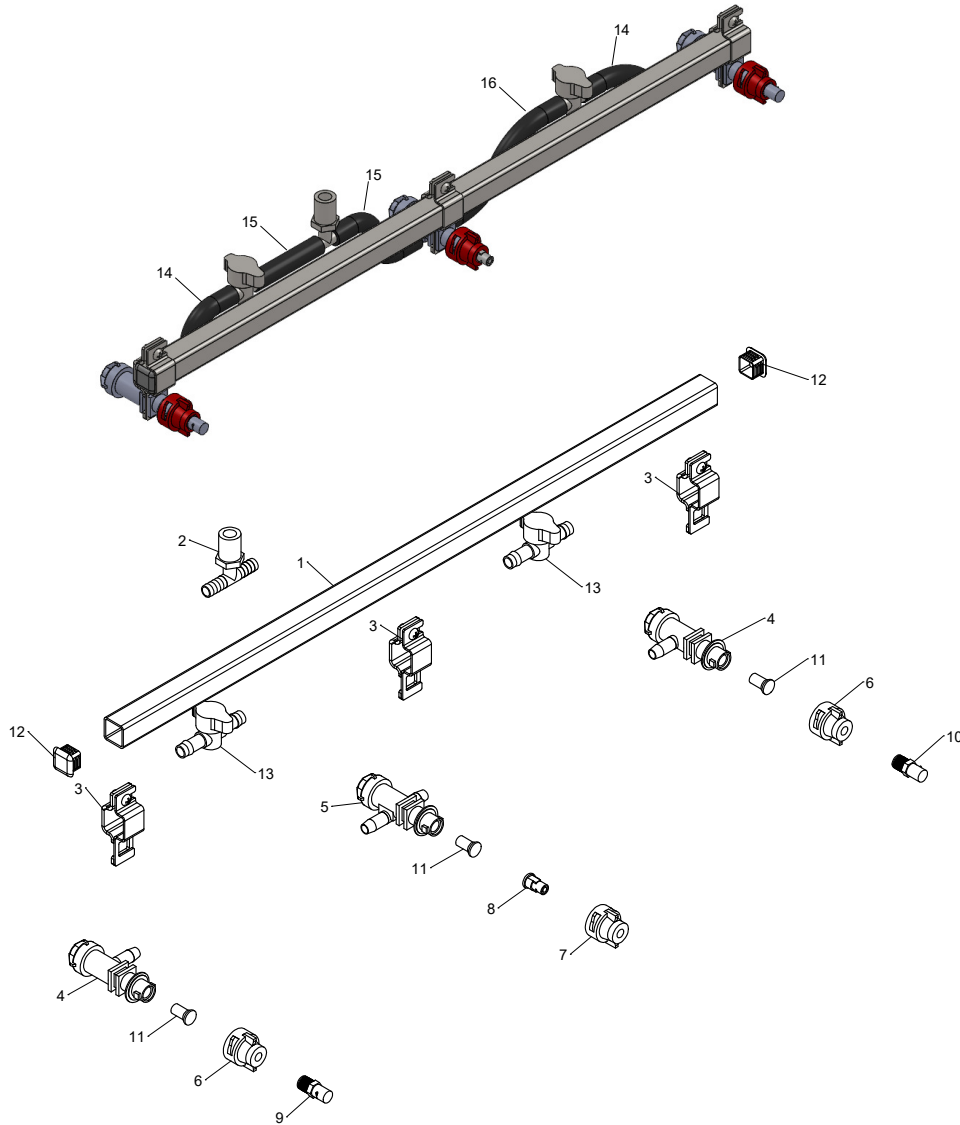


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	5CS43644	Center Boom Tube 72"	1	
2	5CS43646	Side Boom Tube 60"	2	
3	5CS43616	Boom Hinge Backing Plate	4	
4	5CS43862	Boom Hinge Bracket	4	
5	5CS43658	Nozzle Body Single Hose 1/2"	4	
6	5CS43595	Nozzle Body Dual Hose 1/2"	3	
7	5CS43843	Air Induction Spray Tip 0.4 gpm	7	
8	5CS43598	Square Tube Clamp 1"	7	

