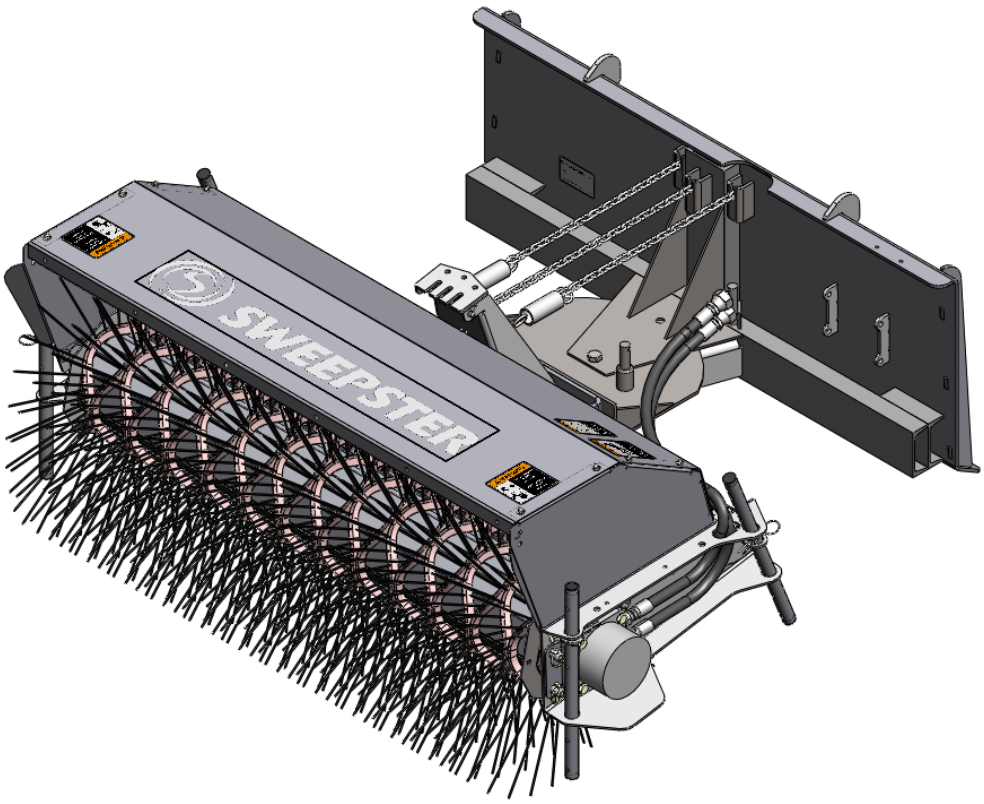
SWEEPSTER
BY PALADIN

# OPERATOR'S AND PARTS MANUAL
## S26 & S30 Series
## MRHL / CTC
## 222, 225, 226

### Hydraulic Windrow Sweepers




**Serial Number: _____**

**Model Number: _____**

**Manual Number: 51-4179**
**Release Date: October 2013**
**Serial Number: 0906001 & Up**
**Rev. 2**

# 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."

NOTE: A list of all Paladin Patents can be found at http://www.paladinattachments.com/patents.asp.

# 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.

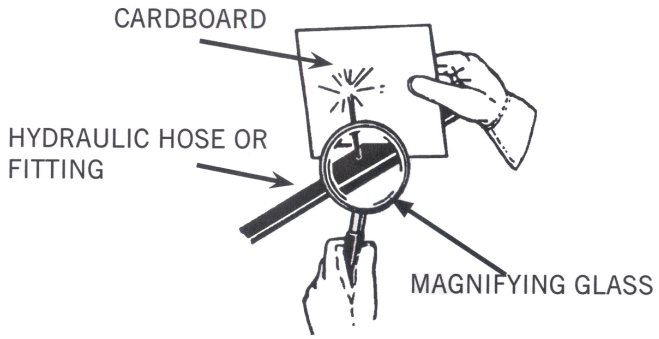
**WARNING!** **USE CARE WITH HYDRAULIC FLUID PRESSURE**

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.

**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.**

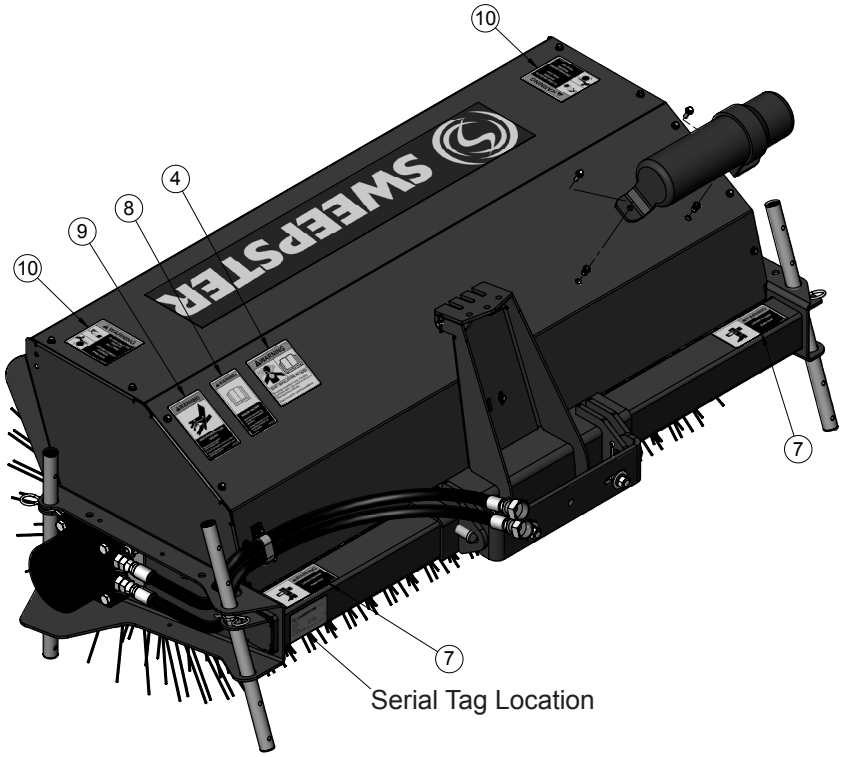
Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.

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.

# DECALS




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 Decals**

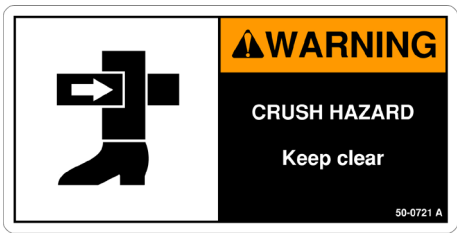
1. Clean the area of application with nonflammable solvent, and then wash the same area with soap and water.
2. Allow the surface to fully dry.
3. Remove the backing from the safety sign, exposing the adhesive surface.
4. Apply the safety sign to the position shown in the diagram above and smooth out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

**Instructions**

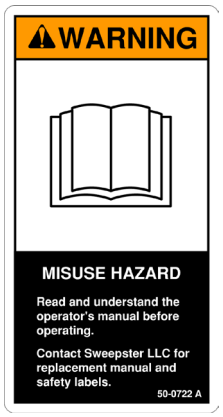
1. Keep all safety signs clean and legible.
2. Replace all missing, illegible, or damaged safety signs.
3. Replacement parts, for parts with safety signs attached, must also have safety signs attached.
4. Safety signs are available, free of charge, from your dealer.

# DECALS


4. 41043




7. 50-0721




8. 50-0722


9. 50-0724


10. 50-0726

| Item | Part | Qty | Description |
|---|---|---|---|
| 4. | 41043 | 1 | Decal, Warning, Hazardous Dust |
| 7. | 50-0721 | 2 | Label Warning, Crush Hazard |
| 8. | 50-0722 | 1 | Label, Warning, Misuse Hazard |
| 9. | 50-0724 | 1 | Label, Warning, High Pressure Fluid Hazard |
| 10. | 50-0726 | 2 | Label, Warning, Flying Objects & Entanglement |

# INSTALLATION

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

***NOTICE! S26/S30 Series sweepers are designed to fit tractors and loaders with hydraulic capacities of 10-20 gpm and up to 2400 psi.***

**MRHL**

To attach the mounting/swing assembly to a loader with a quick attach mounting, follow these instructions:

1. Remove the bucket or other attachment from the loader.

2. Center the mounting/swing assembly in front of the loader

3. Attach the mounting/swing assembly to the loader's quick attach. Lock the quick attach.

4. Level the mounting/swing assembly with the loader's tilt cylinders. Then, adjust the loader height until the assembly is 12 inches (305 mm) above the ground.

***NOTICE! The mounting/swing assembly must be level for the sweeper to operate properly when angled.***

5. Position the brush head assembly in front of the mounting/swing assembly.

6. Attach the brush head assembly to the front of the swing plate with 2, 1/2 inch carriage bolts, flat washers, lock washers and nuts.

7. Install the spring-chain assembly. To do so:

**NOTICE!** Refer to figure 2 during installation.

   a. Connect a spring to each end of a 26-link chain.

   b. Place a 26-link chain on each spring.

   c. Attach the free ends of the 26-link chains to the brackets on the mounting frame.

   d. Loop the other end of the spring-chain assembly over the outside slots on the brush head upright.

8. Install the 36-link transport chain by placing 1 end in the center slot of the brush head upright and the other end on the bracket on the mounting frame.

9. Refer to Leveling.

# INSTALLATION

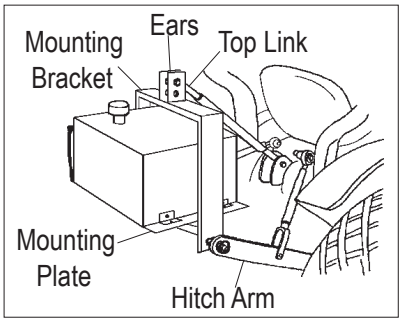


figure 1

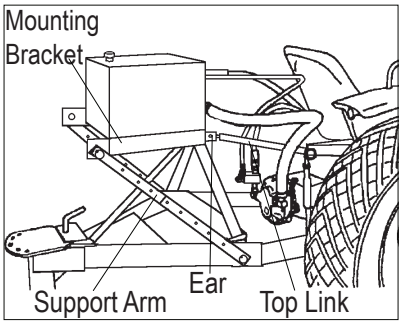


figure 2

**MRHL Power Pack**

The hydraulic tank can be mounted in 1 of 2 positions:

- On 3-point arms or
- Above the 3-point hitch attachment.

If you wish to use another attachment on the hitch, mount the tank above it. Otherwise, mount the tank on the 3-point arms.

**On 3-Point Hitch Arms**

Refer to figure 1 during installation.

1. Connect the mounting bracket to the hitch arms with hitch pins. Secure with ring pins.

2. Connect the hitch's top link to ears on the mounting bracket.

3. Fasten 2 mounting plates to the mounting bracket's bottom channel. Use 2, 1/2 inch carriage bolts, flat washers, lock washers and nuts.

4. Place the tank on top of the mounting plates and bolt in place with 4, 3/8 inch carriage bolts, lock washers and nuts.

5. Go to Installation: Pumps & Hoses.

**Above 3-Point Hitch**

Refer to figure 2 during installation.

1. Connect the attachment, the mounting bracket ears and the hitch's top link.

2. Assemble the support arms using 4, 3/8 inch cap screws, flat washers, lock washers and nuts.

3. Connect support arms to the hitch arms (with pins used on the hitch) and to the mounting bracket.

4. Level mounting bracket from front to back and from left to right by adjusting the support arms.

5. Install the tank on the mounting bracket with 4 carriage bolts.

6. Go to Installation: Pumps & Hoses.

# INSTALLATION

**Pump & Hoses**

1. Install the relief valve and fittings on the pump.
   (Refer to figure 3 during installation.)

   - The 1 5/16 inch - 1 1/4 inch barb fitting goes in the pump inlet.
   - Place fittings on the pump outlet in this order: 1 1/16 inch - 3/4 inch elbow fitting in the outlet opening. 3/4 inch - 3/4 inch nipple fitting on the elbow fitting, relief valve on the nipple and 3/4 inch elbow fitting on the relief valve.

2. Slide the pump onto the tractor PTO shaft. Make sure that the relief valve is on the left-hand side.

3. Fasten the 10-link chain to the bottom threaded hole on the right-hand side of the pump. Bolt the other end of the chain to the tractor. The chain must be attached to a  position on the tractor that is above and forward of the connection on the pump. The chain must also be taught. (Refer to figure 4)

***NOTICE!  This chain holds the pump on the shaft and prevents it from spinning during operation.***

**NOTE!** For steps 4 through 8 refer to figure 5.

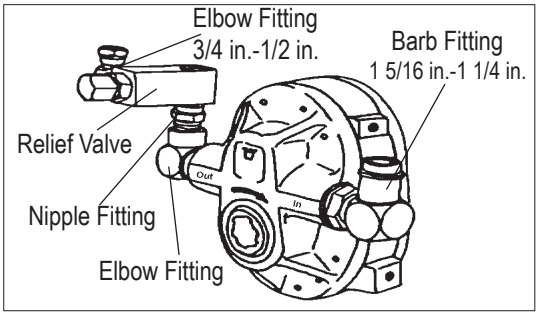


figure 3

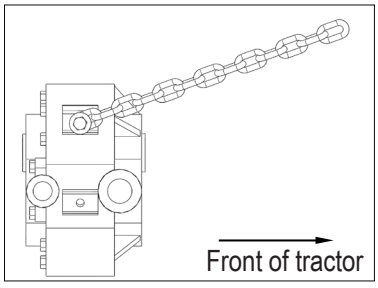


figure 4

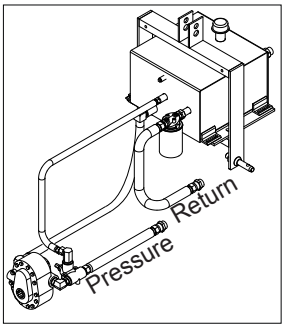


figure 5

# INSTALLATION

**Leveling**

1. Drive the unit to a level, paved area.

2. Move stands to highest position.

3. Swing the brush head assembly straight ahead, and then lower it so the bristle tips are 2 inches (51mm) above the ground.

4. On both sides of the brush head assembly, measure from the brush frame to the ground.

   - If the measurements are equal, proceed to step 5.

   - If the measurements are not equal, loosen the outer bolts on the mounting assembly and adjust the height of 1 end until the measurements are the same. Tighten the hardware.

5. Angle the brush head assembly to the right. Measure from each side of the brush frame to the ground. Then swing the brush head assembly to the left. Measure from each end of the brush frame to the ground.

   - If all 4 measurements are the same, the brush head assembly is level.

   - If the measurements are not equal, proceed to step 6.

6. Adjust the brush head using the loader's tilt cylinders.

   - If the measurements resemble figure 1, tilt the brush head forward with the cylinders.

   - If the measurements resemble figure 2, retract the tilt cylinders.

   - If the measurements resemble figure 3, 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.

7. Repeat steps 4 and 5 until the brush head is level.

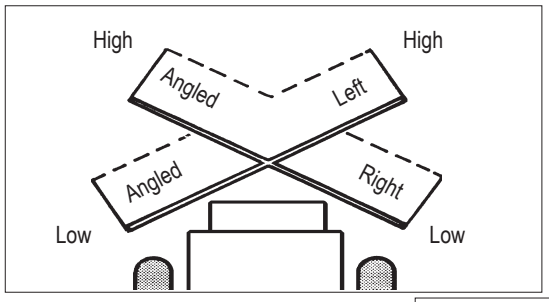


figure 1

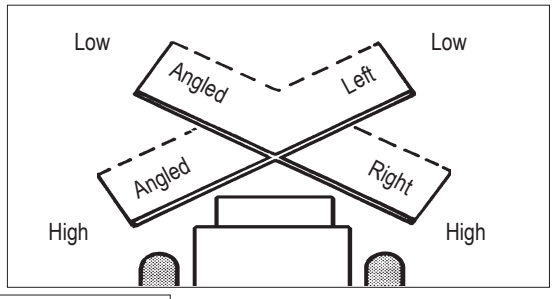


figure 2

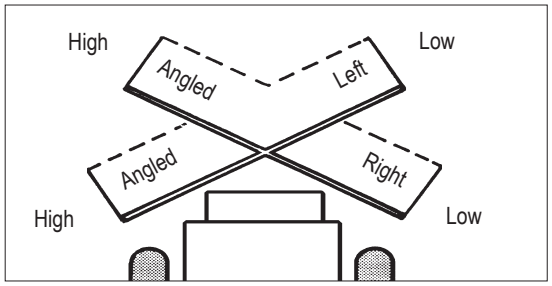


figure 3

# OPERATION

## Intended Use

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

Before operating sweeper:

- Learn sweeper and prime mover controls in off-road location.
- Be sure you are in a safe area, away from traffic or other hazards.
- Check hardware holding sweeper to host machine, making sure it is tight.
- Replace damaged or fatigued hardware.
- Make sure hydraulic hardware and fittings are tight.
- Replace damaged or fatigued fittings or hoses.
- Check tire pressures.
- Check tire ratings to be sure they match the prime mover load. Weigh sweeper end of prime mover to insure proper tire rating.
- Remove all property that could be damaged by flying debris from sweeping area.
- Be sure all persons not operating the sweeper are clear of sweeper discharge area.
- Always wear proper apparel, long sleeved shirt buttoned at cuffs; safety glasses, goggles or face shield; ear protection; and 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 operators area for any reason, lower sweeper to ground. Stop prime mover engine, set brakes, remove key from ignition.
- Minimize flying debris - use slowest rotating speed that will do the job.

# OPERATION

•Keep hands, feet, hair and other loose clothing away from all moving parts.

•Leave brush hood (shield) and all other shields and safety equipment in place when operating sweeper and primer mover.

•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.

•Never sweep toward people, buildings, vehicles or other objects that can be damaged by flying debris.

•Only operate sweeper while you are in the seat of the prime mover. Seat belt must be fastened while you operate prime mover. Only operate controls while the engine is running. Protective glasses must be worn while you operate prime mover and while you operate sweeper.

•Operate sweeper slowly in open area, check for proper operation of all controls and all protective devices. Note any repairs needed. Report any needed repairs.

**Before Each Use**

Perform daily maintenance as indicated in Maintenance Schedule.

Run prime mover and sweeper at  low idle. Check for hydraulic leaks or other problems, make corrections, if necessary, before using sweeper.

**WARNING!** **AVOID SERIOUS INJURY.** Check for large objects that could harm operator or others if thrown by sweeper. Remove items before operating.

**During Use**

Carry sweeper low to ground so operator has good visibility and stability. Avoid sudden movements from one side to the other side when you carry a sweeper.

Avoid excessive downward pressure on brush sections to prevent excessive wear. A  2 to 4 inch (5-10 cm) wide pattern is sufficient for most applications. Ensure that motor and bearing plates are equally adjusted to prevent uneven wear pattern.

