



# QC Series

220 Series

Hydraulic Windrow Sweeper  
for Skid Loaders



**PALADIN**  
LIGHT CONSTRUCTION GROUP

 **BRADCO**

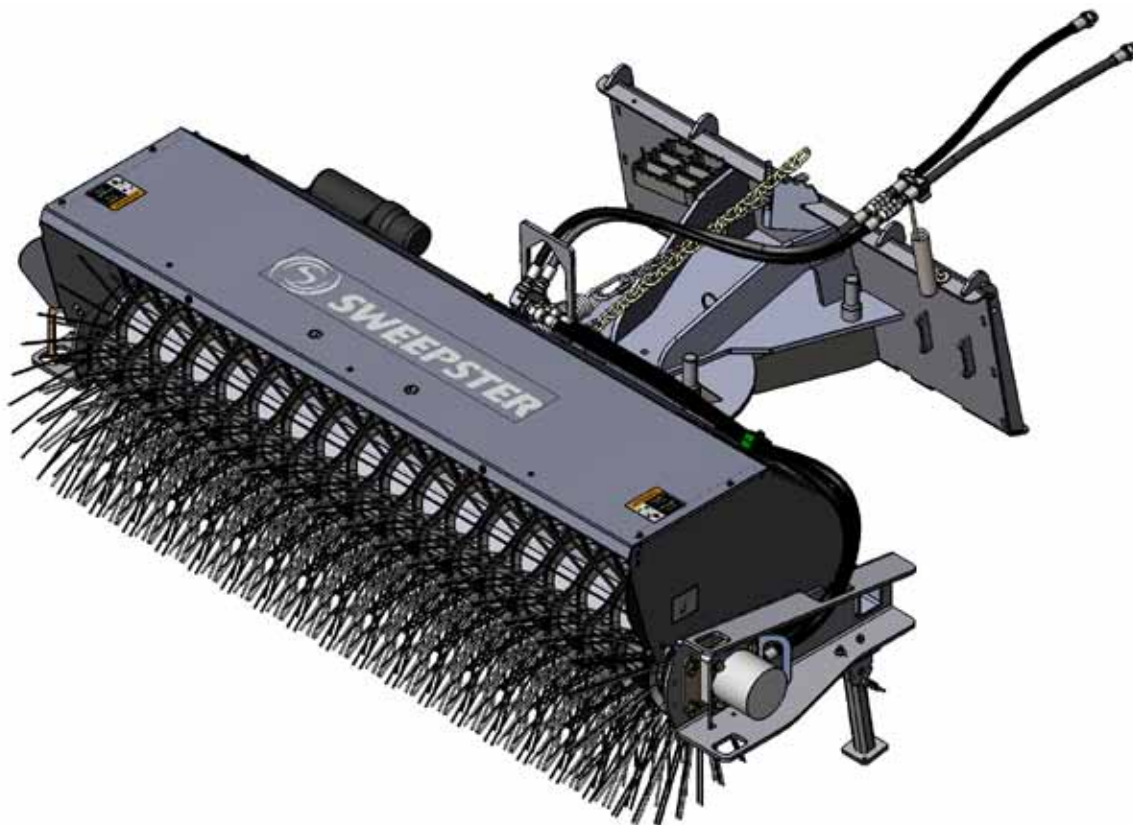
 **FFC**

 **HARLEY**

 **McMILLEN**

 **SWEEPSTER**

*The Power of Combined Excellence*



Model Number \_\_\_\_\_  
Serial Number \_\_\_\_\_

Manual Number: 51-4161  
Release Date: October 2010  
Serial Number 0911001 and Up

## Notes


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# PREFACE

## GENERAL INFORMATION

This product was carefully designed and manufactured to give you many years of dependable service. Only minor maintenance (such as cleaning and lubricating) is required to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and on any equipment on which the attachment is mounted.

**WARNING!**  **Never let anyone operate this unit without reading the “Safety Precautions” and “Operating Instructions” sections of this manual. Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.**

Unless noted otherwise, right and left sides are determined from the operator’s control position when facing the attachment.

**NOTE:** The illustrations and data used in this manual were current (according to the information available to us) at the time of printing, however, we reserve the right to redesign and change the attachment as may be necessary without notification.

## BEFORE OPERATION

The primary responsibility for safety with equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or manufacturer to obtain further assistance. Keep this manual available for reference. Provide this manual to any new owners and/or operator’s

## SAFETY ALERT SYMBOL



This is the “Safety Alert Symbol” used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and the safety of others working with you.

## SERVICE

Use only manufacturer replacement parts. Substitute parts may not meet the required standards. Record the model and serial number of your unit on the cover of this manual. The parts department needs this information to insure that you receive the correct parts.

## SOUND AND VIBRATION

“Sound pressure levels and vibration data for this attachment are influenced by many different parameters; some items are listed below (not inclusive):

- prime mover type, age, condition, with or without cab enclosure and configuration
- operator training, behavior, stress level
- job site organization, working material condition, environment

Based on the uncertainty of the prime mover, operator, and job site, it is impossible to get precise machine and operator sound pressure levels, or vibration levels for this attachment.”

# SAFETY STATEMENTS

**DANGER!**



**THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH WILL RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.**

**WARNING!**



**THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.**

**CAUTION!**



**THIS SIGNAL WORD IS USED WHERE MINOR INJURY COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.**

**NOTICE!**

**NOTICE INDICATES A PROPERTY DAMAGE MESSAGE.**



**THIS SYMBOL BY ITSELF OR USED WITH A WARNING WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.**

## GENERAL SAFETY PRECAUTIONS

**WARNING!**



### **READ MANUAL PRIOR TO INSTALL**

Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operators and maintenance personnel should read this manual as well as all manuals related to this equipment and the prime mover thoroughly before beginning installation, operation, or maintenance. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVERS MANUAL.**

**WARNING!**



### **READ AND UNDERSTAND ALL SAFETY STATEMENTS**

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing or operating this equipment.



### **KNOW YOUR EQUIPMENT**

Know your equipment's capabilities, dimensions and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to assure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn and hard to read.

**WARNING!**



### **PROTECT AGAINST FLYING DEBRIS**

Always wear proper safety glasses, goggles or a face shield when driving pins in or out or when operation causes dust, flying debris, or any other hazardous material.

## GENERAL SAFETY PRECAUTIONS

### **WARNING! LOWER OR SUPPORT RAISED EQUIPMENT**



Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground level or onto blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

### **WARNING! USE CARE WITH HYDRAULIC FLUID PRESSURE**

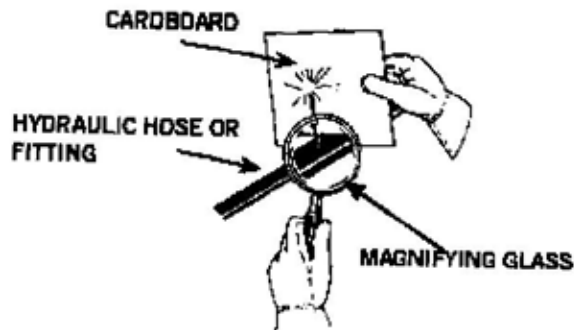


Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible. Before connecting or disconnecting hydraulic hoses, read your prime movers operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

- Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.
- If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research immediately to determine proper treatment.
- Wear safety glasses, protective clothing, and use a sound piece of cardboard or wood when searching for hydraulic leaks.

**DO NOT USE YOUR HANDS!**

**SEE ILLUSTRATION.**



### **WARNING! DO NOT MODIFY MACHINE OR ATTACHMENTS**



Modifications may weaken the integrity of the attachment and may impair the function, safety, life and performance of the attachment. When making repairs, use only the manufacturer's genuine parts, following authorized instructions. Other parts may be substandard in fit and quality. Never modify any ROPS (Roll Over Protection System) equipment or device. Any modifications must be authorized in writing by the manufacturer.

## GENERAL SAFETY PRECAUTIONS

### **WARNING! SAFELY MAINTAIN AND REPAIR EQUIPMENT**



- Do not wear loose clothing, or any accessories that can catch in moving parts. If you have long hair, cover or secure it so that it does not become entangled in the equipment.
- Work on a level surface in a well-lit area.
- Use properly grounded electrical outlets and tools.
- Use the correct tool for the job at hand. Make sure they are in good condition for the task required.
- Wear the protective equipment specified by the tool manufacturer.

### **WARNING! SAFELY OPERATE EQUIPMENT**



- Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your prime movers manual for these instructions.
- Keep all step plates, grab bars, pedals, and controls free of dirt, grease, debris, and oil.
  - Never allow anyone to be around the equipment when it is operating.
  - Do not allow riders on the attachment or the prime mover.
  - Do not operate the equipment from anywhere other than the correct operators position.
  - Never leave equipment unattended with the engine running or with this attachment in a raise position.
  - Do not alter or remove any safety feature from the prime mover or this attachment.
  - Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.

## EQUIPMENT SAFETY PRECAUTIONS

### **WARNING! EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA DUST ALONG WITH OTHER HAZARDOUS DUSTS MAY CAUSE SERIOUS OR FATAL RESPIRATORY DISEASE.**



It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause high levels of dust.

### **WARNING! REMOVE PAINT BEFORE WELDING OR HEATING.**



Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.

When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

### **WARNING! END OF LIFE DISPOSAL.**



At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all federal, state and local regulations for recycling and disposal of the fluid and components.

# EQUIPMENT SAFETY PRECAUTIONS

## **Operating the Sweeper:**

- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- When operating on slopes, drive up and down, not across. Avoid steep hillside operation which could cause the prime mover to over turn.
- Reduce speed when driving over rough terrain, on a slope, or turning to avoid overturning the vehicle.
- An operator must not use drugs or alcohol, which can change his or her alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advice on whether or not he or she can safely operate equipment.
- Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine and remove the key.

## **Transporting the Sweeper:**

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs etc. to prevent accidents. Check local government regulations that may affect you.
- Do not drive close to ditches, excavation, etc. cave in could result.

## **Maintaining the Sweeper:**

- Before performing maintenance (unless otherwise specified) lower the attachment to the ground, apply the brakes, turn off the engine and remove the key.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manual's before any repair is made. After completing maintenance or repair, check for correct functioning of the attachment. If not functioning properly, always tag "DO NOT OPERATE" until all problems are corrected.
- Worn, damaged or illegible safety decals must be replaced. New safety decals can be ordered from Sweeper.
- Never make hydraulic repairs while system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.



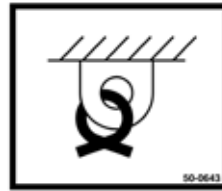
# SAFETY DECALS & LABELS



1. 41043



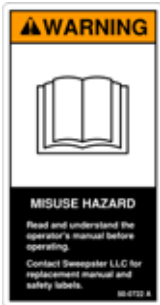
2. 50-0634



3. 50-0643



4. 50-0721



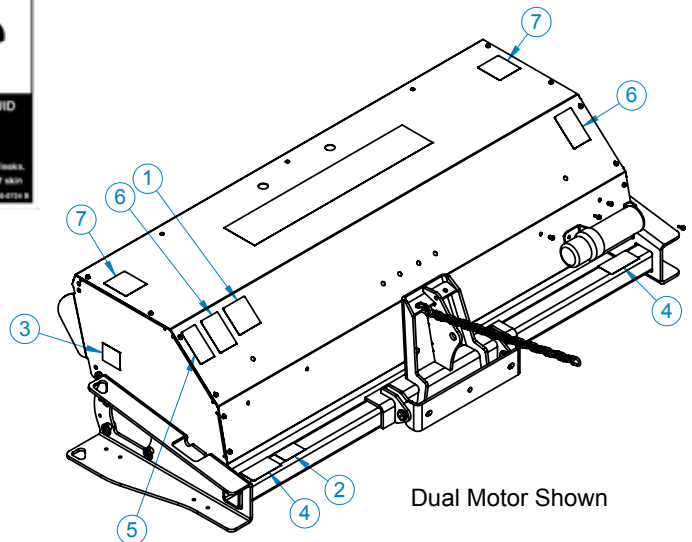
5. 50-0722



7. 50-0726



6. 50-0724



Dual Motor Shown

Item	Part	Qty	Description
1.	41043	1	Decal, Warning, Hazardous Dust
2.	50-0634	1	Label, Serial Number
3.	50-0643	2	Label, Tie Down Point
4.	50-0721	2	Label, Warning, Crush Hazard
5.	50-0722	1	Label, Warning, Misuse Hazard
6.	50-0724	2	Label, Warning, High Pressure Fluid
7.	50-0726	2	Label, Warning, Flying Objects & Entanglement

Use part numbers to order replacements for lost or damaged decals. Be sure to read all decals before operating the attachment. They contain information you need to know for both safety and longevity.

## Placement or replacement of Safety Signs


1. Clean the area of application with nonflammable solvent, and then wash the same area with soap and water.
2. Allow the surface to fully dry.
3. Remove the backing from the safety sign, exposing the adhesive surface.
4. Apply the safety sign to the position shown in the diagram above and smooth out any bubbles.

## Instructions

1. Keep all safety signs clean and legible.
2. Replace all missing, illegible, or damaged safety signs.
3. Replacement parts, for parts with safety signs attached, must also have safety signs attached.
4. Safety signs are available, free of charge, from your dealer or from SWEEPSTER.

# INSTALLATION

## Sweeper Installation

**WARNING!**  **Improper attachment of sweeper could result in injury or death.** Do not operate this machine until you have positive indication that the attachment is securely mounted.

1. Position the broom on a level surface.
2. Enter the prime mover.
3. Fasten the safety restraints.
4. Start the engine.
5. Disengage the parking brake.
6. Align the attachment mechanism with the mounting on the broom, attach to the prime mover. Follow the attaching procedure in the prime mover owners manual.
7. Engage the parking brake and shut down the prime mover. Be sure to relieve pressure to the auxiliary hydraulic lines.
8. Unfasten safety restraints and exit the prime mover.
9. Lock jack stands in stowed position. (if available)
10. Ensure that the hydraulic quick couplers are clean. Connect hydraulic lines for the broom to the prime mover. Twist the collar of the quick couplers one quarter of a turn in order to secure the hydraulic connections.
11. While the loader arms are lowered, visually inspect the attachment mechanism to ensure that it is securely mounted.
12. Enter prime mover, fasten safety restraints and start the prime mover.
13. Carefully raise the loader and cycle the rollback/dump cylinders to check clearances, that limiting stops make proper contact and verify that all mounting procedures have been successfully completed. Contact SWEEPSTER for instructions if the limiting stops do not contact properly.

# OPERATION

## INTENDED USE:

This sweeper is designed solely for the use in construction cleanup, road maintenance and similar operations. Use in any other way is considered contrary to the intended use. Compliance with and strict adherence to operation, service and repair conditions as specified by the manufacturer, are also essential elements of the intended use.

**CAUTION!** **A SWEEPER IS A DEMANDING MACHINE.** Only fully trained operators or trainee operators under supervision of a fully trained person should use this machine.



Before operating sweeper:

- Learn sweeper and prime mover controls in an off-road location.
- Be sure that you are in a safe area, away from traffic or other hazards.
- Check all hardware holding the sweeper to the host machine, making sure it is tight.
- Replace any damaged or fatigued hardware with properly rated fasteners.
- Make sure all hydraulic hardware and hydraulic fittings are tight.
- Replace any damaged or fatigued fittings or hoses.
- Remove from the sweeping area all property that could be damaged by flying debris.
- Be sure all persons not operating the sweeper are clear of the sweeper discharge area.
- Always wear proper apparel such as a long sleeved shirt buttoned at the cuffs; safety glasses, goggles or a face shield; ear protection; and a dust mask.

While operating sweeper:

- When operating sweeper, adhere to all government rules, local laws and other professional guidelines for your sweeping application.
- Before leaving the operators area for any reason, lower the sweeper to the ground. Stop the prime mover engine, set the brakes and remove the key from the ignition.
- Minimize flying debris - use the slowest rotating speed that will do the job.
- Keep hands, feet, hair and other loose clothing away from all moving parts.
- Leave the brush hood (shield) and all other shields and safety equipment in place when operating the sweeper.
- Be aware of extra weight and width a sweeper adds. Reduce travel speed accordingly.
- When sweeping on rough terrain, reduce speed to avoid “bouncing” the sweeper. Loss of steering can result.

# OPERATION

- Never sweep toward people, buildings, vehicles or other objects that can be damaged by flying debris.
- Only operate the sweeper while you are in the seat of the prime mover. The seat belt must be fastened while you operate the prime mover. Only operate the controls while the engine is running. Protective glasses must be worn while you operate the prime mover and while you operate the sweeper.
- While you operate the sweeper slowly in an open area, check for proper operation of all controls and all protective devices. Note any repairs needed during operation of the sweeper. Report any needed repairs.

# OPERATION

To sweep:

1. **Manual angle only** - Swing the brush head assembly the direction that you want to direct debris.
2. Start the prime mover at idle and raise the brush.
3. **Hydraulic angle only** - Swing the brush head assembly the direction that you want to direct debris.
4. Engage the brush and then lower it to the ground.
5. Increase prime mover engine rpm to sweeping speed.
6. Travel forward at 5 mph (8 kph) or less.

## Leveling

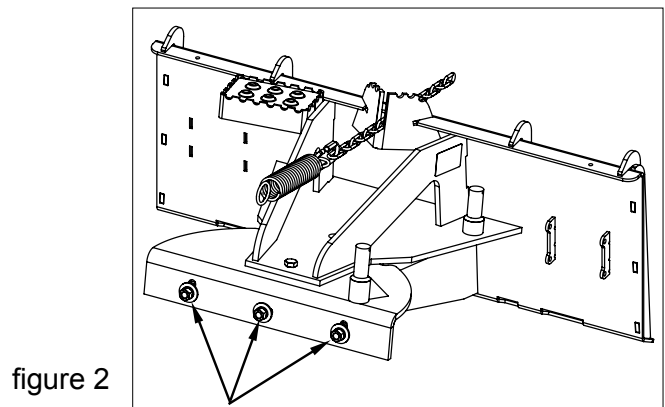
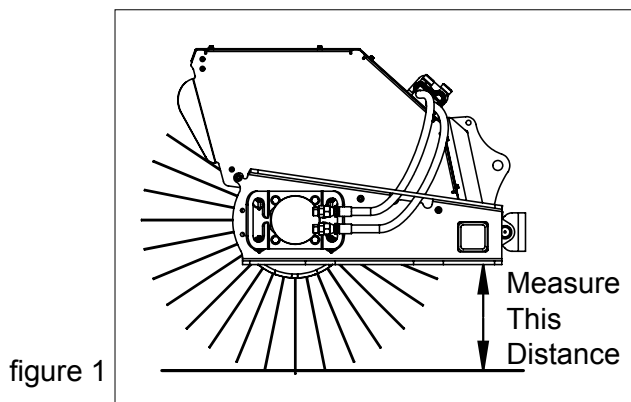
Level the sweeper for even brush wear and effective use.

