VAIL PRODUCTS

WARRANTY

XSS2-3015/20F
XTS2-3015/20F
OWNER'S MANUAL

MADE IN THE U.S.A.

Rev. 11-9-2022

TABLE OF CONTENTS

READ ENTIRE MANUAL BEFORE OPERATING EQUIPMENT!

If you do not understand any section of this manual and/or function of this product please contact your local authorized dealer immediately.

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 for the safety of others working with you.

THIS SYMBOL BY ITSELF OR WITH A WARNING WORD IS USED THROUGHOUT THIS MANUAL 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.

Introduction to Vail Products®

Thank you for purchasing Vail Products®. Our products have been specifically designed to meet and exceed the standards and requirements our customers demand. They have been field tested under the most severe conditions to provide consistent and reliable service with minimum downtime.

GENERAL INFO

Only minor maintenance (such as cleaning and lubricating) is required to keep your Vail Products® unit in top operating condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and

BEFORE OPERATION

The primary responsibility for safety with the 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 for function you do not understand, contact your local authorized dealer or the manufacturer to obtain further assistance. Keep this manual available for reference. Provide the manual to any new owners and/or operators.

SERVICE INFO

Use only Vail Products® replacement parts. Substitute parts may not meet the required specifications. Record the model & serial numbers of your unit in this manual. The parts department needs this information to ensure that you receive the correct parts.

Never let anyone operate a Vail Products® 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 move.

SAFETY PRECAUTIONS

READ MANUAL PRIOR TO INSTALLATION

Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operator 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. Always wear proper safety glasses, goggles or a face shield when driving pins in or out, or when any operation causes dust, flying debris or any other hazardous material.

NOTE! FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVER'S MANUAL(S).

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 ensure 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 or illegible.

SAFETY PRECAUTIONS

LOWER OR SUPPORT RAISED EQUIPMENT

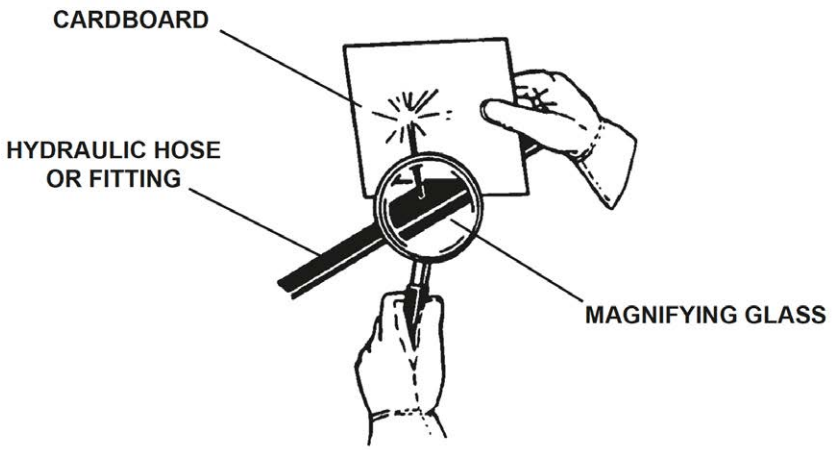
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Make sure support material is solid , not decayed, warped, twisted or tapered. Lower booms to ground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

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 mover's operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

- Keep unprotected body parts, such face, eyes and arms as far away as possible from a suspected leak.
- ***If injured by Hydraulic Fluid, seek Medical Attention at once.***
- Wear safety glasses, protective clothing and use a piece of cardboard or wood when searching for hydraulic leaks.

NOTE! DO NOT USE YOUR HANDS! SEE ILLUSTRATION BELOW



SAFETY PRECAUTIONS

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 Structure) or FOPS (Falling Object Protective Structure) equipment or device.

NOTE! ANY MODIFICATIONS MUST BE AUTHORIZED IN WRITING BY THE MANUFACTURER.

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 tools 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.

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 machine's manual for 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 operator's position.
- Never leave equipment unattended with the engine running, or with this attachment in a raised 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

KNOW WHERE UTILITIES ARE

Observe overhead electrical and other utility lines. Be sure equipment will clear them. When digging, call your local utilities for location of buried utility lines, gas, water and sewer, as well as any other hazard you may encounter.

EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA DUST ALONG WITH OTHER HAZARDOUS DUSTS MAY CAUSE SERIOUS OR FATAL RESPIRATOR 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.

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. Allow fumes to disperse thoroughly before welding or heating.

END OF LIFE DISPOSAL

At the completion of the useful life of the unit, drain all fluids and dis-mantle 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.

OPERATING THE ATTACHMENT

- Block off work area from bystanders, livestock, etc. Falling trees or branches can cause severe injury or death.
- Let others know when and where you will be working. Make sure no one is behind the equipment or for several hundred feet in any direction around the equipment when in operation. Never allow anyone to approach the tree saw when in operation.
- Due to the potential danger of flying debris, it is the owner's responsibility and is "**ABSOLUTELY MANDATORY** that an **IMPACT-RESISTANT**, **SHATTERPROOF 1/2" THICK POLYCARBONATE FRONT CAB DOOR**" be installed on the machine to protect the operator.
- Operate only from the operator's station.
- Do not exceed rated operating capacity of the prime mover.
- Be sure all covers are properly installed before operating unit.
- Do not lift loads in excess of the capacity of the prime mover. Lifting capacity decreases as the load is moved further away from the unit.
- Never try to board or exit equipment while it is running.
- Test all controls before you begin operation.

EQUIPMENT SAFETY PRECAUTIONS

OPERATING THE ATTACHMENT

- When operating on slopes, drive up and down, not across. Avoid steep hillside operation, which could cause the prime mover to overturn.
- 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.
- Never leave the attachment unattended when in the raised position. Always make sure the attachment is on the ground, parking brake is engaged, engine is turned off and the keys are removed before exiting the prime mover.

TRANSPORTING THE ATTACHMENT

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When transporting on a trailer: Secure attachment using tie down accessories that are capable of maintaining attachment stability.
- Use extra care when loading or unloading the attachment onto a truck or trailer. Disconnect hydraulic couplers during transporting when installed on prime mover.
- 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, excavations, etc., a cave-in could result.
- Do not smoke when refueling the prime mover. Allow room in the fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.

MAINTAINING THE ATTACHMENT

- Before performing maintenance, disengage auxiliary hydraulics, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes. Be sure all rotation has stopped before making any adjustments or repairs.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator 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.
- If attachment must be left raised for maintenance or any other reason, block the unit securely to prevent accidental release of the lifting mechanism. Serious damage or personal injury could result.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from Vail Products®.
- Never make hydraulic repairs while the system is under pressure. Serious personal injury or death could result.
- Never work under raised attachment.

Decals

DANGER! 1/2" THICK SHATTERPROOF CAB DOOR

WARNING! HIGH PRESSURE FLUID

DANGER! THROWN OBJECTS

DANGER! PINCH POINT

DANGER! ROTATING BLADES

NO DIESEL IN SPRAY TANK

DANGER!DO NOT OPERATE

DANGER! STAY CLEAR 300 FEET

DANGER! DO NOT EXIT

SERIAL PLATE

NO STEP

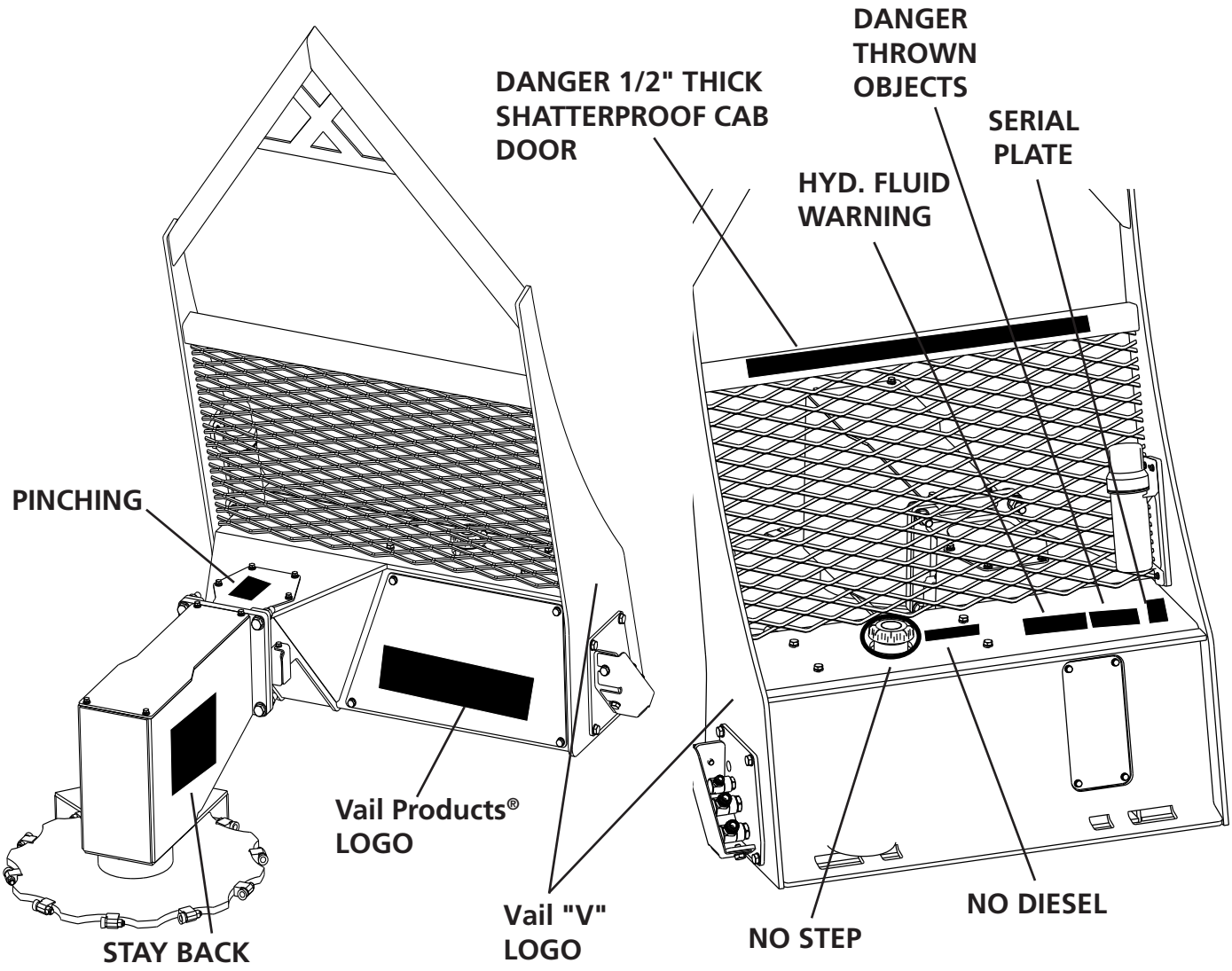
VAIL "V" LOGO

VAIL PRODUCTS® LOGO

DECAL PLACEMENT

GENERAL INFORMATION

The diagram on this page shows the location of all the decals used on your attachment. Reductions of the actual decals located on the previous page. Use this information 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 unit longevity.



IMPORTANT: Keep all safety signs clean and legible. Replace all missing, illegible, or damaged safety signs. When replacing parts with safety signs attached, the safety signs must also be replaced.

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

GENERAL INFORMATION

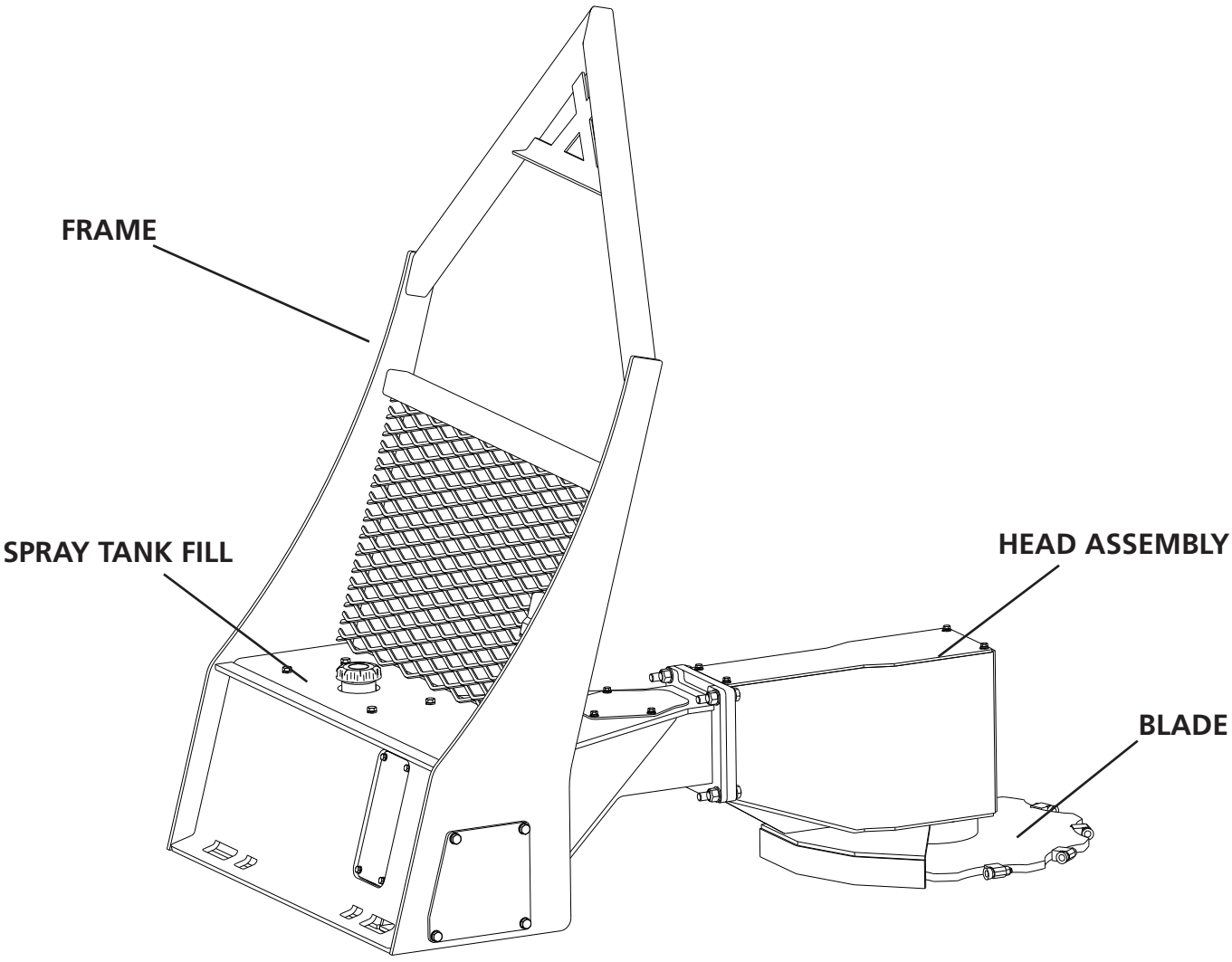
Your attachment is operated by the prime mover's auxiliary hydraulics and mounts to the toolbar/ quick attach mechanism for easy operator hook-up.

