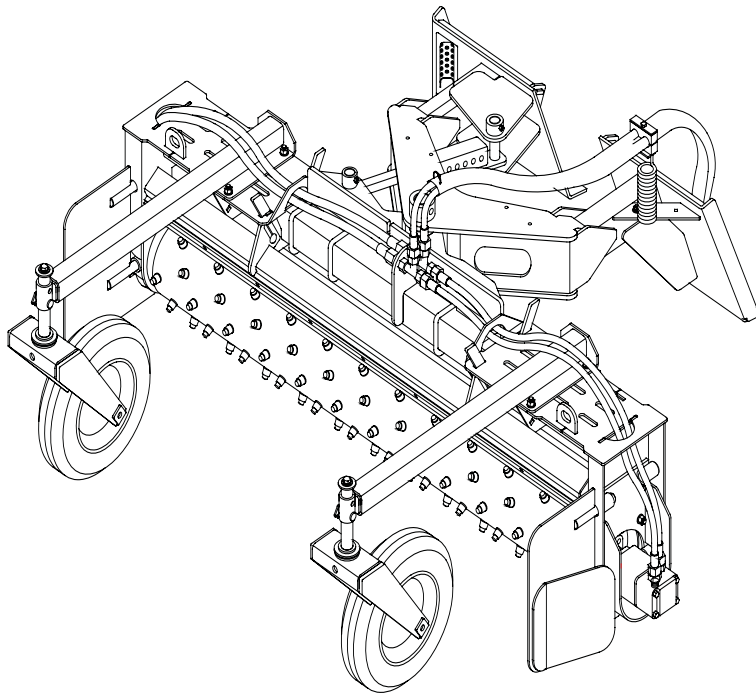




POWER RAKE



PALADIN LIGHT CONSTRUCTION



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: MR35661

Models: LAF5647, LAF5671, LAF5689;
LAF5648, LAF5672, LAF5690;
LAF5649, LAF5673, LAF5691;
LAF5660, LAF5676, LAF5694;
LAF5696, LAF5697 & LAF5698.

Date: February 2007

TABLE OF CONTENTS

Introduction, General Information, Serial Number	1
Owner and Operator Safety Information	2-5
Definitions of Safety Terms and Symbols, Accident Prevention	2
Safety Instructions	3-4
Safety Signs	5
Power Unit Specifications, Mounting	6
Hydraulic Connection	7
Setup	8
Operation	9
Maintenance.....	10
Service	11
Storage.....	12
Parts Illustration	13
Parts List	14-15
Parts Illustration	16
Parts List	17-18
Specifications	19
Hydraulic Angle Kit	19-20
Warranty	i

INTRODUCTION

Congratulations on your purchase of a new **FFC Power Rake**. This product has been designed and built for many applications, including landscape grading and preparation. 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] : LAF5647, LAF5671, LAF5689; LAF5648, LAF5672, LAF5690; LAF5649, LAF5673, LAF5691; LAF5660, LAF5676, LAF5694; LAF5696, LAF5697 and LAF5698. The difference between these models is the width of the product, drive input required, angling and float capabilities, 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 Power Rake: Read this manual carefully to obtain valuable information and instructions that will help you achieve years of 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 the 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 corner of the mounting plate of your Power Rake.

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 moderate or minor 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 when used correctly, 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 Power Rake.**

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 Power Rake 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, operating, 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 power unit'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 power unit.
- 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.

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 Power Rake. Cycle any rollback / dump cylinders. 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.

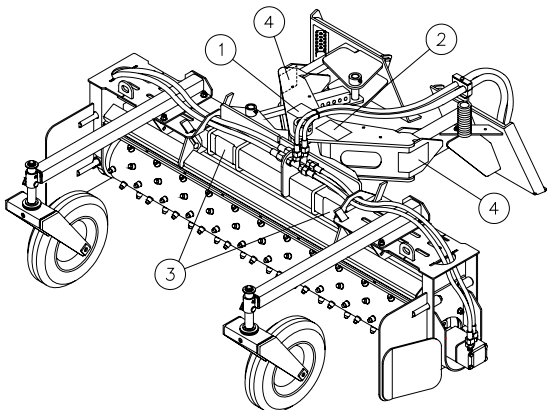
WHEN OPERATING THIS PRODUCT IN ACCORDANCE WITH DESIGN INTENTIONS:

- Keep everyone at least nine feet away from the unit when operating.

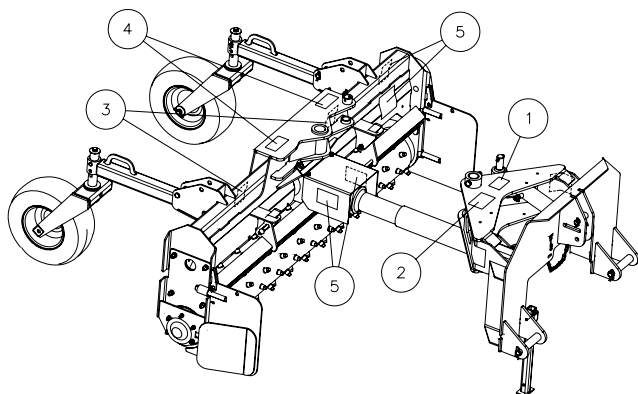
WHEN ADJUSTING, SERVICING OR REPAIRING THIS PRODUCT:

- Make no modifications to your Power Rake.
- 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



STANDARD POWER RAKE



PTO DRIVE POWER RAKE

ITEM	QTY.	PART# - DESCRIPTION
1	1	50-0723 – READ MANUAL
2	1	50-0724 – HYDRAULIC
3	2	RDL3100 – STAND CLEAR
4	2	RDL3123 – PIVOTING ATTACHMENT
5	4	RDL3314 – DANGER ROTATING SHAFT

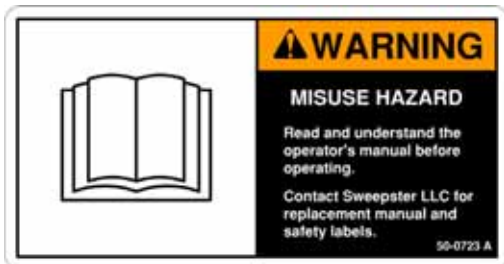
INSTRUCTIONS

- 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 Attachments.

