



OPERATOR'S & PARTS MANUAL

AUTORAKE®



PALADIN
LIGHT CONSTRUCTION GROUP

BRADCO

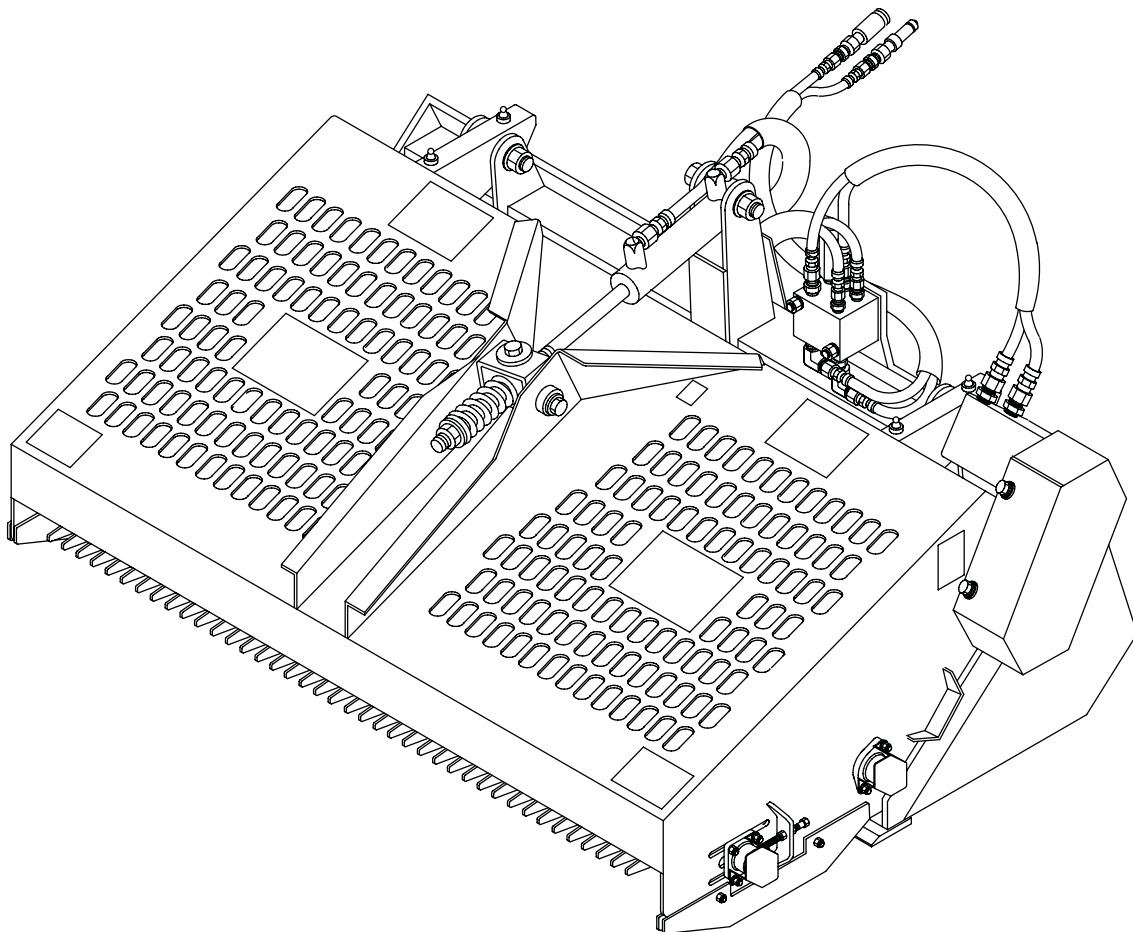


HARLEY

McMILLEN

SWEEPSTER

The Power of Combined Excellence



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: MR25595

Models: LAF6864 & LAF6874

with serial numbers greater than B011498

Rev. 2

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INTRODUCTION

Congratulations on your purchase of a new **FFC AutoRake®**. This product has been designed and built to remove small rocks (less than 6" maximum dimension) and debris from loose soil and the sifting of the surface layer of that soil. 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): **LAF6864** and **LAF6874**. The difference between the models is the width of the product, details of which are covered on the parts list and specifications page(s).

GENERAL INFORMATION

The purpose of this manual is to assist in assembling, mounting, operating, and maintaining your **AutoRake®**. 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 may be necessary without notification to anyone. Throughout this manual, references may be made to:

Prime Mover	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 operation position.
IMPORTANT	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 top left side of the bucket portion** of your **AutoRake®**.

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

SAFETY STATEMENTS



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



DANGER

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



WARNING

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



CAUTION

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

NOTICE

NOTICE INDICATES A PROPERTY DAMAGE MESSAGE.

GENERAL SAFETY PRECAUTIONS

WARNING! READ MANUAL PRIOR TO INSTALLATION



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

GENERAL SAFETY PRECAUTIONS

WARNING! PROTECT AGAINST FLYING DEBRIS



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.