# OPERATION

**Brush Pattern Adjustment**

A properly leveled brush offers the best sweeper performance. If your unit has optional casters, see Option - Casters. To check the brush pattern for all other units:

1. Move the sweeper to a dusty, flat surface.

2. Set the prime mover's parking brake. Leave the engine running.

3. Start the sweeper at a slow speed; then, lower it completely to the surface 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 wide, running the length of the brush. (Compare the swept area with figure 4.)

5. If necessary, adjust the brush pattern with the spring-chain assembly (figure 5).

    a. Raise the sweeper.

    b. Tighten the transport chain (figure 5) or lift cable and lower the sweeper so it supports weight.

    c. Move the spring-chain forward in the swing assembly chain holder to lower the brush head assembly or backward in the holder to raise it.

T**ransport Chain**

**NOTE!** Units with a lift cable do not have a transport chain.

The transport chain supports the weight of the brush head assembly during transport between work sites and during adjustment of the spring-chain assemblies. It should remain slack during sweeping.

To adjust the transport chain:

1. Raise the sweeper.

2. Tighten the transport chain.

3. Lower the sweeper so the transport chain supports the weight of the sweeper.

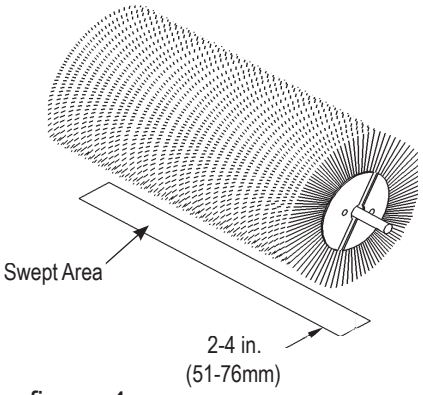


figure 4

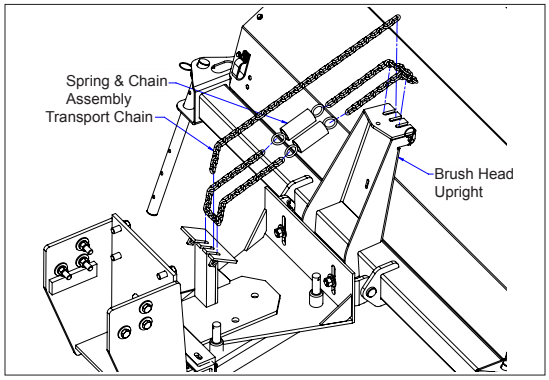


figure 5

# OPERATION

**Operating Tips**

***NOTICE!*** ***Avoid sweeper damage. Do not ram into piles. Use a dozer blade for this type of job.***

Snow

High brush speeds and slow ground speeds are needed to sweep snow effectively. Start at 3/4 throttle and the lowest gear of the prime mover. For wet and/or deep snow, increase to almost full throttle. This helps keep snow from packing up inside the brush hood.

In deep snow you may need to make more than one pass to get down to a clean surface.

To keep snow from blowing back onto a swept area, always sweep so the wind is at your back or so it follows the brush angle.

Dirt & Gravel

To keep dust at a minimum, plan your sweeping for days when it is overcast and humid or after it has rained. Also, sweep so the wind blows at your back or in the direction the brush head is angled.

Low brush speeds and moderate ground speeds work best for cleaning debris from hard surfaces. Brush speeds that are too fast tend to raise dust because of the aggressive sweeper action.

To sweep gravel, use just enough brush speed to “roll” the gravel, not throw it.

Heavy Debris

For 2 inches (51mm) or more of heavy debris, a maximum brush speed in the low range and ground speeds of less than 5 mph (8 kph) are recommended.

Thatch

Low brush speeds and low prime mover speeds do the best thatching job.

To prevent the brush from pulling itself into the ground, adjust the spring-chain assembly so the bristle tips barely touch the grass.
If the brush pulls into the grass and stalls while sweeping, use the lift to raise the brush. **Do not** increase throttle to override a stall out.

Use a combination of brush speeds and ground speeds that rolls up a neat windrow.

To keep thatch from blowing back into a swept area, sweep with the wind at your back or in the direction the brush is angled.

# OPERATION

**WARNING! Never raise the sweeper more than a few feet off the ground. The sweeper can tip back or the prime mover can tip over causing death or serious injury.**

- Before leaving the operator's area for any reason, lower the sweeper to the ground. Stop the prime mover engine, set the parking brake and remove the key from the ignition.
- Minimize flying debris - use the slowest rotating speed that will do the job. See Operating Tips
- Keep hands, feet, hair and 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 and prime mover.
- Be aware of the extra weight and width a sweeper adds. Reduce travel speed accordingly. See Operating the Sweeper.
- When sweeping on rough terrain, reduce speed to avoid "bouncing" the sweeper. Loss of steering can result.
- 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 operating position. The safety restraint 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 needed repairs during operation of the sweeper. Report any needed repairs.

**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.

# OPERATION

## 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.***

## General Storage:

Storage:

- Clean the unit thoroughly, removing all snow, 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.
- 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.
- 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.

- Attach lifting accessories to unit at recommended lifting points, if marked.
- 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 injury or death.**

## 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.

- Attach tie down accessories to unit as recommended, if marked.
- 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

**Schedule**

For best sweeper performance, follow this maintenance schedule.

| Part | Schedule | | | | |
|---|---|---|---|---|---|
| | **Daily** | **Every 50 hr.** | **Every 100 hr** | **Every 500 hr** | **See Prime Mover Manual** |
| **Brush Head Assembly:** Check brush pattern (See Adjustments: Brush Pattern) | ✓ | | | | |
| **Hardware:** Check and tighten if necessary | ✓ | | | | |
| **Hydraulic Filter Element:** Change | | | ✓ | | |
| **Hydraulic Fittings & Hoses:** Inspect for leaks or damage; repair or replace when necessary | ✓ | | | | |
| **Hydraulic Oil:** Check level; add as needed | ✓ | | | | |
| Change; Use ISO VG-46 oil | | | | ✓ | |
| **Prime Mover Air Cleaner:** Clean or replace | | | | | ✓ |
| **Swing Plate:** Grease with EP2 or equivalent | | ✓ | | | |

**Hydraulic System**

***NOTICE!*** ***To prevent hydraulic system contamination, change hydraulic oil and filters at regularly scheduled intervals.***

| 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**

1. Remove motor mount lynch pins. Retain pins for reinstallation. Remove motor mount.
2. Remove motor assembly from core. Do not tangle hoses.
3. Remove bearing mount lynch pins. Retain pins for reinstallation.
4. Remove core from brush head assembly.
5. Remove retaining plate from core assembly.
6. Remove old sections.
7. Install new sections by doing the following:
    a. Number the drive locations on the core as 1, 2, and 3 (figure 1)
    b. Slide the first section onto the core with the drive pins on either side of the tube 1 (figure 2). Make sure that the drive pins face up.
    c. Place the second section on the core with the drive pins on either side of tube 2. Be sure the drive pins face down.
    d. Put the third section on with the drive pins around tube 3. Be sure the drive pins face up.
    e. Slide sections on until the core is full, making sure to alternate the tubes used and the direction of the drive pins.
8. Re-attach the section retaining plate.
9. Place the core back into the brush frame.
10. Slide motor assembly back into the core taking care not to tangle hoses.
11. Re-attach motor mount with pins removed in first step.
12. Re-attach the bearing plate with pins removed from step 3.

# MAINTENANCE

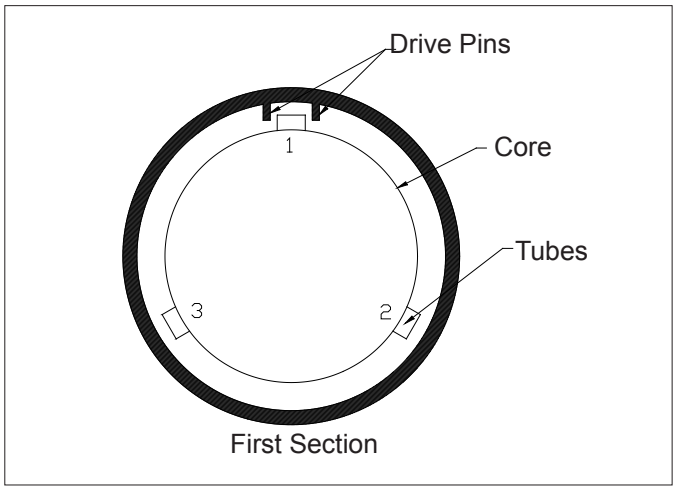



figure 1

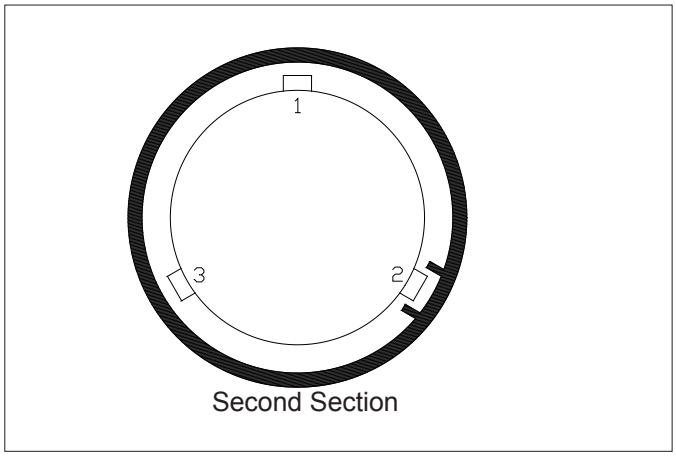



figure 2

# TROUBLESHOOTING

## Brush Head

| Problem | Possible Causes | Possible Solution |
|---|---|---|
| Brush rotates wrong direction | Hoses installed incorrectly | Switch hoses at brush head tubes |
| Brush slows or stops when sweeping | Brush pattern too wide | Adjust brush pattern to 2-4 inches (51-102mm) wide: see Maintenance: Adjusting Brush Pattern |
| | Travel speed too fast | Travel no more than 5 mph (8 kph) while sweeping |
| | 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) |
| | Pump has failed | Contact dealer to repair or replace |
| | Filter plugging | Change or clean filter |
| | Hydraulic motor is failing | Test hydraulic system: see Troubleshooting: Hydraulic Problems |
| Brush head assembly “bounces” during sweeping | Spring-chain assembly too loose | Adjust spring-chain assembly, see: Adjusting Spring-Chain Assembly |
| | 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) |
| | Core is bent | Replace core |
| 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 pattern to 2-4 inches (51-102mm) wide, see: Setting Brush Pattern |

## Spring-Chain Assemblies

| Problem | Possible Causes | 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 (8kph) |

# TROUBLESHOOTING

## Hydraulic System

| Problem | Possible Causes | 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 |
| | Host pump flow rate exceeds maximum gpm rating for broom. Back pressure exceeds BTU removal by heat exchanger | Contact host manufacturer for proper flow control method |
| Hydraulic quick couplers leak | Quick coupler poppet is unseated | Reseat poppet; replace quick coupler if poppet is beyond repair |
| Hydraulic motor seals leak | Flow rate exceeds maximum gpm rating for broom. Hydraulic pressure exceeds maximum psi rating for broom | Contact Sweepster |
| | Motor is failing | High number of hours on motor; Contact dealer to rebuild or replace |
| Hydraulic oil flows from breather cap on hydraulic tank | Hydraulic tank too full | Drain hydraulic tank until level is 2 inches (51mm) from top |

# TROUBLESHOOTING

**Hydraulic Problems**

If hydraulic problems - which include the brush failing to rotate, the brush slowing or stopping when making contact with the sweeping surface or swing/lift cylinders not functioning - occur, complete all the following checks on the hydraulic system.

**WARNING! Avoid serious injury.**

**Test components must have a minimum rating of 3000 psi (206.0 bars). Otherwise, components could rupture, causing serious injury. Open the gate valve before beginning any tests.**

**Do not operate the hydraulic system more than 5 seconds with pressure over 2000 psi (138.0 bars). Higher pressures can rupture hydraulic components and cause serious injury.**

**Testing Relief Setting**

1. Add a flow meter, pressure gauge and gate valve on the pressure side of the sweeper hydraulic system.

2. Raise the sweeper. Then, engage the brush.

3. Shut the gate valve and note the reading on the pressure gauge.

**CAUTION! Avoid pump damage. Do not run test for more than 5 seconds.**

4. Refer to the prime mover manual for proper relief setting. If the pressure gauge reading does not match manufacturer's recommendations, take the prime mover to your dealer for repair.

5. Go to Testing Pump or Prime Mover Hydraulics.

**Testing Power Pack Hydraulic Pump**

Complete the following steps to test the pump on units with a power pack.

1. Place a pressure gauge, flow gauge and gate valve between the pump and the pressure line on the brush frame.

2. Make sure the prime mover is in Neutral with the parking brake on. Start the prime mover at idle and engage the sweeper.

3. Raise engine speed to normal operating rpm.

4. Note the reading on the flow gauge. Then, shut the gate valve. Note the reading on the pressure gauge.

    - If the flow gauge reads at least 10 gpm (.63 lps) and the pressure gauge reached 2000 psi (138.0 bars), the pump is functioning properly.

    - If the flow and/or pressure did not reach the proper reading, the pump has failed. Take it to your dealer to have it rebuilt or replaced.

5. Remove the pressure gauge, flow gauge and gate valve and reconnect hoses.

6. Go to Testing Brush Head Motors.

**Testing Brush Head Motors**

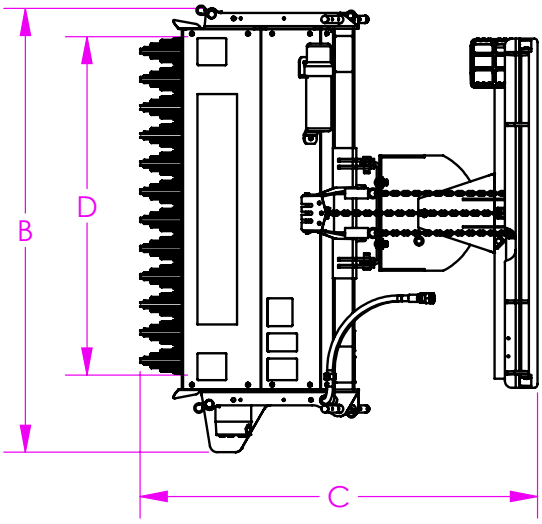
1. Place a pressure gauge and flow gauge between the sweeper or prime mover hydraulic tank and the return line on the brush frame.

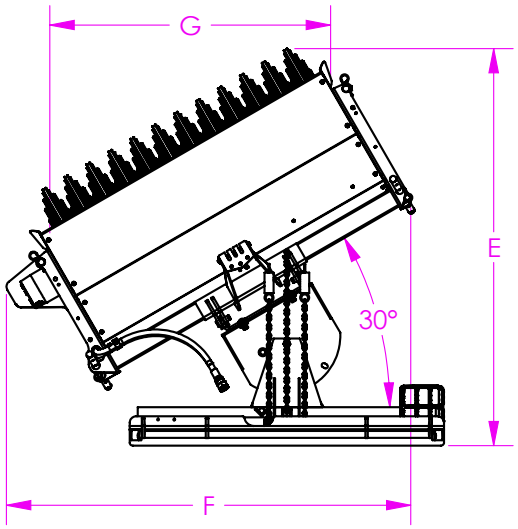
2. Make sure the prime mover is in Neutral with the parking brake on. Start the prime mover at idle and engage the sweeper. Then, adjust the brush to the maximum sweeping pattern.

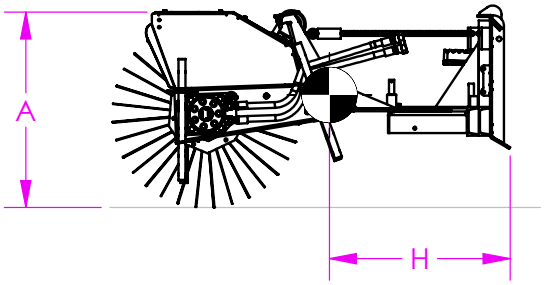
3. When the brush stalls, note the reading on the flow gauge. If it is 3 gpm (.19 lps) or more, the motor(s) need(s) to be replaced.

