SXL-26088

Farm King

OPERATOR AND PARTS MANUAL

1460 Fertilizer Applicator

04/2010

1460 Fertilizer Applicator

TO THE OWNER
Thank you for purchasing a Farm King 1460 Fertilizer Applicator. This machine is designed to be a heavy-duty unit for liquid fertilizer application.

This Fertilizer Applicator features:

- 1600 gallon liquid tank
- Adjustable axle from 120"-160"
- Ground driven pump, or a centrifugal pump with Raven controller options
- Solid 8" x 3" mainframe tubing
- Heavy duty 4" x 6" double toolbar frames
- Single and double fold toolbars from 27'6" to 41'0" working widths
- Clevis and 2 point hitch options
- Designed for mounting of many types of coulters

Farm King Fertilizer Applicators have been designed to provide many years of profitable and dependable service. To assure maximum performance of your Fertilizer Applicator, it is mandatory that you thoroughly study the operator's manual and follow its recommendations. Proper operation and maintenance are essential for safety, to maintain performance, and to maximize the life of the Fertilizer Applicator.

It is the owner's responsibility to:
Operate and maintain this Fertilizer Applicator in a safe manner and in accordance with all applicable local, state, and federal codes and/or laws; and in compliance with labeling instructions furnished by the supplier of the chemical being used.

Make sure each and every operator has read the operator's manual and thoroughly understands safe and correct operating procedures.

Make sure unauthorized people do not operate or are not in the vicinity of the Fertilizer Applicator while it is in operation.

Maintain the Fertilizer Applicator in accordance with the maintenance schedule in this manual. Furthermore, as additional technology becomes available, the owner is responsible for improving the safety and reliability of the system.

Fulfill all warranty obligations so as not to void the warranties. Verify the unit is warranty registered prior to making any warranty claims. The warranty section at the back of this manual outlines the warranty policy of Farm King.

Abuse or modifications to the Fertilizer Applicator that change the performance other than original factory specifications void the warranty.

Farm King reserves the right to make product improvements to the equipment at any time. It shall not be obligated to make such changes to machines already in service.

**The owner, manager and/or operator is responsible for safe, accurate operation and maintenance of the Farm King 1460 Fertilizer Applicator.*

Table of Contents

Manufacturer's statement: for technical reasons Buhler Trading Inc. reserves the right to modify machinery design and specifications provided herein without any preliminary notice.
Information provided herein is of descriptive nature. Performance quality may depend on soil fertility, applied agricultural techniques, weather conditions and other factors.

NOTES:

Safety Instruction
Section A

Safety First

Accidents can be prevented by recognizing the causes or hazards before an accident occurs... and doing something about them.

Regardless of the care used in the design and construction of this equipment, there are some areas that cannot be completely safeguarded without interfering with the accessibility and efficiency of operation.

THIS MESSAGE ALERT SYMBOL IDENTIFIES IMPORTANT MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY AND CAREFULLY READ THE MESSAGE THAT FOLLOWS.

In this manual and on labels used on the machine the words “DANGER”, “WARNING”, and “CAUTION”, are used to indicate the following:

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

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

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

THIS MESSAGE ALERT SYMBOL IDENTIFIES INFORMATION THAT MUST BE HEEDED FOR PROPER OPERATION OF EQUIPMENT AND TO PREVENT DAMAGE OR DETERIORATION OF THE EQUIPMENT.

In this manual the words “IMPORTANT” and “NOTE” are used to indicate the following:

IMPORTANT: Highlights information that must be heeded.

NOTE: A reminder of other related information that needs to be considered.

Safety Instructions for Operation

1. DO NOT ALLOW ANYONE TO OPERATE THIS FARM KING FERTILIZER APPLICATOR UNTIL HE OR SHE HAS READ THIS MANUAL AND IS COMPLETELY FAMILIAR WITH ALL SAFETY AND OPERATION PROCEDURES.

 WARNING	Observe the IMPORTANT SAFETY INSTRUCTIONS listed below at all times! THE BEST KIND OF SAFETY IS A CAREFUL OPERATOR.
 CAUTION	Always wear protective clothing, goggles, respirator and gloves when handling chemicals. 
 DANGER	Always wear protective clothing, goggles, respirator and gloves when handling chemicals.  
 WARNING	Observe all Federal and State EPA regulations and all Local, State and Federal codes and / or laws regarding licensing, handling, storage, transportation, application and waste disposal of chemicals.

2. If any safety device on the Fertilizer Applicator itself is not functioning properly, DO NOT use the Fertilizer Applicator. Remove it from service until it has been properly repaired by a qualified service technician.

3. Do not allow the following people to operate or repair this equipment:

   - Children
   - Irresponsible persons
   - People under the influence of alcohol, medications or other drugs that can cause drowsiness or impaired judgement.
   - Persons unfamiliar with equipment or people who are careless or unfamiliar with safe operating procedures.People who are allergic to any of the chemicals used must never be allowed in or near the Fertilizer Applicator.

4. Always park the Fertilizer Applicator on a level surface, and lock the tractor brakes, or block the tires, before making adjustments or repairs.

5. Before operating this equipment, thoroughly inspect the unit to ensure it is in good working order.

6. Do not operate this unit if any defect or malfunction exists. Pay particular attention to safety features such as safety chains.

7. Verify that the Fertilizer Applicator is securely hitched to the tractor and safety chains are in place.

8. Always position the toolbar in the lowered and locked position prior to disconnecting the trailer hitch from the tractor.

9. Shut off tractor and put in park, engage the parking brake, and disengage hydraulic power before servicing or making adjustments to the toolbar and other equipment.

10. Keep all guards in place during operation. Keep all safety decals clean and legible. Contact Farm King, for replacement decals if they are illegible.

11. Lower implement to ground when storing or leaving machine unattended.

12. Equipment is to be operated by qualified personnel only. A full understanding of the operation, maintenance, and safety requirements is mandatory before use.

13. Follow all tractor operating procedures and safety information.

14. Before operating the toolbar, be sure the cylinders and hydraulic hoses are fully charged with oil. If air is still in the system when operating, the 1460 may fold, unfold, lift and lower rapidly and erratically. Ensure no one is in the area of the tractor and toolbar when folding and unfolding. Serious injury or death may occur if the toolbar strikes personnel.

15. Absolutely no riders on the implement. A fall will cause severe injury and possible death.

16. Hydraulic oil escaping under pressure has sufficient force to penetrate the skin, causing personal injury or death. Depending on the type of tractor hydraulic system, relieve pressure when attaching or disconnecting the implement by either placing the corresponding hydraulic lever in float position and shutting the tractor off, or shutting the tractor off and moving the hydraulic lever both directions. Be sure all hydraulic connections are tight and hoses are not damaged before operating the machinery. Escaping hydraulic oil from a small hole can be almost invisible. Do not use your hands to search for a hydraulic leak. Use a piece of cardboard or wood to look for leak spray. IF INJURED BY ESCAPING HYDRAULIC OIL, SEE A DOCTOR AT ONCE. SERIOUS REACTION AND INFECTION CAN DEVELOP IF PROPER MEDICAL TREATMENT IS NOT ADMINISTERED IMMEDIATELY.

17. Be extremely careful when working around unshielded coulter and disc blades. Serious injury may occur if contact is made with sharp blades.

18. Before operating the equipment, thoroughly inspect the unit to ensure it is in good working order.

19. Stopping distance increases as the square of the speed. For example: It will take twice as much distance to stop a unit traveling 15 mph as one going 10 mph; and four times the distance at 20 mph (more than eight times the distance at 25 mph)! Road surface will influence stopping distance. Dry pavement is usually considerably better than gravel road. Materials (such as ice, snow, water, oil or mud) on the surface can greatly increase stopping distance.
    Road slope has a significant impact on stopping distance and can greatly magnify the other factors mentioned above. Under some downhill conditions stopping can be very difficult or impossible.

20. Do not replace components or parts with those other than genuine Farm King Factory Service Parts. To do so may reduce the effectiveness of safety features or decrease the accuracy of the unit.

21. Read the Operation Instructions section of this manual for further necessary information relating to the safe operation of the applicator.

WARNING

Certain chemicals can be very corrosive and may oxidize steel over a period of time. This weakens steel parts and can cause failure to perform as intended, resulting in possible safety hazards. Periodically check all safety shields and structural members for corrosion. Replace or repair anything that could cause a potential safety hazard.

Safety Decals on a Farm King Model 1460 Fertilizer Applicator

1

P/N SX002438

2

P/N SX002439

3

P/N SX004302

4

P/N SX004772

5

P/N SX004774

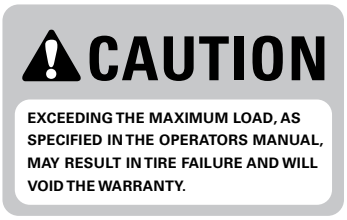
7

P/N SX004776

6

P/N SX004775

8



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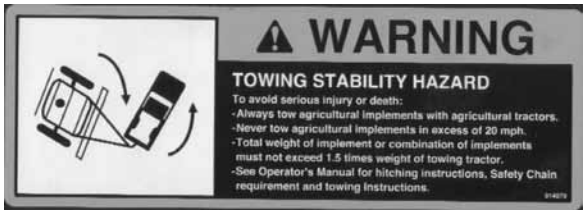

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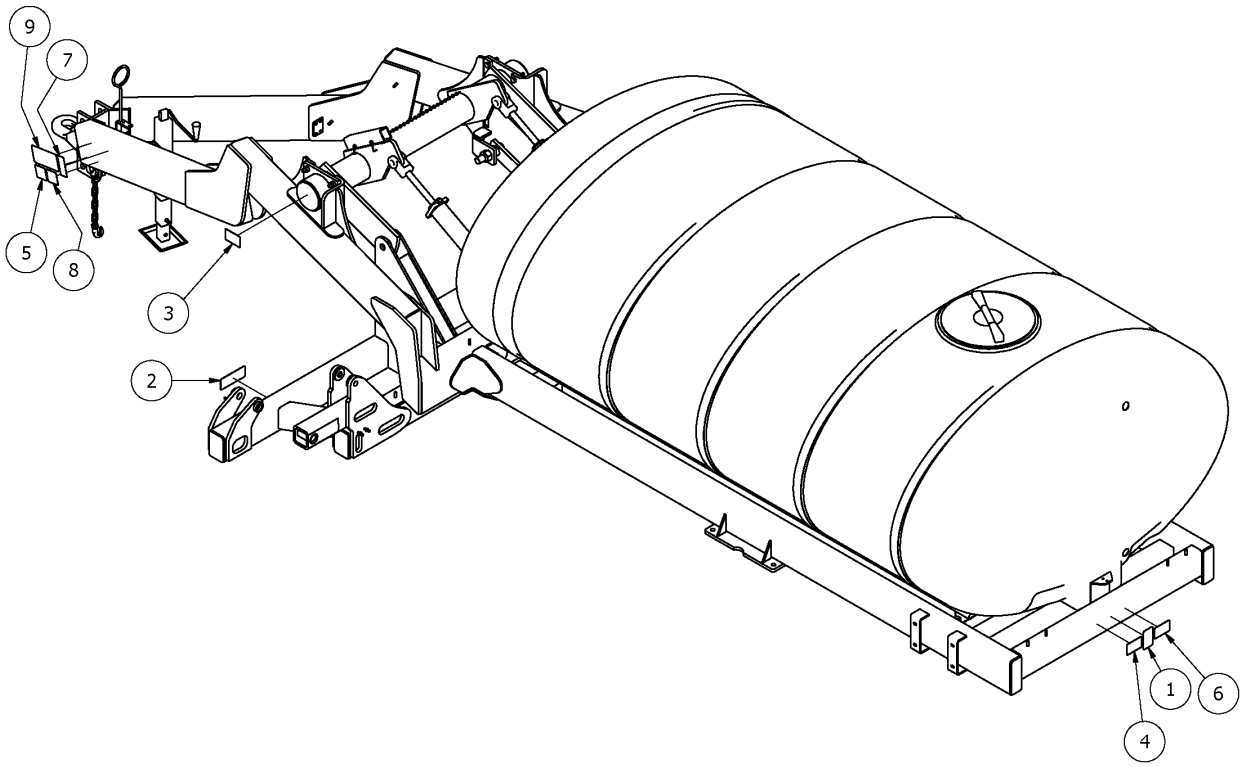
Safety Decal Placement



NOTES:

Operation Instructions
Section B

Inspect Unit

IMPORTANT

Check machine thoroughly for screws, bolts, fittings, etc., which may have come loose during transport or operation.

System Overview

The Farm King Model 1460 Fertilizer Applicator consists of the following subsystems:

Hitch (Pintle/Clevis or 2 Point)
Lift and Fold Hydraulics - Operating
Leveling the Mainframe
Adjusting Axle Width
Setting Toolbar Depth
Lighting and Marking Systems
Centrifugal Pump and Controller Plumbing
Coulters, Liquid Injectors, and Knives
Redball® Spray Monitors

Hitch

Farm King provides 2 types of hitches: a pintle/clevis or a 2-point attachment type.

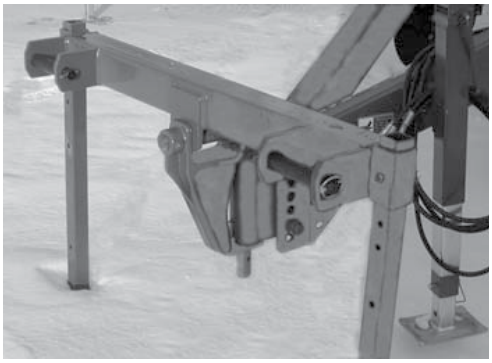
Adjust hitch so applicator is level when connected to tractor drawbar.

Adjust 2-point hitch with tractor hydraulics so applicator is level.

Connect the applicator to the tractor according to the tractor manufacturer's instructions. Once the hitch is connected to the tractor, make certain that the safety chains on pintle/clevis hitches are securely fastened to the tractor. Using the hand crank, raise the hitch jack high enough to allow for pivoting of the assembly. Pull the pin and rotate until horizontal and the pin is re-engaged and locked.

Remove the 2-point attachment hitch jack stands.

Pintle/Clevis Style Hitch



2-Point Attachment Hitch (Optional)

WARNING

For pintle and clevis style hitches, towing of the applicator by any type of vehicle requires safety chains.

Hydraulics

Tractor Requirements

- Closed center hydraulic system set at 4 to 6 GPM rate-excess flow will cause improper function.
- System pressure: 2,000 psi, minimum.
- Two directional valves; one valve can be spring centered, but the other valve needs to have detent capability (detent maintained at system pressure).

Start-Up Procedures

1. A copy of this page should be kept readily available with the machine.
2. The hoses for connection to the tractor valves are numbered at the hydraulic manifold, ports 1 through 4.
3. Hoses #1 and #2 are working valve control during fertilizer application.
4. Hoses #3 and #4 are the road transport valve control.
5. Confirm the tractor hydraulics are operating at 4-6 GPM. Use the "turtle" setting on the flow control for both valves.
6. Confirm the tractor's 7-pin electrical connector has 12 volt supply to pin #7, the center pin.
7. Connect hoses and 7-pin electrical connector before starting up. If wings move too slow, adjust the hydraulic flow up from the "turtle" setting.

Typical Machine Behavior

1. Using the transport valve, unfold the wings. The inner wings will stop automatically and the outer wings will then unfold with the center section.
2. To begin applying fertilizer, use the working valve to lower the wings. The outer wings will lower first and the center section will follow.

IMPORTANT

Do not use the working valve. The transport valve will lose its electrical sequence for transport.

3. During the application of fertilizer, the working valve must remain detented to provide constant pressure to the active hydraulic system.

IMPORTANT

Do not use the **transport valve**. The transport valve electrically times the fold sequence. If you engage the transport valve, you must complete the transport folding cycle to correct the electrical timing.

4. Use the **working valve** for the **end row turn**; the wings will lift slightly and then the toolbar will lift and stop automatically.
5. Use transport valve to complete folding the toolbar.

IMPORTANT

Wings will be lifted at approximately a 6 degree angle to the center section.

Cylinder Functions

Use the following table to check the tractor valve function against the cylinder behavior.

Directional valve function in tractor	Desired Directional Valve Configuration	Toolbar Action	Desired Cylinder Behavior		
			Center	Middle	Outer
Transport	Spring centered	Fold up ready for transport	Extend	Retract	Retract
	Spring centered	Unfolded ready for work	No movement	Extend, stops when toolbar up 10 deg.	Extend
Work	Spring centered (Detent is optional)	Lift for end row turns	Extend	Retract, stops when toolbar up 5 deg.	No movement
	Detented (must retain detented throughout application cycle)	Down for fertilizer application	Retract	Extend	Extend

CAUTION

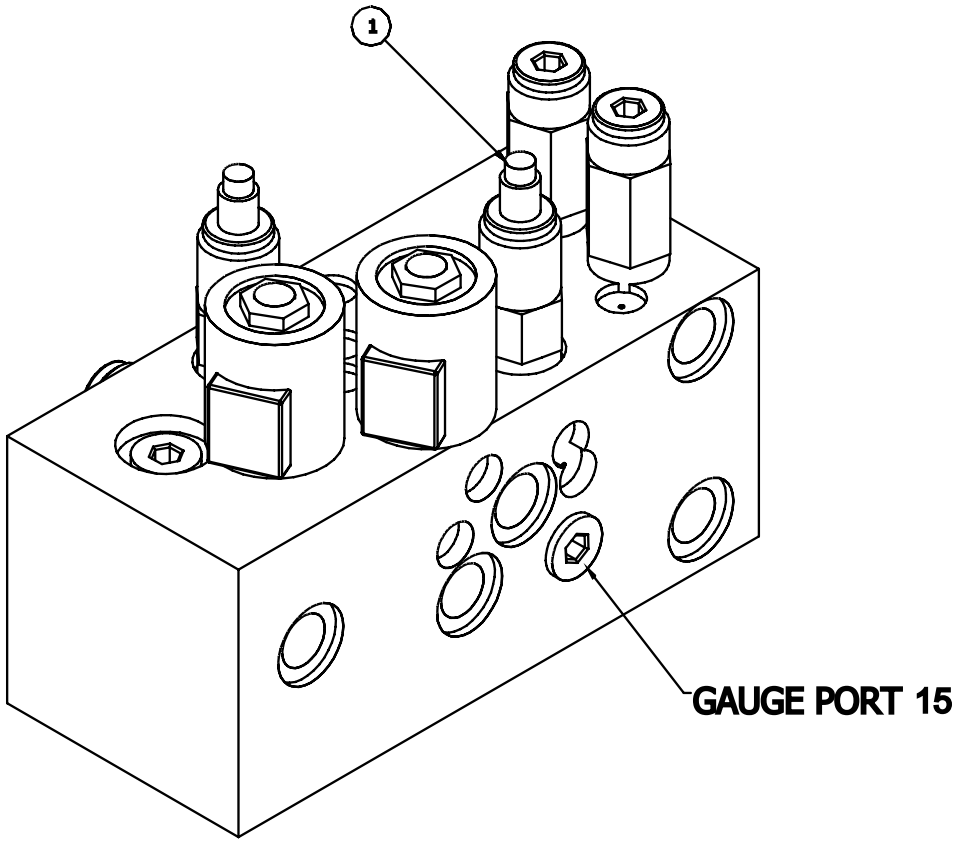
1. Operate only on a pressure compensated, load sensing, or flow compensated closed center pump system. Use of an open center tractor hydraulic system will result in the hydraulic flow continuously bypassing through the relief valve resulting in an increase engine horsepower requirement to turn the pump at the relief valve pressure. This will overheat the oil and the tractor very quickly.
2. It is important to note that some older tractors will have a detented valve that will kick out when system pressure is achieved. This valve must be over-ridden. The valve must remain in detented position during application of fertilizer. Maintaining pressure will allow the system to keep the toolbar at a constant depth.

Adjusting Hydraulic Pressure

The reducing valve (Item #1) in the hydraulic manifold controls the amount of downward pressure applied to the outer coulters on either side of the machine. It has an adjustment range of 300 to 1,500 psi. The factory preset is 800 psi, which should be adequate for most conditions. Too much pressure will put unnecessary stress on the machine, and will put more load on the gauge wheels. Too little pressure may not keep the coulters in the ground at the proper depth. The pressure can be checked with a pressure gauge on port 15 while the SCV control lever is in detent position for the work mode of the machine.

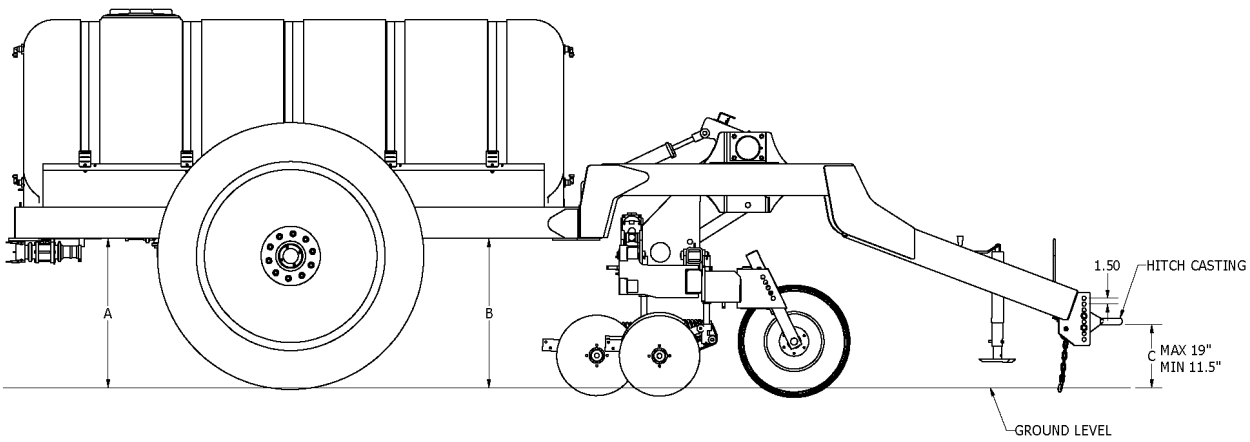
Steps for adjustment:

1. Have the machine hitched to a tractor with all necessary hydraulic and electric connections made.
2. Lower the toolbar to the ground.
3. Detent the SCV control lever that puts the toolbar in working position.
4. Using a 3/4" wrench, loosen the lock nut on the reducing valve (Item #1).
5. While watching the pressure at port 15, adjust the set screw on the top of the valve until the desired pressure is reached. Clockwise increases pressure, counter clockwise decreases pressure.
6. Tighten the lock nut.
7. Return to normal operating procedures.



