



OPERATOR'S AND PARTS MANUAL

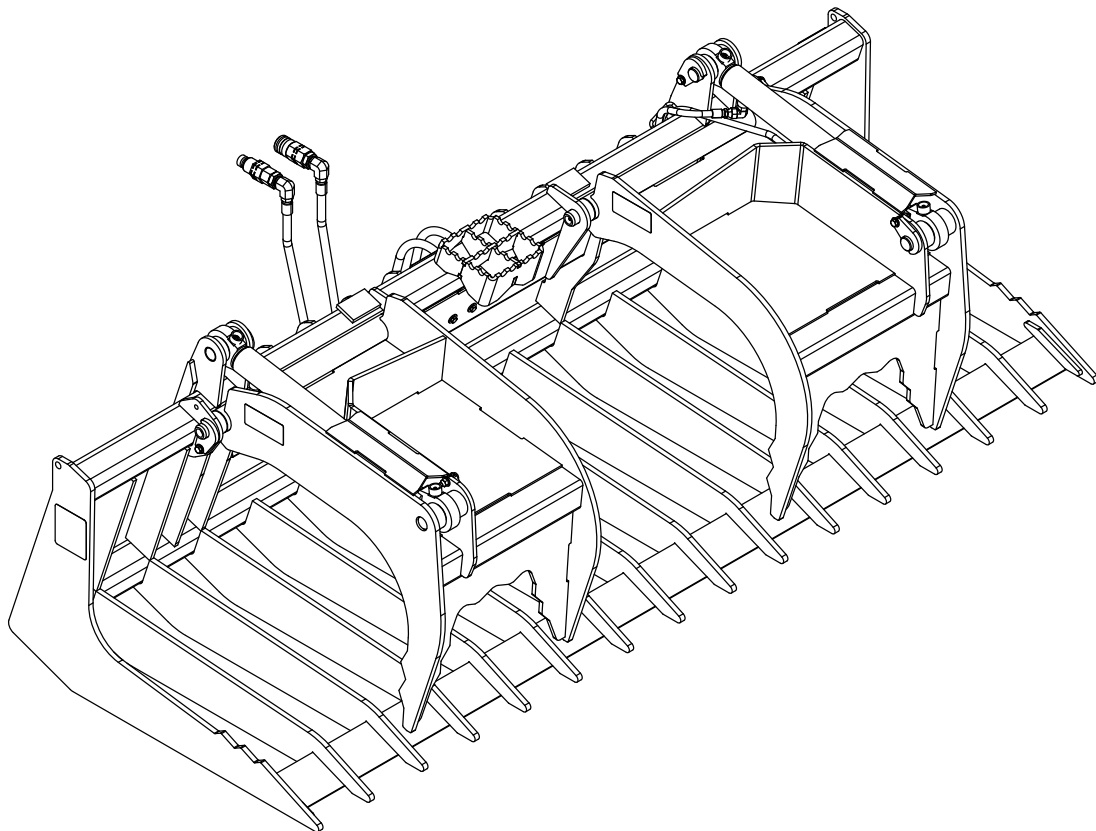
CONSTRUCTION & UTILITY GRADE BRUSH & SCRAP GRAPPLE BUCKETS



PALADIN
LIGHT CONSTRUCTION GROUP



The Power of Combined Excellence



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: 51-10026

Part Number: 11266 & 11272;

11372, 11378, 11384 & 11390;

11860, 11866 & 11872;

11876, 11882 & 11888

Rev. 2

TABLE OF CONTENTS

INTRODUCTION	3
GENERAL INFORMATION	3
SERIAL NUMBER	3
SAFETY PRECAUTIONS	
SAFETY STATEMENTS	4
GENERAL SAFETY PRECAUTIONS	4-6
EQUIPMENT SAFETY PRECAUTIONS	7
DECALS	
DECAL PLACEMENT	8
DECALS	9
SPECIFICATIONS	10-11
OPERATION	
OPERATING TIPS	12
INSTALLATION	13
REMOVING	14
STORAGE	15
MAINTENANCE	16-17
PARTS ILLUSTRATION	18, 20, 22 & 24
PARTS LISTS	
UTILITY BRUSH GRAPPLE	19
CONSTRUCTION BRUSH GRAPPLE	21
UTILITY SCRAP GRAPPLE	23
CONSTRUCTION SCRAP GRAPPLE	25
HYDRAULIC CYLINDER PARTS ILLUSTRATION AND LIST	26
WARRANTY	i

INTRODUCTION

Congratulations on your purchase of your new FFC product! This product has been designed and built solely for use in material handling. 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 models:

Construction Brush: 11372, 11378, 11384 and 11390.