# PRODUCT SPECIFICATIONS

222 Brush Head



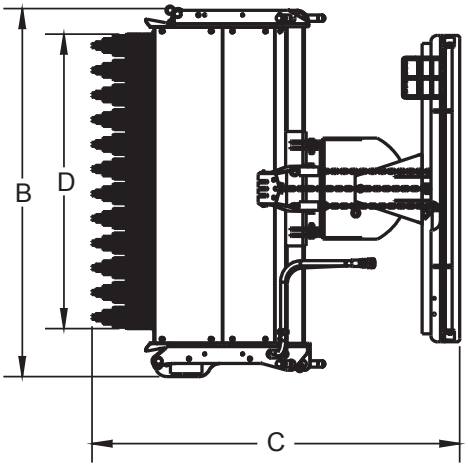



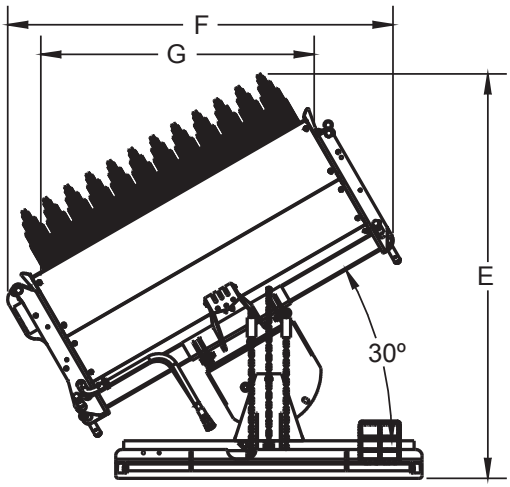



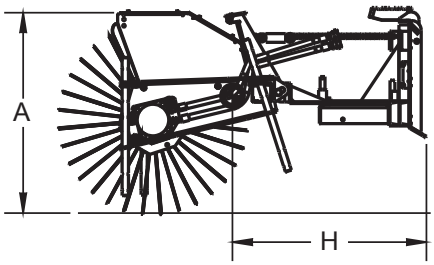

| 222 Brush Head | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **22248** | **22249** | **22259** | **22260** | **22261** | **22272** | **22273** |
| A. Overall Height | 27.1 inches (68.8 cm) | | | | | | |
| B Overall Width @ 0º | 59.4 inches (151 cm) | | 71.4 inches (181 cm) | | | 83.4 inches (212 cm) | |
| C. Overall Length @ 0º | 54.4 inches (138 cm) | | | | | | |
| D. Sweeping Width @ 0º | 48 inches (122 cm) | | 60 inches (152 cm) | | | 72 inches (183 cm) | |
| E. Overall Length @30º | 60.7 inches (154 cm) | | 63.7 inches (162 cm) | | | 66.7 inches (169 cm) | |
| F. Overall Width @ 30º | 60 inches (152 cm) | | 72 inches (183 cm) | | | 84 inches (213 cm) | |
| G. Sweeping Width @30º | 41.5 inches (105 cm) | | 52 inches (132 cm) | | | 60.4 inches (153 cm) | |
| H. Center of Gravity | 26.5 inches (67.3 cm) | | 27.5 inches (69.9 cm) | | | 28.5 inches (72.4 cm) | |
| Weight | 370 lbs (168 kg) | | 405 lbs (184 kg) | | | 440 lbs (200 kg) | |
| Flow Range | 8-15 gpm (30-57 lpm) | 10-18 gpm (38-68 lpm) | 4-10 gpm (15-38 lpm) | 8-15 gpm (30-57 lpm) | 10-18 gpm (38-68 lpm) | 8-15 gpm (30-57 lpm) | 10-18 gpm (38-68 lpm) |
| Maximum Pressure | 3000 psi (206 bar) | | | | | | |
| Maximum Articulation | 30 Degrees | | | | | | |
| Brush Diameter | 26 inches (66 cm) | | | | | | |

# PRODUCT SPECIFICATIONS

225 Brush Head



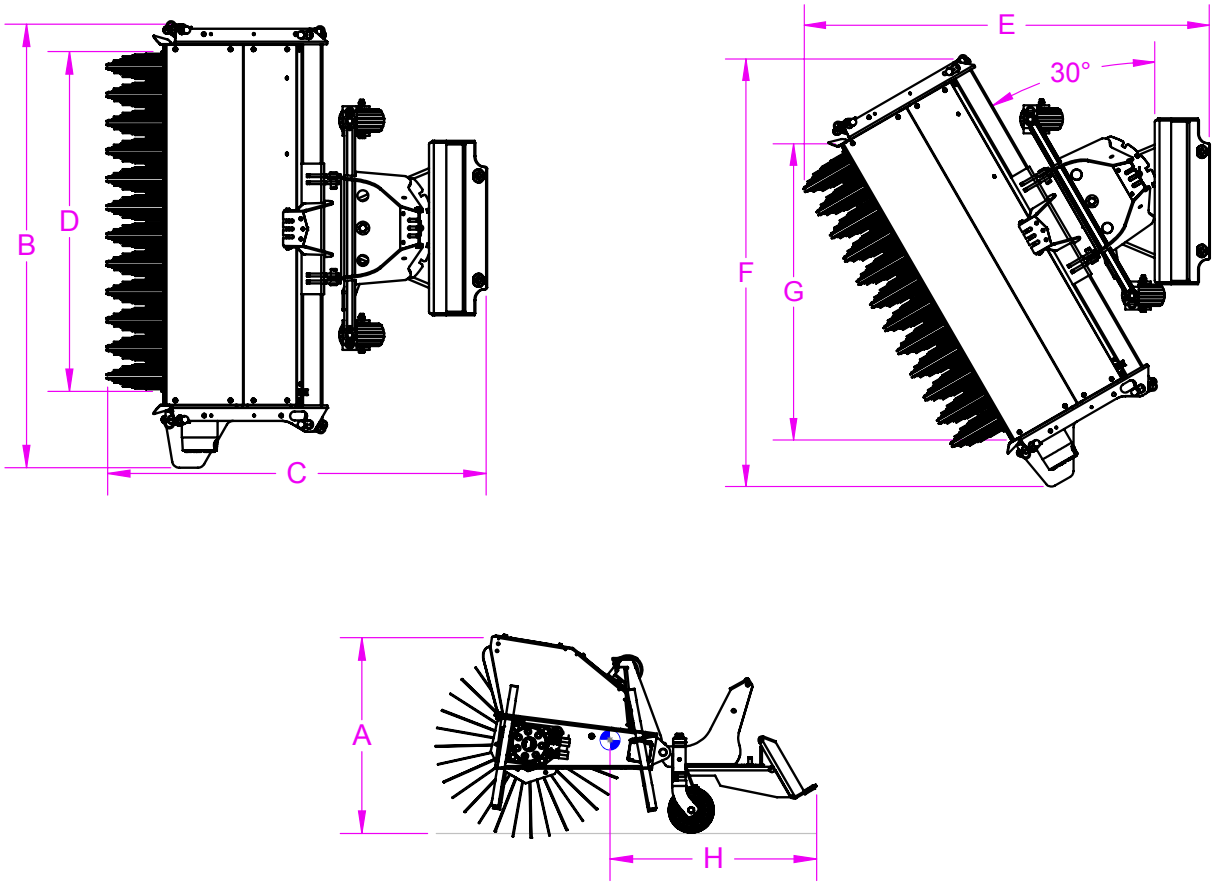




| 225 Brush Head | | | | | | |
|---|---|---|---|---|---|---|
| | **22560** | **22561** | **22572** | **22573** | **22659** | **22585** |
| A. Overall Height | 32 inches (81.3 cm) | | | | | |
| B Overall Width @ 0º | 70.3 inches (178.6 cm) | | 82.3 inches (209 cm) | | 94.3 inches (239.5 cm) | |
| C. Overall Length @ 0º | 58.3 inches (148.1 cm) | | | | | |
| D. Sweeping Width @ 0º | 48 inches (122 cm) | | 60 inches (152 cm) | | 72 inches (183 cm) | |
| E. Overall Length @30º | 67.1 inches (170.4 cm) | | 70.1 inches (178.1 cm) | | 73.1 inches (185.7 cm) | |
| F. Overall Width @ 30º | 70.7 inches (179.6 cm) | | 81.1 inches (206 cm) | | 91.5 inches (232.4 cm) | |
| G. Sweeping Width @30º | 52 inches (132 cm) | | 62.4 inches (159 cm) | | 72.8 inches (185 cm) | |
| H. Center of Gravity | 29.1 inches (73.9 cm) | | 30 inches (76.2 cm) | | 30.8 inches (78.2 cm) | |
| Weight | 445 lbs (202 kg) | | 485 lbs (220 kg) | | 525 lbs (238 kg) | |
| Flow Range | 8-15 gpm (30-57 lpm) | 10-18 gpm (38-68 lpm) | 8-15 gpm (30-57 lpm) | 10-18 gpm (38-68 lpm) | 8-15 gpm (30-57 lpm) | 10-18 gpm (38-68 lpm) |
| Maximum Pressure | 3000 psi (206 bar) | | | | | |
| Maximum Articulation | 30 Degrees | | | | | |
| Brush Diameter | 30 inches (76 cm) | | | | | |

# PRODUCT SPECIFICATIONS

226 Brush Head




| 226 Brush Head | | | | | |
|---|---|---|---|---|---|
| | **22640** | **22641** | **22646** | **22647** | **22659** |
| A. Overall Height | 27.8 inches (70.6 cm) | | | | |
| B Overall Width @ 0° | 53.4 inches (135.6 cm) | | 59.4 inches (150.9 cm) | | 71.4 inches (181.4 cm) |
| C. Overall Length @ 0° | 54.4 inches (138 cm) | | | | |
| D. Sweeping Width @ 0° | 42 inches (107 cm) | | 48 inches (122 cm) | | 60 inches (152 cm) |
| E. Overall Length @30° | 57.4 inches (145.8 cm) | | 58.9 inches (149.6 cm) | | 61.9 inches (157.2 cm) |
| F. Overall Width @ 30° | 54 inches (137.2 cm) | | 60 inches (152 cm) | | 72 inches (183 cm) |
| G. Sweeping Width @30° | 36.3 inches (92 cm) | | 41.5 inches (105 cm) | | 52 inches (132 cm) |
| H. Center of Gravity | 27.2 inches (69.1 cm) | | 27.7 inches (70.4 cm) | | 28.7 inches (72.9 cm) |
| Weight | 318 lbs (144 kg) | | 335 lbs (152 kg) | | 370 lbs (168 kg) |
| Flow Range | 4-8 gpm (15-30 lpm) | 6-12 gpm (23-45 lpm) | 4-8 gpm (15-30 lpm) | 6-12 gpm (23-45 lpm) | 6-12 gpm (23-45 lpm) |
| Maximum Pressure | 3000 psi (206 bar) | | | | |
| Maximum Articulation | 30 Degrees | | | | |
| Brush Diameter | 26 inches (66 cm) | | | | |

# BOLT TORQUE SPECIFICATIONS

## GENERAL TORQUE SPECIFICATION TABLES

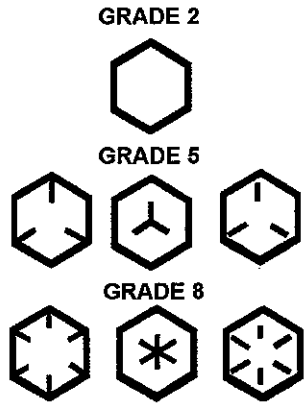
Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

## 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 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 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 |

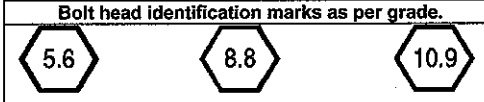
Bolt head identification marks as per grade.
NOTE: Manufacturing Marks Will Vary




## 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.

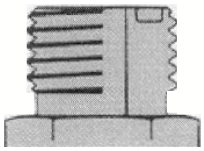



| Size of Bolt | Grade No. | Pitch (mm) | Pounds Feet | Newton-Meters | Pitch (mm) | Pounds Feet | Newton-Meters |
|---|---|---|---|---|---|---|---|
| M6 | 5.6 | 1.0 | 3.6-5.8 | 4.9-7.9 | - | - | - |
| | 8.8 | | 5.8-.4 | 7.9-12.7 | | - | - |
| | 10.9 | | 7.2-10 | 9.8-13.6 | | - | - |
| M8 | 5.6 | 1.25 | 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 |

# 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 0-ring to end of fitting if not already installed. Ensure 0-ring is fully seated and retained properly.
3. Lubricate 0-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

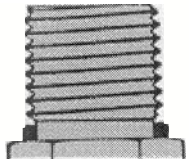
| SAE Dash Size | **Tube Side Thread Size** | **In-lbs** | **Ft-lbs** |
|---|---|---|---|
| -4 | 9/16 - 18 | 220 ± 10 | 18 ± 1 |
| -6 | 11/16 - 16 | 320 ± 25 | 27 ± 2 |
| -8 | 13/16 - 16 | 480 ± 25 | 40 ± 2 |
| -10 | 1 - 14 | 750 ± 35 | 63 ± 3 |
| -12 | 1 3/16 - 12 | 1080 ± 45 | 90 ± 4 |
| -16 | 1 7/16 - 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**

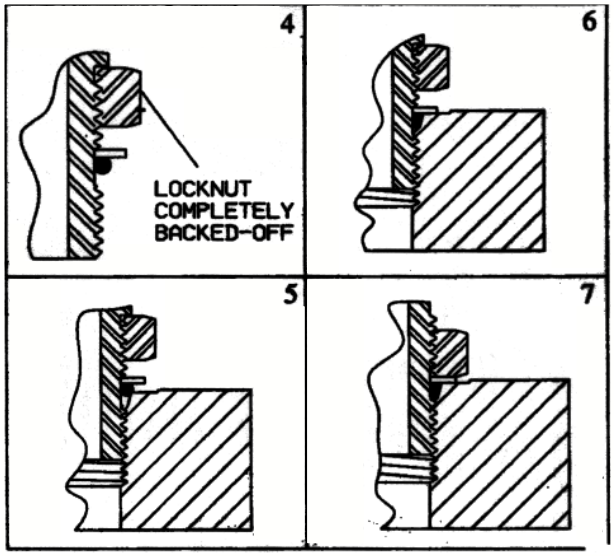


**NOTE -** Straight thread o-ring fittings are utilized to adapt hydraulic systems to motors, pumps, cylinders, and valves.

**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[1], 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.**

*[1]Attachment Technologies Inc., a subsidiary of Paladin Brands Holding, Inc. (PBHI) is referred to herein as Paladin Light Construction.*

*February 10, 2010*

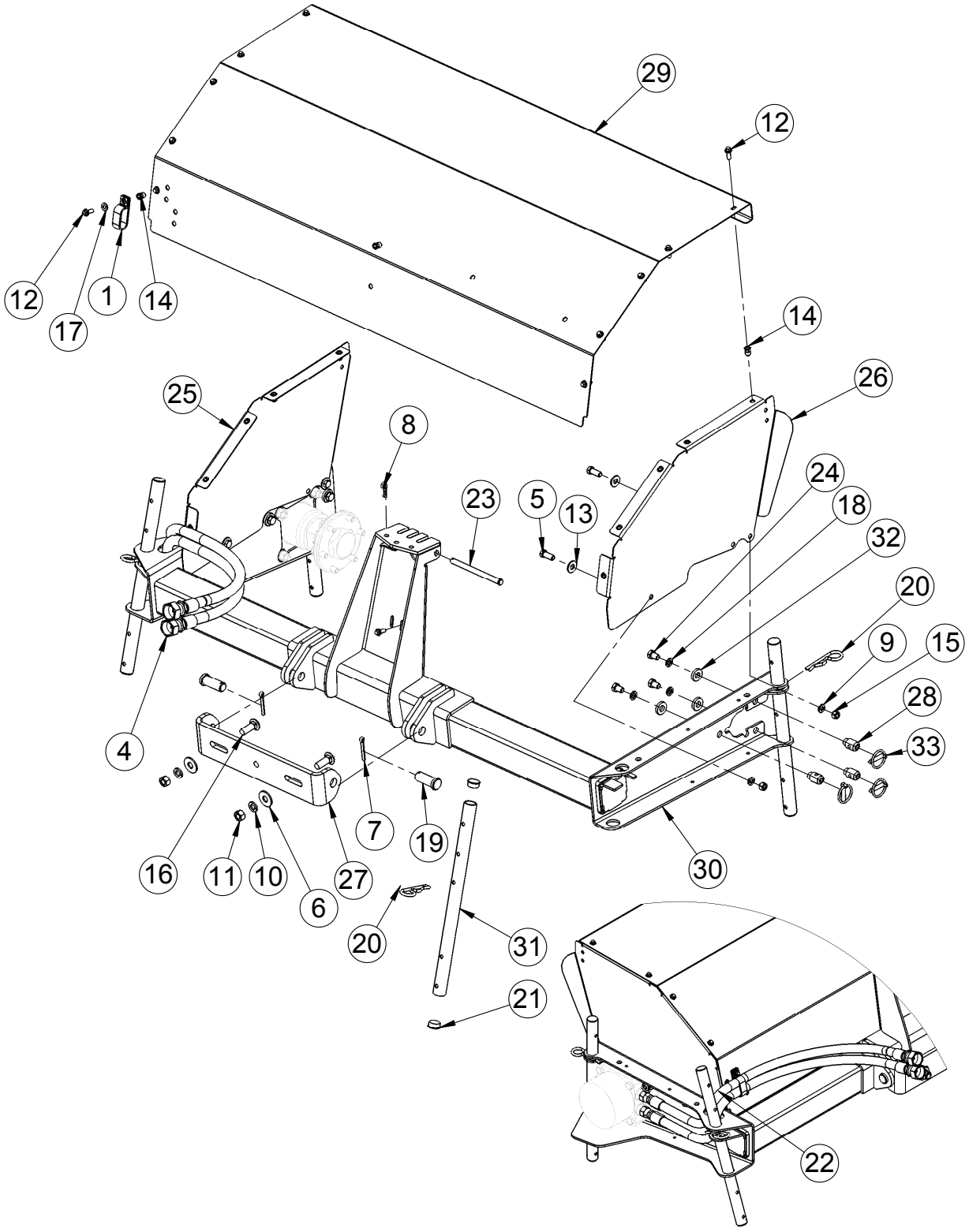
# NOTES

# BRUSH HEAD 222
# STANDARD

Assembly 28-10305

| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-2490 | 1 | Clamp, Hose, Double, Rubber Coat |
| 4. | 03-5620 | 2 | Hose, .5 x 72, TC, 8FF-12FF (4-5 ft) |
| | 03-5111 | 2 | Hose, 5 x 84, TC, 8FF-12FF (6 ft) |
| 5. | 07-0018 | 4 | Screw, HHC, Gr8, 3/8-16 x 1 |
| 6. | 07-0156 | 2 | Washer, Flat, Gr8, 1/2 |
| 7. | 07-0206 | 2 | Pin, Cotter, Gr2, 3/16 x 2 |
| 8. | 07-0209 | 1 | Clip, Hairpin, 16ga x 1 3/8 |
| 9. | 07-1718 | 4 | Washer, Lock, Split, Medium, 3/8 |
| 10. | 07-1762 | 2 | Washer, Lock, Split, Medium, 1/2 |
| 11. | 07-1764 | 2 | Nut, Hex, Gr8, 1/2-13 |
| 12. | 07-2952 | 12 | Screw, HFH, CL10.9, M6-1 x 20 |
| 13. | 07-3279 | 4 | Washer, Flat, Gr8, 3/8 |
| 14. | 07-3617 | 12 | Nut, Insert, Hex, M6 x 1 |
| 15. | 07-3654 | 4 | Nut, Gr8, 3/8-16 |
| 16. | 07-3708 | 2 | Bolt, Carriage, Gr5, 1/2-13 x 1 1/2 |
| 17. | 07-3736 | 1 | Washer, Flat, CL8.8, M8 |
| 18. | 07-3747 | 6 | Washer, Lock, Split, Medium, M10 |
| 19. | 07-4046 | 2 | Pin, Clevis, 3/4 x 2 |
| 20. | 07-4522 | 4 | Clip, Hairpin, .162 x 3.43 |
| 21. | 07-4523 | 8 | Cap, Tube, Vinyl, 1 x .51, Black |
| 22. | 07-4539 | 1.5ft | Sleeve, Hose, 3/4, Partek, Bulk |
| 23. | 07-6488 | 1 | Pin, Clevis, 3/8 x 5 1/2 |
| 24. | 07-6769 | 6 | Screw, HHC, CL10.9, M10-1.5 x 16mm |
| 25. | 13-13457 | 1 | Sheet, Side, Hood, Left |
| 26. | 13-13458 | 1 | Sheet, Side, Hood, Right |
| 27. | 13-13525 | 1 | Plate, Mounting |
| 28. | 13-14083 | 6 | Stud, Mounting, Motor |
| 29. | 13-16178-4 | 1 | Sheet, Hood (4 ft) |
| | 13-16178-5 | 1 | Sheet, Hood (5 ft) |
| | 13-16178-6 | 1 | Sheet, Hood (6 ft) |
| 30. | 13-16638-4 | 1 | Weld, Brush Head Frame (4 ft) |
| | 13-16638-5 | 1 | Weld, Brush Head Frame (5 ft) |
| | 13-16638-6 | 1 | Weld, Brush Head Frame (6 ft) |
| 31. | 13-9818 | 4 | Tube, Round, Stand |
| 32. | P852608 | 6 | Washer, Hard, 1/2 |
| 33. | RHW8068 | 6 | Pin, Lynch, .25-1.56 |