WARNING! LOWER OR SUPPORT RAISED EQUIPMENT



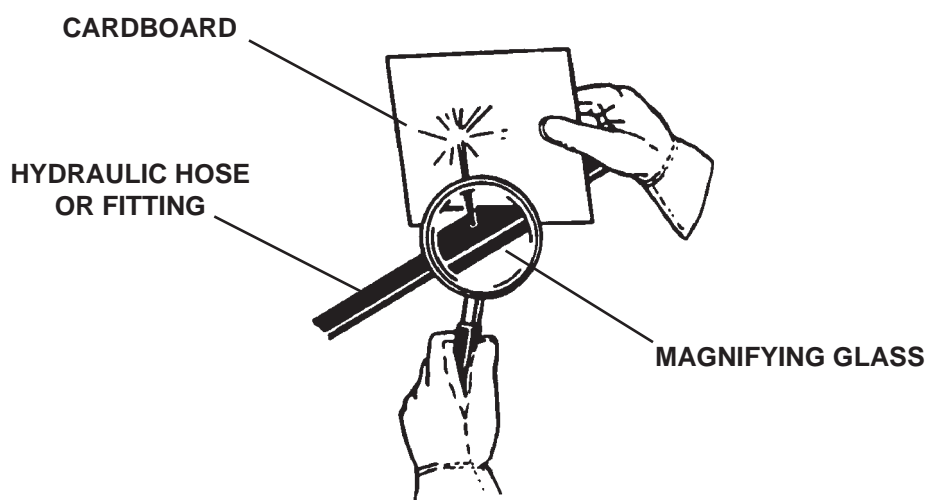
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground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

WARNING! USE CARE WITH HYDRAULIC FLUID PRESSURE



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

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



GENERAL SAFETY PRECAUTIONS

WARNING! DO NOT MODIFY MACHINE OR ATTACHMENTS



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

WARNING! SAFELY MAINTAIN AND REPAIR EQUIPMENT



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

WARNING! SAFELY OPERATE EQUIPMENT



Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your machine's manual for these instructions.

- Keep all step plates, grab bars, pedals, and controls free of dirt, grease, debris, and oil.
- Never allow anyone to be around the equipment when it is operating.
- Do not allow riders on the attachment or the prime mover.
- Do not operate the equipment from anywhere other than the correct operators position.
- Never leave equipment unattended with the engine running or with this attachment in a 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.

WARNING! 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.

EQUIPMENT SAFETY PRECAUTIONS

Obey all the safety instructions listed in this section and throughout this manual.

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



- Never lift this product above (a) the operator's eye level or (b) to a height where visibility is obstructed, whichever is lower.
- Do not roll back this product so far that the load falls off toward or on the operator.
- Do not lock the auxiliary hydraulics of your prime mover in the "ON" position.
- Keep everyone at least nine feet away from this product when operating.

CAUTION! NOT A STEP!

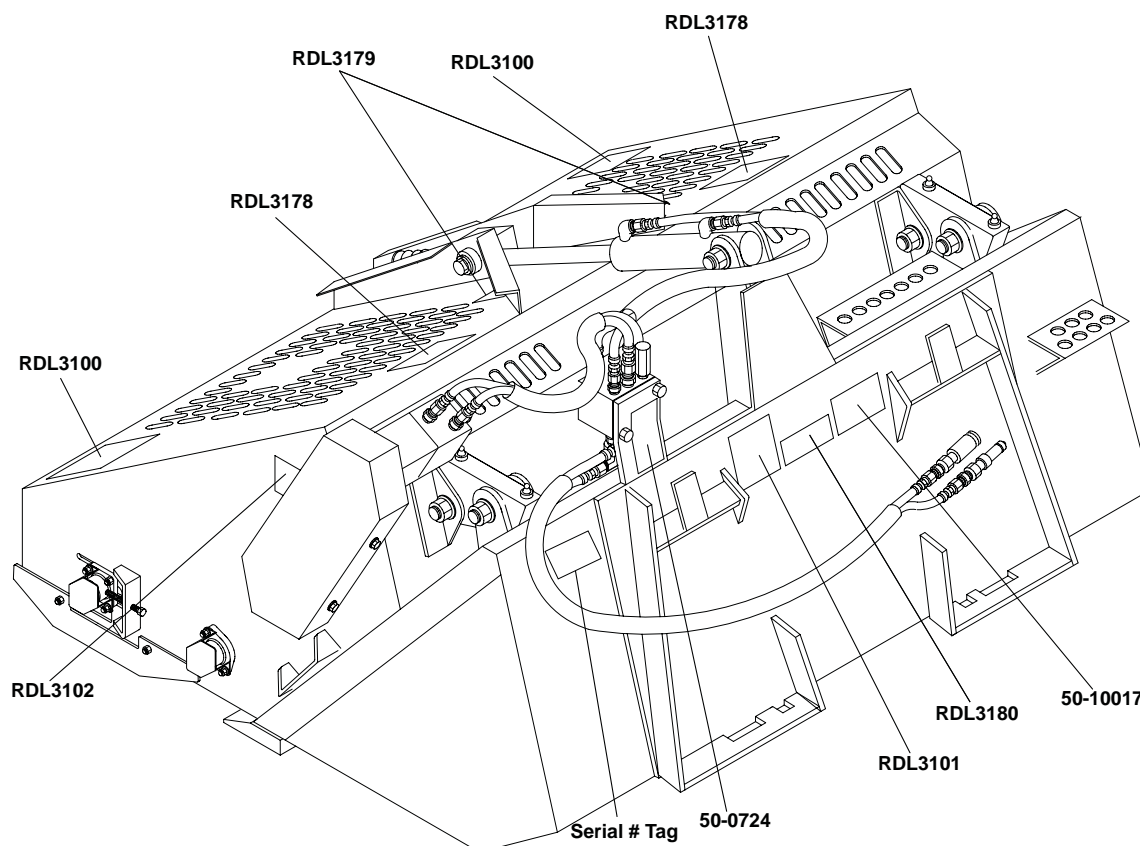


Failure to obey instructions in this section may result in personal injury.

- Do not use the top of this product as a step. Under certain conditions, this area can be slippery.

SAFETY SIGN LOCATIONS

The diagram on this page shows the location of the decals used on the FFC AutoRake®. The decals are identified by their part numbers, with reductions of the actual decals located on the following 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 product longevity.



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.