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 on the left and smooth out any bubbles.

ITEM 1



ITEM 2



ITEM 3



ITEM 4



ITEM 5



POWER UNIT SPECIFICATIONS

IMPORTANT Exceeding any of the maximum recommended power unit specifications **CAN** result in damage to this product and **WILL** void all FFC warranties.

DESCRIPTION	SPECIFICATIONS
Weight of Power Unit without Power Rake	11,000 lbs. maximum
Operating Capacity of Power Unit's loader	4,500 lbs. maximum
Lift Capacity of Power Unit's loader	9,000 lbs. maximum
Hydraulic Pressure Output	3,500 psi. maximum
Rear or Front Ballast	As required to maintain full power unit stability (Note the Shipping Weight on page 16, then see the operator's manual(s) for your power unit and quick-attach for ballasting needs).

TRACTOR REQUIREMENTS

The PTO Drive Units are designed for use with tractors that are equipped with an 1-3/8"-6 spline rear power take-off (PTO), **540 rpm only**.

The tractor must also provide for 3-point hitch attachment Category I or II. The tractors rated drawbar PTO horsepower on a 3-point should be no less than 25 HP and no more than 100 HP.

NOTE: In order to maintain steering control, ballast may need to be added to your tractor. To determine whether or not to add the ballast, refer to your tractor's operator's manual.

POWER RAKE MOUNTING



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2–5 of this manual) BEFORE BEGINNING ANY POWER RAKE 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. Refer to the operator's manual(s) for your power unit, loader, and quick-attach and follow the mounting instructions contained therein.
3. Carefully raise the loader arms or three point linkage and cycle the tilt cylinders or lower link arms to check clearances and to verify that all mounting procedures have been successfully completed.

IMPORTANT Lubricate all grease fittings before connecting this product to your power unit's hydraulic system. Refer to the **POWER RAKE MAINTENANCE** page and follow the instructions.

POWER RAKE HYDRAULIC CONNECTION



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

Loaders

1. Disconnect the hydraulic hose quick couplers (or purchase locally, if not supplied) 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 or lower link arms to check hose clearances and to check for any interference.
3. If your Power Rake is equipped with a hydraulic angling kit (LAF5640/LAF5650), connect the two eye terminal wire ends (black = positive / white = negative) to the power unit battery. The angle cylinder is activated by the toggle switch **ONLY** when the drum is turning clockwise [viewed from the left end]. The toggle switch box is magnetized and should be placed on a convenient steel surface in the cab of the power unit. If your unit is equipped with a quick connect wire harness for the power unit joystick refer to owner's manual for proper installation and operation.
4. Cycle the hydraulic cylinder(s) on this product several times from fully retracted to fully extended until all air has been completely removed from the cylinder(s).

3 Point Hitch Category 1 or 2

1. **Both the hydraulic drive and the PTO drive require one set of auxiliary hydraulics.** Purchase proper couplers and hoses and attach to the tractor per the instructions in your tractors' operators manual.
2. Carefully raise the link arms and cycle the upper link cylinder to check hose clearances, interferences, and acceptable range of motion to operate the Power Rake.

NOTICE: When shipped, the hydraulic cylinder(s) on this product contained air or an air-fluid mixture. Also, there are orifices beneath the port(s) in the hydraulic cylinder barrel(s) that will restrict the exit of that air. Failure to remove all the air from the hydraulic cylinder(s) can cause uneven, jerky cylinder movement when the hydraulic controls are being operated and unwanted cylinder movement when those controls are not being operated. (Refer to #4 above.)



WARNING

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

POWER RAKE SETUP



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2–5 of this manual) BEFORE BEGINNING ANY POWER RAKE SETUP

1. Roller

The roller and power rake [front to back] should be positioned level with the ground. To adjust, raise or lower the gauge wheels and/or use the power unit's tilt cylinder. For a 3-point mounting, the upper link needs to be adjusted in or out. To allow the roller to penetrate the ground deeper, raise the gauge wheels. During operation, depth control can be adjusted further by tilting the power rake back to raise the gauge wheels, allowing more roller penetration.

2. Deflectors

Under average conditions, the normal gap between the roller and deflector should be about 1-1/4". This gap can be adjusted by loosening the two carriage bolts that hold the deflector and adjusting it up or down in the square cornered slot. A wider opening will allow more dirt and rock to pass through. **DO NOT** let the roller hit the deflector. The gap should be consistent all across the deflector and this can be verified by either measuring or matching height marks on the two tabs that protrude up through a slot in the deflector support area.

3. Endplates

The endplates contain the material in front of the roller while clean material passes between the roller and deflector. With the endplates mounted in the working position and the power rake parallel with the power unit's tires, material can be moved along, filling in low spots.

Hydraulic drive unit endplates can be mounted to the front or back of the power rake, depending on raking direction. When moving the endplates from front to back, move the left one to the right side and the right one to the left side. Pin the top bushing only to secure the endplates. For PTO drive units the endplate mounting is limited to containment when traveling forward only.

The endplates can be stored by using the top front bushing and storage tab or tabs on the mainframe.

4. Angle

Set the rake straight for conditioning and collecting debris.

Angle the rake for windrowing debris or fill. Angling is also used to change grade.

POWER RAKE OPERATION

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

WARNING

Failure to obey the following procedures could result in death or serious injury.
Never lift this product above:

- the operators eye level OR
- to a height where visibility is obstructed, whichever is lower.

1. Never raise the Power Rake more than a few inches off the ground when traveling from job site to job site.
2. For the roller to operate effectively, it must rotate in the opposite direction of the power unit wheels [see figure below]. Roller direction is controlled by power unit hydraulic controls or PTO shaft. PTO shaft rotation cannot be reversed and results in roller rotation shown in the lower illustration.