Utility Brush: 11266 and 11272.

Construction Scrap: 11876, 11882 and 11888.

Utility Scrap: 11860, 11866 and 11872.

GENERAL INFORMATION

The purpose of this manual is to assist in assembling, mounting, operating, and maintaining your attachment. 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. See Safety Signs section for the location of the serial number plate for this product.

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



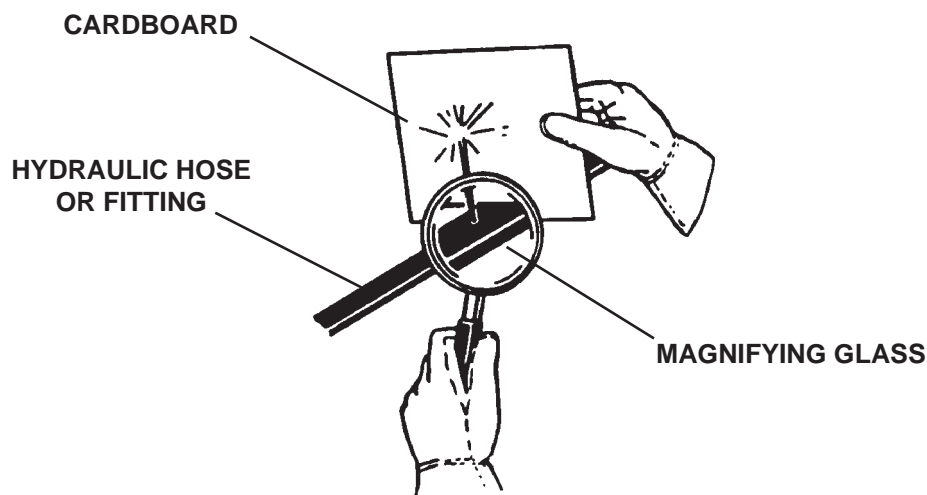
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground 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



OPERATING THE GRAPPLE BUCKET

- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- When operating on slopes, drive up and down, not across. Avoid steep hillside operation, which could cause the prime mover to overturn.
- Reduce speed when driving over rough terrain, on a slope, or turning, to avoid overturning the vehicle.
- An operator must not use drugs or alcohol, which can change his or her alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advice on whether or not he or she can safely operate equipment.
- Before exiting the prime mover, lower the attachment to the ground, turn off the primer mover's engine, remove the key and apply the brakes.
- Never heap or load heavy material where the combined weight of the bucket and material could exceed the rated lifting capacity of the loader.
- Be sure the load does not stick out too far in front of the bucket. A light load sticking out too far can have the same tipping effect as a heavy load carried in close.
- When using the grapple, 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 and reposition the load to attain full stability.



TRANSPORTING THE GRAPPLE BUCKET

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs etc., to prevent accidents. Check local government regulations that may affect you.
- Do not drive close to ditches, excavations, etc., cave in could result.
- Do not smoke when refueling the prime mover. Allow room in the gas tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.



MAINTAINING THE GRAPPLE BUCKET

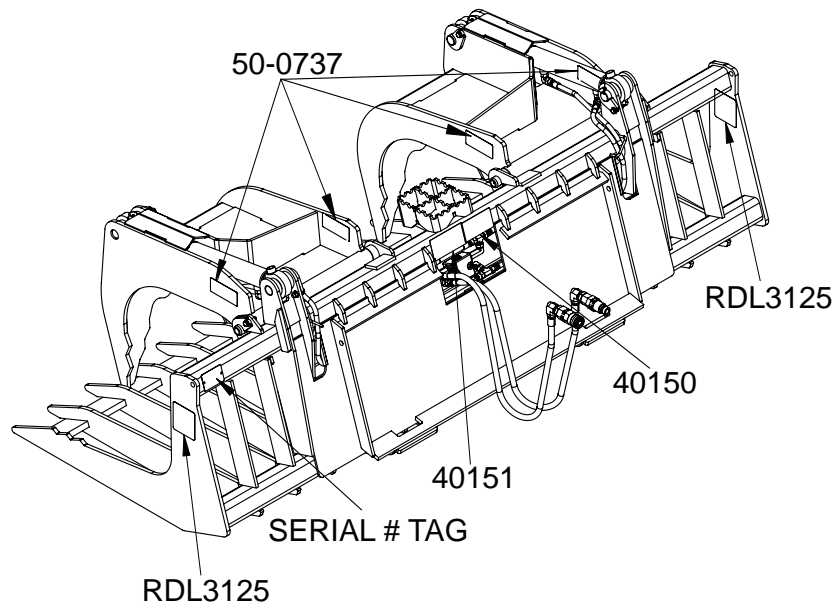
- Before performing maintenance, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manual's before any repair is made. After completing maintenance or repair, check for correct functioning of the attachment. If not functioning properly, always tag "DO NOT OPERATE" until all problems are corrected.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from FFC.
- Never make hydraulic repair while the system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.

