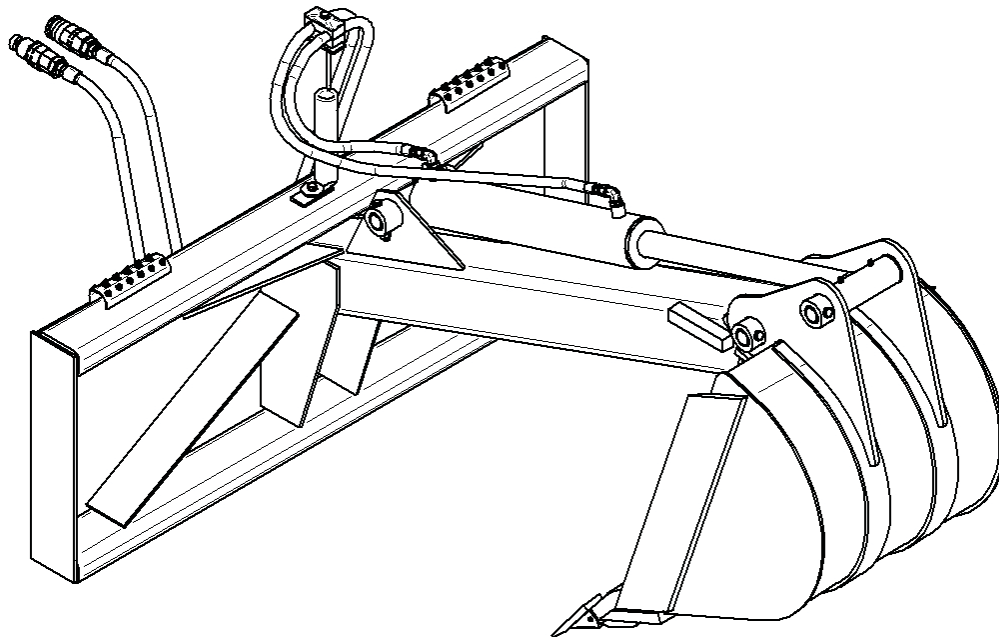




SKID STEER BACKHOE



PALADIN LIGHT CONSTRUCTION



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: MR25515
Models: LAF2301, LAF2302
& LAF2303
Date: August 2007

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INTRODUCTION

Congratulations on your purchase of a new **FFC Backhoe**. This product has been designed and built to dig holes and trenches up to 60" deep. You or any other person who will be assembling, operating, maintaining, or working with this product are required to read and completely understand the information and instructions contained in this manual. If anyone does not fully understand every part of this manual, please obtain further assistance by contacting the dealer from which this product was purchased or by contacting FFC at the telephone number or address listed on the cover of this manual. Keep this manual available for reference whenever this product is being handled or used. Provide this manual to any new owners and/or operators.

This manual covers model[s] : **LAF2301, LAF2302 and LAF2303**. The difference between these models is the width of the backhoe bucket, details of which are covered on the parts list and specification page[s].

GENERAL INFORMATION

The purpose of this manual is to assist in assembling, mounting, operating, and maintaining your Backhoe: Read this manual carefully to obtain valuable information and instructions that will help you achieve safe and dependable service. The illustrations and data used in this manual were current at the time of printing, but due to possible engineering and/or production changes, this product may vary slightly in detail. FFC reserves the right to redesign and/or change components as necessary without notification.

Throughout this manual, references may be made to:

Power Unit	The engine-driven machine to which this product must be attached.
Right, Left, Front, Rear	Directions that are determined in relation to the operator of the equipment when seated in the normal operating position.
IMPORTANT	Precautions that must be followed to prevent damage to equipment.
NOTICE	Precautions that must be followed to prevent substandard performance.

SERIAL NUMBER LOCATION

Always refer to the model and serial number when ordering parts or requesting information from your dealer. The serial number plate for this product is located on the upper left rear portion of the loader attachment plate of your Backhoe .

Reference Information	
Model Number	Loader Make
Serial Number	Loader Model
Date Purchased	Loader Serial Number

DEFINITION OF SAFETY TERMS AND SYMBOLS

Throughout this manual, the terms **DANGER**, **WARNING**, and **CAUTION** are used to indicate the degree of hazard to personnel if proper safety procedures are not followed. These words will be used in conjunction with the Safety Alert Symbol: a dark triangle containing a white exclamation mark.



The Safety Alert Symbol means:

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

DANGER

Indicates an imminently hazardous situation which, if not avoided,
WILL result in death or serious injury.

WARNING

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

CAUTION

Indicates a potentially hazardous situation which, if not avoided,
may result in minor or moderate injury;
OR

may also be used to alert against unsafe practices which **may result in personal injury.**

ACCIDENTS CAN BE PREVENTED WITH YOUR HELP!

No accident prevention program can be successful without the wholehearted cooperation of the person who is directly responsible for the operation of the equipment.

To read equipment accident reports from all over the country is to be convinced that a large number of accidents can be prevented only by operators who consistently anticipate the results of their actions and thus prevent accidents from ever occurring. No power-driven equipment, whether it is on the highway, in a farm field, or in an industrial plant, can be any safer than the person who is at the controls.

If accidents are to be prevented [and accidents can be prevented], that prevention will come from equipment operators who accept their complete responsibility.

The designer, the manufacturer, and the safety engineer all help create a safe product, but their combined efforts can be wiped out with a single careless act by the operator of that product.

The best safety device is a careful operator. FFC and your dealer ask that **YOU** be that careful, responsible equipment operator.

YOU ARE THE KEY TO SAFETY BECAUSE:

YOU are responsible for the SAFE operation and maintenance of **YOUR** Backhoe.

YOU are responsible to familiarize yourself, and anyone else who will assemble, operate, maintain, or work around this product, with the safety information contained in this manual.