**CAUTION!** Avoid injury. Before adjusting the sweeper, always turn off the sweeper and the prime mover engine and remove the key.



1. Move the sweeper to a flat, paved surface.
2. Lower the brush head assembly so the brush is 2 inches (51 mm) above the ground.
3. Engage the parking brake and shut down the prime mover. Be sure to relieve pressure to the auxiliary hydraulic lines.
4. Unfasten safety restraints and exit prime mover.
5. Check if the swing assembly is level by using a bubble level. To make corrections: Adjust tilt cylinders. If the front of the swing assembly is high, extend tilt cylinders. If low, retract cylinders.
6. Position the brush head assembly straight ahead. On each side, measure from the brush frame to the ground (figure 1). If measurements are not equal:

Loosen hardware that attaches the swing assembly to the brush head assembly; lower the high side of the brush head until both sides are an equal distance above the ground. Tighten the hardware. (figure 2)



## OPERATION

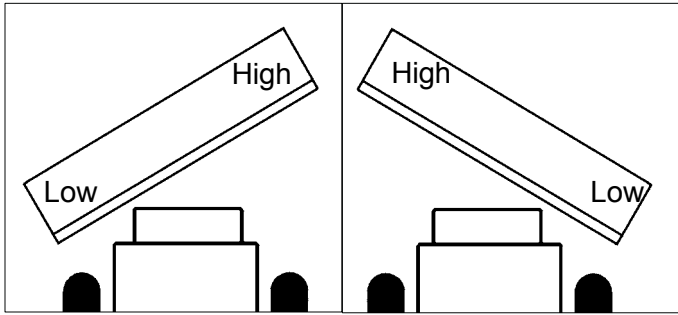


figure 3

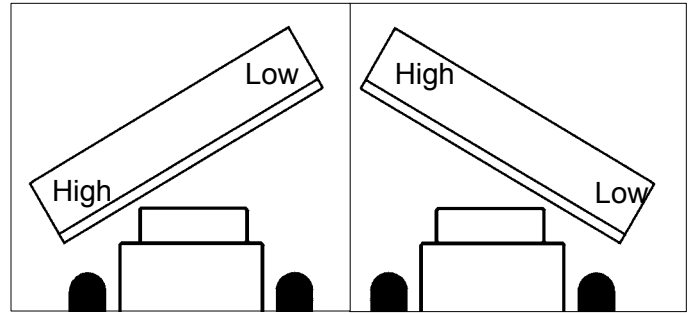


figure 5

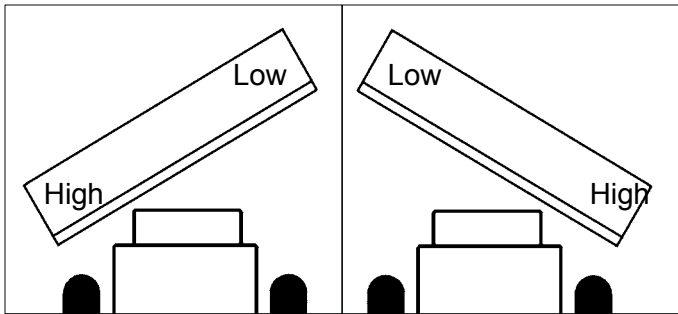


figure 4

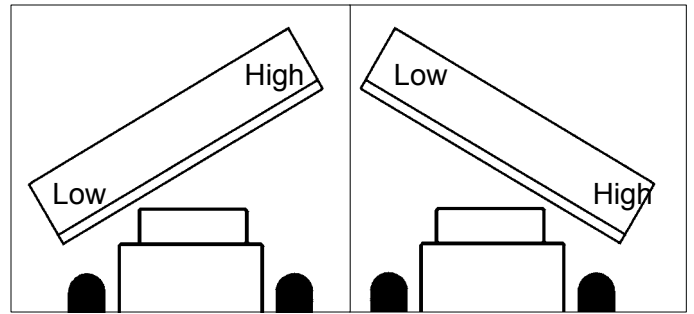


figure 6

7. Measure to see if the brush head assembly is level when angled. First, angle the brush head to the right. Measure as in step 4. Then, angle the brush head to the left. Measure again. If measurements are equal, the sweeper is level. If not, proceed with this step.

To correct leveling problems shown in:

- figure 3, extend tilt cylinders.
- figure 4, retract tilt cylinders.
- figure 5, loosen hardware that attaches the swing assembly to the brush head assembly; lower the left-hand side of the brush head until both sides are an equal distance above the ground. Tighten the hardware.
- figure 6, loosen hardware that attaches the swing assembly to the brush head assembly; lower the right-hand side of the brush head until both sides are an equal distance above the ground. Tighten the hardware.

# OPERATION

## Setting Brush Pattern

A properly adjusted brush offers the best sweeper performance. To check the brush pattern:

1. Move the sweeper to a dusty, flat surface.
2. Set the prime mover's parking brake and leave the engine running.
3. Start the sweeper at a slow speed: lower it so the bristle tips touch the ground. Run the sweeper in a stationary position for 10 seconds.
4. Raise the sweeper and back away; switch off the engine and remove the key. The brush pattern left in the dust should be 2-4 inches (51-102 mm) wide, running the length of the brush. (Compare the swept area with figure 1.)
5. Adjust the brush pattern as necessary according to instructions found in adjusting the Spring-Chain Assembly.

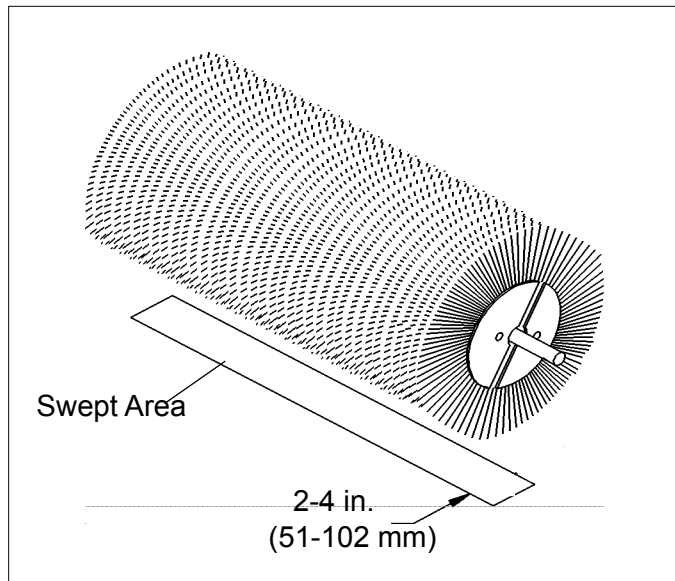


Figure 1

## Adjusting Spring-Chain Assembly

The spring-chain assembly allows the brush head to pivot up and down.

To adjust the brush pattern:

1. Lower the sweeper.
2. Tighten the tie down chain and lower the sweeper so the tie down chain supports the weight.  
To adjust the tie down chain:
  - a. Extend tilt cylinders.
  - b. Tighten the tie down chain.
  - c. Retract tilt cylinders.
3. Move the spring chain forward in the swing assembly chain holder to lower the brush head or backward in the holder to raise it.

# OPERATION

## Service & Repair

**CAUTION ! DO NOT MODIFY THE SWEEPER IN ANY WAY.** Personal injury could result. If you have questions, contact your dealer or SWEEPSTER.



Repair or adjust the sweeper in a safe area, away from traffic and other hazards.

Before adjusting or servicing, lower the sweeper to the ground, set parking brake, shut down the prime mover and remove the key from the ignition.

When working on or around the sweeper, safely secure it from falling or shifting.

## Service & Repair - Hydraulic Safety

Stop the prime mover engine and release hydraulic pressure before servicing or adjusting sweeper hydraulic systems.

**WARNING! Escaping hydraulic fluid can have enough pressure to penetrate the skin, causing serious personal injury.**



Check lines, tubes and hoses carefully. Do not use your hand to check for leaks. Use a board or cardboard to check for leaks. Tighten all connections to the recommended torque.

Do not bend high pressure lines. Do not strike high pressure lines, Do not install bent lines, bent tubes, or kinked hoses. Do not install damaged lines, damaged tubes, or damaged hoses.

Repair loose lines, loose tubes, and loose hoses. Repair damaged lines, damaged tubes, and damaged hoses. Leaks can cause fires. See your SWEEPSTER dealer for repair or replacement parts.

Replace the parts if any of the following conditions are present:


- The end fittings are damaged or leaking.
- The outer covering is chafed or cut.
- The reinforcing wire layer is exposed.
- The outer covering is ballooning locally.
- The hose is kinked or crushed.
- The hoses have been pulled or stretched.

Make sure that all clamps, guards, and shields are installed correctly.



# OPERATION

## Removing the Sweeper

**WARNING!**  **Serious injury or death may result from disengaging the sweeper when the sweeper is in an unstable position or carrying a load.** Place the sweeper in a stable position before disengaging.

**NOTICE!** **Hoses for the sweepers must be removed before the quick attach is disengaged. Pulling the sweeper with the hoses could result in damage to the prime mover or the sweeper.**

1. Lower the broom to the ground.
2. Engage the parking brake and shut down the prime mover. Be sure to relieve pressure to the auxiliary hydraulic lines.
3. Unfasten safety restraints and exit prime mover.
4. Lock jack stands in lowered position. (if available)
5. Disconnect the broom hydraulic lines from the prime mover. Connect quick couplers together to keep clean.
6. Disengage attachment locking mechanism. (mechanical type)
7. Enter prime mover, fasten safety restraints and start the prime mover.
8. Disengage attachment mechanism. (hydraulic type)
9. Disengage the parking brake, and back away from the broom.

## General Storage:

**NOTICE!** Do not store the sweeper with weight on the brush. Weight will deform the bristles, destroying the sweeping effectiveness. To avoid this problem, place the sweeper on blocks or use storage stands.

Do not store polypropylene brushes in direct sunlight. The material can deteriorate and crumble before the bristles are worn out. Keep polypropylene brush material away from intense heat or flame.

### Storage:

- Clean the unit thoroughly, removing all mud, dirt and grease.
- Inspect for visible signs of wear, breakage or damage. Order any parts required and make the necessary repairs to avoid delays upon removal from storage.
- Tighten loose nuts, capscrews and hydraulic connections.
- Coat exposed portions of the cylinder rods with grease.
- Lubricate grease fittings.

# OPERATION

## General Storage Continued

- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage.
- Store unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

### Additional Precautions for Long Term Storage:

- Touch up all unpainted surfaces with paint to avoid rust.
- Inflate tires to recommended tire pressure.
- Fill fuel tank and hydraulic oil tank to maximum.
- Check antifreeze properties and drain fluids as appropriate.

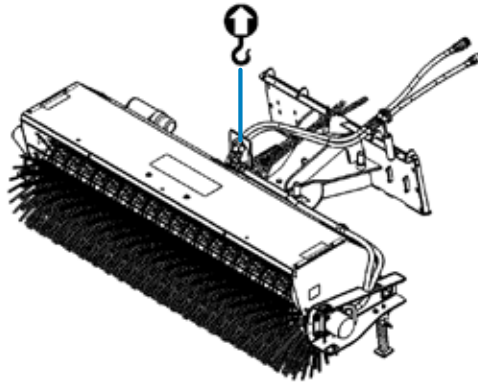
### Removal from Storage:

- Remove cover.
- Wash unit and replace any damage and/or missing parts.
- Lubricate grease fittings.
- Check hydraulic hoses for damage and replace as necessary.


# OPERATION

## LIFT POINTS

Lifting points are identified by lifting decals where required. Lifting at other points is unsafe and can damage attachment. Do not attach lifting accessories around cylinders or in any way that may damage hoses or hydraulic components. See diagram:

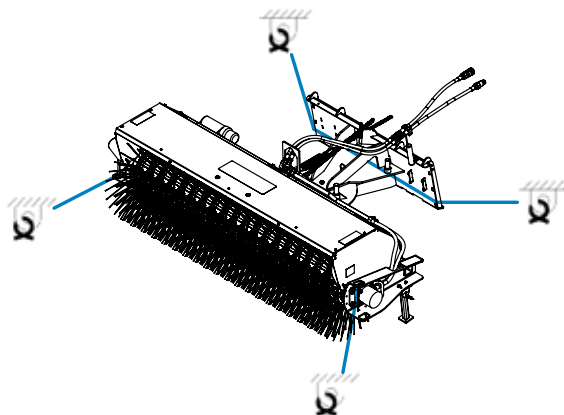


- Attach lifting accessories to unit at recommended lifting points.
- Bring lifting accessories together to a central lifting point.
- Lift gradually, maintaining the equilibrium of the unit.


**WARNING!**  **USE LIFTING ACCESSORIES (CHAINS, SLINGS, ROPES, SHACKLES AND ETC.) THAT ARE CAPABLE OF SUPPORTING THE SIZE AND WEIGHT OF YOUR ATTACHMENT. Secure all lifting accessories in such a way to prevent unintended disengagement. Failure to do so could result in the attachment falling and causing serious personal**

## TIE DOWN POINTS

Tie down points are identified by tie down decals where required. Securing to trailer at other points is unsafe and can damage attachment. Do not attach tie down accessories around cylinders or in any way that may damage hoses or hydraulic components. See diagram:



- Attach tie down accessories to unit as recommended.
- Check unit stability before transporting.

**WARNING!**  **VERIFY THAT ALL TIE DOWN ACCESSORIES (CHAINS, SLINGS, ROPES, SHACKLES AND ETC.) ARE CAPABLE OF MAINTAINING ATTACHMENT STABILITY DURING TRANSPORTING and are attached in such a way to prevent unintended disengagement or shifting of the unit. Failure to do so could result in serious personal injury or death.**

# MAINTENANCE SCHEDULE

## Maintenance Schedule

Procedure	Before Each Use	After Each Use	100 Hours	500 Hours	See Prime Mover Manual
<b>Brush Head Assembly</b> - Level	✓				
<b>Brush Pattern</b> - Check (See Pattern Adjustment)	✓				
<b>Cylinders</b> - Retract rods		✓			
- Grease threaded and ball ends to prevent rust.		✓			
<b>Filter, Air, Prime Mover</b> - Clean					✓
<b>Fittings/Hoses, Hydraulic</b> - Check for leaks/Tighten Check for damage	✓				
<b>Fittings, Zerk</b> - Grease (See lubrication points)	✓				
<b>Oil, Hydraulic</b> - Check level	✓				
<b>Hardware</b> - Check for tightness	✓				

## Oil Cleanliness Requirements

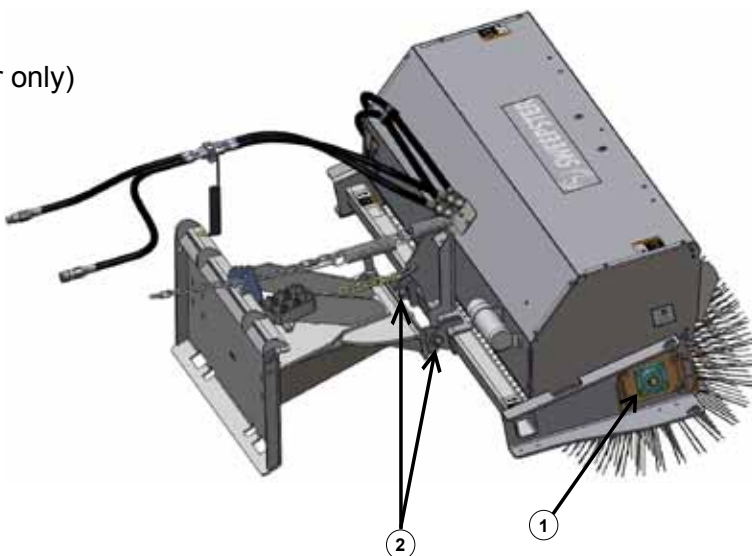
**NOTICE!** All hydraulic fluid shall be filtered before use in any SWEEPSTER product to obtain the ISO cleanliness standard of 17-14 or better, unless explicitly specified otherwise.

## Lubrication Points

The following grease fittings should be greased before each use. See figure for locations.

1. Core bearing (1 fitting - single motor only)
2. Brush Head Pivot (2 fitting)

Not Shown:  
Hydraulic Angle Cylinder (1 fitting)



## MAINTENANCE RECORD

[illegible]

# MAINTENANCE

## Replacing Brush Sections

1. Remove motor mount retainer pins. Retain hardware for reinstallation. Remove motor mount(s).
2. Remove idler bearing shaft mounting plate retainer pins from side. Retain hardware for reinstallation. (Single motor only)
3. Remove core from brush head assembly.
4. Remove one half of bearing mount plate from bearing.
5. Remove retaining plate from core assembly.
6. Remove old sections.
7. Install new sections by doing the following:
  - a. Slide the first section onto the core with the drive pins on each side of a tube. Make sure that the drive pins angle up. (figure 1)
  - b. Install a second section with drive pins rotated 180° from those on the first section. (figure 2)
  - c. Continue installing sections, rotating each section 180° until the core is full.
8. Re-attach the section retainer and bearing mounting plate with previously removed hardware.
9. Lay core on ground. Lower frame over core.
10. Re-attach bearing mounting plate with previously removed hardware.
11. Re-attach motor mount with hardware removed in first step.