# BRUSH HEAD 222
# STANDARD

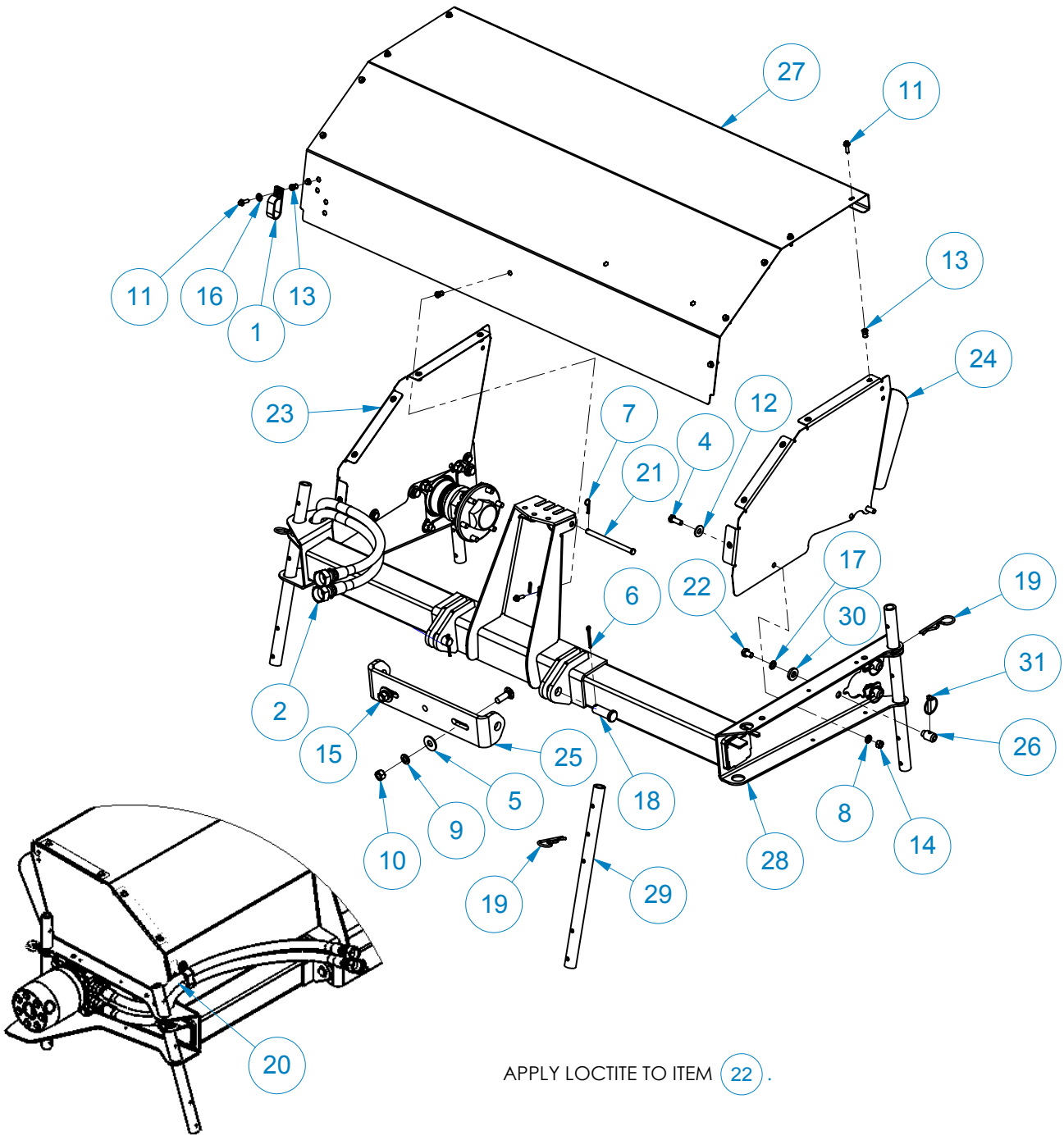


# BRUSH HEAD 222
# WITH HEAVY DUTY STANDS

Assembly 28-10835

| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-2490 | 1 | Clamp, Hose, Double, Rubber Coat |
| 2. | 03-5620 | 2 | Hose, .5 x 72, TC, 8FF-12FF (4-5 ft) |
| | 03-5111 | 2 | Hose, 5 x 84, TC, 8FF-12FF (6 ft) |
| 4. | 07-0018 | 4 | Screw, HHC, Gr8, 3/8-16 x 1 |
| 5. | 07-0156 | 2 | Washer, Flat, Gr8, 1/2 |
| 6. | 07-0206 | 2 | Pin, Cotter, Gr2, 3/16 x 2 |
| 7. | 07-0209 | 1 | Clip, Hairpin, 16ga x 1 3/8 |
| 8. | 07-1718 | 4 | Washer, Lock, Split, Medium, 3/8 |
| 9. | 07-1762 | 2 | Washer, Lock, Split, Medium, 1/2 |
| 10. | 07-1764 | 2 | Nut, Hex, Gr8, 1/2-13 |
| 11. | 07-2952 | 12 | Screw, HFH, CL10.9, M6-1 x 20 |
| 12. | 07-3279 | 4 | Washer, Flat, Gr8, 3/8 |
| 13. | 07-3617 | 12 | Nut, Insert, Hex, M6 x 1 |
| 14. | 07-3654 | 4 | Nut, Gr8, 3/8-16 |
| 15. | 07-3708 | 2 | Bolt, Carriage, Gr5, 1/2-13 x 1 1/2 |
| 16. | 07-3736 | 1 | Washer, Flat, CL8.8, M8 |
| 17. | 07-3747 | 6 | Washer, Lock, Split, Medium, M10 |
| 18. | 07-4046 | 2 | Pin, Clevis, 3/4 x 2 |
| 19. | 07-4522 | 4 | Clip, Hairpin, .162 x 3.43 |
| 20. | 07-4539 | 1.5ft | Sleeve, Hose, 3/4, Partek, Bulk |
| 21. | 07-6488 | 1 | Pin, Clevis, 3/8 x 5 1/2 |
| 22. | 07-6769 | 6 | Screw, HHC, CL10.9, M10-1.5 x 16mm |
| 23. | 13-13457 | 1 | Sheet, Side, Hood, Left |
| 24. | 13-13458 | 1 | Sheet, Side, Hood, Right |
| 25. | 13-13525 | 1 | Plate, Mounting |
| 26. | 13-14083 | 6 | Stud, Mounting, Motor |
| 27. | 13-16178-4 | 1 | Sheet, Hood (4 ft) |
| | 13-16178-5 | 1 | Sheet, Hood (5 ft) |
| | 13-16178-6 | 1 | Sheet, Hood (6 ft) |
| 28. | 13-16638-4 | 1 | Weld, Brush Head Frame (4 ft) |
| | 13-16638-5 | 1 | Weld, Brush Head Frame (5 ft) |
| | 13-16638-6 | 1 | Weld, Brush Head Frame (6 ft) |
| 29. | 13-17877 | 4 | Tube, Round, Stand, Heavy Duty |
| 30. | P852608 | 6 | Washer, Hard, 1/2 |
| 31. | RHW8068 | 6 | Pin, Lynch, .25-1.56 |

# BRUSH HEAD 222
# WITH HEAVY DUTY STANDS

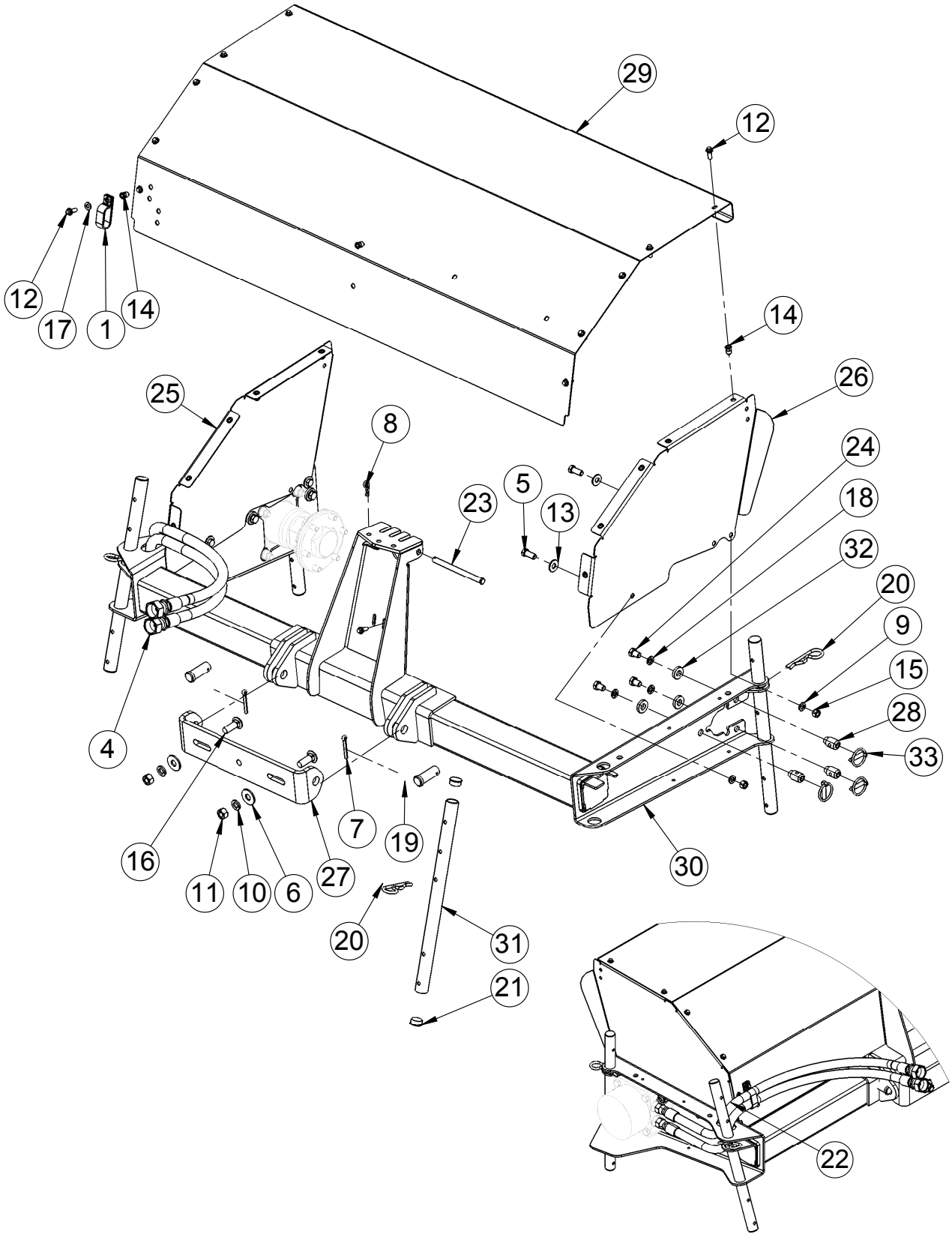



APPLY LOCTITE TO ITEM 22 .

# BRUSH HEAD 225

| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-2490 | 1 | Clamp, Hose, Double, Rubber Coat |
| 4. | 03-5620 | 2 | Hose, .5 x 72, TC, 8FF-12FF (4-5 ft) |
| | 03-5111 | 2 | Hose, 5 x 84, TC, 8FF-12FF (6-7 ft) |
| 5. | 07-0018 | 4 | Screw, HHC, Gr8, 3/8-16 x 1 |
| 6. | 07-0156 | 2 | Washer, Flat, Gr8, 1/2 |
| 7. | 07-0206 | 2 | Pin, Cotter, Gr2, 3/16 x 2 |
| 8. | 07-0209 | 1 | Clip, Hairpin, 16ga x 1 3/8 |
| 9. | 07-1718 | 4 | Washer, Lock, Split, Medium, 3/8 |
| 10. | 07-1762 | 2 | Washer, Lock, Split, Medium, 1/2 |
| 11. | 07-1764 | 2 | Nut, Hex, Gr8, 1/2-13 |
| 12. | 07-2952 | 12 | Screw, HFH, CL10.9, M6-1 x 20 |
| 13. | 07-3279 | 4 | Washer, Flat, Gr8, 3/8 |
| 14. | 07-3617 | 12 | Nut, Insert, Hex, M6 x 1 |
| 15. | 07-3654 | 4 | Nut, Gr8, 3/8-16 |
| 16. | 07-3708 | 2 | Bolt, Carriage, Gr5, 1/2-13 x 1 1/2 |
| 17. | 07-3736 | 1 | Washer, Flat, CL8.8, M8 |
| 18. | 07-3747 | 6 | Washer, Lock, Split, Medium, M10 |
| 19. | 07-4046 | 2 | Pin, Clevis, 3/4 x 2 |
| 20. | 07-4522 | 4 | Clip, Hairpin, .162 x 3.43 |
| 21. | 07-4523 | 8 | Cap, Tube, Vinyl, 1 x .51, Black |
| 22. | 07-4539 | 1.5ft | Sleeve, Hose, 3/4, Partek, Bulk |
| 23. | 07-6488 | 1 | Pin, Clevis, 3/8 x 5 1/2 |
| 24. | 07-6769 | 6 | Screw, HHC, CL10.9, M10-1.5 x 16mm |
| 25. | 13-13457 | 1 | Sheet, Side, Hood, Left |
| 26. | 13-13458 | 1 | Sheet, Side, Hood, Right |
| 27. | 13-13525 | 1 | Plate, Mounting |
| 28. | 13-14083 | 6 | Stud, Mounting, Motor |
| 29. | 13-16178-4 | 1 | Sheet, Hood (4 ft) |
| | 13-16178-5 | 1 | Sheet, Hood (5 ft) |
| | 13-16178-6 | 1 | Sheet, Hood (6 ft) |
| | 13-16178-7 | 1 | Sheet, Hood (7 ft) |
| 30. | 13-16638-4 | 1 | Weld, Brush Head Frame (4 ft) |
| | 13-16638-5 | 1 | Weld, Brush Head Frame (5 ft) |
| | 13-16638-6 | 1 | Weld, Brush Head Frame (6 ft) |
| | 13-16638-7 | 1 | Weld, Brush Head Frame (7 ft) |
| 31. | 13-9818 | 4 | Tube, Round, Stand |
| 32. | P852608 | 6 | Washer, Hard, 1/2 |
| 33. | RHW8068 | 6 | Pin, Lynch, .25-1.56 |