YOU are responsible to read ALL information contained in this manual to any operators or maintenance personnel who are not fully able to read the written English language. Whether **YOU** read the manual as written or translate it into another language, **YOU** must make certain that all operators and maintenance personnel have a complete understanding of the full and exact contents of this manual. Translations of this manual into other languages are available by submitting a written request to FFC.

YOU can reduce the risk of injury or death by following all safety precautions and by using good safety practices.

SAFETY INSTRUCTIONS

WORK SAFELY - A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST ACCIDENTS !!

SECTION 1

WARNING SECTION



WARNING

Obey all the safety instructions listed in this section and throughout this manual. Failure to obey instructions in this section could result in death or serious injury.

BEFORE ATTEMPTING ANY TYPE OF ASSEMBLY, OPERATION, MAINTENANCE, OR OTHER WORK ON OR NEAR THIS PRODUCT:

- **READ AND COMPLETELY UNDERSTAND THIS MANUAL.**
- **READ AND COMPLETELY UNDERSTAND THE MANUALS PROVIDED WITH YOUR POWER UNIT, LOADER AND QUICK-ATTACH.**
- Read and understand all safety signs on this product and on your power unit, loader, and quick-attach.
- Know all your controls and know how to quickly stop all power unit movement, the Backhoe movement, and the engine in case of an emergency.
- Know and obey all applicable government rules, O.S.H.A. regulations, local laws and other professional guidelines for your operation.
- Make sure that anyone who will be assembling, mounting, maintaining, repairing, removing, and/or storing this product:
 - has been instructed in the safe operation of this product and of the power unit and quick-attach to which this product is attached.
 - is physically and mentally capable of the safe operation of this type of equipment.
 - is not under the influence of drugs or alcohol.
 - is carefully supervised from a safe distance, especially if such person is inexperienced.
 - wears appropriate protective equipment (i.e. hardhat, safety glasses, work gloves, protective shoes, respirator, ear protection, etc.).
 - does not wear loose fitting clothing, loose or uncovered hair, or any accessories (jewelry, necktie, scarf, wrist watch, etc.) that can catch in moving parts.
 - has annually reviewed all safety instructions.
- Know and follow good work practices when assembling, mounting, maintaining, repairing, removing, and storing this product:
 - Work on a level surface in a well lit area.
 - Keep the area clean and dry.
 - Use properly grounded electrical outlets & tools.

- Use the right tool for the job at hand.
- Make sure that your tools are in good condition for performing the desired function.
- When using tools, wear the protective equipment specified by the tool manufacturer. (i.e. hardhat, safety glasses, work gloves, protective shoes, etc.)

WHEN YOUR POWER UNIT IS USED DURING ANY TYPE OF ASSEMBLY, OPERATION, MAINTENANCE, OR OTHER WORK ON OR NEAR THIS PRODUCT:

- Before leaving the operator's station or before beginning any type of work on this product, lower this product to the ground, apply your power unit's parking brake, stop the engine, remove the starter key, wait for all moving parts to stop, and then relieve all pressure in the hydraulic lines. Refer to your power unit's operator's manual for instructions on how to relieve hydraulic pressure in lines.
- Know your loader's safe lifting and operating capacity and the weight of this product. See the specifications in this manual for the weight of this product and refer to your power unit's and loader's operator's manuals for safe operating limits. Lift capacity may be reduced if using a quick-attach.
- Never allow anyone, except the operator, to be around the power unit or this product when either is in motion.
- Do not startup unless others are clear of the work area.
- Do not allow riders on this product or the power unit.
- Do not stand or climb on this product when raised.
- Do not place any part of your body under any part of this product unless this product is securely resting on adequate blocking or on the ground.
- Do not use blocking made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Do not use wood or steel blocking that shows any signs of material decay. Do not use blocking that is warped, twisted, or tapered.
- Never operate controls from the ground. Operate the controls only from the operator's station.
- Never leave equipment unattended with the engine running or with this product raised on the loader.
- Be aware of the added weight and width of this product. Reduce travel speeds accordingly, especially when traveling over rough ground.
- Keep this product close to the ground and under control when transporting.
- When transporting, be sure backhoe does not block view of vehicle lights or road.

SAFETY INSTRUCTIONS

WORK SAFELY - A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST ACCIDENTS !!

WARNING SECTION [CONTINUED]



WARNING

Obey all the safety instructions listed in this section and throughout this manual. Failure to obey instructions in this section could result in death or serious injury.

WHEN DEALING WITH HYDRAULICS DURING ANY TYPE OF ASSEMBLY, OPERATION, MAINTENANCE, OR OTHER WORK ON OR NEAR THIS PRODUCT:

- Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible!
- If any fluid penetrates the skin, GET IMMEDIATE MEDICAL ATTENTION!!
- Wear safety glasses, protective clothing, and use a sound piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS!**
- Before connecting or disconnecting hydraulic hoses, read your tractor or power unit's operator's manual for detailed instructions on connecting and disconnecting hydraulic attachments.
- Make certain that all parts meet the specifications for this product when installing or replacing hydraulic hoses or fittings.
- After connecting hydraulic lines:
 - Slowly and carefully raise the loader and cycle the rollback / dump cylinders to check hose clearances and to check for any interference.
 - Operate the hydraulics on this product to check hose clearances and to check for any interference.
 - Make certain that the hoses cannot interfere with or actuate the quick-attach mechanism.
 - Make certain that hoses will not be pinched, or get tangled, in any equipment.
- Do not lock the auxiliary hydraulics of your power unit in the "ON" position.
- Refer to your power unit's operator's manual and this manual for procedures and intervals, then inspect and maintain the entire hydraulic system to insure that the fluid remains clean, that all devices function properly, and that there are no fluid leaks.

WHEN MOUNTING THIS PRODUCT TO YOUR POWER UNIT:

- Refer to the operator's manuals of your power unit, your loader, and your quick-attach for special or detailed mounting instructions.
- This product should fit onto the quick-attach or loader arms of your power unit the same as the original products that were designed by your loader / quick-attach manufacturer.