Leveling the Mainframe

1. Attach the 1460 to the specific tractor being used in the field.
2. Check tire pressure in the 1460 and the tractor.
3. Park the applicator on flat and smooth ground.
4. Compare dimensions A and B on the 1460.
5. Level the machine by moving the hitch casting to different holes on the hitch. For height changes less than 1.5", flip the casting over.
6. Operate the machine level, or very slightly nose down.
7. Step back and view the entire unit and tractor. If the machine does not look level, it probably isn't. Repeat the process if necessary.

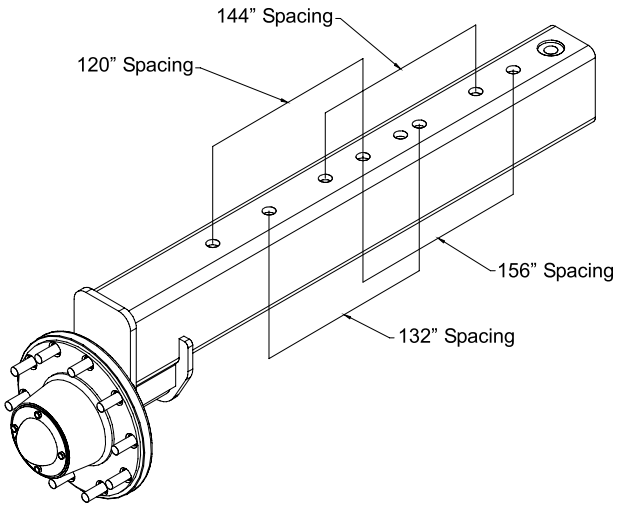


WARNING

Always make sure the machine is secure before unhooking from the tractor. Make sure there is no possibility of the machine moving while changing hitch height.

Adjusting Axle Width

The Redball® Model 1460 Fertilizer Applicator has adjustable axles to accommodate different row spacing. The axle width adjustment procedure follows:



1. Secure applicator on level ground, attached to a tractor with the wheels chocked and the tractor in park. Ensure that NO fore or aft rolling of the applicator can occur when elevating a tire.
2. Using a jack, hoist or forklift, raise one tire off the ground.
3. Secure elevated side with jack stands, braces, or equivalent, ensuring that the applicator cannot fall while the tire and spindle are moved. Damage to the applicator and serious injury or death to personnel can occur if the applicator falls.
4. **The spindle assembly/hub and wheel is very heavy and should be moved with the aid of a floor jack or equivalent lifting system**. Loosen and remove the two bolts that hold the spindle/hub assembly to the axle subframe. Slide the assembly in or out to the desired row spacing. Replace the bolts and nuts with new bolts and locknuts.

DANGER

Never attempt to adjust the tire width unless the applicator is secure, and on level ground. The liquid tank should be completely void of fluid. **Always secure applicator with jack stands, braces or equivalent when working under an elevated unit.**

IMPORTANT

Always replace the adjustment bolts with new bolts and lock- nuts.

5. **Tighten all axle adjustment bolts to the torque specified in Section C.** Replace any bolts or nuts that have signs of physical damage, especially noting damage due to corrosion.
6. Remove jack stands and braces and lower the unit to the ground.
7. Repeat for the other side making certain the same center line distance is maintained.

Setting the Toolbar Depth

1. Adjust toolbar height by adding or removing stroke control segments to the lift cylinders. Use equal lengths of segments on both cylinders.
2. Check depth while operating in the field.
3. If equipped with ground drive, adjust ground drive to have only enough down pressure to prevent tire slippage. Excessive tire down pressure will increase wear and may damage the unit. Adjust down pressure by pinning the down pressure spring in a different location, and adjust the stop nuts on the down pressure spring.

	WARNING	Make sure all air is bled from the hydraulic system before adjusting toolbar height.

	DANGER	Lower toolbar wings when making any adjustment around the toolbar.

Light System

The light system provides the signal from the tractor to the applicator. Connect the seven-pin male connector to the tractor's seven-pin female connector at the rear of the tractor. The connector for the applicator is located near the hitch. If the tractor is not equipped with such a connector, see your tractor dealer.

Seven Pin Connector located near the hitch

Centrifugal Pump

Pump operation is very important. The following must be followed when operating a centrifugal pump. Proper pump operation will make your system operate with minimal maintenance and down time. **Failure to follow the manufacturer's pump operation instructions will void the pump warranty.**

The pump **must never be run** in a non-flooded condition. Operating the pump in a non-flooded condition will cause extensive seal damage and possible pump damage. To verify the pump is flooded, visually check pump vent line for fluid. Fluid will appear in vent line when pump is flooded.

A "flooded" condition is when the centrifugal pump is completely full of fluid and no pockets of air are present in the pump. In order to get maximum pump efficiency the mounting and plumbing must meet the guidelines stated below.

1. The pump inlet must be mounted below the product tank(s) sump to allow gravity to naturally fill the pump with liquid. See Figures 1 - 3.
2. The suction line must have a continual rise from the pump inlet to the tank sump.
3. The pump must have the vent line plumbed to it.

Figure 1

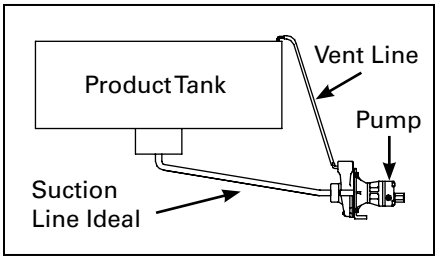


Figure 2

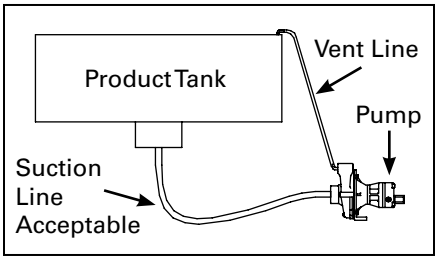
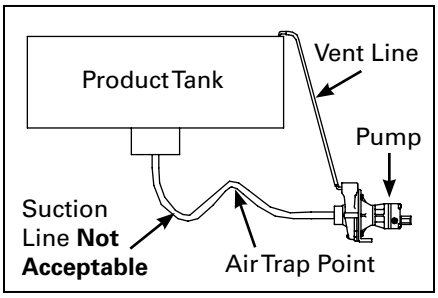


Figure 3



IMPORTANT

The vent line is designed to prevent air lock by bleeding off trapped air. This allows the pump to prime and keeps some fresh solution circulating by the seal.

IMPORTANT

For proper venting, the vent line must continually rise from the pump to the top of the tank. A small amount of solution will move through this line back to the solution tank indicating a primed pump.

Hydraulically Driven Centrifugal Pump: It is very important that the proper oil flow is supplied to the hydraulic motor which powers the pump. Excessive flow will over-speed the motor and cause motor damage. **To regulate the correct oil flow to the pump motor see the pump manufacturer's manual.**

IMPORTANT

There are two basic rules to follow when operating a hydraulically driven centrifugal pump:
1. **Never run the pump** in a "non-flooded" condition.
2. Always have the **correct oil flow** to the pump motor.
Always read and follow the pump manufacturer's operational instructions.

IMPORTANT

Turn off a hydraulically driven centrifugal pump using the "float" position of the tractor's hydraulic valve. This allows the motor to stop slowly helping to protect the motor and motor seals.

Refer to the ground drive pump manual, or the controller manual for instructions on setting each type of pump.

NOTE

To set the ground drive pump; the tire loaded radius, number of wheel sprocket teeth and drive sprocket teeth is necessary. The ground drive wheel sprocket has 60 teeth, the drive sprocket has 18 teeth. The drive ratio is 3.33. The loaded radius of the 5 x 15 tire is found by measuring from the ground to the center of the hub when the toolbar is lowered in operating position. Always double-check application rates while operating the machine.

Selecting Plumbing Orifices
Orifices are selected based on the type of coulter, application rate, ground speed, and machine width.

Coulter Type

Liquid Injectors - Select an orifice that will allow the system to operate within 40 to 100 PSI. Sufficient energy is required to penetrate into the coulter slot.

Liquid Knives - Select an orifice that will operate at a minimum of 10 PSI.

Application rate will depend on the particular use of the machine.

Machine width is the total width of the rows covered per swath of the machine, not the width of the coulters on the bar.

Example - An 8 row 30" swath is 240".

Refer to the following John Blue webpage for more calibrating information:

www.cds-johnblue.com/calculate_your_rates /CDS_JBC_Pump_Calculator_Standard_3-1-06.xls

Refer to the coulter manual for instructions on setting up the coulter units.

Nozzle Selection

To select a nozzle rated for gallons per minute (GPM) based on your target pounds per acre desired output, use the following formulas to convert pounds per acre to GPM:

$$\text{Total pounds per acre of nitrogen} = \frac{\text{Target pounds per acre}}{\text{Percent of nitrogen}} \qquad \frac{\text{Total pounds per acre}}{\text{Pounds per gallon}} = \text{GPA}$$

Example: The desired output is 100 pounds of nitrogen per acre. In order to get 100 pounds of nitrogen you need to apply 357 pounds of 28% nitrogen solution per acre. 357 pounds per acre of a solution that weighs 10.65 pounds per gallon equals 33.53 gallons per acre (GPA). Select a nozzle that will provide 33.53 GPA at your desired system pressure.

$$\text{Total lbs. per acre: } 357 = \frac{100}{0.28} \qquad \frac{357}{10.65} = 33.53 \text{ GPA}$$

Weight of Solution	Example	Specific Gravity	Conversion Factor
7.00 lbs. Per Gallon		0.84	0.92
8.00 lbs. Per Gallon		0.96	0.98
8.34 lbs. Per Gallon	Water	1.00	1.00
9.00 lbs. Per Gallon		1.08	1.04
10.00 lbs. Per Gallon		1.20	1.10
10.65 lbs. Per Gallon	28% Nitrogen	1.28	1.13
11.00 lbs. Per Gallon	7-27-7 Fertilizer	1.32	1.15
11.06 lbs. Per Gallon	32% Nitrogen	1.33	1.15
11.40 lbs. Per Gallon	10-34-0 Fertilizer	1.37	1.17
11.50 lbs. Per Gallon	12-0-0-26 Fertilizer	1.38	1.17
11.60 lbs. Per Gallon	11-37-0 Fertilizer	1.43	1.20
12.00 lbs. Per Gallon		1.44	1.20
14.00 lbs. Per Gallon		1.68	1.30

Useful Formulas:

$$\text{GPM (per nozzle)} = \frac{\text{GPA} \times \text{MPH} \times \text{W}}{5940} \qquad \text{GPA} = \frac{\text{GPM (per nozzle)} \times 5940}{\text{MPH} \times \text{W}}$$

$$\text{MPH} = \frac{\text{Distance in feet} \times 60}{\text{Time in Seconds} \times 88}$$

W = Nozzle spacing in Inches

For nozzle spacing other than 30", use the conversion factors to establish your GPA coverages: For spacings not listed, use the formula: Conversion factor = Nozzle spacing in table

Other Spacing	Conversion Factor
22	1.36
36	0.83
38	0.79

GPA Target Conversion Factor = Corrected GPA

Your nozzle spacing

Nozzle Specifications+

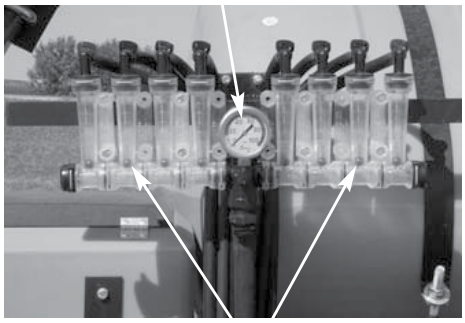
Nozzle*	PSI	GPM (Per Nozzle)	GPA at 30" Nozzle Spacing**			
			4 MPH	6 MPH	8 MPH	10 MPH
H1/4U-SS0004	10	0.20	9.9	6.6	5.0	4.0
	20	0.28	13.9	9.2	6.9	5.5
	30	0.35	17.3	11.6	8.7	6.9
	40	0.40	19.8	13.2	9.9	7.9
H1/4U-SS0006	10	0.30	14.9	9.9	7.4	5.9
	10	0.42	20.8	13.9	10.4	8.3
	30	0.52	25.7	17.2	12.9	10.3
	40	0.60	29.7	19.8	14.9	11.9
H1/4U-SS0008	10	0.40	19.8	13.2	9.9	7.9
	20	0.57	28.2	18.8	14.1	11.3
	30	0.69	34.2	22.8	17.1	13.7
	40	0.80	39.6	26.4	19.8	15.8
H-1/4U-SS0010	10	0.50	24.8	16.5	12.4	9.9
	20	0.71	35.1	23.4	17.6	14.1
	30	0.87	43.1	28.7	21.5	17.2
	40	1.00	49.5	33.0	24.8	19.8
H1/4U-SS0015	10	0.75	37.1	24.8	18.6	14.9
	20	1.06	52.5	35.0	26.2	21.0
	30	1.30	64.4	42.9	32.2	25.7
	40	1.50	74.3	49.5	37.1	29.7
H1/4U-SS0020	10	1.00	49.5	33.0	24.8	19.8
	20	1.41	69.8	46.5	34.9	27.9
	30	1.73	85.6	57.1	42.8	34.3
	40	2.00	99.0	66.0	49.5	39.6
H1/4U-SS0030	10	1.50	74.3	49.5	37.1	29.7
	20	2.12	104.9	70.0	52.5	42.0
	30	2.60	128.7	85.8	64.4	51.5
	40	3.00	148.5	99.0	74.3	59.4
H1/4U-SS0040	10	2.50	123.8	82.5	61.9	49.5
	20	3.54	175.2	116.8	87.6	70.1
	30	4.53	224.2	149.5	112.1	89.7
	40	5.00	247.5	165.0	123.8	99.0
H1/4U-SS0050	10	3.00	148.5	99.0	74.3	59.4
	20	4.24	209.9	139.9	104.9	84.0
	30	5.20	257.4	171.6	128.7	103.0
	40	6.00	297.0	198.0	148.5	118.8
H1/4U-SS0060	10	3.00	148.5	99.0	74.3	59.4
	20	4.24	209.9	139.9	104.9	84.0
	30	5.20	257.4	171.6	128.7	103.0
	40	6.00	297.0	198.0	148.5	118.8

+ Nozzle specification on TeeJet® StreamJet® spray nozzles based on information from the TeeJet® Buyers Guide 201
* Nozzle or tip (TP). Tip used with the standard TeeJet® cap. Nozzles are threaded with BSPT threads.
** Use the conversion factor for other nozzle spacings.

Redball® Spray Monitors

The Redball® Spray Monitor is an effective flow indicator for an operator applying liquid chemicals and fertilizer. Once the monitor is set up, the operator observes the location of the balls. If there is no change in the ball location, then the flow rate has not changed.

Pressure Gauge (included with pump kit)



Farm King® Spray Monitors

Installation Instructions

1. Check the modular style flow tables (Figure 1) for your desired flow rate. For best results, select a ball that operates at monitor flow level 3 or 4. Modular style spray monitors can separate each monitor column. SEE FIGURE 3.
2. To change to a different set of balls, remove the u-pin, the hose barb/float stop, o-ring and balls and install the proper balls. SEE FIGURE 3.
3. Assemble monitors into a manifold as shown in FIGURES 2 AND 3. Flow (GPM) to each monitor manifold determines how many monitors to connect together. **Make certain the total input flow (GPM) to each monitor manifold does not exceed 3.40 GPM.**

FIGURE 1

FLOW TABLE FOR WATER						FLOW TABLE FOR LIQUID FERTILIZER			
	Green Plastic Balls	Black Plastic Balls	Red Plastic Balls	Red Glass Balls	Steel Balls		Red Plastic Balls	Red Glass Balls	Steel Balls
	GPM	GPM	GPM	GPM	GPM		GPM	GPM	GPM
Level 7	0.34	0.47	0.51	0.91	3.33	Level 7	0.19	0.84	2.17
Level 6	0.24	0.35	0.39	0.71	2.48	Level 6	0.14	0.61	1.70
Level 5	0.18	0.27	0.28	0.56	1.68	Level 5	0.12	0.45	1.26
Level 4	0.13	0.20	0.21	0.39	1.09	Level 4	0.07	0.32	0.82
Level 3	0.08	0.13	0.14	0.27	0.60	Level 3	0.04	0.19	0.58
Level 2	0.04	0.08	0.08	0.19	0.45	Level 2	0.02	0.11	0.32
Level 1	0.02	0.03	0.03	0.11	0.30	Level 1	0.00	0.05	0.25

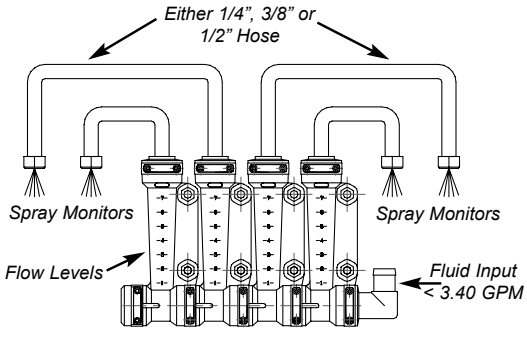


Figure 2

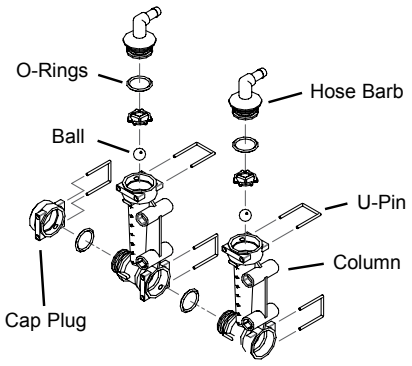


Figure 3

NOTES:

Maintenance, Service & Troubleshooting
Section C

IMPORTANT

Proper maintenance of the Fertilizer Applicator and the tractor is critical for peak performance, reliability and accuracy of this system. The following is a guideline of the type of
maintenance and servicing that should be performed on this unit. Your environment and uses may require additional maintenance and service beyond this list to assure a reliable and safe unit. The operator of this unit has ultimate responsibility to identify areas of concern and rectify them before they become a hazard or safety issue. There is no substitute for a trained, alert operator.

Structure

Inspect all welds and structural components for tears, bends, cracks, or other damage. This unit may operate in a corrosive environment. Make sure all corrosion is remove and repainted. If corrosion is deep, replace the component or have a qualified service technician add plating by welding.

Hydraulics

1. Inspect cylinder shafts for corrosion or damage. Repair or replace shaft to avoid hydraulic leaks or cylinder failure.
2. Inspect hydraulic hoses. Replace any hose that shows signs of wear or damage.

Electrical and Lighting System

1. Inspect lights for any damage and operation. Replace any lights that are not in good condition.
2. Inspect wiring for chafing or damage. Repair or replace any wiring that is damaged.
3. Inspect safety decals. Replace any decals that are worn, faded, or damaged. Contact Farm King, for replacements.

DANGER

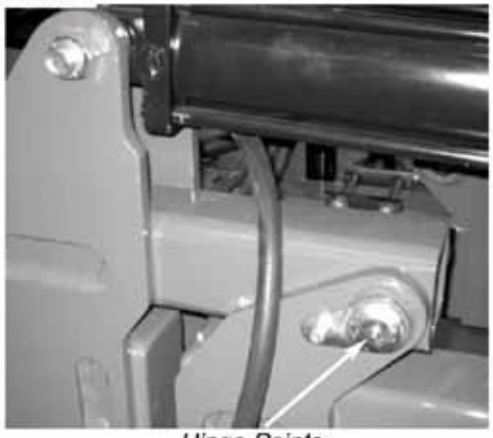
If any of the above inspections, or others identified, are discovered
REPAIR IMMEDIATELY.
Do not put this unit into operation with any questionably maintained parts. Poor performance or a hazard may occur.

Lubrication

1. Always lubricate the 1460 Fertilizer Applicator before bringing the machine to the field.
2. Stop the tractor, set the parking brake and turn off the engine before performing maintenance or lubricating the machine.
3. Grease fittings at least daily. Grease coulters every 10 hours.
4. Clean grease fittings before lubricating.
5. If grease fittings are missing or damaged, replace the fittings to ensure lubrication.
6. Use a high quality lubricating grease per the intervals shown on the drawing.
7. Optional equipment may require additional greasing. Refer to the specific equipment manual for instructions.

This applicator is designed to be lubricated daily in normal conditions, and more frequently under severe conditions.

Photo 1

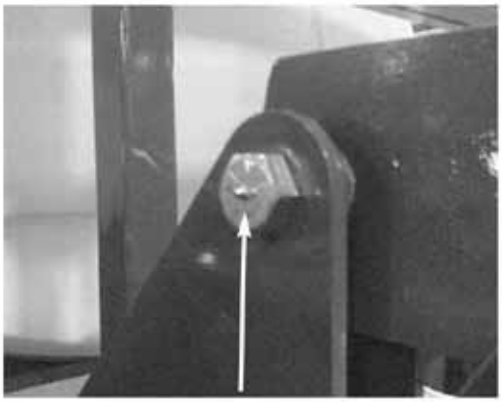


Hinge Points

Photo 2

Rockshaft Caps
(1 Zerk each)

Photo 3



Lift Assist
(6 Zerks)

Preventative Maintenance

Wheel and Coulter Bearings

Repack coulter and wheel bearings every 250 hours.

1. Remove hubs and bearings from machine.
2. Clean bearings and hubs of old grease.
3. Inspect hub, bearings, and seal for damage.
4. Replace if necessary.
5. Repack cones and fill hub cavities with a good wheel bearing grease.