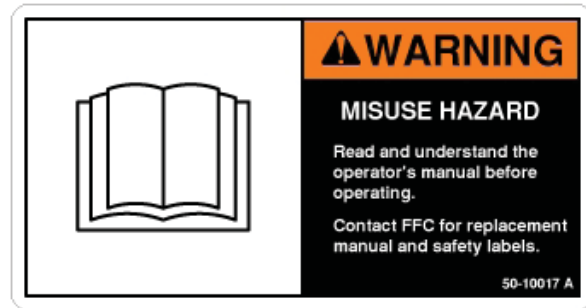
PLACEMENT OR REPLACEMENT OF SAFETY SIGNS

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

SAFETY SIGNS



PART #50-0724
WARNING! HIGH PRESSURE FLUID



PART #50-10017
WARNING! READ MANUAL



PART #RDL3100
WARNING! STAND CLEAR



PART #RDL3101
WARNING! ROLLOVER HAZARD



PART #RDL3102
WARNING! SHIELDS



PART #RDL3178
CAUTION! NOT A STEP



PART #RDL3179
LIFT POINT (HOOK)



PART #RDL3180
IMPORTANT! CHAIN TENSION

PRIME MOVER SPECIFICATIONS

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

DESCRIPTION	SPECIFICATIONS
Rated net Engine Horsepower of Prime Mover	110 hp. maximum
Weight of Prime Mover without AutoRake®	10,000 lbs. maximum
Hydraulic Pressure Output	4,000 psi maximum
Rear Ballast	As required to maintain full prime mover stability. (Note the Shipping Weight on the specifications page, then see the operator's manual(s) for your prime mover, loader, and quick-attach for ballasting needs.)

AUTORAKE® SPECIFICATIONS

Model Number	Overall Width	Overall Height	Overall Depth	Working Width	Quantity of Teeth	Bucket Capacity	Shipping Weight
LAF6864	74"	40"	64"	63.5"	396	13 cu. ft.	1,092 lbs.
LAF6874	84"	40"	64"	73.5"	462	15 cu. ft.	1,200 lbs.
All replacement hydraulic hoses must have a minimum rated working pressure of 4,000 psi.							

BOLT TORQUE

BOLT TORQUE SPECIFICATIONS

GENERAL TORQUE SPECIFICATION TABLES


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

SAE BOLT TORQUE SPECIFICATIONS


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

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


GRADE 2









GRADE 5






GRADE 8





METRIC BOLT TORQUE SPECIFICATIONS

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

Bolt head identification marks as per grade.		
		

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

AUTORAKE[®] MOUNTING

WARNING! READ MANUAL PRIOR TO INSTALLATION



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

Loaders

1. Place this product on a firm, level surface that is large enough to safely accommodate this product, your prime mover and all workers involved in the mounting process.
2. Refer to the operator's manual(s) for your prime mover, loader, and quick-attach and follow the mounting instructions contained therein.
3. Carefully raise the loader and cycle the rollback/dump cylinders 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 prime mover's hydraulic system. Refer to **AUTORAKE[®] MAINTENANCE** page and follow the instructions.

3 Point Hitch Category 1 or 2

1. Place this product on a firm, level surface that is large enough to safely accommodate this product, your tractor, and all workers involved in the mounting process. Making sure this product is in the operating position and level will facilitate in selecting the proper mounting holes.
2. Read and understand the Operation and Maintenance manual for your tractor before installing this product.
3. Remove the top link on your tractors' 3 point and drive the tractor backwards in to position to connect the lower links to the attachment mounting ears. The ears have a combination category 1 & 2 hitch pin installed so you need to make sure the outer pin matches your tractors' category. Select a hole position on the mounting ears that aligns or is a little above the lower link points with the tractor link arms fully lowered and connect the arms.
4. The upper link cylinder provided with this product requires a category #2, 1" diameter pin to attach to the tractors' upper link point. If you have a category #1 tractor you will have to bush the pin up to category #2. It is important that when you pin the rod end of the cylinder to the tractors' upper link point there is between 4" and 5" of exposed cylinder rod. If you have less the bucket will not roll back enough and if you have more the bucket will not dump properly. Move the cylinder pin hole position on the mounting ears until you attain the recommended amount of exposed cylinder rod.

IMPORTANT Lubricate all grease fittings before connecting this product to your prime mover's hydraulic system. Refer to **AUTORAKE[®] MAINTENANCE** page and follow the instructions.

AUTORAKE® HYDRAULIC CONNECTION



READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals before beginning any AutoRake® hydraulic connection. 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.

Loaders

1. Disconnect the hydraulic hose quick couplers from one another and attach the quick couplers to your prime mover as per the instructions in your prime mover's operator's manual.
2. Carefully raise the loader and cycle the rollback/dump cylinders to check hose clearances and to check for any interference. Operate the hydraulic cylinder(s) on this product to make the same checks.
3. 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. This product requires two sets of auxiliary hydraulics. Purchase proper couplers and hoses for the upper link cylinder locally 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 roll back and dump the bucket. Operate the hydraulic cylinder on the attachment to make the same checks.
3. 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).

NOTICE

When shipped, the hydraulic cylinder(s) on this product contained air or an air-fluid mixture. The orifices beneath the port(s) of the cylinder barrels 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 the controls are not being operated.

WARNING!



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

AUTORAKE[®] OPERATION

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



- Never lift this product above (a) the operator's eye level or (b) to a height where visibility is obstructed, whichever is lower.
- Do not roll back this product so far that the load falls off toward or on the operator.
- Do not lock the auxiliary hydraulics of your prime mover in the "ON" position.
- Keep everyone at least nine feet away from this product when operating.

CAUTION! NOT A STEP!



Failure to obey instructions in this section may result in personal injury.