- If this product does not fit properly, contact FFC before operating.
- Never place your finger into the mounting plate or 3-point hitch or loader holes. A slight movement of the power unit or this product could cause serious injury.

BEFORE EACH USE, THOROUGHLY INSPECT THIS PRODUCT AND:

- Make certain that all safety signs are in place and legible. Refer to the safety sign page in this manual for the placement of safety signs for this product.
- Replace all damaged or excessively worn parts and hardware only with genuine FFC parts or with properly rated fasteners, hydraulic hoses, or fittings.
- Make certain that all locking pins, latches, and connection devices are properly installed and secured.
- Make certain that all protective guards, canopies, doors, etc., are in place and secure.

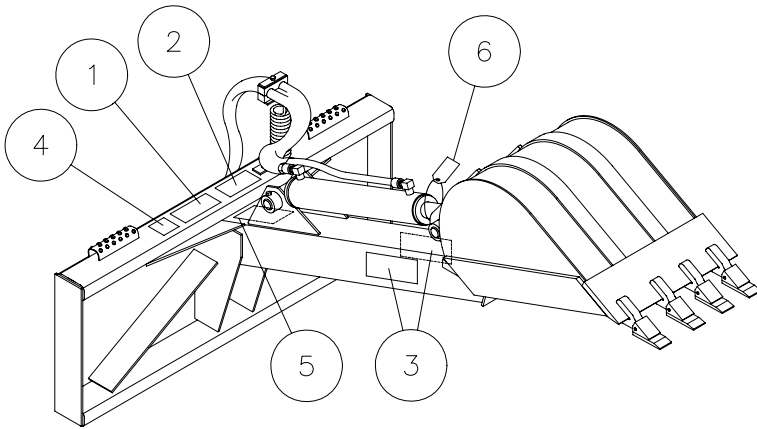
WHEN OPERATING THIS PRODUCT IN ACCORDANCE WITH DESIGN INTENTIONS:

- Contact utility companies before digging. Know your digging area! Avoid hitting underground cables and pipes, overhead wires, and other hazards.
- Do not drive near the trench. Always back away from the trench before turning.
- Never use backhoe on a power unit that is not equipped with a cab or ROPS, and operator restraints (seat belts or equivalent devices).
- Do not use the backhoe to dislodge overhead objects. Objects could fall and cause injury.
- Do not attach a jack hammer to the backhoe.
- Be careful when raising loaded bucket. Objects could fall from bucket toward bystanders or operator.
- Know your loader's safe operating weight limit, and the weight of loaded attachment.
- Never dig close to loader's wheels or under the loader; this can cause a cave in and vehicle overturn.
- Do not drive near the trench. Always back away from trench before turning.
- Always dump loaded bucket on uphill side of backhoe to minimize possibility of upset.
- Use caution when working close to fences and ditches, or on uneven ground.

WHEN ADJUSTING, SERVICING OR REPAIRING THIS PRODUCT:

- Make no modifications to your Backhoe.
- When making repairs, use only genuine FFC parts or, for fasteners, hydraulic hoses, or hydraulic fittings, use only properly rated parts.
- Replacement parts, for parts with safety signs attached, must also have safety signs attached.

SAFETY SIGN LOCATIONS



ITEM	QTY	PART #	DESCRIPTION
1	1	50-10017	READ MANUAL
2	1	50-0725	HYDRAULIC
3	2	50-0737	PINCH POINT
4	1	RDL3113	DANGER BACKHOE
5	1	RDL3154	PORT RELIEF
6	1	50-0740	TAG-MISUSE

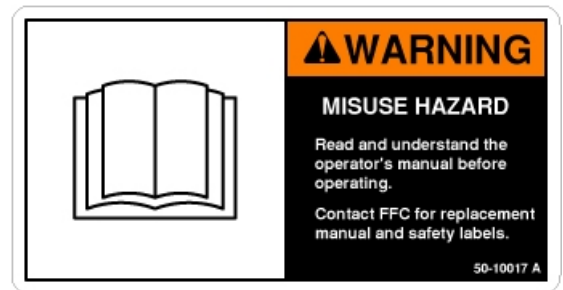
INSTRUCTIONS

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

PLACEMENT OR REPLACEMENT OF SAFETY SIGNS

1. Clean the area of application with non-flammable solvent, 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.

ITEM 1



ITEM 2



ITEM 3



ITEM 4



ITEM 5



ITEM 6



POWER UNIT SPECIFICATIONS

IMPORTANT

Exceeding any of the recommended power unit specifications **CAN** result in damage to your power unit and/or this product and **WILL** void all FFC warranties

LOADER DESCRIPTION	MAXIMUM BUCKET SIZE
LESS THAN 25 HORSEPOWER	DO NOT USE MINI-HOE
25 – 35 HORSEPOWER	12" BUCKET
35 – 45 HORSEPOWER	18" BUCKET
45 OR GREATER HORSEPOWER	24" BUCKET
POWER UNIT'S TILT CURCUIT HAS NO PORT RELIEF	INSTALL RELIEF VALVE FOR POWER UNIT'S TILT CIRCUIT

BACKHOE INSTALLATION INSTRUCTIONS



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2-5 of this manual) BEFORE BEGINNING ANY BACKHOE MOUNTING


1. Place this product on a firm, level surface that is large enough to safely accommodate this product, your power unit, and all workers involved in the mounting process.
2. Be sure all connection points are properly secured.
3. Refer to the operator’s manual(s) for your power unit, loader, and quick-attach and follow the mounting instructions contained therein.
4. Carefully raise the loader arms and cycle the tilt cylinders to check clearances and to verify that all mounting procedures have been successfully completed.
5. All power units **MUST** have a port relief installed on its hydraulic tilt circuit. See Supplemental Information starting at page 13.

BACKHOE HYDRAULIC CONNECTION



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2-5 of this manual) BEFORE BEGINNING ANY BACKHOE HYDRAULIC CONNECTION

1. Disconnect the hydraulic hose quick couplers from one another and attach the quick couplers to your power unit as per the instructions in your power unit’s operator’s manual.
2. Carefully raise the loader arm and cycle the tilt cylinders to check hose clearances and to check for any interference.