Coulter hubs

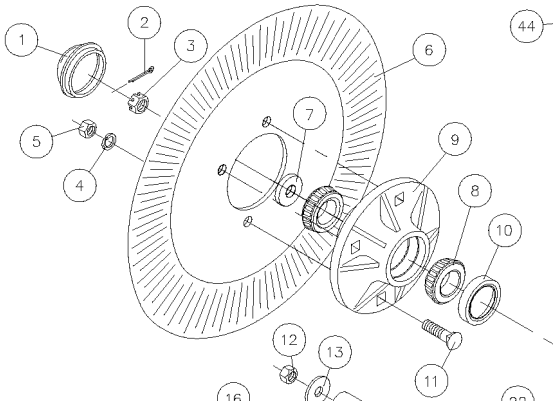
a. Assemble and torque nut to 15 ft-lbs while rotating hub to seat hub and seal.
b. Loosen nut one slot and check that hub rotates freely. Install Cotter pin.
c. Fill cap with grease and replace cap.

Wheel bearing hubs

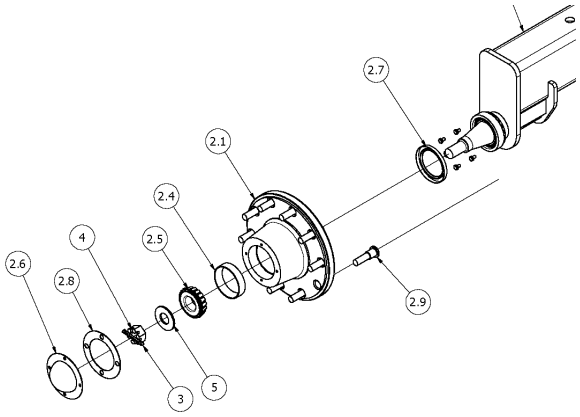
a. Assemble and torque nut to 75 ft-lbs while rotating hub to seat hub and seal.
b. Loosen nut and re-torque to 45 ft-lbs while rotating hub.
c. Loosen nut one slot and check that hub rotates freely. Install cotter pin. Do not loosen nut more than 30 degrees to install cotter pin.
d. Fill cap with grease and replace cap.

DANGER

Block the machine securely before performing any maintenance on the machine. Do not let the machine fall.



Coulter Bearing



Wheel Bearing

Cylinder Rods

Coat the exposed shaft with grease during machine storage to prevent rust.

Pre-Season Startup Check

1. Review this manual for proper operation of the machine.
2. Check that all bolts are tight. Re-tighten bolts to proper spec listed in the torque table.
3. Inspect coulters, knives or injectors and replace components if they are worn.
4. Check tires for proper inflation. Inflate tires to manufacturers specifications.
5. Check wheel lug nuts. Torque according to the torque table in the proper pattern.
6. Inspect and repack or replace coulter and wheel bearings and seals.

7. Inspect hoses, monitors, and hydraulic hoses for fraying. Do not use hands to check leaks on hydraulic hoses.
8. Check all light bulbs and visibility decals. Replace faded decals, and burnt out bulbs.

Post-Season Storage

1. The liquid applied with the 1460 is very corrosive. Thoroughly clean the machine before placing it in storage. Flush all liquid lines with RV antifreeze.
2. Inspect machine for worn parts. Note parts for replacement during the off-season.
3. Repaint all areas where paint has worn off.
4. Lubricate the machine.
5. Apply a thin layer of grease to all coulters and exposed cylinder shafts.
6. Store the machine inside to increase the life of plastic and rubber components.
7. Use cylinder lockups in storage to prevent the toolbar from settling.

NOTE

Failure to check and maintain the proper lug nut torque could result in elongation of rim and/or broken lug-bolts. We recommend checking lug nut torque periodically to insure proper wheel tightness on your Farm King 1460 Fertilizer Applicator.

Wheel Lug Nut Torque

When receiving your sprayer or replacing a tire, follow these steps for insuring proper lug-nut torque:

NOTE

DO NOT lubricate threads.

1. Tighten lug nuts to correct torque specifications using a criss-cross pattern.

Size	Torque ft./lbs.
3/4-16	280

2. After tightening, pull the Farm King 1460 Fertilizer Applicator approximately one (1) mile.
3. Retighten lug nuts to correct torque specifications.
4. Use the toolbar, stopping after three (3) hours and again after ten (10) hours to retighten lug nuts to correct torque specifications.
5. At regular maintenance intervals recheck lug nut tightness.

Wheel Lug

NOTE

DO NOT use undersized tires. Use the right size tires for the job and properly match tires to wheels.

Bolt Torque Data

The chart provided contains information concerning standard hardware used on this machine. It is recommended that all fasteners be tightened to the torque values specified. The grade of the bolt is identified by the markings on the head of the bolt .

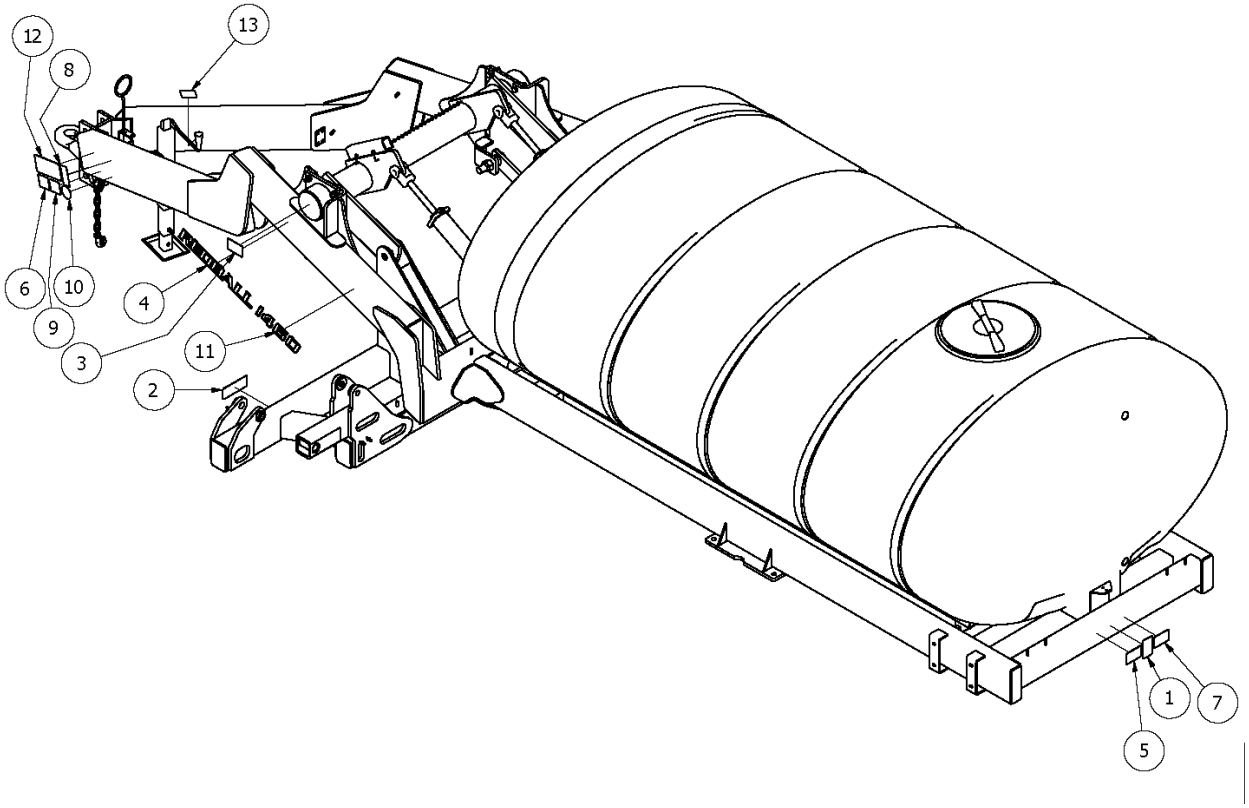
	GENERAL BOLT TORQUE DATA IN FT./LB.			
	SAE - GRADE 5		SAE - GRADE 8	
BOLT SIZE	DRY	LUB	DRY	LUB
1/4-20	8	6	12	9
1/4-28	9	7	13	10
5/16-18	17	13	25	18
5/16-24	19	14	25	20
3/8-16	30	23	45	35
3/8-24	35	25	50	40
7/16-14	50	35	70	50
7/16-20	55	40	80	60
1/2-13	78	55	110	80
1/2-20	90	65	120	90
9/16-12	110	80	150	110
9/16-18	120	90	170	130
5/8-11	150	110	220	170
5/8-18	170	130	240	180
3/4-10	260	200	380	280
3/4-16	300	220	420	320
7/8-9	430	320	600	460
7/8-14	470	350	660	500
1-8	640	480	900	680
1-14	700	530	1000	740

WARNING

Do Not use values in place of those specified in other sections of this manual or contained in information published by the manufacturer of the components in question.

Parts & Schematics
Section D

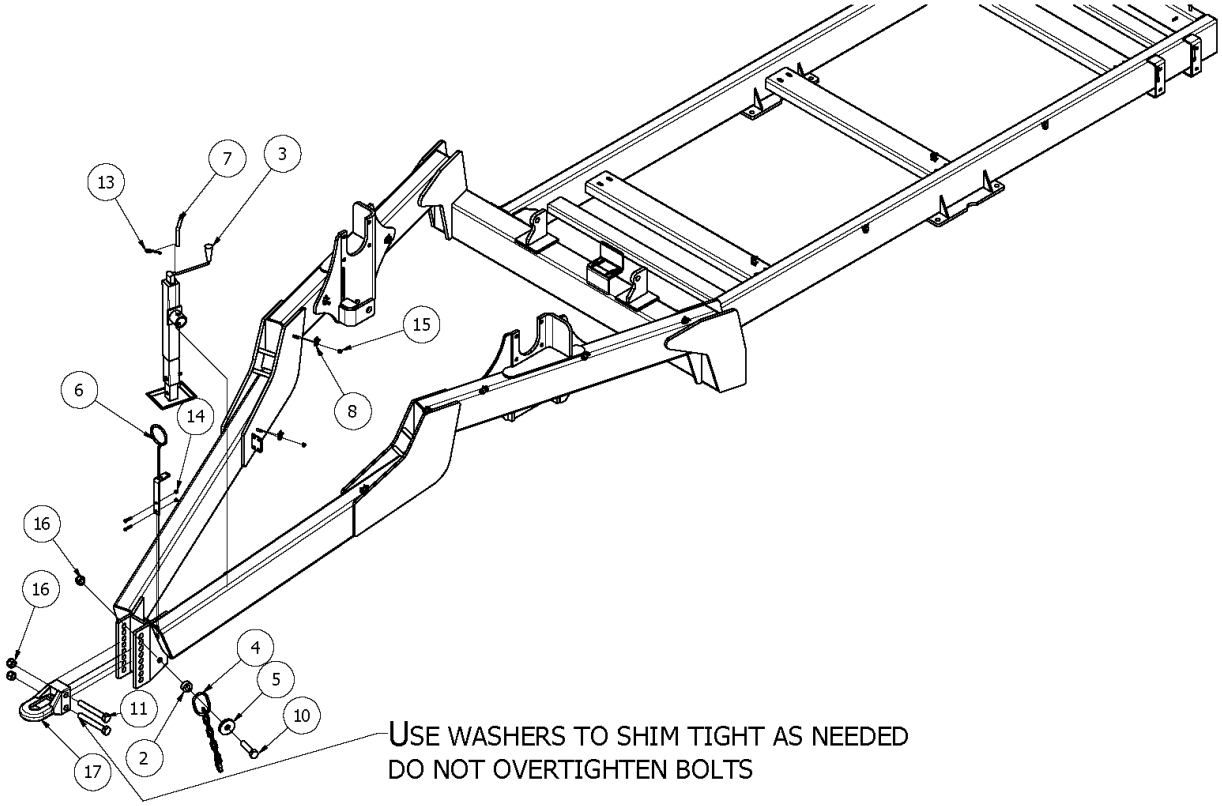
Description: Decal Placement



Description: Decal Placement

Item#	Part #	Description	Quantity
1	SX002438	Decal, Ag Chemicals	1
2	SX002439	Decal, Danger Wing Falling	2
3	SX004302	Decal, Use Cylinder Locks	2
4	SX004623	Decal, Farm King	2
5	SX004772	Decal, Service Manual	1
6	SX004774	Decal, Escaping Hydraulic Fluid	1
7	SX004775	Decal, Chemical Handling	1
8	SX004776	Decal, Watch for Wires	1
9	SX008553	Decal, Do Not Exceed Load	1
10	SX013046	Decal; Made in USA	1
11	SX013889	Decal, Model 1460	2
12	SX014079	Decal, Watch for Wires	1
13	SXLC028	Decal, Serial Number Tag	1

Description: Frame Assembly

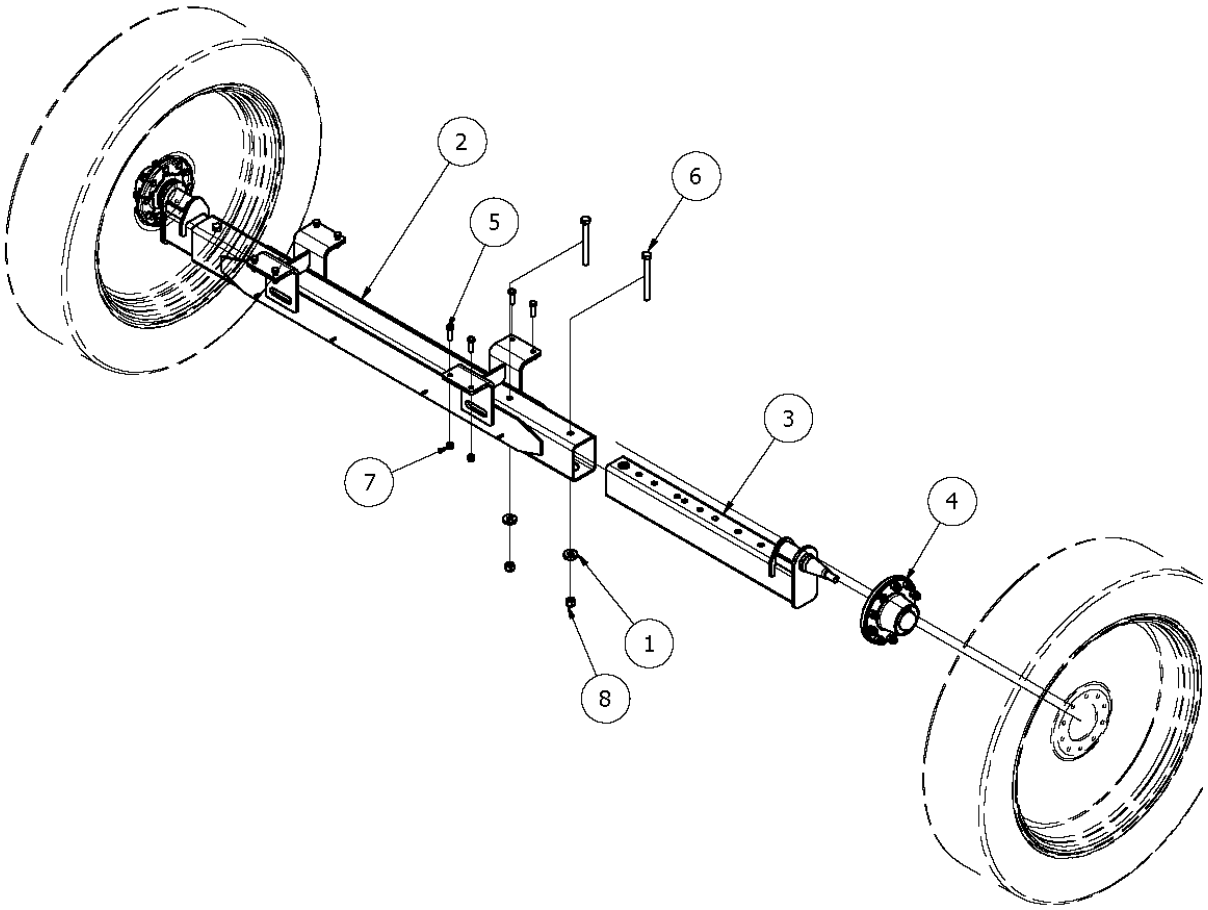


Description: Frame Assembly

Item#	Part #	Description	Quantity
2	SX014072	Tube Rd, 2.00 OD x 1.020 ID x .88	1
3	SX014115	Weldment; Top Handle Jack	1
4	SX014119	Safety Chain; 21000#	1
5	SX014120	Plate; .50 x 3.25 Dia w/Hole	1
6	SX014121	Weldment; Pigtail, w/Tab	1
7	SX014125	Pin, Jack	1
8	SX21294	Mount, Cable Tie Heavy Duty	13
9*	SXBH-031-150-5	Bolt; 5/16" x 1.50 Grade 5	2
10	SXBH-100-400-5	Bolt; 1 x 4" Hex, Grade 5	1
11	SXBH-100-700-5	Bolt, Hex, 1 x 7" Grade 5	2
12*	SXFW-031	Washer, Flat, 5/16"	2
13	SXHPC210	Pin Clip; 1/8" x 23/16"	1
14	SXLN-031-NI	Locknut; 5/16" Nylon Insert	2
15	SXLN-038-NI	Locknut; 3/8" Nylon Insert	15
16	SXLN-100-NI	Locknut, 1" Nylon Insert	3
17	SXPPI-331VH	Hitch; Pintle, Black	1
22*	SXFW-038	Washer, Flat, 3/8"	4
23*	SXBH-038-300-5	Bolt; 3/8" x 3" Grade 5	2
26*	SX014739	Plate; 1/4" x 6" Formed w/Slots	2

* Not Shown

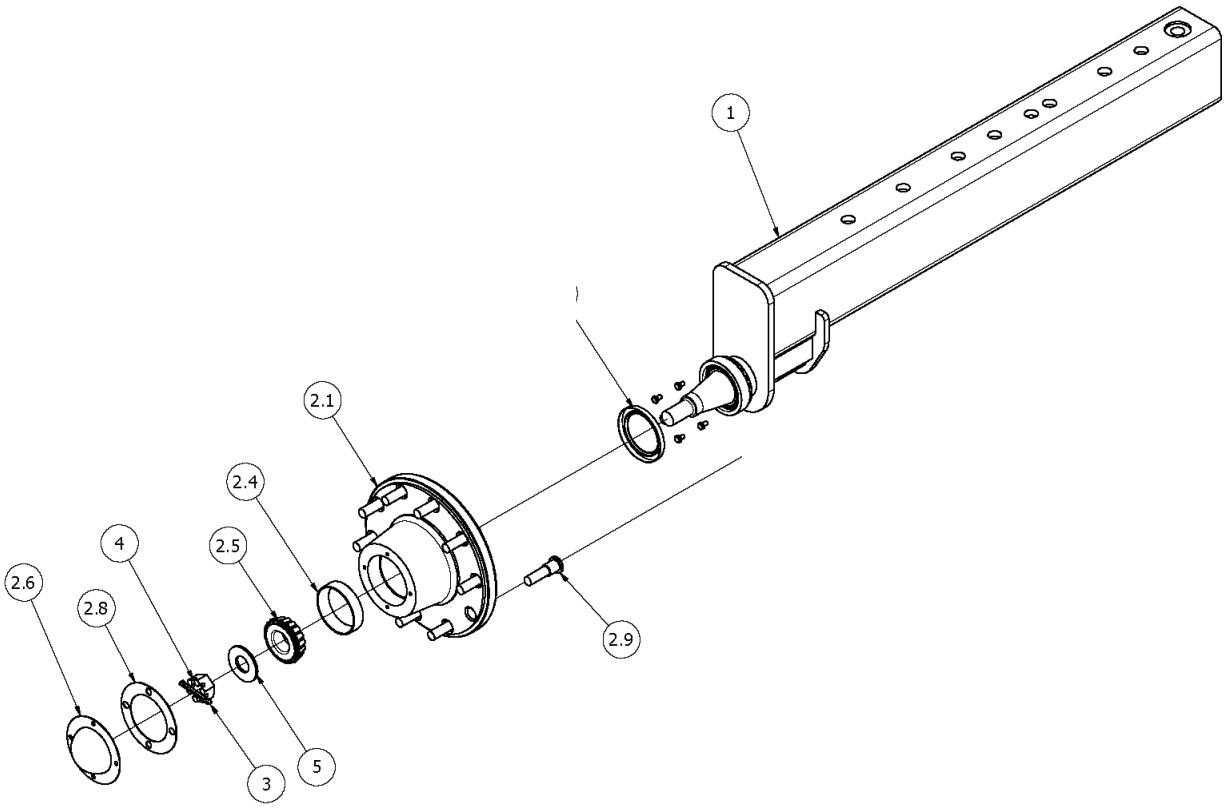
Description: Adjustable Axle Assembly



Description: Adjustable Axle Assembly

Item#	Part #	Description	Quantity
1	SX013733	Washer; 2.5" x .5", 1.047" Hol	4
2	SX014027	Weldment; Axle	1
3	SX014032	Weldment; Axle Insert	2
4	SX289126	Hub Complete	4
5	SXBH-075-250-5	Bolt; 3/4" x 2-1/2" Grade 5	8
6	SXBH-100-950-5	Bolt, Hex, 1" x 9" Grade 5	4
7	SXLN-075-NI	Locknut; 3/4" Nylon Insert	8
8	SXLN-100-NI	Locknut, 1" Nylon Insert	4