Roller Rotation	Travel Direction

3. Normal operating ground speed is between 3 and 5 mph. In heavy rock, reduce speed to 1 to 3 mph.
4. For hydraulic drive, normal operating rpm of the roller is approximately 170. If operating in heavy rock, reduce speed as appropriate. For PTO drive the drum rpm is constant at 211 at 540 PTO rpm.
5. Operating depth will determine how much dirt is carried ahead of the roller. Ideal depth will vary from skimming the surface to about 3" deep.
6. When making the first windrow, the level of dirt may be halfway up the deflector. After moving the windrow two or three times, the level of dirt may be to the top of the deflector. Try to prevent material from flowing over the top of the deflector. Volume and density of material will dictate how many times a windrow can be moved.
7. The following are common operating applications:

Application	Roller Position	Endplate Position	Hydraulic Float Position*
Pulverizing topsoil	Angled or Straight	Stored	Rigid
Debris Removal	Angled or Straight	Windrow or Collect	Float
Finish Grading	Straight	Collect	Float
Spreading Fill and Topsoil	Angled	Windrow	Rigid
Changing Grade	Angled	Windrow	Float
Thatching existing Grass Area	Straight	Stored	Rigid

*See your power unit's manual for whether or not your loader has hydraulic float capabilities. For models with 4-bar linkages, remove the clevis pin (part # 96) to float. (pins may be stored in the middle position holes of the back plate ribs.) For PTO drive models connect the upper link at the slotted mast hole.

8. When adjusting the gap between the roller and deflector; a wider opening will allow more dirt and rock to pass through. For finer raking, reduce the gap.
9. Tires: check the air pressure of your tires before each use. Maintain recommended tire pressure to maintain a consistent, even grade.

POWER RAKE MAINTENANCE



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

1. Park your power unit on a level surface with this product properly attached.
2. Place your power unit's transmission in "Park" and engage the parking brake.
3. Lower this product onto preplaced blocking.
4. Shut off your power unit's engine, remove the starter key, wait for all moving parts to come to a stop, and relieve all pressure in the hydraulic lines (refer to your power unit's operator's manual for instructions on how to relieve hydraulic pressure). On PTO drive models disconnect the driveline.



WARNING

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 is warped, twisted, or tapered. Failure to obey this warning could result in death or serious injury.

BEFORE EACH USE

- Make sure all shielding is in place.
- On PTO drive models check driveline for wear.
- 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 tires are inflated to maximum load pressure indicated on tire. Do not over inflate.
- Make sure that all hydraulic fittings are tightened to specifications and that there are no leaks in any fittings or hoses. (SEE THE HYDRAULIC CONNECTION SECTION).
- 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.

AFTER EVERY 10 HOURS OF USE ON PTO DRIVE MODELS

- Grease roller bearing (48" and PTO drive models only). Grease all u-joint cross bearings. The main frame shaft guard must be removed to grease the hex driveline.

WEEKLY

- Lubricate all pivot points, PTO driveline guard, and PTO driveline telescoping shafts.

FOR PTO DRIVE – AFTER 50 HOURS OF USE AND THEN EVERY 1000 HOURS OR ANNUALLY

- Drain the 90 degree gearbox and the spur gear case of lubricant and refill with 80-90 W gear lube with an EP rating of GL-5 minimum. (Approximately 41 oz. For the 90 degree gearbox and 63 oz. For the spur gear case.)

ANNUALLY

Repack the bearings in the wheels as described in steps 1-4 below.

1. Make sure that there is no weight on the wheels. If the wheels are partially supporting the weight of this product, restart your power unit and move the loader and/or dump cylinders. Repeat the specified shutdown procedure.
2. Remove each wheel using two wrenches and remove the bearing components from the wheels.
3. Clean the bearing components, and then use a high quality waterproof grease to repack the bearing components & hub.
4. Reassemble all components using a new seal.

POWER RAKE SERVICE



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

Removing Wire, Twine, Weeds, etc. that are Wrapped Around the Roller

1. Park your power unit on a level surface with this product properly attached.
2. Place your power unit's transmission in "Park" and engage the parking brake. On PTO models make sure PTO is disengaged.
3. Lower this product onto preplaced blocking that will support the motor guards of this product so that the teeth are not in contact with the ground.



WARNING

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 is warped, twisted, or tapered. Failure to obey this warning could result in death or serious injury.

4. Shut off your power unit's engine, remove the starter key, wait for all moving parts to come to a stop, and relieve all pressure in the hydraulic lines.
5. Disconnect the hydraulic lines from your power unit and connect the two ends to each other. For PTO drive disconnect the PTO driveline. This should permit the roller to rotate freely.
6. Pull the material from the roller while allowing it to rotate.

ALTERNATE METHOD FOR SKID STEER LOADERS

If your power unit is equipped with safety stops for the lift arms of the loader that can be activated from the operator's position or if the safety stops must be activated from outside the operator's position and a second person is present, then the method above may be replaced with these steps:

1. Park your power unit on a level surface with this product properly attached.
2. Place your power unit's transmission in "Park" and engage the parking brake.
3. Disconnect the hydraulic lines from your power unit and connect the two ends to each other. This should permit the roller to rotate freely.
4. Fully raise the lift arms and fully extend the tilt cylinders to the fully dumped position.
5. Shut off your power unit's engine, remove the starter key, wait for all moving parts to come to a stop, and relieve all pressure in the hydraulic lines.
6. Pull the material from the roller while allowing it to rotate.

Replacing Deflector Strips

1. Perform steps 1 through 5 above.
2. Remove worn strip by removing bolts and nuts that secure the strip.
3. Replace the strip, making sure the steel backing strip is re-installed.

IMPORTANT: For PTO Drive Models genuine FFC replacement parts must be used to service the PTO driveline.

POWER RAKE STORAGE



SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS (pages 2–5 of this manual) BEFORE BEGINNING ANY POWER RAKE STORAGE

1. Disconnect hydraulic hoses from power unit. Install dust plugs or couple hoses together, as appropriate.
2. Disengage your Power Rake from the power unit. Be sure your Power Rake rests in a stable position for storage.
3. Be sure your power rake is stored on a hard, level surface.