WARNING

Do not lock the auxiliary hydraulics of your tractor or power unit in the “ON” position. Failure to obey this warning could result in death or serious injury.

BACKHOE OPERATION



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2-5 of this manual) BEFORE BEGINNING ANY BACKHOE OPERATION



DANGER

Failure to obey the following procedures will result in death or serious injury.

- Avoid contacting overhead wires and underground pipes or cables. Failure to heed may result in electrocution or explosion.



WARNING

Failure to obey the following procedures could result in death or serious injury.

Never lift this product:

- above the operator's eye level OR
- to a height where visibility is obstructed, whichever is lower.

Use caution when raising loaded bucket. Objects could fall from bucket toward bystanders or operator.

NOTICE

USE OF REAR COUNTERWEIGHTS IS REQUIRED!

Refer to your power unit's operator's manual for safe operating limit and use of counterweights.

TO DIG:

1. Be sure the loader is on solid ground before digging or lifting any load.
2. With the loader arms partially raised and the bucket cylinder partially extended, slowly curl the dipperstick toward the loader (using the loader's tilt control). The loader arms may need to be lowered or raised and/or the bucket cylinder extended to allow the bucket to penetrate the soil.
3. As the bucket fills, extend the bucket cylinder and extend the dipper or raise the loader arms to lift the bucket clear of the hole.
4. The depth of the hole will be controlled by the amount the dipper is extended and the height of the loader arms.
 - Use extreme care when working on hillsides. Always dump loaded bucket on uphill side of backhoe to minimize possibility of upset.
 - Exercise caution when working close to fences, ditches, or on uneven ground.

DO NOT:

- Dig close to the loader's wheels or under the loader; this could cause a cave-in and vehicle overturn.

TO DUMP ON GROUND:

1. With the bucket raised clear of the hole, slowly back up and pivot the loader rearward about the front wheels. This will swing the loader away from the trench, and the bucket to the side to dump.
 - Keep loads close to the ground while transporting.

BACKHOE OPERATION (continued)



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2-5 of this manual) BEFORE BEGINNING ANY BACKHOE OPERATION



DANGER

Failure to obey the following procedures will result in death or serious injury.

- Avoid contacting overhead wires and underground pipes or cables. Failure to heed may result in electrocution or explosion.



WARNING

Failure to obey the following procedures could result in death or serious injury.

Never lift this product:

- above the operator's eye level OR
- to a height where visibility is obstructed, whichever is lower.

Use caution when raising loaded bucket. Objects could fall from bucket toward bystanders or operator.

TO CUT A SHALLOW TRENCH

1. With the loader arms partially raised and the bucket cylinder partially extended, slowly curl the dipperstick toward the loader (using the loader's tilt control). The loader arms may need to be lowered or raised to allow the bucket to penetrate the soil.
2. When the bucket is positioned at the desired depth, slowly back up the loader, keeping the bucket height constant to cut a shallow amount of soil.

IMPORTANT The tilt circuit of your power unit must be protected with a port relief; ignoring this precaution **CAN** result in damage to your power unit and/or this product and **WILL** void all FFC warranties



WARNING

Always back away from trenches before turning.

Failure to obey this warning could result in death or serious injury.

TO FILL A TRENCH

1. With the loader arms partially raised, curl the dipperstick (attachment mainframe) forward with the bucket cylinder extended and the bottom of the bucket flat on the ground. The entire height of the bucket should be visible.
2. Use the loader's tilt cylinder only to raise the bucket above the material pile.
3. Pivot the loader to reach over the pile and tilt the backhoe downward so the bottom of the bucket is approximately 12" below the top of the pile.
4. Pivot the loader toward the trench, using the side of the bucket to move the material into the trench. Repeat this process, lowering the bucket 6" at a time.
5. Move your power unit forward and repeat the above steps to continue filling the trench.

IMPORTANT Make sure the portion of the trench to be driven on is full before moving forward. Moving on an unstable surface

CAN result in damage to your power unit and/or this product and **WILL** void all FFC warranties

- Always lower the bucket to the ground, set the parking brake, stop engine, remove ignition key and wait for all moving parts to stop before leaving the operator's seat.

BACKHOE MAINTENANCE



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2-5 of this manual) BEFORE BEGINNING ANY BACKHOE MAINTENANCE

BEFORE FIRST USE

- Inspect the attachment for shipping damage. If damage does exist, do not operate until the damaged parts have been replaced or repaired.

BEFORE EACH USE

- Make sure that all nuts and bolts are in place and properly tightened.
- Make sure that all other fasteners are in place and are performing their specified function.
- Make sure that all hydraulic fittings are tightened and that there are no leaks in any fittings or hoses.
- Make sure that all safety signs are in place, are clean, and are legible.
(SEE THE SAFETY SIGN SECTION)
- Replace any damaged parts and excessively worn parts.
- Grease all (5) lubrication points.

AFTER EVERY 4 HOURS OF OPERATION

- Grease all (5) lubrication points.

BACKHOE SERVICE



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2-5 of this manual) BEFORE BEGINNING ANY BACKHOE SERVICE

Tilt Circuit secondary Relief Valve Installation:

- The purpose of this valve is to relieve high pressure in the loader's tilt circuit when the loader's main control valve does not have port relief for this circuit. Read these instructions and your power unit's manual(s) before attempting installation.



WARNING

Hydraulic fluid under pressure can penetrate the skin, resulting in serious injury or death. Always relieve hydraulic pressure before disconnecting lines.

- Shut off engine, set parking brake, and relieve hydraulic pressure before connecting or disconnecting hydraulic lines. Refer to your power unit's manual for instructions on how to relieve hydraulic pressure in lines.
- Before applying pressure to the system, be sure that all connections are tight and be sure there are no damaged hoses, lines, or fittings.
- Wear safety glasses and use metal or wood when searching for leaks. Do not use your hands.