Description: Hub Assembly

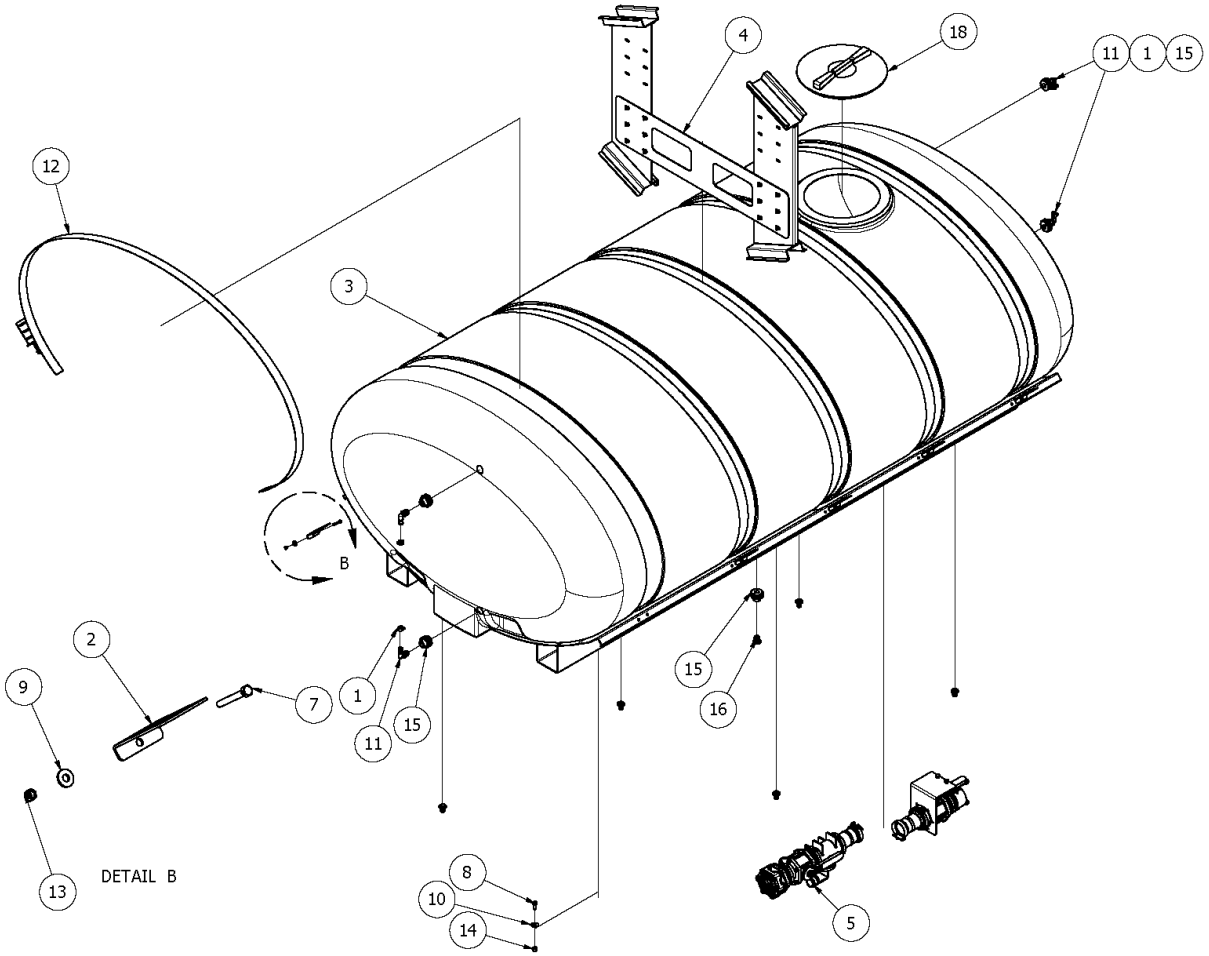


Description: Hub Assembly

Item#	Part #	Description	Quantity
1	SX014032	Weldment, Axle Insert	1
2*	SX289126	Hub Complete	1
2.1	SX10 Bolt Hub	Hub Only	1
2.2*	SX33275	Cone, Bearing	1
2.3*	SX33462	Cup, Bearing	1
2.4	SX453A	Cup, Bearing	1
2.5	SX460	Cone, Bearing	1
2.6	SX909983	Hub Cap	1
2.7	SX946275	Seal, Grease	1
2.8	SX950402	Hub Cap Gasket	1
2.9	SX953033	Wheel Stud	10
2.10*	SXBH-031-050-5	Bolt; 5/16" x .50" Grade 5	4
3	SX905944	Cotter Pin, Spindle	1
4	SX912969	Castle Nut	1
5	SX913632	Flat Washer	1

* Not Shown

Description: Tank Skid Assembly

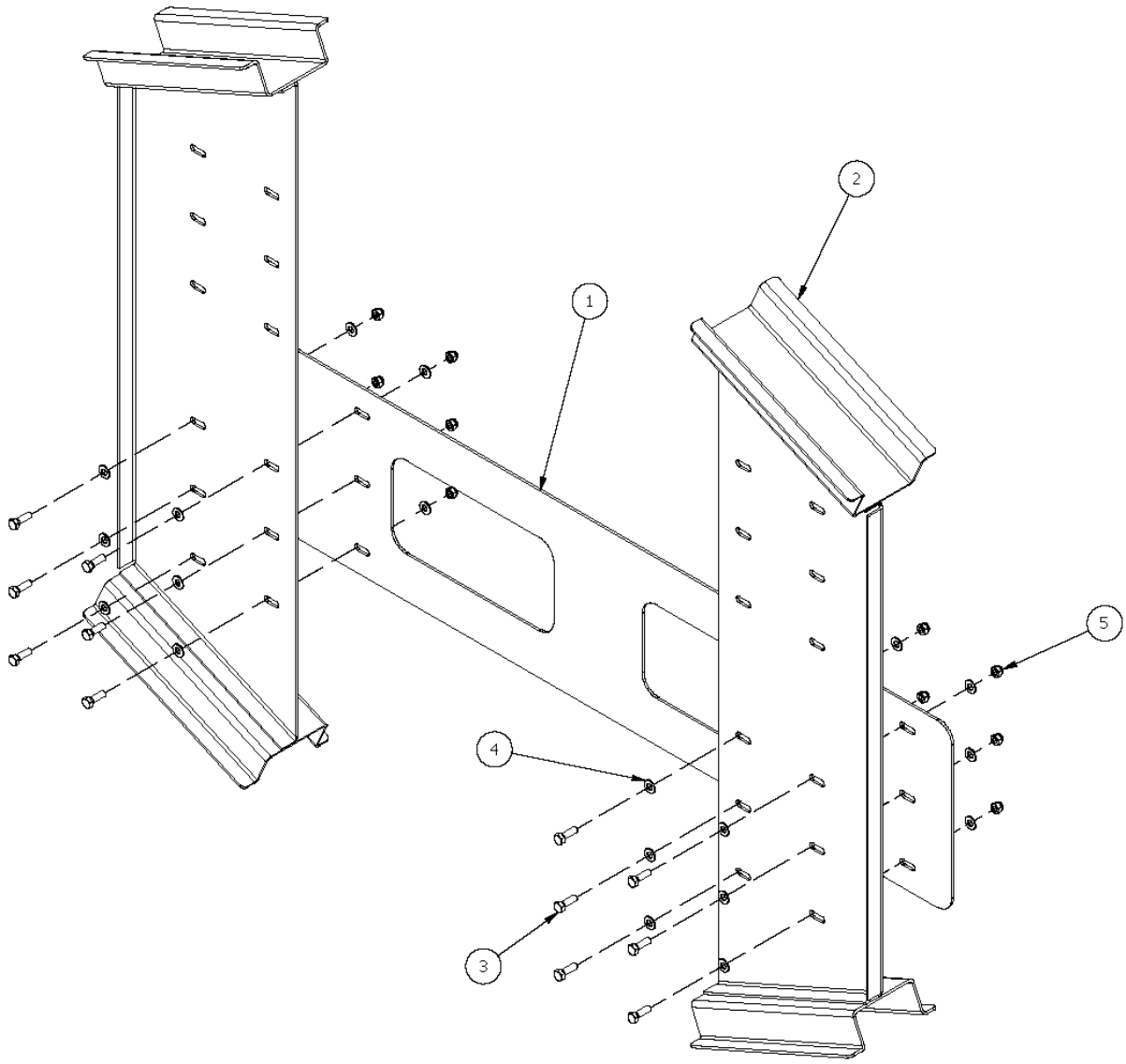


Description: Tank Skid Assembly

Item#	Part #	Description	Quantity
1	SX#12J	Clamp, 3/4" Hose Worm Screw	4
2	SX013265	Bracket, Webbing	10
3	SX013266C	Tank, Product; 1600 Gallon, Cream	1
	SX013266Y	Tank, Product; 1600 Gallon, Yellow	1
4	SX013799	1600 Gallon Eliptical Tank Baffle	1
5	SX014106	1460, Tank Plumbing Kit	1
6*	SX014730	Weldment, Saddle, Tank; 1600 Gallon	1
7	SXBH-031-250-5	Bolt; 5/16" x 2.50" Grade 5	10
8	SXBH-050-125-5	Bolt; 1/2" x 1.25" Grade 5	12
9	SXFW-031	Washer, Flat, 5/16"	10
10	SXFW-050	Flatwsher; 1/2"-28 Per #	24
11	SXHB075-90	Hose Barb, 3/4" MPT x 3/4" HB, Ell	4
12	SX008822	Tank Strap	5
13	SXLN-031-CL	Nut; 5/16" Centerlocknut	10
14	SXLN-050-NI	Locknut; 1/2" Nylon Insert	12
15	SXNW60401	Bulkhead, 3/4" Threaded	5
16	SXPLUG075	Plug; 3/4" MPT Poly	1
17*	SXSIGHT-34	Hose; 3/4" ID x 1/8" Sight	2
18	SXTLG16	Lid; 16", Vented	1

* Not Shown

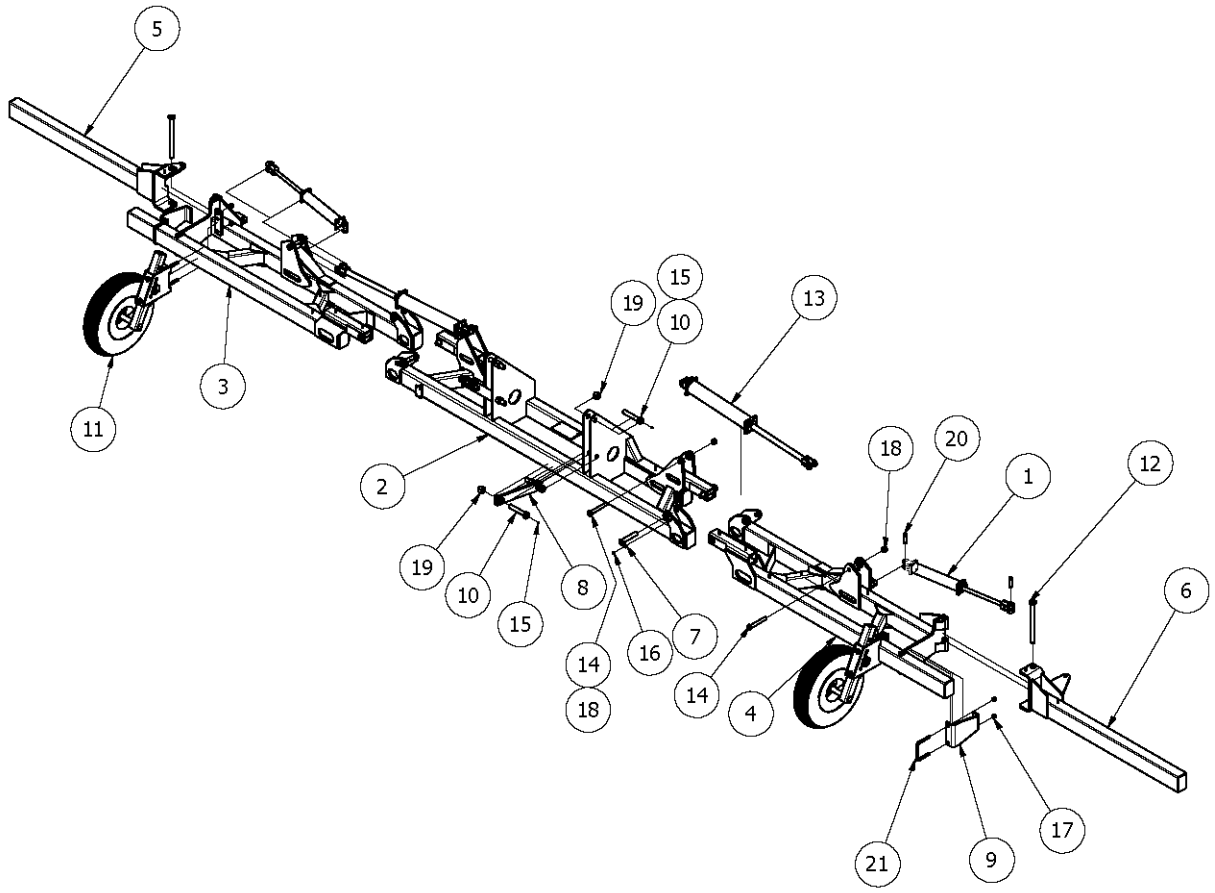
Description: 1600 Gallon Elliptical Tank Baffle



Description: 1600 Gallon Elliptical Tank Baffle

Item#	Part #	Description	Quantity
1	SX013797	Plate, Baffle; 1600 Gallon Elliptical Tank	1
2	SX013798	Baffle Side W/A, 1600 Gallon Elliptical Tank	2
3	SXBH-031-100-S	Bolt, S.S.; 5/16" x 1" Grade 5	12
4	SXFW-031-S	Flatwasher, S.S.; 5/16"	24
5	SXLN-031-NI-S	Locknut S.S., 5/16"; Nylon Insert	12

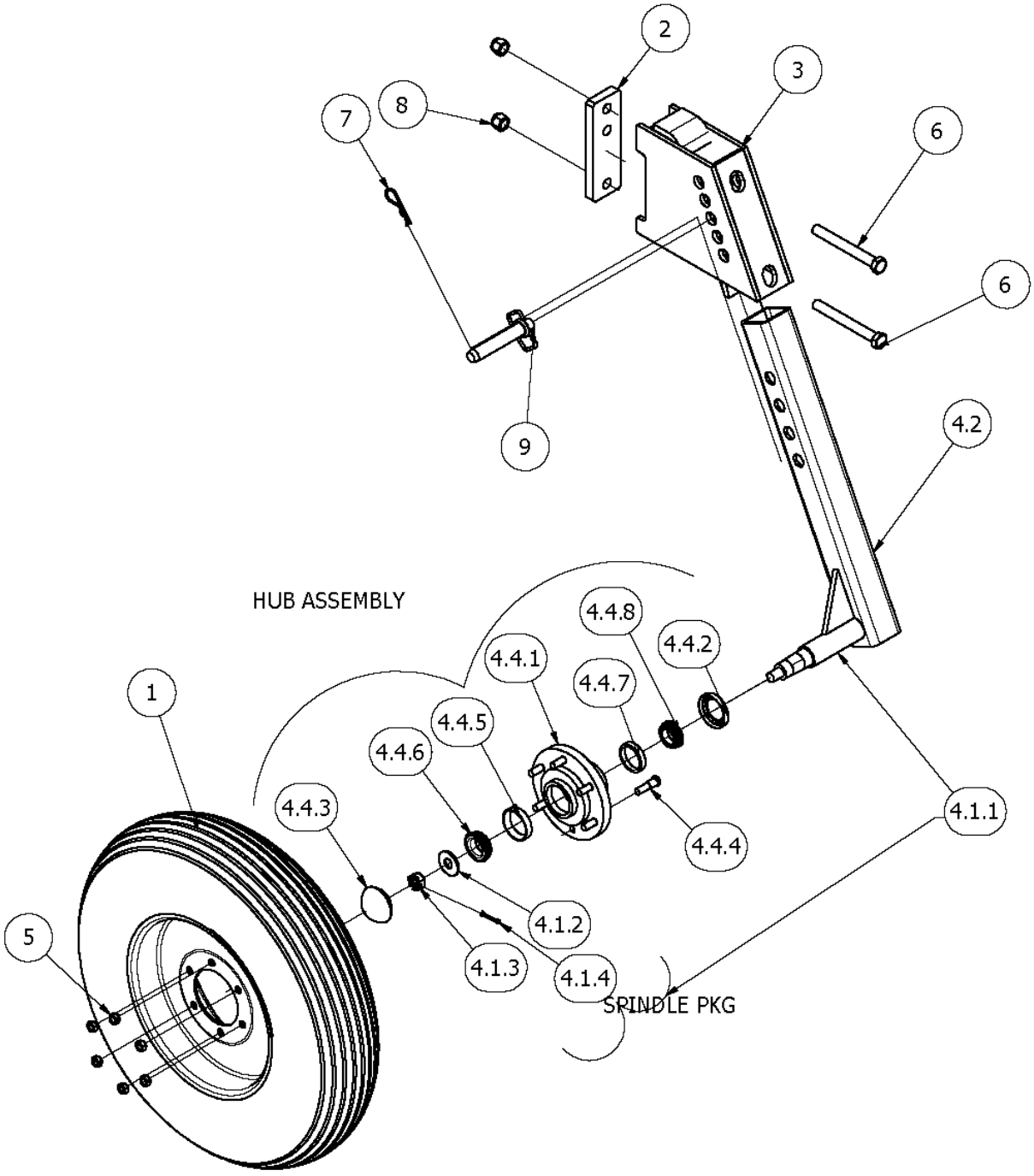
Description: 1460 Toolbar Complete Assembly



Description: 1460 Toolbar Complete Assembly

Item#	Part #	Description	Quantity
1	SX011958	Cylinder; Hyd, 570 - 3x16", #645984	2
2	SX013952	Weldment, DB Center	1
3	SX013984	Weldment, DB Right Secondary	1
4	SX013993	Weldment, DB Left Secondary	1
5	SX013995	Weldment, DB Wing Right	1
6	SX014000	Weldment, DB Wing Left	1
7	SX014005	Pin Weldment, 1.25 x 6.88	4
8	SX014010	Weldment, Lifting Link	2
9	SX014049	Plate, .50" Wing Stop	2
10	SX014082	Pin, 1.25" x 7" Gr. 5 w/ Grease	6
11	SX014122	Assembly; Gauge Wheel	2
12	SX014126	Weldment; Wing Pin	2
13	SXSAE34024	Cylinder; Tierod 4" x 24" 3500 PSI	2
14	SXBH-100-700-5	Bolt, Hex, 1" x 7" Grade 5	4
15	SXG1641	Zerk; Grease; 1/4" - 28 Straight	6
16	SXLN-038-NI	Locknut; 3/8" Nylon Insert	4
17	SXLN-062-NI	Locknut; 5/8" Nylon Insert	4
18	SXLN-100-NI	Locknut, 1" Nylon Insert	4
19	SXLN-125-NI	Locknut, 1" Nylon Insert	6
20	SXPCL-100-300	Pin; 1" x 3" Clevis	6
21	SXBU062-600-550-5	U-Bolt; 5/8" x 6.00" x 5.50" Grade 5	2

Description: Gauge Wheel Assembly

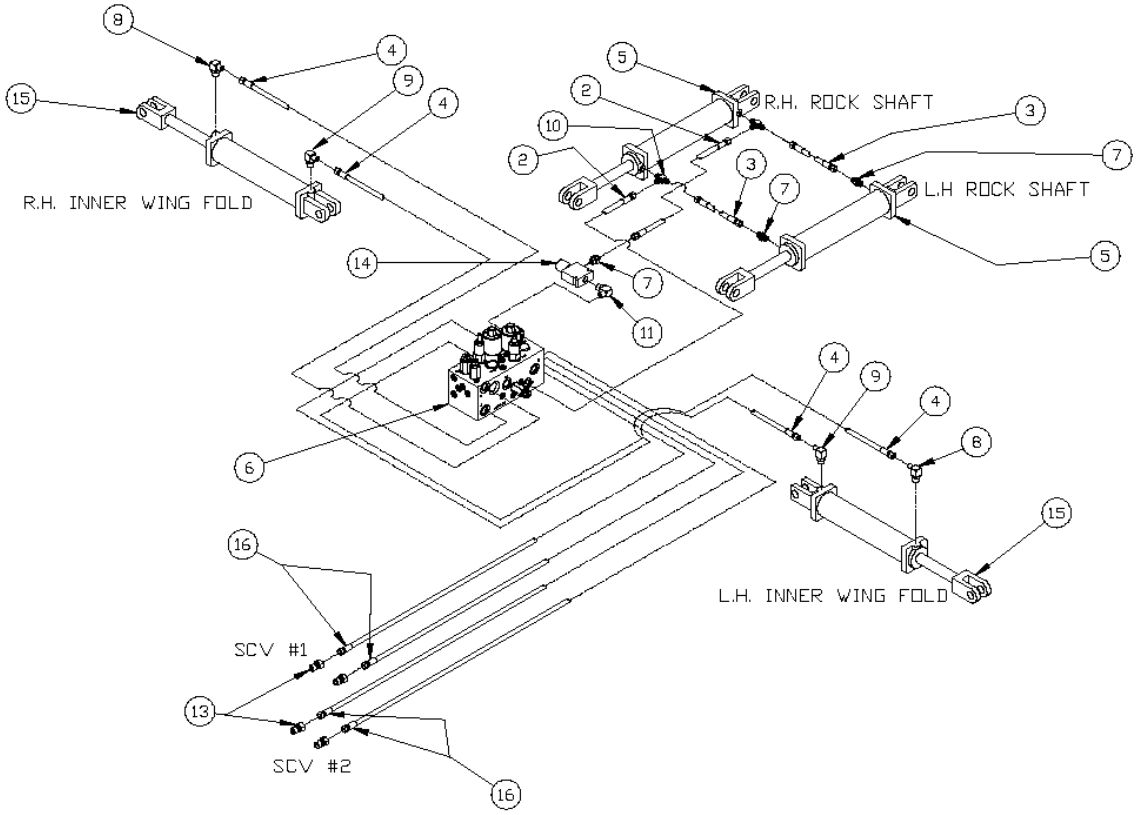


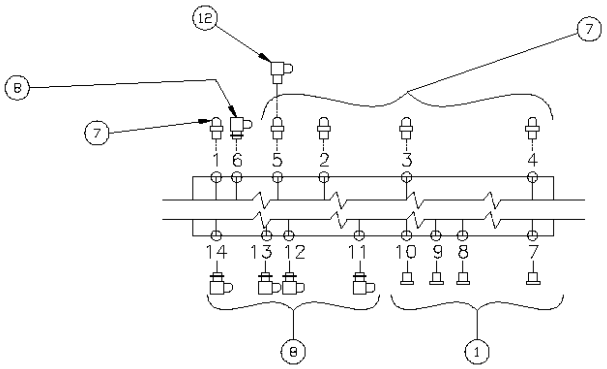
Description: Gauge Wheel Assembly

Item#	Part #	Description	Quantity
1	SX011506	Tire & Wheel Assembly 7.6-15SL	1
2	SX014057	Flat, .75" x 3" x 9.00" w/Holes	2
3	SX014077	Weldment, Bracket, Gauge Wheel	1
4*	SX014123	Weldment, Tube, Spindle	1
4.1*	SX011502	Spindle Package	1
4.1.1	SX281210	Spindle; 1-3/4" x 12-5/16"	1
4.1.2	SX913616	Washer	1
4.1.3	SX912952	Slotted Hex Nut	1
4.1.4	SX905936	Pin - Cotter	1
4.2	SX014058	Tube Sq., 3" x 3" x .25" w/Holes	1
4.3*	SX014059	Gusset, .50" x 4" x 3"	1
4.4*	SX281020	Hub Complete	1
4.4.1	SX25-6	Hub Only	1
4.4.2	SX906295	Seal, Grease	1
4.4.3	SX909905	Dust Cap	1
4.4.4	SX913576	Wheel Stud	6
4.4.5	SXLM48510	Cup, Bearing	1
4.4.6	SXLM48548	Cone, Bearing	1
4.4.7	SXLM67010	Cup, Bearing	1
4.4.8	SXLM67048	Cone, Bearing	1
5	SX912952	Hex Nut	6
6	SXBH-075-650-5	Bolt; 3/4" x 4" Grade 5	2
7	SXHPC210	Pin Clip; 1/8" x 23/16"	1
8	SXLN-075-NI	Locknut; 3/4" Nylon Insert	2
9	SXPHI-100-525	Pin; Hitch, 1" x 5-1/4"	1