Worn Section Standard				Reference Information	
Section OD, New	Ring ID	Section OD, Worn	Exposed Bristle, Worn	Bristle Length	Exposed Bristle, New
24	6.38	17	3.8	8.50	7.5
26	8.00	18	4.0	9.00	8.0
32	10.00	22	5.0	11.00	10.0
36	10.00	24	6.0	13.00	12.0
36	10.63	25	6.0	12.69	11.4
46	19.38	34	6.0	13.31	12.1

# MAINTENANCE

## Replacing Brush Sections

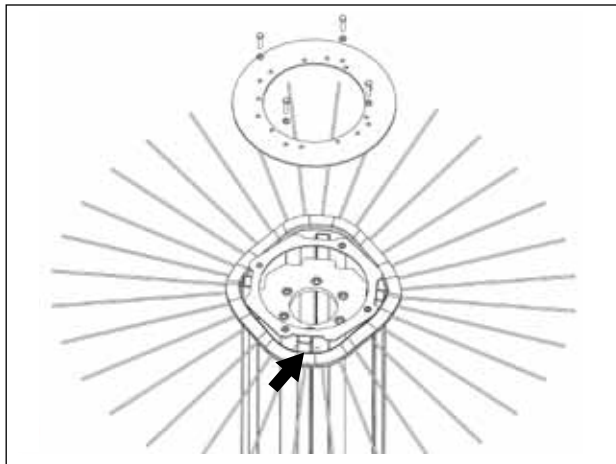


figure 1

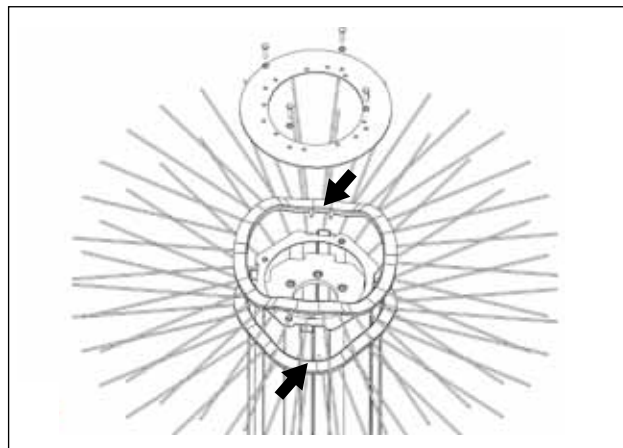


figure 2



# TROUBLESHOOTING

## Brush Head Assembly

Problem	Possible Cause	Possible Solution
Brush rotates in wrong direction	Hoses installed incorrectly	Switch hoses at bulk head fittings
Brush slows or stops when sweeping	Brush pattern too wide	Adjust brush pattern to 2-4 inches (5-10cm) wide: see: Adjusting Brush Pattern
	Travel speed too fast	Travel no more than 5 mph (8 kph) while sweeping (2-3 mph recommended)
	Trying to sweep too much material at once	Make several passes with sweeper
	Relief pressure set too low	Set relief pressure to 2000 psi (138.0 bars)
	Filter plugging	Change or clean hydraulic oil filter
Brush head assembly “bounces” during sweeping	Travel speed too fast and/or brush speed too slow	Find correct combination of ground and brush speeds: do not travel at more than 5 mph (8 kph)
Brush wears into cone shape	Sweeper is not level	Level sweeper before each use: see: Leveling
	Tires on prime mover at different pressures or are different sizes	Check tire sizes and rating: make corrections as necessary
Brush wears very quickly	Brush pattern too wide	Adjust brush pattern to 2-4 inches (5-10cm) wide: see: Setting Brush Pattern



# TROUBLESHOOTING

## Spring-Chain Assemblies

Problem	Possible Cause	Possible Solution
Springs on spring-chain assemblies stretching	Transport chain too loose when traveling between job sites	Adjust according to Adjustment: Transport Chain
	Travel speeds too fast when sweeping	Do not travel at speeds over 5 mph (8 kph).

## Hydraulic Cylinders - Lift & Swing

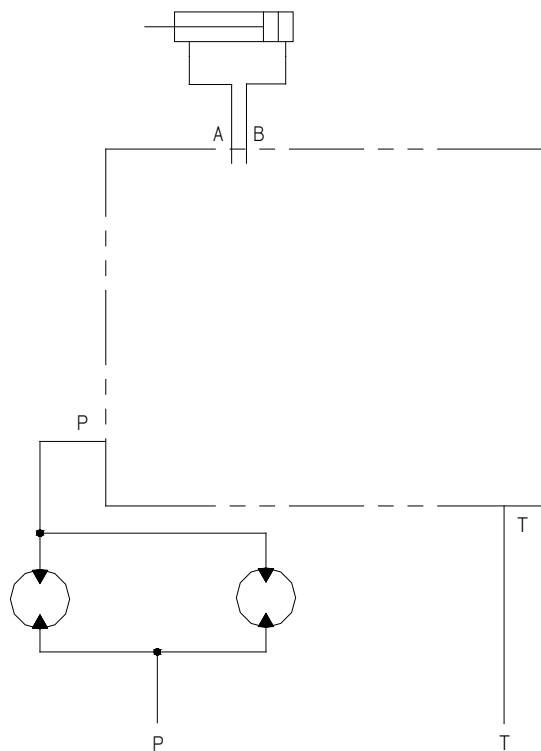
Problem	Possible Cause	Possible Solution
Hydraulic cylinder neither extends nor retracts	<u>Manual valve</u> - Control rods not connected or are binding	Check control rod linkage; make sure all parts are connected and are not binding; fix if necessary
	<u>Electric valve</u> - No power from controls because wires are broken or disconnected	Reconnect wires if disconnected; replace wires if broken
	<u>Electric valve</u> - No power from controls because switch is broken	Replace switch
	<u>Both types of valves</u> - Hydraulic oil level too low	Fill tank to 2-3 inches (51-76mm) from top of tank with ISO VG-46 oil
	<u>Both types of valves</u> - Hoses or fittings loose or disconnected	Tighten hoses and fittings
	<u>Both types of valves</u> - Restriction in hoses	Remove bends in hoses, remove obstructions inside hoses
Hydraulic cylinder only extends or only retracts	<u>Electric valve</u> - Set screw in flow divider on manifold out of adjustment	Loosen jam nut and then turn set screw in until it stops; turn set screw out 1 1/2 turns; tighten jam nut
	<u>Electric valve</u> - Dirt or debris in spools	Contact Sweepster Technical Service
Hydraulic cylinder extends or retracts too quickly	<u>Manual valve</u> - Flow too high because restrictor fitting missing from cylinder	Reinstall restrictor fitting on barrel end of cylinder
	<u>Manual valve</u> - Flow too high even though restrictor fitting is installed	Contact Sweepster for smaller orifice fitting

# TROUBLESHOOTING

## Hydraulic System

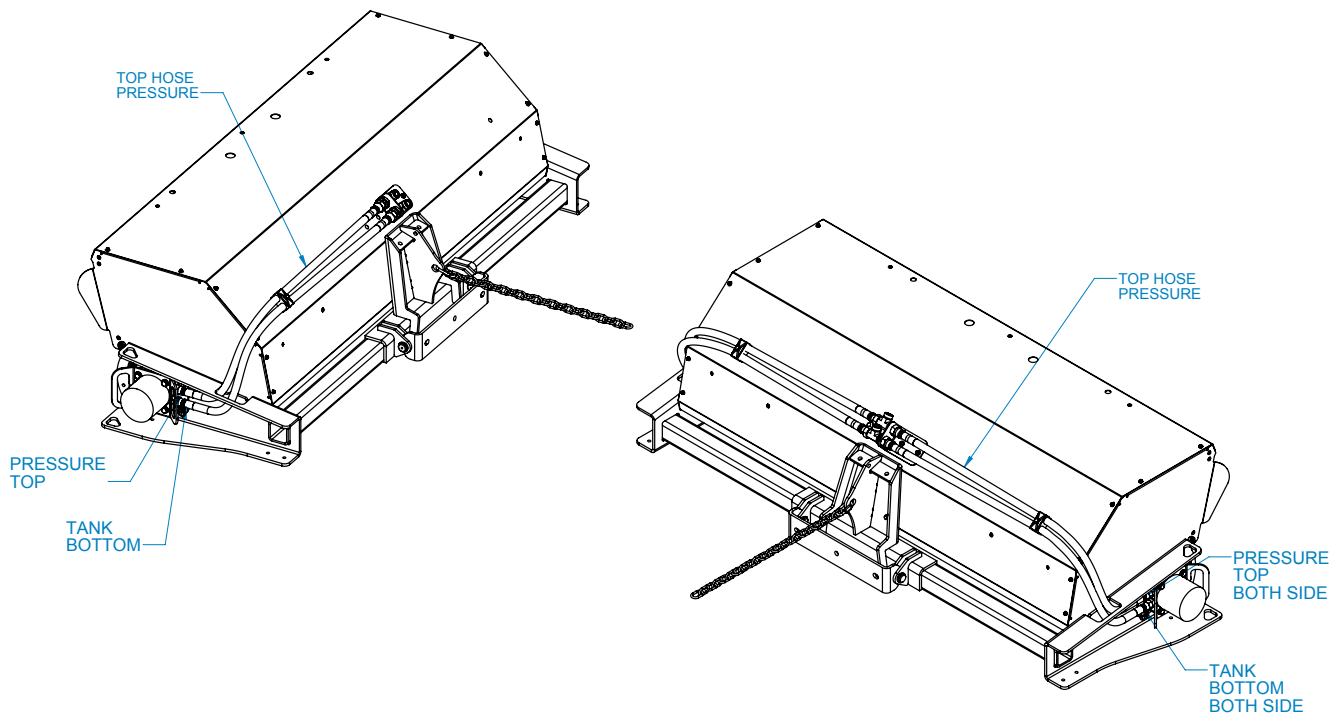
Problem	Possible Cause	Possible Solution
Hydraulic system overheats	Hydraulic oil level too low	Add hydraulic oil to tank until it comes to 2 inches (51mm) from top
	Restriction in hoses	Remove bends in hoses; remove obstructions inside hoses / Replace Hose
	Host pump flow rate exceeds maximum rate of broom	Contact host manufacturer for proper flow control method
Hydraulic motor seals leak	Back pressure exceeds 1000 psi	Contact Sweepster
	Motor is failing	High number of hours on motor; Contact dealer to rebuild or replace

## Hydraulic Schematic



# TROUBLESHOOTING

## Hydraulic Hose Routings



**Manual Angle:** Connect pressure line to female quick disconnect. Connect return line to male quick disconnect.

**Hydraulic Angle:** Connect pressure line to female quick disconnect . Connect return line from brush motor(s) to “P” port on manifold. Connect “T” port on manifold to male quick disconnect.

**Note:**

Quick Disconnect Set-Up

Your broom comes equipped with standard ISO 16028 hydraulic quick disconnects (QD's). They are factory installed using the broom female QD as the pressure line. If your skid steer loader male QD is not the pressure line you will need to swap the positions of the broom QD's.

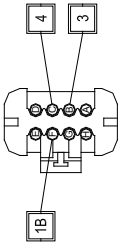
Wiring Harness

TROUBLESHOOTING

Item Part QtyDescription

- 1. 07-3152 1 Circuit Breaker
- 2. 07-0868 1 Switch

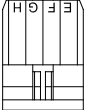
LAF9444 WIRE HARNESS			
WIRE NO.	GAUGE	IDENTIFICATION	APPLICATION
		FROM	TO
1A	16	BLACK	BATTERY +12V
1B	16	BLACK	PACKARD CONN. PIN F
2A	16	RED	BATTERY +
2B	16	RED	CIRCUIT BREAKER 10A-AUX
3	16	RED	CIRCUIT BREAKER 10A-B-DEPTH
4	16	YELLOW	PACKARD CONN. PIN C-TILT



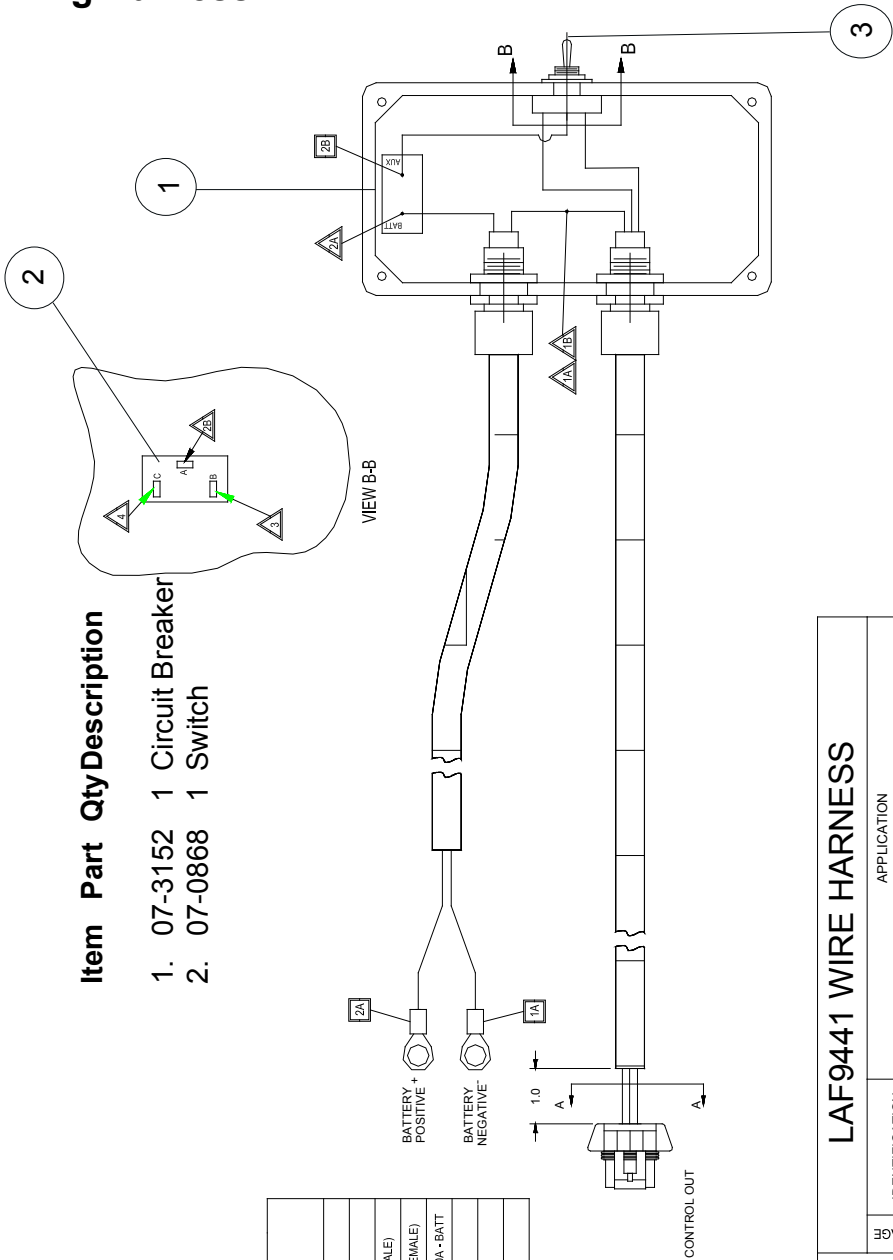
PLUG - A, D, E, G & H  
VIEW "A-A"



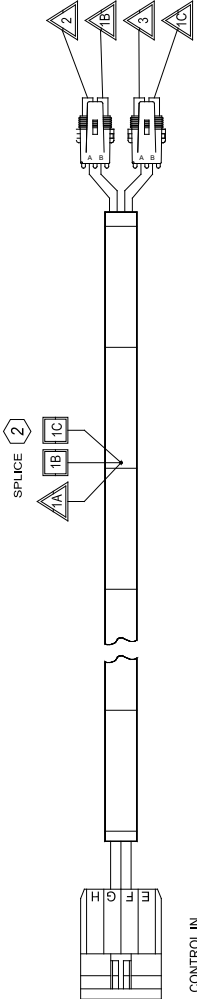
A.D.E.G.H. PLUG



CONTROL IN

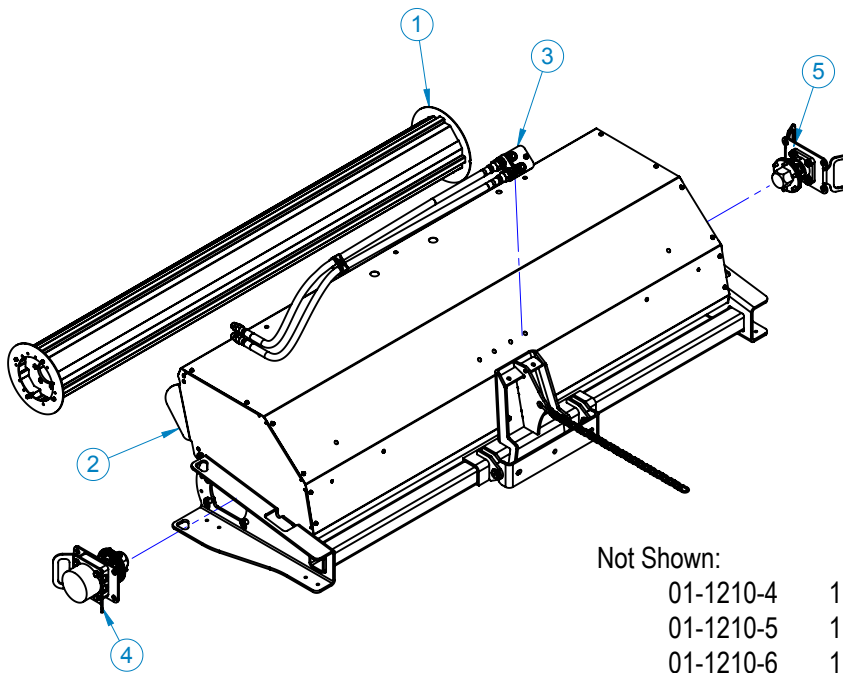


LAF9441 WIRE HARNESS			
WIRE NO.	GAUGE	IDENTIFICATION	APPLICATION
		FROM	TO
1A	16	BLACK	PACKARD PIN F
1B	16	BLACK	ULTRA SONIC SPLICE
1C	16	BLACK	ULTRA SONIC SPLICE
2	16	RED	PACKARD PIN B
3	16	YELLOW	PACKARD PIN C



SPLICE (2)