Your prime mover/loader must have an auxiliary hydraulic system and an IMPACT-RESISTANT, SHATTERPROOF 1/2" THICK POLYCARBONATE FRONT CAB DOOR to operate the saw.

TO AVOID SERIOUS PERSONAL INJURY OR DEATH THE TREE SAW MUST NOT BE ATTACHED TO ANY POWER UNIT THAT DOES NOT HAVE AN IMPACT-RESISTANT, SHATTERPROOF 1/2" THICK POLYCARBONATE FRONT CAB DOOR INSTALLED.

NOMENCLATURE

The purpose of this diagram is to acquaint you with the various names of the tree saw components. This knowledge will be helpful when reading through this manual or when ordering service parts.



GENERAL INFORMATION

The following instructions will help you to mount your tree saw onto your skid steer loader. The tree saw uses the quick-attach system for ease of installation. Therefore, if you know how to attach your loader bucket, attaching the tree saw should prove no problem. Remember to read all safety warnings, decals and operating instructions before operating the attachment. If there is any portion of this manual that you do not understand, contact your dealer.

TO AVOID SERIOUS PERSONAL INJURY OR DEATH THE TREE SAW MUST NOT BE ATTACHED TO ANY POWER UNIT THAT DOES NOT HAVE AN IMPACT-RESISTANT, SHATTERPROOF 1/2" THICK POLYCARBONATE FRONT CAB DOOR INSTALLED.

ATTACHING TO PRIME MOVER

1. Remove any attachments from the front of the loader.
2. Following all standard safety practices and the instructions for installing an attachment in your skid steer operator's manual, install the tree saw onto your skid steer loader.

IT IS IMPORTANT TO MAKE SURE THE LOCKING MECHANISM ON YOUR QUICK ATTACH IS ENGAGED, THEREFORE LOCKING THE ATTACHMENT ONTO THE SKID STEER.

3. Lower the unit to the ground and remove the key.
4. After making sure that there is not any foreign matter on the hydraulic couplers, connect the couplers to the auxiliary hydraulic system of your skid steer/compact track loader.
5. The tree saw requires electrical connections to the prime mover in order to respond to switches pressed by the operator. The tree saw comes with connector which allows the tree saw to interface directly with the prime movers OEM controls in the cab, without installing additional wiring harnesses. Three wires supply +12V DC power to various features in the saw. The 4th wire is the ground.

NOTE! CASE DRAIN IS REQUIRED. NOT USING THE CASE DRAIN WILL VOID THE MANUFACTURER'S WARRANTY.

DETACHING FROM PRIME MOVER

1. On firm, level ground, lower the attachment to the ground, ensure the parking brake is engaged, engine is turned off and the keys are removed.
2. Follow your prime mover operator's manual to relieve pressure in the hydraulic lines.
3. Disconnect couplers and either connect them together or install dust caps and plugs to prevent contaminants from entering the hydraulic system. Store hoses on attachment, off the ground.
4. Disconnect the electrical plug, and store in a safe place preventing damage to plug.
5. Follow you prime mover operator's manual for detaching (removing) an attachment.

TREES CAN FALL IN ANY DIRECTION. IT IS THE OPERATOR'S RESPONSIBILITY TO BE CERTAIN THE AREA IS SAFE AND CLEAR OF PEOPLE, ANIMALS AND PERSONAL PROPERTY.

Operating Instructions

GENERAL INFORMATION

The tree saw attaches to the toolbar/quick-attach mechanism of your skid steer loader. Due to this arrangement, thorough knowledge of the skid-steer controls is necessary for machine operation. Read and understand your skid steer operator's manual for information regarding skid steer operation before attempting to use the tree saw. Follow all installation instructions for the proper installation of the unit onto your skid steer before attempting to operate your tree saw.

OPERATING TIPS

Continuous rotation of the blade is required during operation to prevent overheating of the hydraulic system. If the blade stalls, disengage auxiliary hydraulics, and remove saw from debris before restarting. Blade rotation is maintained by operating the attachment at pressures below relief valve settings. Overheating of the hydraulic system is caused if hydraulic oil is repeatedly forced over the relief valve setting on either the prime mover or tree saw (whichever is less).

GENERAL INFORMATION

Felling

1. Felling of standing trees requires care and planning. Be aware of wind, slopes, leaning stems, and other factors that may indicate the probable direction that the tree will fall once cut. Even with careful observation, the tree may fall in any direction, so it is important to use a machine with proper ROPS/FOPS protection and to be very vigilant when felling.
2. Start the hydraulic flow to spin the blade. Approach the tree slowly and "sneak into the cut" only applying more cutting force once the blade is already cutting wood. It is often preferable to progress through the cut by rotating the machine rather than driving forward, but field conditions will dictate which to use. As the cut gets deeper listen to the sound of the saw to anticipate if the blade is becoming pinched. If the saw begins to slow down, ease off on the cutting force or back out of the tree and cut from another direction.
3. As the cut nears completion, be aware of the direction that the tree is tending to fall and be prepared to respond.

NOTE! DO NOT USE THE TREE SAW DEFLECTION GUARD AS A PUSHBAR.

Trimming

Branches may be trimmed by rotating the saw head and proceeding to trim. Be aware that the saw dust will be propelled in a certain direction depending upon which way the head is rotated and what part of the blade is used to cut the branch. Plan your cut to avoid spraying saw dust on the machine. Also be aware of the falling branch and do not position the machine under the branch where it will be struck.

Cross Cutting

Once the tree is on the ground, it may be sectioned into manageable logs or rounds by cross-cutting. Approach perpendicular to the stem, with the head rotated to one side, proceed to cross-cut. Care should be taken to avoid spraying saw dust on the machine, and to avoid driving the blade into the ground. The teeth on the blade will generally stand up to dirt and mud, but rocks or other hard objects will chip the inserts.

Ripping

Trees on the ground may also be ripped along their length if the machine can straddle the log without contact. Rotate the head to one side, approach the stem from the end, and proceed to cut. Rip cutting will produce very long and stringy chips of wood, and care should be taken to avoid spraying chips on the machine.

STORAGE

The following storage procedure will help you to keep your attachment in top condition. It will also help you get off to a good start the next time your saw is needed. We therefore strongly recommend that you take the extra time to follow these procedures whenever your unit will not be used for an extended period of time.

- 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 when starting next season.

NOTE! PURCHASE ONLY MANUFACTURER APPROVED REPLACEMENT PARTS.

- Tighten all loose nuts, bolts and hydraulic connections.
- Check the drive bearing housing for proper lubricant level.
- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage.
- Replace decals if damaged, or in unreadable condition.
- Apply a rust-preventive spray to all moving parts and to the bottom of the blade.
- Store the unit in a dry and protected place. Leaving the unit outside will materially shorten its life.
- Touch up all unpainted and exposed areas with paint, to prevent rust.

REMOVING FROM STORAGE

- Remove all protective coverings.
- Check hydraulic hoses for deterioration, and replace if necessary.
- Check all nuts and bolts for proper tightness.

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.

TRANSPORTING

Follow all local government regulations that may apply along with recommended tie down points and any equipment safety precautions at the front of this handbook when transporting your attachment.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY
BLADE WILL NOT SPIN	No hydraulic flow	Check fluid level in the machine reservoir. Ensure that the machine's auxiliary hydraulic function has been activated.
	Reversed supply lines	Remove the two large hydraulic couplers from the ends of the supply lines, and reinstall them on the opposite hose. Reconnect to machine.
	Relief valve stuck	Remove relief valve cartridge from the valve manifold and inspect.
BEARING FAILURE	No lubricant	Remove the motor from the top of the bearing and check inside the bearing for proper lubricant level. Oil should be approximately 1.5" below the top of the bearing. Fill to this level with SAE 90W gear oil, or replace the bearing assembly if damaged.
SAW TEETH WORN OR BROKEN	Normal operating condition - Teeth are consumable items	Replace the teeth.

GENERAL INFORMATION

Economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant. Neglect leads to reduced efficiency, wear, breakdown, and needless replacement of parts.

PERIODIC CHECK

The oil level in the drive bearing housing should be checked yearly, or if you notice any leaks from bottom of the housing. Fill as necessary with a mild extreme pressure lubricant API-GL-5, No. 80 or 90 weight gear lubricant.

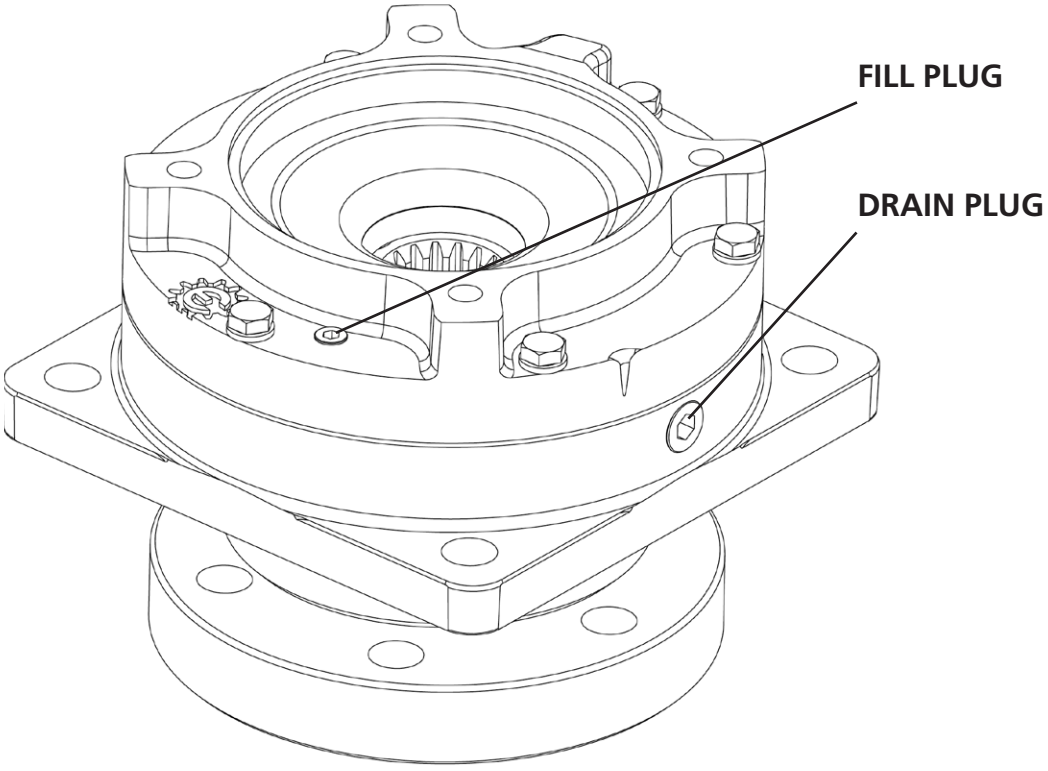
TO CHECK:

Remove plug from top of drive bearing housing. Lubricant should be visible very near the top.

TO ADD:

Remove plug from top of the drive bearing housing and add lubricant until full. Replace plug.

DRIVE BEARING HOUSING



GENERAL INFORMATION

Regular maintenance is the key to long equipment life and safe operation. Maintenance requirements have been reduced to an absolute minimum. However, it is very important that these maintenance functions be performed as described.

TO AVOID SERIOUS INJURY. LOWER THE TREE SAW TO THE GROUND, SET THE PARKING BRAKE, STOP THE SKID STEER ENGINE, AND REMOVE THE KEY BEFORE LEAVING THE OPERATOR'S SEAT. IF UNIT MUST BE LEFT RAISED FOR MAINTENANCE, BLOCK THE UNIT SECURELY TO PREVENT ACCIDENTAL RELEASE OF THE LIFTING MECHANISM. DISCONNECT THE HYDRAULIC COUPLERS.