DECALS

DECAL PLACEMENT

GENERAL INFORMATION

The diagram on this page shows the location of the decals used on the FFC Scrap Grapples and Brush Grapples. 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.



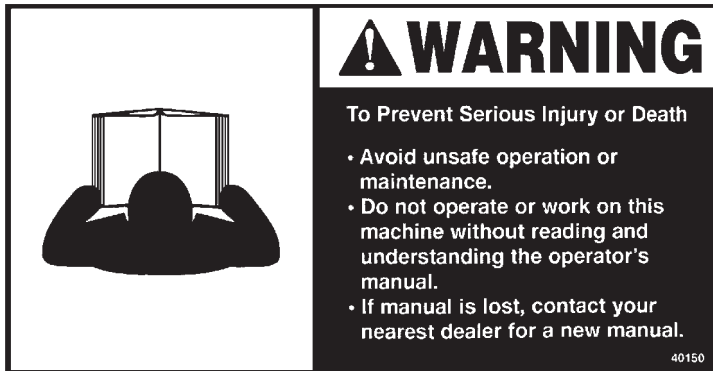
INSTRUCTIONS

- 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.

DECALS



PART #40150
WARNING! READ OPERATOR'S MANUAL



PART #40151
WARNING! HIGH PRESSURE FLUID



PART #50-0737
WARNING! PINCH POINT HAZARD



PART #RDL3125
WARNING! CRUSH HAZARD

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	
	CONSTRUCTION	UTILITY
BRUSH & SCRAP GRAPPLE BUCKETS		
Weight of Prime Mover without Grapple Bucket	20,000 lbs. maximum	8,000 lbs. maximum
Lift Capacity of Prime Mover's Loader	10,000 lbs. maximum	4,000 lbs. maximum
Operating Capacity of Prime Mover's Loader	5,000 lbs. maximum	1,800 lbs. maximum
Hydraulic Pressure Output	3,000 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 for ballasting needs.)	

ATTACHMENT SPECIFICATIONS

Model Number	Overall Width	Overall Height w/ Closed Grapples	Overall Depth w/ Univ Mounts	Weight
11266	66-3/4"	28-3/4"	35-1/2"	740#
11272	72-3/4"	28-3/4"	35-1/2"	775#
11372	73"	28-3/4"	38-1/2"	925#
11378	79"	28-3/4"	38-1/2"	999#
11384	85"	28-3/4"	38-1/2"	1054#
11390	91"	28-3/4"	38-1/2"	1105#
11860	60-3/4"	28-1/2"	35-5/16"	738#
11866	66-3/4"	28-1/2"	35-5/16"	788#
11872	72-3/4"	28-1/2"	35-5/16"	835#
11876	77"	28-7/8"	38-7/16"	1081#
11882	83"	28-7/8"	38-7/16"	1133#
11888	89"	28-7/8"	38-7/16"	1180#

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	<div style="text-align: center;"> <p>GRADE 2</p>  <p>GRADE 5</p>  <p>GRADE 8</p>  </div>
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	

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

OPERATION

OPERATING TIPS

Before each Use

Perform daily maintenance as indicated in the Maintenance Schedule.

Activate the attachment cylinder(s) with the prime mover at a slow idle. Check for hydraulic leaks or other problems and make corrections, if necessary, before using. See "Fittings/Hoses Inspection Guidelines" (pg. 16).

During Use

WARNING! Avoid serious injury.



- THE GRAPPLE MOVES QUICKLY! Do not allow anyone near the grapples.
- 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 off toward or on the operator.