18' Folding Boom

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
9	5CS43403	Spring 3/4" x 3-3/4" x .105	2	
10	03H1506	5/16" x 3" Carriage Bolt	2	
11	03H2209	5/16" x 1-3/4" Carriage Bolt	14	
12	A22698	5/16" Flange Nut	26	
13	5CS65090	5/16" x 1-3/4" Hex Bolt	4	
14	5CS43401	Plastic End Cap 1"	6	
15	5CS43420	Tee 1/2" Barb	1	
16	5CS50120	1/2"x4" Clevis Pin	2	
17	5CS50237	Bowtie Clip 1/2"	2	
18	5CS43411	Spray Tip Screen	7	
19		1/2" Hose	1	CTL 6", MF 5CS43418
20		1/2" Hose	1	CTL 22.25", MF 5CS43418
21		1/2" Hose	3	CTL 29", MF 5CS43418
-	5CS43652	Hose Clamp Screw Type 3/8" - 1/2"	13	Not Illustrated

Boomless 24' Spray

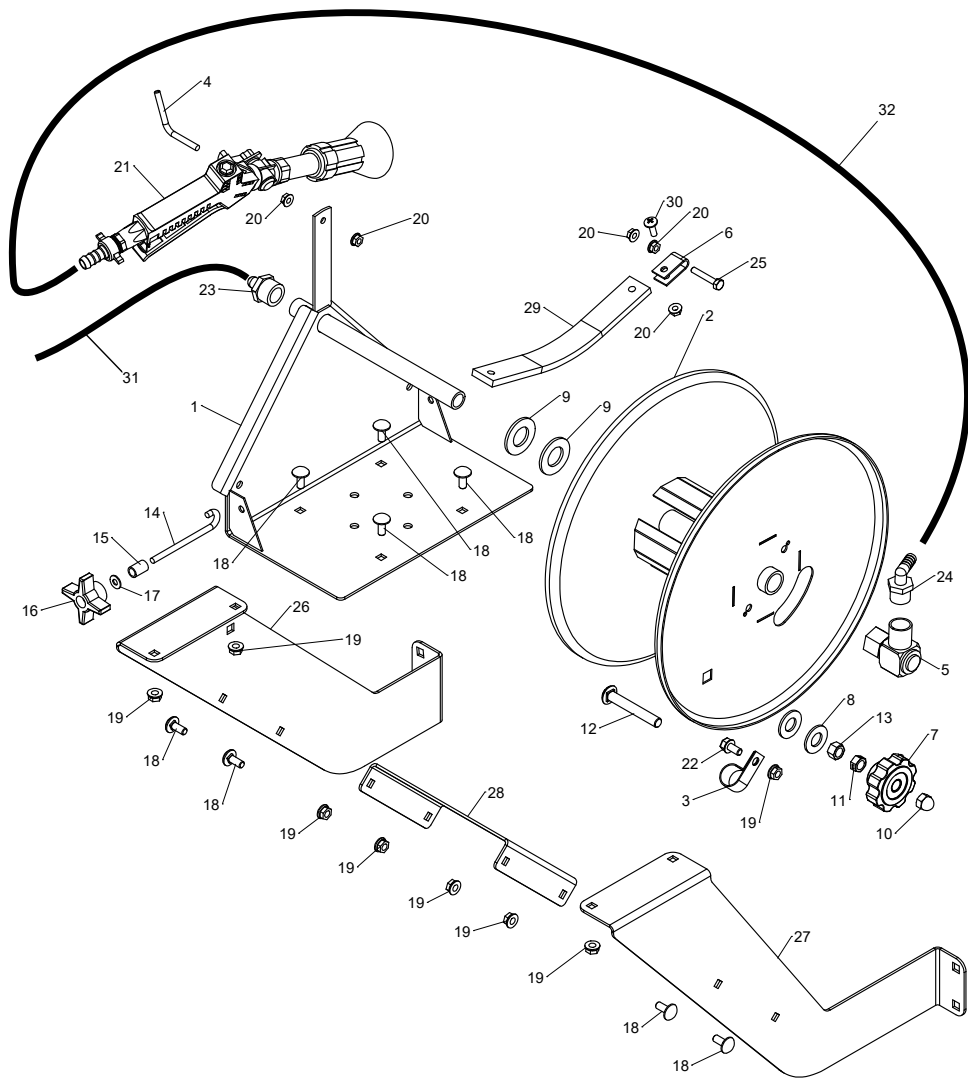


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	5CS61020	Boom Tube 31"	1	
2	5CS43597	Tee 1/2" Barb - 1/2" NPT F	1	
3	5CS43598	Square Tube Clamp 1"	3	
4	5CS43658	Nozzle Body Single Hose 1/2"	2	
5	5CS43595	Nozzle Body Dual Hose 1/2"	1	
6	5CS43599	Spray Tip Cap w/ Gasket for Threaded Tips	2	
7	5CS43408	Spray Tip Cap w/ Gasket	1	

