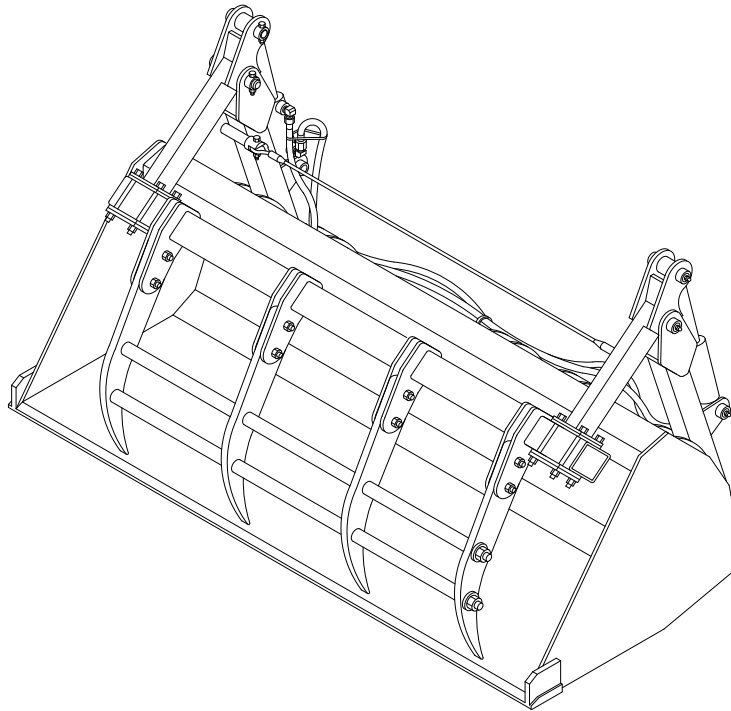




# OPERATOR'S AND PARTS MANUAL

## BALE GRAPPLE



SERIAL NUMBER: \_\_\_\_\_

MODEL NUMBER: \_\_\_\_\_

Manual Number: MR25607

Part Number: LAF2501

Rev. 3



# TABLE OF CONTENTS

PREFACE.....	3
OWNER AND OPERATOR SAFETY INFORMATION	
SAFETY STATEMENTS .....	4
SAFETY PRECAUTIONS .....	4-7
SAFETY SIGNS .....	8-9
SPECIFICATIONS .....	10-11
MOUNTING .....	12-14
HYDRAULIC CONNECTION .....	15
OPERATION .....	16
MAINTENANCE .....	17
PARTS ILLUSTRATION .....	18
PARTS LIST .....	19
HYDRAULIC CYLINDER PARTS ILLUSTRATION & LIST .....	20
WARRANTY .....	i



# PREFACE

## GENERAL INFORMATION

This product was carefully designed and manufactured to give you many years of dependable service. Only minor maintenance (such as cleaning and lubricating) is required to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and on any equipment on which the attachment is mounted.

**WARNING!** Never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual.



Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.

Unless noted otherwise, right and left sides are determined from the operator's control position when facing the attachment.

**NOTE:** The illustrations and data used in this manual were current (according to the information available to us) at the time of printing, however, we reserve the right to redesign and change the attachment as may be necessary without notification.

## BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer to obtain further assistance. Keep this manual available for reference. Provide the manual to any new owners and/or operator's

## SAFETY ALERT SYMBOL



This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working with you.

## SERVICE

Use only manufacturer replacement parts. Substitute parts may not meet the required standards.

Record the model and serial number of your unit on the cover of this manual. The parts department needs this information to insure that you receive the correct parts.

## SOUND AND VIBRATION

Sound pressure levels and vibration data for this attachment are influenced by many different parameters: some items are listed below (not inclusive):

- prime mover type, age, condition, with or without cab enclosure and configuration
- operator training, behavior, stress level
- job site organization, working material condition, environment

Based on the uncertainty of the prime move, operator, and job site, it is not possible to get precise machine and operator sound pressure levels or vibration levels for this attachment.

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

## SAFETY STATEMENTS



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 INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.



### **WARNING**

THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.



### **CAUTION**

THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE INJURY.

### **NOTICE**

NOTICE IS USED TO ADDRESS PRACTICES NOT RELATED TO PHYSICAL INJURY.