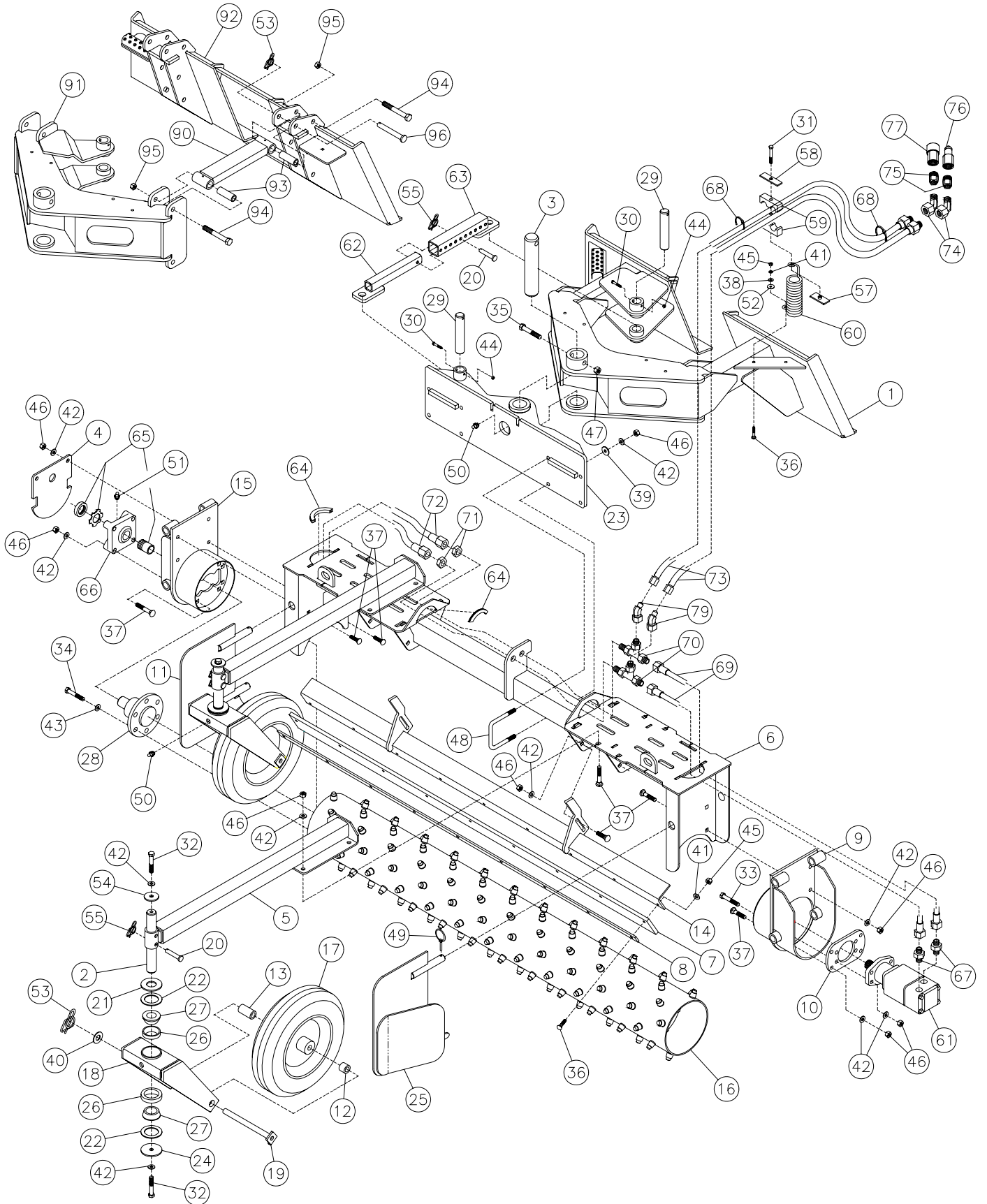


WARNING
Block equipment securely for storage.



WARNING
Keep children and bystanders away from storage area.

PARTS ILLUSTRATION



POWER RAKE: PARTS LIST

ITEM	QTY.	LAF5647	LAF5671	LAF5689	DESCRIPTION
		LAF5648	LAF5672	LAF5690	
		LAF5649	LAF5673	LAF5691	
		48"	72"	90"	
1*	1	LAF5600 or LAF5604	LAF5600 or LAF5604	LAF5600 or LAF5604	Mounting Frame or RIGID Mounting Frame
2	2			LAF5638	Wheel Post
3	1			LAF5602	Pivot Pin
4	1	LAF5606	Not Used	Not Used	Dust Guard (for 48" model)
5	2			13-50866	Wheel Arm
6	1	LAF5608	LAF5631	LAF5605	Mainframe (hydraulic drive)
7	2	LAF5609	LAF5633	LAF5603	Drum Deflector
8	2	LAF5610	LAF5634	LAF5627	Drum Deflector Strap
9	varies	(1)	(2)	(2) 13-50860	Motor Mount
10	varies	(1)	(2)	(2) 13-50865	Motor Plate
11	1			LAF5613	Right Side Shield
12	2			LAF5614	Bushing: 1-1/4" x 1/4" x 1"
13	2			LAF5615	Bushing: 1-1/4 x 1/4" x 2-3/8"
14	2	LAF5616	LAF5632	LAF5635	Deflector Support
15	1	13-51048	Not Used	Not Used	Bearing Mount (for 48" model)
16	1	LAF5618	LAF5630	LAF5626	Drum
17	2			LAF5620	Wheel Assembly
18	2			LAF5621	Wheel Caster (Bearing)
19	2			LAF5622	Wheel Axle
20	2			RHW8150	Clevis Pin: 1/2" x 2-3/4"
21	2			LAF5624	Wheel Caster Washer (top)
22	4			LAF5625	Wheel Bearing Seal
23	1			LAF5628	Pivot Frame
24	2			LAF5629	Wheel Caster Washer (bottom)
25	1			LAF5636	Left Side Shield
26	4			LAF9522	Bearing Race
27	4			LAF9523	Tapered Roller Bearing Cone
28	1	13-50861	Not Used	Not Used	Axle Shaft Assembly
29	2			LAF9715	Pin: 1-1/4" x 6-1/2"
30	2			RHW1041	Grade 8 Hex Head Cap Screw: 1/4" x 2"
31	1			RHW1112	Grade 5 Hex Head Cap Screw: 5/16" x 2-1/2" (not used for all models)
32	4			RHW1404	Grade 5 Hex Head Cap Screw: 1/2" x 1-1/4"
33	varies	(4)	(8)	(8) RHW1406	Grade 5 Hex Head Cap Screw: 1/2" x 1-3/4"
34	6	RHW1603	Not Used	Not Used	Grade 5 Hex Head Cap Screw: 5/8" x 1-3/4"
35	1			RHW1612	Grade 5 Hex Head Cap Screw: 5/8" x 4"
36	varies	(12)	(18)	(24) RHW2201	Grade 5 Carriage Bolt: 5/16" x 1-1/2"
37	20			RHW2405	Grade 5 Carriage Bolt: 1/2" x 1-1/2"
38	1			RHW5162	Grade 5 Flat Washer: 5/16"
39	8			RHW5432	Grade 5 Flat Washer: 1/2" (quantity may vary)
40	2			RHW5762	Grade 5 Flat Washer: 3/4"
41	varies	(13)	(19)	(25) RHW6102	Grade 5 Lock Washer: 5/16"
42	40			RHW6402	Grade 5 Lock Washer: 1/2"
43	6	RHW6602	Not Used	Not Used	Grade 5 Lock Washer: 5/8"
44	2			RHW7003	Grade 5 Lock Nut: 1/4"
45	varies	(13)	(19)	(25) RHW7101	Grade 5 Hex Nut: 5/16" (quantity may vary)
46	varies	(32)	(36)	(36) RHW7401	Grade 5 Hex Nut: 1/2"