Positioning the Load

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

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.

**NOTICE - Using the partially open grapple as a rake
CAN result in damage to this product and
WILL void all FFC warranties!**

Make certain that the bucket is completely under the load and make certain that the bucket floor is level.

Close the grapple to the fullest extent possible.

Lift the load slightly and make sure that the load is secure. If the load appears to be unstable, lower the load, reposition the load to achieve full stability, and repeat above steps until full stability is achieved.

Transporting the Load

WARNING! Avoid serious injury.



- Raise the load to the **minimum** height required for the terrain that must be crossed with the load.
- Operate the prime mover so that the load always remains level.
- Accelerate, turn, and brake gradually.
- Avoid any obstacles, bumps, or holes in your intended path.
- Frequently check the load to make sure that the load has not become unstable

OPERATION

GRAPPLE BUCKET INSTALLATION

Attachment to Prime Mover

WARNING! Improper attachment of the Grapple Bucket could result in injury or death. Do not operate this product until you have positive indication that the attachment is securely mounted.



1. Position the attachment on a level surface.
2. Enter the prime mover.
3. Fasten the safety restraints.
4. Start the engine.
5. Disengage the parking brake.
6. Follow the attaching procedure in the prime mover owners manual. Align the attachment mechanism with the mounting on the grapple bucket, attach to the prime mover.
7. Engage the parking brake and shut down the prime mover. Be sure to relieve pressure to the auxiliary hydraulic lines.
8. Unfasten safety restraints and exit the prime mover.
9. Ensure that the hydraulic quick couplers are clean. Connect hydraulic lines for the attachment to the prime mover. Twist the collar of the quick couplers one quarter of a turn in order to secure hydraulic connections. Purchase proper couplers and hoses, as needed, and attach to the prime mover per the manufacturer's instructions.
10. Carefully raise the loader and cycle the rollback/dump cylinders to check clearances, that limiting stops make proper contact and verify that all mounting procedures have been successfully completed. Contact FFC for instructions if the limiting stops do not contact properly.
11. 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.

12. While the loader arms are lowered, visually inspect the attachment mechanism to ensure that it is securely mounted.

OPERATION

REMOVING THE GRAPPLE BUCKET

WARNING! Serious injury or death may result from disengaging the attachment when the attachment is in an unstable position or carrying a load. Place the attachment in a stable position before disengaging.



CAUTION - Hoses for the attachment must be removed before the quick attach is disengaged. Pulling the attachment with the hoses could result in damage to the prime mover or the attachment.



1. Lower the attachment to the ground.
2. Engage the parking brake and shut down the prime mover. Be sure to relieve pressure to the auxiliary hydraulic lines.
3. Unfasten safety restraints and exit prime mover.
4. Disconnect the attachment hydraulic lines from the prime mover. Connect quick couplers together to keep clean.
5. Disengage attachment locking mechanism (mechanical type).
6. Enter prime mover, fasten safety restraints and start the prime mover.
7. Disengage attachment locking mechanism (hydraulic type).
8. Disengage the parking brake, and back away from the attachment.

OPERATION

STORAGE

1. Clean the unit thoroughly, removing all mud, dirt, and grease.
2. Inspect for visible signs of wear, breakage, or damage. Order any parts required, and make the necessary repairs to avoid delays when starting next season.
3. Tighten loose nuts, capscrews, and hydraulic connections.
4. Cap hydraulic couplers to protect against contaminants.
5. Touch up all unpainted surfaces with paint, to prevent rust.
6. Coat the exposed portions of the cylinder rod with grease.
7. Store the unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

MAINTENANCE

MAINTENANCE SCHEDULE

Procedure	Before each use	After each use	100 Hours	500 Hours	See Prime Mover Manual
Fittings/hoses, hydraulic - Check for leaks/tighten - Check for damage	✓				
Fittings, zerk - Grease (See Lubrication Points)	✓				
Oil, hydraulic (Prime Mover) - Check level	✓	See Below for Requirements.			
Hardware - Check for tightness	✓				

Oil Cleanliness Requirements

IMPORTANT - All hydraulic fluid shall be filtered before use in any FFC product to obtain the ISO cleanliness standard of 20/18/15. Unless explicitly specified otherwise.

Fittings/Hoses Inspection Guidelines

Stop the prime mover engine and release hydraulic pressure before servicing or adjusting hydraulic system.

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.