- Do not use the top of this product as a step. Under certain conditions, this area can be slippery.

IMPORTANT Attempting to pick up large rocks, large tree branches, etc. **CAN result in damage to this product and WILL void all FFC warranties.**

IMPORTANT Using this product to till compacted soil **CAN result in damage to this product and WILL void all FFC warranties.**

Before using this product on an area, make sure that:

- the area is free of all boulders larger than 6" in diameter, all logs and large tree branches, all wire, all lumber, and any other item that is too large for the bucket or could get wrapped around the rake chain, and
- the soil is relatively loose and any compacted areas have been tilled with another piece of equipment to a depth of 2" or deeper.

Loader Raking

Keeping in mind that **all raking must be done while moving backward**, position your prime mover and this product on the area to be raked. To begin raking:

1. Activate the auxiliary hydraulics for operating the rake chain, (If the rake chain does not move but the hydraulic cylinder begins to retract, then activate the auxiliary hydraulics in the opposite direction to get the rake chain to operate.)
2. Lower the loader arms completely and set the loader arm control in the float position,
3. Tilt this product forward until the weight of the rake portion is resting on the depth adjustment plates, and
4. Move your prime mover slowly backward.

3 Point Hitch Raking

As a three point attachment **all raking must be done while moving forward**. Position this product appropriately on the area to be raked. To begin raking:

1. Activate the auxiliary hydraulics for operating the rake chain, (If the rake chain does not move but the hydraulic cylinder begins to retract, then activate the auxiliary hydraulics in the opposite direction to get the rake chain to operate.)
2. Lower the 3 point link arms completely.
3. Tilt this product backward by extending the upper link cylinder until the weight of the rake portion is resting on the depth adjustment plates, and
4. Move your tractor slowly forward.

AUTORAKE[®] OPERATION

To achieve the best possible results, please keep in mind that:

- If the rake is throwing too much soil into the bucket, then the depth adjustment plates should be placed in a lower hole on the main housing.
- If the rake is slipping over items that should be collected, then the depth adjustment plates should be placed in a higher hole on the main housing.
- Multiple passes may be needed to achieve the desired results depending on what those results are and what the initial conditions are.
- The wide variety of soil types, moisture conditions, compaction levels, foliage densities, and rock and debris quantities that can be encountered mean that the operator may need to make adjustments based upon the operator's experience.

IMPORTANT Opening the main housing and using the bucket for standard bucket operations **CAN** result in damage to this product and **WILL** void all FFC warranties.

DUMPING

1. Shut off the auxiliary hydraulics.
2. Move to the dump site and park on firm, level ground.
3. Activate the auxiliary hydraulics in the direction opposite of what was used to operate the rake chain. This will retract the hydraulic cylinder and open the main housing.
4. Raise this product about four feet above the ground.
5. Dump the bucket and reverse the process so that you are ready to resume raking.

AUTORAKE[®] MAINTENANCE

GENERAL INFORMATION

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

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. Replace the rake chain when the raking action has been reduced to an inefficient level.

AFTER EVERY 10 HOURS OF USE

- Grease 11 fittings: one on each of the six bearings (one on each end of the two idler shafts and one on each end of the drive shaft), two on each of the two swing arms where the main housing pivots on the bucket, and one on the barrel end of the hydraulic cylinder.

AFTER EVERY 30 HOURS OF USE

- Check the drive chain and the rake chain tension and adjust if necessary.
(See AUTORAKE[®] SERVICE page)
 - The proper tension on the drive chain results in the longest run of chain having a .38" to .5" midpoint deflection.
 - The proper tension on the rake chain results in the top run of chain (i.e. from the front idler shaft to the drive shaft) having a .75" to 1" midpoint deflection. (Note: For this chain, the combined up and down midpoint deflection of 1.5" to 2" may be easier to measure.)
- Check the rake chain travel to make sure that the chain is centered on the idlers. Adjust the front idler if centering is necessary.

AFTER EVERY 250 HOURS OF USE

- Check the drive chain, the drive and driven sprockets, the drive shaft, and the idler shafts for excessive wear and replace if necessary.

IMPORTANT Using heat to straighten bent rake chain teeth
CAN result in damage to this product and
WILL void all FFC warranties.

- Check for bent rake chain teeth and cold straighten those teeth.

BEFORE EXTENDED STORAGE (More than 2 month)

- Oil the drive chain and all 3 rake chains.

AUTORAKE[®] SERVICE

IMPORTANT When replacing parts use only factory approved replacement parts. Manufacturer will not claim responsibility for use of unapproved parts or accessories and/or other damages as a result of their use.

1. Park your prime mover on a level surface with this product properly attached.
2. Place your prime mover's transmission in "Park" and engage the parking brake.
3. Lower this product onto a level surface.
4. Shut off your prime mover's engine, remove the starter key, wait for all moving parts to come to a stop, and relieve all pressure in the hydraulic lines.