*For Floating Models (LAF5647, LAF5671, & LAF5689) see part numbers 90 – 96.

NOTE: All parts are the same as the LAF5690 unless noted otherwise.

POWER RAKE: PARTS LIST (continued)

ITEM	QTY.	LAF5647	LAF5671	LAF5689	DESCRIPTION
		LAF5648	LAF5672	LAF5690	
		LAF5649	LAF5673	LAF5691	
		48"	72"	90"	
47	1			RHW7602	Grade 5 Nylock Nut: 5/8"
48	4			RHW7999	Grade 5 U-Bolt: 1/2" x 4-1/4" x 4-1/32"
49	2			RHW8068	Lynch Pin 1/4" x 1-1/2" (1-1/4" useable)
50	3			RHW8090	Grease Zerk: 1/4", self-tapping
51	1	RHW8091	Not Used	Not Used	Grease Zerk: 1/4", 90°
52	1			RHW8098	Grade 2 Fender Washer: 5/64" x 5/16" x 1-1/2" (not used for all models)
53	2			RHW8115	Rue Ring Cotter Pin; 3/4", Heavy
54	2			RHW8136	Washer; 1/2" x 2" x .093" thick
55	1			RHW8133	Cotter Pin: 1/2", Rue Ring, Heavy
57	1			RHW8613	Weld Plate for 7/8" OD (Not used for All models)
58	1			RHW8614	Cover Plate for 7/8" OD (Not used for All models)
59	2			RHW8616	Hose Cradle for 7/8" OD (Not used for All models)
60	1			RHW8618	Hose Spring (Not used for All models)
61	varies	(1)LAF4655	(2)LAF4678	(2) LAF4678	Hydraulic Motor
62	1			LAF2818	Position Tube (male)
63	1			LAF2817	Position Tube (female)
64	varies	(3)	(8)	(8)LAF3412	Shroud Gusset Protector
66	1	LAF6808	Not Used	Not Used	Rotor Bearing
67	varies	(2)	(4)	(4) LAF4414	Hydraulic Fitting: 10MB – 10MJ, Straight
68	2			RMR5002	Wiretie (not used for all models)
69	2	Not Used	LAF4657(48')	LAF4682(57")	Hydraulic Hose: 1/2" x Length noted, 10FJ – 10FJ
70	2	Not Used		LAF4656	Run Bulkhead Tee: 10MJ – 10MJ – 10MJ
71	2	Not Used		LAF4075	Bulkhead Jam Nut: #10
72	2	Not Used	LAF4682(57")	LAF4709(66")	Hydraulic Hose: 1/2" x Length noted, 10FJ – 10FJ
73	2	LAF4514(92")	LAF4680(96")	LAF4680(96")	Hydraulic Hose: 5/8" x Length noted, 10FJ – 12MB
74	2	Contact FFC to obtain the correct item			Hydraulic Elbow (not required on all models)
75	2	Contact FFC to obtain the correct item			Hydraulic Adapter (not required on all models)
76	1	Contact FFC to obtain the correct item			Hydraulic Hose Quick Coupler: Male Connection
77	1	Contact FFC to obtain the correct item			Hydraulic Hose Quick Coupler: Female Connection
78	1	Contact FFC to obtain the correct item			Hydraulic Hose Sheathing
79	2	Contact FFC to obtain the correct item			Hydraulic Elbow (not required on all models)
80	4			RHW8069	Clevis Pin: 3/4" x 4"
81	4			RHW8227	Clevis Pin: 3/4" x 3-1/2"