## 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 or 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 on blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

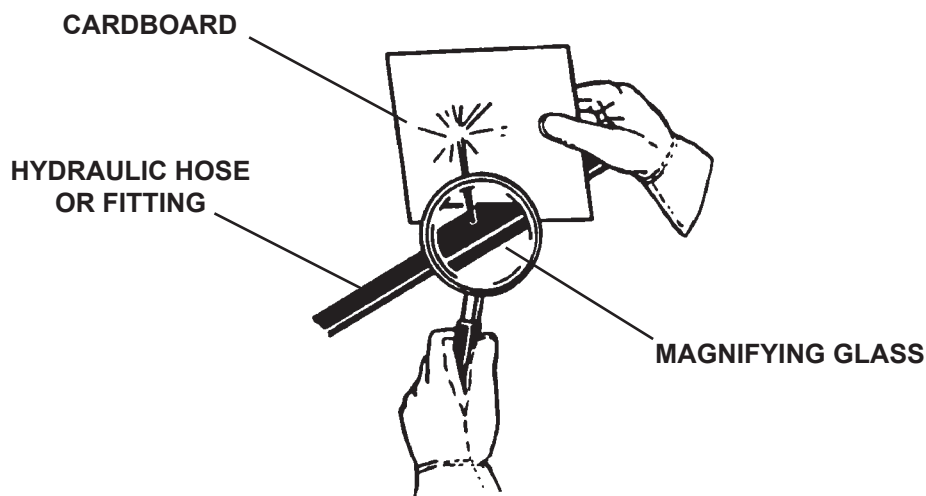
### WARNING!



#### 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 mover's 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 it immediately to determine proper treatment.
- Wear safety glasses, protective clothing, and use a 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 Protective 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 tools for the job at hand. Make sure they are in good condition for the task required.
- Wear the protective equipment specified by the tool manufacturer.



#### SAFELY OPERATE EQUIPMENT

Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your machine's manual for 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 operator's position.
- Never leave equipment unattended with the engine running, or with this attachment in a raised position.
- Do not alter or remove any safety feature from the prime mover or this attachment.
- Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.

### WARNING!



#### CALIFORNIA PROPOSITION 65 WARNING

This product may contain a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



## EQUIPMENT SAFETY PRECAUTIONS

### 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.

### WARNING!



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

It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause high levels of dust.

### WARNING!



#### REMOVE PAINT BEFORE WELDING OR HEATING

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

When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

### WARNING!



#### END OF LIFE DISPOSAL

At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all federal, state and local regulations for recycling and disposal of the fluid and components.