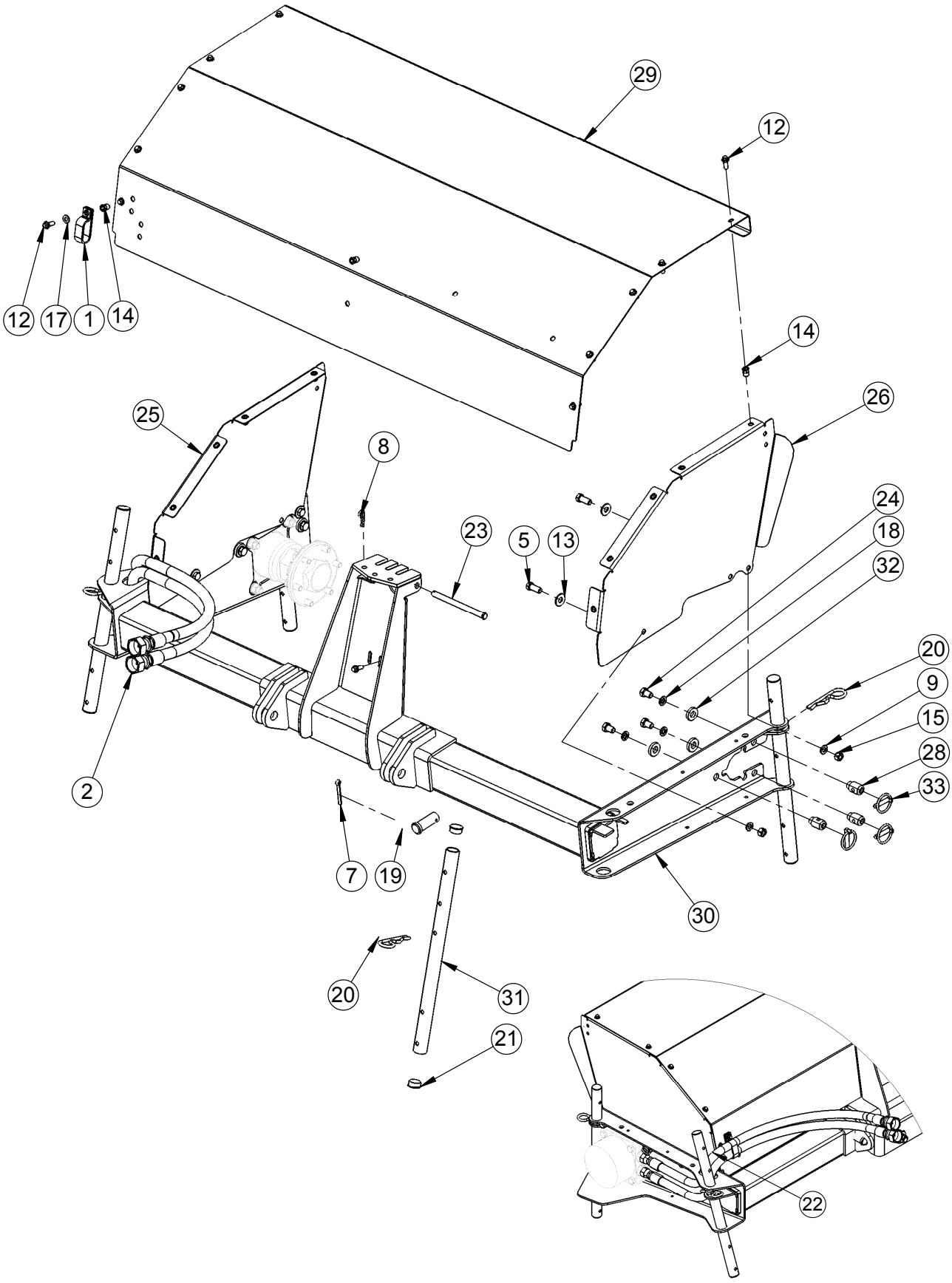
# BRUSH HEAD 225



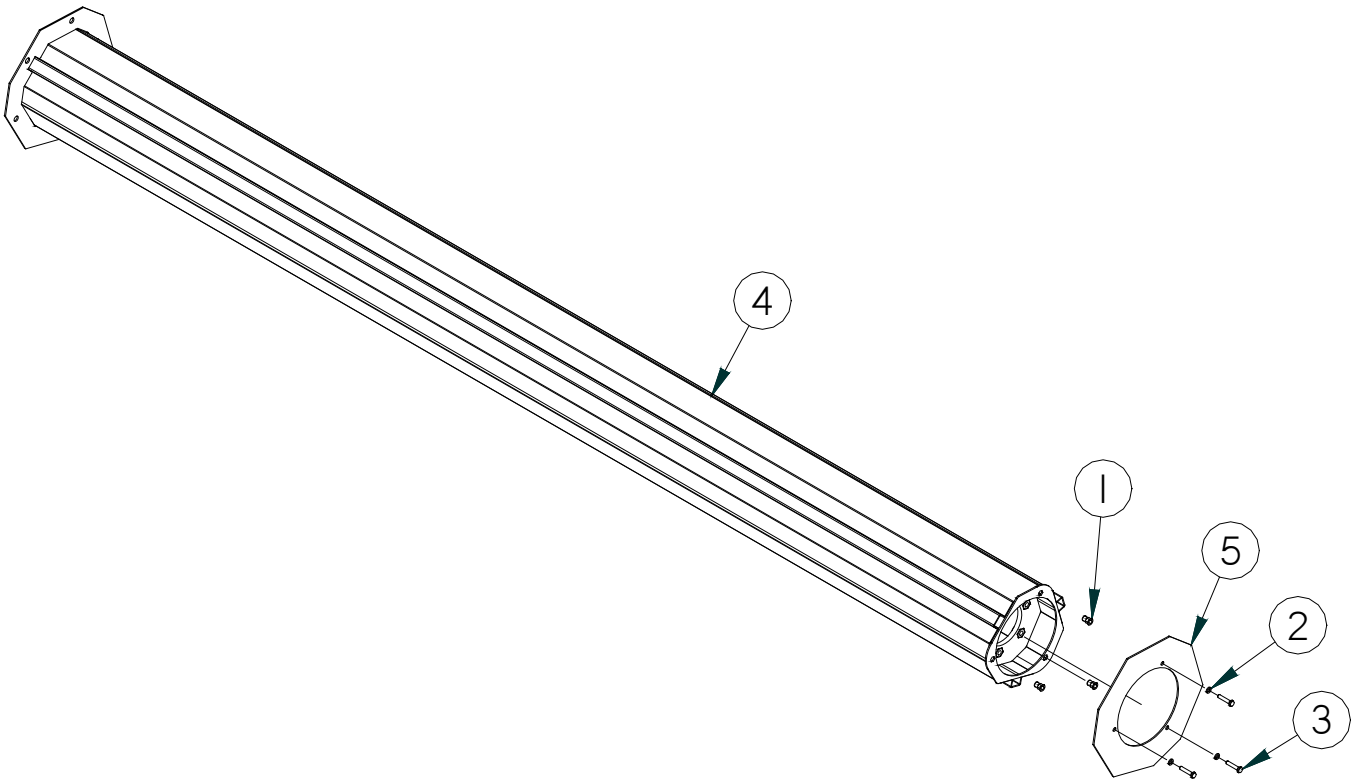
# BRUSH HEAD 226

| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-2490 | 1 | Clamp, Hose, Double, Rubber Coat |
| 2. | 03-4562 | 2 | Hose, .5 x 60, 8FF-8FF, 4.25K |
| 5. | 07-0018 | 4 | Screw, HHC, Gr8, 3/8-16 x 1 |
| 7. | 07-0206 | 2 | Pin, Cotter, Gr2, 3/16 x 2 |
| 8. | 07-0209 | 1 | Clip, Hairpin, 16ga x 1 3/8 |
| 9. | 07-1718 | 4 | Washer, Lock, Split, Medium, 3/8 |
| 12. | 07-2952 | 12 | Screw, HFH, CL10.9, M6-1 x 20 |
| 13. | 07-3279 | 4 | Washer, Flat, Gr8, 3/8 |
| 14. | 07-3617 | 12 | Nut, Insert, Hex, M6 x 1 |
| 15. | 07-3654 | 4 | Nut, Gr8, 3/8-16 |
| 17. | 07-3736 | 1 | Washer, Flat, CL8.8, M8 |
| 18. | 07-3747 | 6 | Washer, Lock, Split, Medium, M10 |
| 19. | 07-4046 | 2 | Pin, Clevis, 3/4 x 2 |
| 20. | 07-4522 | 4 | Clip, Hairpin, .162 x 3.43 |
| 21. | 07-4523 | 8 | Cap, Tube, Vinyl, 1 x .51, Black |
| 22. | 07-4539 | 1.5ft | Sleeve, Hose, 3/4, Partek, Bulk |
| 23. | 07-6488 | 1 | Pin, Clevis, 3/8 x 5 1/2 |
| 24. | 07-6769 | 6 | Screw, HHC, CL10.9, M10-1.5 x 16mm |
| 25. | 13-13457 | 1 | Sheet, Side, Hood, Left |
| 26. | 13-13458 | 1 | Sheet, Side, Hood, Right |
| 28. | 13-14083 | 6 | Stud, Mounting, Motor |
| 29. | 13-16178-42 | 1 | Sheet, Hood (3.5 ft) |
| | 13-16178-4 | 1 | Sheet, Hood (4 ft) |
| | 13-16178-5 | 1 | Sheet, Hood (5 ft) |
| 30. | 13-16638-42 | 1 | Weld, Brush Head Frame (3.5 ft) |
| | 13-16638-4 | 1 | Weld, Brush Head Frame (4 ft) |
| | 13-16638-5 | 1 | Weld, Brush Head Frame (5 ft) |
| 31. | 13-9818 | 4 | Tube, Round, Stand |
| 32. | P852608 | 6 | Washer, Hard, 1/2 |
| 33. | RHW8068 | 6 | Pin, Lynch, .25-1.56 |

# BRUSH HEAD 226

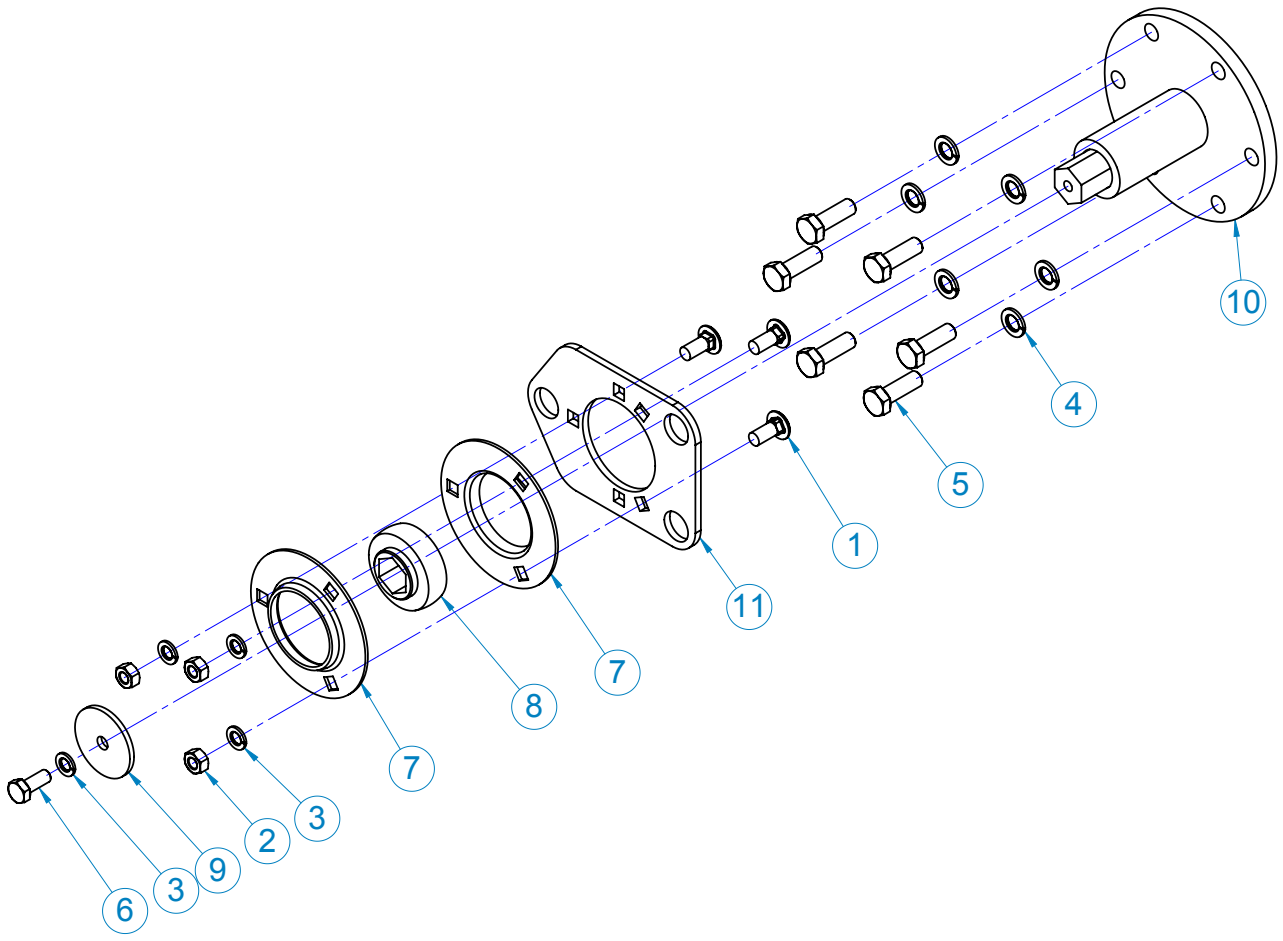


# CORE



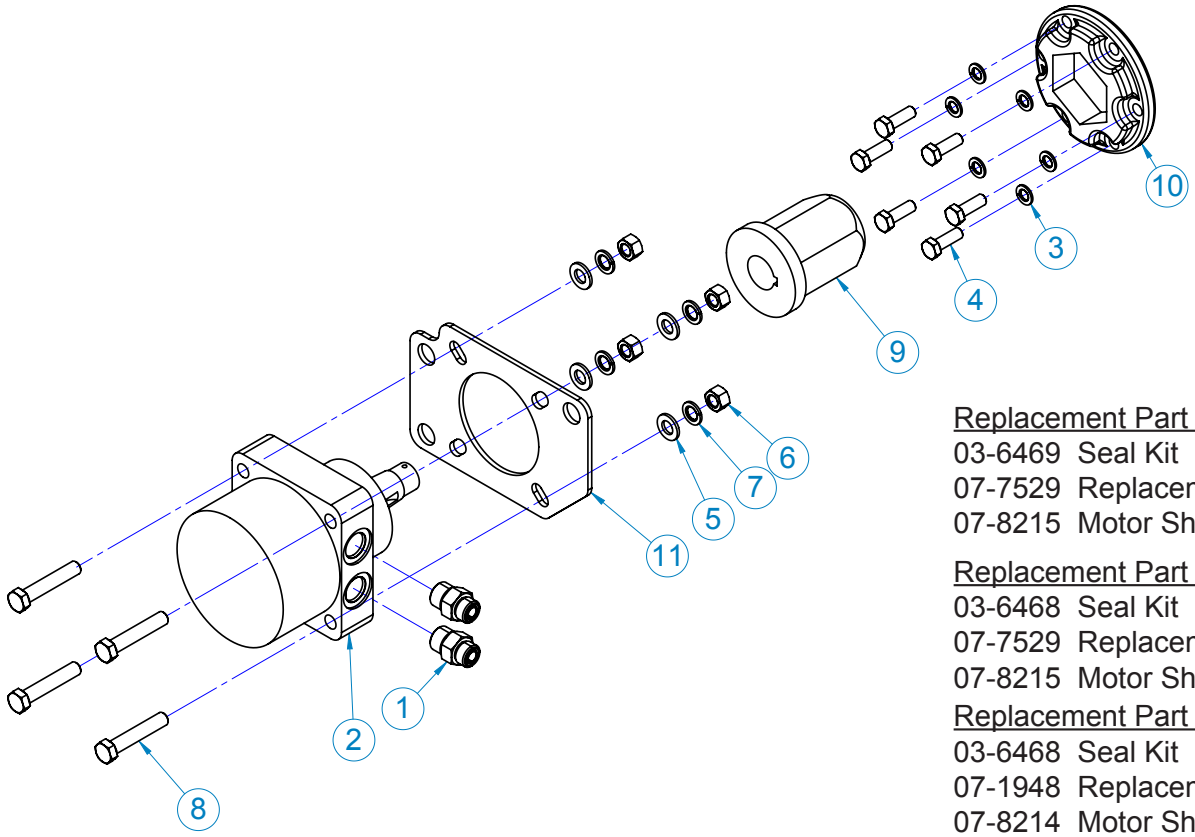

| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 07-3617 | 3 | Nut, Insert, Hex, M6 x 1 |
| 2. | 07-3730 | 3 | Washer, Lock, Split, Medium, M6 |
| 3. | 07-3731 | 3 | Screw, HHC, CL10.9, M6-1 x 30mm |
| 4. | 13-15657-42 | 1 | Weld, Core, 8, 3.5 ft |
| | 13-15657-4 | 1 | Weld, Core, 8, 4 ft |
| | 13-15657-5 | 1 | Weld, Core, 8, 5 ft |
| | 13-15657-6 | 1 | Weld, Core, 8, 6 ft |
| | 13-15657-7 | 1 | Weld, Core, 8, 7 ft |
| 5. | 13-15662 | 1 | Plate, Section Retainer, 8 |

# BEARING




| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 07-2950 | 3 | Bolt, Carriage, CL8.8, M8-1.25 x 20mm |
| 2. | 07-3737 | 3 | Nut, Hex, CL10, M8-1.25 |
| 3. | 07-3738 | 4 | Washer, Lock, Split, Medium, M8 |
| 4. | 07-3747 | 6 | Washer, Lock, Split, Medium, M10 |
| 5. | 07-3749 | 6 | Screw, HHC, CL10.9, M10-1.5 x 30mm |
| 6. | 07-3777 | 1 | Screw, HHC, CL10.9, M8-1.25 x 20 |
| 7. | 08-0008 | 2 | Bearing, Flange, 3 Bolt |
| 8. | 08-0037 | 1 | Bearing, 7/8 Hex, without Hub |
| 9. | 13-11903 | 1 | Washer, .34 x 1.88 x 10ga |
| 10. | 13-16923 | 1 | Weld, Hex, Shaft, Idler, Bolt-In |
| 11. | 13-17015 | 1 | Plate, Mounting, Bearing |

# MOTOR ASSEMBLY




| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-3481 | 2 | Fitting, 10MB-8MF |
| 2. | 03-6445 | 1 | Motor, 14.5 CID (MRHL) (Serial # 1234001 & Up) |
| | 03-5614 | 1 | Motor, 14.2 CID (MRHL) (Serial # 1233199 & Down) |
| | 03-6444 | 1 | Motor, 17.1 CID (MRHL) (Serial # 1234001 & Up) |
| | 03-5612 | 1 | Motor, 18.3 CID (MRHL) (Serial # 1233199 & Down) |
| | 03-6446 | 1 | Motor, 8.0 CID (CTC/MRHL) (Serial # 1234001 & Up) |
| | 03-5615 | 1 | Motor, 7.9 CID (CTC) (Serial # 1233199 & Down) |
| | 03-6447 | 1 | Motor, 11.9 CID (CTC) (Serial # 1234001 & Up) |
| | 03-5616 | 1 | Motor, 12.2 CID (CTC) (Serial # 1233199 & Down) |
| 3. | 07-3747 | 6 | Washer, Lock, Split, Medium, M10 |
| 4. | 07-3749 | 6 | Screw, HHC, CL10.9, M10-1.5 x 30mm |
| 5. | 07-3754 | 4 | Washer, Flat, CL10.9, M12 |
| 6. | 07-3755 | 4 | Nut, Hex, CL10.9, M12-1.75 |
| 7. | 07-3756 | 4 | Washer, Lock, Split, Medium, M12 |
| 8. | 07-6683 | 4 | Screw, HHC, CL10.9, M12-1.75 x 65mm |
| 9. | 13-15206 | 1 | Hub, Hex, 2 1/2 x 1 1/4 Tapered Bore x 3.75 (MRHL) |
| | 13-18135 | 1 | Hub, Hex, Drive (CTC/MRHL) (Serial # 1234001 & Up) |
| | 13-15205 | 1 | Hub, Hex, Drive (CTC) (Serial # 1233199 & Down) |
| 10. | 13-16225 | 1 | Plate, Receiver, Hex, 2.5 |
| 11. | 13-17016 | 1 | Plate, Mounting, Motor |

Not Shown:

| | | | |
|---|---|---|---|
| | 07-4568 | 1 | Nut, Motor, Shaft |

Replacement Part for 03-6445
03-6469 Seal Kit
07-7529 Replacement Key
07-8215 Motor Shaft Nut

Replacement Part for 03-6444
03-6468 Seal Kit
07-7529 Replacement Key
07-8215 Motor Shaft Nut

Replacement Part for 03-6446
03-6468 Seal Kit
07-1948 Replacement Key
07-8214 Motor Shaft Nut

Replacement Part for 03-6447
03-6467 Seal Kit
07-1948 Replacement Key
07-8214 Motor Shaft Nut