# SINGLE MOTOR BRUSH HEAD



NOTE:  
TOP PORT PRESSURE  
BOTTOM PORT RETURN

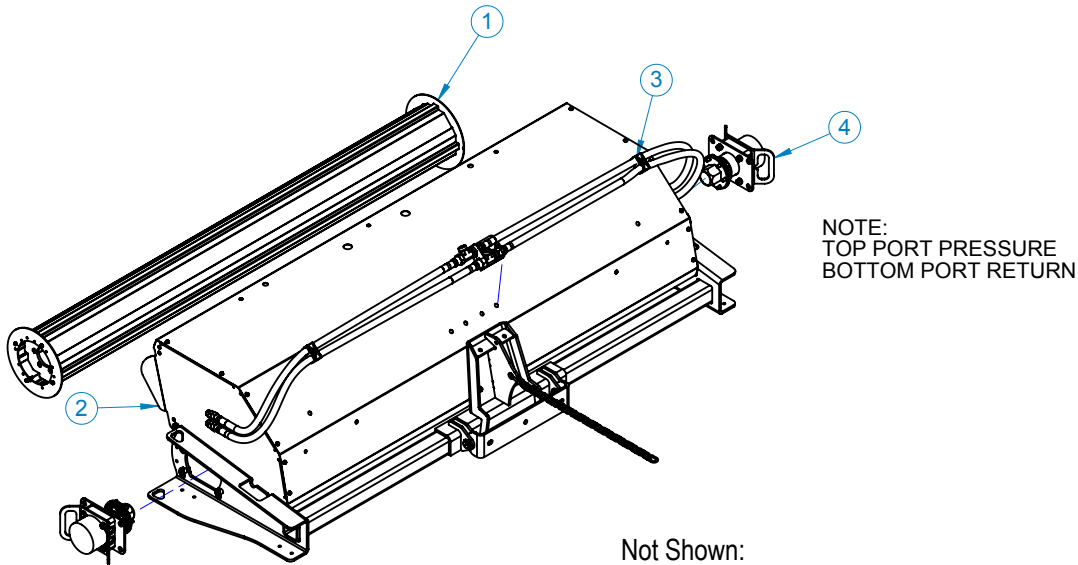
## Not Shown:

01-1210-4	1	Set Section, 32, 10, Poly, Convoluted, 4 Ft
01-1210-5	1	Set Section, 32, 10, Poly, Convoluted, 5 Ft
01-1210-6	1	Set Section, 32, 10, Poly, Convoluted, 6 Ft
01-1210-7	1	Set Section, 32, 10, Poly, Convoluted, 7 Ft
01-1210-8	1	Set Section, 32, 10, Poly, Convoluted, 8 Ft
01-1209-4	1	Set Section, 32, 10, Mixed, Convoluted, 4 Ft
01-1209-5	1	Set Section, 32, 10, Mixed, Convoluted, 5 Ft
01-1209-6	1	Set Section, 32, 10, Mixed, Convoluted, 6 Ft
01-1209-7	1	Set Section, 32, 10, Mixed, Convoluted, 7 Ft
01-1209-8	1	Set Section, 32, 10, Mixed, Convoluted, 8 Ft
01-1213-4	1	Set Section, 32, 10, Wire, Convoluted, 4 Ft
01-1213-5	1	Set Section, 32, 10, Wire, Convoluted, 5 Ft
01-1213-6	1	Set Section, 32, 10, Wire, Convoluted, 6 Ft
01-1213-7	1	Set Section, 32, 10, Wire, Convoluted, 7 Ft
01-1213-8	1	Set Section, 32, 10, Wire, Convoluted, 8 Ft
01-1214-4	1	Set Section, 32, 10, 1/2 & 1/2, Convoluted, 4 Ft
01-1214-5	1	Set Section, 32, 10, 1/2 & 1/2, Convoluted, 5 Ft
01-1214-6	1	Set Section, 32, 10, 1/2 & 1/2, Convoluted, 6 Ft
01-1214-7	1	Set Section, 32, 10, 1/2 & 1/2, Convoluted, 7 Ft
01-1214-8	1	Set Section, 32, 10, 1/2 & 1/2, Convoluted, 8 Ft

## Item Part Qty Description

1.	28-10095-4	1	Assembly, Core 4 Ft
	28-10095-5	1	Assembly, Core 5 Ft
	28-10095-6	1	Assembly, Core 6 Ft
	28-10095-7	1	Assembly, Core 7 Ft
	28-10095-8	1	Assembly, Core 8 Ft
2.	28-10309-4	1	Assembly, Brush Frame 4 Ft
	28-10309-5	1	Assembly, Brush Frame 5 Ft
	28-10309-6	1	Assembly, Brush Frame 6 Ft
	28-10309-7	1	Assembly, Brush Frame 7 Ft
	28-10309-8	1	Assembly, Brush Frame 8 Ft
3.	28-10313-4	1	Assembly, Hydraulic Hose 4 Ft
	28-10313-5	1	Assembly, Hydraulic Hose 5 Ft
	28-10313-6	1	Assembly, Hydraulic Hose 6 Ft
	28-10313-7	1	Assembly, Hydraulic Hose 7 Ft
	28-10313-8	1	Assembly, Hydraulic Hose 8 Ft
4.	28-9849-1	1	Assembly, Motor, Hydraulic, 18.3 CI
	28-9849-2	1	Assembly, Motor, Hydraulic, 28.3 CI
5.	28-9862	1	Assembly, Idler

# DUAL MOTOR BRUSH HEAD

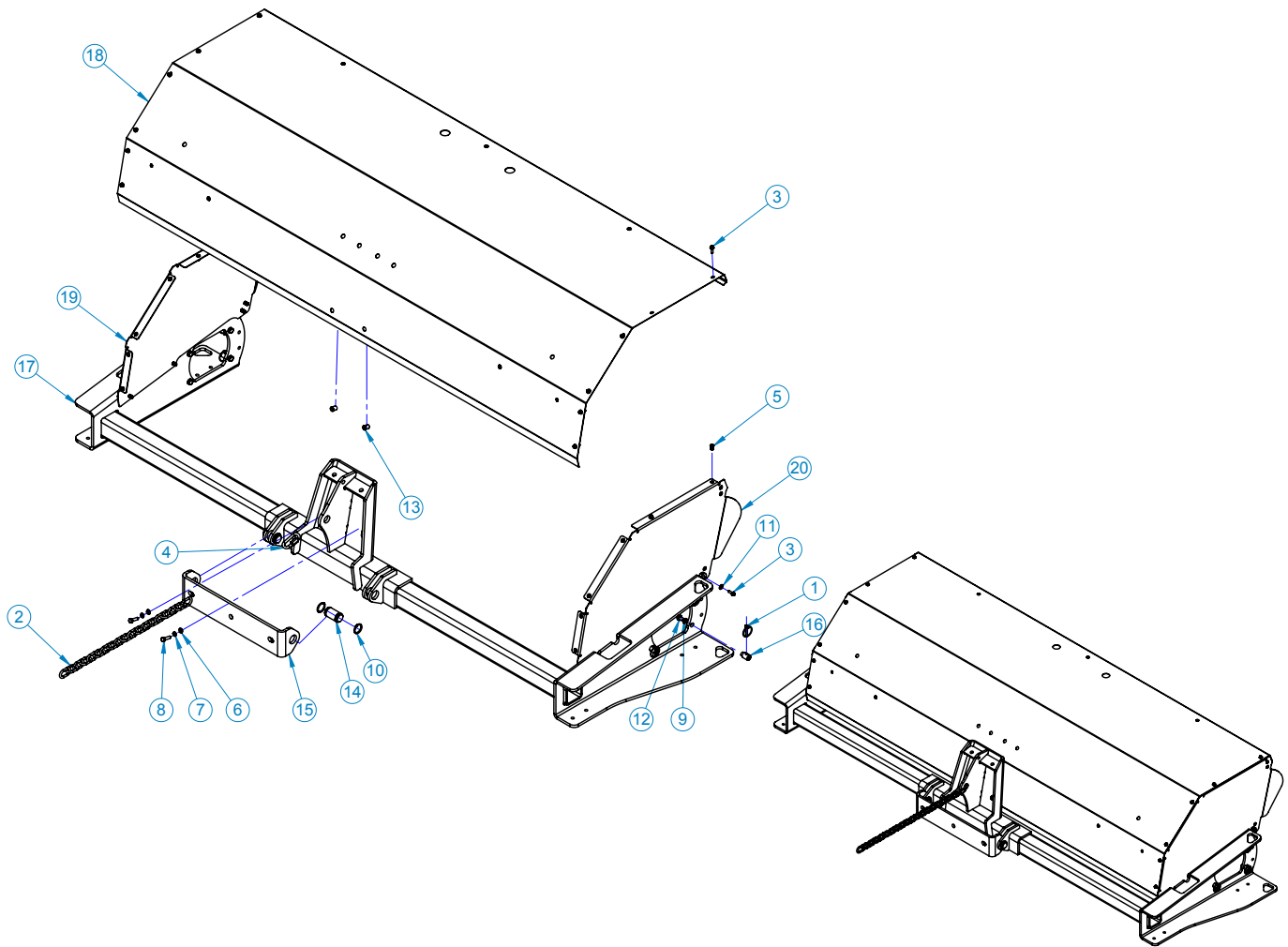


## Not Shown:

01-1210-4	1	Set Section, 32, 10, Poly, Convolved, 4 Ft
01-1210-5	1	Set Section, 32, 10, Poly, Convolved, 5 Ft
01-1210-6	1	Set Section, 32, 10, Poly, Convolved, 6 Ft
01-1210-7	1	Set Section, 32, 10, Poly, Convolved, 7 Ft
01-1210-8	1	Set Section, 32, 10, Poly, Convolved, 8 Ft
01-1209-4	1	Set Section, 32, 10, Mixed, Convolved, 4 Ft
01-1209-5	1	Set Section, 32, 10, Mixed, Convolved, 5 Ft
01-1209-6	1	Set Section, 32, 10, Mixed, Convolved, 6 Ft
01-1209-7	1	Set Section, 32, 10, Mixed, Convolved, 7 Ft
01-1209-8	1	Set Section, 32, 10, Mixed, Convolved, 8 Ft
01-1213-4	1	Set Section, 32, 10, Wire, Convolved, 4 Ft
01-1213-5	1	Set Section, 32, 10, Wire, Convolved, 5 Ft
01-1213-6	1	Set Section, 32, 10, Wire, Convolved, 6 Ft
01-1213-7	1	Set Section, 32, 10, Wire, Convolved, 7 Ft
01-1213-8	1	Set Section, 32, 10, Wire, Convolved, 8 Ft
01-1214-4	1	Set Section, 32, 10, 1/2 & 1/2, Convolved, 4 Ft
01-1214-5	1	Set Section, 32, 10, 1/2 & 1/2, Convolved, 5 Ft
01-1214-6	1	Set Section, 32, 10, 1/2 & 1/2, Convolved, 6 Ft
01-1214-7	1	Set Section, 32, 10, 1/2 & 1/2, Convolved, 7 Ft
01-1214-8	1	Set Section, 32, 10, 1/2 & 1/2, Convolved, 8 Ft

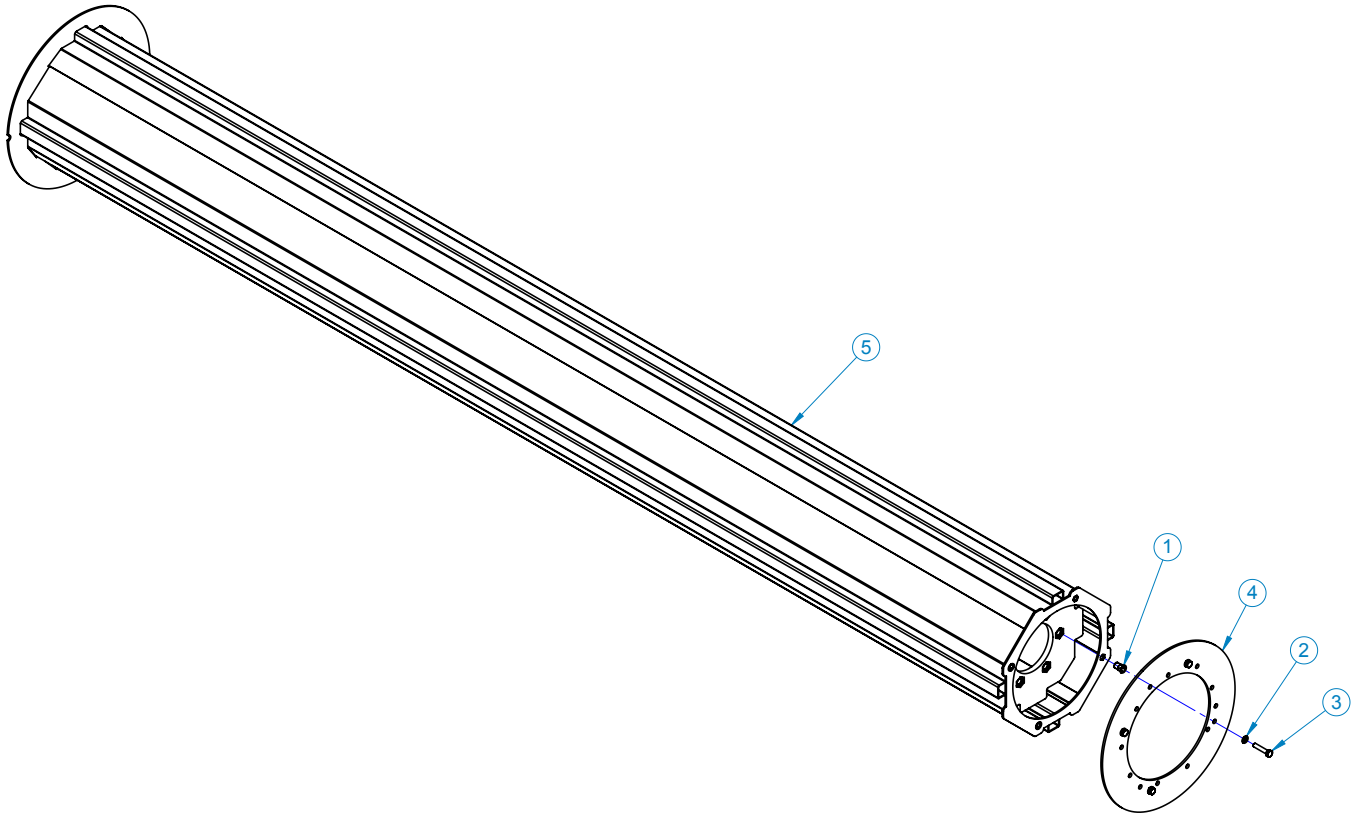
Item	Part	Qty	Description
1.	28-10095-4	1	Assembly, Core 4 Ft
	28-10095-5	1	Assembly, Core 5 Ft
	28-10095-6	1	Assembly, Core 6 Ft
	28-10095-7	1	Assembly, Core 7 Ft
	28-10095-8	1	Assembly, Core 8 Ft
2.	28-10309-4	1	Assembly, Brush Frame 4 Ft
	28-10309-5	1	Assembly, Brush Frame 5 Ft
	28-10309-6	1	Assembly, Brush Frame 6 Ft
	28-10309-7	1	Assembly, Brush Frame 7 Ft
	28-10309-8	1	Assembly, Brush Frame 8 Ft
3.	28-10314-4	1	Assembly, Hydraulic Hose 4 Ft
	28-10314-5	1	Assembly, Hydraulic Hose 5 Ft
	28-10314-6	1	Assembly, Hydraulic Hose 6 Ft
	28-10314-7	1	Assembly, Hydraulic Hose 7 Ft
	28-10314-8	1	Assembly, Hydraulic Hose 8 Ft
4.	28-9849-1	2	Assembly, Motor, Hydraulic, 18.3 CI

# BRUSH FRAME ASSEMBLY



Item	Part	Qty	Description	Item	Part	Qty	Description
1.	07-0244	8	Pin, Linch, 1/4	17.	13-16994-4	1	Weld, Frame, Brush 4 Ft
2.	07-0249	1	Chain, 1/4 x 22 Links		13-16994-5	1	Weld, Frame, Brush 5 Ft
3.	07-2952	18	Screw, HFH, CL10.9, M6-1 x 20		13-16994-6	1	Weld, Frame, Brush 6 Ft
4.	07-3311	1	Link, Quick, 5/16		13-16994-7	1	Weld, Frame, Brush 7 Ft
5.	07-3617	29	Nut, Insert, Hex, M6 x 1		13-16994-8	1	Weld, Frame, Brush 8 Ft
6.	07-3736	2	Washer, Flat, CL8.8, M8	18.	13-16995-4	1	Sheet, Hood 4 Ft
7.	07-3738	2	Washer, Lock, Split, Medium, M8		13-16995-5	1	Sheet, Hood 5 Ft
8.	07-3740	2	Screw, CL10.9, M8-1.25 x 30mm		13-16995-6	1	Sheet, Hood 6 Ft
9.	07-3747	8	Washer, Lock, Split, Medium, M10		13-16995-7	1	Sheet, Hood 7 Ft
10.	07-3842	4	Ring, Snap		13-16995-8	1	Sheet, Hood 8 Ft
11.	07-4927	6	Washer, Fender, CL8.8, M6	19.	13-16996	1	Sheet, Hood, Side, Left
12.	07-6769	8	Screw, CL10.9, M10-1.5 x 16mm	20.	13-16997	1	Sheet, Hood, Side, Right
13.	07-7115	2	Nut, Insert, M8-1.25				
14.	13-10004	2	Pin, Pivot, Lift, Arm				
15.	13-12617	1	Plate, Mounting, Pivot				
16.	13-14083	8	Stud, Mounting, Motor				