* Not Shown

Description: Hydraulic Routing Set-up without Outer Wings





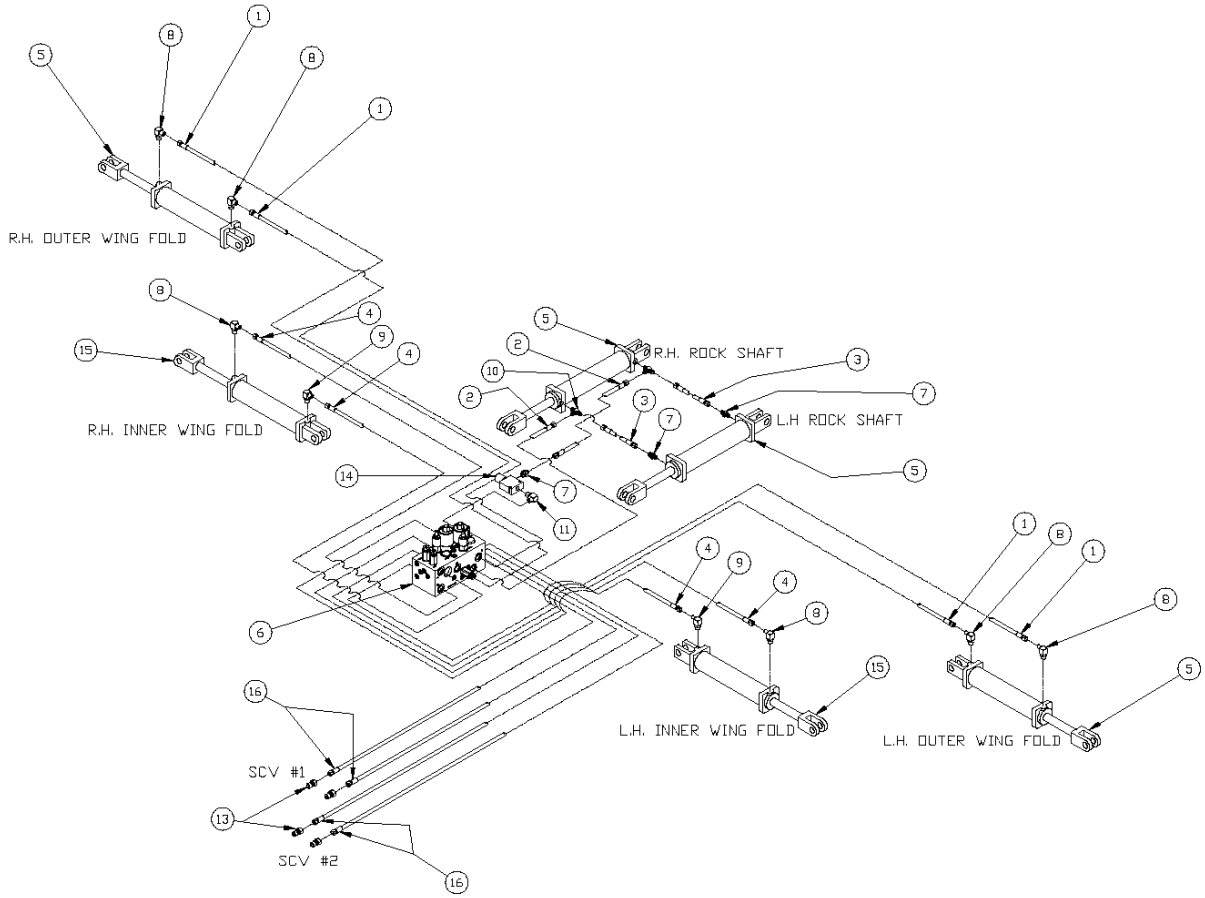
HYDRAULIC BLOCK PORT
HOOK-UP LOCATION

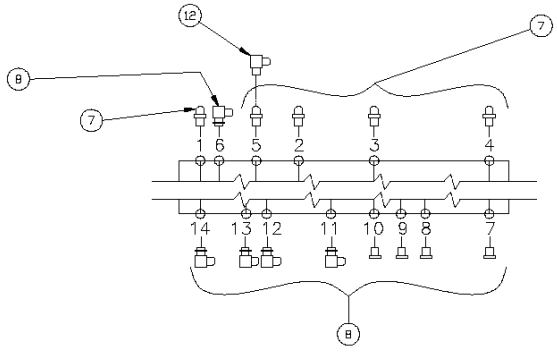
PORT NO.	ROUTING LOCATION
1	EXTEND (INTO GROUND) SCV #2 HOSE
2	RETRACT (RAISE) SCV #2 HOSE
3	RETRACT (FOLD IN) SCV #1 HOSE
4	EXTEND (FOLD OUT) SCV #1 HOSE
5	ROCKSHAFT CYLINDER BASE END
6	ROCKSHAFT CYLINDER SHAFT END
7	NOT USED
8	NOT USED
9	NOT USED
10	NOT USED
11	LH INNER WING CYLINDER SHAFT END
12	RH INNER WING CYLINDER SHAFT END
13	LH INNER WING CYLINDER BASE END
14	RH INNER WING CYLINDER BASE END
15	PRESSURE GAUGE PORT (NOT USED)

Description: Hydraulic Routing Set-up without Outer Wings

Item#	Part #	Description	Quantity
1	SX6408-8	Hydraulic Fitting; -8MORB Plug	4
2	SX007475	Hydraulic Hose; 1/4" x 34" -8 F JICX	2
3	SX009600	Hydraulic Hose; 1/2" x 24" -8 F JICX	2
4	SX011588	Hydraulic Hose; 1/2" x 96" -8 F JICX	4
5	SX011958	Hydraulic Cylinder; 3" x 16" Tie Rod	2
6	SX014093	Hydraulic Manifold Block w/ Valves	1
7	SX6400-8	Hydraulic Fitting; -8MJIC x -8MORB	8
8	SX6801-8	Hydraulic Fitting; -8MJIC x -8MORB El.	7
9	SX6802-8	Hydraulic Fitting; -8MJIC x -8MORB 45	2
10	SX6804-8	Hydraulic Fitting; -8MJIC x -8MORB Tee	2
11	SX6809-8-8	Hydraulic Fitting; -8FJIC x -8MORB El.	1
12	SX6500-8	Hydraulic Fitting; -8FJIC x -8MJIC El.	1
13	SX8010-15P	Hydraulic Quick Coupler; Universal Poppet	4
14	SXRV10-24A-8T-N-35/12	Hydraulic Relief Valve	1
15	SXSAE34024	Hydraulic Cylinder; 4" x 24" Tie Rod	2
16	SX004656	Hydraulic Hose; 1/2" x 180" -8FJIC X -8MORB	4

Description: Hydraulic Routing Set-up with Outer Wings





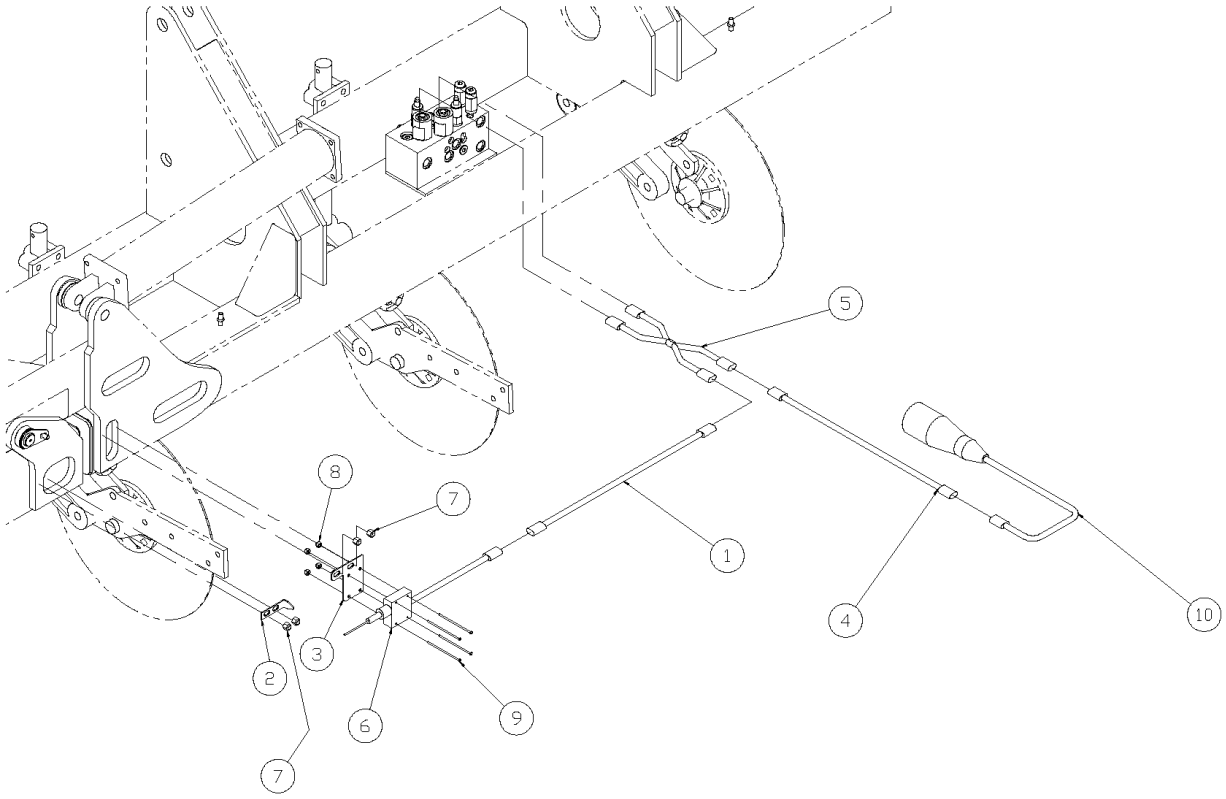
HYDRAULIC BLOCK PORT
HOOK-UP LOCATION

PORT NO.	ROUTING LOCATION
1	EXTEND (INTO GROUND) SCV #2 HOSE
2	RETRACT (RAISE) SCV #2 HOSE
3	RETRACT (FOLD IN) SCV #1 HOSE
4	EXTEND (FOLD OUT) SCV #1 HOSE
5	ROCKSHAFT CYLINDER BASE END
6	ROCKSHAFT CYLINDER SHAFT END
7	LH OUTER WING CYLINDER BASE END
8	RH OUTER WING CYLINDER BASE END
9	LH OUTER WING CYLINDER SHAFT END
10	RH OUTER WING CYLINDER SHAFT END
11	LH INNER WING CYLINDER SHAFT END
12	RH INNER WING CYLINDER SHAFT END
13	LH INNER WING CYLINDER BASE END
14	RH INNER WING CYLINDER BASE END
15	PRESSURE GAUGE PORT (NOT USED)

Description: Hydraulic Routing Set-up with Outer Wings

Item#	Part #	Description	Quantity
1	SX005563	Hydraulic Hose; 1/2" x 160" -8 F JICX	4
2	SX007475	Hydraulic Hose; 1/4" x 34" -8 F JICX	2
3	SX009600	Hydraulic Hose; 1/2" x 24" -8 F JICX	2
4	SX011588	Hydraulic Hose; 1/2" x 96" -8 F JICX	4
5	SX011958	Hydraulic Cylinder; 3" x 16" Tie Rod	4
6	SX014093	Hydraulic Manifold Block w/ Valves	1
7	SX6400-8	Hydraulic Fitting; -8MJIC x -8MORB	8
8	SX6801-8	Hydraulic Fitting; -8MJIC x -8MORB El.	15
9	SX6802-8	Hydraulic Fitting; -8MJIC x -8MORB 45	2
10	SX6804-8	Hydraulic Fitting; -8MJIC x -8MORB Tee	2
11	SX6809-8-8	Hydraulic Fitting; -8FJIC x -8MORB El.	1
12	SX6500-8	Hydraulic Fitting; -8FJIC x -8MJIC El.	1
13	SX8010-15P	Hydraulic Quick Coupler; Universal Poppet	4
14	SXRV10-24A-8T-N-35/12	Hydraulic Relief Valve	1
15	SXSAE34024	Hydraulic Cylinder; 4" x 24" Tie Rod	2
16	SX004656	Hydraulic Hose; 1/2" x 180" -8FJIC X -8MORB	4

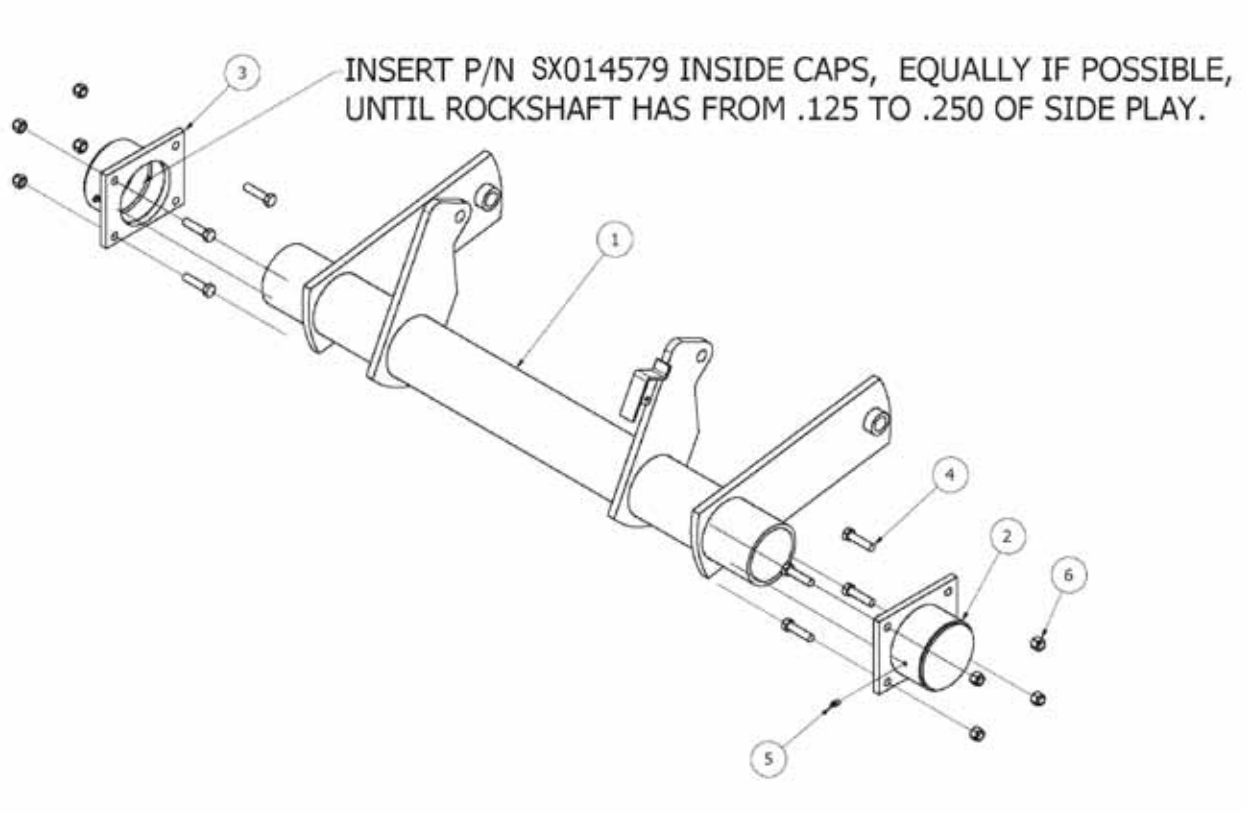
Description: Electrical Hydraulics used with or without Wings



Description: Electrical Hydraulics used with or without Wings

Item#	Part #	Description	Quantity
1	SX005813	Harness Ext; 5’ Special	1
2	SX014600	Plate; 12 Ga. x .75" Formed	1
3	SX014601	Plate; 12 Ga. W/Slots	1
4	SX014610	Harness; Extension 25"	1
5	SX014611	Harness; Solenoid Tee	1
6	SXSB010510	Wire; Assembly Microswitch	1
7	SXLN-038-NI	3/8" Nylon Locknut	4
8	SXLN-10/24-NI	10/24" Nylon Locknut	4
9	SXBH-10/24-175	10/24" Bolt; 1-3/4" Long	4
10	SX014602	Light Harness	1

Description: Rockshaft Kit

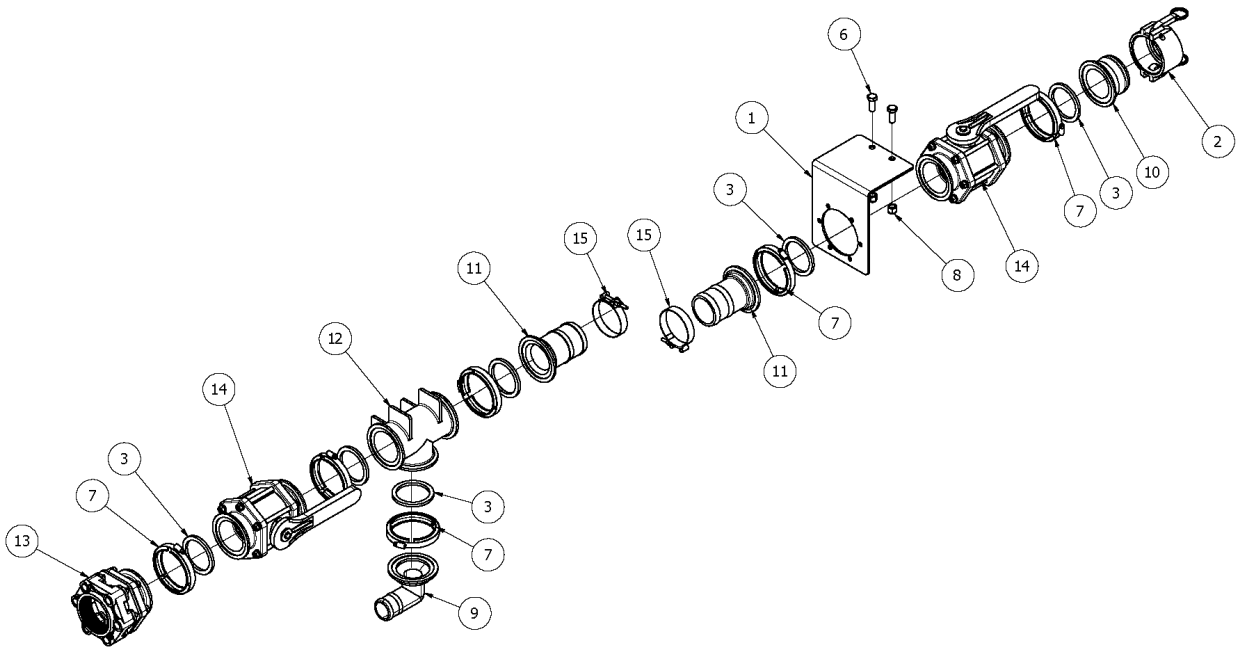


Description: Rockshaft Kit

Item#	Part #	Description	Quantity
1	SX014040	Weldment, Rockshaft	1
2	SX014045	Weldment, Rockshaft Cap LS	1
3	SX014091	Weldment, Rockshaft Cap RS	1
4	SXBH-062-250-5	Bolt, Hex, 5/8" x 5" Grade 5	8
5	SXG1610	Zerk; 1/8" N Str. Grease Zerk	2
6	SXLN-062-NI	Locknut; 5/8" Nylon Insert	8
7*	SX014579	Plate; 11 Ga. Shim	