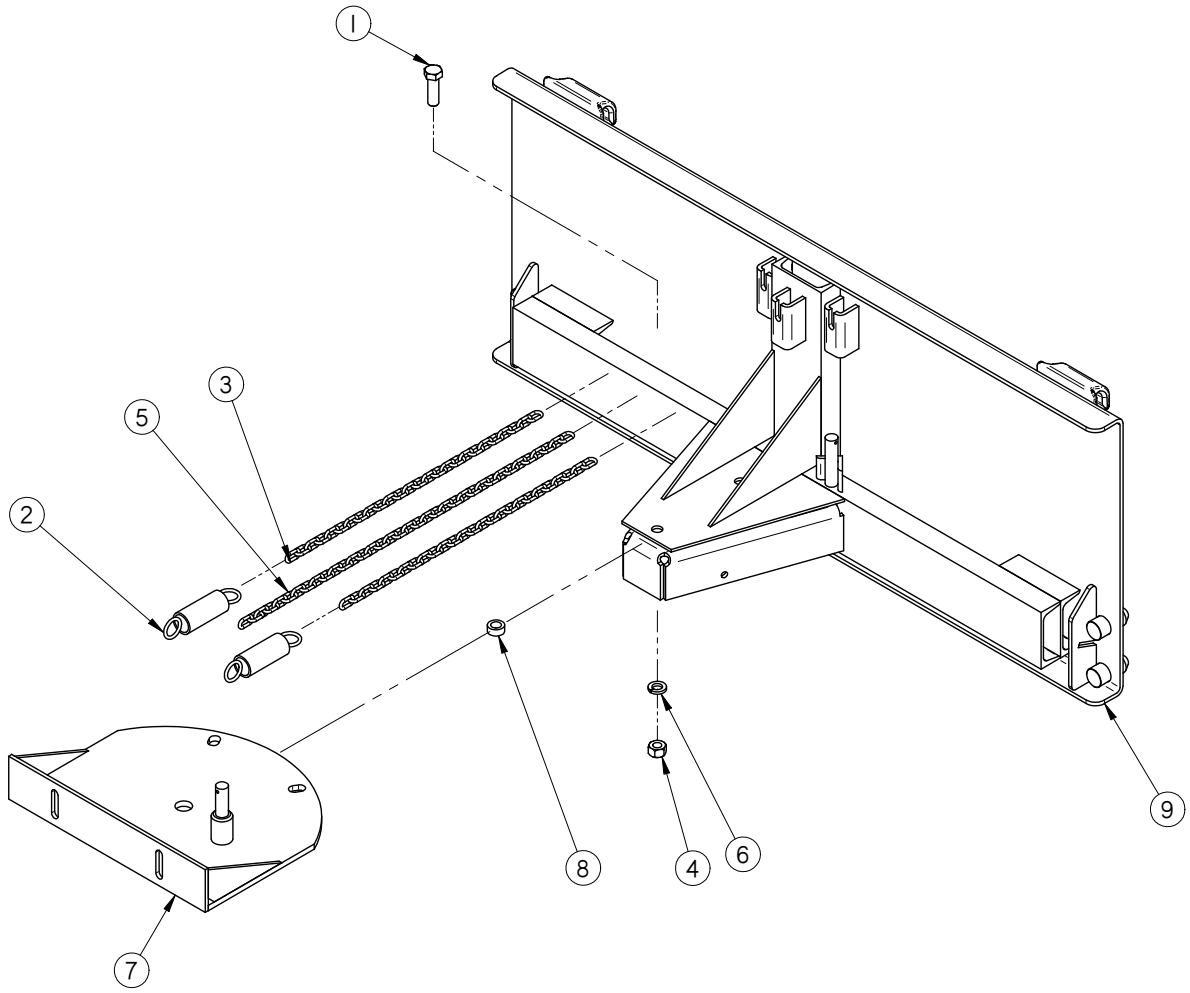
Replacement Part for 03-5614
03-5503 Seal Kit
07-7286 Replacement Key

Replacement Part for 03-5612
03-5503 Seal Kit
07-7286 Replacement Key
07-4568 Motor Shaft Nut

Replacement Part for 03-5615
03-5211 Seal Kit
07-0794 Replacement Key

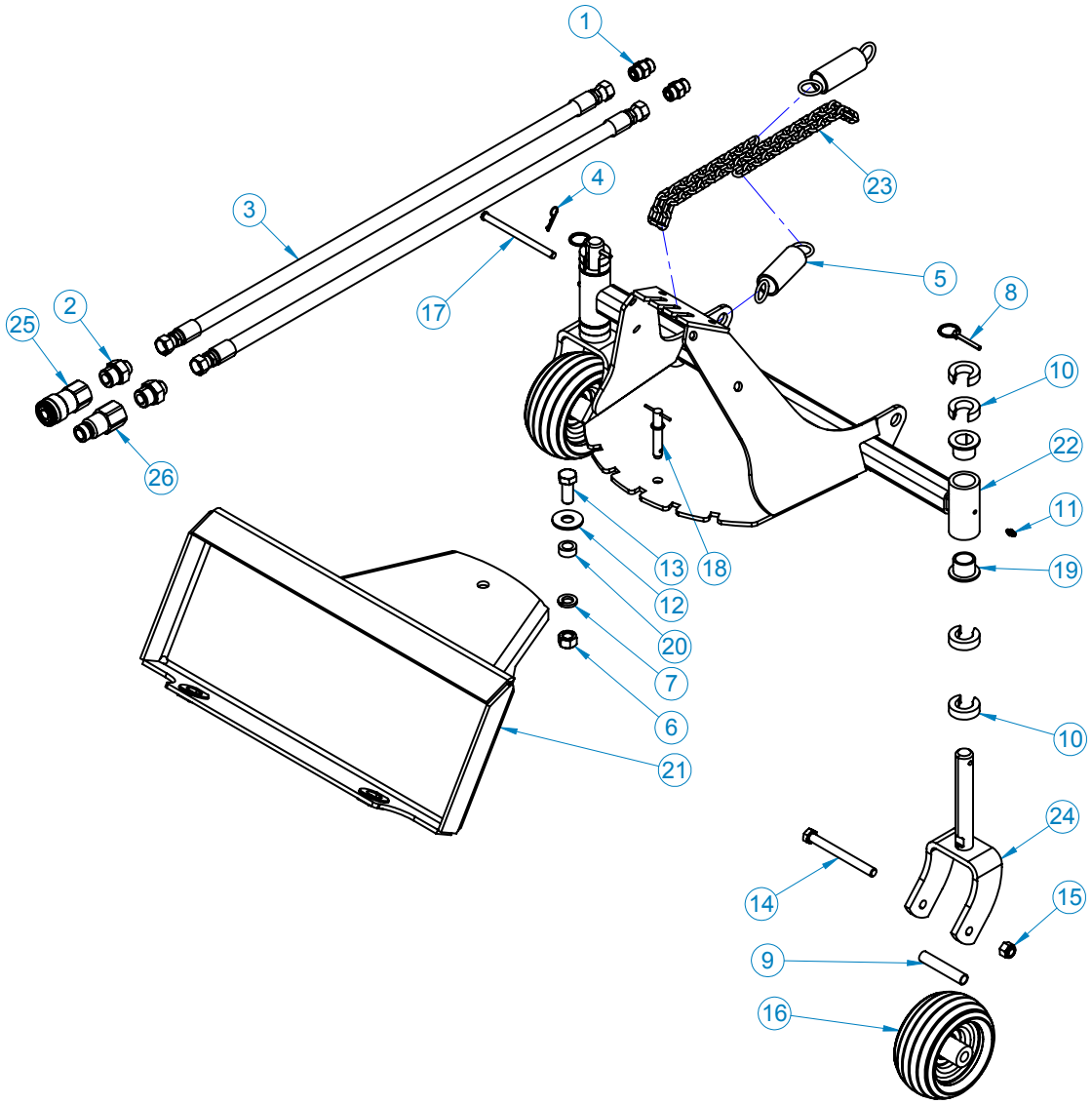
Replacement Part for 03-5616
03-5211 Seal Kit
07-0794 Replacement Key

# 222/225 WITH QUICK ATTACH MOUNTING




| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 07-0066 | 1 | Screw, HHC, Gr 8, 5/8-11 x 2 |
| 2 | 07-0237 | 2 | Spring, Tens, 1-13/32 x 6 |
| 3. | 07-0387 | 2 | Chain, 3/16, 26 Links |
| 4. | 07-1294 | 1 | Nut, Hex, Gr 8, 5/8-11 |
| 5. | 07-1759 | 1 | Chain, 3/16, 36 Links |
| 6. | 07-1872 | 1 | Washer, Lock, Split, 5/8 |
| 7. | 11-1277 | 1 | Weld, Plate, Swing, MRHL |
| 8. | 11-7479 | 1 | Bushing, 1 x 5/8 x 7/16 |
| 9. | Varies | 1 | Weld, Frame, Mounting (Contact Sweepster for correct frame for your application) |

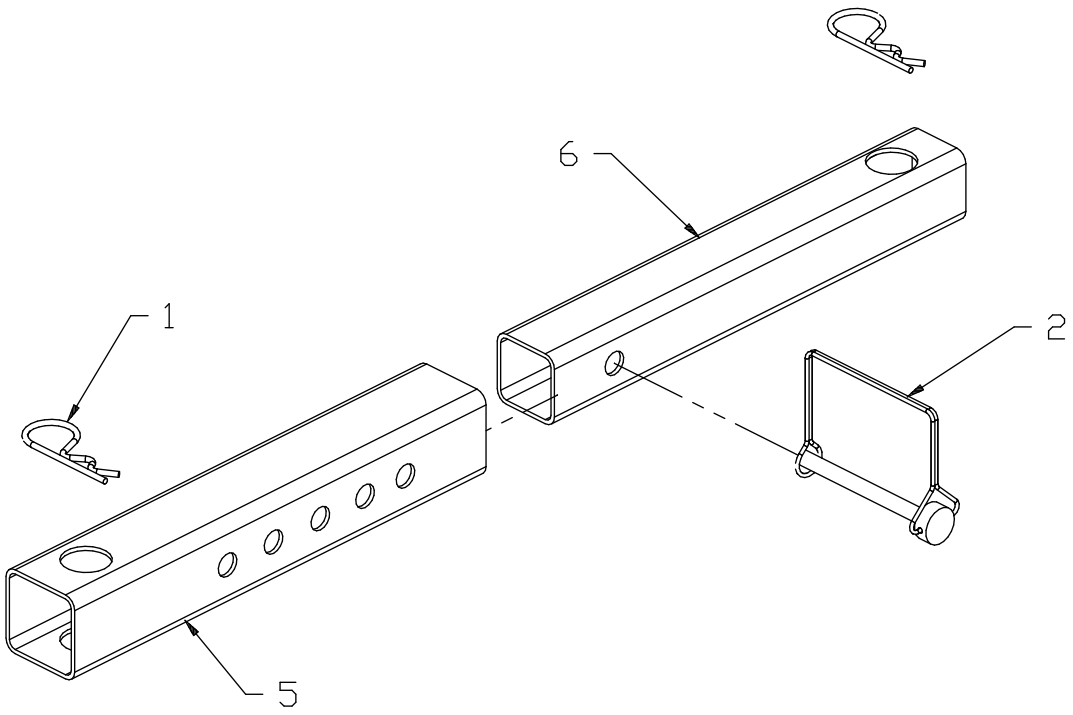
# 226 WITH QUICK ATTACH MOUNTING
# 11-17602



# 226 WITH QUICK ATTACH MOUNTING
# 11-17602

| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-1919 | 2 | Fitting, 8MF-8MF |
| 2. | 03-3515 | 2 | Fitting, 12MB-8MF |
| 3. | 03-3896 | 2 | Hose, .5 x 36, 8FF-8FF, 3K, TC |
| 4. | 07-0209 | 1 | Clip, Hairpin, 16ga x 1 3/8 |
| 5. | 07-0237 | 2 | Spring, Tension, 1 13/32 x 6 |
| 6. | 07-1294 | 1 | Nut, Hex, Gr8, 5/8-11 |
| 7. | 07-1872 | 1 | Washer, Lock, Split, Medium, 5/8 |
| 8. | 07-2843 | 2 | Pin, Klik, 3/16 x 1 5/8 |
| 9. | 07-3013 | 2 | Bushing, Caster |
| 10. | 07-3015 | 8 | Spacer, Caster |
| 11. | 07-3112 | 2 | Fitting, Zerk, 1/4-28, Self-Tap |
| 12. | 07-3120 | 1 | Washer, Flat, Gr8, 5/8 |
| 13. | 07-3433 | 1 | Screw, HHC, Gr8, 5/8-11 x 1 1/2 |
| 14. | 07-3676 | 2 | Screw, HHC, Gr8, 1/2-13 x 5 |
| 15. | 07-4037 | 2 | Nut, Hex, Nylock, Gr8, 1/2-13 |
| 16. | 07-4367 | 2 | Wheel, Caster, 6.25 x 5/8, Black |
| 17. | 07-6488 | 1 | Pin, Clevis, 3/8 x 5 1/2 |
| 18. | 07-7077 | 1 | Pin, Quick Release, Shoulder Type |
| 19. | 08-0131 | 4 | Bearing, Caster |
| 20. | 11-7479 | 1 | Bushing, 1 x 5/8 x 7/16 |
| 21. | Varies | 1 | Weld, Mounting (Contact Sweepster for correct mounting) |
| 22. | 13-16680 | 1 | Weld, Swing, with Casters |
| 23. | 13-16911 | 1 | Chain, 3/16, 48 Links |
| 24. | 13-4291 | 2 | Weld, Caster Fork |
| 25. | P272670 | 1 | Coupler |
| 26. | P272671 | 1 | Coupler |

# MANUAL ANGLE KIT
# 11-5819

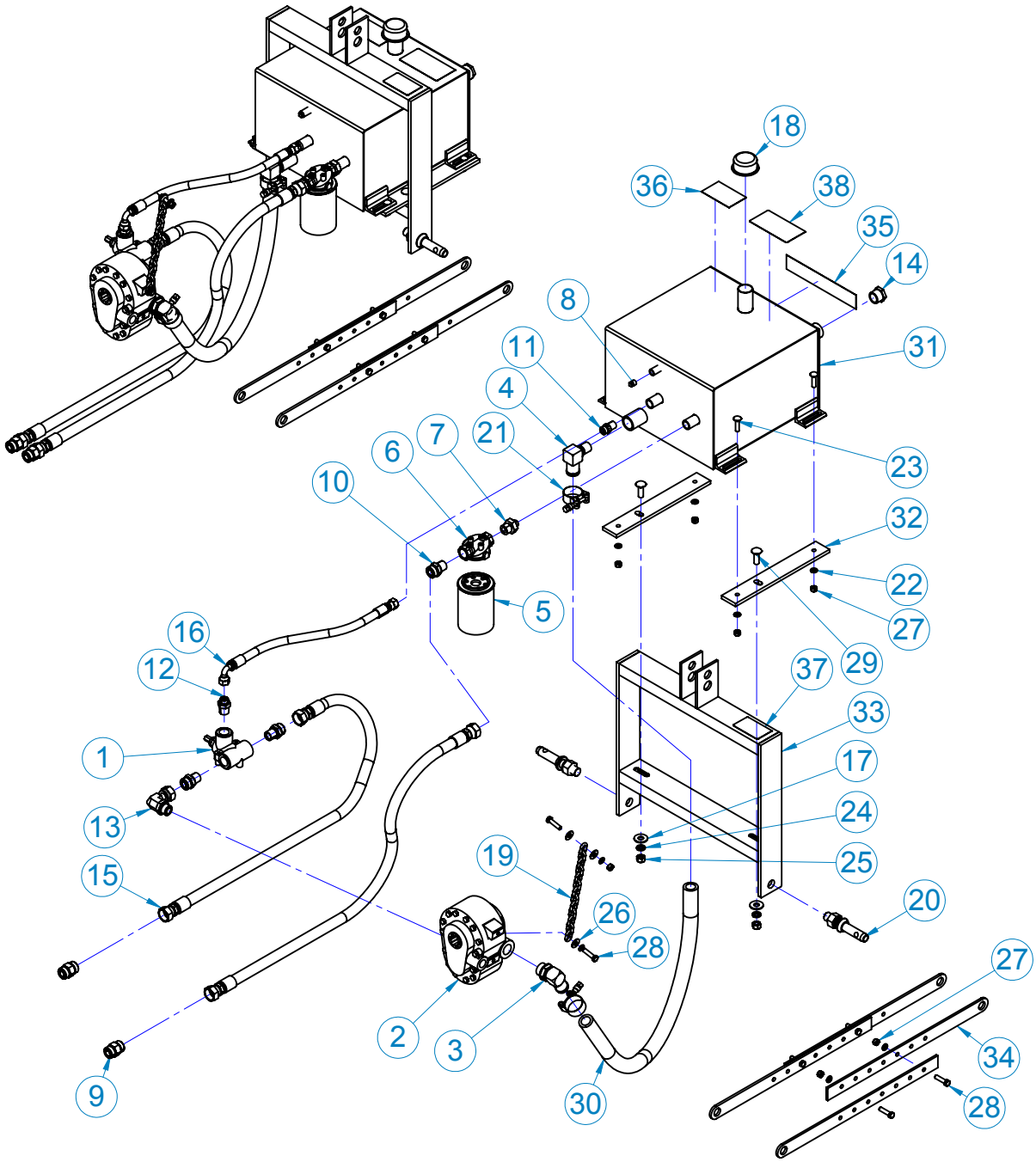



| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 07-0210 | 2 | Clip, Hairpin, 14Ga x 1 3/4 |
| 2. | 07-2105 | 1 | Pin, Lock, 3/8 Square Bail |
| 5. | 13-4193 | 1 | Tube, Link, Outer |
| 6. | 13-4194 | 1 | Tube, Link, Inner |

# NOTES

# MRHL POWER PACK
# 11-7692

**Service Part for 03-0691 Pump**
03-0597A Seal Kit



# MRHL POWER PACK
# 11-7692

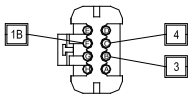
| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-0129 | 1 | Valve, Relief, 3/4 Ports |
| 2. | 03-0691 | 1 | Pump, PTO, 12gpm |
| 3. | 03-0710 | 1 | Fitting, Barb, HP, 90°, 1 1/4, 1 5/16MOR |
| 4. | 03-0711 | 1 | Fitting, Barb, HP, 90°, 1 1/4, 1MP |
| 5. | 03-0744 | 1 | Filter, Element, 25 Micron, Spin-On |
| 6. | 03-0745 | 1 | Filter, Base, Spin-On |
| 7. | 03-0834 | 1 | Fitting, Nipple, HP, Hex, 3/4MP, 1/2MP |
| 8. | 03-1182-2 | 1 | Fitting, Plug, BP, Square, 1/4P |
| 9. | 03-1920 | 2 | Fitting, 12MF-12MF |
| 10. | 03-1943 | 3 | Fitting, 12MF-12MP |
| 11. | 03-3478 | 1 | Fitting, 8MF-8MP |
| 12. | 03-3750 | 1 | Fitting, 8MF-12MP |
| 13. | 03-3787 | 1 | Elbow, 90º, 12FF-12MB |
| 14. | 03-4709 | 1 | Gauge, Sight Window, 1 inch |
| 15. | 03-4923 | 2 | Hose, .75 x 156, 12FF-12FF, 3K |
| 16. | 03-5044 | 1 | Hose, .5 x 50, 8FF-8FF90, 3K |
| 17. | 07-0156 | 2 | Washer, Flat, Gr8, 1/2 |
| 18. | 07-0245 | 1 | Cap, Breather |
| 19. | 07-0246 | 1 | Chain, 1/4 x 13 Links |
| 20. | 07-0285 | 2 | Pin, Link, Gr2 |
| 21. | 07-1192 | 2 | Clamp, T-Bolt, 1 1/4 |
| 22. | 07-1718 | 10 | Washer, Lock, Split, Medium, 3/8 |
| 23. | 07-1730 | 4 | Bolt, Carriage, Gr5, 3/8 x 1 1/2 |
| 24. | 07-1762 | 2 | Washer, Lock, Split, Medium, 1/2 |
| 25. | 07-1764 | 2 | Nut, Hex, Gr8, 1/2-13 |
| 26. | 07-3279 | 3 | Washer, Flat, Gr8, 3/8 |
| 27. | 07-3654 | 9 | Nut, Hex, Gr8, 3/8-16 |
| 28. | 07-3655 | 6 | Screw, HHC, Gr8, 3/8 x 1 1/2 |
| 29. | 07-3708 | 2 | Bolt, Carriage, Gr5, 1/2 x 1 1/2 |
| 30. | 09-0020 | 4ft | Hose, Suction, 1 1/4 |
| 31. | 11-2147 | 1 | Weld, Tank |
| 32. | 11-6115 | 2 | Plate, Mounting, Tank |
| 33. | 11-7461 | 1 | Weld, Mounting, Tank |
| 34. | 11-7466 | 4 | Arm, Mounting, Tank, Hydraulic |
| 35. | 50-0184 | 1 | Label, Sweepster, White, Small |
| 36. | 50-0272 | 1 | Label, Oil, ISO, VG-46 |
| 37. | 50-0635 | 1 | Label, Plate, Part Number |
| 38. | 50-0725 | 1 | Label, Warning, High Pressure Fluid |