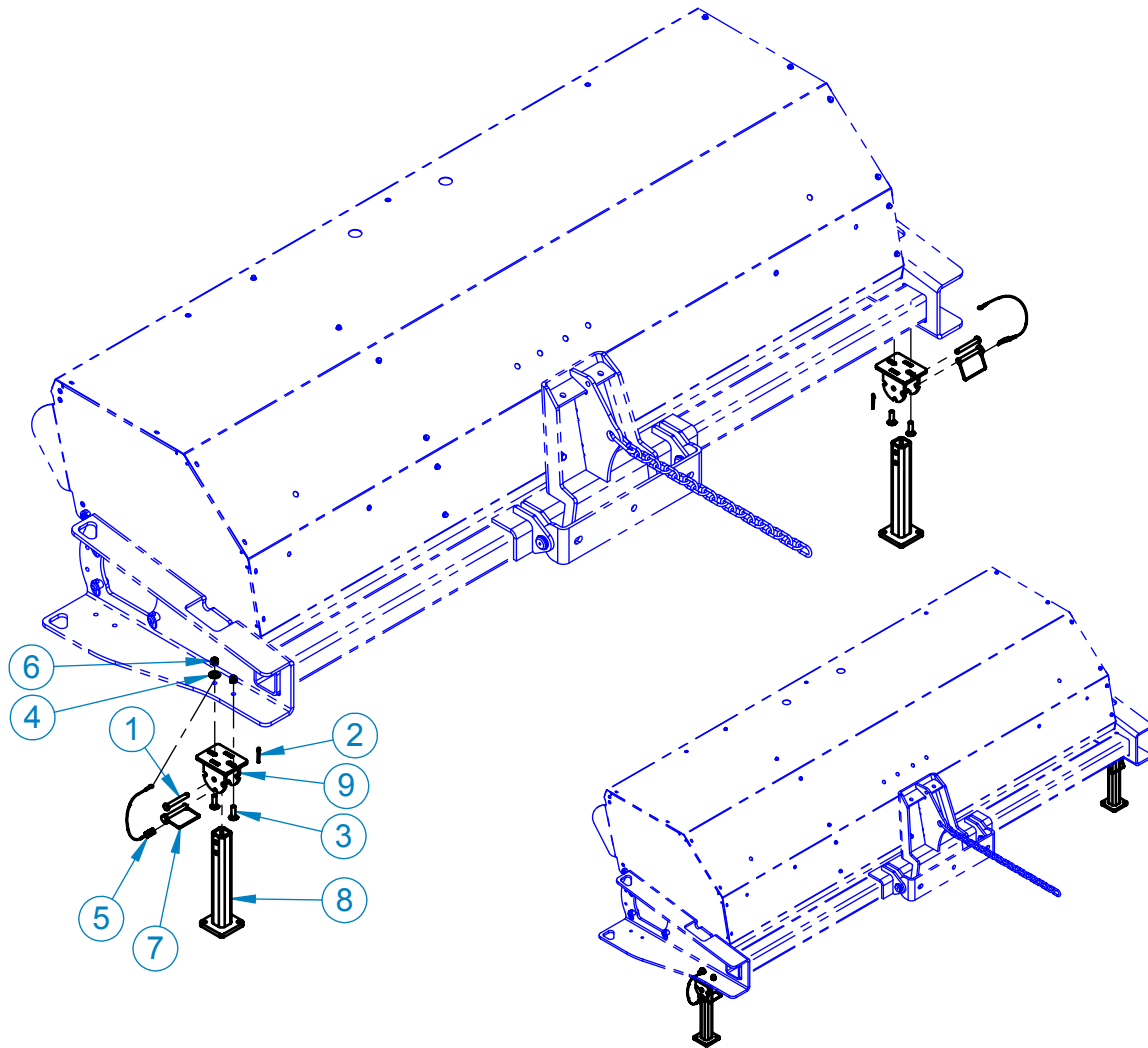
## CORE ASSEMBLY



Item	Part	Qty	Description
1.	07-3617	4	Nut, Insert, Hex, M6 x 1
2.	07-3730	4	Washer, Lock, Split, Medium, M6
3.	07-3731	4	Screw, HHC, CL10.9, M6-1 x 30mm
4.	13-13166	1	Plate, Ring, Core, End
5.	13-15866-4	1	Weld, Core, 4 Ft
	13-15866-5	1	Weld, Core, 5 Ft
	13-15866-6	1	Weld, Core, 6 Ft
	13-15866-7	1	Weld, Core, 7 Ft
	13-15866-8	1	Weld, Core, 8 Ft

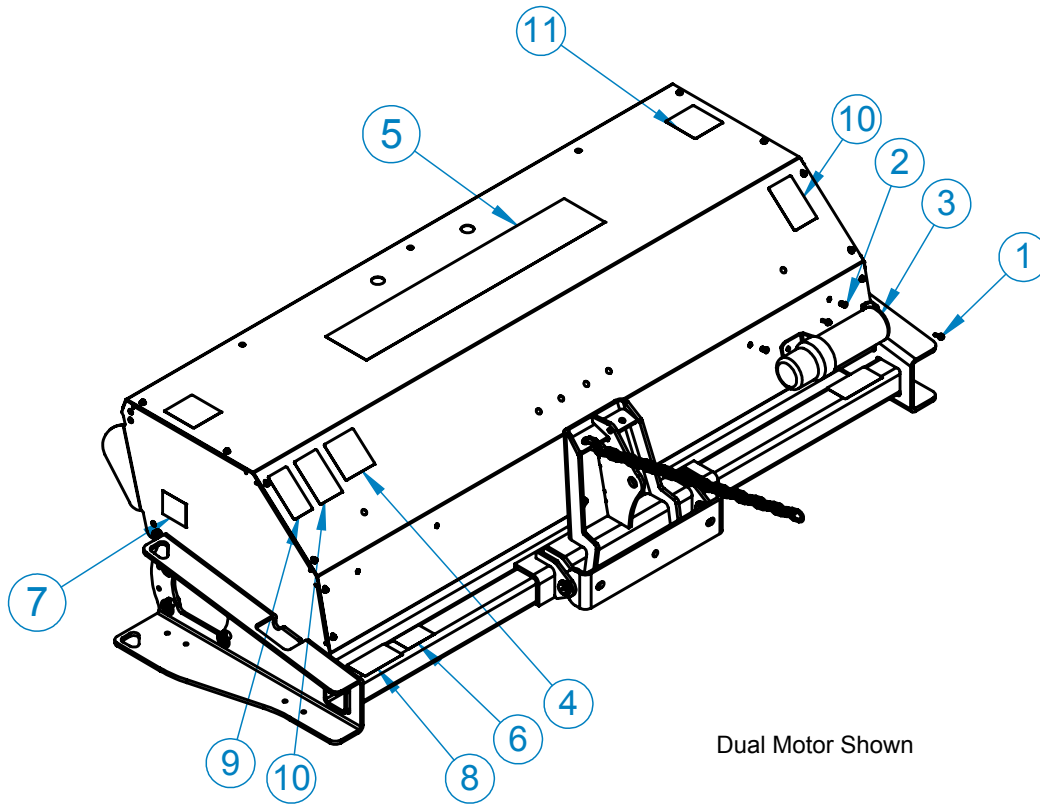


# BRUSH HEAD STANDS



Item	Part	Qty	Description
1.	07-0260	2	Pin, Clevis, Gr2, 3/8, 2 3/4
2.	07-0699	2	Pin, Cotter, Gr2, 1/8 x 1 1/4
3.	07-1717	4	Bolt, Carriage, Gr5, 3/8-16 x 1 1/4
4.	07-3279	2	Washer, Flat, Gr8, 3/8
5.	07-3375	2	Lanyard, 1/16 Cable, 1 1/4 Tab 8
6.	07-4036	4	Nut, Hex, Nylock, Gr8, 3/8-16
7.	07-4748	2	Pin, Lock, 3/8 x 2
8.	13-13226	2	Weld, Stand
9.	13-17002	2	Weld, Stand, Mounting

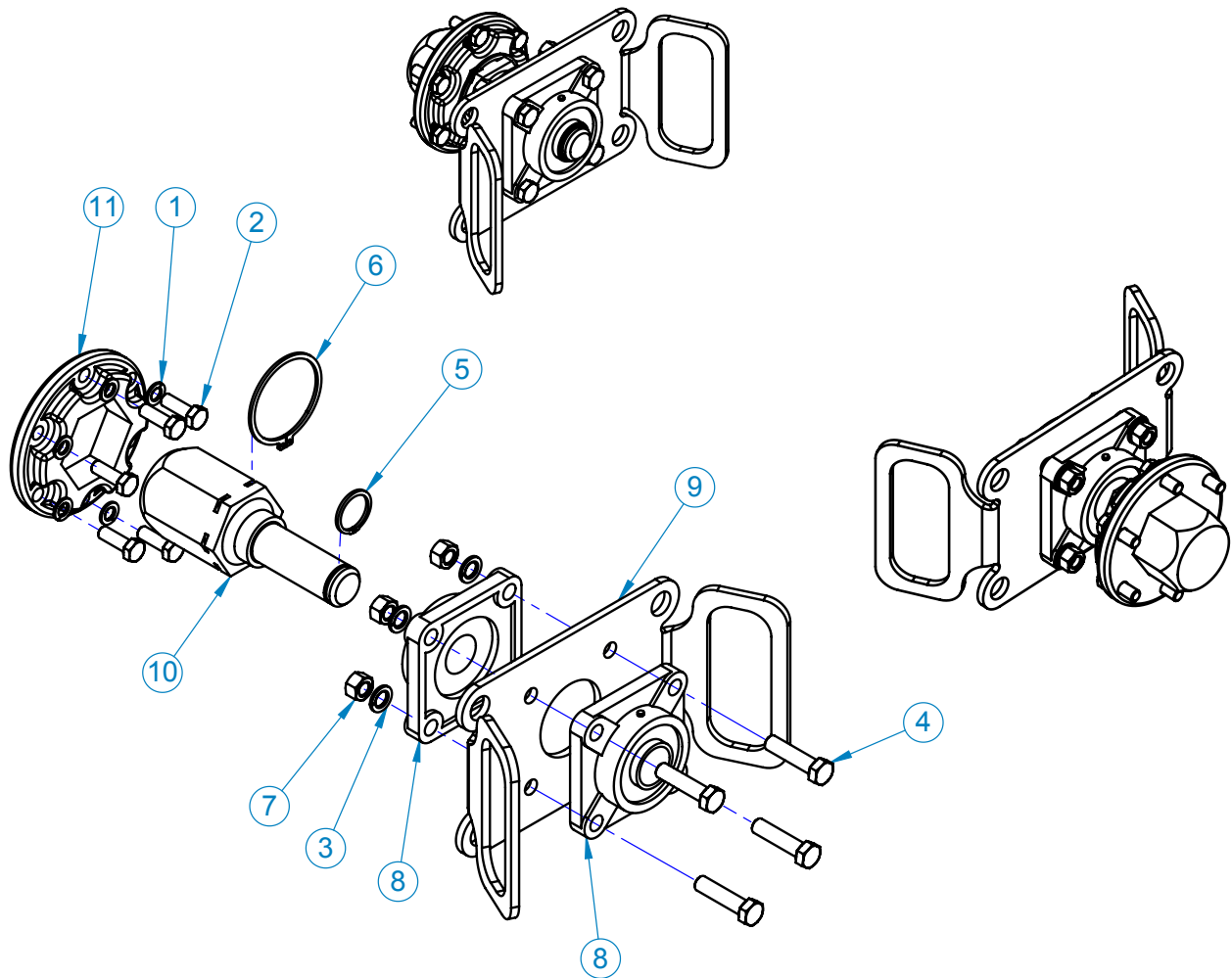
## BRUSH HEAD LABELS



Dual Motor Shown

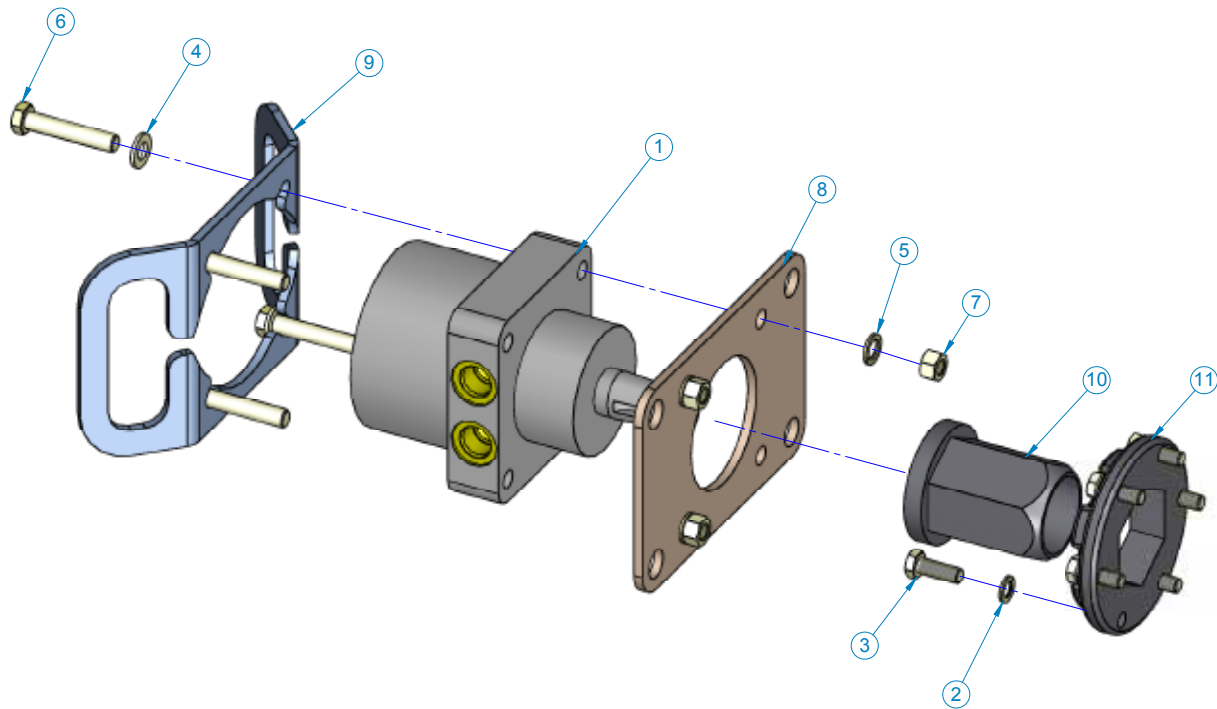
Item	Part	Qty	Description
1.	07-3522	2	Screw, HFH, CL10.9, M6 x 1
2.	07-3617	2	Nut, Insert, Hex, M6 x 1
3.	07-6869	1	Manual, Holder
4.	41043	1	Decal, Warning, Hazardous Dust
5.	50-0252	1	Label, Logo, Sweepster, Large, White
6.	50-0634	1	Label, Serial Number
7.	50-0643	2	Label, Tie Down Point
8.	50-0721	2	Label, Warning, Crush Hazard
9.	50-0722	1	Label, Warning, Misuse Hazard
10.	50-0724	2	Label, Warning, High Pressure Fluid Hazard
11.	50-0726	2	Label, Warning, Flying Object & Entanglement

## HEX DRIVE HUB ASSEMBLY



Item	Part	Qty	Description
1.	07-3747	6	Washer, Lock, Split, Medium, M10
2.	07-3749	6	Screw, HHC, CL10.9, M10-1.5 x 30mm
3.	07-3756	4	Washer, Lock, Split, Medium, M12
4.	07-3762	4	Screw, HHC, CL10.9, M12-1.75 x 50mm
5.	07-3842	1	Ring, Snap
6.	07-6196	1	Ring, Snap
7.	07-6766	4	Nut, Hex, CL10.9, M12-1.75
8.	08-0067	2	Bearing, 1 1/4, 4 Bolt
9.	13-14133	1	Plate, Mounting, Bearing
10.	13-14135	1	Hub, Hex, 2 1/2, Single Motor
11.	13-16225	1	Plate, Receiver, Hex, 2.5

# MOTOR ASSEMBLIES

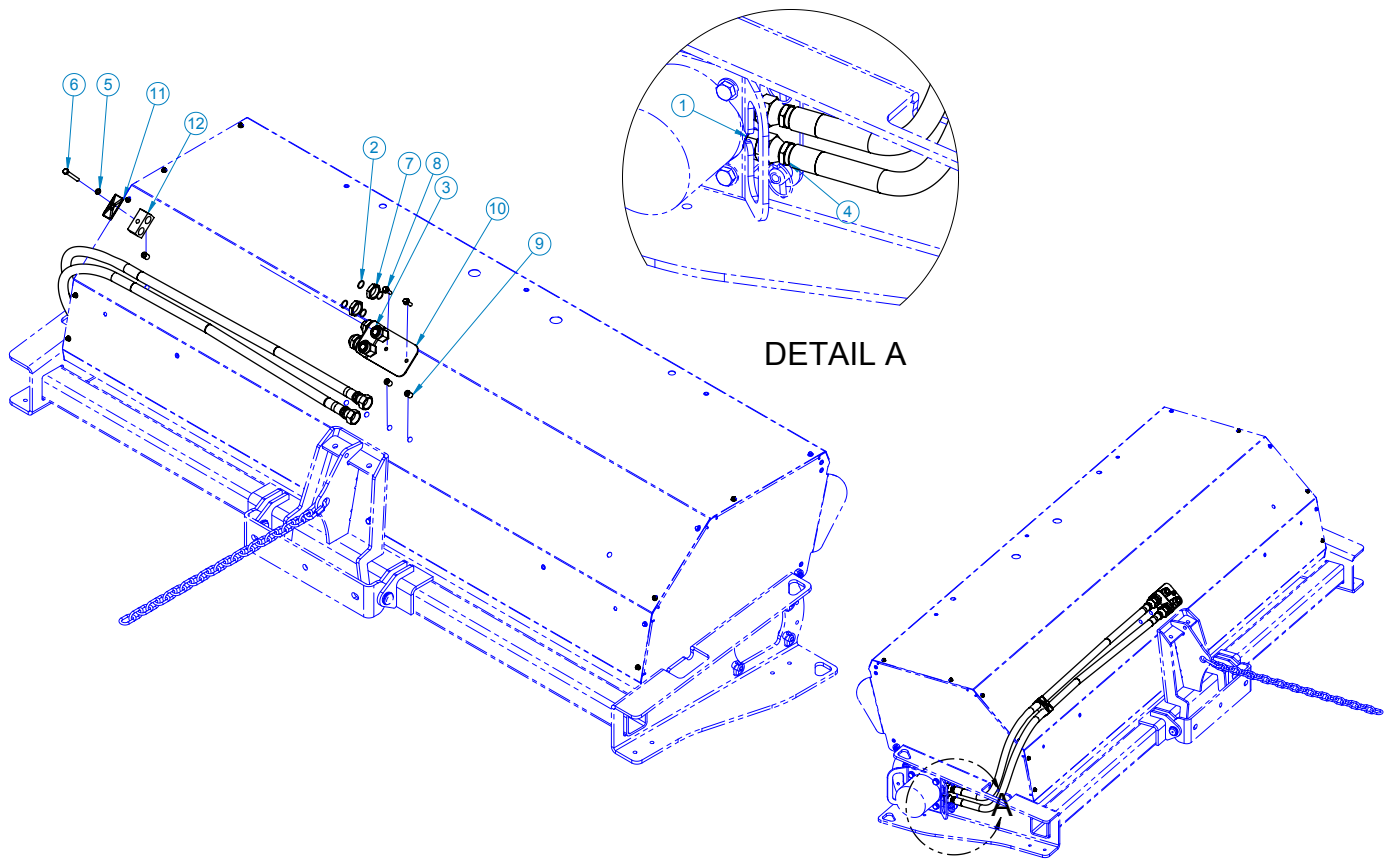


Item	Part	Qty	Description
1.	03-5612	1	Motor, 18.3 CI, 1.25, White-CE
	03-5613	1	Motor, 28.3 CI, 1.25, White-RE
2.	07-3747	6	Washer, Lock, Split, Medium, M10
3.	07-3749	6	Screw, HHC, CL10.9, M10-1.5 x 30mm
4.	07-3754	4	Washer, Flat, CL10.9, M12
5.	07-3756	4	Washer, Lock, Split, Medium, M12
6.	07-6683	4	Screw, HHC, CL10.9, M12-1.75 x 65mm
7.	07-6766	4	Nut, Hex, CL10.9, M12-1.75
8.	13-14085	1	Plate, Mounting, Motor
9.	13-14086	1	Plate, Handle, Motor
10.	13-15206	1	Hub, Hex, 2 1/2 x 1 1/4 Tapered Bore x 3.75
11.	13-16225	1	Plate, Receiver, Hex, 2.5