WARNING

Before servicing the loader, remove the attachment and make certain the lift arms are lowered to their lowest position or that the arms are supported by the mechanical lock up devices (if the machine is so equipped).

- Steam clean the power unit before any installation is made to the hydraulic system. Remove any attachment from the power unit and position on a level surface.

BACKHOE SERVICE (continued)



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2-5 of this manual) BEFORE BEGINNING ANY BACKHOE SERVICE

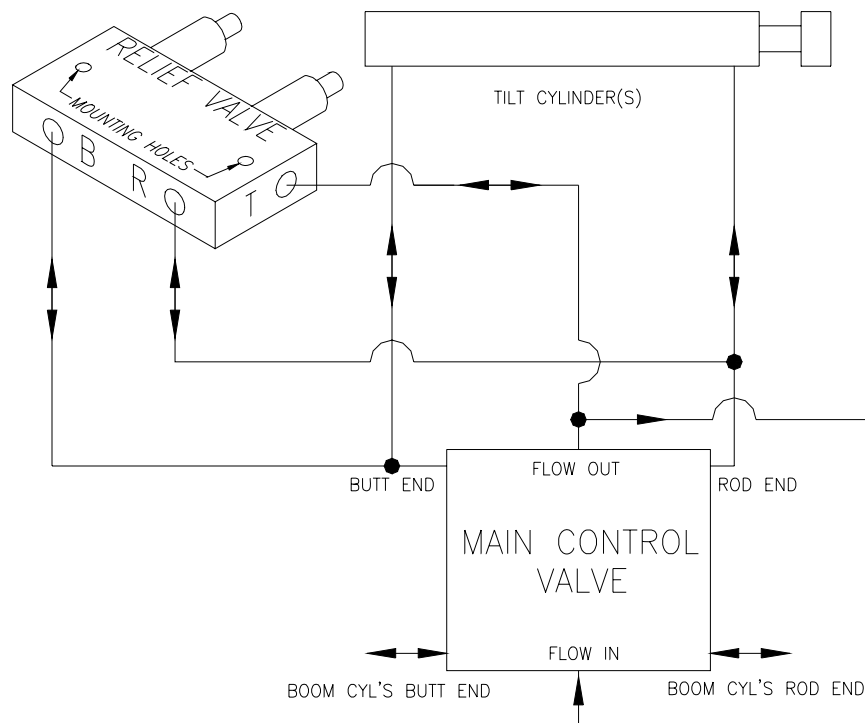
- Locate a convenient place to “tee” into the loader’s tilt circuit lines after they have passed through any self-leveling devices or any other devices which may be present on these lines (refer to your loader’s service manual). Locate a convenient area to “tee” into a return to tank line. Once these areas are located, find an area in close proximity for mounting the relief valve. The valve can be mounted in any position. Every effort should be made to ensure accessibility to the valve, its cartridges, fittings and any lines that will be added. Careful consideration should also be made as to the type and size of the fittings and hoses that will be required before dismantling any hydraulic circuitry. Keep any added fittings, hoses, or the valve a safe distance from all moving parts of the machine. 3/8” pipe fittings, 1/2” SAE o-ring or JIC fittings and 3/8” hydraulic hoses are all adequate for the amount of flow required. The valve’s ports accept 3/8” NPT pipe fittings or SAE #8 o-ring, depending on the model of valve. Be sure to differentiate between the two styles before proceeding.

NOTICE If using NPT pipe fittings (anywhere on the loader’s circuit), it is recommended that you use a n-eflon based thread sealant. Do NOT use n-eflon tape as it may enter the loader hydraulic circuit and cause relief poppets to stick open.

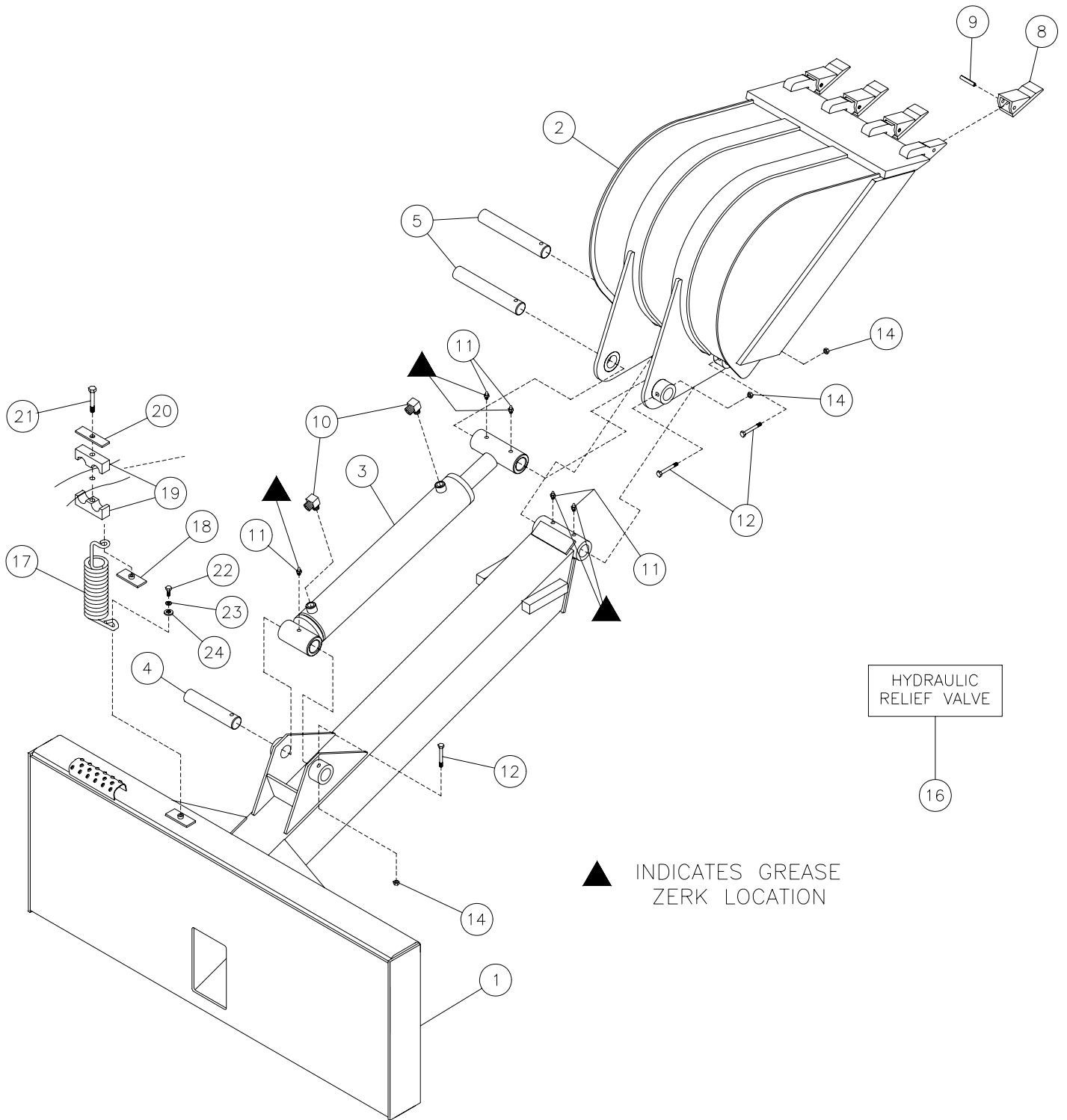
- Install the line from the butt end of the loader’s tilt cylinders into port “B” on the valve. Install the line from the rod end of the cylinder into port “R” on the valve and the return to tank line into port “T”. Make sure all fittings and hoses are tightened securely and no hoses are stretched, severely bent, or kinked before mounting the valve.
- Using the valve as a template, mark the location of two 9/32” holes. Remove the three lines connected to the valve and seal the line ends to keep out contaminants. Drill the previously located holes.