PROCEDURE	DAILY	1200 HOURS	2000 HOURS
Check skid steer loader hydraulic system to ensure an adequate level of hydraulic oil.	•		
Check mounting hardware on blade and tighten if necessary. See Bolt Torque Specifications.	•		
Check all other hardware and tighten, if necessary. See Bolt Torque Specifications.	•		
Check hydraulic system for hydraulic oil leaks.	•		
Check cutting inserts for damage and replace as needed.	•		
Check all safety guards and ensure that all devices are installed correctly.	•		
Check for missing or illegible Safety / Warning decals.	•		
Check oil level in drive bearing housing and add if necessary.		•	
Change oil in drive bearing housing.			•

OIL CLEANLINESS REQUIREMENTS

NOTE! ALL HYDRAULIC FLUID SHALL BE FILTERED BEFORE USE IN PRODUCT TO OBTAIN THE ISO CLEANLINESS STANDARD OF 20/18/15 UNLESS EXPLICITLY SPECIFIED OTHERWISE.

ESCAPING FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE THE SKIN, CAUSING SERIOUS PERSONAL INJURY. FLUID ESCAPING FROM A VERY SMALL HOLE CAN BE ALMOST INVISIBLE. USE A PIECE OF CARDBOARD OR WOOD, RATHER THAN HANDS TO SEARCH FOR SUSPECTED LEAKS. SEE THE SAFETY SECTION OF THIS MANUAL.

KEEP UNPROTECTED BODY PARTS, SUCH AS FACE, EYES, AND ARMS AS FAR AWAY AS POSSIBLE FROM A SUSPECTED LEAK. IF INJURED BY INJECTED FLUID, SEEK MEDICAL ATTENTION IMMEDIATELY.

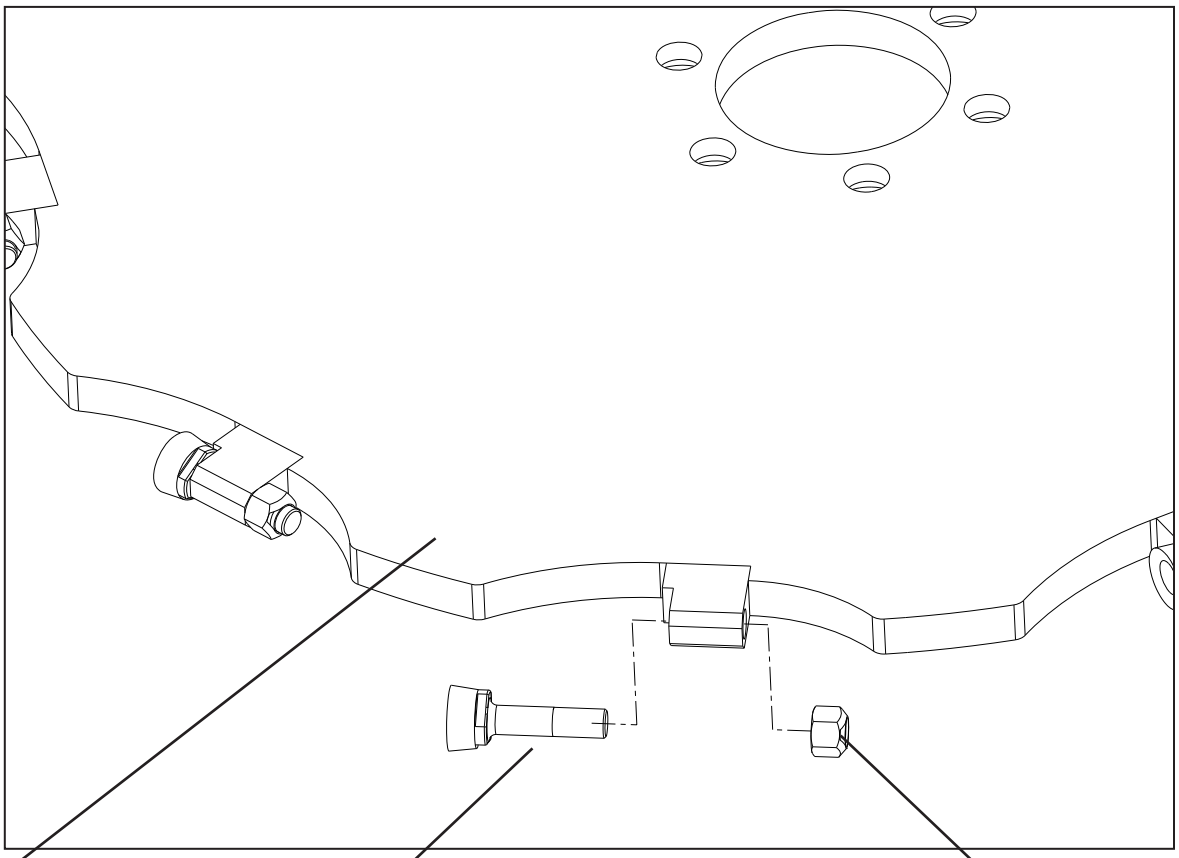
TO AVOID SERIOUS INJURY. LOWER THE UNIT TO THE GROUND, SET THE PARKING BRAKE, STOP THE SKID STEER ENGINE, AND REMOVE THE KEY BEFORE LEAVING THE OPERATOR'S SEAT. IF UNIT MUST BE LEFT RAISED FOR MAINTENANCE, BLOCK THE UNIT SECURELY TO PREVENT ACCIDENTAL RELEASE OF THE LIFTING MECHANISM. DISCONNECT THE HYDRAULIC COUPLERS.

REPLACING SAW INSERTS

The inserts should be inspected regularly (every 8 hours) to ensure they are not broken and are tightened correctly and intact.

1. With hydraulic couplers disconnected, remove the old insert.
2. Clean all dirt and debris from the face of the mounting block.

NOTE! FAILURE TO CLEAN THE FACE OF THE MOUNTING BLOCK MAY RESULT IN BREAKING A NEW INSERT WHEN THE RETAINING SCREW IS TIGHTENED.



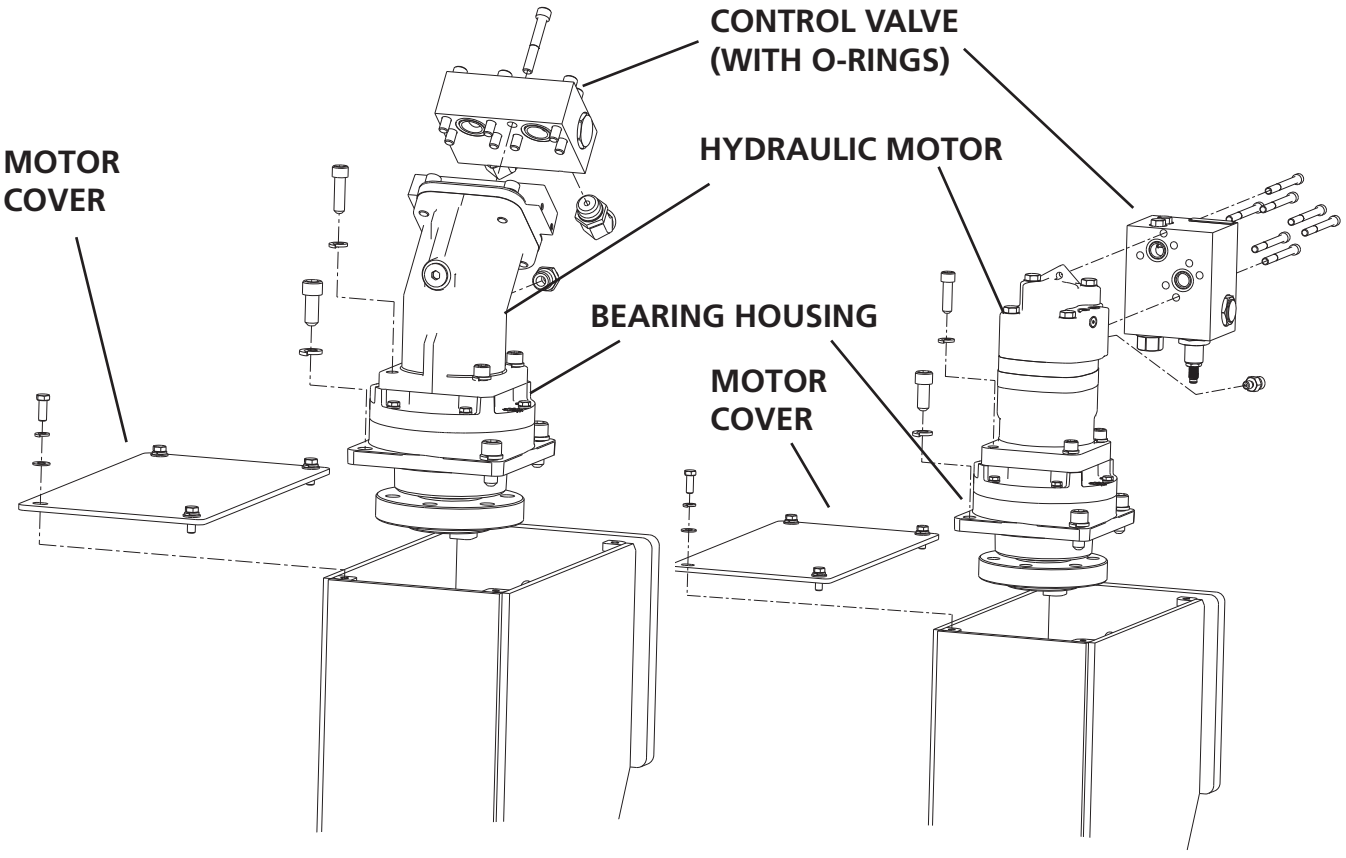
REPLACING HYDRAULIC MOTOR

When replacing the hydraulic motor the unit should be setting firmly on the ground with the hydraulic couplers disconnected. **Be sure all rotation has stopped before making any adjustments or repairs.**

NOTE! FIELD REPLACEMENT OF THE INTERNAL MOTOR SEALS VOIDS WARRANTY.

1. Remove motor cover. (Four cap screws.)
2. Disconnect hoses from control valve and from motor. (Mark orientation.)
3. Remove the control valve from the existing hydraulic motor and place in a clean container, be sure to keep the O-rings with the valve assembly.
4. Remove the socket cap screws holding the motor to the drive bearing housing, and remove the motor. Check motor seal (O-ring) for damage and replace if required.
5. Install the new motor with O-ring onto the drive bearing housing using the existing hardware. Torque to specifications. See Bolt Torque Specifications.
6. Re-install the existing control valve onto the new hydraulic motor using the existing hardware. Be sure O-rings are properly positioned when installing valve.
7. Re-install motor cover using existing hardware and torque to specification. See Bolt Torque Specifications.

NOTE! IF COUPLERS WERE NOT DISCONNECTED PRIOR TO REMOVING THE CONTROL VALVE, OIL WILL DRAIN FROM THE SKID STEER CAUSING EXTENSIVE OIL LOSS.



REPLACING DRIVE BEARING HOUSING

When replacing the drive bearing housing, the unit must be detached from the prime mover in a clean, open location.

BE SURE ALL ROTATION HAS STOPPED BEFORE MAKING ANY ADJUSTMENTS OR REPAIRS.

1. Remove the motor cover. (Four cap screws.)
2. Disconnect hoses from control valve and from motor. (Mark orientation.)
3. Remove the control valve from the hydraulic motor and place in a clean container, be sure to keep the O-rings with the valve assembly.
4. Remove the socket cap screws holding the motor to the drive bearing housing, and remove the motor. Check motor seal (O-ring) for damage and replace if required.
5. Remove the blade. (Six flat socket cap screws)
6. Remove the socket cap screws holding the drive bearing to the head assembly, and remove the drive bearing.

REPLACING DRIVE BEARING HOUSING

7. Remove the fill plug from the top of the new bearing housing and fill with a mild extreme pressure lubricant API-GL-5, No. 80 or 90 weight gear lubricant. Replace fill plug.
8. Install the new drive bearing using existing hardware and torque to specifications. See Bolt Torque Specifications.
9. Install the motor and O-ring onto the drive bearing housing using the existing hardware and torque to specifications. See Bolt Torque Specifications, page 29 of this manual.
10. Re-install the control valve using existing hardware. Be sure O-rings are properly positioned when installing valve.
11. Re-install hydraulic hoses to motor and control valve. Ensuring they are in the same position as they were prior to removal.
12. Re-install blade using existing hardware and torque to specifications. See Bolt Torque Specifications.
13. Re-install motor cover using existing hardware and torque to specification. See Bolt Torque Specifications.

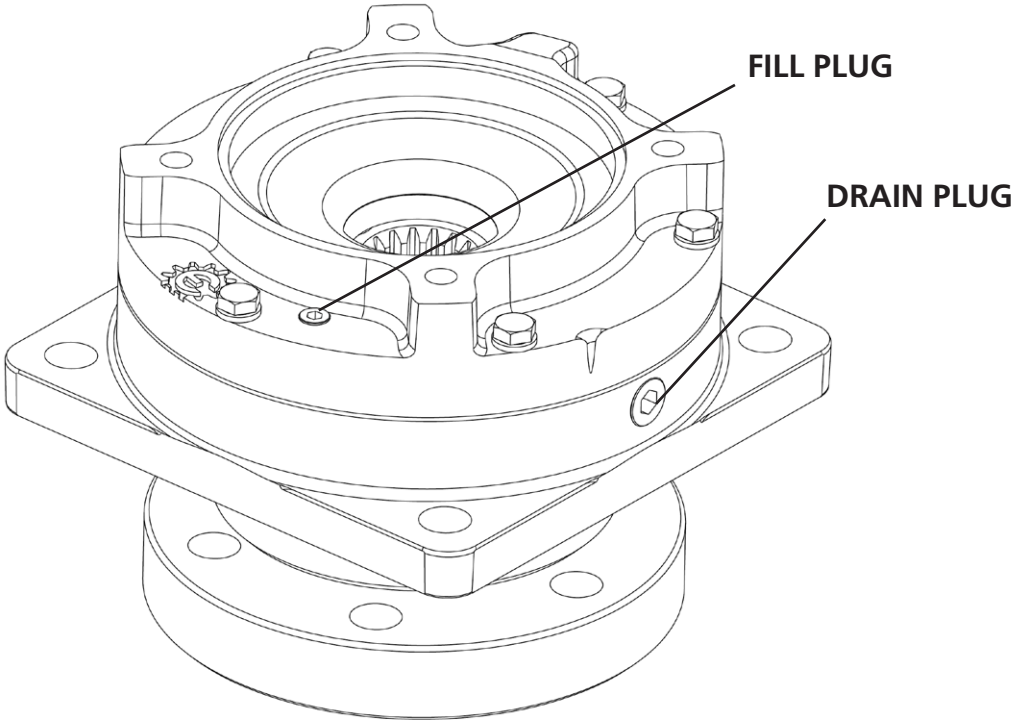
Follow the installation procedure for attaching the unit onto your prime mover.