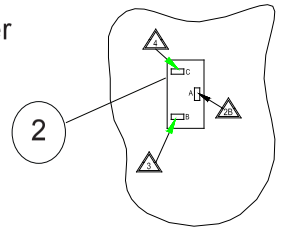
# ELECTRIC WIRING HARNESS

Serial Number 1118199 & Down

# LAF9444

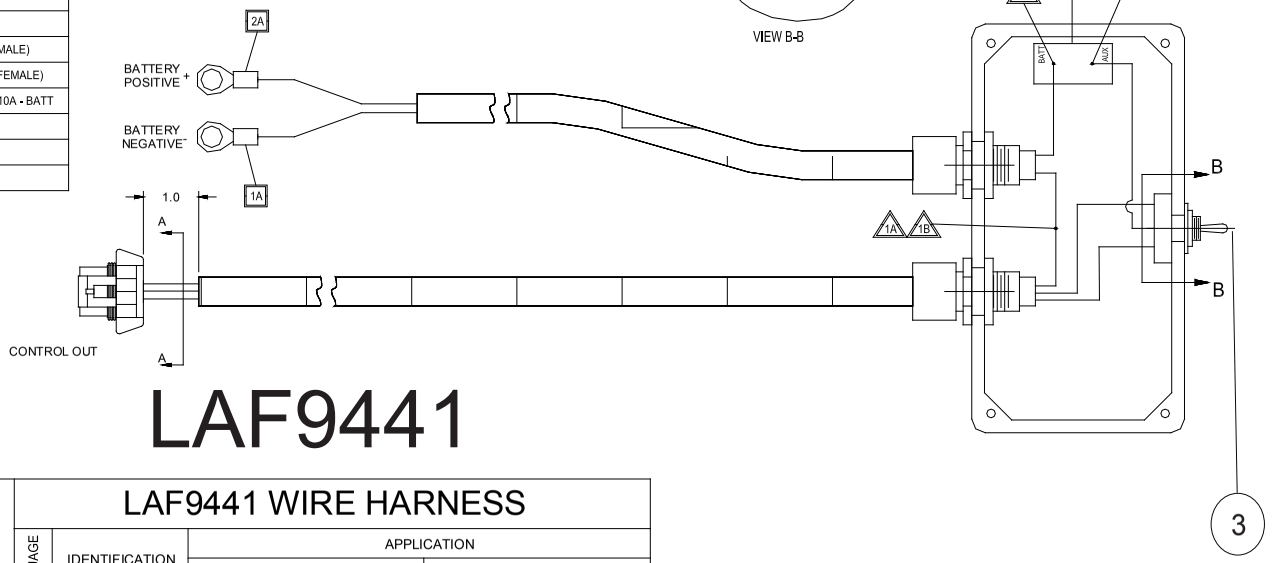
| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 07-3152 | 1 | Circuit Breaker |
| 2. | 07-0868 | 1 | Switch |
| 3. | 07-1824 | 1 | Rubber Boot |

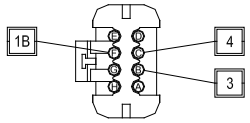



## LAF9444 WIRE HARNESS

| WIRE NO. | GUAGE | IDENTIFICATION | APPLICATION □ FROM | APPLICATION △ TO |
|---|---|---|---|---|
| 1A | 16 | BLACK | BATTERY -12V | SPADE TERMINAL (MALE) |
| 1B | 16 | BLACK | PACKARD CONN. PIN F | SPADE TERMINAL (FEMALE) |
| 2A | 16 | RED | BATTERY + | CIRCUIT BREAKER 10A - BATT |
| 2B | 16 | RED | CIRCUIT BREAKER 10A - AUX | SWITCH 1-A |
| 3 | 16 | RED | PACKARD CONN. PIN B-DEPTH | SWITCH 1-B |
| 4 | 16 | YELLOW | PACKARD CONN. PIN C-TILT | SWITCH 1-C |




PLUG - A, D, E, G & H

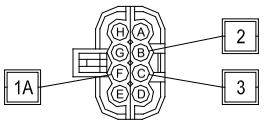
VIEW "A-A"

# LAF9441

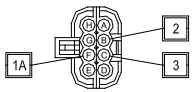
## LAF9441 WIRE HARNESS

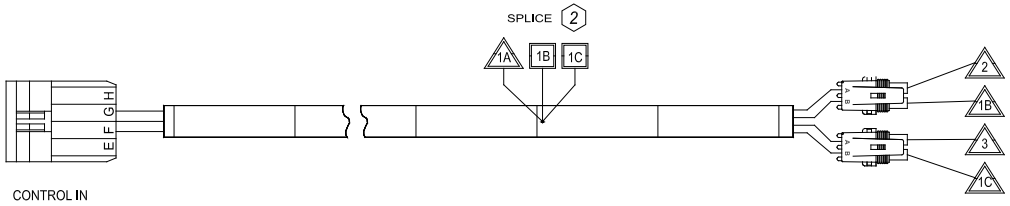
| WIRE NO. | GUAGE | IDENTIFICATION | APPLICATION □ FROM | APPLICATION △ TO |
|---|---|---|---|---|
| 1A | 16 | BLACK | PACKARD PIN F | ULTRA SONIC SPLICE |
| 1B | 16 | BLACK | ULTRA SONIC SPLICE | PACKARD 1 PIN B |
| 1C | 16 | BLACK | ULTRA SONIC SPLICE | PACKARD 2 PIN B |
| 2 | 16 | RED | PACKARD PIN B | PACKARD 1 PIN A |
| 3 | 16 | YELLOW | PACKARD PIN C | PACKARD 2 PIN A |

A,D,E,G,H PLUG



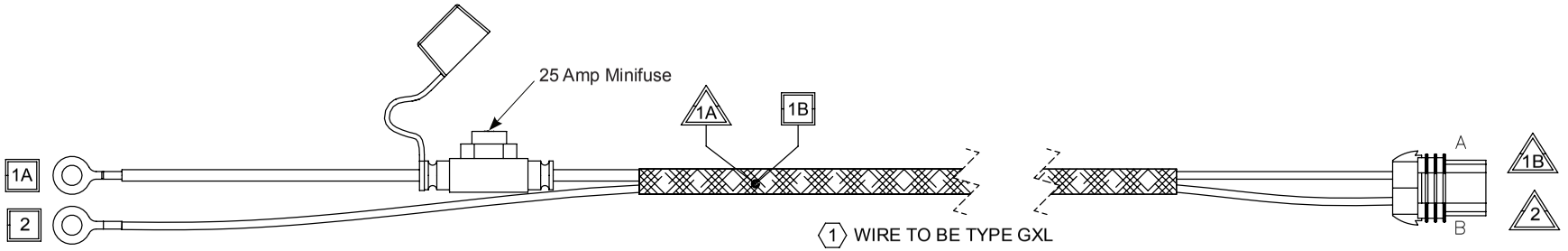

A,D,E,G,H PLUG



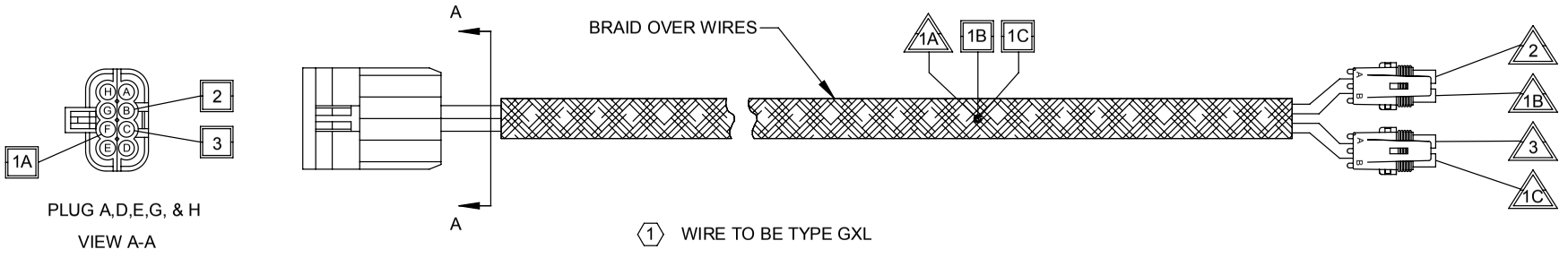
# 07-7733

| WIRE NO. | WIRE GUAGE | WIRE IDENTIFICATION | APPLICATION □ FROM | APPLICATION △ TO | □ END (LEFT) (BEYOND HARNESS) TERMINAL SIZE | □ END (LEFT) (BEYOND HARNESS) TERMINAL TYPE | □ END (LEFT) (BEYOND HARNESS) EXTRA WIDE PROTECTION YES | □ END (LEFT) (BEYOND HARNESS) EXTRA WIDE PROTECTION NO | △ END (LEFT) (BEYOND HARNESS) TERMINAL SIZE | △ END (LEFT) (BEYOND HARNESS) TERMINAL TYPE | △ END (LEFT) (BEYOND HARNESS) EXTRA WIDE PROTECTION YES | △ END (LEFT) (BEYOND HARNESS) EXTRA WIDE PROTECTION NO | WIRE NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | 12 | RED | BATTERY (+) | ULTRA SONIC SPLICE | 0.38 | RING TERMINAL (WAYTEK # 32205) | - | X | - | ULTRA SONIC SPLICE | - | X | 1A |
| 1B | 12 | RED | ULTRA SONIC SPLICE | PACKARD PIN A | - | ULTRA SONIC SPLICE | - | X | - | PACKARD 12129493 & SEAL | - | X | 1B |
| 2 | 12 | BLACK | BATTERY (-) | PACKARD PIN B | 0.38 | RING TERMINAL (WAYTEK # 32205) | - | X | - | PACKARD 12129493 & SEAL | - | X | 2 |




# 07-7737

| WIRE NO. | WIRE GUAGE | WIRE IDENTIFICATION | APPLICATION □ FROM | APPLICATION △ TO | □ END (LEFT) (BEYOND HARNESS) TERMINAL SIZE | □ END (LEFT) (BEYOND HARNESS) TERMINAL TYPE | □ END (LEFT) (BEYOND HARNESS) EXTRA WIDE PROTECTION YES | □ END (LEFT) (BEYOND HARNESS) EXTRA WIDE PROTECTION NO | △ END (RIGHT) (BEYOND HARNESS) TERMINAL SIZE | △ END (RIGHT) (BEYOND HARNESS) TERMINAL TYPE | △ END (RIGHT) (BEYOND HARNESS) EXTRA WIDE PROTECTION YES | △ END (RIGHT) (BEYOND HARNESS) EXTRA WIDE PROTECTION NO | WIRE NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1A | 16 | BLACK | PACKARD PIN F | ULTRA SONIC SPLICE | - | PACKARD 12045773 & SEAL | - | X | - | ULTRA SONIC SPLICE | - | X | 1A |
| 1B | 16 | BLACK | ULTRA SONIC SPLICE | DEUTSCH 1 PIN B | - | ULTRA SONIC SPLICE | - | X | - | DEUTSCH 0462-201-16141 & SEAL | - | X | 1B |
| 1C | 16 | BLACK | ULTRA SONIC SPLICE | DEUTSCH 2 PIN B | - | ULTRA SONIC SPLICE | - | X | - | DEUTSCH 0462-201-16141 & SEAL | - | X | 1C |
| 2 | 16 | RED | PACKARD PIN B | DEUTSCH 1 PIN A | - | PACKARD 12045773 & SEAL | - | X | - | DEUTSCH 0462-201-16141 & SEAL | - | X | 2 |
| 3 | 16 | YELLOW | PACKARD PIN C | DEUTSCH 2 PIN A | - | PACKARD 12045773 & SEAL | - | X | - | DEUTSCH 0462-201-16141 & SEAL | - | X | 3 |




**ELECTRIC WIRING HARNESS**

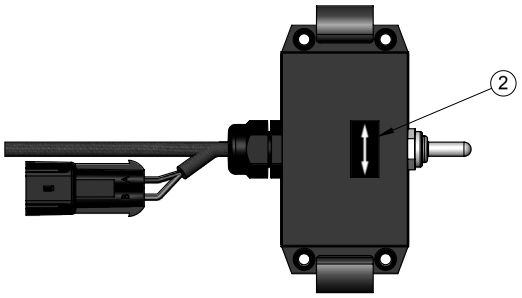
Serial Number 1119001 & Up

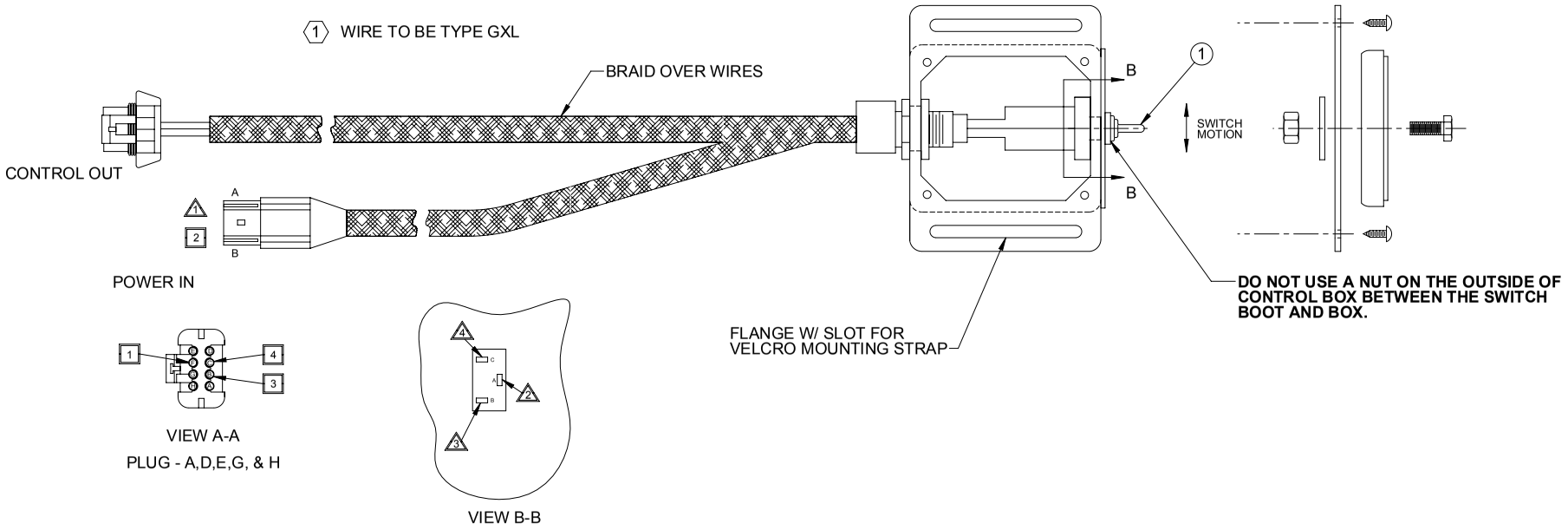
# 07-7734

## ELECTRIC WIRING HARNESS

Serial Number 1119001 & Up

| WIRE NO. | WIRE | | | | □ END (LEFT) (BEYOND HARNESS) | | | | △ END (RIGHT) (BEYOND HARNESS) | | | | WIRE NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GUAGE | IDENTIFICATION | APPLICATION | | TERMINAL | | EXTRA WIDE PROTECTION | | TERMINAL | | EXTRA WIDE PROTECTION | | |
| | | | □ FROM | △TO | SIZE | TYPE | YES | NO | SIZE | TYPE | YES | NO | |
| 1 | 16 | BLACK | PACKARD PIN F (8-PIN) | PACKARD PIN A (2-PIN) | - | PACKARD 12048159 & SEAL | - | X | - | PACKARD 12048074 & SEAL | - | X | 1 |
| 2 | 16 | RED | PACKARD PIN B (2-PIN) | SWITCH 1-A | - | PACKARD 12048159 & SEAL | - | X | 0.25 | SPADE TERMINAL (FEMALE) | - | X | 2 |
| 3 | 16 | RED | PACKARD PIN B (8-PIN) | SWITCH 1-B | - | PACKARD 12048074 & SEAL | - | X | 0.25 | SPADE TERMINAL (FEMALE) | - | X | 3 |
| 4 | 16 | YELLOW | PACKARD PIN C (8-PIN) | SWITCH 1-C | - | PACKARD 12048074 & SEAL | - | X | 0.25 | SPADE TERMINAL (FEMALE) | - | X | 4 |