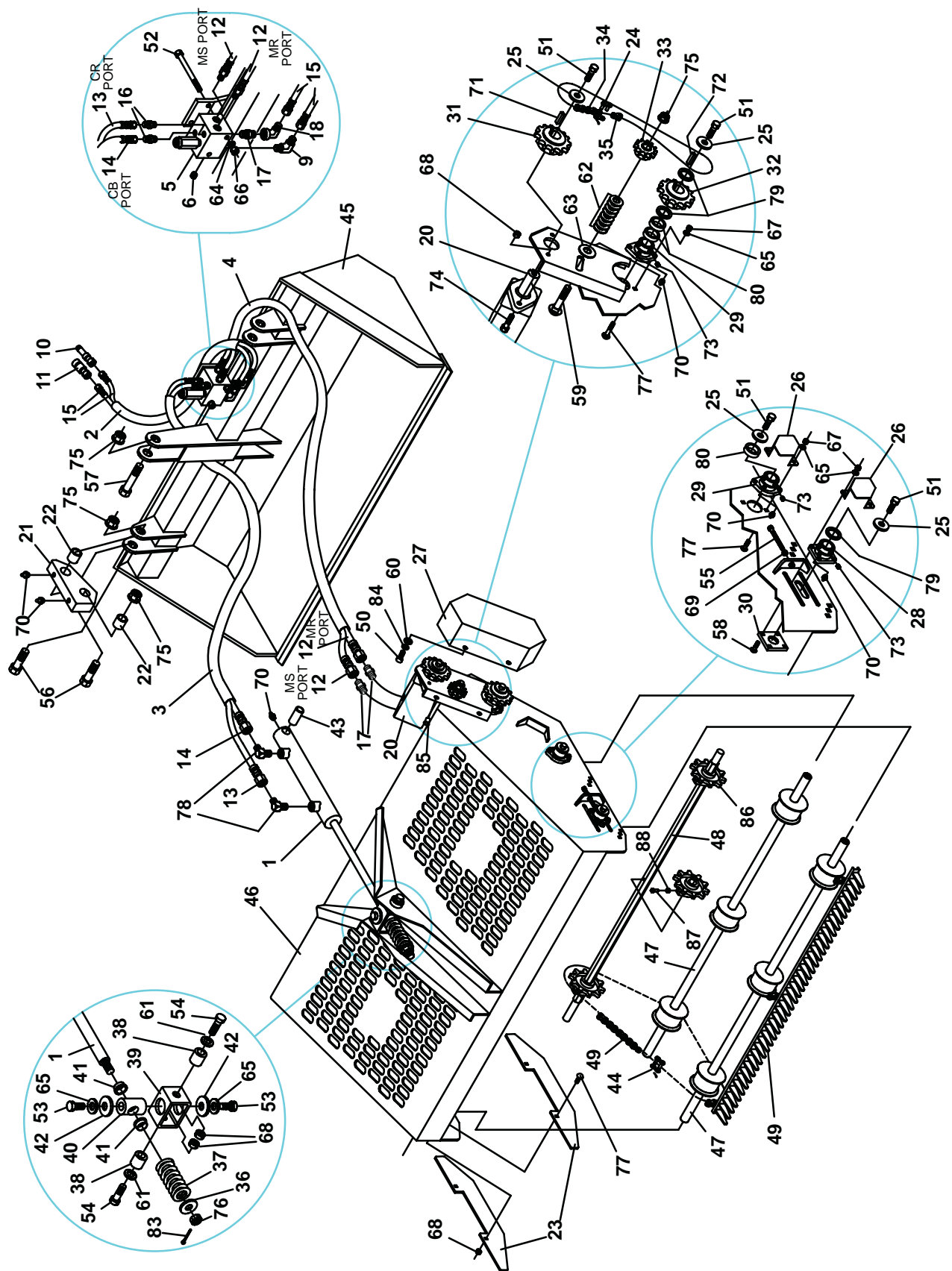
DRIVE CHAIN ADJUSTMENT

5. Remove four bolts from the drive chain shield. (Two from the top-front face and two from the bottom-rear face.)
6. Remove the shield by pulling straight out to the left.
7. Loosen the nut on the idler sprocket and push the sprocket toward the chain until the opposite chain run (i.e. the longest) has a midpoint deflection of .38" to .5".
8. Retighten the idler sprocket nut to 304 ft. lbs., + or - 22 ft. lbs.
9. Recheck the chain deflection and repeat steps 7 and 8 if the deflection is not within the above specified range.
10. Replace the drive chain shield and bolts. Tighten the bolts to 20 ft. lbs., + or - 2.0 ft. lbs.

RAKE CHAIN ADJUSTMENT

5. Loosen the four nuts that secure the bearing on one end of the front idler shaft. Repeat this process for the other end of the front idler shaft.
6. For each of the two front idler shaft bearings, loosen the jam nut on the .63" dia. x 6" long tightener bolt.
7. Tighten the tightener bolts until a midpoint deflection of .75" to 1" between the idler shaft and the drive shaft has been achieved for each of the roller chain portions of the rake chain. (By utilizing a tape measure and a long, slender hook device, the combined up and down midpoint deflection of 1.5" to 2" may be easier to measure.)
8. Retighten the four nuts on each of the two bearings to 84 ft. lbs., + or - 6.0 ft. lbs. and retighten the jam nut on the two tightener bolts to 169 ft. lbs., + or - 12 ft. lbs.
9. Recheck the chain deflection for compliance with the above specifications and check the chain travel to make sure that the chain is centered on the idlers. Repeat steps 5 to 8 until both the specified deflection and desired line of travel has been attained.