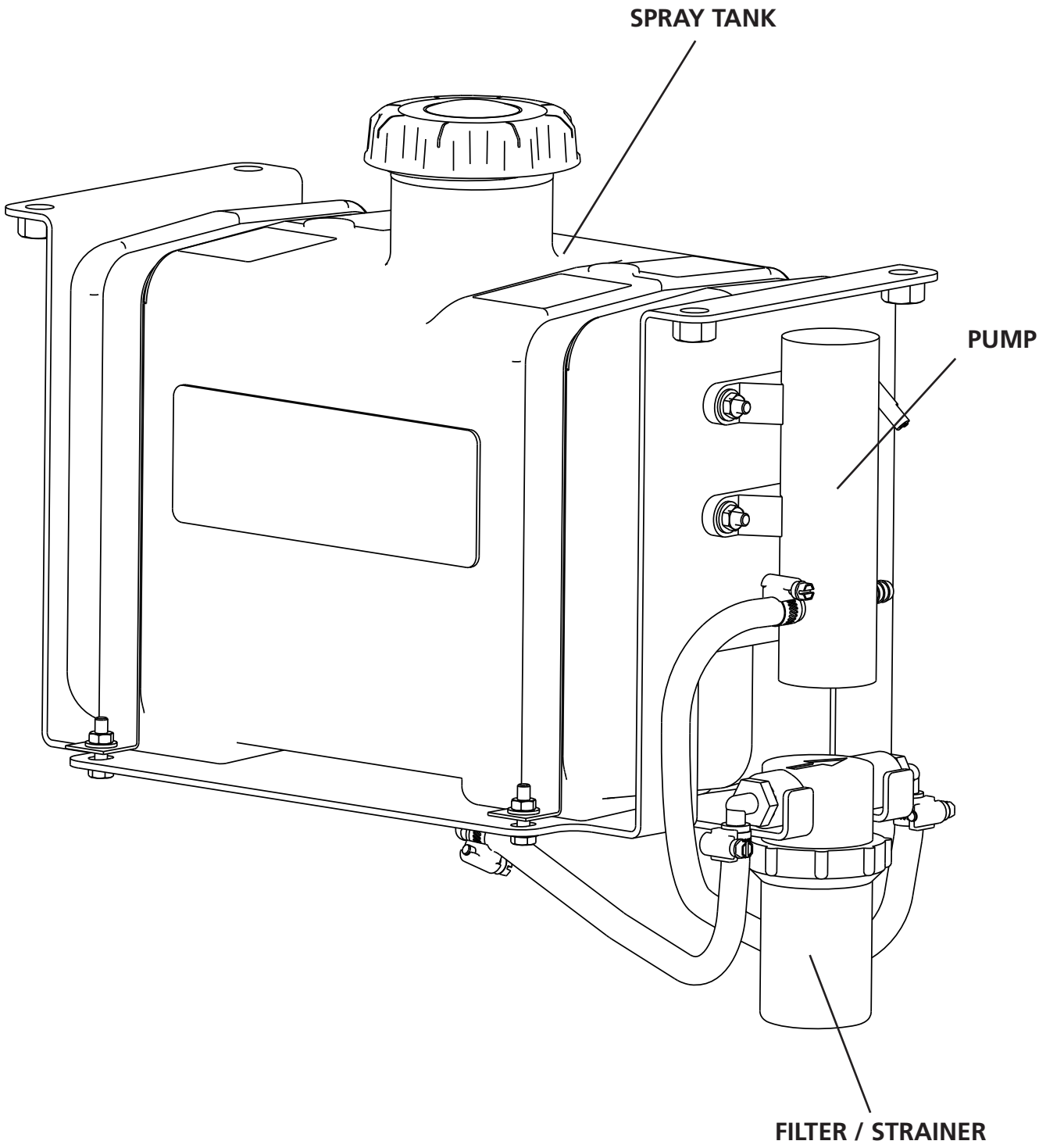
CHANGING OIL IN DRIVE BEARING HOUSING

When changing the oil in the drive bearing housing the unit should be setting firmly on the ground with the hydraulic couplers disconnected. We recommend removing the existing oil with a fluid removal pump.

1. Remove Drain plug in the drive bearing housing and place the extraction hose into the housing so that it reaches the bottom.
2. Place the output hose into an approved container or drum that will hold the waste oil.
3. Following the instructions for your fluid removal pump, remove all oil from the drive bearing housing.
4. Once the oil has been drained from the housing, remove the pump and refill the housing thru the Fill plug with approximately 18 ounces of a mild Extreme Pressure Lubricant API GL-5, No. 80 or 90 weight gear lubricant.
5. Replace plug.

DRIVE BEARING HOUSING




SPRAY TANK
PUMP
FILTER / STRAINER

SPRAY SYSTEM USAGE & CLEANING PROCEDURE

The Herbicide Spray Pump is designed to spray a large variety of Agricultural and Lawn & Garden chemicals diluted in water, see the list below for some examples of water-based (amine-based) herbicide formulations.

NOTE! THE PUMP IS NOT DESIGNED FOR PETROLEUM PRODUCTS (SUCH AS DIESEL FUEL, KEROSENE, OR GASOLINE) OR CHEMICALS THAT ARE DILUTED WITH PETROLEUM (ESTER-BASED HERBICIDES). FLAMMABLE FLUIDS, PETROLEUM BASED OR OTHERS, SHOULD NEVER BE USED WITH THE PUMP.

The internal parts of the pump are damaged by petroleum products.

THIS TYPE OF DAMAGE IS NOT COVERED UNDER WARRANTY.

The pump motor itself is not sealed and could ignite flammable vapors causing injury or death. Other common fluids that should not be used with the pump include bleach, paint, and stains.

It is recommended that you only use liquid formulations. Soluble powders, granules, and other dry formulations do not always dissolve completely and can cause the strainer to plug and/or build up inside the pump causing it to fail.

If the pump loses pressure or decreases in flow, check for a clog in the strainer, lines, fittings, and/or spray nozzle for foreign materials.

When you are done spraying, fill the tank part way with clean water and spray it through the entire system to flush out any remaining chemicals. Additional flushing with clean water and a chemical neutralizer is also recommended to maximize pump and system life.

It is recommended that you only mix enough herbicide that can be sprayed in one day. If you have leftover spray, you should still rinse everything as described to maximize pump and system life.

For off season storage, clean the entire system as described. Drain out all water, especially in the pump and strainer. Water that freezes in the pump and/or strainer will cause them to crack and break and is not covered under warranty. Winterizing can be done by pumping RV antifreeze through the entire system.

For best results, store in a temperature controlled environment.

EXAMPLES OF WATER DILUTABLE HERBICIDE FORMULATIONS:

Arsenal®	Milestone®
Banvel®	Pathway®
Chopper®	Razor® Pro
Clarity®	Roundup PowerMax®
Forester®	Stalker®
Garlon® 3A	Tordon® RTU
Glypro® Plus	

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 UN-PLATED AND EITHER DRY OR LUBRICATED.

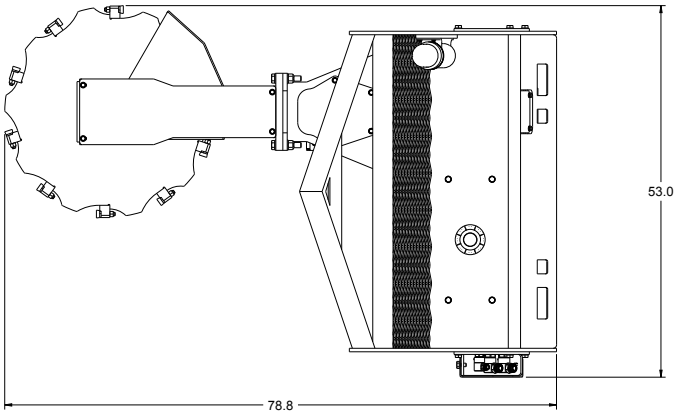
BOLT SIZE		SAE GRADE 5 TORQUE				SAE GRADE 8 TORQUE				Bolt head identification marks as per grade. NOTE: Manufacturing marks will vary.
		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		
Inches	Millimeters	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	
1/4	6.35	8	9	11	12	10	13	14	18	
5/16	7.94	14	17	19	23	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	478	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	