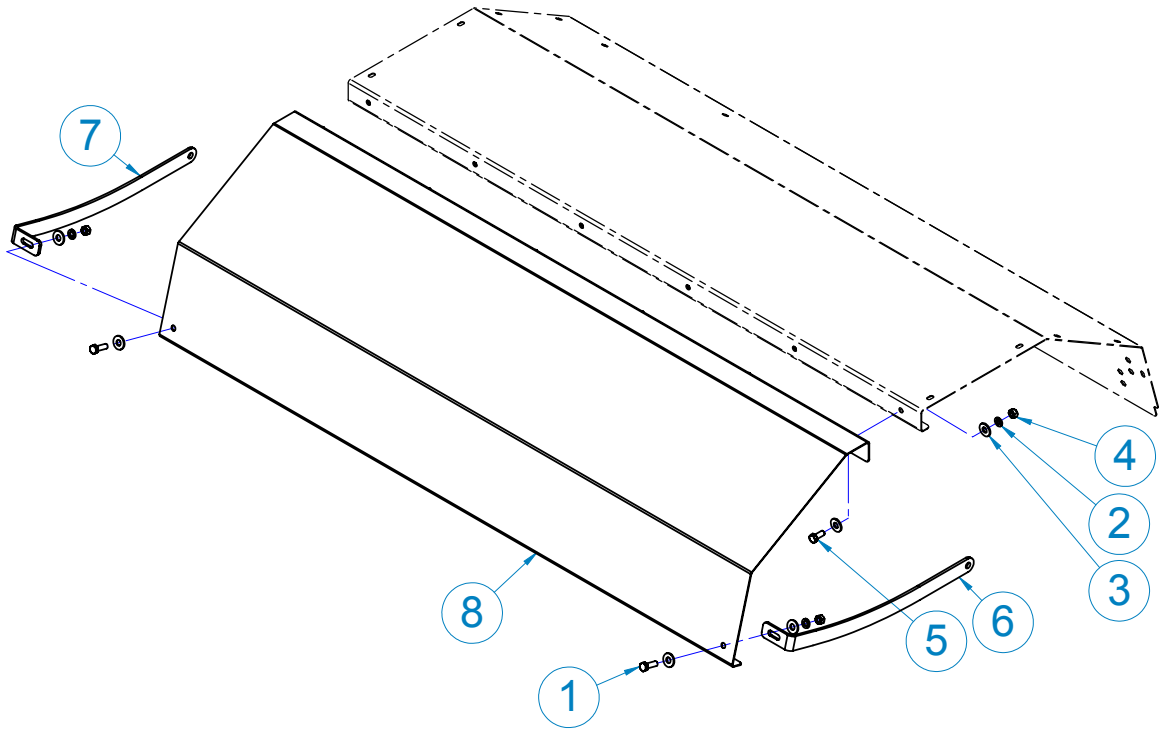




| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | N/A | 1 | Boot, Full |
| 2. | 50-0942 | 1 | Decal, Swing Arrow |

# DIRT DEFLECTOR KITS S26 & S30

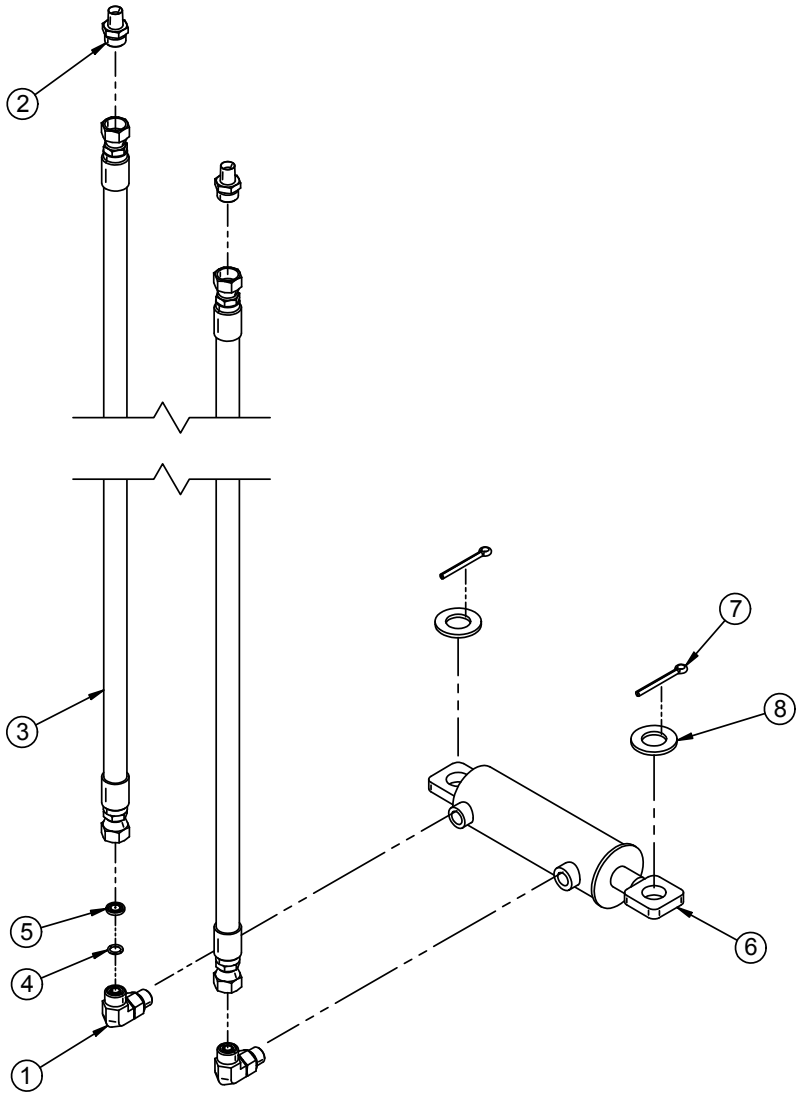
**S26 & S30**

28-10162-4 4 Ft.
28-10162-5 5 Ft.
28-10162-6 6 Ft.
28-10162-7 7 Ft.




| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 07-1714 | 2 | Screw, HHC, Gr8, 5/16-18 x 1 |
| 2. | 07-3273 | 8 | Washer, Lock, Split, Medium |
| 3. | 07-3275 | 16 | Washer, Flat, Gr8, 5/16 |
| 4. | 07-3278 | 8 | Nut, Hex, Gr8, 5/16-18 |
| 5. | 07-3436 | 6 | Screw, HHC, Gr8, 5/16-18 x 3/4 |
| 6. | 13-13634 | 1 | Plate, Mounting, Left |
| 7. | 13-13635 | 1 | Plate Mounting, Right |
| 8. | 13-16201-4 | 1 | Sheet, Dirt Deflector (4 Ft.) |
| | 13-16201-5 | 1 | Sheet, Dirt Deflector (5 Ft.) |
| | 13-13633 | 1 | Sheet, Dirt Deflector (6 Ft.) |
| | 13-16201-7 | 1 | Sheet, Dirt Deflector (7 Ft.) |

# HYDRAULIC ANGLE / NO VALVE
# 11-4191



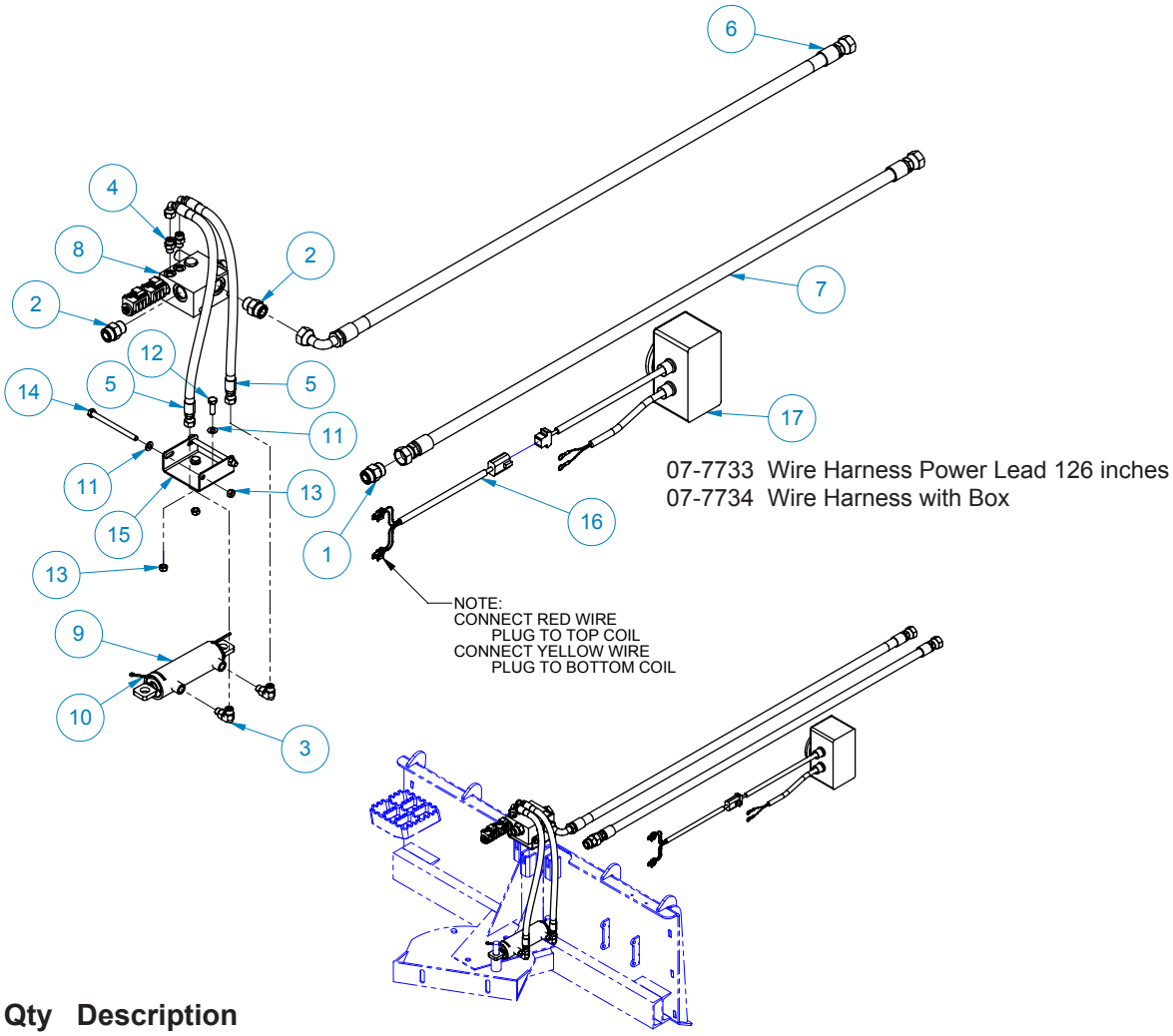

| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-2092 | 2 | Fitting, Elbow, HP, 90°, 9/16MOR, 3/8MFS |
| 2. | 03-2159 | 2 | Fitting, Adapter, HP, 3/8MFS, 1/4MP |
| 3. | 03-2270 | 2 | Hose, 3/8 x 72, 3/8FFS, 3/8FFS |
| 4. | 03-3573 | 1 | O-Ring, Face Seal, 3/8, SAE #6 |
| 5. | 03-4668 | 1 | Plate, Hydraulic, Orifice, .028, #6 O-Ring Face Seal |
| 6. | 03-5719 | 1 | Cylinder, 1.75 x .75 x 4, 3.5K (09/24/09 & After) |
| | 03-3381 | 1 | Cylinder, 1.75 x .75 x 4 (09/23/09 & Before) |
| 7. | 07-0206 | 2 | Pin, Cotter, Gr2, 3/16 x 2 |
| 8. | 07-1782 | 2 | Washer, Flat, Gr2, 3/4SAE, 1 1/2 |

**Service Part for 03-3381 Cylinder**
03-3382 Seal Kit

**Service Part for 03-5719 Cylinder**
46072 Seal Kit
114406 Cylinder Rod

# HYDRAULIC ANGLE WITH ELECTRIC VALVE
# MRHL 11-5310

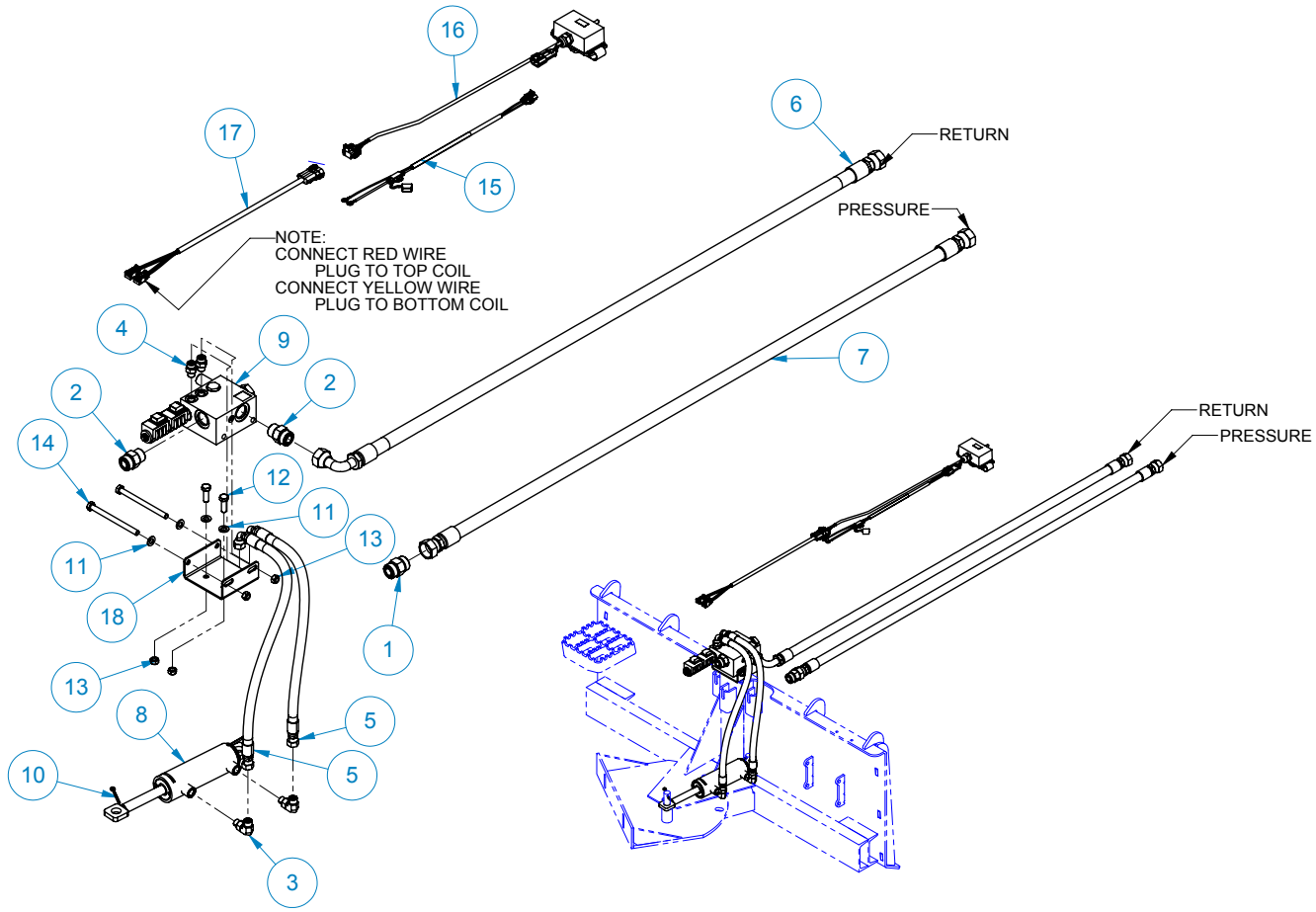
Serial Number 1014199 & Down




| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-1920 | 1 | Fitting, 12MF-12MF |
| 2. | 03-1945 | 2 | Fitting, Adapter, HP, 1 1/16MOR, 3/4MFS |
| 3. | 03-2092 | 2 | Fitting, Elbow, HP, 90°, 3/16MOR, 3/8MFS |
| 4. | 03-2291 | 2 | Fitting, Adapter, HP, 3/8MFS, 9/16MOR |
| 5. | 03-2352 | 2 | Hose, 3/8 x 32, 2W, 3/8FFS90, 3/8FFS |
| 6. | 03-3968 | 1 | Hose, .75 x 60, 12FF-12FF90, 3.125K |
| 7. | 03-4506 | 1 | Hose, .75 x 60, 12FF-12FF, 3.125K |
| 8. | 03-5215 | 1 | Manifold, 12 Volt |
| 9. | 03-3381 | 1 | Cylinder, 1.75 x .75 x 4 (09/23/09 & Before) |
| | 03-5719 | 1 | Cylinder, 1.75 x .75 x 4, 3.5K (09/24/09 & After) |
| 10. | 07-0206 | 2 | Pin, Cotter, Gr2, 3/16 x 2 |
| 11. | 07-3745 | 4 | Washer, Flat, CL8.8, M10 |
| 12. | 07-3749 | 2 | Screw, HHC, CL10.9, M10-1.5 x 30mm |
| 13. | 07-4622 | 4 | Nut, Hex, Lock, M10-1.5, CL10.9 |
| 14. | 07-7028 | 2 | Screw, HHC, CL10.9, M10-1.5 x 130mm |
| 15. | 13-16972 | 1 | Bracket, Mounting |
| 16. | LAF9441 | 1 | Wire Harness |
| 17. | LAF9444 | 1 | Wire Harness, with Box |

# HYDRAULIC ANGLE WITH ELECTRIC VALVE
# MRHL 11-5433

Serial Number 1015001 & Up




| Item | Part | Qty | Description |
|---|---|---|---|
| 1. | 03-1920 | 1 | Fitting, 12MF-12MF |
| 2. | 03-1945 | 2 | Fitting, Adapter, HP, 1 1/16MOR, 3/4MFS |
| 3. | 03-2092 | 2 | Fitting, Elbow, HP, 90°, 3/16MOR, 3/8MFS |
| 4. | 03-2291 | 2 | Fitting, Adapter, HP, 3/8MFS, 9/16MOR |
| 5. | 03-2352 | 2 | Hose, 3/8 x 32, 2W, 3/8FFS90, 3/8FFS |
| 6. | 03-3968 | 1 | Hose, .75 x 60, 12FF-12FF90, 3.125K |
| 7. | 03-4506 | 1 | Hose, .75 x 60, 12FF-12FF, 3.125K |
| 8. | 03-3381 | 1 | Cylinder, 1.75 x .75 x 4 (09/23/09 & Before) |
| | 03-5719 | 1 | Cylinder, 1.75 x .75 x 4, 3.5K (09/24/09 & After) |
| 9. | 03-5835 | 1 | Manifold, 12 Volt, with Deutsch Coil |
| 10. | 07-0206 | 2 | Pin, Cotter, Gr2, 3/16 x 2 |
| 11. | 07-3745 | 4 | Washer, Flat, CL8.8, M10 |
| 12. | 07-3749 | 2 | Screw, HHC, CL10.9, M10-1.5 x 30mm |
| 13. | 07-4622 | 4 | Nut, Hex, Lock, M10-1.5, CL10.9 |
| 14. | 07-7028 | 2 | Screw, HHC, CL10.9, M10-1.5 x 130mm |
| 15. | 07-7733 | 1 | Wire Harness, Power Lead, 126 Inches |
| 16. | 07-7734 | 1 | Wire Harness, with Box |
| 17. | 07-7737 | 1 | Wire Harness, 108 Inches, for Solenoid |
| 18. | 13-16972 | 1 | Bracket, Hydraulic |

**Service Part for 03-3381 Cylinder**
03-3382 Seal Kit

**Service Part for 03-5719 Cylinder**
46072 Seal Kit
114406 Cylinder Rod

# NOTES