## Not Shown:

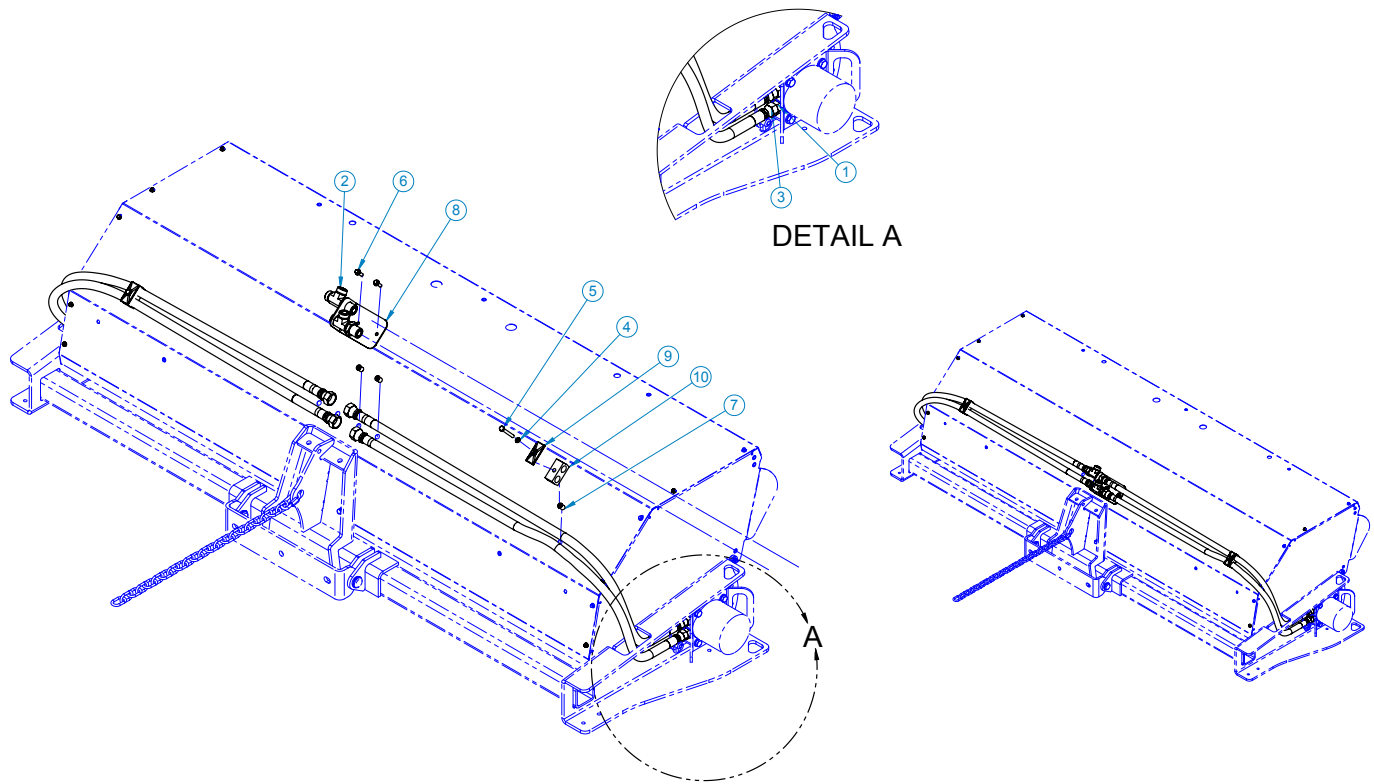
07-4568	1	Nut, Motor, Shaft
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# HYDRAULIC HOSE ASSEMBLY SINGLE MOTOR



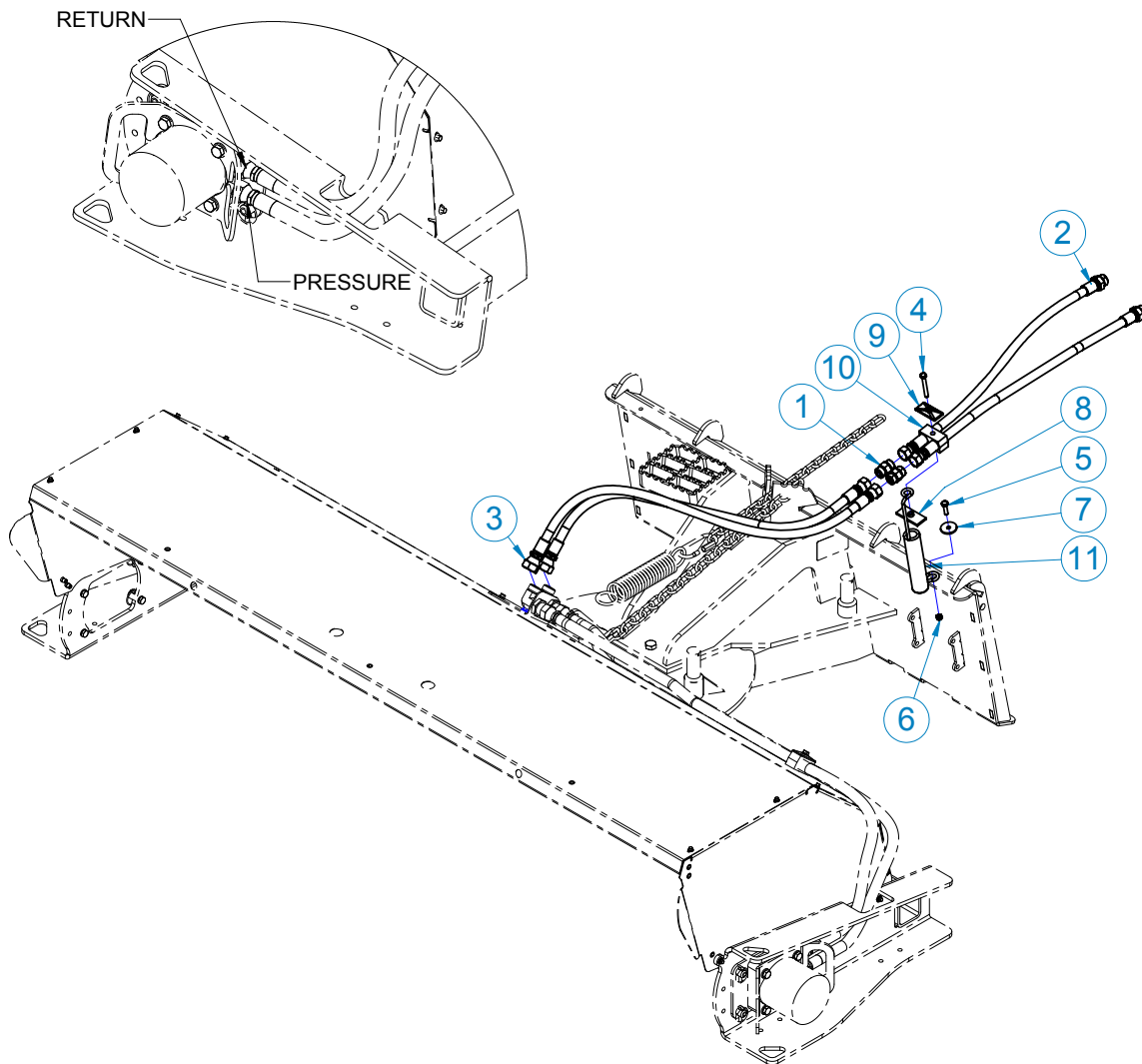
Item	Part	Qty	Description
1.	03-1939	2	Fitting, 10MB-10MF
2.	03-2003	4	O-Ring, FS, 3/4
3.	03-3531	2	Elbow, 90°, 12MF-12MF
4.	03-5167	2	Hose, .5 x 44, 10FF, 12FF, 3.5K 4 Ft
	03-5168	2	Hose, .5 x 50, 10FF, 12FF, 3.5K 5 Ft
	03-5179	2	Hose, .5 x 56, 10FF, 12FF, 3.5K 6 Ft
	03-5654	2	Hose, .5 x 62, 10FF, 12FF, 3.5K 7 Ft
	03-5655	2	Hose, .5 x 68, 10FF, 12FF, 3.5K 8 Ft
5.	07-3738	1	Washer, Lock, Split, Medium, M8
6.	07-5287	1	Screw, HHC, CL10.9, M8-1.25 x 65mm
7.	07-6396	2	Nut, Bulkhead, #12
8.	07-6531	2	Screw, HFH, CL10.9, M8-1.25 x 25mm
9.	07-7115	3	Nut, Insert, M8-1.25, 22-10ga
10.	13-17014	1	Plate, Mounting, Bulkhead Fittings
11.	RHW8614	1	Cover, Plate
12.	RHW8616	1	Hose, Cradle

# HYDRAULIC HOSE ASSEMBLY DUAL MOTOR



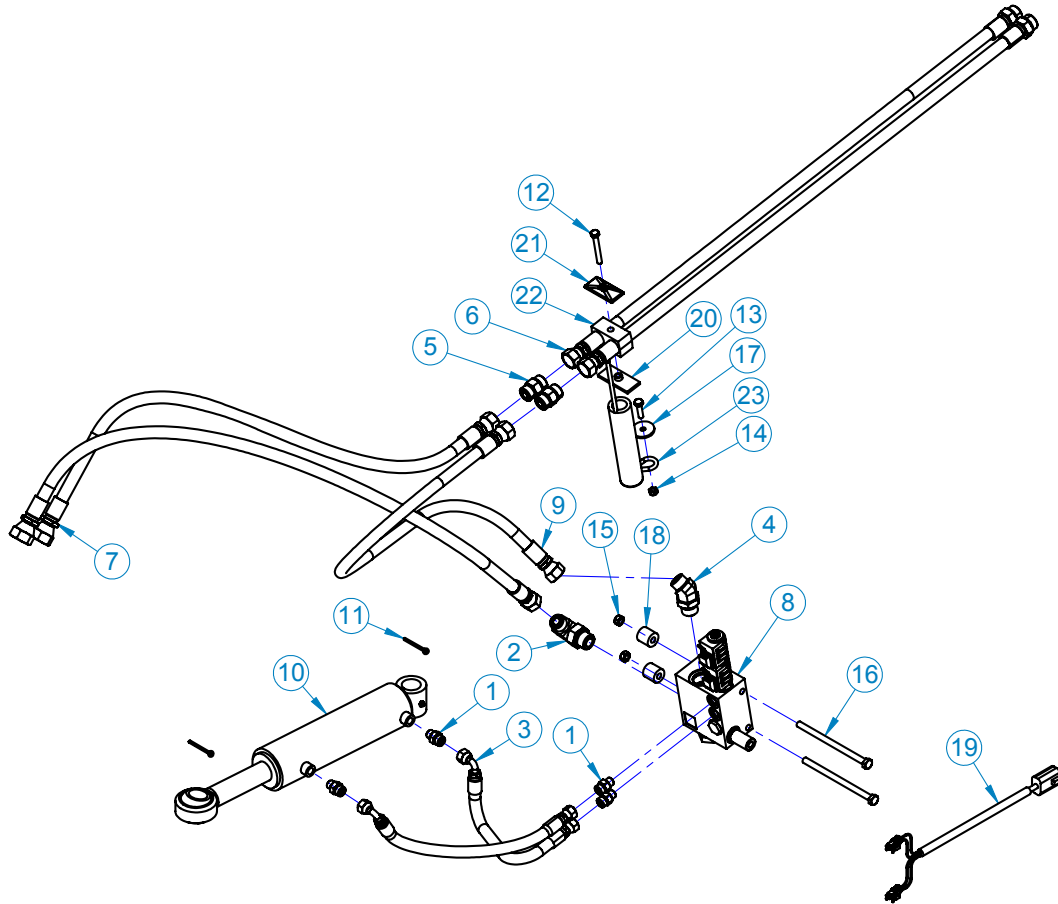
Item	Part	Qty	Description
1.	03-1939	4	Fitting, 10MB-10MF
2.	03-5160	2	Tee, 12MF-12MF-12MF
3.	03-5167	4	Hose, .5 x 44, 10FF, 12FF, 3.5K 4 Ft
	03-5168	4	Hose, .5 x 50, 10FF, 12FF, 3.5K 5 Ft
	03-5179	4	Hose, .5 x 56, 10FF, 12FF, 3.5K 6 Ft
	03-5654	4	Hose, .5 x 62, 10FF, 12FF, 3.5K 7 Ft
	03-5655	4	Hose, .5 x 68, 10FF, 12FF, 3.5K 8 Ft
4.	07-3738	2	Washer, Lock, Split, Medium, M8
5.	07-5287	2	Screw, HHC, CL10.9, M8-1.25 x 65mm
6.	07-6531	2	Screw, HFH, CL10.9, M8-1.25 x 25mm
7.	07-7115	4	Nut, Insert, M8-1.25, 22-10ga
8.	13-17014	1	Plate, Mounting, Bulkhead Fittings
9.	RHW8614	2	Cover, Plate
10.	RHW8616	2	Hose, Cradle

# STANDARD HYDRAULIC ASSEMBLY



Item	Part	Qty	Description
1.	03-4804	2	Fitting, 10MF-10MF
2.	03-5153	2	Hose, .5 x 80, 10FF-12MB, 3.5K,
3.	03-5179	2	Hose, .5 x 56, 10FF, 12FF, 3.5K
4.	07-1784	1	Screw, HHC, Gr8, 5/16-18 x 2 1/2
5.	07-3740	1	Screw, HHC, CL10.9, M8-1.25 x 30mm
6.	07-4604	1	Nut, Hex, Lock, M8-1.25, CL10.9
7.	105840	2	Washer, Fender
8.	RHW8613	1	Weld, Plate
9.	RHW8614	1	Cover, Plate
10.	RHW8616	1	Hose, Cradle
11.	RHW8618	1	Hose, Spring

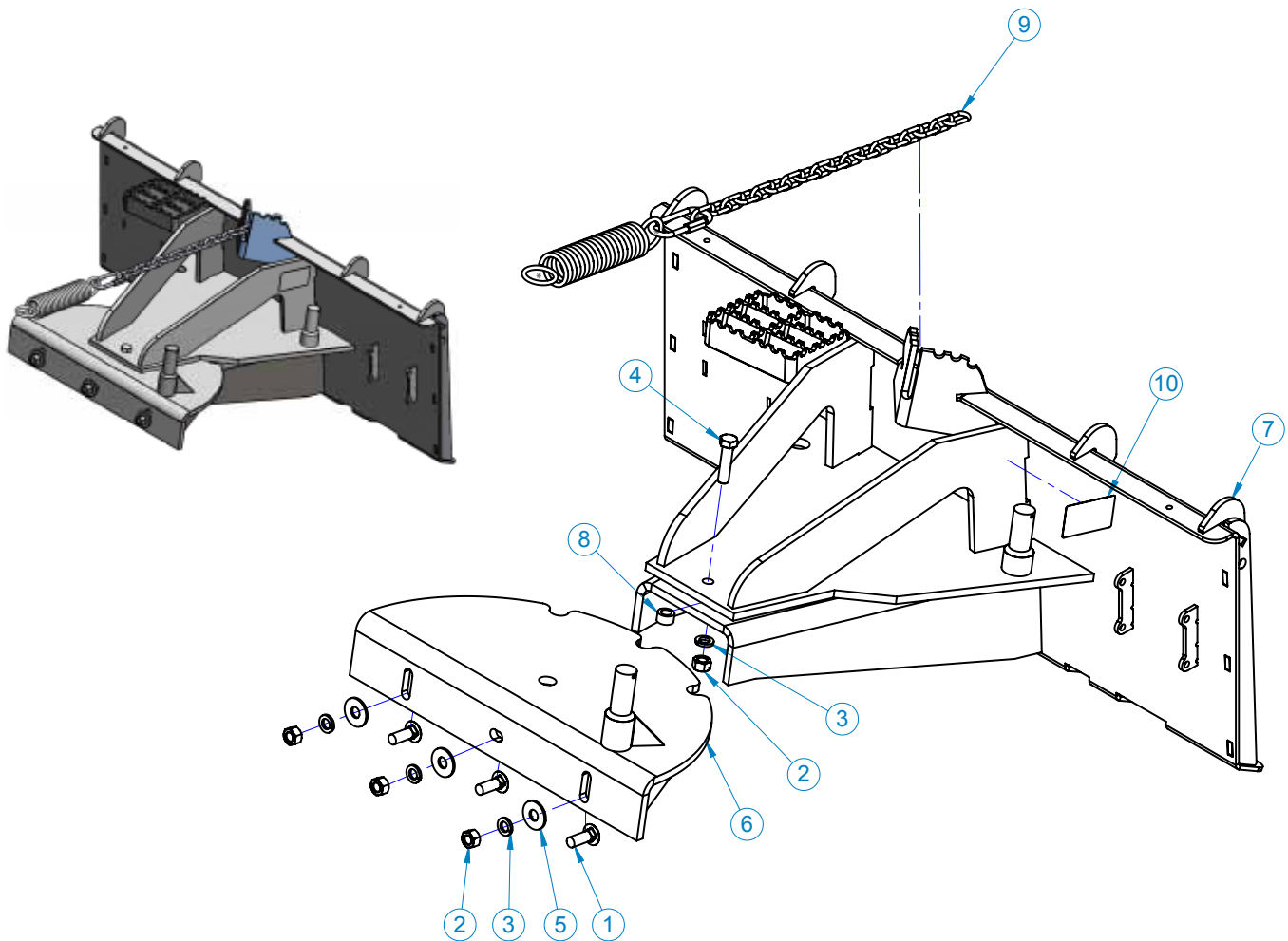
# HYDRAULIC ANGLE ASSEMBLY WITH MANIFOLD