### CAUTION!

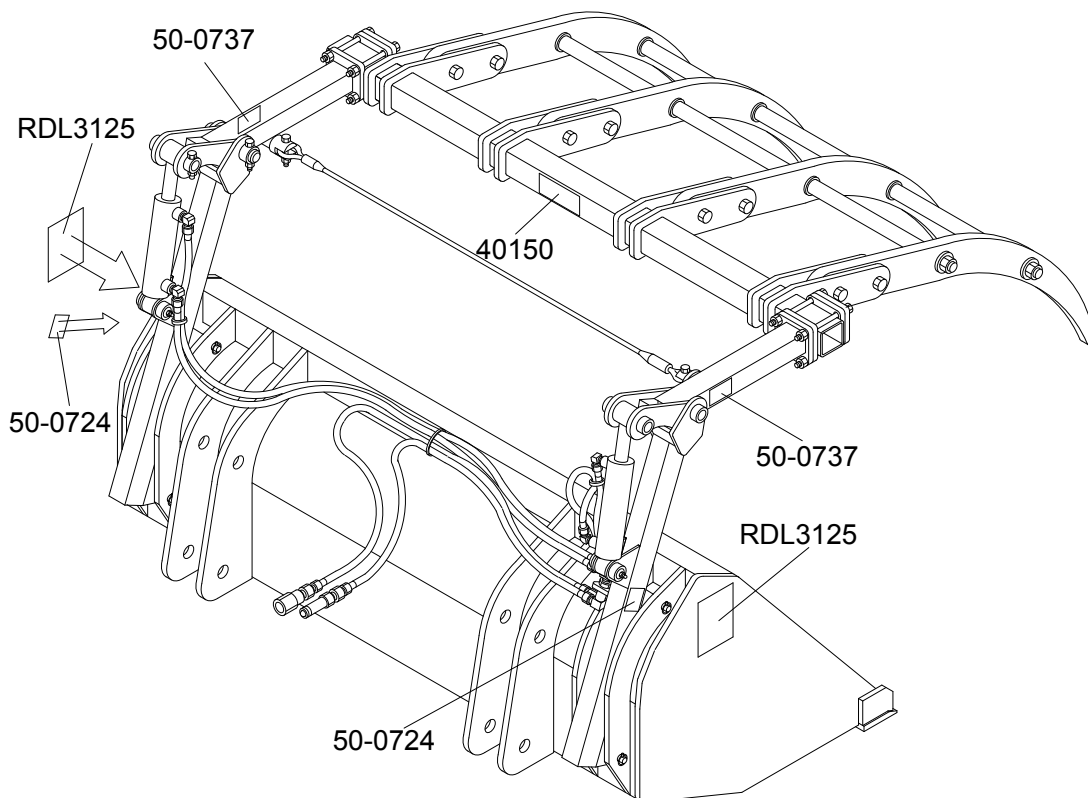


**Obey all the safety instructions listed in this section and throughout this manual. Failure to obey instructions in this section may result in personal injury.**

- Never leave the grapple open when this product is not in use.

## SAFETY SIGN LOCATIONS

The diagram on this page shows the location of the decals used of the FFC Bale Grapple. 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.



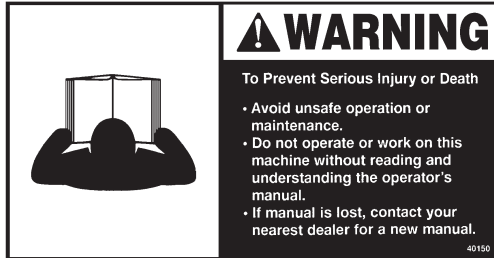
### INSTRUCTIONS

- 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 # 40150**  
**WARNING! READ MANUAL**



**PART # 50-0724**  
**WARNING! HIGH PRESSURE FLUID**



**PART # 50-0737**  
**WARNING! PINCH POINT**



**PART # RDL3125**  
**WARNING! CRUSH HAZARD**

## PRIME MOVER/LOADER SPECIFICATIONS

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

DESCRIPTION	SPECIFICATIONS
Hydraulic Pressure Output	4,000 psi. maximum
Rear Ballast	As required to maintain full prime mover stability. (Note the shipping weight of your model, then see the operator's manual(s) for your prime mover and loader, and quick attach for ballasting needs.)

## ATTACHMENT SPECIFICATIONS

Model Number	Overall Width	Overall Height		Overall Depth		Shipping Weight
		Open*	Closed*	Open	Closed	
LAF2501	67.69"	84.37"	56.25"	64.88"	47.69"	380 lbs.
All replacement hydraulic hoses and fittings must have a minimum rated working pressure of 4,000 psi.						
*NOTE: These dimensions are from the base of the bucket.						

# 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

# BALE GRAPPLE 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/loader thoroughly before beginning installation, operation, or maintenance. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVER'S MANUAL(S).**

1. This product can be mounted only on the following FFC Attachments buckets:

LAF2572	72" Heavy Duty Utility Bucket
LAF2584	84" Heavy Duty Utility Bucket
LAF2596	96" Heavy Duty Utility Bucket
LAF2508	108" Heavy Duty Utility Bucket

  - If you do not have one of these buckets, this product will not fit and you should contact your dealer.
  - If you have one of the above buckets, but your bucket does not have four extra ears on the back of the bucket for mounting this product, you will need to purchase and install a Bale Grapple Mounting Ears Kit (LAF2502) before proceeding with step 2 below. Contact your dealer to obtain this kit.
  - If you have one of the above buckets, but your bucket has a spill guard, you will not be able to pick up any round bale with a diameter greater than 5'. To lift bales with diameters greater than 5', the spill guard must be unbolted or cut off, depending on the age of the bucket.
2. Park your prime mover and 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.
3. Place your prime mover's transmission in "Park" and engage the parking brake.
4. Lower the loader bucket completely so that the floor of the bucket rests fully on the level surface.
5. 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.
6. Install the Left Mounting Tube (Item 11) between the left pair of Bale Grapple Mounting Ears and the Right Mounting Tube (Item 12) between the right pair of Bale Grapple Mounting Ears by securing each tube with two Mounting Tube Attachment Pins (Item 10). Secure each pin with two Lynch Pins (Item 28).
7. Place an Extension Tube (Item 17) in the top yolk of each Mounting Tube and secure with a (5.25" long) Connection Pin (Item 14). Be sure that the two cable securing yokes point toward one another after installation. Secure each of the two pins with a .25" Dia. x 2" Long Grade 8 Hex Head Cap Screw (Item 21) and a .25" Dia. Center Dent Locknut (Item 25) tightened to 12.4 ft. lbs. + or - 0.9 ft. lbs.
8. Slide a looped end of the Cable Assembly (Item 13) into the yolk of each Cable Anchoring Pin which is welded to each of the mounting tube. Secure each end of the cable with a .38" Dia. x 2" Long Grade 5 Hex Head Cap Screw (Item 22) and a .38" Dia. Center Dent Locknut (Item 26) tightened to 34 ft. lbs. + or - 2.0 ft. lbs.
9. Remove the two port plugs from each of the two Hydraulic Cylinders (Item 4). With the two hose connection ports pointed down over an appropriate container, fully extend the rod of each Hydraulic Cylinder, allowing the fluid inside each cylinder to flow into the container. This fluid should be recycled according the laws and regulations governing your particular area.