IMPORTANT When drilling holes, be sure that you are not drilling into a reservoir or any other sealed compartment. Also be careful not to damage any hydraulic lines, fittings, pumps, valves, manifolds, electric components, batteries, steering linkages, safety devices, etc.

- Reassemble the three lines onto the valve and install mounting bolts. Check all connections for proper fit and tightness.
- Replace all guards, shields, and covers.
- Replace estimated lost hydraulic fluid using your loader’s specifications.
- Start loader; reposition the boom arms and dump cylinders according to the loader manufacturer’s recommendations for checking fluid levels. Add fluid as needed.



PARTS ILLUSTRATION

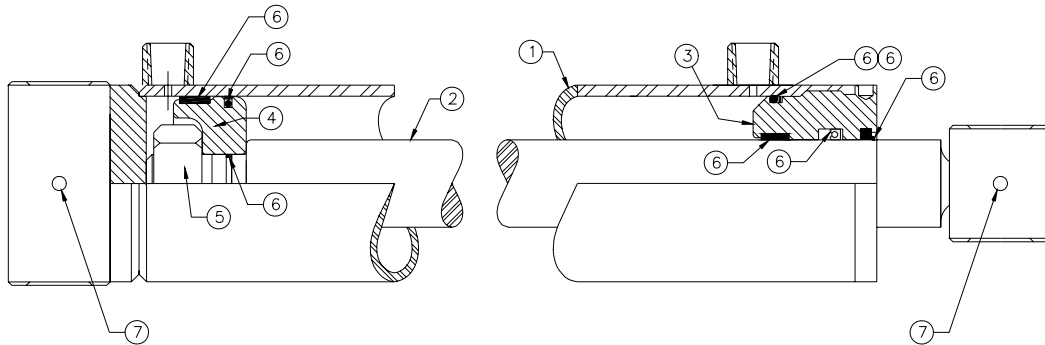


BACKHOE: PARTS LIST

ITEM	QTY.	LAF2301 12"	LAF2302 18"	LAF2303 24"	DESCRIPTION
1	1			LAF2304	Attachment Mainframe
2	1	LAF2312	LAF2318	LAF2324	Backhoe Bucket
3	1			LAF4562	Hydraulic Cylinder: 3" x 1-3/4", 4000 psi
4	1			LAF9973	Pin: 1-1/4" x 7-1/4", stressproof
5	2			LAF9972	Pin: 1-1/4" x 8-5/8", stressproof
8	varies	(3)	(4)	(5) LAF1000	Replaceable Point: 1"
9	varies	(3)	(4)	(5) RHW8026	Roll Pin: 5/16" x 1-3/4"
10	2			LAF4298	Hydraulic Elbow: 90°, 6MB – 6MJ
11	5			RHW8090	Grease Zerk: 1/4", 28 tpi, self-tapping
12	3			RHW1213	Grade 5 Hex Head Cap Screw: 3/8" x 2-1/2"
14	3			RHW7203	Grade 5 Lock Nut: 3/8"
16	1	Contact FFC to obtain the correct item			Hydraulic Relief Valve
17	1			RHW8618	Hose Spring
18	1			RHW8613	Weld Plate: 7/8" OD
19	1			RHW8616	Hose Cradle: 7/8" OD
20	1			RHW8614	Cover Plate: 7/8" OD
21	1			RHW1112	Grade 5 Hex Head Cap Screw: 5/16" x 2-1/2"
22	1			RHW1101	Grade 5 Hex Head Cap Screw: 5/16" x 1/2"
23	1			RHW6102	Grade 5 Lock Washer: 5/16"
24	1			RHW8098	Grade 2 Fender Washer: 5/16" x 1-1/2" (.08" thick)

NOTE: All parts are the same as the LAF2303 except for those parts numbered under the other model.