* Not Shown

Description: Tank Plumbing Kit

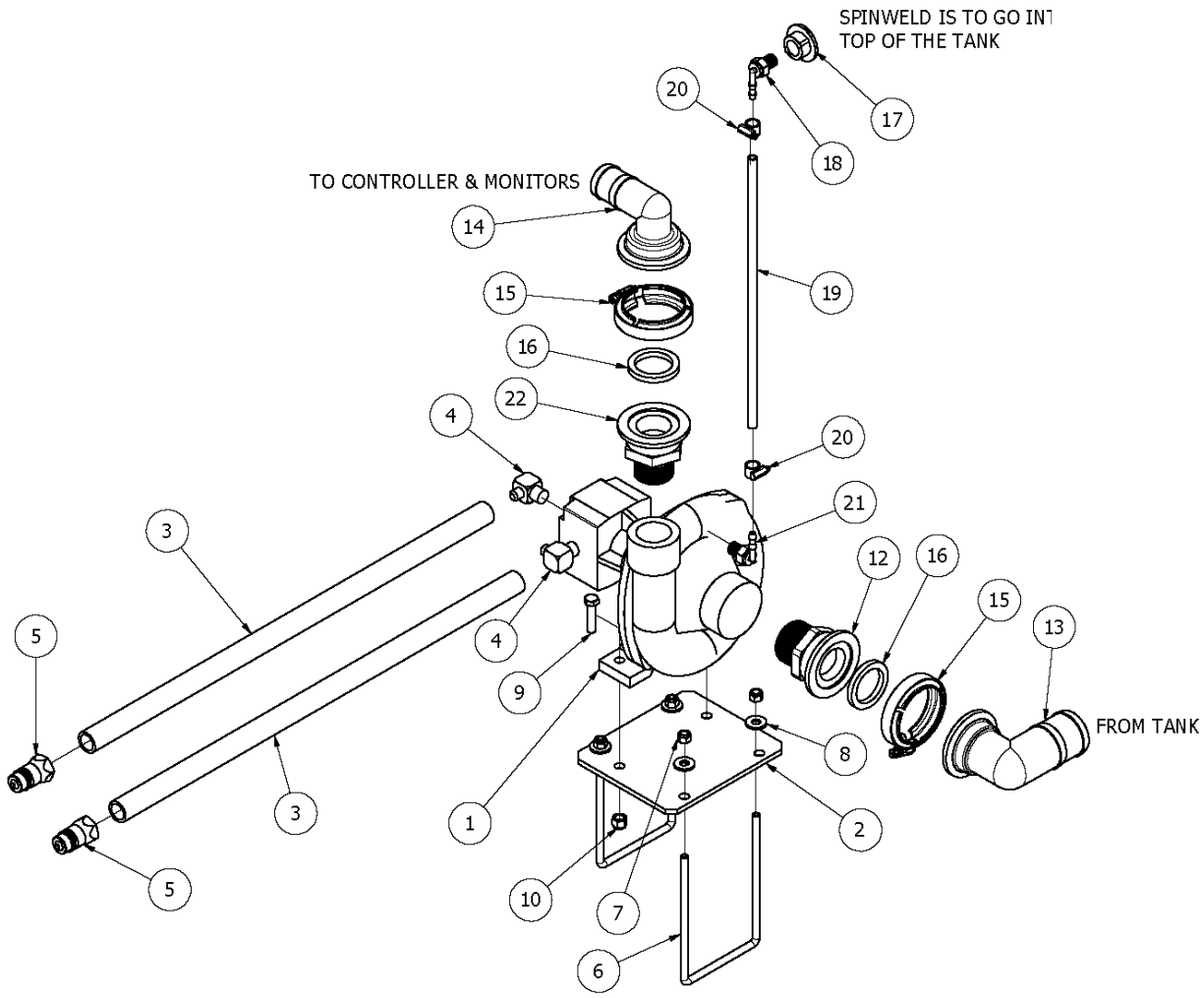


Description: Tank Plumbing Kit

Item#	Part #	Description	Quantity
1	SX014105	Plate, Valve Mount	1
2	SX300CAP	Coupling; 3"" Cam Lever Cap	1
3	SX300G	Gasket, 3" Banjo	6
4*	SX600432	Hose; 2" Enforcer, Fertilizer Solution	1
5*	SX600448	Hose; 3" EPDM W/Poly Helix	1
6	SXBH-050-125-5	Bolt; 1/2" x 1.25" Grade 5	2
7	SXFC300	Clamp, 3" Banjo	6
8	SXLN-050-NI	Locknut; 1/2" Nylon Insert	2
9	SXM300220BRB90	Elbow; Flange, 3" x 2" Poly	1
10	SXM300A	Coupler, 3" Flange x 3" Cam Coupler Banjo	1
11	SXM300BRB	Hose Barb; 3" Flange x 3" HB, Poly	2
12	SXM300TEE	Tee; 3" Flanged	1
13	SXMBF300BD	Fitting; Flanged Tank Fitting	1
14	SXMV300	Valve; 3" Standard Port Manifold Valve	2
15	SXTBC350	Clamp; T-Bolt 2-11/32"-2-5/8"	2

* Not Shown

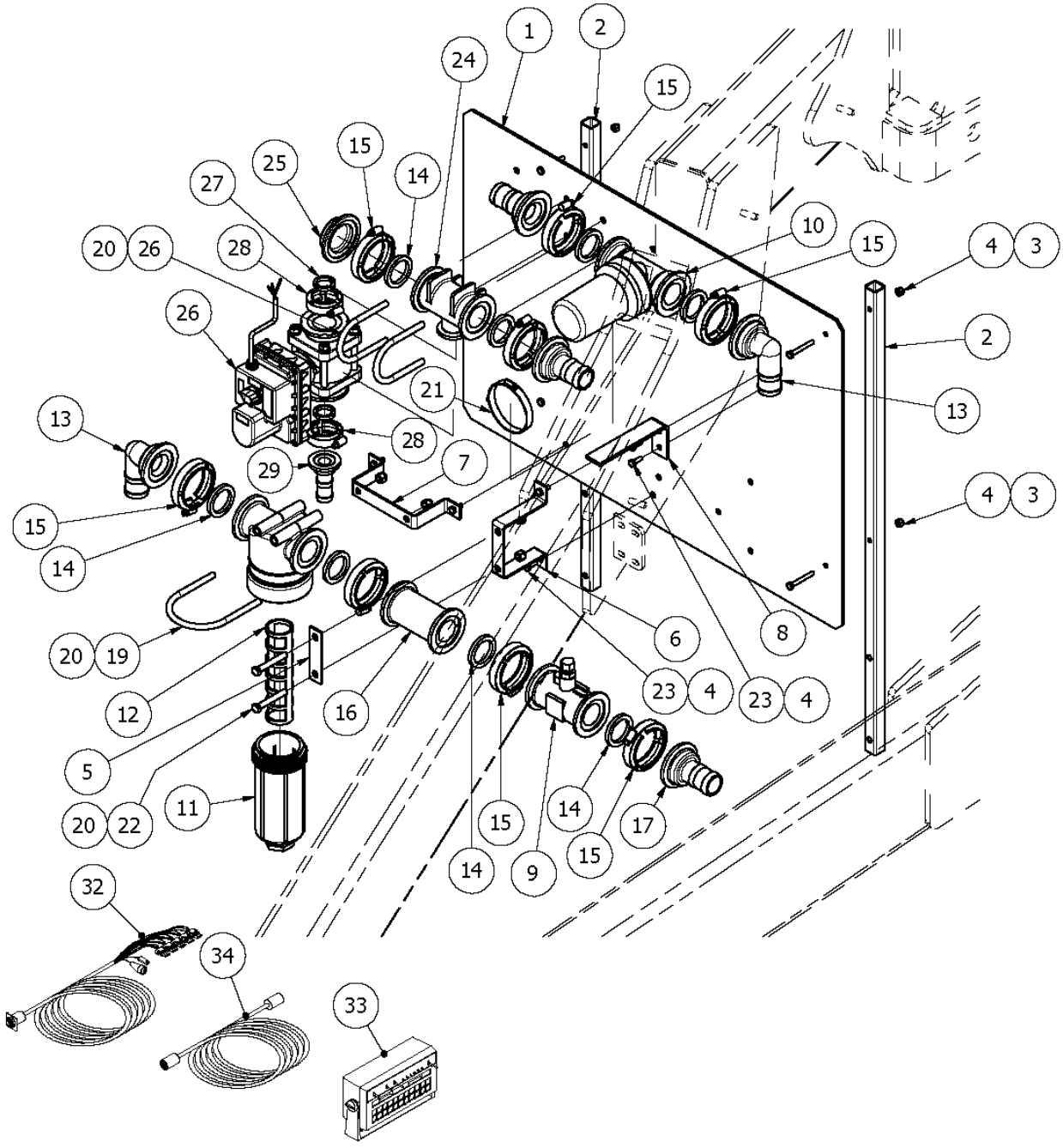
Description: Ace Centrifugal Pump Plumbing



Description: Ace Centrifugal Pump Plumbing

Item#	Part #	Description	Quantity
1	SXFMCSC150HYD206	Ace Pump	1
2	SX001065	Plate; Centrifugal Pump	1
3	SX005669	Hyd. Hose; 1/2" x 180" MORB & 1/2" MPT	2
4	SX5405-6-8	Hyd. Adapter; 3/8" MPT x 1/2" FPT	2
5	SX8010-15P	Hyd. Quick Coupler; Univ. Poppet	2
6	SXBU031-400-650-2	U-Bolt; 5/16" x 4.00" x 6.5" Gr. 2	2
7	SXLN-031-NI	Locknut; 5/16" Nylon Insert	4
8	SXFW-031	Washer, Flat, 5/16"	4
9	SXBH-038-150-5	Bolt; 3/8" x 1.50" Grade 5	2
10	SXLN-038-NI	Locknut; 3/8" Nylon Insert	2
12	SXM200150MPT	Manifold, 2" Flange, 1-1/2" MPT	1
13	SXM200BRB90	Hose Barb, 2" HB, 2" Flange, Elbow	1
14	SXM200150BRB90	Hose Barb, 2" Flange x 1-1/2" HB, Elbow	1
15	SXFC200BJ	Clamp; 2"	2
16	SX150G	Gasket; For 2" Flanged Valve	2
17	SX73HD	Spinweld; 1/4" FPT Raised	1
18	SXHB025-90	Hose Barb Ell; 1-4 MPT x 1/4" HB	1
19	SXK3150-025	Hose; 1/4" Vinyl Reinforce Clear	
20	SX#4JM	Clamp, 1/4" Hose Worm Screw	2
21	SX3A1814	Hose Barb; 1/8" x 1/4", Poly	1
22	SXM200125MPT	Manifold, 2" Flange, 1-1/4" MPT	1

Description: Raven Control Plumbing

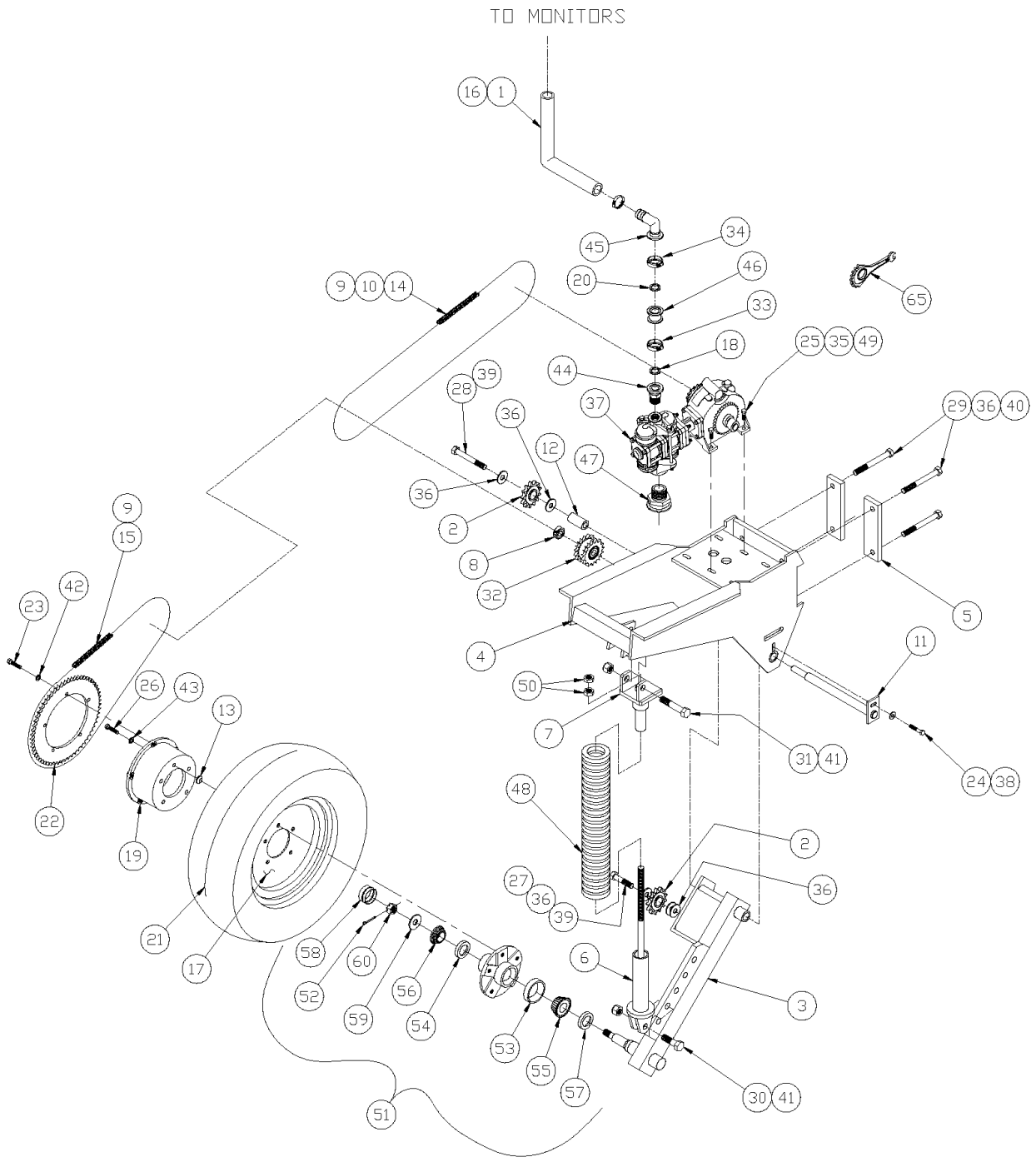


Description: Raven Control Plumbing

Item#	Part #	Description	Quantity
1	SX007601	Plate; Mounting Plate	1
2	SX007777	Tube; Panel Mount	2
3	SXBH-025-200-2	Bolt; 1/4" x 2.00" Grade 2	4
4	SXLN-025-NI	Locknut; 1/4" Nylon Insert	10
5	SX004108	Plate; Strainer Mount	1
6	SX004114	Mount; Flow Meter 3"	1
7	SX006069	Mount; Strainer Flanged	1
8	SX007659	Bracket; Raven Regulating Valve	1
9	SX063-0171-793	Flow Meter, RFM 60P	1
10	SX063-0172-125	Valve; Control, 1" Poly	1
11	SXMLST150HB	Strainer, Flanged; 2" Std Port	1
12	SXLST1550	Strainer, Screen, 2" Flg, 50 Mesh	1
13	SXM200150BRB90	Hose Barb, 2" Flg x 1-1/2" HB, EL	2
14	SX150G	Gasket; For 2" Flanged Valve	8
15	SXFC200BJ	Clamp, 2" Banjo	8
16	SXM200CPG	Cplg, 2" Flanged	1
17	SXM200150BRB	Hose Barb, 2" Flanged x 1-1/2" HB	3
18*	SXBUR038-250-400	Bolt, U, 3/8" x 2-1/2" x 4", Rnd	2
19	SXBUR038-375-500	U-Bolt; 3/8" x 3-3/4" x 5" Round	1
20	SXLN-038-NI	Locknut; 3/8" Nylon Insert	8
21	SX#48J	Clamp, 4" Hose Worm Screw	1
22	SXBH-038-300-5	Bolt; 3/8" x 3" Grade 5	2
23	SXBH-025-075-5	Bolt; 1/4" x 0.75" Grade 5	6
24	SXM200100TEE	Tee; 2" x 1" Tee	1
25	SXM200PLG	Plug; Banjo Flange 2"	1
26	SXMVE100CF	Valve, 1" Flange, Elec.	1
27	SXM100G	Gasket; For 1" Flanged Valve	2
28	SXFC100	Coupling; 1" FPT	2
29	SXM100BRB	Hose Barb; 1" x 1" Straight	2
30*	SX#16J	Clamp; 1" Hose Stainless	2
31*	SX#24J	Clamp; 1-1/2" Hose Stainless	6
32	SX006367	Cable; Raven Flow w/ Packards	1
33	SX063-0171-220	Console Assembly; Raven 450 w/ Serial	1
34	SX115--0159-492	Cable; Raven 450 Control Cable	1
35*	SX011612	Hose; 1" 150# EPDM Black	
36*	SX012412	Hose; 1-1/2" 150# EPDM Black	

* Not Shown

Description: Ground Driven Piston Pump Assembly



Description: Ground Driven Piston Pump Assembly

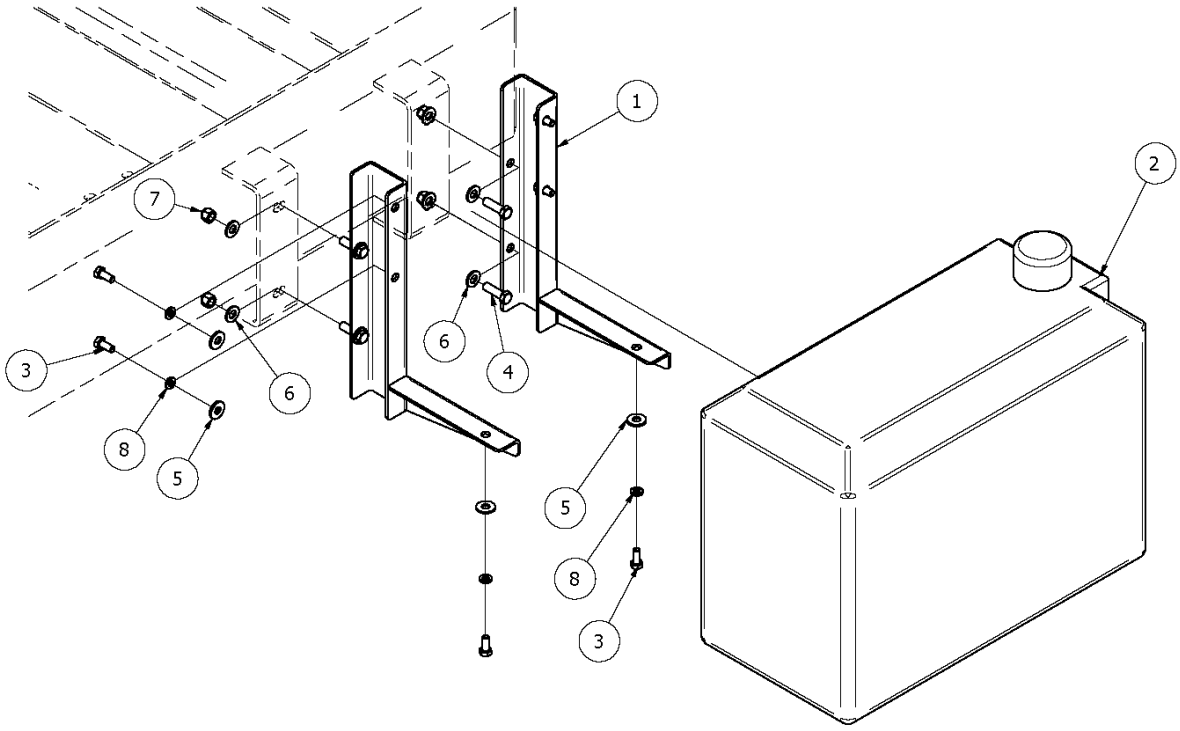
Item#	Part #	Description	Quantity
1	SX#24J	Clamp, 1-1/2" x 1/2" Stainless	1
2	SX013520	Sprocket, Idler, 50-13.5/8" Bore	2
3	SX008003	Weld; Swingarm and Spindle	1
4	SX008013	Weld; Frame and Pump Mount	1
5	SX008014	Plate; Backing Bolt Plate	2
6	SX008018	Weld; Threaded Rod Half	1
7	SX008022	Weld; Mainframe Mount End	1
8	SX008025	Collar; 2 PC Clamp on, 3/4"	1
9	SX008053	Connecting Link; #50	2
10	SX008054	Connecting Link; Half Link #50	2
11	SX008170	Weldment; Shaft	1
12	SX008221	Tube; Spacer Bushing	1
13	SX008222	Tube; Spacer Collar	5
14	SX008223	Chain; Pump to Idler	1
15	SX008224	Chain; Idler to Wheel	1
16	SX012412	Hose; 1-1/2" 150# EPDM	
17	SX046-RIM	Rim; 15'	1
18+	SX100G	Gasket; 1" Coupling EPDM	1
19	SX106190-01	Hub Sprocket Adaptor; 4 Bolt	1
20	SX150G	Gasket; For 2" Flanged Valve	1
21	SX50015	Tire; 500 x 15 4 Ply Tractor, TBL	1
22	SXA-1342-AP	Sprocket; 60 Tooth, Ground Drive	1
23	SXBH-038-075-5	Bolt; 3/8" x 3/4" Grade 5	5
24	SXBH-038-200-5	Bolt; 3/8" x 2" Grade 5	1
25	SXBH-050-100-2	Bolt; 1/2" x 1" Grade 2	4
26	SXBH-050-200-20	Bolt; 1/2" x 2" Fine Thread 20TPI	5
27	SXBH-062-300-2	Bolt; 5/8" x 3" Hex Bolt	1
28	SXBH-062-500-2	Bolt; 5/8" x 5" Grade 2	1
29	SXBH-062-600-5	Bolt; 5/8" x 6" Grade 5	4
30	SXBH-075-250-5	Bolt; 3/4" x 2-1/2" Grade 5	1
31	SXBH-075-400-5	Bolt; 3/4" x 4" Grade 5	1
32	SXDS50A17	Idler Sprocket; w/Bearings	1
33+	SXFC100BJ	Clamp; 1"	1
34	SXFC200BJ	Clamp; 2"	1
35	SXFW-050	Flatwasher; 1/2"	4