(Continued on the next page)

## BALE GRAPPLE MOUNTING

10. Install the two Hydraulic Cylinders with the barrel ends down, the rod ends up, and the hose connection ports rotated toward the center of the bucket. Secure the cylinders with the Hydraulic Cylinder / Mounting Tube Connection Pin (Item 19) (4.75" Long) and the Hydraulic Cylinder / Extension Tube Connection Pin (Item 20) (4.25" Long). Secure each of the two pins with a .25" Dia. x 2" Long Grade 8 Hex Head Cap Screw (Item 21) and a .25" Dia. Center Dent Locknut (Item 25) tightened to 12.4 ft. lbs. + or – 0.9 ft. lbs.
11. Partially install (3) Cross Tube Mounting Plates (Item 15) on each Extension Tube by placing (2) .5" Dia. x 5.5" Long Grade 8 Hex Head Cap Screws (Item 24) and (2) .5" SAE Grade 8 flat washers (Item 35) on one edge of each mounting plate. These bolts should also go through the lower two holes in the end plate of one Extension Tube and the outer two holes in the end plate of the other Extension Tube. Secure each bolt with a .5" SAE Grade 8 flat washer (Item 35) and a .5" top lock flanged Grade 8 nut (Item 34) installed finger tight plus a half turn. Slide the mounting plates away from the tube as far as the bolts will allow.
12. Carefully pick up the Cross Tube (Item 18) with the tooth lugs pointed away and down from the Extension Tube. Slide one end of the Cross Tube between the Cross Tube Mounting Plates with (1) mounting plate against the extension tube and where the bolts have been installed on the outer edge. With that end fully inserted, lay the other end of the Cross Tube between the other Cross Tube Mounting Plates, also with (1) mounting plate against the other extension tube and where the bolts have been installed on the lower edge. Securing that end with a third .5" Dia. x 5.5" Long Grade 8 Hex Head Cap Screw, (2) .5" SAE Grade 8 flat washers, and a .5" Dia. Locknut. Be sure to steady the Cross Tube in place while installing the third bolt so that the Cross Tube does not slide out of position and fall. Center the Cross Tube between the two Extension Tube, install the other three bolts, flat washers, and locknuts, and evenly tighten all eight locknuts a small amount at a time until a torque of 84 ft. lbs., + or – 6.0 ft. lbs., is attained.
13. Insert a Grapple Tooth (Item 16) between each pair of the tooth lugs on the Cross Tube and secure the rear of each tooth with a .5" Dia. x 2" Long Grade 5 Hex Head Cap Screw (Item 23) and a .5" Dia. Center Dent Locknut (Item 27) finger tightened. Pull up on the Cross Tube enough to permit the second bolt to be installed in each tooth. Tighten all eight locknuts to 84 ft. lbs., + or – 6.0 ft. lbs.

**NOTE: If your loader's auxiliary hydraulics are on the left loader arm, reverse the left/right instructions below.**

14. Install (2) .75" SAE Grade 8 flat washers (Item 33) and (1) Grapple spacer (Item 32) between each grapple tooth, while inserting a stiffener rod (Item 36) through the upper holes in the grapple teeth. Repeat this process for the lower holes. Install (1) .75" SAE Grade 8 flat washer and (1) .75" top lock Grade 8 flange nut (Item 31) on each end of both stiffener rods. Tighten each rod's nuts to 300 ft. lbs. +/- 10 ft. lbs. making sure that the thread of the rods extend outside of each nut.
15. Install the four 90° Male-Male Hydraulic Elbows (Item 6) on the Hydraulic Cylinder ports. Three of the elbows should be installed with the leg of the elbow pointed down toward the base of the cylinder barrel. The fourth elbow (i.e. the elbow on the lower port of the right cylinder) should be installed with the leg pointed up toward the top of the cylinder rod. For each elbow: (1) Insert the O-ring end of the elbow into a port and fully tighten the elbow. (2) Back the elbow off until the leg of the elbow points the correct direction. (3) Tighten the captive jamb nut to 27 ft. lbs., + or - 2.0 ft. lbs. to hold the elbow in position.