HYDRAULIC CYLINDER ILLUSTRATION: LAF4562



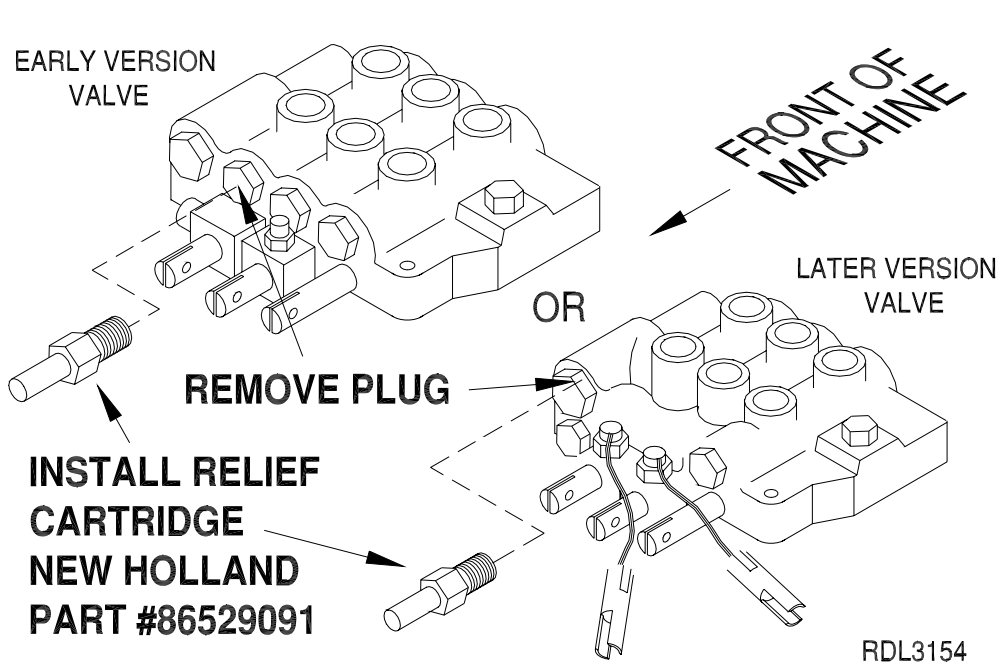
NUMBERS FROM HYDRAULIC CYLINDER ILLUSTRATION: LAF4562			
ITEM	QTY.	PART #	DESCRIPTION
1	1	LAF4612	Barrel: 3" Tube Assembly
2	1	LAF4611	Shaft: 1-3/4" Shaft Assembly
3	1	LAF4610	Head: 3"
4	1	LAF4609	Piston: 3"
5	1	LAF4608	Nut: Grade 8, 1-1/8", 12 tpi
6	1	LAF4607	Seal Kit (includes all seals, o-rings, etc.)
7	3	RHW8090	Grease Zerk: 1/4", 28 tpi., self-tapping

SUPPLEMENTAL

IMPORTANT Failure to install a Relief Cartridge as specified below **CAN** result in damage to the power unit and **WILL** void all FFC warranties

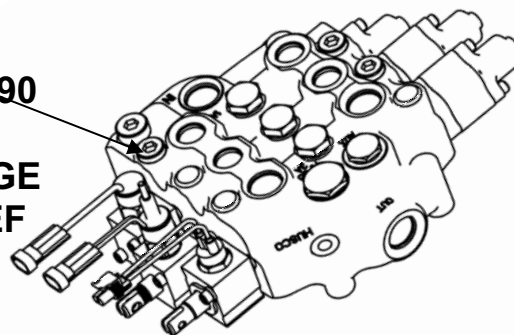
NEW HOLLAND LOADERS:

Install relief cartridge in bucket cylinder base end port of control valve before operating the Mini Hoe.



<p>EARLY VERSION: L / LX 465 LX 485 L / LX 565 LX 665 L / LX 865 LX 885 LX 985</p>
<p>EARLY OR LATER: LS 140 LS 150 LS 160 LS 170 LS 180 LS 190</p>
<p>LATER VERSION: L 140 L 150 L 160 L 170</p>

**FOR NH LS.B, LT.B,
 L180-L190, C185, C190
 MODELS REMOVE
 EXISTING CARTRIDGE
 AND INSTALL RELIEF
 CARTRIDGE
 #87445939**



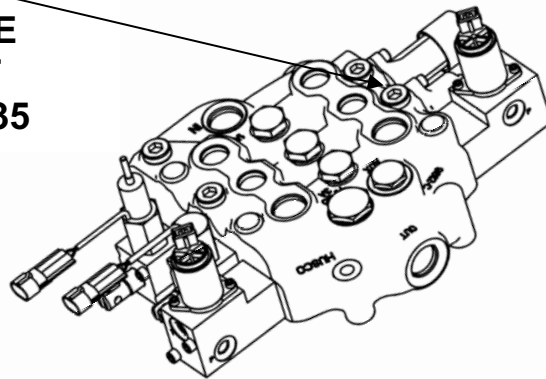
<p>LS 180.B LS 185.B LS 190.B LT 185.B LT 190.B L180 L185 L190 C185 C190</p>

SUPPLEMENTAL (continued)

FOR CASE LOADERS:

CASE 1845C and CASE XT power units require no additional relief.

FOR CASE 400-SERIES MODELS REMOVE EXISTING CARTRIDGE AND INSTALL RELIEF CARTRIDGE #87445935



OTHER LOADERS:

For other makes of machines using a screw-in cartridge relief, the base end (opposite the rod end) of the tilt cylinder(s) needs to be protected. Contact your dealer to confirm which (plugged) port the cartridge should be inserted.

Bobcat power units with BICS (Bobcat Interlock Control System) require no additional relief.

Bobcat power units without BICS but with a plug and a relief on the tilt spool require Bobcat part # 6599161 cartridge (to replace the plug).

John Deere 4475, 5575, 6675, 7775, and 8875 power units require the JD part # MG86529091 cartridge.

John Deere 240, 250, 260, 270 and 280 power units with serial number lower than 400000 must use FFC part # LAF4264.