Description: Ground Driven Piston Pump Assembly

Item#	Part #	Description	Quantity
36	SXFW-062	Flatwasher; 5/8"	8
37	SXLM-4455	Pump For Single Piston	1
	SXLM-4955	Pump For Dual Piston	
38	SXLN-038-NI	Locknut; 3/8" Nylon Insert	1
39	SXLN-062-CL	Locknut; 5/8" Center Lock	2
40	SXLN-062-NI	Locknut; 5/8" Nylon Insert	4
41	SXLN-075-NI	Locknut; 3/4" Nylon Insert	2
42	SXLW-038	Lockwasher; 3/8"	5
43	SXLW-050	Lockwasher; 1/2"	5
44	SXM100MPT	Manifold; 1" x 1" MPT	1
	SXM200150MPT	Manifold; 2" x 1-1/2" MPT	
45	SXM200/150BRB90	Ell; 2" Flange x 1-1/2" Hose Barb	1
46+	SXM200100CPG	Flange Reducer; 2" x 1"	1
47	SXM200150MPT	Manifold; 2" x 1-1/2" MPT	1
	SXM200200MPT	Manifold; 2" x 2" MPT	
48	SX73362	Spring; Compression	1
49	SXNUT-050	Nut; 1/2"	4
50	SXNUT-075-J	Nut; 3/4" Jam Nut	2
51	SX047	Assembly; Hub and Bearings (511200-5)	1
52	SXP401901	Cotter Pin	
53	SXP702203	Inner Cup	
54	SXP702210	Outer Cup	
55	SXP752311	Inner Cone	
56	SXP752305	Outer Cone	
57	SXP602111	Grease Seal	
58	SXP502005	Hub Cap	
59	SXP301801	Washer	
60	SXP251701	Nut	
61*	SX115393	Single Piston Operation Kit	
	SX115394	Dual Piston Operation Kit	

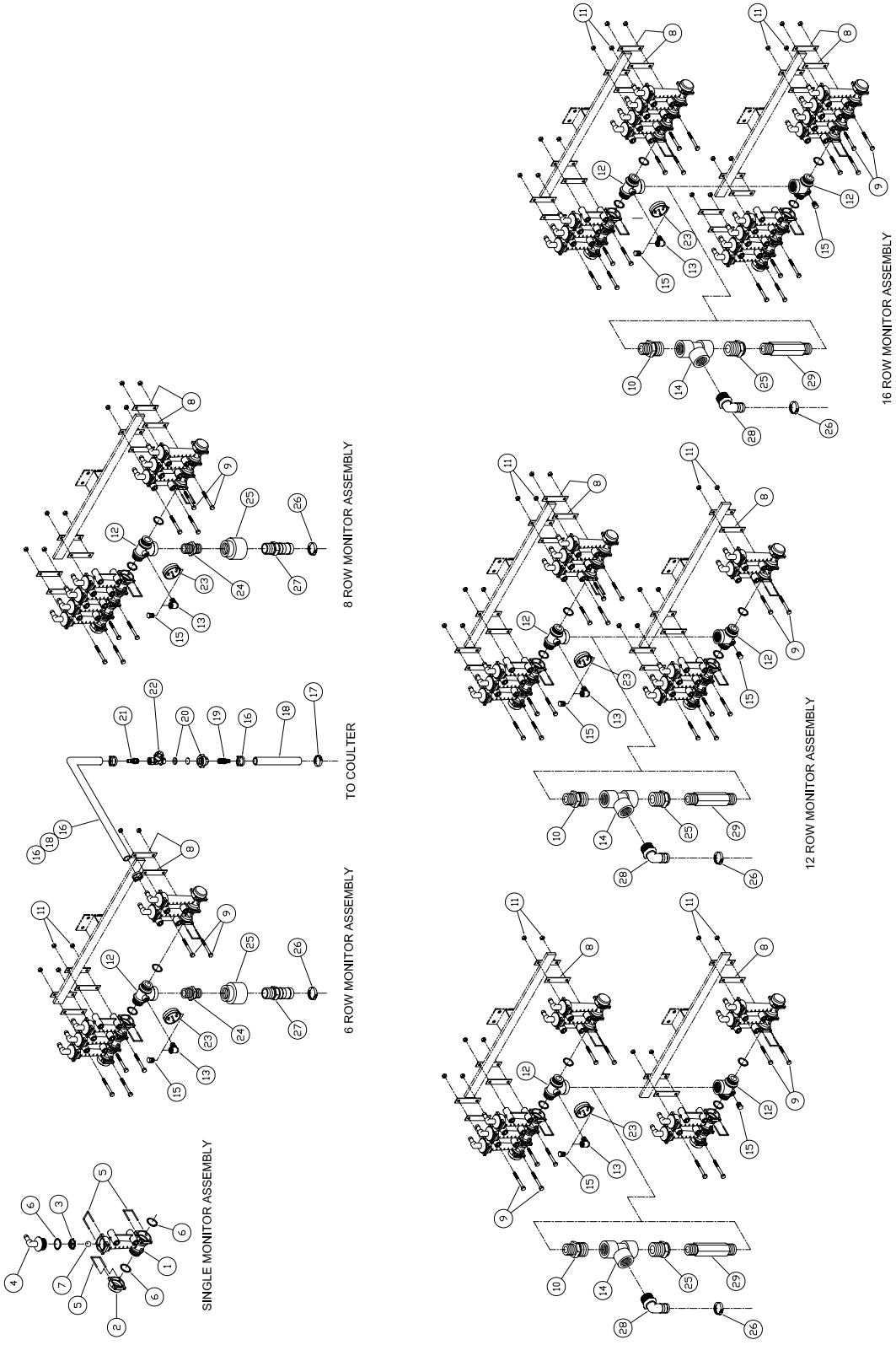
* Kit includes wrench, slide rule and manual
LM-4455 Uses M100MPT & N200150MPT
LM4955 Uses M200150MPT and M200200MPT
+ Used only with LM-4455

Description: 9 Gallon Fresh Water Assembly



Item#	Part #	Description	Quantity
1	SX014666	Weldment; Bracket, 9 Gal. Tank	2
2	SX6000-30Y	Tank; 9 Gal. Rinse Tank, Yellow	1
	SX6000-30C	Tank; 9 Gal. Rinse Tank, Cream	1
3	SXBH-031-075-5	Bolt; 5/16" x .75" Grade 5	6
4	SXBH-038-125-5	Bolt; 3/8" x 1.25" Grade 5	4
5	SXFW-031	Washer, Flat, 5/16"	6
6	SXFW-038	Washer, Flat, 3/8"	8
7	SXLN-038-NI	Locknut; 3/8" Nylon Insert	4
8	SXLW-031	Washer, Lock, 5/16"	6

Description: Spray Monitor, Plumbing Assembly for Farm King 1460 Fertilizer Applicator

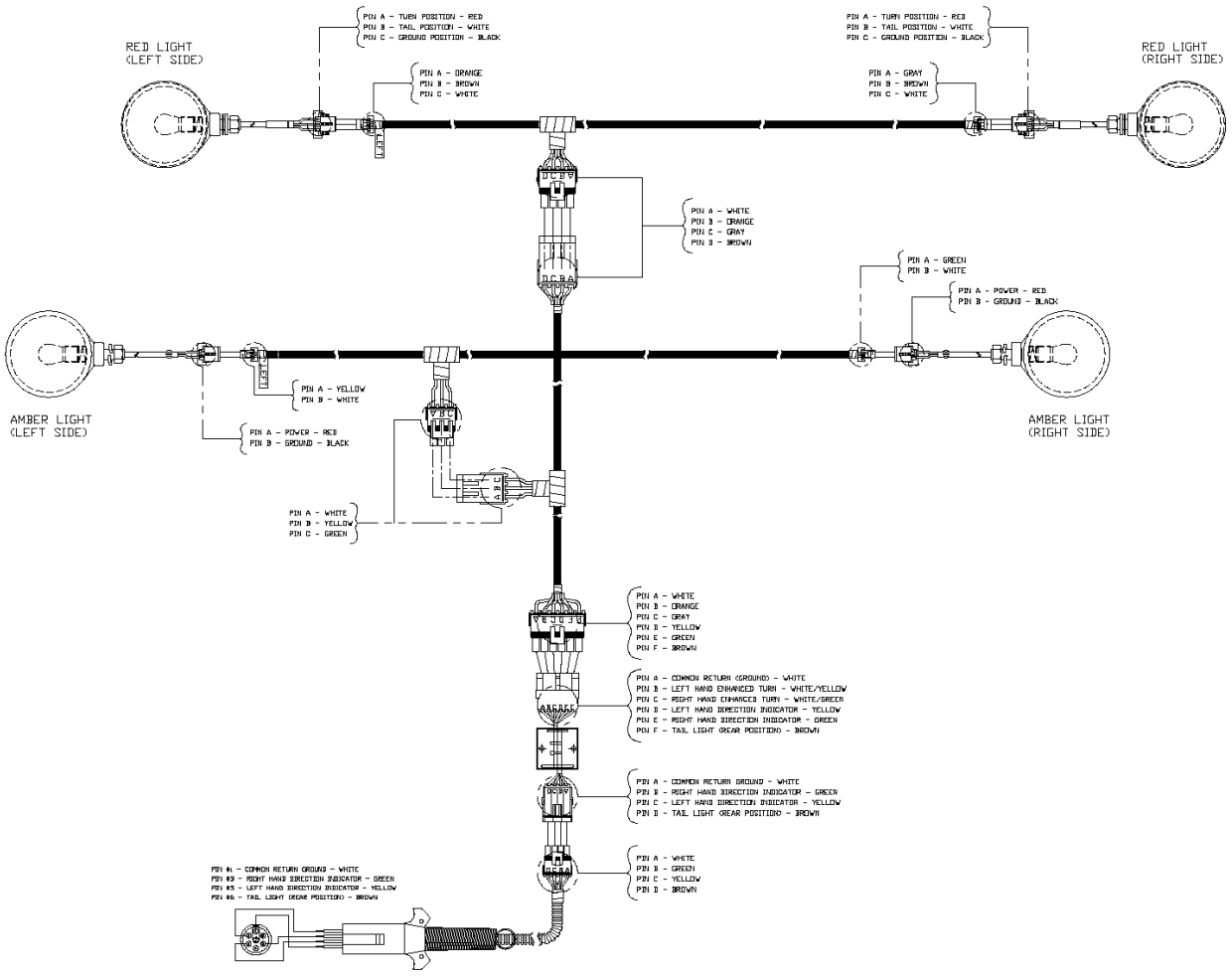


Description: Spray Monitor, Plumbing Assembly for Farm King 1460 Fertilizer Applicator

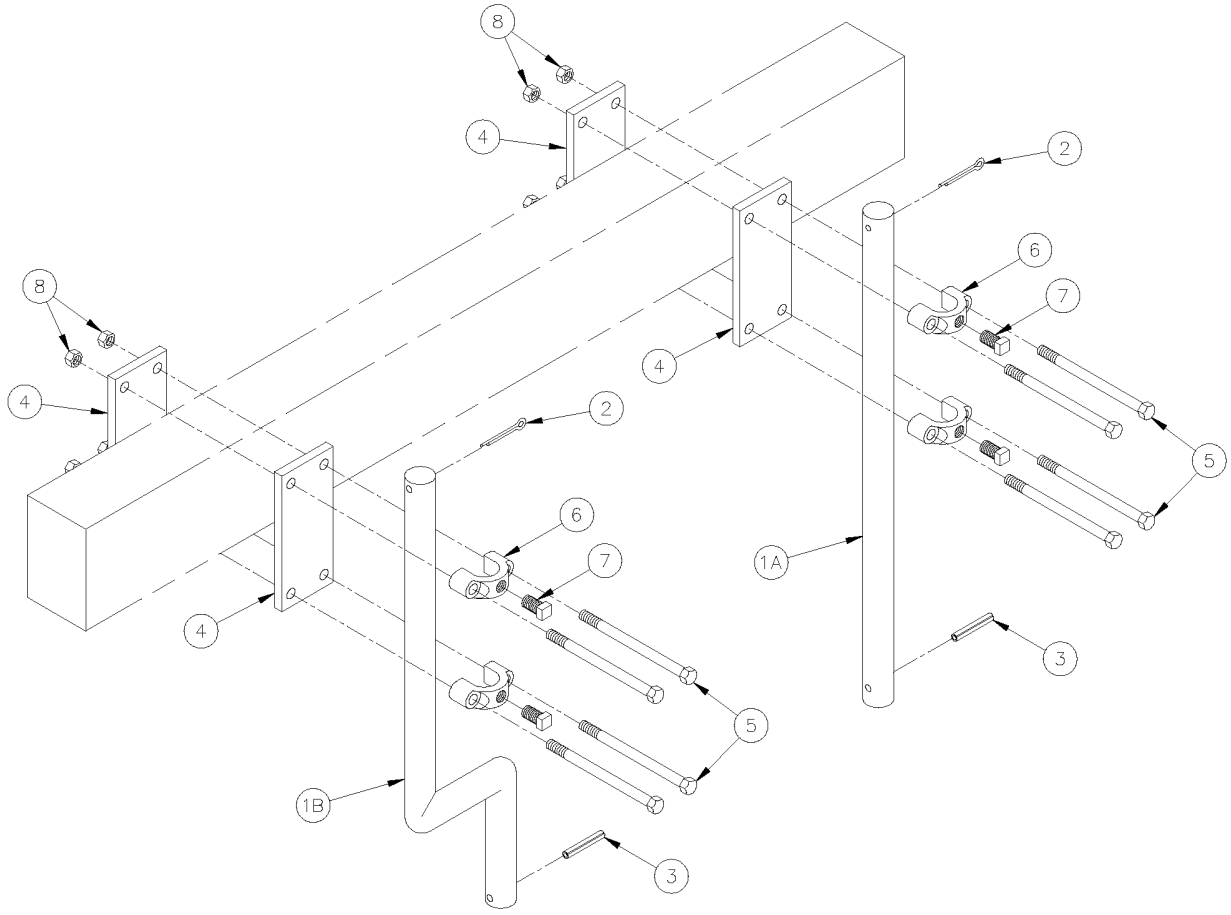
Item#	Part #	Description	Quantity
1	SX002139	Monitor, Single Manifold	
2	SX002138	Cap, Column	
3	SX002137	Float Stop	
4	SX002135	Monitor Hose Barb; 1/2"	
5	SX002037	Pin; U-Shaped	
6	SX002140	O-Ring; Monitor	
7	SX8165105	Ball; Red Glass	
	SX8165101	Ball; Green Plastic	
	SX8165102	Ball; Black Plastic	
	SX8165100	Ball; Red Plastic	
8	SX003930	Clip; New Monitor	
9	SXBH-025-250-2	Bolt; 1/4" x 2-1/2" Hex. Gr. 2	
10	SXRN150-100	Reducer Nipple; 1-1/2" x 1" Nipple	
11	SXLN-025-NI	Locknut; 1/4" Nylon Insert	
12	SX007306	Tee; Monitor w/Gauge Port	
13	SX3SE14	Street Elbow; 1/4" FPTx MPT90"	
14	SXTEE 150	Tee; Poly, 1-1/2" Female	
15	SXEF14G	Plug; 1/4" MPT	
16*	SXH	Clamp; Speedy, Fits 1/2" Hose	
17*	SX# 8J	Clamp; 1/2" Stainless Clamp	
18*	SX000812	Hose; 1/2" 150# EPDM, L85	
19*	SX3A1412G	Hose Fitting; 1/4" MPTx 1/2" HB	
20*	SX402910	Cap & Gasket; QT, 1/4 "Thread, Black	
21*	SX3A3812G	Hose Barb; 3/8" MPTx 1/2" HB Poly	
22*	SXQJT8360-NYB	Diaphragm Check Valve	
23**	SXGG100	Gauge; 2-1/2" Liquid Filled 100 PSI	
24	SXNIP100-SH	Nipple; 1" x Short, MPT, Poly	
25	SXRC150-100	Reducing Coupling; 1-1/2" x 1"	
26	SX#24J	Clamp; 1-1/2" x 1/2" Stainless	
27	SXHB-150	Hose Barb; 1-1/2" MPTx HB	
28	SXHB-150-90	Hose Barb; Ell, 1-1/2" MPTx 1-1/2" HB	
29	SXNIP100-4	Nipple; 1" x 4" MPT, Poly	

* Quantities listed are per coulter.** Only used with centrifugal pump.

Description: Light Harness

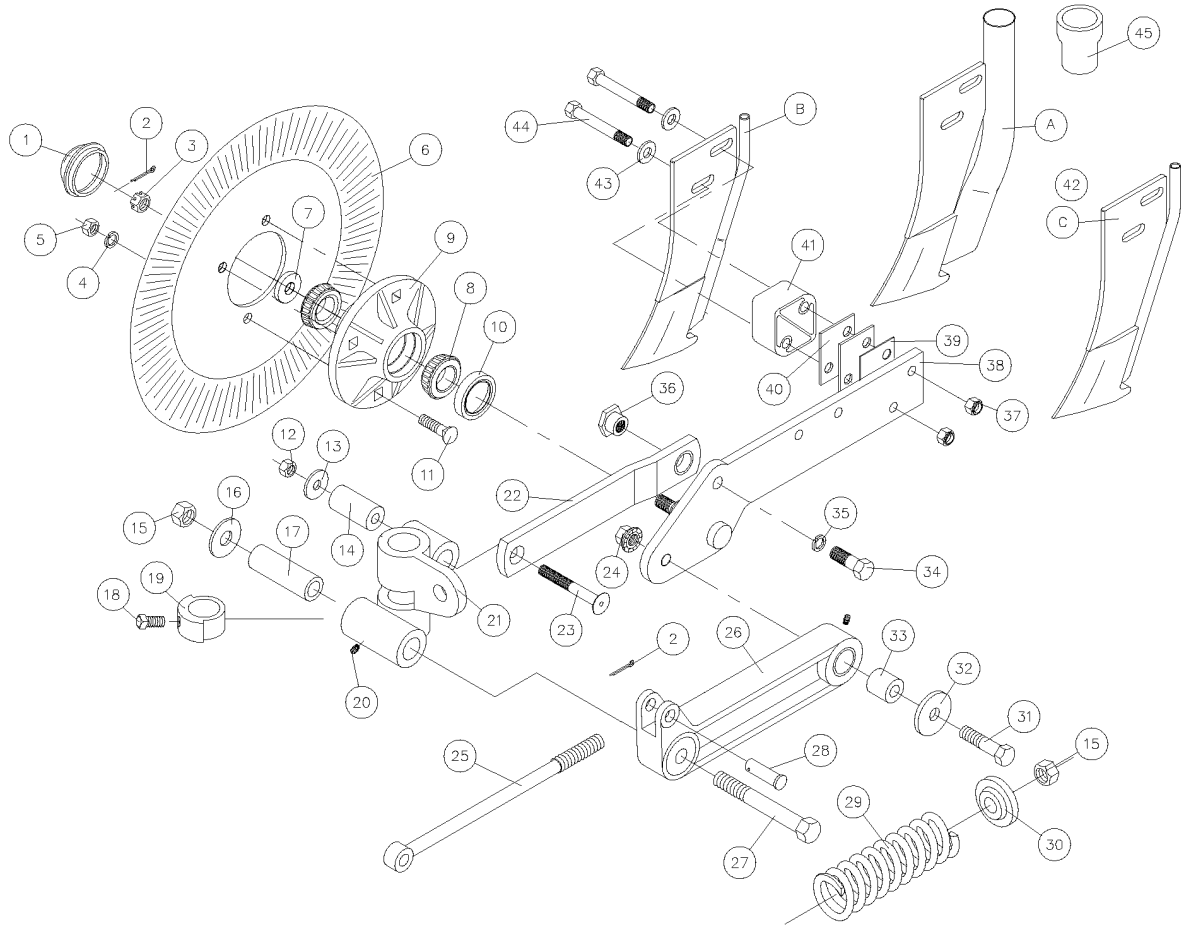


Description: Shaft and Clamp Kit for Coulter Assembly



Item#	Part #	Description	Quantity
1	SXA3010-303	Straight Coulter Shank	1
1	SXB3011-302	Offset Coulter Shank	
2	SXPCT-031-250	5/16" x 2-1/2" Cotter Pin ZP	1
3	SXPRP-038-250	3/8" x 2-1/2" Roll Pin ZP	1
4	SX2990-322	Clamp Plate; for 6" Tube	2
5	SXBH-050-700-5	1/2"-13 x 7" Hex Hd; CPASC. Gr. 5 ZP	4
6	SX2990-360	Clamp Casting, Drilled	2
7	SXSTS-062-100	5/8"-11 x 1" SQ. Hd. Cuppoint Setsc.	2
8	SXLN-050-CL	1/2"-13 Lock Hex Nut ZP	4

Description: 2996 Series 20" Fertilizer Coulter Assembly; Right Hand Assembly Shown