(Continued on the next page)



## BALE GRAPPLE MOUNTING

16. Insert the long legs of the two Hydraulic Bulkhead Run Tees (Item 5) down through the two holes in the plate on the inside of the Right Mounting Tube. Point the horizontal legs of the tees directly toward the other mounting tube so that those legs are parallel with the back of your bucket. Rotate the horizontal legs 30° toward the bucket and secure the tees in that position by installing the two Hydraulic Jamb Nuts (Item 3) on the long legs underneath the mounting tube plate and tightening to 27 ft. lbs., + or - 2.0 ft. lbs.
17. Install the two 90° Female-Male Hydraulic Elbows (Item 2) on the long legs of the Hydraulic Bulkhead Run Tees, just below the jamb nuts. The male legs of each elbow should be rotated so that exact alignment (i.e. 30° angle) is achieved with the horizontal leg of the tee above. Tighten the elbow to 27 ft. lbs., + or - 2.0 ft. lbs.
18. Install the Hydraulic Orifice (Item 7) on the male leg of the rear 90° Female-Male Hydraulic Elbow. Tighten the orifice to 27 ft. lbs., + or - 2.0 ft. lbs.
19. Install the two 1'-6" Hydraulic Hoses (Item 8): one between the top elbow on the right Hydraulic Cylinder and the vertical leg of the front Hydraulic Bulkhead Run Tee and the other between the bottom elbow on the right Hydraulic Cylinder and the vertical leg of the rear Hydraulic Bulkhead Run Tee. Tighten all four fittings to 27 ft. lbs., +/- 2.0 ft. lbs.
20. Install the 6'-0" Hydraulic Hose (Item 1) between the top elbow on the left Hydraulic Cylinder and the horizontal leg of the front Hydraulic Bulkhead Run Tee. Tighten both fittings to 27 ft. lbs., + or - 2.0 ft. lbs.
21. Install the 5'-3" Hydraulic Hose (Item 9) between the bottom elbow on the left Hydraulic Cylinder and the horizontal leg of the rear Hydraulic Bulkhead Run Tee. Tighten both fittings to 27 ft. lbs., + or - 2.0 ft. lbs.
22. Install and snug up a Nylon Cable Tie (Item 30) around the two Left Hydraulic Cylinder hoses just below the lower Male-Male Hydraulic Elbow.
23. Install and snug up another Nylon Cable Tie around the two Right Hydraulic Cylinder hoses just above the lower Male-Male Hydraulic Elbow. Note this will result in the rear hose being held twice in an inverted "J" shape by the tie.
24. The remaining Nylon Cable Tie will be installed as a part of the BALE GRAPPLE HYDRAULIC CONNECTION.
25. Carefully raise the loader and cycle the tilt cylinders to check clearances and to verify that all mounting procedures have been successfully completed. Make sure that no portion of this product makes any contact with your loader arms or dump cylinders. If such a problem is encountered, stop the setup procedure immediately and contact FFC before proceeding further.

### IMPORTANT

Lubricate all grease fittings before connecting this product to your prime mover's hydraulic system.  
Refer to BALE GRAPPLE MAINTENANCE and follow the instructions.



# HYDRAULIC CONNECTION



## READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals before beginning any Bale Grapple 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.