Item	Part	Qty	Description
1.	03-2291	4	Fitting, 6MF-6MB
2.	03-2396	1	Elbow, 90°, 10MF-12MB
3.	03-4030	2	Hose, .38 x 32, 6FF-6FF90, 5K
4.	03-4700	1	Elbow, 45°, 10MF-12MB
5.	03-4804	2	Fitting, 10MF-10MF
6.	03-5153	2	Hose, .5 x 80, 10FF-12MB, 3.5K,
7.	03-5179	2	Hose, .5 x 56, 10FF, 12FF, 3.5K
8.	03-5215	1	Manifold, Swing, 12 Volt
	03-5280	1	Manifold, Swing, 24 Volt
9.	03-5661	1	Hose, .5 x 36, 10FF-10FF, 3.5K
10.	03-5724	1	Cylinder, 2.5 x 1.38 x 7.5, 3.5K
11.	07-0206	2	Pin, Cotter, Gr2, 3/16 x 2
12.	07-1784	1	Screw, HHC, Gr8, 5/16-18 x 2 1/2
13.	07-3740	1	Screw, HHC, CL10.9, M8-1.25 x 30mm
14.	07-4604	1	Nut, Hex, Lock, M8-1.25, CL10.9
15.	07-4622	2	Nut, Hex, Lock, M10-1.5, CL10.9
16.	07-7131	2	Screw, HHC, CL10.9, M10-1.5 x 160mm
17.	105840	1	Fender Washer
18.	13-11248	2	Bushing, 1 x .406 x 1
19.	LAF9441	1	Wire, Harness
20.	RHW8613	1	Weld, Plate
21.	RHW8614	1	Cover, Plate
22.	RHW8616	1	Hose, Cradle
23.	RHW8618	1	Hose, Spring

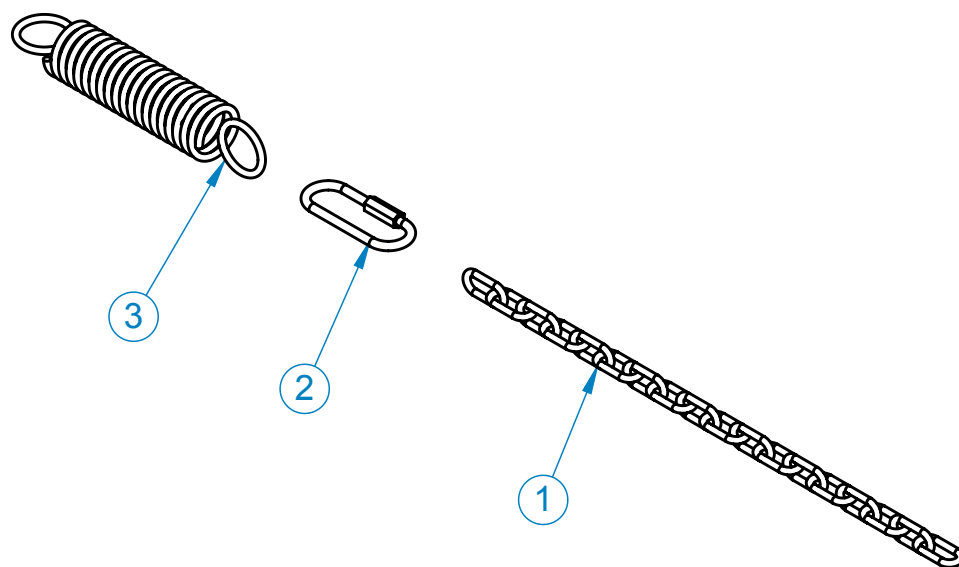


## MOUNTING ASSEMBLY



Item	Part	Qty	Description
1.	07-0119	3	Bolt, Carriage, Gr5, 5/8-11 x 1 3/4
2.	07-1294	4	Nut, Hex, Gr8, 5/8-11
3.	07-1872	4	Washer, Lock, Split, Medium, 5/8
4.	07-2855	1	Screw, HHC, Gr8, 5/8-11 x 2 1/2
5.	07-3120	3	Washer, Flat, Gr8, 5/8
6.	11-9080	1	Weld, Swing, Plate
7.	13-14956	1	Weld, Frame, Mounting
8.	13-4657	1	Bushing, 1 x 5/8 x .562
9.	28-10342	1	Kit, Spring, Chain, Adjust
10.	50-0635	1	Label, Part Number, Date

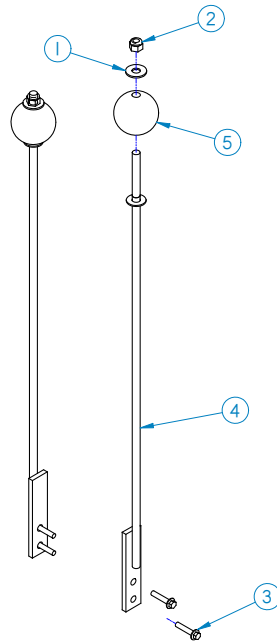
## SPRING/CHAIN ADJUSTMENT



Item	Part	Qty	Description
1.	07-1558	1	Chain, 1/4, 18 Links
2.	07-5294	1	Link, Quick, 5/16, Wide Jaw
3.	07-6451	1	Spring, Tension, 325 #/In

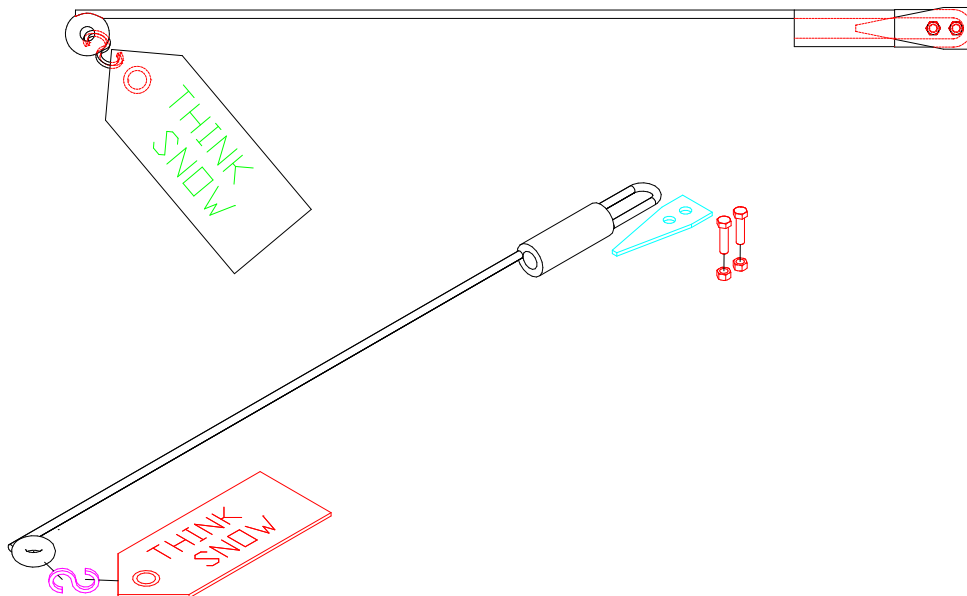
## SIGHT INDICATORS

Kit: 28-9965

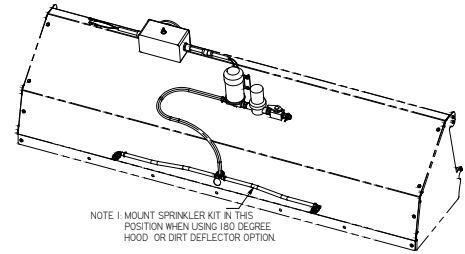
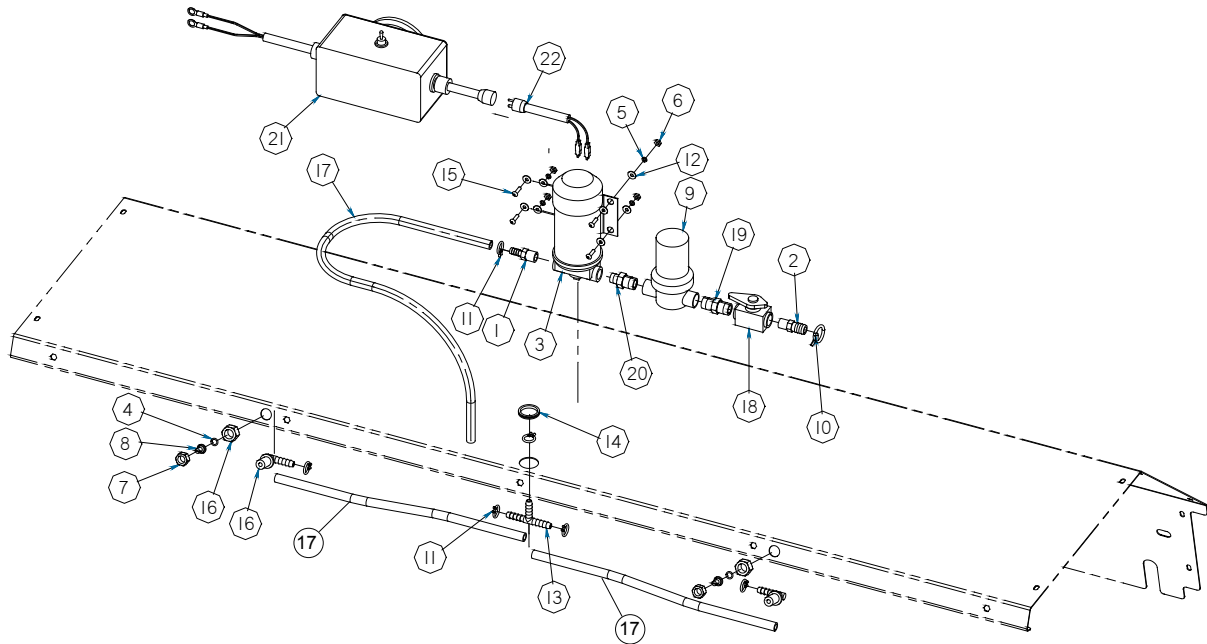


Item	Part	Qty	Description
1.	07-3279	2	Washer, Flat, Gr8, 3/8
2.	07-4036	2	Nut, Hex, Nylock, 3/8-16
3.	07-6597	4	Screw, HFH, CL10.9, M6-1 x 30
4.	13-14857	2	Weld, Sight Indicator
5.	13-9567	2	Ball, 2 1/8 Round, Red, with Hole

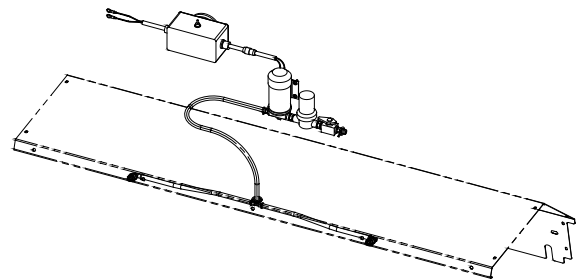
Kit: 11-5897



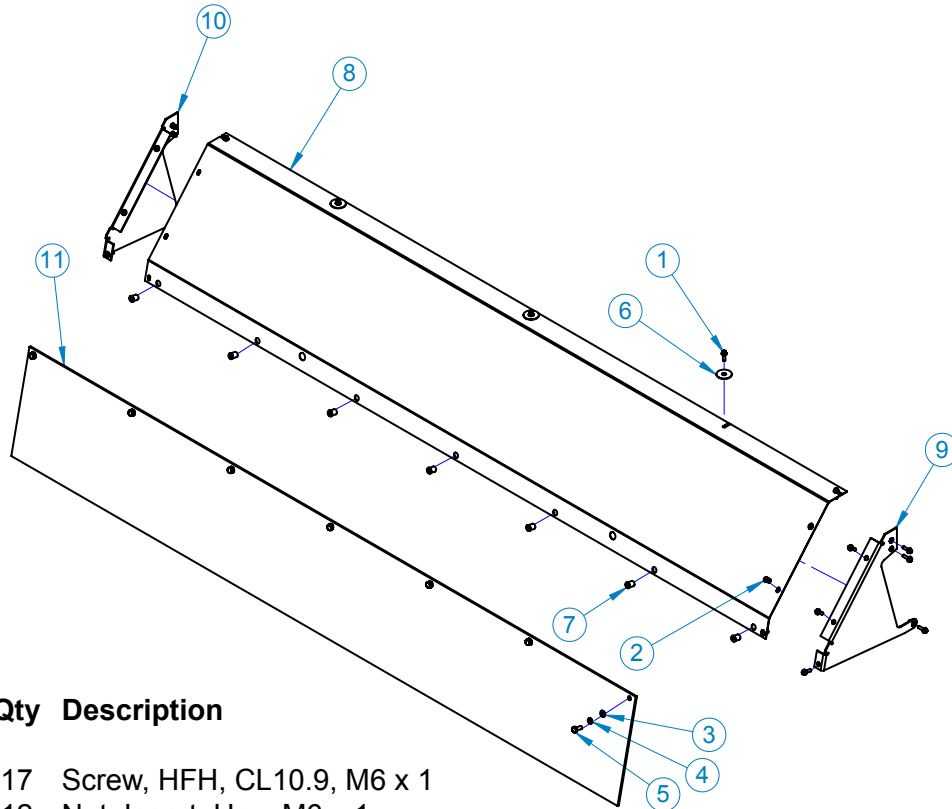
# SPRINKLER KIT WITHOUT TANK



Item	Part	Qty	Description
1.	03-0457	1	Fitting, Barb, Nylon, 3/8, 3/8MP
2.	03-1226	1	Fitting, Barb, HP, 5/8, 1/2MP
3.	03-1326	1	Pump, Flojet, 2.1gpm, 12 volt, 7amp, 35psi
	03-2558	1	Pump, Flojet, 2.1gpm, 24 volt, 3.5amp, 60psi
4.	03-3537	2	O-Ring, #8 Face Seal
5.	07-0140	4	Washer, Lock, Gr2, #10
6.	07-0141	4	Nut, Hex, Gr2, 10-24
7.	07-0413	2	Nozzle, Cap, Nylon
8.	07-0414	2	Nozzle, Tip, Brass
9.	07-0532	1	Strainer, Water
10.	07-0547	1	Clamp, Spring, 7/8, Hose
11.	07-0549	6	Clamp, Spring, 5/8, Hose
12.	07-1430	8	Washer, Flat, #10
13.	07-3869	1	Fitting, Barb, Tee, Nylon, 3/8
14.	07-4804	1	Grommet, Rubber, 1 1/4 Hole x 7/8 Bore x 1/16 Panel
15.	07-4831	4	Screw, BHC, 10-24UNC, 2B x 3/4
16.	07-4862	2	Nozzle, Elbow, without Clamp
17.	07-5127	25ft	Hose, Clear, Vinyl, 3/8
18.	07-6862	1	Valve, Shut-Off, 1/2, Nylon
19.	07-6863	1	Fitting, Nipple, 1/2, Nylon
20.	07-6864	1	Fitting, Nipple, 1/2 x 3/8, Nylon
21.	LAF8316	1	Wire, Harness, with Box
22.	LAF8320	1	Wire, Assembly, x 11 Ft



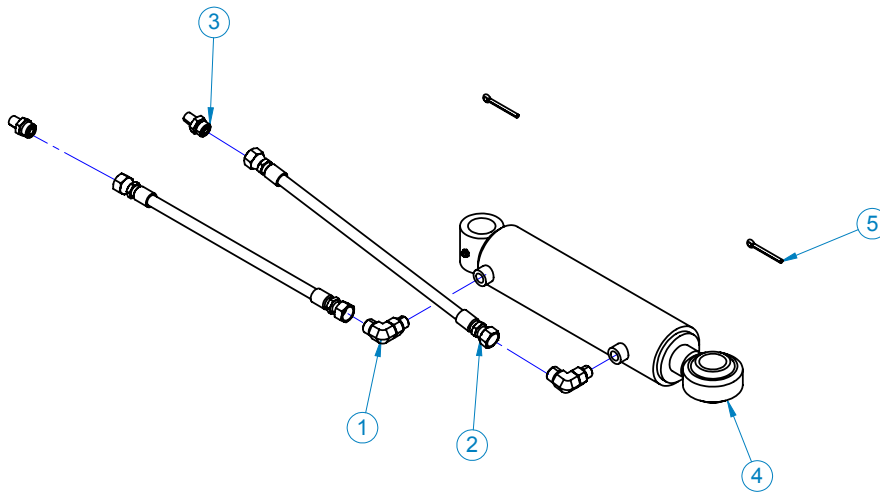
## HOOD EXTENSION AND DRAPE ASSEMBLY



Item	Part	Qty	Description
1.	07-3522	17	Screw, HFH, CL10.9, M6 x 1
2.	07-3617	12	Nut, Insert, Hex, M6 x 1
3.*	07-3736	5	Washer, Flat, CL8.8, M8 4 Ft, 5 Ft
	07-3736	7	Washer, Flat, CL8.8, M8 6 Ft, 7 Ft
	07-3736	9	Washer, Flat, CL8.8, M8 8 Ft
4.*	07-3738	5	Washer, Lock, Split, Medium, M8 4 Ft, 5 Ft
	07-3738	7	Washer, Lock, Split, Medium, M8 6 Ft, 7 Ft
	07-3738	9	Washer, Lock, Split, Medium, M8 8 Ft
5.*	07-3777	5	Screw, HHC, CL10.9, M8-1.25 x 20 4 Ft, 5 Ft
	07-3777	7	Screw, HHC, CL10.9, M8-1.25 x 20 6 Ft, 7 Ft
	07-3777	9	Screw, HHC, CL10.9, M8-1.25 x 20 8 Ft
6.	07-4942	3	Washer, Fender, 5/16 x 1 1/2
7.	07-7115	5	Nut, Insert, M8-1.25, 22-10ga 4 Ft, 5 Ft
	07-7115	7	Nut, Insert, M8-1.25, 22-10ga 6 Ft, 7 Ft
	07-7115	9	Nut, Insert, M8-1.25, 22-10ga 8 Ft
8.	13-16998-4	1	Sheet, Hood, Extension 4 Ft
	13-16998-5	1	Sheet, Hood, Extension 5 Ft
	13-16998-6	1	Sheet, Hood, Extension 6 Ft
	13-16998-7	1	Sheet, Hood, Extension 7 Ft
	13-16998-8	1	Sheet, Hood, Extension 8 Ft
9.	13-16999	1	Sheet, Hood, Extension, Side, Left
10.	13-17000	1	Sheet, Hood, Extension, side, Right
11.*	13-17030-4	1	Flap, Deflector 4 Ft
	13-17030-5	1	Flap, Deflector 5 Ft
	13-17030-6	1	Flap, Deflector 6 Ft
	13-17030-7	1	Flap, Deflector 7 Ft
	13-17030-8	1	Flap, Deflector 8 Ft