AUTORAKE® PARTS ILLUSTRATION

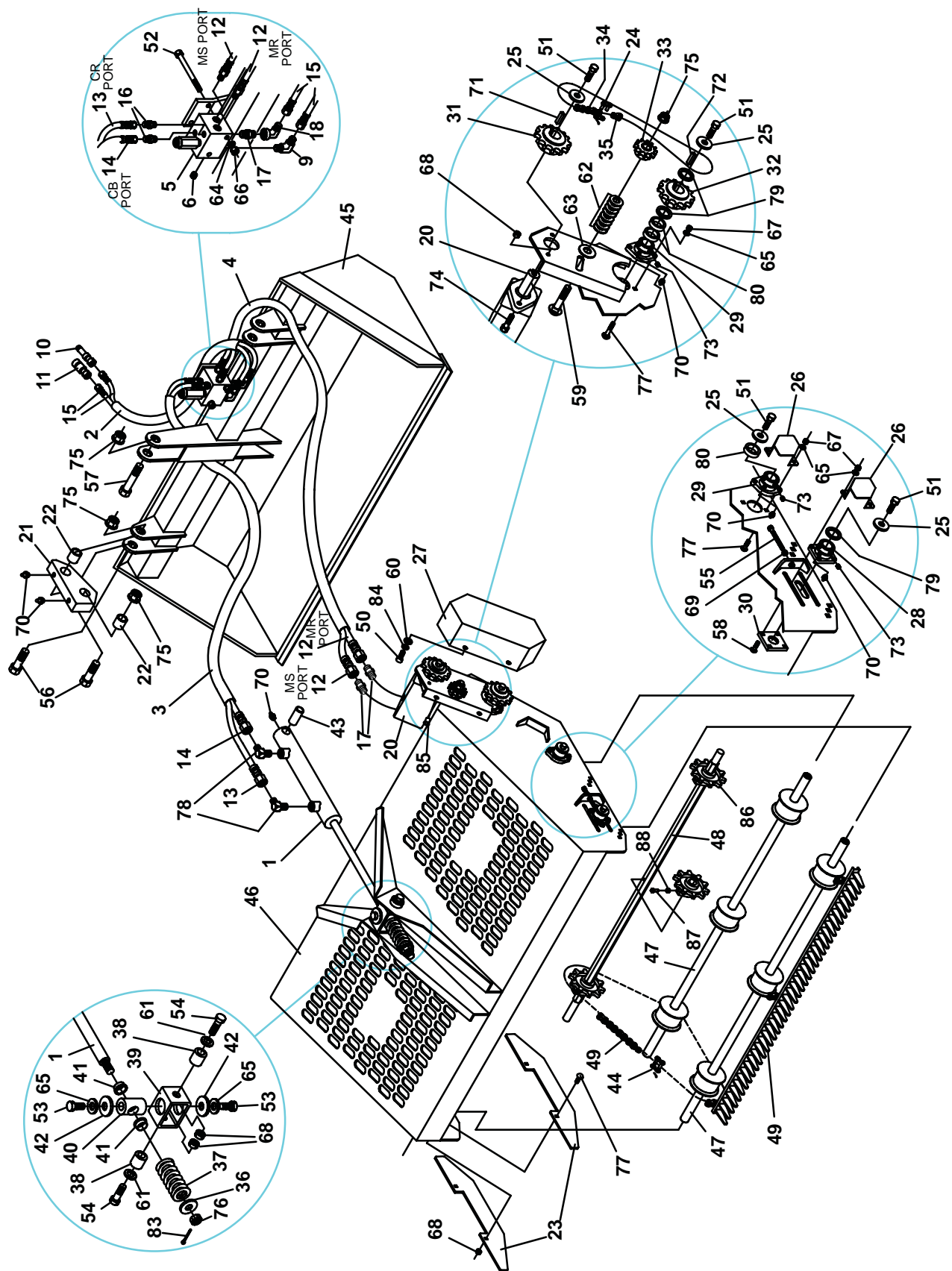


AUTORAKE® PARTS LIST

ITEM	QTY.	LAF6864 66"	LAF6874 76"	DESCRIPTION
1	1		LAF4216	Hydraulic Cylinder 2" x 8.5"
2	1		LAF4033	Hydraulic Hose Sheathing 1.88" x 72"
3	1		LAF4245	Hydraulic Hose Sheathing 1.88" x 34"
4	1		LAF4082	Hydraulic Hose Sheathing 1.88" x 26"
5	1		LAF4532	Hydraulic Block Assembly
6	2		LAF4252	Hydraulic Plug Allen Head 6MB
9	1		LAF4278	Hydraulic Elbow 90° 10MB-10MJ
*10	1		03-3860	Hydraulic Quick Coupler Male (and adapter if required)
*11	1		03-3859	Hydraulic Quick Coupler Female (and adapter if required)
12	2		LAF4360	Hydraulic Hose .5" x 30" 10FJ-10MB
13	1		LAF4307	Hydraulic Hose .38" x 44" 6FJ-6FJ
14	1		LAF4311	Hydraulic Hose .38" x 34" 6FJ-6FJ
15	2		LAF4514	Hydraulic Hose .5" x 93" 10FJ-10MB
16	2		03-2140	Hydraulic Adapter 6MB-6MJ
17	3		P276200	Hydraulic Adapter 10MB-10MJ
18	1		LAF4417	Hydraulic Elbow 90° 10FJ-10MJ
20	1		LAF4584	Hydraulic Motor
21	2		LAF6801	Swing Arm
22	4		LAF6802	Pivot Bushing
23	4		LAF6803	Rake Depth Guide
24	1		LAF3517	Connecting Link #80H
25	7		LAF6805	Washer
26	5		LAF6806	Shaft End Guard
27	1		LAF6807	Drive Chain Guard
28	2		LAF6808	Flange Mount Bearing 1.44" ID 4-Bolt
29	4		LAF6809	Flange Mount Bearing 1.44" ID 2-Bolt
30	2		LAF6810	Bearing Back Plate
31	1		LAF6811	Drive Sprocket 13 Tooth #80 with 1.25" Keyed Bore
32	1		LAF6812	Drive Sprocket 13 Tooth #80 with 1.44" Keyed Bore
33	1		LAF6813	Idler Sprocket 12 Tooth #80 with .75" ID Bearing
34	1		LAF6814	Roller Chain #80H 40"
35	2		LAF3518	Connecting Link #80H Offset
36	1		LAF9965	Sprocket Retainer
37	1		LAF6817	Spring 1.75" x 4" Coil Compression
38	2		LAF6818	Cylinder Rod Support Block Bushing
39	1		LAF6819	Cylinder Rod Support Block
40	1		LAF6820	Cylinder Rod Guide Tube
41	2		LAF6821	Cylinder Rod Wiper 1" ID