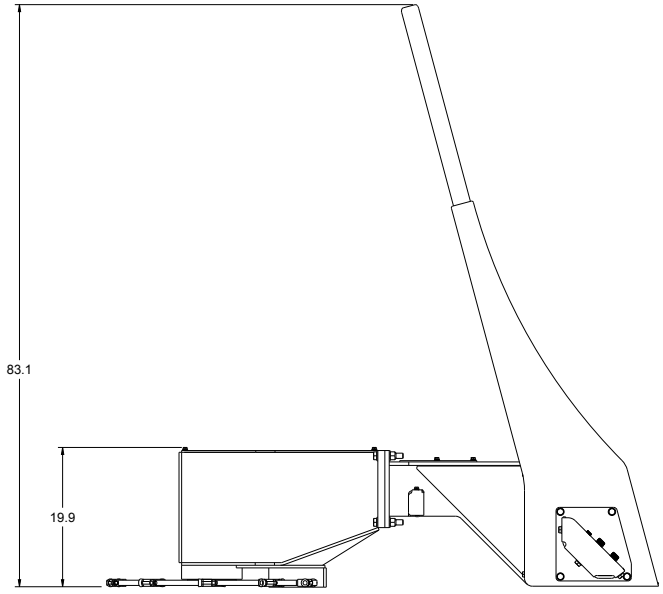
GRADE 2

GRADE 5

GRADE 8

Specifications

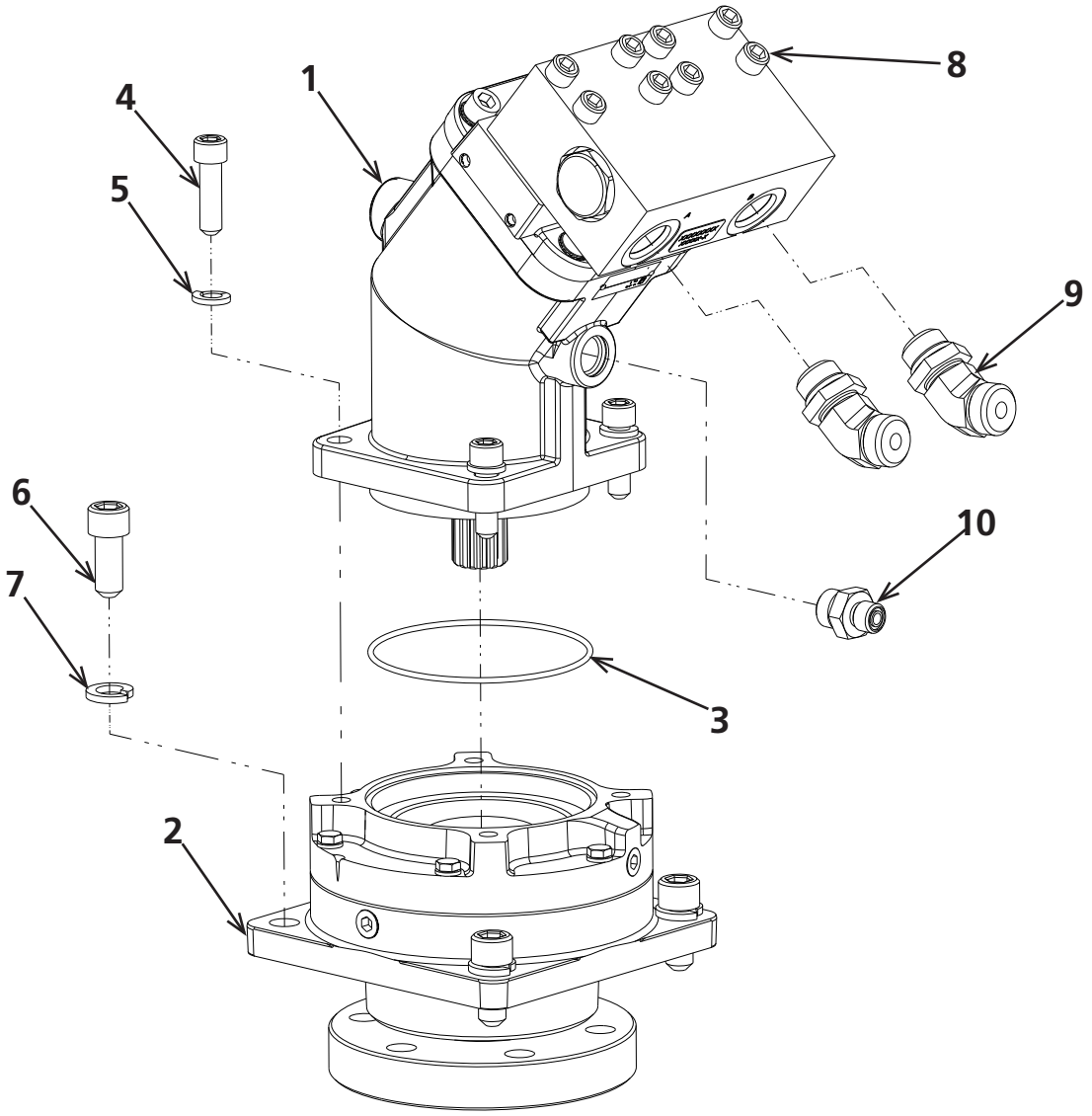




SPECIFICATIONS

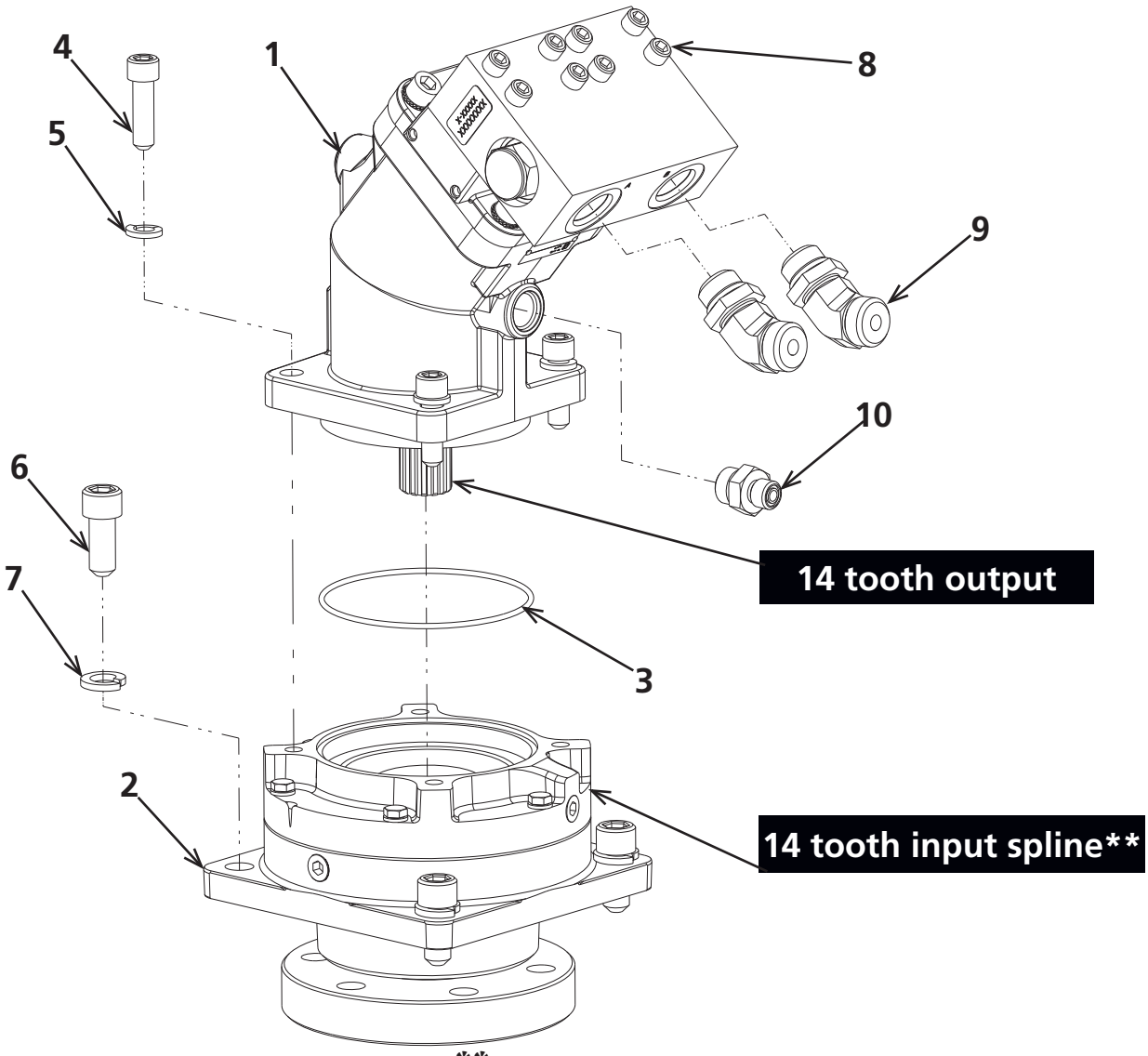
Overall Height	**83.10”**
Overall Width	**53”**
Overall Length	**78.8”**
Cutting Head Height	**19.90”**
Blade Diameter	**30”**
Max Operating Pressure (Attachment)	**4000 psi**
Recommended Flow (High Flow)	**20 - 45 gpm**
Recommended Flow (Low Flow)	**25 gpm Max**
Required Skid Steer Lifting Capacity	**2200 lbs.**
Weight	**1280 lbs.**

High Speed - High Flow Motor & Bearing Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
52991280		Motor Kit, includes items 1, 3, 4, 5 & 8.	
1	52992080	Hydraulic Motor w/Valve Body (High Flow, 20 - 45 GPM)	1
2	52090100	Bearing Housing, 17 tooth input spline	1
3	51060500	O-Ring	1
4	52093200	1/2" x 1-3/4" Socket Cap Screw	4
5	79513320	1/2" Lock Washer	4
6	52093100	5/8" x 1-1/2" Socket Cap Screw	4
7	52093000	5/8" Lock Washer	4
8	52092812	7/16" x 3" Socket Cap Screw	8
9	52091960	Hyd. Elbow Adapter, 45° x -12 MBo x -12 ORFS	2
10	52091950	Hyd. Adapter Fitting, Straight, -10 MBo x -06 ORFS	1

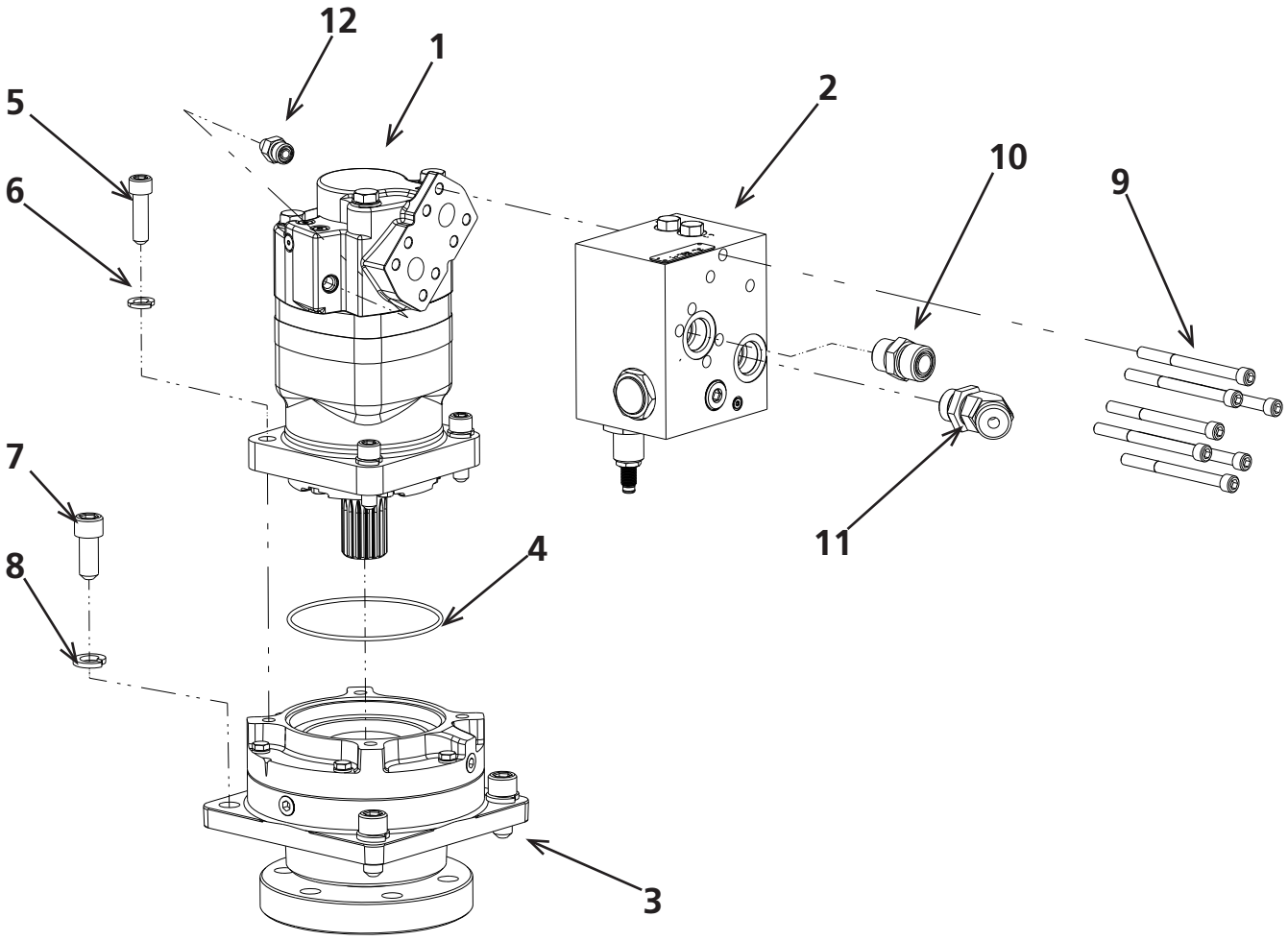
High Speed - Low Flow Motor & Bearing Assembly



**Use with Low Flow Motor ONLY!

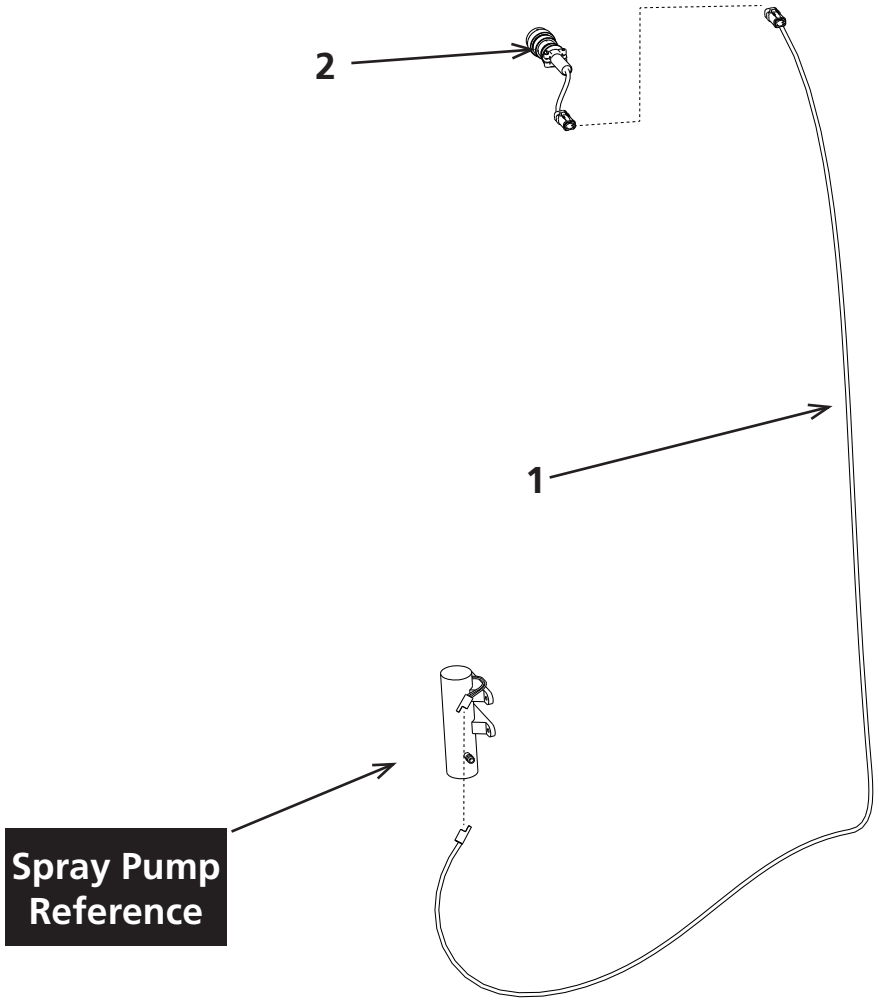
ITEM	PART NUMBER	DESCRIPTION	QTY
52991263		Motor Kit, includes items 1, 3, 4, 5 & 8.	
1	52992063	Hydraulic Motor w/Valve Body (Low Flow, 25 GPM Max)	1
2	52090110	Bearing Hsg, 14 tooth input spline (use w/Low-Flow only)	1
3	51060500	O-Ring	1
4	52093200	1/2" x 1-3/4" Socket Cap Screw	4
5	79513320	1/2" Lock Washer	4
6	52093100	5/8" x 1-1/2" Socket Cap Screw	4
7	52093000	5/8" Lock Washer	4
8	52092808	3/8" x 2-3/4" Socket Cap Screw	8
9	52091960	Hyd. Elbow Adapter, 45° x -12 MBo x -12 ORFS	2
10	52091950	Hyd. Adapter Fitting, Straight, -10 MBo x -06 ORFS	1