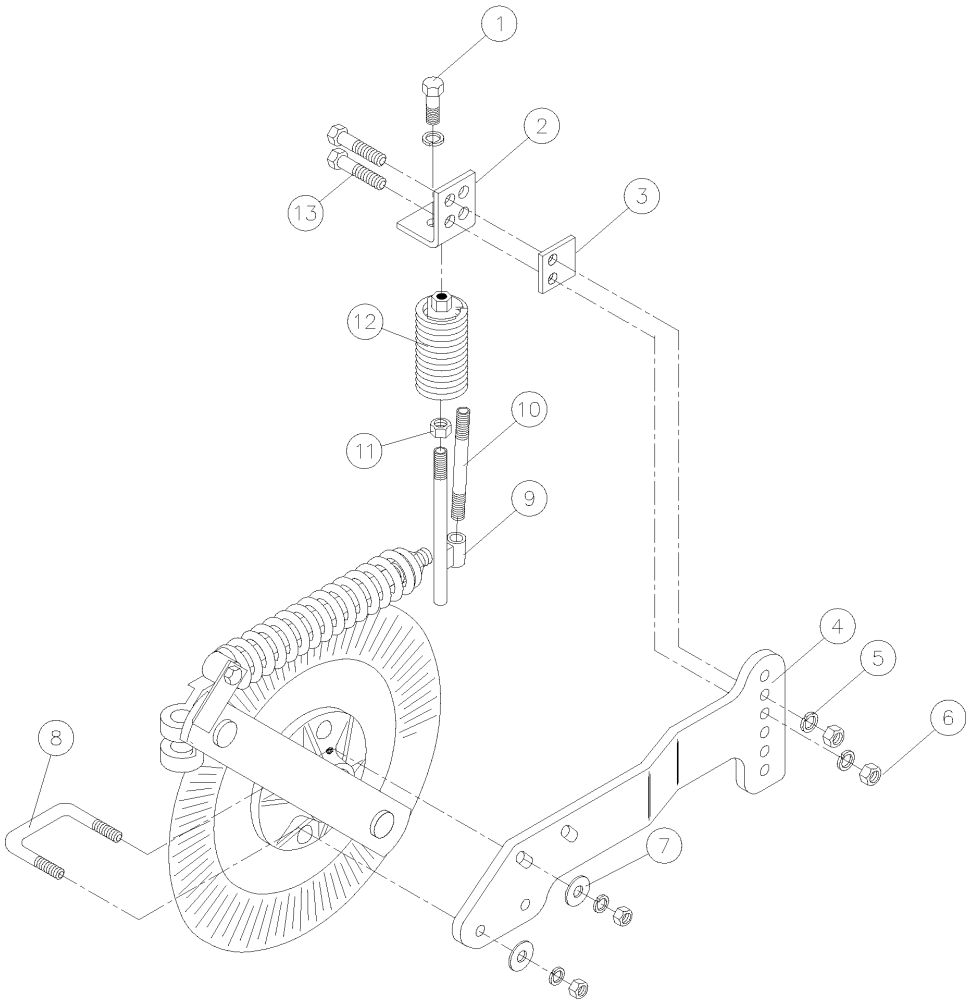


Item#	Part #	Description	Quantity
1	SX2570-375	Hub Cap	1
2	SXPCT-012-125	1/8" x 1-1/4" Cotter Pin Black	1
3	SX2520-469	5/8"-18 Slotted Hex Nut, Black	1
4	SXLW-050	1/2" Med. Lockwasher ZP.	4
5	SXNUT-050	1/2"-13 Hex Nut ZP.	4
6	SX2571-076	20" Ripple Blade	1
7	SX2526-449	5/8" Flatwasher, 1/4" .010 Thk	1
8	SX2550-027	Cone, LM67048	2
9	SX2900-105	Hub Pressed Assembly	1
	SX2900-029	Cup (Pre-Asem w/No.9XLM67010)	2
10	SX2550-115	Seal, 16069	1
11	SXBC-050-150-5	1/2"-13 x 1-1/2" Car. Blt. Grade 5 ZP.	4
12	SXLN-050-CL	1/2"-13 Lock Hex Nut ZP.	1
13	SX2527-340	1/2" ID x 1-1/2" OD x 10 Ga. Ma. Bu., ZP.	1
14	SX2995-303	Pivot Sleeve, 2-19/32"	1

Description: 2996 Series 20” Fertilizer Coulter Assembly; Right Hand Assembly Shown

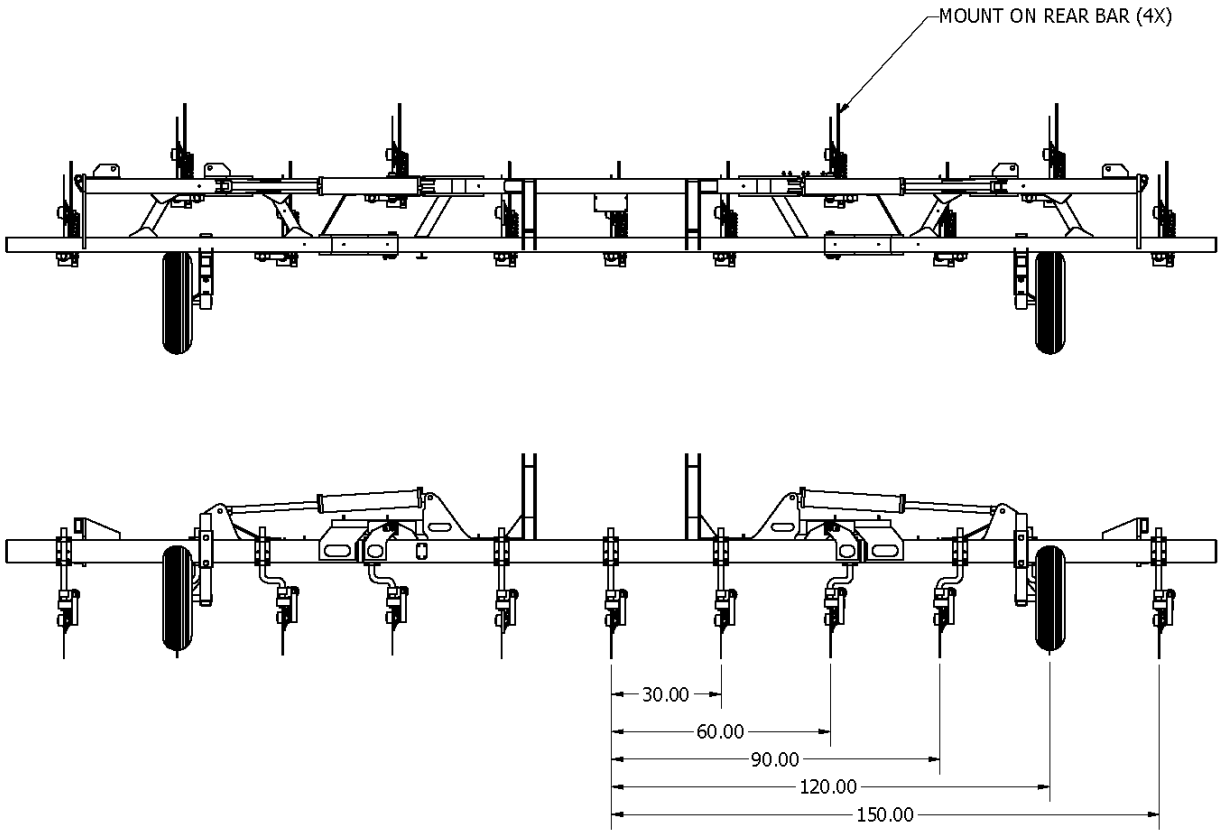
Item#	Part #	Description	Quantity
15	SXLN-075-CL	3/4"-10 Lock Hex Nut ZP.	2
16	SX2527-5322	5/32" x 2" x 10 Ga. Ma. Bu., ZP.	1
17	SX2570-704	Pivot Sleeve	1
18	STS-062-100-5	5/8"-11 x 1" SQ. HCPSSGr. 5 ZP.	1
19	SX2975-303	2975 Locking Collar	1
20	SX2533-110	1/4"-28 ZERC Straight Self-Tap	3
21	SX2995-307	Coulter Pivot, RH (Shown)	1
	SX2995-306	Coulter Pivot, LH	1
22	SX2995-111	Upper Coulter Arm Assembly	1
	SX2528-360	1" ID x 1-1/4" OD x 1/2" Bronze, Bush.	
23	SX2502-360	1/2"-13 x 4 HSFHCS	1
24	SXNUT-062	5/8"-11 Whizlock Hex Nut ZP.	1
25	SX2995-304	Spring Rod, 13 1/2"	1
26	SX2995-110	Lower Coulter Arm Assembly	1
	SX2528-362	‘2995’Arm Bronze Bushing	1
27	SXBH-075-600-5	3/4"-10 x 6 HHCSGr. 5 ZP	1
28	SX2995-308	Spring Rod Pin	1
29	SX2550-795	Spring, .562" Wire x 11" Long	1
30	SX2555-096	Spring Bushing Casting	1
31	SXBH-062-250-5	5/8"-11 x 2-1/2" HHCS Gr. 5 ZP.	1
32	SX2527-5292	1/32" ID x 2-1/4" OD x 1/4" MA. Bu.	1
33	SX2570-761	Lower Arm Pivot	1
34	SXBH-062-150-5	5/8"-18 x 1-1/2" HHCS Gr. 5 ZP.	1
35	SXLW-062	5/8" Med. Lock Washer ZP.	1
36	SX2570-762	Upper Arm Pivot/Washer ZP.	1
37	SXLN-050-NI	1/2"-13 Hex NIF-LOK Nut, ZP.	2
38	SX2996-205	RH2996 Knife Arm/Spindle W.A.1	
	SX2996-204	LH2996 Knife Arm/Spindle W.A.1	
39	SX2970-320	Knife Shim, 16 Ga., ZP.	1
40	SX2970-319	Knife Shim, 1/8" ZP.	2
41	SX2995-309	Spacer Block, 1.531"	1
42A	SX2996-201	20" Dry Fertilizer Knife W.A.	1
42B	SX2996-200	20" Liquid Fertilizer Knife W.A.	1
42C	SX2996-203	20" Suspension Knife W.A.	1
43	SXFW-050	1/2" Flat Washer, Hard’nd, P.C.	2
44	SXBH-050-350-8	1/2"-13 x 3-1/2" HHCS Gr. 8, ZDP	2
	SX2565-294	Critical Adjustment Decal	1
	SX2530-208	Roll Pin For Shank	1
	SX2531-161	Cotter Pin For Shank	1
45	SX2515-547	Dry Fertilizer Adaptor, PVC	1

Description: Hydraulic Liquid Fertilizer Kit Assembly

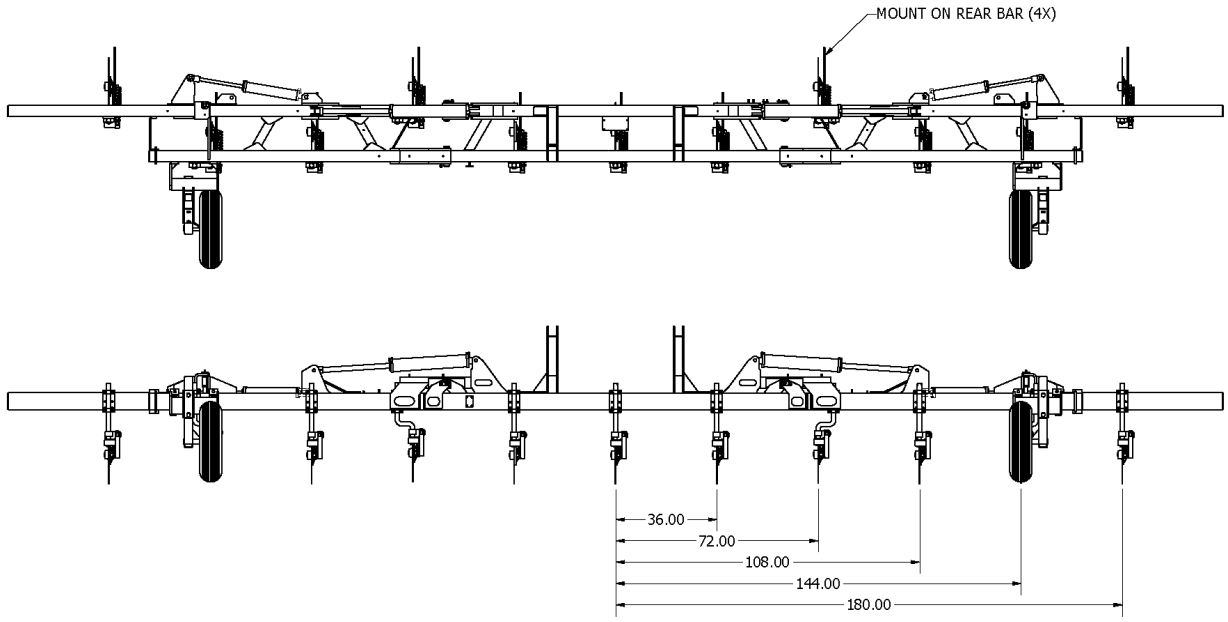


Item#	Part #	Description	Quantity
1	SXBH-050-100-5	1/2"-13 x 1" HHCS Grade 5 ZP	1
2	SX2995-301	Injector Mount Plate	1
3	SX2995-320	Spacer, Injector	1
4	SX2910-321	HD Injector Arm 2910	1
5	SXLW-050	1/2" Med Lockwasher ZP	5
6	SXNUT-050	1/2"-13 Hex Nut ZP	4
7	SXFW-050	1/2" Standard Flatwasher ZP	2
8	SX2570-736	1/2" x 3-1/8: x 2-1/4" U-Bolt ZP	1
9	SX2995-212	Injector Rod W.A., 1/2"-13	1
10	SX2515-3113”	Nipple, 1/4" NPTStainless Steel	1
11	SXNUT-050-JAM	1/2"-13 Jam Hex Nut	1
12	SX2995-131	Injector Spring Assembly	1
13	SXBH-050-175-S	1/2"-13 x 1-3/4" HHCS Grade 5 ZP	2

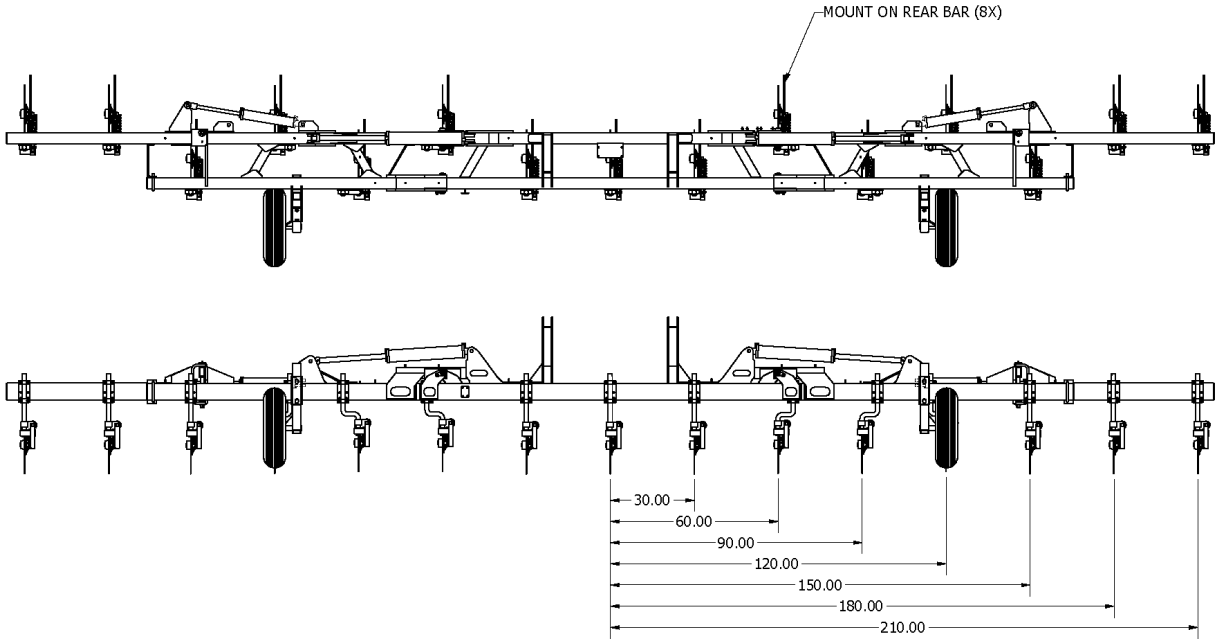
Description: 12R30 Coulter Spacing



Description: 12R36 Coulter Spacing



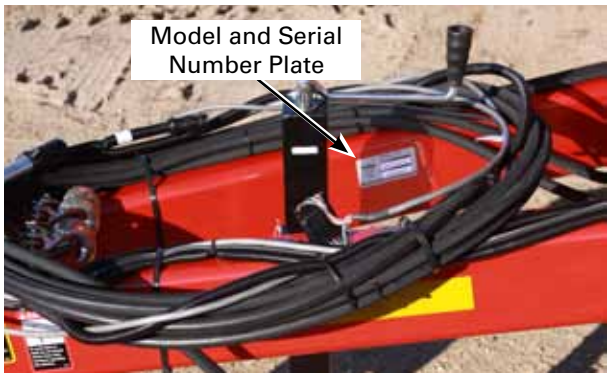
Description: 16R30 Coulter Spacing



NOTES:

Warranty
Section E

Serial and Model Number Location



Inner frame of liquid supply trailer, facing front.

The following page contains a space for you to record the information about your liquid supply trailer found on this plate. Please record this information here for future reference.

SERIAL NUMBER INFORMATION

Farm King Model Number:_____

Farm King Serial Number:_____

Component Serial Numbers:

Manufacturer	Part Number	Serial No.	Notes:

IMPORTANT

The binder containing this manual is sub-component of this applicator unit and should go with the unit in the event of a future sale. This information contained within this binder is specific to this applicator unit and cannot easily be replaced.

Warranty Policy

Farm King Limited Warranty

This document limits your warranty rights.

Base Limited Warranty

Farm King provides this warranty only to original retail purchasers of its products. Farm King warrants to such purchasers that all Farm King-manufactured parts and components used and serviced as provided for in the Operator's Manual shall be free from defects in materials and workmanship for a period following delivery to the original retail purchaser of one (1) year. This limited warranty applies only to those parts and components manufactured by Farm King. Parts and components manufactured by others are subject to their manufacturer's warranties, if any.

Farm King will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Farm King within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Parts must be returned through the selling representative and the buyer must prepay transportation charges.

Farm King will not be responsible for repairs or replacements that are necessitated, in whole or part, by the use of parts not manufactured by or obtained from Farm King. Under no circumstances are component parts warranted against normal wear and tear. There is no warranty on product pump seals, product pump bearings, rubber product hoses, pressure gauges, or other components that require replacement as part of normal maintenance.

Repair Parts Limited Warranty

Farm King warrants genuine Farm King replacement parts purchased after the expiration of the Farm King Limited Warranty, and used and serviced as provided for in the Operator's Manual, to be free from defects in materials or workmanship for a period of thirty (30) days from the invoice date for the parts. Farm King will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Farm King within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Such parts must be shipped to the Farm King factory at the purchaser's expense.

What is Not Covered

Under no circumstances does this limited warranty cover any components or parts that have been subject to the following: negligence; alteration or modification not approved by Farm King; misuse; improper storage; lack of reasonable and proper maintenance, service, or repair; normal wear; damage from failure to follow operating instructions; accident; and/or repairs that have been made with parts other than those manufactured, supplied, and or authorized by Farm King.

Continued on next page

Authorized Dealer and Labor Costs
Repairs eligible for labor under this limited warranty must be made by Farm King or an authorized Farm King dealer. Farm King retains the exclusive discretion to determine whether it will pay labor costs for warranty repairs or replacements, and the amount of such costs that it will pay and the time in which the repairs will be made. If Farm King determines that it will pay labor costs for warranty work, it will do so by issuing a credit to the dealer's or distributor's account. Farm King will not approve or pay invoices sent for repairs that Farm King has not previously approved. Warranty service does not extend the original term of this limited warranty.

Warranty Requirements
To be covered by warranty, each new product must be registered with Farm King within thirty (30) days of delivery to original retail purchaser. If the customer decides to purchase replacement components before the warranty disposition of such components is determined, Farm King will bill the customer for such components and then credit the replacement invoice for those components later determined to be covered by this limited warranty. Any such replacement components that are determined not be covered by this limited warranty will be subject to the terms of the invoice and shall be paid for by the purchaser.

Exclusive Effect of Warranty and Limitation of Liability

TO THE EXTENT PERMITTED BY LAW, FARM KING DISCLAIMS ANY WARRANTIES, REPRESENTATIONS, OR PROMISES, EXPRESS OR IMPLIED, AS TO THE QUALITY, PERFORMANCE, OR FREEDOM FROM DEFECT OF THE COMPONENTS AND PARTS COVERED BY THIS WARRANTY AND NOT SPECIFICALLY PROVIDED FOR HEREIN.

TO THE EXTENT PERMITTED BY LAW, FARM KING DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ON ITS PRODUCTS COVERED HEREIN, AND DISCLAIMS ANY RELIANCE BY THE PURCHASER ON FARM KING'S SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS FOR ANY PARTICULAR PURPOSE. THE PURCHASER'S ONLY AND EXCLUSIVE REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON FARM KING'S PRODUCTS ARE THOSE SET FORTH HEREIN. IN NO EVENT SHALL FARM KING BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BY WAY OF EXAMPLE ONLY AND NOT LIMITATION, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE, OR COST OF REPLACEMENT OF RENTAL EQUIPMENT). IN NO EVENT SHALL FARM KING'S CONTRACT OR WARRANTY LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT. (Note that some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusion may not apply to you.) This warranty gives you specific legal rights and you may also have other rights, which vary from state to sate.

Farm King neither assumes nor authorizes any person or entity, including its selling representatives, to assume any other obligations or liability in connections with the sale of covered equipment, or to make any other warranties, representations, or promises, express or implied, as to the quality, performance, or freedom from defect of the components and parts covered herein. No one is authorized to alter, modify, or enlarge this limited warranty, or its exclusions, limitations and reservations.

Continued on next page.

Corrections of defects and improper workmanship in the manner, and for the applicable time periods, provided for herein shall constitute fulfillment of all responsibilities of Farm King to the purchaser, and Farm King shall not be liable in negligence, contract, or on any other basis with respect to the subject equipment.

This limited warranty is subject to any existing conditions of supply which may directly affect Farm King's ability to obtain materials or manufacturer replacement parts.

Buhler Industries Inc. reserves the right to make improvements in design or changes in specifications to its products at anytime, without incurring any obligation to owners of units previously sold.

www.farm-king.com

Farm King

1330 43rd Street NW
Fargo, ND USA 58102
Ph.: 701.282.7014 | Fax: 701.282.5865
E-mail: info@buhler.com
www.farm-king.com

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