Do not bend high pressure lines. Do not strike high pressure lines. Do not install bent lines, bent tubes, or kinked hoses. Do not install damaged lines, damaged tubes, or damaged hoses.

Repair loose lines, loose tubes, and loose hoses. Repair damaged lines, damaged tubes, and damaged hoses. Leaks can cause fires. See your FFC dealer for repair or replacement parts.

Check lines, tubes, and hoses carefully. Do not use your hand to check for leaks. Use a board or cardboard to check for leaks. Tighten all connections to the recommended torque.

Replace the parts if any of the following conditions are present:

- The end fittings are damaged or leaking.
- The outer covering is chafed or cut.
- The reinforcing wire layer is exposed.
- The outer cover is ballooning locally.
- The hose is kinked or crushed.
- The hoses have been pulled or stretched.

Make sure that all clamps, guards, and shields are installed correctly.

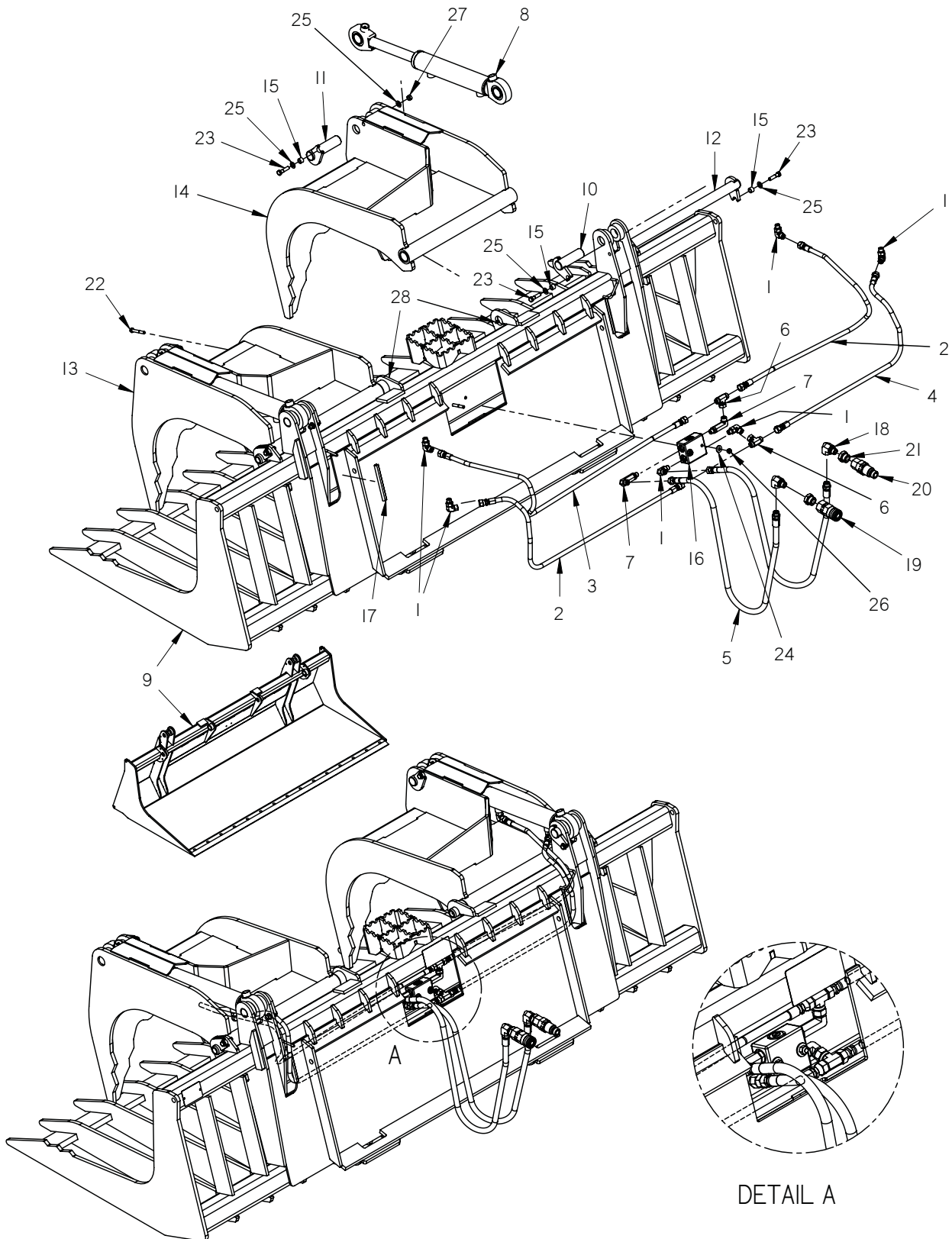
MAINTENANCE

MAINTENANCE RECORD

Use this log to record maintenance performed on the attachment.