**NOTE: All parts are the same as the LAF6874 except for those parts numbered under the other models.
*ITEM may vary per Prime Mover -- Contact FFC for correct item.**

AUTORAKE® PARTS ILLUSTRATION



AUTORAKE® PARTS LIST

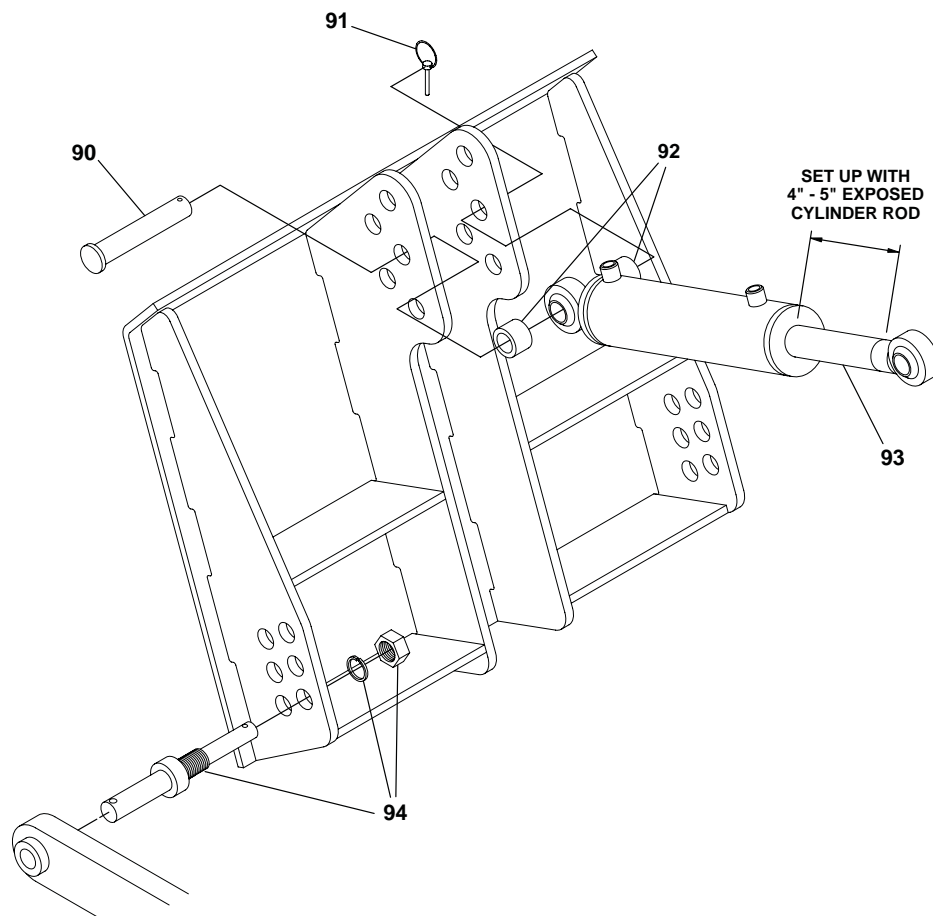
ITEM	QTY.	LAF6864 66"	LAF6874 76"	DESCRIPTION
42	2		LAF6822	Washer
43	1		LAF6823	Cylinder Cross Tube Sleeve
44	3		LAF6828	Connecting Link for CA550HD Chain
45	1	LAF6867	LAF6877	Bucket
46	1	LAF6868	LAF6878	Shroud
47	2	LAF6869	LAF6879	Idler Shaft
48	1	LAF6829	LAF6830	Drive Shaft
49	1	LAF6831	LAF6832	Rake Chain Weldment
50	4		RHW1105	Grade 5 Hex Head Cap Screw .31" x 1"
51	7		P100604	Grade 5 Hex Head Cap Screw .38" x 1"
52	2		RHW1218	Grade 5 Hex Head Cap Screw .38" x 3.75"
53	2		P100804	Grade 5 Hex Head Cap Screw .5" x 1"
54	2		RHW1406	Grade 5 Hex Head Cap Screw .5" x 1.75"
55	2		RHW1666	Grade 5 Hex Head Cap Screw .63" x 6" (full thread)
56	4		RHW1707	Grade 5 Hex Head Cap Screw .75" x 2.5"
57	1		RHW1715	Grade 5 Hex Head Cap Screw .75" x 5"
58	8		RHW2406	Grade 5 Carriage Bolt .5" x 1.75"
59	1		RHW2709	Grade 5 Carriage Bolt .75" x 3"
60	4		RHW5162	Grade 5 Flat Washer .31" USS
61	2		RHW5462	Grade 5 Flat Washer .5" USS
62	16		P850812	Grade 5 Flat Washer .75" SAE
63	1		RHW5932	Grade 5 Flat Washer 1" SAE
64	2		P851106	Grade 5 Lock Washer .38"
65	18		P851108	Grade 5 Lock Washer .5"
66	2		RHW7201	Grade 5 Hex Nut .38"
67	16		RHW7401	Grade 5 Hex Nut .5"
68	8		RHW7403	Grade 5 Lock Nut .5"
69	2		RHW7601	Grade 5 Lock Nut .63"
70	4		07-3112	Grease Zerk .25" self-tapping (28 tpi)
71	1		RHW8119	Square Key .31 x 1.5"
72	1		RHW8071	Square Key .38 x 1.5"
73	12		RHW8226	Set Screw .31" x .25" (24 tpi)
74	2		RHW8236	Socket Head Cap Screw .5" x 1.5" (13 tpi)
75	6		RHW8604	Grade 8 Lock Nut .75", Flange Top
76	1		RHW7606	Grade 5 Slotted Nut .63"
77	12		RHW2405	Grade 5 Carriage Bolt .5" x 1.5"
78	2		P261350	Hydraulic Elbow 6MB-6MJ
79	4		RHW5970	Machinery Bushing 2.25" OD x 1.5" ID 10 ga.