Torque Motor & Bearing Assembly



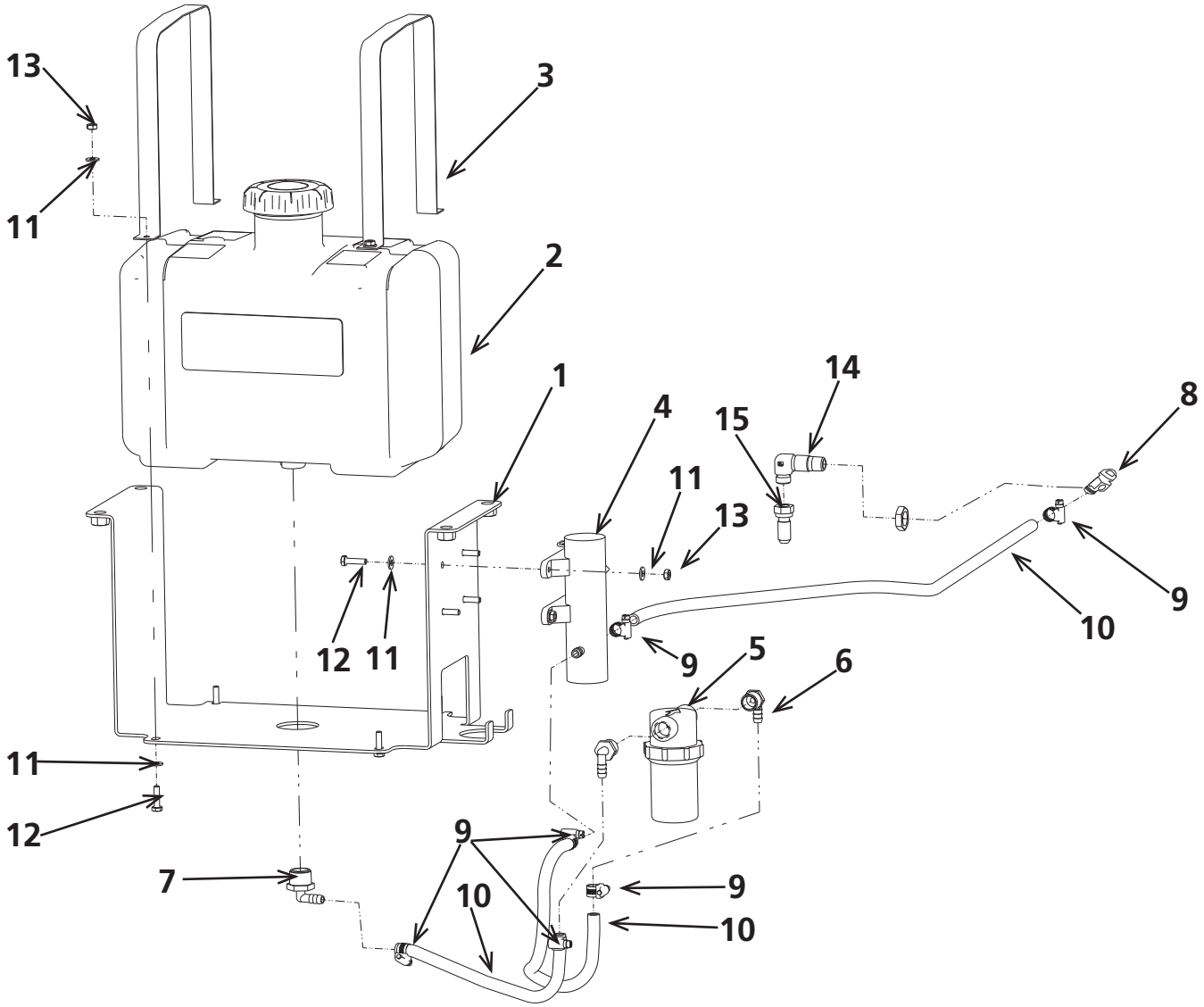
ITEM	PART NUMBER	DESCRIPTION	QTY
	52991000	Motor Kit, includes items 1, 2, 4, 5, 6 & 9. (Specify Low Flow or High Flow motor)	
1	51060000	Hydraulic Motor (High Flow 20 - 45 GPM)	1
	51060040	Hydraulic Motor (Low Flow 25 GPM Max)	
2	52090200	Hydraulic Valve Body	1
3	52090100	Bearing Housing, 17 tooth input spline	1
4	51060500	O-Ring	1
5	52093200	1/2" x 1-3/4" Socket Cap Screw	4
6	79513320	1/2" Lock Washer	4
7	52093100	5/8" x 1-1/2" Socket Cap Screw	4
8	52093000	5/8" Lock Washer	4
9	51090100	3/8" x 4-1/2" Socket Cap Screw	7
10	51060600	Hyd. Adapter Fitting, Straight, -12 MBo x -12 ORFS	1
11	52091960	Hyd. Elbow Adapter, 45° x -12 MBo x -12 ORFS	1
12	51060700	Hyd. Adapter Fitting, Straight, -04 MBo x -06 ORFS	1

Electrical Assembly



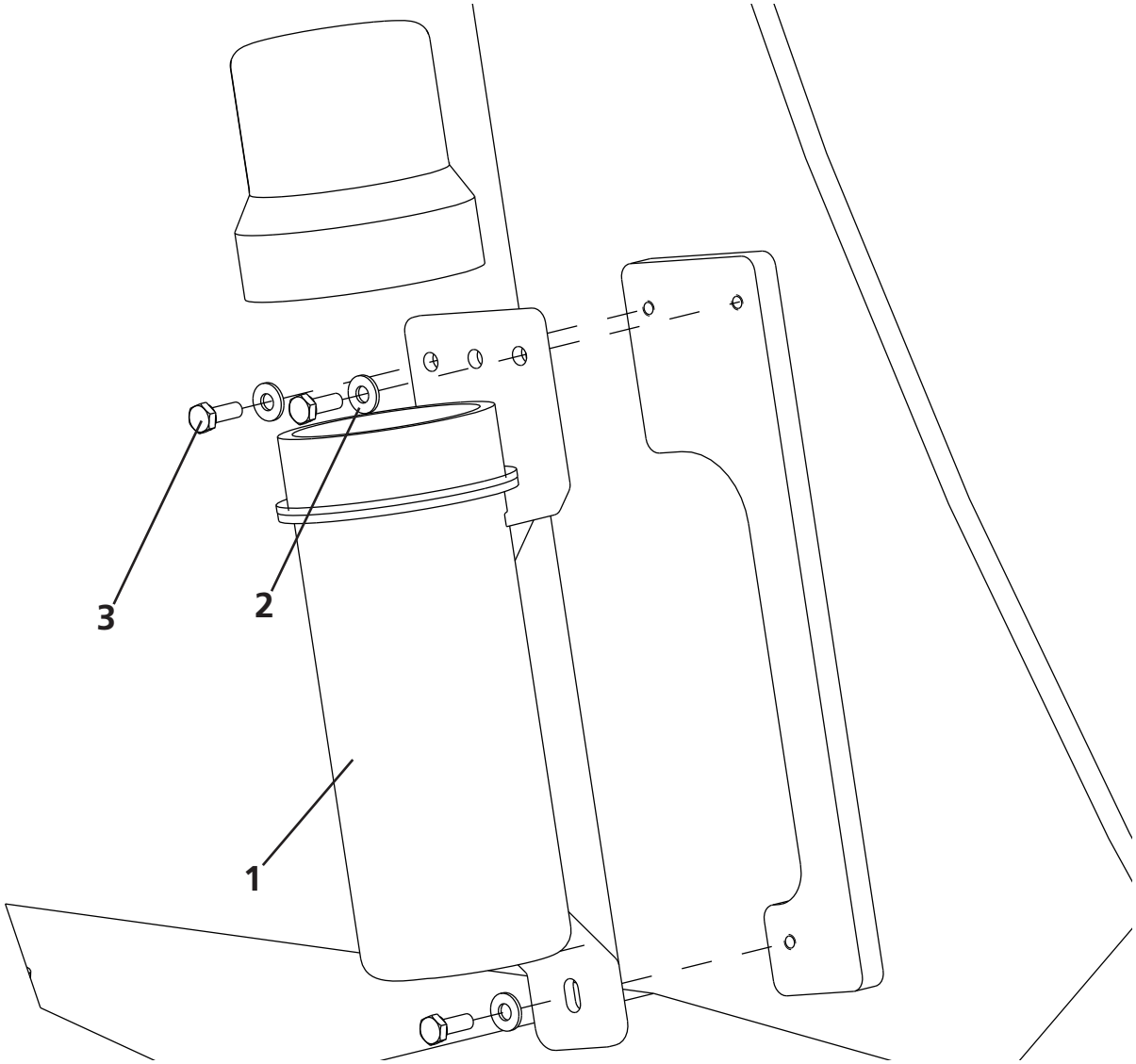
ITEM	PART NUMBER	DESCRIPTION	QTY
1	52090280	Jumper, Frame	1
2	52090290	Jumper Harness, Prime Mover	1

Spray System Assembly



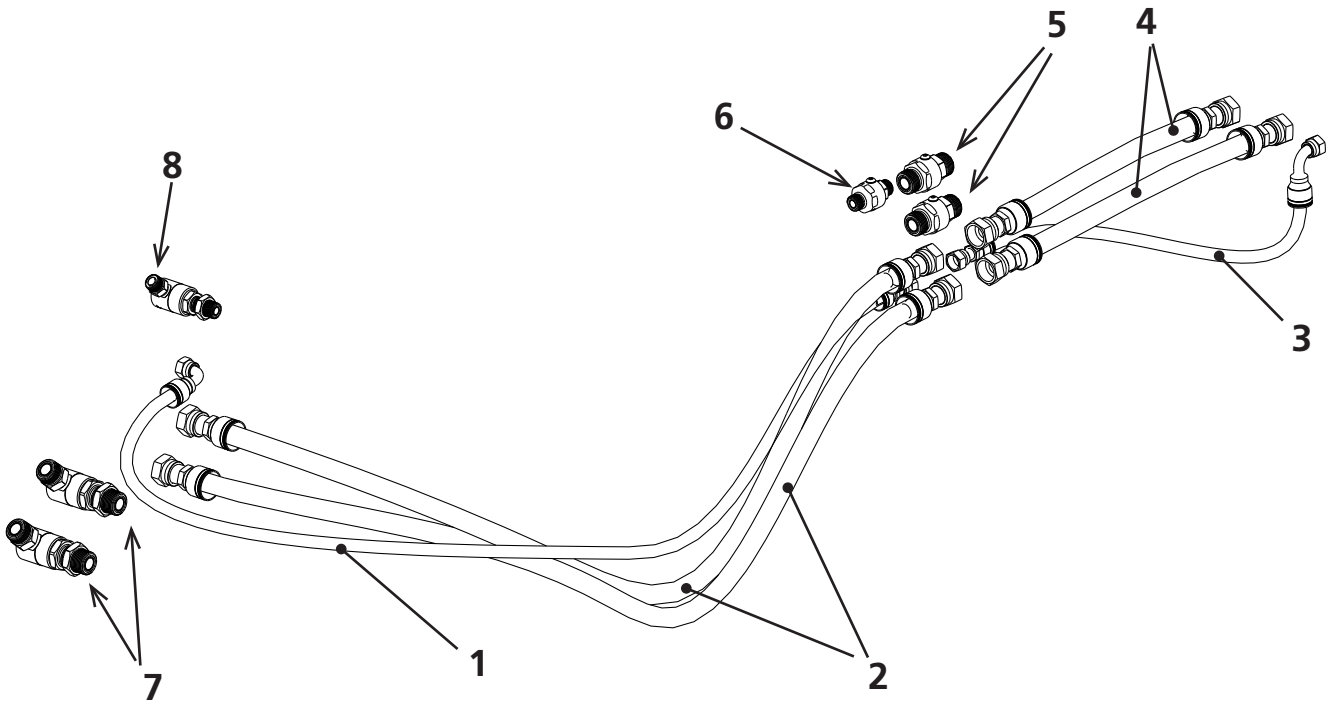
ITEM	PART NUMBER	DESCRIPTION	QTY
1	52040000	Mounting Bracket	1
2	52091100	5 Gal. Tank Asy, w/Cap	1
3	52091200	Hold Down Strap	2
4	52090900	12V DC Spray Pump	1
5	52091000	Filter / Strainer	1
6	52090500	Elbow, 1/2” MNPT x 3/8” Barb	2
7	52090600	Elbow, 3/4” MNPT x 3/8” Barb	1
8	52090400	Brass Check Valve, 3/8” FNPT x 3/8” Barb	1
9	52091600	Hose Clamp	6
10	52091700	3/8” ID Hose	A/R
11	52093500	1/4” SAE Flat Washer	16
12	52093400	1/4” x 1” Hex Cap Screw Gr.5	8
13	52093600	1/4” TopLock Nut Gr.C	8
14	52090700	Bulkhead Elbow, 3/8” MNPT x 9/16” UNF w/Nut	1
15	52090800	Adjustable Spray Nozzle	1