Boomless 24' Spray

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
8	5CS43410	Flood Spray Tip 0.3 gpm	1	
9	5CS43600	Boomless Flat Spray Tip Right	1	
10	5CS43601	Boomless Flat Spray Tip Left	1	
11	5CS43411	Spray Tip Screen	3	
12	5CS43401	Plastic End Cap 1"	2	
13	5CS43736	In-line Valve 1/2"	2	
14		1/2" Hose	2	CTL 3.25", MF 5CS43418
15		1/2" Hose	2	CTL 5", MF 5CS43418
16		1/2" Hose	1	CTL 10.25", MF 5CS43418
-	5CS43652	Hose Clamp Screw Type 3/8" - 1/2"	10	Not Illustrated

100 ft Hose Reel



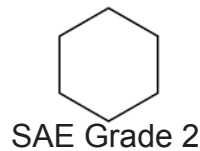
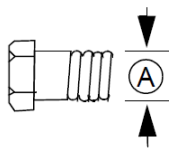
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
1	5CS43686	Hose Reel Base	1	
2	5CS43687	Hose Reel Assembly	1	
3	5CS43663	Hose Holder 1/2"	1	
4	5CS62008	1/4" Bent Pin	1	
5	5CS43782	Swivel 1/2" FPT, Elbow	1	
6	5CS50245	Retention Strap Clamp	1	
7	5CS43783	Swivel Knob	1	
8	A110615	5/8" SAE Washer	2	
9	5CS65161	7/8" SAE Washer	2	
10	5CS65162	7/16" Acorn Nut	1	

100 ft Hose Reel

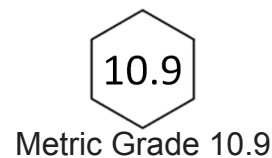
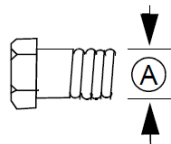
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Note
11	5CS65163	7/16" Center Lock Nut	1	
12	03H1705	7/16" x 3" Carriage Bolt	1	
13	14H849	7/16" Hex Nut	1	
14	5CS43781	1/4" x 4" J-Bolt	1	
15	5CS43725	Spacer	1	
16	5CS43810	1/4" Plastic Knob	1	
17	5CS65154	1/4" Washer	1	
18	03H1540	5/16" x 3/4" Carriage Bolt	8	
19	A22698	5/16" Flange Nut	9	
20	N10217	1/4" Flange Nut	5	
21	5CS43435	Sprayer Handgun	1	
22	T58694	5/16" x 5/8" Flange Bolt	1	
23	5CS43588	Elbow 1/2" Barb - 1/2" NPT F	1	
24	5CS43803	Elbow 1/2" Barb - 1/2" NPT M	1	
25	TCU38060	1/4"x 1-1/2" Bolt	1	
26	5CS43793	Front Mounting Bracket	1	
27	5CS43794	Rear Mounting Bracket	1	
28	5CS43804	Crossmember	1	
29	5CS43988	Rubber Strap 5/16" x 1-1/4" x 10"	1	
30	5CS65016	1/4" x 3/4" Truss Head Bolt	1	
31		1/2" Hose	1	CTL 36", MF 5CS43418
32		1/2" Hose	1	CTL 1200", MF 5CS43418
-	5CS43652	Hose Clamp Screw Type 3/8" - 1/2"	4	Not Illustrated

BOLT TORQUE CHART

- Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedures is given for a specific application. For plastic insert or crimped steel type lock nuts, for stainless steel, or for nuts on u-bolts, see the tightening instructions for the specific application.
- Fasteners must always be replaced with the same grade as specified in the manual parts list.
- Shear bolts are designed to fail under predetermined loads, always replace shear bolts with identical grades.
- Make sure fasteners threads are clean and start thread engagement properly.



Diameter (A) (Inches)	Torque Values (Dry)					
	SAE Grade 2		SAE Grade 5		SAE Grade 8	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
1/4	7.4	5.5	12	9	17	12.5
5/16	15	11	24	18	35	26
3/8	27	20	45	33	62	46
7/16	43	32	70	52	102	75
1/2	68	50	108	80	156	115
9/16	95	70	156	115	217	160
5/8	136	100	217	160	305	225
3/4	238	175	380	280	540	400
7/8	238	175	615	455	870	640



Diameter (A) (millimeters)	Torque Values (Dry)			
	Grade 8.8		Grade 10.9	
	N-m	lb-ft	N-m	lb-ft
M6	11.3	8.3	16.5	12.2
M8	27.5	20.3	40	29.5
M10	55	40	80	59
M12	95	70	140	105
M14	150	110	220	165
M16	240	175	350	255

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