However, 200 series 4th year production models require no additional relief. These may be identified with serial numbers greater than: 440001 (JD240), 450001 (JD250), 460001 (JD260), 470001 (JD270), and 480001 (JD280). John Deere 317, 320, 325, 328 and 332 power units also require no additional relief.

Scat Trak 1700 HD power units require no additional relief.

GEHL 7600, 7610, 7800 & 7810 and Mustang 2095, 2099, 2105 & 2109 skidloaders can utilize a relief cartridge (GEHL part #138703) screwed into their main control valve opposite the existing cartridge on the tilt circuit spool, eliminating the need for FFC' dual cross over relief.

IMPORTANT This cartridge is IN ADDITION to the existing relief cartridge, and is REQUIRED to protect the circuit of your power unit. Failure to install the extra cartridge

CAN result in damage to your power unit and this product and
WILL void all FFC warranties

Contact your skidloader dealer to obtain the correct relief cartridge and instructions for installation.

Other power units require FFC part # LAF4264.

Contact your dealer to confirm the proper relief is used.

BACKHOE SPECIFICATIONS

Model Number	Overall Width	Overall Height	Overall Depth	Bucket Capacity*	Qty. of Teeth	Digging Depth (max. to teeth)**	Shipping Weight
LAF2301	48"	34"	86"	1.25 cu. feet	3	60"	635 lbs
LAF2302	48"	34"	86"	1.97 cu. feet	4	60"	665 lbs
LAF2303	48"	34"	86"	2.69 cu. feet	5	60"	695 lbs
All replacement hydraulic hoses must have a minimum rated working pressure of 4,000 psi.							

* Struck capacity

** Approximate depth only. Power Unit will also affect depth capabilities.

TORQUE SPECIFICATIONS FOR STANDARD MACHINE HARDWARE (FOR REFERENCE ONLY)

Bolt Size	SAE Grade Bolt	Torque Ft./Lbs
5/16" - 18	5	17
3/8" - 16	5	30



PALADIN LIGHT CONSTRUCTION

Warranty Registration Form and Delivery Inspection Report

IMPORTANT! Warranty **Void** if card is not returned with 10 days.
All Applicable sections **must** be filled in.

This section to be filled out and signed by Dealer at time of delivery.

Warranty Registration

Customer's Name _____	Dealer's Name _____
Address _____	Address _____
City _____ State _____ Zip _____	City _____ State _____ Zip _____
Phone _____	CHECK ONE:
Loader / Tractor Model _____	Construction Use _____
Delivery Date _____	Agricultural Use _____
Model or Part # _____	Landscape Use _____
Serial # _____	Other: _____

Dealer Inspection (check items applicable)

- | | |
|-----------------------------------------------------------------------|-------------------------------------------------------------------|
| <input type="checkbox"/> All Decals installed (see operator's manual) | <input type="checkbox"/> Review Operating and Safety Instructions |
| <input type="checkbox"/> Hydraulic fittings tight and free of leaks | <input type="checkbox"/> Guards and covers in place and secure |
| <input type="checkbox"/> Fasteners tight | <input type="checkbox"/> Does Product Function Properly |

I have thoroughly instructed the buyer on the above described equipment. This review included: The Operator's manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date _____ Dealer's Rep. signature _____

This section to be completed and signed by the customer

	1 Excellent	2 Good	3 Average	4 Unsatisfactory	5 Poor
QUALITY ASSURANCE RATING					
Question:		FFC		Local Dealer	
Quality of Product: Appearance		_____		_____	
Construction		_____		_____	
Quality of Service		_____		_____	
Value (Priced Fairly)		_____		_____	
Does it perform as claimed		_____		_____	

The above described equipment and Operator's Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date: _____ Owner's signature _____

NOTE! Make one copy each for the dealer's and owner's records. Mail original to FFC Attachments.



PALADIN LIGHT CONSTRUCTION

FFC LIMITED 12 MONTH WARRANTY

Thank you for purchasing a FFC product. Warranty protection is valid only when this Warranty Registration is completed and signed by the customer and dealer, and mailed to FFC. I hereby acknowledge that I have received a copy of the owners Limited Warranty and I accept the terms therein.

For a period of 12 months from date of delivery of product to the original user, FFC, warrants each product to be free from manufacturing defects, subject to the limitations contained in this policy.

This warranty does not apply to defect caused, in whole or in part, by unreasonable use while in the possession of the user, including, but not limited to: failure to properly set up product; failure to provide reasonable and necessary maintenance; normal wear; routine tune ups or adjustments; improper handling or accidents; operation at speed or load conditions contrary to published specification; improper or insufficient lubrication; improper storage. This warranty is also not a guarantee that the performance of each product will meet the expectations of the purchaser.

FFC shall not be liable for consequential damages of any kind, including, but not limited to: consequential labor costs or transportation charges in connection with the replacement or repair of defective parts; lost time or expense which may have accrued because of said defects. In no event shall FFC, Inc.'s total liability hereunder exceed the product purchase price.

FFC makes no warranty with respect to trade accessories or any component or accessory of the product which was not manufactured by FFC, including any purchased components on any kind. These are subject to the warranties of their respective manufacturers. The warranty will be considered void if the product or any part of the product is modified or repaired in any way not expressly authorized by FFC, or if closed components are disassembled prior to return. Closed components include, but are not limited to: gearboxes, hydraulic pumps, motors, cylinders, and actuators.

Our obligation under the warranty is expressly limited, at our option, to the replacement or repair at FFC, of Lee, Illinois, or at a service facility designated by us, or such part or parts as inspection shall disclosed to have been defective. We are not responsible for unauthorized repairs or replacements. Any implied or statutory warranties, including any warranty of merchantability or fitness for a particular purpose, are expressly limited to the duration of this written warranty. We make no other express or implied warranty, nor is anyone authorized to make any in our behalf. This warranty cannot be extended, broadened, or changed except in writing by an authorized officer of FFC.