1. You must purchase and install two hydraulic hoses that have fittings permanently attached to each end. These hoses and fittings must meet the following specifications: (NOTE: If your Bale Grapple was supplied with hoses, skip to step 4.)
  - Inside Diameter:..... 0.38"
  - Minimum Operating Pressure:..... 4,000 psi.
  - Hose End Fittings:..... One hose end must be a #6 female JIC fitting. The fitting for the other end can be whatever you determine to be the most beneficial to making the connection to your prime mover.
  - Length:..... You must make this determination based upon recommendations provided in your prime mover's operator's manual. The hoses must be long enough to avoid applying any tension to them (i.e. stretching) in all operating positions of this product. The hoses must not be excessively long either, because this could cause the hoses to drag on the ground, be pinched in the equipment, become entangled in moving parts, etc., any of which will shorten the life of the hose and could cause injury to the operator or others near the equipment. Keep in mind step 5 below when determining the correct length.
2. Remove all the protective plastic caps from the hose ends and this product's connection fittings.
3. Make certain that the male and female threads, as well as the inside of the hoses, are clean, then place the #6 hose ends on/in to the fittings on this product and tighten to 27 ft. lbs., + or - 2.0 ft. lbs. (#6 is .56" dia. with 18 tpi.)
4. Make the connection to your prime mover using the appropriate method below for your prime mover:
  - If your prime mover has female threads for connecting the hydraulic hoses to the valve body, make certain that you have all necessary adapters and the male and female threads, as well as the inside of the hoses and possibly fittings, are clean. Insert the male O-ring ends of the hoses or fittings into the threaded valve body and tighten as per the recommendations in your prime mover's owner's manual.
  - If your prime mover uses quick-couplers for connecting the hydraulic hoses to the valve body, you must purchase the proper male quick-coupler fittings that you must install on the free ends of the two hoses. In most cases, the owner's manual for your prime mover will describe the exact type of fitting that is needed for your hydraulic coupling system, but in no case should any fitting have an allowable operating pressure of less than 4,000 psi. These male fittings, or adapters for these fittings, must have threads that match the hose ends you specified above. Once all the quick-coupler fittings are properly installed and tightened to manufacturer's specifications, then the hoses can be coupled to the prime mover's hydraulic valve body as per the instructions found in your prime mover's operator's manual.
5. Install and snug up a Nylon Cable Tie (Item 30) around these two hoses and the two longer hoses previously installed. The tie should be just on the bucket-center side of the loader's nearest dump cylinder to keep the hoses from being damaged by the dump cylinder movement. (For center dump loaders, the tie should be just on the bucket-center side of the nearest loader arm.)
6. Carefully raise the loader and cycle the tilt cylinders to check hose clearances and to check for any interference. Operate the hydraulic cylinder(s) on this product to make the same checks.
7. 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. 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.*

# BALE GRAPPLE OPERATION



**SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS BEFORE BEGINNING ANY BALE GRAPPLE OPERATION**

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



- **THE GRAPPLE MOVES QUICKLY! Do not allow anyone near the grapple.**
- **Never get between the grapple and the bucket.**
- **Do not lift any load that is taller than the height of the fully opened grapple.**
- **Do not roll back this product so far that the load falls toward the operator.**

## **POSITIONING THE LOAD**

1. Approach the load so that the weight will be centered on the bucket. If the load has a heavy side, then that side should be closest to the back of the bucket rather than near the tip of the bucket edge.

**NOTICE** *When transporting large round bales, approaching the bale from a rounded side while the bale is resting on the rounded side will produce the greatest bale stability.*

**IMPORTANT** Using the partially open grapple as a rake  
**CAN result in damage to this product and**  
**WILL void all FFC Attachments warranties.**

If the grapple is ever used as a rake to drag materials into a position for being picked up, **the grapple must be completely open.** Applying a raking-type force to the partially open grapple will greatly magnify the fluid pressure in the hydraulic hoses, fittings, and cylinders and may cause those components to fail.

2. Make certain that the bucket is under the load as far as possible and is level.
3. Close the grapple to the fullest extent possible.
4. Lift the load slightly and make sure that the load is secure. If the load appears to be unstable, lower the load, open the grapple, reposition the load to achieve full stability, and repeat steps 2 through 4 until full stability is achieved.

## **TRANSPORTING THE LOAD**

1. Raise the load to the minimum height required for the surfaces that must be crossed with the load.
2. Operate your prime mover so that:
  - the load always remains level,
  - accelerating, turning, and braking are done very gradually,
  - and any obstacles, bumps, or holes in your intended path are avoided.
3. Frequently check the load to make sure that the load has not become unstable.