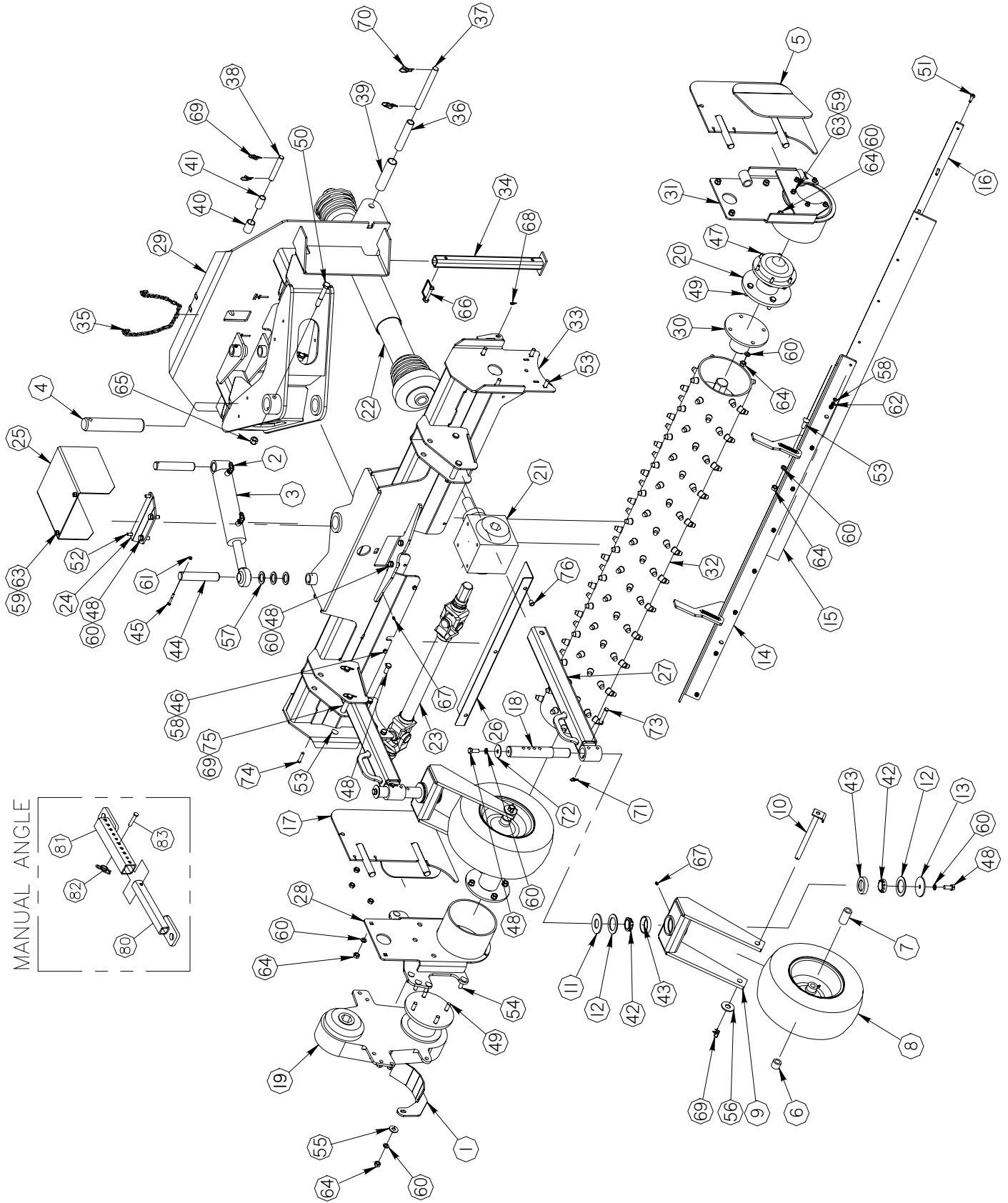
*For Floating Models (LAF5647, LAF5671, & LAF5689) see part numbers 90 – 96.

NOTE: All parts are the same as the LAF5690 unless noted otherwise.

*Floating Models	LAF5647	LAF5671	LAF5689	DESCRIPTION	
ITEM	QTY.	48"	72"		90"
90	4			LAF5619	Link Arm
91	1			LAF5639 or LAF5642	Mounting Frame or RIGID Mounting Frame
92	1			LAF5641	Back Plate
93	8			LAF5643	Bushing
94	8			RHW1614	Grade 5 Hex Head Cap Screw: 5/8" x 5"
95	8			RHW7603	Grade 5 Locknut: 5/8"
96	2			RHW8148	Clevis Pin: 5/8" x 4-3/4"

NOTE: All parts are the same as the LAF5689 unless noted otherwise.

PARTS ILLUSTRATION (PTO Power Rake)



PTO POWER RAKE: PARTS LIST

ITEM	QTY.	LAF5660 56"	LAF5676 72"	LAF5694 90"	DESCRIPTION
1	1			13-50412	PTO Gear Box Guard Weldment
2	2			LAF4298	90 Elbow:6MB-6MJ
3	1			LAF4516	Cylinder: 2-1/2" x 7-1/2" x 1-1/4"
4	1			LAF5602	Pivot Pin
5	1			LAF5613	Right Side Shield
6	2			LAF5614	Bushing: 1-1/4" x 1/4" x 1"
7	2			LAF5615	Bushing: 1-1/4" x 1/4" x 2-3/8"
8	2			LAF5620	Wheel Assembly
9	2			LAF5621	Wheel Caster
10	2			LAF5622	Wheel Axle
11	2			LAF5624	Wheel Caster Washer (top)
12	4			LAF5625	Wheel Bearing Seal
13	2			LAF5629	Wheel Caster Washer (bottom)
14	1	LAF5687	LAF5632	LAF5635	Deflector Support
15	1	LAF5688	LAF5633	LAF5603	Drum Deflector
16	1	LAF5692	LAF5634	LAF5627	Drum Deflector Strap
17	1			LAF5636	Left Side Shield
18	2			LAF5638	Wheel Post
19	1			LAF5644	Spur Gear Case
20	1			LAF5645	Bearing Assembly
21	1			LAF5646	90 Degree Gear Box
22	1			LAF5653	PTO Drive Shaft
23	1	LAF5661	LAF5662	LAF5663	Hex Drive Line
24	1			LAF5664	Spacer Plate
25	1			LAF5665	Clutch Guard
26	1	LAF5667	LAF5668	LAF5669	Shaft Guard
27	2			LAF5670	Wheel Arm
28	1			13-51051	Gear Case Mount
29	1			LAF5677	Mounting Frame
30	2			LAF5678	Hub Mount
31	1			13-51049	Bearing Mount
32	1	LAF5680	LAF5681	LAF5682	Drum
33	1	LAF5683	LAF5684	LAF5685	Mainframe
34	1			LAF8350	Jack Stand
35	1			LAF9010	Chain
36	2			LAF9429	Bushing: 1-1/8" x 1/8" x 5-9/16"
37	2			LAF9430	Pin: 7/8" x 8-3/8"
38	1			LAF9431	Pin: 3/4" x 4-3/4"
39	2			LAF9432	Bushing: 1-7/16" x 1/8" x 5-9/16"
40	1			LAF9433	Top Link Bushing
41	1			LAF9434	Top Link Bushing
42	4			LAF9522	Bearing Race
43	4			LAF9523	Tapered Roller Bearing Cone
44	2			LAF9715	Pin: 1-1/4" x 6-1/2"
45	2			RHW1041	Screw, HHC, GR8, 1/4-20 x 2"
46	Varies	(2)	(3)	RHW1105 (4)	Screw, HHC, GR5, 5/16-18 x 1"
47	5			RHW1207	Screw, HHC, GR5, 3/8-16 x 1 1/4"
48	11			RHW1404	Screw, HHC, GR5, 1/2-13 x 1 1-4"
49	8			RHW1406	Screw, HHC, GR5, 1/2-13 x 1 3/4"
50	1			RHW1612	Screw, HHC, GR5, 5/8-11 x 4"
51	Varies	(7)	(9)	RHW2201 (12)	Bolt, CRG, GR5, 5/16-18 x 1 1/2"