Date	Maintenance Procedure Performed	Performed by	Comments

PARTS ILLUSTRATION



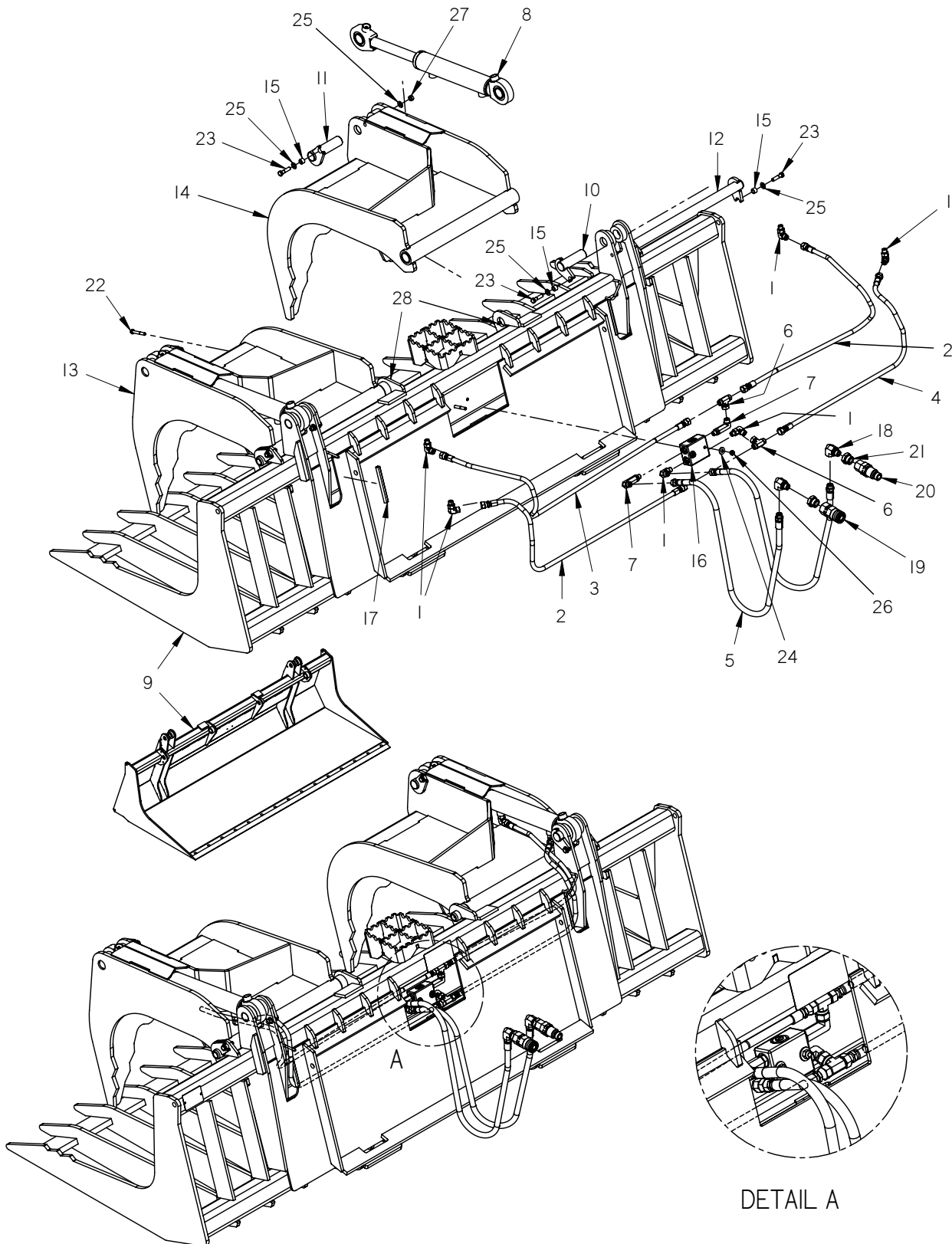
UTILITY BRUSH GRAPPLE PARTS LIST

ITEM	QTY	11266 66"	11272 72"	DESCRIPTION
1	6	30204		90° Elbow HP 6MFS 6MB
2	2	03-10107		Hose 1/4 x 44" 100R2 6FFS 6FFS Sheathed
3	1	03-10108		Hose 1/4 x 50" 100R2 6FFS 6FFS Sheathed
4	1	03-10109		Hose 1/4 x 36" 100R2 6FFS 6FFS Sheathed
*5	2	03-10110 <i>or</i> 03-10111 <i>or</i> 03-10027		Hose 3/8 x 59" 100R2 8MB 6FFS Sheathed <i>or</i> Hose 3/8 x 79" 100R2 8MB 6FFS Sheathed <i>or</i> Hose 3/8 x 87" 100R2 10MB 6FFS Sheathed
6	2	30381		Branch Tee HP 6MFS 6MFS 6FFS
7	2	30380		90° Elbow HP 6MFS 6MB Long
8	2	107865		Hydraulic Cylinder 2 x 8-1/2 x 1-1/4 3000psi
9	1	13-52452	13-52397	Frame Weldment Utility Brush Grapple
10	2	13-52369		Pivot Pin Weldment 3.47"
11	2	13-52370		Pivot Pin Weldment 4.47"
12	2	13-52371		Pivot Pin Weldment 23.19"
13	1	13-52380		Grapple Weldment Utility LH