**CAUTION!** Failure to obey the following procedures may result in personal injury.



- **Never leave the grapple open when this product is not in use.**

# MAINTENANCE



## 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.

## BEFORE EACH USE

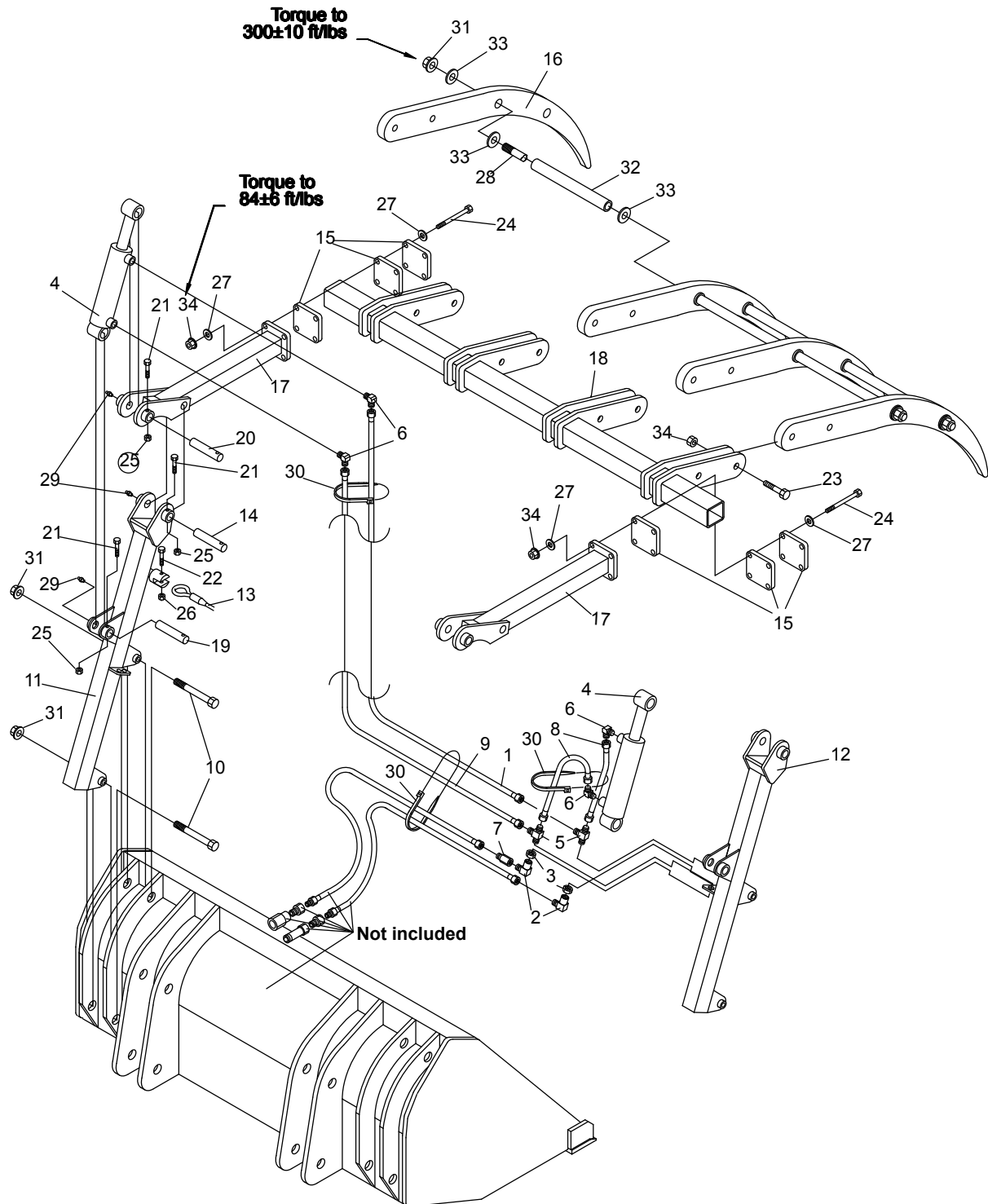
- Make sure that all nuts and bolts are in place and properly tightened.
- Make sure that all other fasteners are in place and are performing their specified function.
- Make sure that all hydraulic fittings are tightened and that there are no leaks in any fittings or hoses.
- Make sure that all safety signs are in place, are clean, and are legible.
- Replace any damaged parts and excessively worn parts.

## AFTER EVERY 10 HOURS OF USE

- Grease 6 fittings: one on the end of each of the four hydraulic cylinder pins and one on the end of each of the two cable anchoring connection pins.