NOTE: All parts are the same as the LAF5694 unless noted otherwise.

PTO POWER RAKE: PARTS LIST (continued)

ITEM	QTY.	LAF5660 56"	LAF5676 72"	LAF5694 90"	DESCRIPTION
52	2			RHW2205	Bolt, CRG, GR5, 3/8-16 x 1"
53	13			RHW2405	Bolt, CRG, GR5, 1/2-13 x 1 1/2"
54	2			RHW2406	Bolt, CRG, GR5, 1/2-13 x 1 3/4"
55	2			RHW5462	Washer, FL, GR5, 1/2, USS
56	2			RHW5762	Washer, FL, GR5, 3/4, USS
57	3			RHW5972	Bushing, Machinery, 0.135-1.25ID x 2.25OD
58	Varies	(12)	(15)	RHW6102 (19)	Washer, Lock, Split, Med, 5/16
59	7			RHW6202	Washer, Lock, Split, Med, 3/8
60	34			RHW6402	Washer, Lock, Split, Med, 1/2
61	2			RHW7003	Nut, Hex, Center Dent Lock, GR5, 1/4-20
62	Varies	(9)	(9)	RHW7101 (12)	Nut, Hex, GR5, 5/16-18
63	7			RHW7201	Nut, Hex, GR5, 3/8-16
64	23			RHW7401	Nut, Hex, GR5, 1/2-13
65	1			RHW7602	Nut, Hex, Nylock, GR5, 5/8-11
66	1			RHW8079	Pin, Snapper, 3/8 x 2 3/4 (2 1/2 USBL)
67	3			RHW8090	Grease Zerk 1/4-28 Self Tap
68	2			RHW8114	Rue Ring Cotter, 3/8, Reg
69	8			RHW8115	Rue Ring Cotter, 3/4, Heavy
70	4			RHW8130	Rue Ring Cotter, 7/8, Heavy
71	2			RHW8133	Rue Ring Cotter, 1/2, Heavy
72	2			RHW8136	Washer, Special, 1/2 x 2 x 0.093
73	2			RHW8150	Pin, Clevis, 1/2 x 2 3/4, Plated
74	2			RHW8225	Pin, Clevis, 3/8 x 1 3/4, Plated
75	4			RHW8227	Pin, Clevis, 3/4 x 3 1/2, Plated
76	Varies	(2)	(3)	RHW8645 (4)	Nut, Rivet, 5/16-18, .027-.150 Grip Rane

NOTE: All parts are the same as the LAF5694 unless noted otherwise.

*For Manual Angle Models (LAF5696, LAF5697 and LAF5698) see part numbers 80-83 (which replace the cylinder).

*Manual Models ITEM	QTY.	LAF5696 56"	LAF5697 72"	LAF5698 90"	DESCRIPTION
80	1			LAF2818	Position Tube (male)
81	1			LAF2817	Position Tube (female)
82	1			RHW8133	Cotter Pin: 1/2", Rue Ring Heavy
83	1			RHW8150	Clevis Pin: 1/2" x 2-3/4"

NOTE: All parts are the same as the LAF5698 unless noted otherwise.

POWER RAKE SPECIFICATIONS

Model Number	Overall Width	Overall Height	Overall Depth	Shipping Weight
LAF5648 RIGID	60-5/8"	27-9/16"	72-1/2"	720 lbs.
MANUAL	60-5/8"	30-5/16"	72-1/2"	870 lbs.
HYDRAULIC	60-5/8"	30-5/16"	72-1/2"	905 lbs.
LAF5672 RIGID	82-3/4"	27-9/16"	72-1/2"	850 lbs.
MANUAL	82-3/4"	30-5/16"	72-1/2"	1000 lbs.
HYDRAULIC	82-3/4"	30-5/16"	72-1/2"	1035 lbs.
LAF5690 RIGID	100-3/4"	27-9/16"	72-1/2"	925 lbs.
MANUAL	100-3/4"	30-5/16"	72-1/2"	1075 lbs.
HYDRAULIC	100-3/4"	30-5/16"	72-1/2"	1110 lbs.
LAF5660 HYDRAULIC	68-1/8"	38-3/4"	95"	1150 lbs.
MANUAL	68-1/8"	38-3/4"	95"	1115 lbs.
LAF5676 HYDRAULIC	84-1/8"	38-3/4"	95"	1220 lbs.
MANUAL	84-1/8"	38-3/4"	95"	1185 lbs.
LAF5694 HYDRAULIC	102-1/8"	38-3/4"	95"	1290 lbs.
MANUAL	102-1/8"	38-3/4"	95"	1255 lbs.