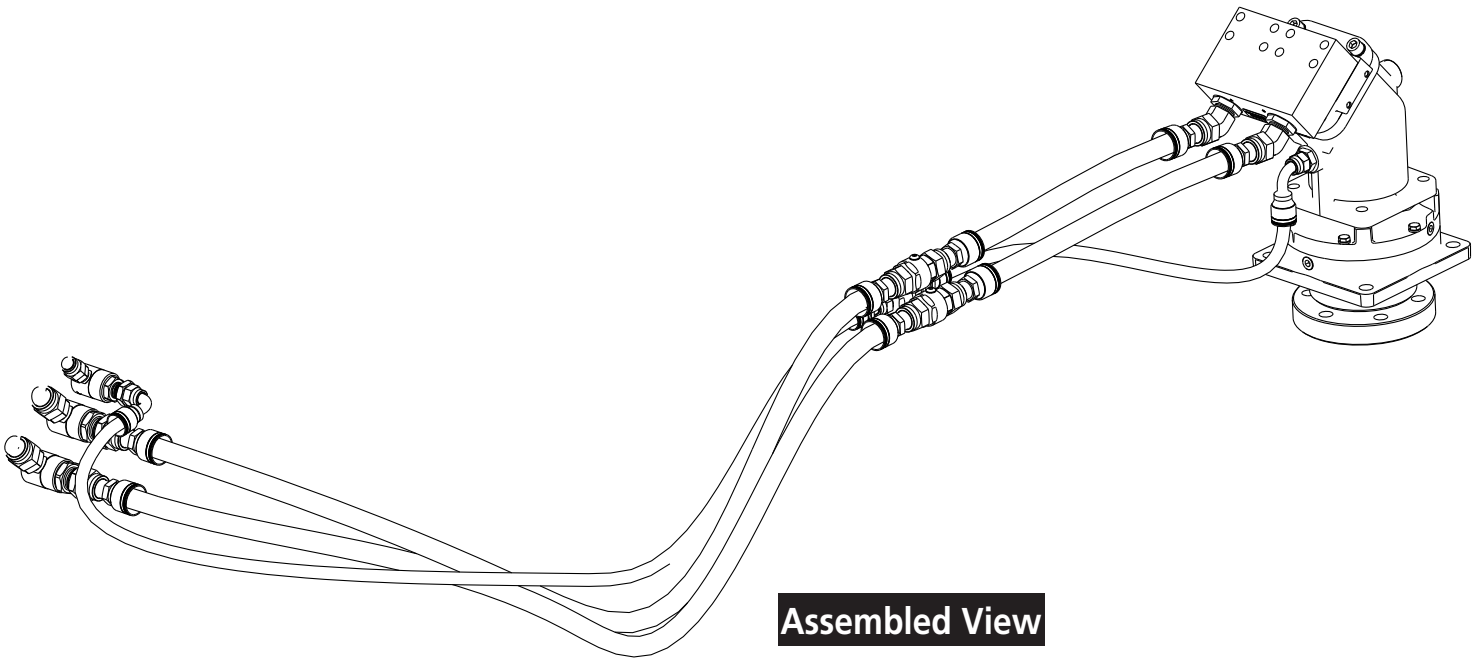
Manual Canister



ITEM	PART NUMBER	DESCRIPTION	QTY
1	59999000	Manual Canister	1
2	52093500	1/4" SAE Flat Washer	3

Internal Hoses



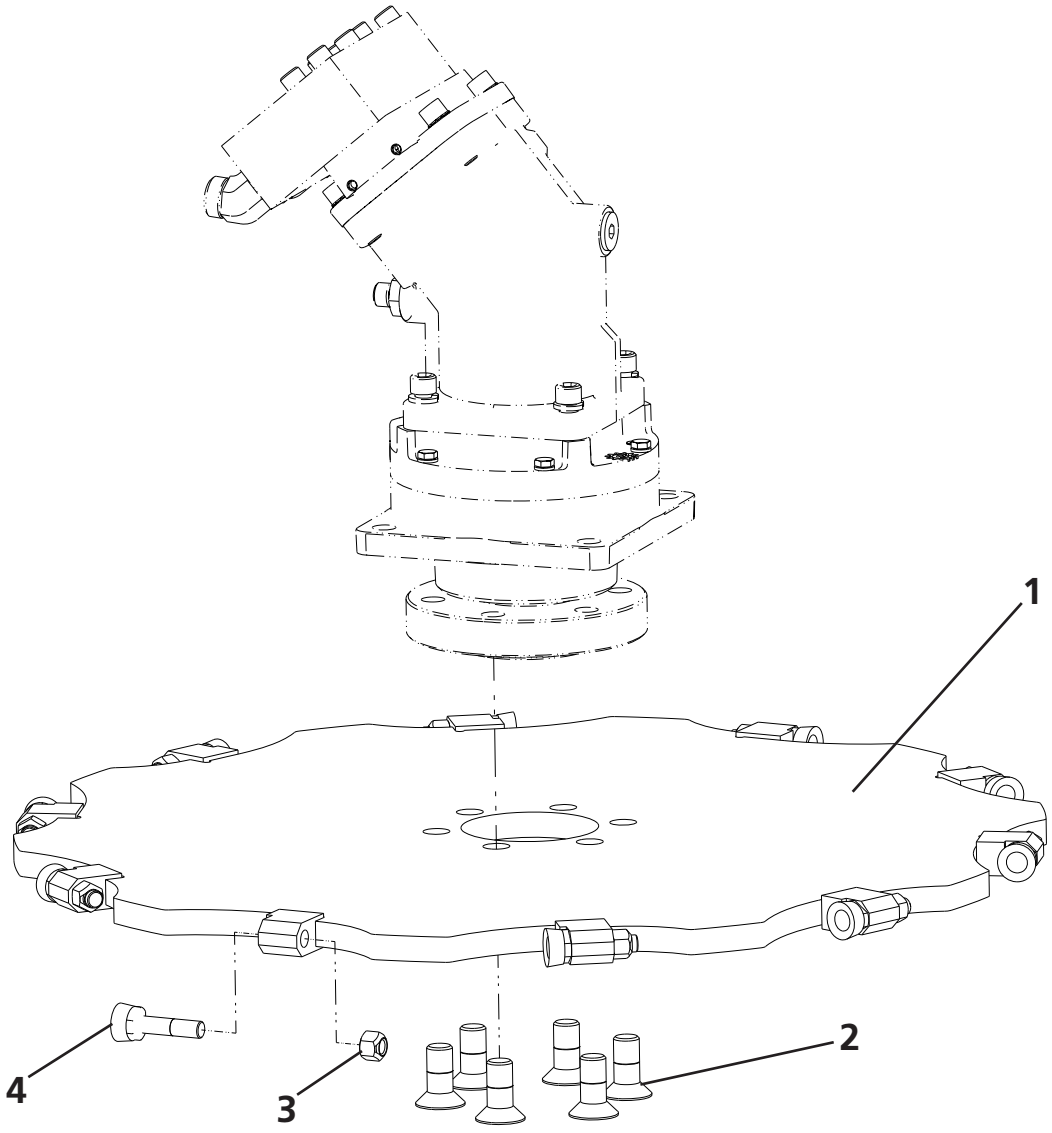


Assembled View

Internal Hoses

ITEM	PART NUM.	DESCRIPTION	QTY
1	52097800	Hose Asy, 3/8" x 62.5", Side Swivel to Boom Swivel, Case Drain	1
2	52097700	Hose Asy, 3/4" x 59", Side Swivel to Boom Swivel, Pressure & Return	2
3	52098000	Hose Asy, 3/8" x 45", Boom Swivel to Motor Port, Case Drain	1
4	52097900	Hose Asy, 3/4" x 24", Boom Swivel to Motor Block, Pressure & Return	2
5	52091980	Hyd. Live Swivel, -12 ORFS x -12 ORFS	2
6	52091990	Hyd. Live Swivel, -08 ORFS x -08 ORFS	1
7	57795400	Hyd. Live Swivel 90 deg w/ Nut, -12 ORFS x -12 ORFS	2
8	55285000	Hyd. Live Swivel 90 deg w/ Nut, -08 ORFS x -08 ORFS	1

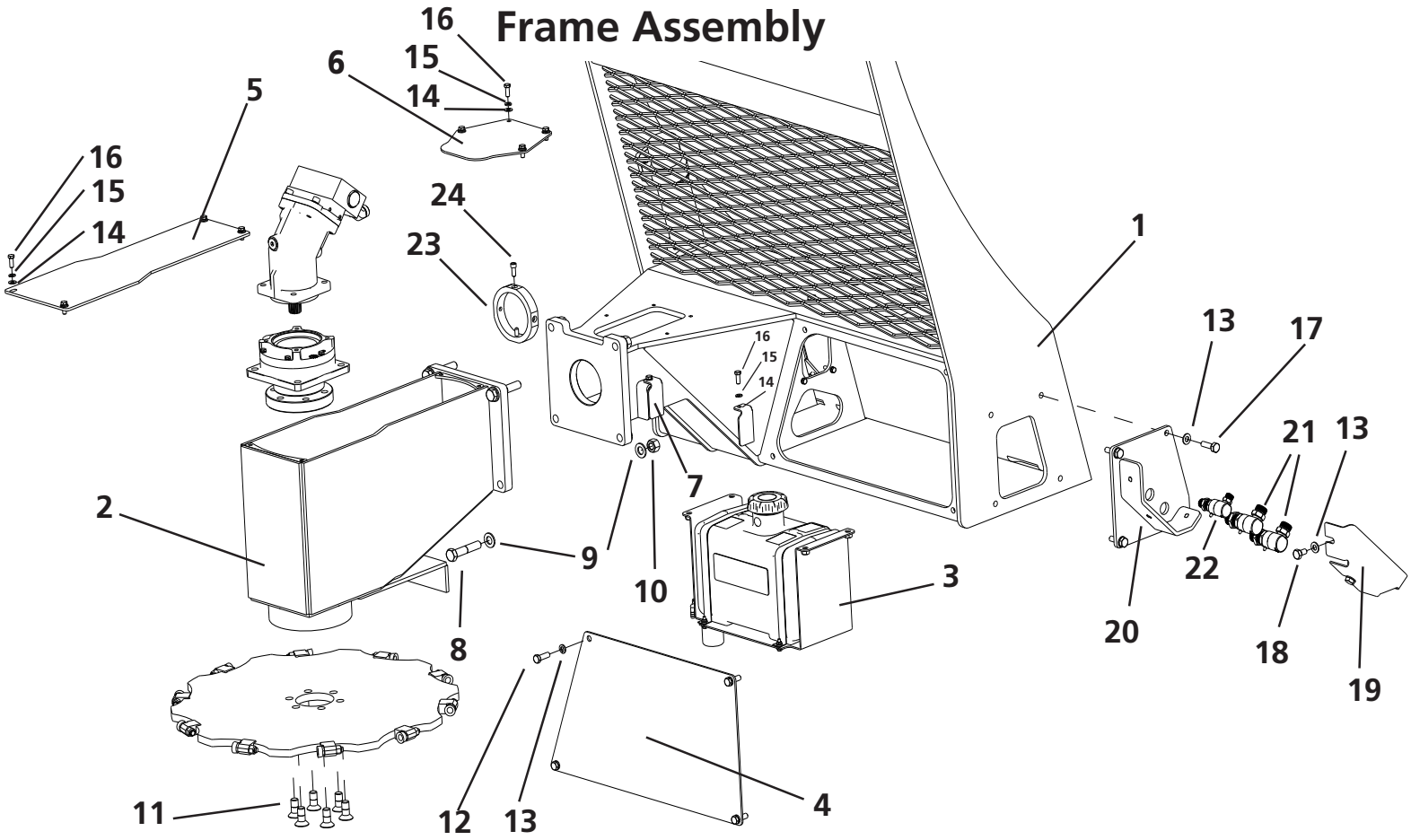
Tree Saw 30” Blade



ITEM	PART NUMBER	DESCRIPTION	QTY
1	52030050	Blade Weldment, 30”	1
2	52092500	3/4”UNF x 1-3/4” Flat Socket Cap Screw	6
3	56090100	1/2” NC Lock Nut	10
4	52090320	Cutting Insert, “Green Teeth”	10