\* Designates Drape Assembly

## HYDRAULIC ANGLE KIT

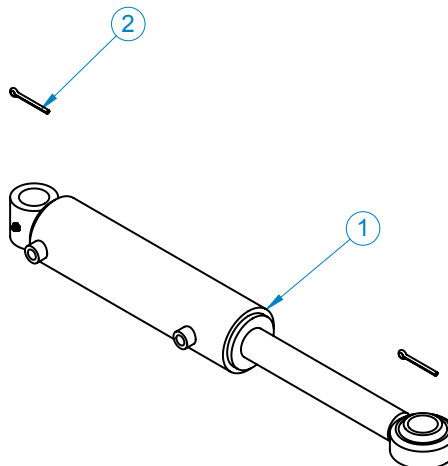


Item	Part	Qty	Description
1.	03-2092	2	Elbow, 90°, 6MB-6MF
2.	03-2155	2	Hose, .25 x 72, 6FF-6FF, 3.25K
3.	03-2159	2	Fitting, 6MF-4MP
4.	03-4887	1	Cylinder, 2.5 x 1.38 x 7.5, 3.5K
6.	07-0206	2	Pin, Cotter, Gr2, 3/16 x 2

### Replacement Parts for 03-4887 :

03-4888	Seal Kit
03-5035	Rod

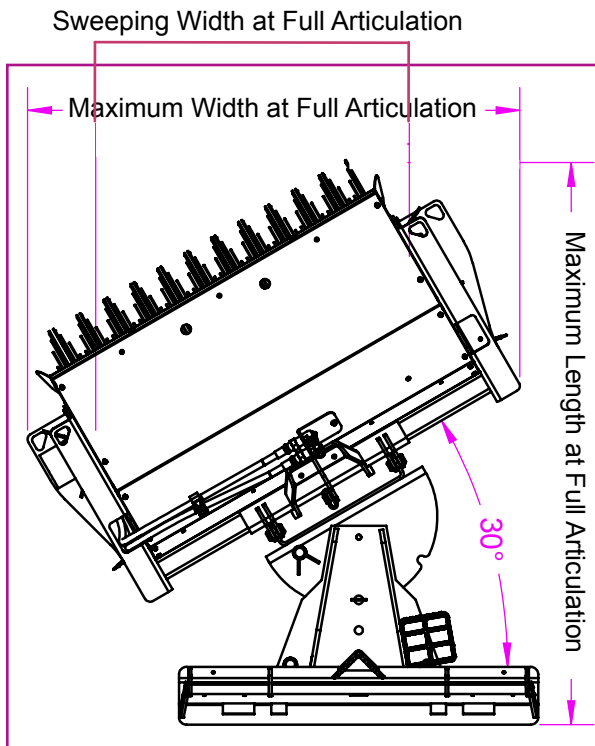
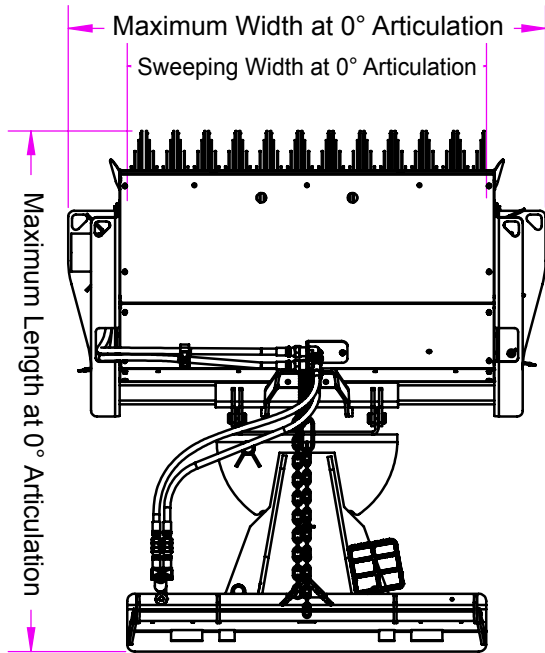
## HYDRAULIC ANGLE CYLINDER



Item	Part	Qty	Description
1.	03-4887	1	Cylinder, 2.5 x 1.38 x 7.5, 3.5K
2.	07-0206	2	Pin, Cotter, Gr2, 3/16 x 2

# PRODUCT SPECIFICATIONS

## Specifications and Model Views



QC Brush Head			
	Single Motor	Dual Motor	
Approximate Weight with SAE J2513 Mounting	754 lbs	779 lbs	4 Ft
	805 lbs	830 lbs	5 Ft
	856 lbs	881 lbs	6 Ft
	907 lbs	932 lbs	7 Ft
	958 lbs	964 lbs	8 Ft
Maximum Length at 0° Articulation	68.5 inches with SAE J2513 Mounting		
Maximum Width at 0° Articulation	62.8 inches	4 Ft	
	74.8 inches	5 Ft	
	86.8 inches	6 Ft	
	98.8 inches	7 Ft	
	110.8 inches	8 Ft	
Maximum Length at Full Articulation	74 inches	4 Ft	
	77 inches	5 Ft	
	80 inches	6 Ft	
	83 inches	7 Ft	
	86 inches	8 Ft	
Maximum Width at Full Articulation	64.8 inches	4 Ft	
	75.2 inches	5 Ft	
	85.6 inches	6 Ft	
	96 inches	7 Ft	
	106.4 inches	8 Ft	
Sweeping Width at 0° Articulation	48 inches	4 Ft	
	60 inches	5 Ft	
	72 inches	6 Ft	
	84 inches	7 Ft	
	96 inches	8 Ft	
Sweeping Width at Full Articulation	41.5 inches	4 Ft	
	52 inches	5 Ft	
	62.4 inches	6 Ft	
	72.8 inches	7 Ft	
	83.2 inches	8 Ft	

Range of Hydraulic Oil Flow		
Single Motor	18 cubic inch	10-18
Single Motor	28 cubic inch	15-25
Dual Motor	18 cubic inch	18-36
Maximum Hydraulic Oil Pressure		
Single Motor	18 cubic inch	3000 psi
Single Motor	28 cubic inch	3000 psi
Dual Motor	18 cubic inch	3000 psi

# BOLT TORQUE SPECIFICATIONS

## GENERAL TORQUE SPECIFICATION TABLES


Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

## SAE BOLT TORQUE SPECIFICATIONS




**NOTE:** The following torque values are for use with extreme pressure lubricants, plating or hard washer applications increase torque 15% when using hardware that is unplated and either dry or lubricated with engine oil.

Bolt Size		SAE GRADE 5 TORQUE				SAE GRADE 8 TORQUE				Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary
		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		
Inches	Millimeters	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	
1/4	6.35	8	9	11	12	10	13	14	18	
5/16	7.94	14	17	19	23	20	25	27	34	
3/8	9.53	30	36	41	49	38	46	52	62	
7/16	11.11	46	54	62	73	60	71	81	96	
1/2	12.70	68	82	92	111	94	112	127	152	
9/16	14.29	94	112	127	152	136	163	184	221	
5/8	15.88	128	153	174	207	187	224	254	304	
3/4	19.05	230	275	312	373	323	395	438	536	
7/8	22.23	340	408	461	553	510	612	691	830	
1	25.40	493	592	668	803	765	918	1037	1245	
1-1/8	25.58	680	748	922	1014	1088	1224	1475	1660	
1-1/4	31.75	952	1054	1291	1429	1547	1700	2097	2305	
1-3/8	34.93	1241	1428	1683	1936	2023	2312	2743	3135	
1-1/2	38.10	1649	1870	2236	2535	2686	3026	3642	4103	




GRADE 2



GRADE 5






GRADE 8



## METRIC BOLT TORQUE SPECIFICATIONS

**NOTE:** The following torque values are for use with metric hardware that is unplated and either dry or lubricated with engine oil. Reduce torque 15% when using hardware that has extreme pressure lubricants, plating or hard washer applications.

Bolt head identification marks as per grade.		
		

Size of Bolt	Grade No.	Pitch (mm)	Pounds Feet	Newton-Meters	Pitch (mm)	Pounds Feet	Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
M10	5.6	1.5	20-25	27.1-33.9	1.25	20-29	27.1-39.3
	8.8		34-40	46.1-54.2		35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
M12	5.6	1.75	28-34	37.9-46.1	1.25	31-41	42-55.6
	8.8		51-59	69.1-79.9		56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
M14	5.6	2.0	49-56	66.4-75.9	1.5	52-64	70.5-86.7
	8.8		81-93	109.8-126		90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
M16	5.6	2.0	67-77	90.8-104.3	1.5	69-83	93.5-112.5
	8.8		116-130	157.2-176.2		120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
M18	5.6	2.0	88-100	119.2-136	1.5	100-117	136-158.5
	8.8		150-168	203.3-227.6		177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
M20	5.6	2.5	108-130	146.3-176.2	1.5	132-150	178.9-203.3
	8.8		186-205	252-277.8		206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6

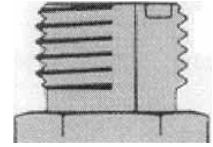
**NOTE** - Nylock nuts are utilized when greater resistance to vibrating loose is required, and greater operating temperatures are not a factor. In addition, like lock nuts, nylock nuts have a safety feature that if the bolt does vibrate loose, the nut will remain on the screw. Install nylock nuts to the standard torque shown above.



# HYDRAULIC TORQUE SPECIFICATIONS

## Face Seal: Assembly, Tube to Fitting

**NOTICE -** Face seal fittings have the most reliable sealing method and therefore, should be used whenever possible.



## Installation

1. Make sure threads and sealing surfaces are free of burrs, nicks, scratches, or foreign materials.
2. Install proper SAE O-ring to end of fitting if not already installed. Ensure O-ring is fully seated and retained properly.
3. Lubricate O-ring with a light coating of clean hydraulic oil.
4. Position tube and nut squarely on face seal of fitting and tighten nut finger tight.
5. Using appropriate torquing device, tighten to given torque rating from the table below.

## Torque Values

SAE Dash Size	Tube Side Thread Size	In-lbs	Ft-lbs
-4	9/16 - 18	220 ± 10	18 ± 1
-6	11/16 - 16	320 ± 25	27 ± 2
-8	13/16 - 16	480 ± 25	40 ± 2
-10	1 - 14	750 ± 35	63 ± 3
-12	1 3/16 - 12	1080 ± 45	90 ± 4
-16	1 7/16 - 12	1440 ± 90	120 ± 8
-20	1 11/16 - 12	1680 ± 90	140 ± 8
-24	2 - 12	1980 ± 100	165 ± 8

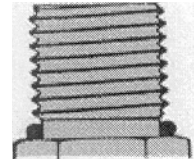
**NOTE** - ft-lb may be converted to Newton Meters by multiplying by 1.35582.

**NOTE** - in-lbs may be converted to Newton Meters by multiplying by 0.11298.

# HYDRAULIC TORQUE SPECIFICATIONS

## Straight Thread O-ring Fitting: Assembly, Fitting to Port

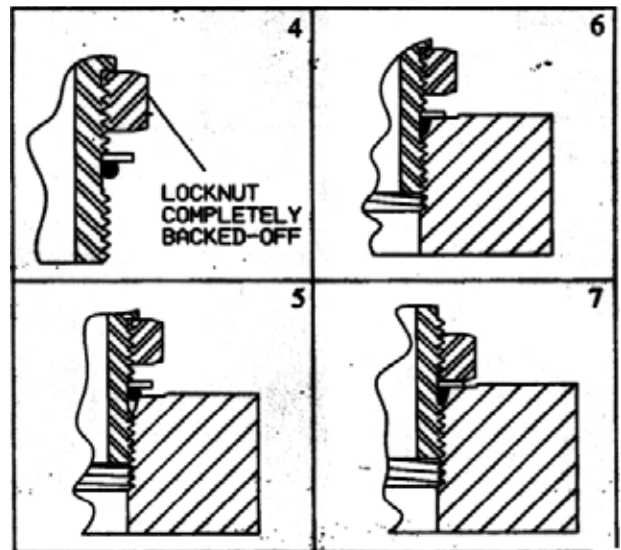
**NOTE -** Straight thread o-ring fittings are utilized to adapt hydraulic systems to motors, pumps, cylinders, and valves.



## Installation (Adjustable Fitting)

1. Make sure threads and sealing surfaces are free of burrs, nicks, scratches, or any foreign materials.
2. Install proper SAE o-ring on port end of fitting if not already installed. Ensure o-ring is fully seated and retained properly.
3. Lubricate o-ring with a light coating of clean hydraulic oil.
4. Back off nut as far as possible and push washer up as far as possible. (figure 4 & 5)
5. Screw fitting into port. Hand tighten fitting until backup washer contacts face of port. (figure 6)
6. To position the fitting, unscrew to desired position, but not more than one full turn.
7. Hold fitting in position with wrench. Using appropriate torquing device, tighten nut to given torque rating from table. (figure 7)

Fitting Size	SAE Port Thread Size	In-lbs	Ft-lbs
-4	7/16 - 20	190 ± 10	16 ± 1
-6	9/16 - 18	420 ± 15	35 ± 1
-8	3/4 - 14	720 ± 25	60 ± 2
-10	7/8 - 14	1260 ± 50	105 ± 5
-12	1 1/16 - 12	1680 ± 75	140 ± 6
-16	1 5/16 - 12	2520 ± 100	210 ± 8
-20	1 5/8 - 12	3100 ± 150	260 ± 12
-24	1 7/8 - 12	3800 ± 150	315 ± 12



**NOTE** - ft-lb may be converted to Newton Meters by multiplying by 1.35582.

**NOTE** - in-lbs may be converted to Newton Meters by multiplying by 0.11298.

# WARRANTY

## Limited Warranty

Except for the Excluded Products as described below, all new products are warranted to be free from defects in material and/or workmanship during the Warranty Period, in accordance with and subject to the terms and conditions of this Limited Warranty.

1. Excluded Products. The following products are excluded from this Limited Warranty:

(a) Any cable, part that engages with the ground (i.e. sprockets), digging chain, bearing, teeth, tamping and/or demolition head, blade cutting edge, pilot bit, auger teeth and broom brush that either constitutes or is part of a product.

(b) Any product, merchandise or component that, in the opinion of Paladin Light Construction<sup>1</sup>, has been (i) misused; (ii) modified in any unauthorized manner; (iii) altered; (iv) damaged; (v) involved in an accident; or (vi) repaired using parts not obtained through Paladin Light Construction.

2. Warranty Period. The Limited Warranty is provided only to those defects that occur during the Warranty Period, which is the period that begins on the first to occur of: (i) the date of initial purchase by an end-user, (ii) the date the product is first leased or rented, or (iii) the date that is six (6) months after the date of shipment by Paladin Light Construction as evidenced by the invoiced shipment date (the "Commencement Date") and ends on the date that is twelve (12) months after the Commencement Date.

3. Terms and Conditions of Limited Warranty. The following terms and conditions apply to the Limited Warranty hereby provided:

(a) Option to Repair or Replace. Paladin Light Construction shall have the option to repair or replace the product.

(b) Timely Repair and Notice. In order to obtain the Limited Warranty, (i) the product must be repaired within thirty (30) days from the date of failure, and (ii) a claim under the warranty must be submitted to Paladin Light Construction in writing within thirty (30) days from the date of repair.

(c) Return of Defective Part or Product. If requested by Paladin Light Construction, the alleged defective part or product shall be shipped to Paladin Light Construction at its manufacturing facility or other location specified by Paladin Light Construction, with freight PRE-PAID by the claimant, to allow Paladin Light Construction to inspect the part or product.

Claims that fail to comply with any of the above terms and conditions shall be denied.

### **LIMITATIONS AND EXCLUSIONS.**

**THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY BASED ON A COURSE OF DEALING OR USAGE OF TRADE.**

**IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES.**

**IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR ANY LOSS OR CLAIM IN AN AMOUNT IN EXCESS OF THE PURCHASE PRICE, OR, AT THE OPTION OF PALADIN LIGHT CONSTRUCTION, THE REPAIR OR REPLACEMENT, OF THE PARTICULAR PRODUCT ON WHICH ANY CLAIM OF LOSS OR DAMAGE IS BASED. THIS LIMITATION OF LIABILITY APPLIES IRRESPECTIVE OF WHETHER THE CLAIM IS BASED ON BREACH OF CONTRACT, BREACH OF WARRANTY, NEGLIGENCE OR OTHER CAUSE AND WHETHER THE ALLEGED DEFECT IS DISCOVERABLE OR LATENT.**

<sup>1</sup>Attachment Technologies Inc., a subsidiary of Paladin Brands Holding, Inc. (PBHI) is referred to herein as Paladin Light Construction.