**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.

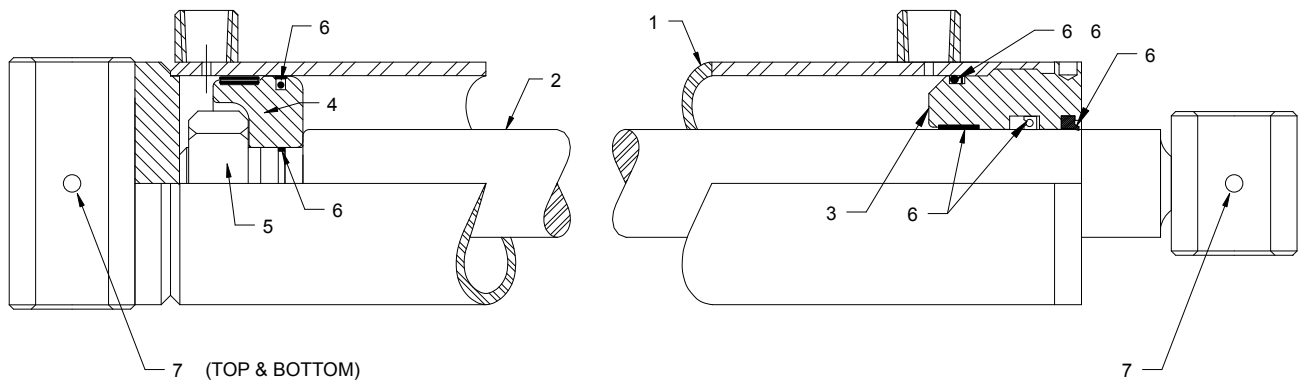
# BALE GRAPPLE PARTS ILLUSTRATION



## BALE GRAPPLE PARTS LIST

ITEM	QTY.	LAF2501	DESCRIPTION
1	1	37781	Hose .38" x 73" 6FJX-6FJX
2	2	3430	Elbow 90° 6MJ-6FJX
3	2	3217	Jam Nut 6J .56"-18
4	2	LAF4605	Hydraulic Cylinder 2" x 1.25" x 8" Parallel 4000-psi (Cylinder Seal Kit = LAF4617)
5	2	30379	Tee Bulkhead Run 6MJ-6MJ-6MJ
6	4	3434	Elbow 90° 6MBO-6MJ
7	1	30383	Connector Straight 6MJ-6FJ
8	2	38516	Hose .38" x 18.88" 6FJX-6FJX
9	1	37887	Hose .38" x 64" 6FJX-6FJX
10	4	2005950	Hex Capscrew .75" x 6" Grade 8
11	1	LAF9586	Left Mounting Tube
12	1	LAF9587	Right Mounting Tube
13	1	LAF9605	Cable Assembly
14	2	LAF9811	Pin 1" x 5.25" Greasable
15	6	LAF9866	Cross Tube Mounting Plate
16	4	LAF9867	Grapple Tooth
17	2	LAF9873	Extension Tube
18	1	LAF9874	Cross Tube
19	2	LAF9978	Pin 1" x 4.75" Greasable
20	2	LAF9979	Pin 1" x 4.25" Greasable
21	6	RHW1041	Hex Capscrew .25" x 2" Grade 8
22	2	1047	Hex Capscrew .38" x 2" Grade 5
23	8	1092	Hex Capscrew .5" x 2" Grade 5
24	8	1984	Hex Capscrew .5" x 5.5" Grade 8
25	6	1629	Lock Nut .25" Grade 5
26	2	1837	Lock Nut .38" Grade 5
27	16	1646	Flat Washer .5" Hardened SAE Grade 8
28	2	LAF9570	Stiffener Rod
29	6	6616	Grease Zerk .25" 28-tpi self-tapping
30	3	7104	Tie Strap .3 x 15.25" Plastic
31	8	RHW8604	Lock Nut Flange Top .75" Grade 8
32	6	LAF9569	Grapple Spacer Sleeve
33	20	1649	Flat Washer .75" Hardened SAE Grade 8
34	16	RHW8601	Lock Nut Flange Top .5" Grade 8

## HYDRAULIC CYLINDERS PARTS ILLUSTRATIONS & LISTS



ITEM #	QTY.	LAF4605	DESCRIPTION
1	1	LAF4621	Barrel 2" ID x 8" Stroke with Cross Tube End and Ports Parallel to Cross Tube
2	1	LAF4620	Shaft 1.25" Dia. with Cross Tube End
3	1	LAF4619	Head 2" OD x 1.25" ID Nominal
4	1	LAF4618	Piston 2" OD x .75" ID Nominal
5	1	LAF4129	Nut .75" Dia. 16-tpi Grade 8
6	1	LAF4617	Seal Kit (Includes all Seals, O-rings, etc.)
7	3	6616	Grease Zerk 1/4" 28 tpi Self-Tapping

## LIMITED WARRANTY

In order to provide you with the most UP-TO-DATE Warranty information, Paladin Warranty Statement and Warranty Procedures along with Warranty Registration and Claim Forms have been moved to our website at [www.paladinattachments.com](http://www.paladinattachments.com).