14	1	13-52381		Grapple Weldment Utility RH
15	6	81595		Tube Rnd .62 x .385 x .44 YDC
16	1	88536		Valve Pilot Operated Double Check
17	2	34114		Hose Guard 5"
*18	2	30442 <i>or</i> 89665		90° Elbow 8MB 8FB <i>or</i> 90° Elbow 10MB 10FB (not required on all models)
*19	1	22518		Quick Coupler Hydraulic Female End 12FB
*20	1	19632		Quick Coupler Hydraulic Male End 12FB
*21	2	30377 <i>or</i> 30198		Adaptor 8FB 12MB <i>or</i> Adaptor 10FB 12MB (not required on all models)
22	2	1027		Screw Hex Cap 5/16-18 x 2-1/4 Gr5
23	6	1045		Screw Hex Cap 3/8-16 x 1-1/2 Gr5
24	4	1513		Washer Flat 5/16 Gr5 USS
25	12	1525		Washer Flat 3/8 Gr5 SAE
26	2	1934		Lock Nut Center Dent 5/16 Gr5
27	6	1837		Lock Nut Center Dent 3/8 Gr5
28	2	6616		Grease Zerk 1/4-28TPI Self-Tap

NOTE: All parts are the same as 11266 except for those parts numbered under 11272.

*ITEM may vary per Skid Steer -- Contact FFC for correct item.