NOTE: All parts are the same as the LAF6874 except for those parts numbered under the other models.

AUTORAKE® PARTS LIST

ITEM	QTY.	LAF6864 66"	LAF6874 76"	DESCRIPTION
80	4		LAF9526	Spacer 1.88" OD x 1.5" ID 10 ga.
83	1		RHW8017	Grade 2 Cotter Pin .19" x 2"
84	4		P851105	Grade 5 Lock Washer .31"
85	4		RHW8642	Rivet Nut .31"
86	3		LAF6827	Hex Bore Sprocket
87	2		RHW2237	Square Head Set Screw .38" x 1"
88	2		RHW7205	Grade 5 Jam Nut .38"

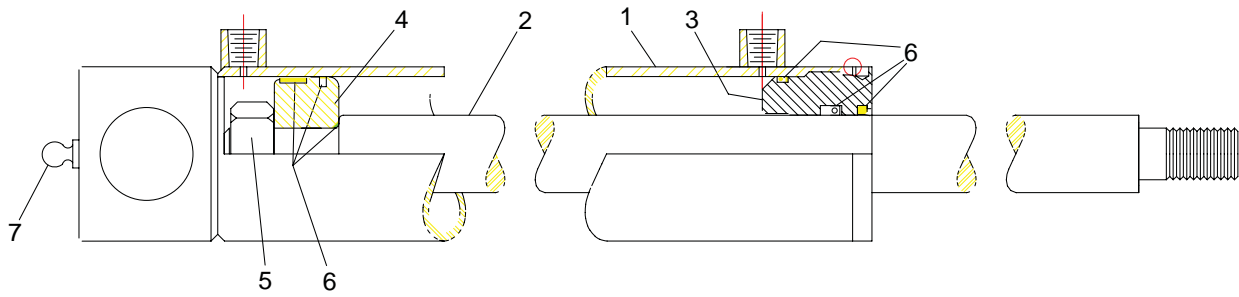
3 POINT HITCH MOUNTINGS PARTS ILLUSTRATION & LIST



90	1		RHW8048	Clevis Pin 1" x 6"
91	1		RHW8042	Lynch Pin .19" x 1.56"
92	2		ILA1032	Bushing
93	1		LAF4515	Hydraulic Cylinder 3" x 1.75"
94	2		RHW8401	Draw Pin Category 1 & 2

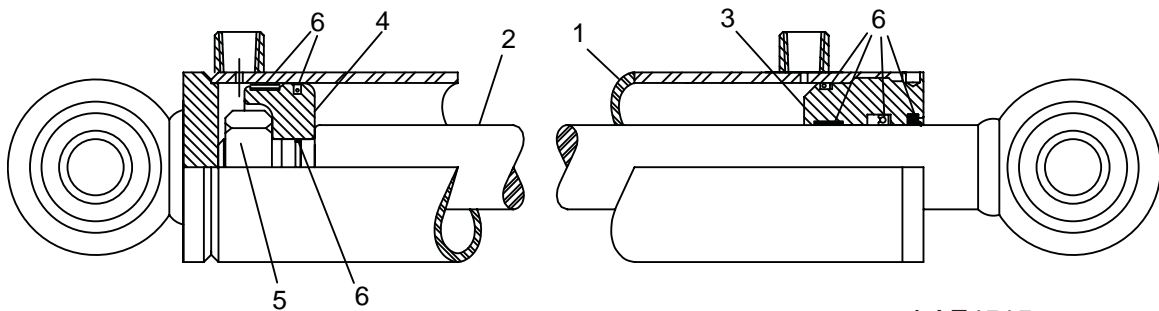
NOTE: All parts are the same as the LAF6874 except for those parts numbered under the other models.

HYDRAULIC CYLINDERS PARTS ILLUSTRATIONS & LISTS



LAF4216

ITEM	QTY.	LAF4216	DESCRIPTION
1	1	LAF4105	Barrel 2" x 8.5" Stroke with Internal Cross Tube End
2	1	LAF4106	Shaft 1" Dia. with Turned Down .63" - 18 Treaded End
3	1	LAF4107	Head 1" ID Nominal
4	1	LAF4108	Piston 2" OD .63" ID Nominal
5	1	RHW8605	Nut .63" 18 tpi.
6	1	LAF4109	Seal Kit (includes all seals, o-rings, etc.)
7	1	07-3112	Grease Zerk .25" self-tapping (28 tpi)



LAF4515

ITEM	QTY.	LAF4515	DESCRIPTION
1	1	LAF4688	Barrel 3" ID x 13" Stroke with Ball End
2	1	LAF4687	Shaft 1.75" Dia.
3	1	LAF4610	Head 1.75" ID Nominal
4	1	LAF4609	Piston 3" OD x 1.13" ID Nominal
5	1	LAF4608	Nut 1.13" 12 tpi. Top Lock
6	1	LAF4607	Seal Kit (includes all seals, o-rings, etc.)



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.


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)*

_____ All Decals installed (see operator's manual)	_____ Review Operating and Safety Instructions
_____ Hydraulic fittings tight and free of leaks	_____ Guards and covers in place and secure
_____ Fasteners tight	_____ 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.

Form MR00000-0000 Rev. 10/08