Parts Section

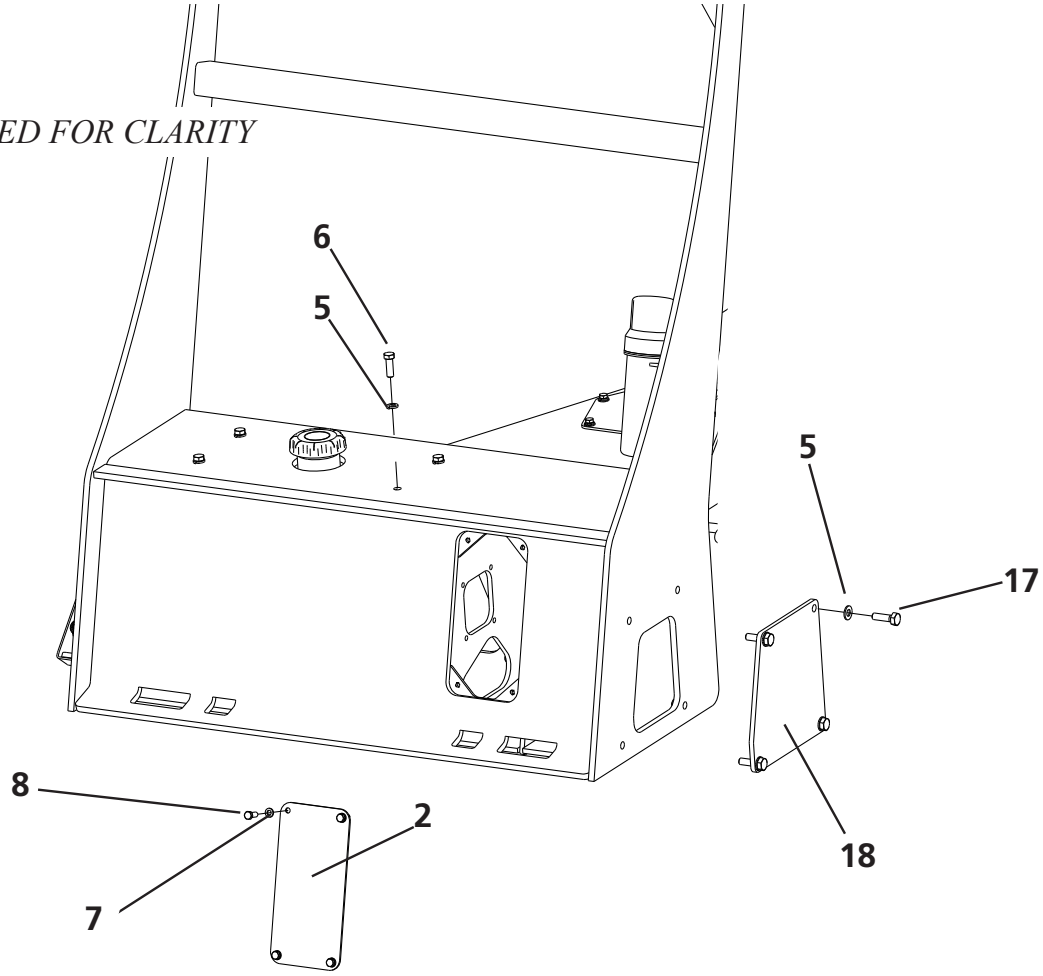
Frame Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	52015010	Frame Weldment, Gen 2	1
2	52020010	Head Weldment	1
3	52090000	Spray Tank Assembly	1
4	52050010	Tank Cover Plate, Gen. 2	1
5	52060010	Motor Cover Plate	1
6	52036010	Boom Access Cover Plate	1
7	52080000	Spray Nozzle Guard	1
8	52092760	3/4” x 3-3/4” Hex Cap Screw Gr.5	4
9	79514200	3/4” SAE Flat Washer	8
10	79512060	3/4” Lock Nut Gr.C	4
11	52092500	3/4”UNF x 1-3/4” Flat Socket Cap Screw	6
12	52093800	1/2” x 1-1/2” Hex Cap Screw Gr.5	4
13	79513320	1/2” SAE Flat Washer	11
14	51090500	3/8” SAE Flat Washer	9
15	52092950	3/8” Lock Washer	9
16	52093700	3/8” x 1” Hex Cap Screw GR.5	9
17	79525100	1/2” x 1-3/4” Hex Cap Screw Gr.5	4
18	79510200	1/2” x 1” Hex Cap Screw Gr.5	3
19	52083040	Live Swivel Guard Plate, Gen. 2	1
20	52083030	Live Swivel Plate, Gen. 2	1
21	57795400	Hydraulic Live Swivel 90° w/Nut, -12 ORFS x -12 ORFS	2
22	55285000	Hydraulic Live Swivel 90° w/Nut, -08 ORFS x -08 ORFS	1
23	52036013	Retaining Ring	1
24	52092805	3/8” x 1” Socket Cap Screw	2

Frame Assembly

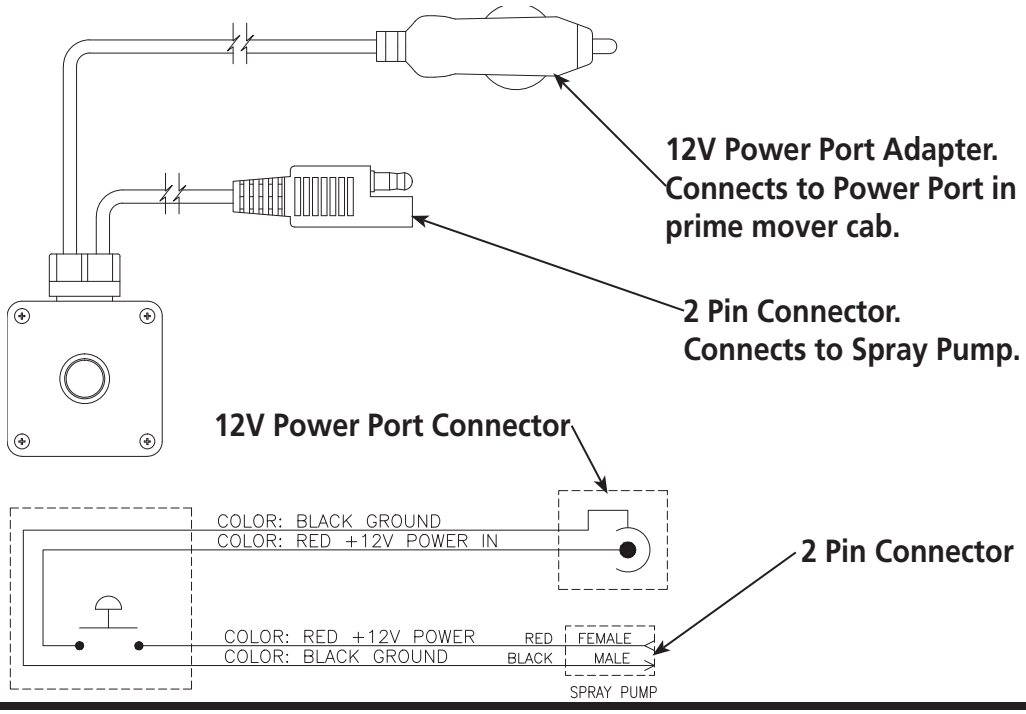
GRATING REMOVED FOR CLARITY



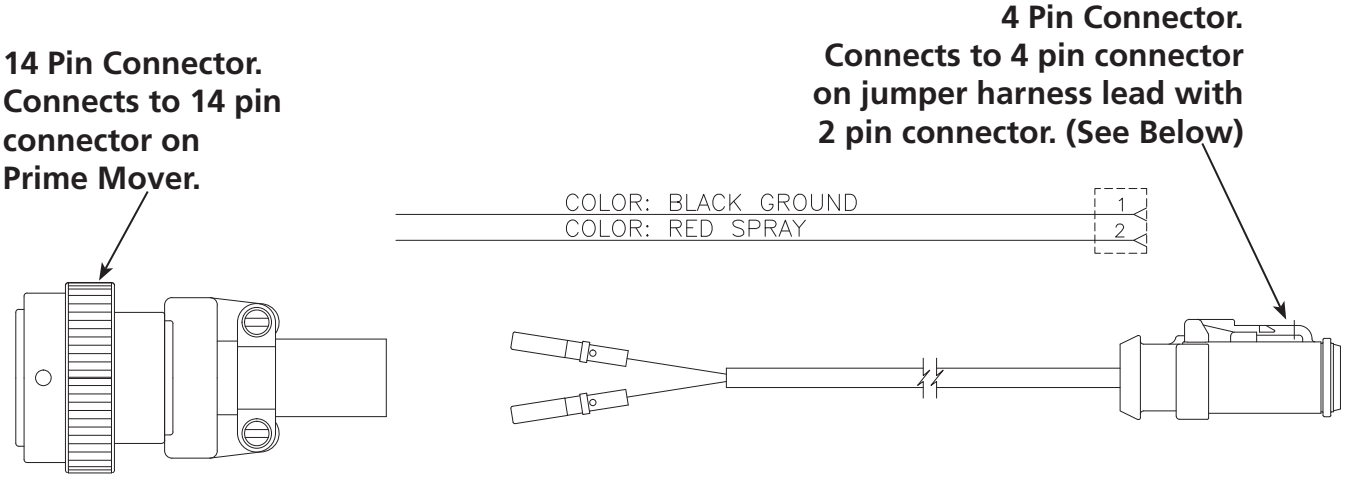
ITEM	PART NUMBER	DESCRIPTION	QTY
1	52090220	Valve Body	1
2	52083010	Rear Cover Plate, Gen 2	1
3	52084000	Frame Electrical Harness Mount Plate	1
4	52085000	Valve Body Fitting Cover Plate	1
5	79513320	1/2" SAE Flat Washer	8
6	52093800	1/2" x 1-1/2" Hex Cap Screw Gr.5	4
7	52092950	3/8" SAE Flat Washer	4
8	52093700	3/8" x 1" Hex Cap Screw Gr.5	4
9	52093020	5/16" Lock Washer	4
10	52092720	5/16" x 1-1/4" Hex Cap Screw Gr.5	4
11	52093040	1/4" Lock Washer	8
12	52093300	1/4" x 3/4" Hex Cap Screw Gr.5	8
13	52094000	#5 Flat Washer S.S.	4
14	52093900	#5-40 x 5/8" Pan Head Screw S.S.	4
15	52094100	#5-40 NyLock Nut S.S.	4
16	52090260	Frame Harness	1
17	79525100	1/2" x 1-3/4" Hex Cap Screw Gr.5	4
18	52083020	Blank Live Swivel Plate, Gen 2	1

Wiring Diagram

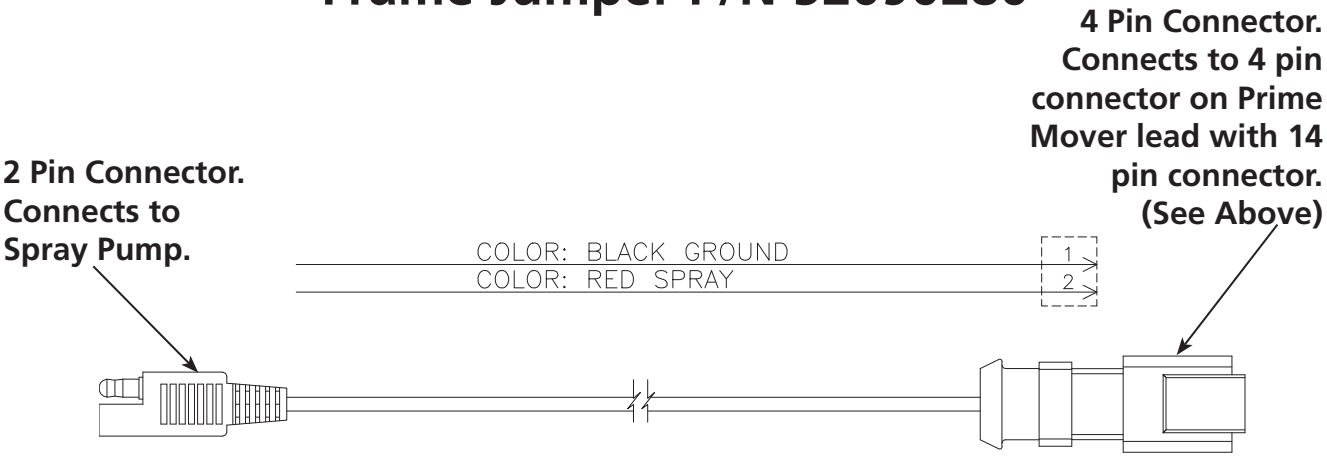
One Button Pendant P/N 52992700 (Option)



Jumper Harness to Prime Mover P/N 52090290



Frame Jumper P/N 52090280



Limited Warranty

U.S. WARRANTY

Vail Products equipment are warranted against any defect in material and workmanship for a period of twelve (12) months for hydraulics and thirty six (36) months for structural components from date of shipment when properly installed, maintained and operated within the limits of normal usage. This warranty does not extend to products subject to misuse, neglect, vandalism, accidents or alterations to the original design. Liability, if any, is limited to replacement parts or material found to be defective, that will be furnished free of charge and shipped by transportation of our choice, F.O.B., our shop. No allowance or claim of any nature will be paid resulting from alterations or repairs of the product, including labor, and in no event shall seller be liable for any special, contingent or consequential damages. In all cases, full opportunity is to be given for investigation by seller's representative, before warranty is authorized. No goods shall be returned except by written permission of seller, and returns under any other conditions will not be accepted. VAIL PRODUCTS will not be responsible for any import taxes or duties imposed by other governments or governmental agencies. SAID WARRANTY IN RESPECT OF REPLACEMENT OF DEFECTIVE PARTS AND ANY SUCH ADDITIONAL WARRANTY OR REPRESENTATION EXPRESSLY MADE A PART HEREOF ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY FOR FITNESS OF PURPOSE. Where you are a distributor, financing company or similar entity acting for or on behalf of the initial user of the equipment, the warranty is transferable to initial user only. In all other cases the warranty is limited to you and is not transferable. For products not supplied by the seller's licensed manufacturer, it extends to the buyer the warranties of the manufacturer only.

INTERNATIONAL WARRANTY

Vail Products equipment are warranted against any defect in material and workmanship for a period of six (6) months for hydraulics and twelve (12) months for structural components from date of shipment for products that are properly installed, maintained and operated within the limits of normal usage. This warranty does not extend to products subject to misuse, neglect, vandalism, accidents or alterations to the original design. Liability, if any, is limited to replacement parts or material found to be defective, that will be furnished free of charge and shipped by transportation of our choice, F.O.B., our shop. No allowance or claim of any nature will be paid resulting from alterations or repairs of the product, including labor, and in no event shall seller be liable for any special, contingent or consequential damages. In all cases, full opportunity is to be given for investigation by seller's representative, before warranty is authorized. No goods shall be returned except by written permission of seller, and returns under any other conditions will not be accepted. VAIL PRODUCTS will not be responsible for any import taxes or duties imposed by other governments or governmental agencies. SAID WARRANTY IN RESPECT OF REPLACEMENT OF DEFECTIVE PARTS AND ANY SUCH ADDITIONAL WARRANTY OR REPRESENTATION EXPRESSLY MADE A PART HEREOF ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY FOR FITNESS OF PURPOSE. Where you are a distributor, financing company or similar entity acting for or on behalf of the initial user of the equipment, the warranty is transferable to initial user only. In all other cases the warranty is limited to you and is not transferable. For products not supplied by the seller's licensed manufacturer, it extends to the buyer the warranties of the manufacturer only.

OWNER'S MANUAL

MUST STAY WITH PRODUCT