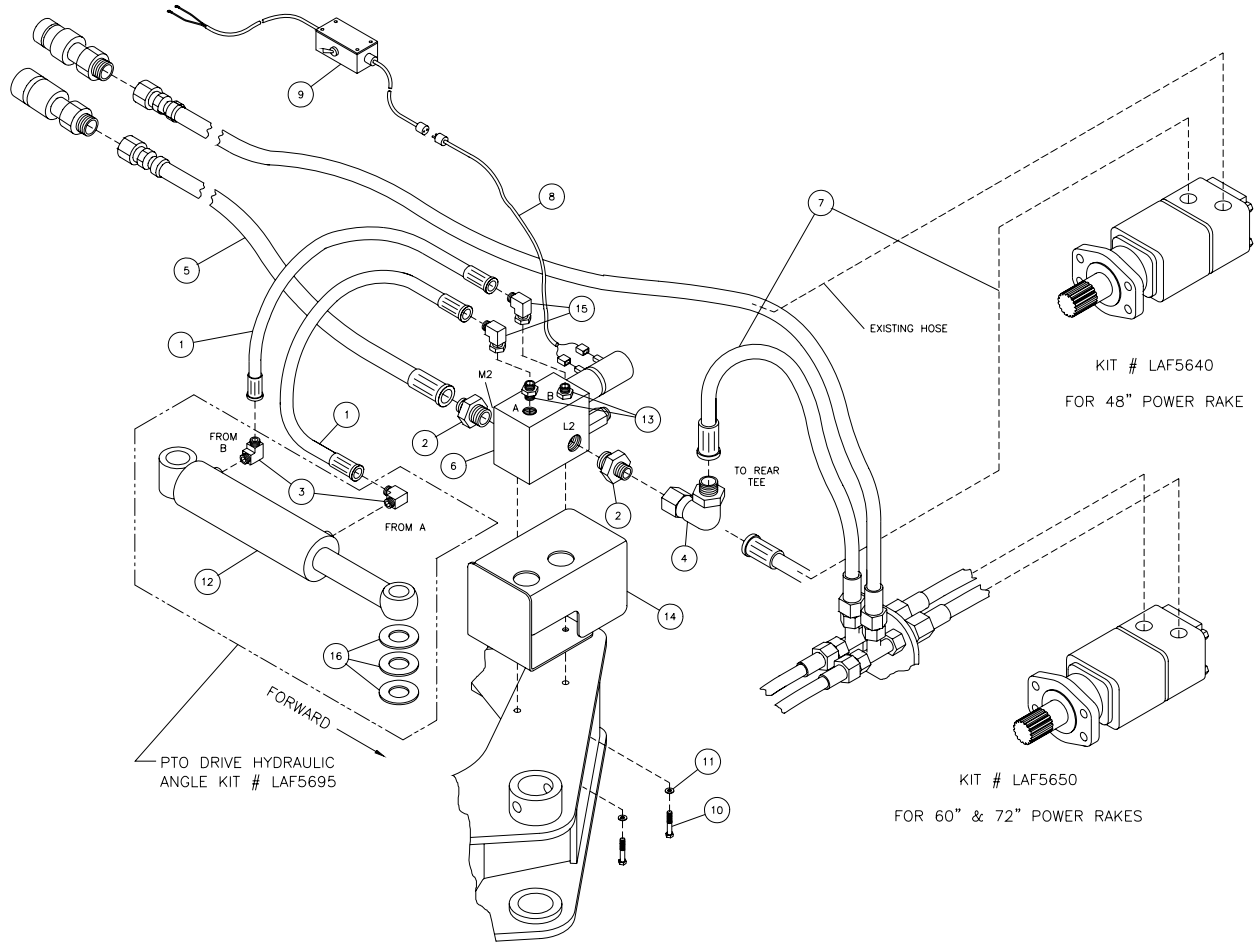
TORQUE SPECIFICATIONS FOR STANDARD MACHINE HARDWARE (FOR REFERENCE ONLY)

Bolt Size	SAE Grade Bolt	Torque Ft./Lbs
1/4" - 20	8	12
5/16" - 18	5	17
1/2" - 13	5	75
5/8" - 11	5	150

POWER RAKE Hydraulic Angle Kit Parts List

ITEM	QTY	LAF5640 PART #	LAF5650 PART #	LAF5695 PART #	DESCRIPTION
1	2	LAF4308	LAF4308		Hydraulic Hose: 3/8" x 19", 6FJ-6FJ
2	2	LAF4402	LAF4402		Hydraulic Adapter: 10MJ-12MB
3	2	LAF4298	LAF4298	LAF4298	Hydraulic Elbow: 90° 6MB-6MJ
4	1	Not Used	LAF4417		Hydraulic Elbow: 90°, 10MJ-10FJ
5	1	LAF4719	LAF4658		Hydraulic Hose: 1/2" x 72", 10FJ-10MB Hydraulic Hose: 5/8" x 72", 10FJ-12MB
6	1	LAF4660	LAF4660		Solenoid Operated Control Block Assembly
7	1	LAF4657 (48")	LAF4681 (22")		Hydraulic Hose: 1/2" x Length Noted, 10FJ-10FJ
8	1	LAF9441	LAF9441		Wire Assembly: 9'
9	Contact FFC to obtain correct				Wire Harness with Box for Rotating Cylinder
10	2	RHW1107	RHW1107		Grade 5 Hex Head Cap Screw: 5/16" x 1-1/4"
11	2	RHW6102	RHW6102		Grade 5 Lock Washer: 5/16"
12	1	LAF4516	LAF4516	LAF4516	Hydraulic Cylinder: 2-1/2"x7-1/2"x1-1/4" shaft w/Parallel Ports
13	2	LAF4406	LAF4406		Hydraulic Adapter: 6MJ-6MB
14	1	LAF5659	LAF5659		Shield
15	2	LAF4093	LAF4093		Hydraulic Elbow: 90°, 6FJ-6MJ
16	3	RHW5772	RHW5772	LAF5972	Machine Bushing

PARTS ILLUSTRATION (Hydraulic Angle Kits)





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.