PARTS ILLUSTRATION



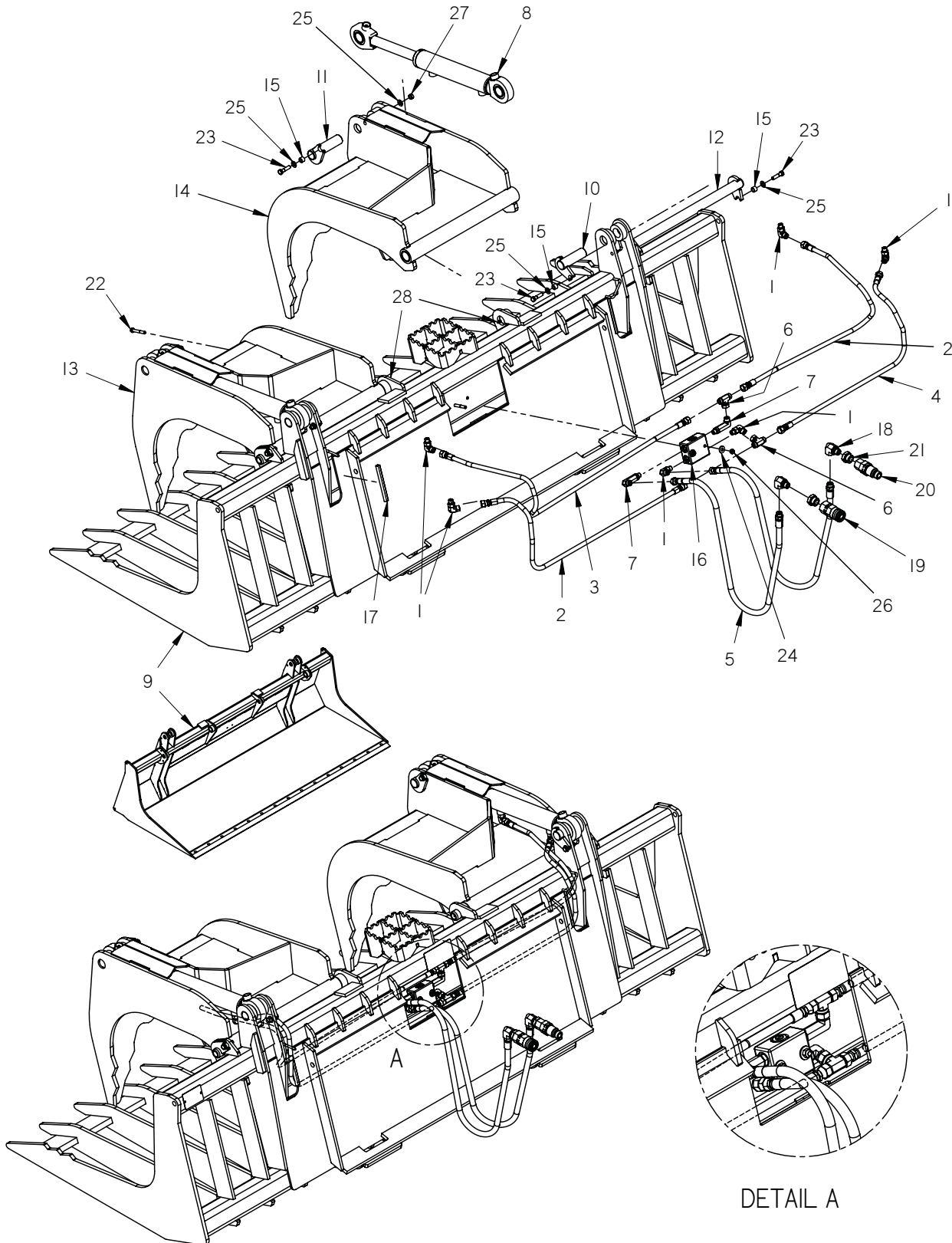
CONSTRUCTION BRUSH GRAPPLE PARTS LIST

ITEM	QTY	11372 72"	11378 78"	11384 84"	11390 90"	DESCRIPTION
1	6	30204				90° Elbow HP 6MFS 6MB
2	2	03-10107				Hose 1/4 x 44" 100R2 6FFS 6FFS
3	1	03-10108				Hose 1/4 x 50" 100R2 6FFS 6FFS
4	1	03-10109				Hose 1/4 x 36" 100R2 6FFS 6FFS
*5	2	03-10110 <i>or</i> 03-10111 <i>or</i> 03-10027				Hose 3/8 x 59" 100R2 8MB 6FFS <i>or</i> Hose 3/8 x 79" 100R2 8MB 6FFS <i>or</i> Hose 3/8 x 87" 100R2 10MB 6FFS
6	2	30381				Branch Tee HP 6MFS 6MFS 6FFS
7	2	30380				90° Elbow HP 6MFS 6MB Long
8	2	107865				Hydraulic Cylinder 2 x 8-1/2 x 1-1/4 3000psi
9	1	13-52451	13-52450	13-52449	13-52358	Frame Weldment Construction Brush Grapple
10	2	13-52369				Pivot Pin Weldment 3.47"
11	2	13-52370				Pivot Pin Weldment 4.47"
12	2	13-52371				Pivot Pin Weldment 23.19"
13	1	13-52376				Grapple Weldment Construction LH
14	1	13-52377				Grapple Weldment Construction RH
15	6	81595				Tube Rnd .62 x .385 x .44 YDC
16	1	88536				Valve Pilot Operated Double Check
17	2	34114				Hose Guard 5"
*18	2	30442 <i>or</i> 89665				90° Elbow 8MB 8FB <i>or</i> 90° Elbow 10MB 10FB (not required on all models)
*19	1	22518				Quick Coupler Hydraulic Female End 12FB
*20	1	19632				Quick Coupler Hydraulic Male End 12FB
*21	2	30377 <i>or</i> 30198				Adaptor 8FB 12MB <i>or</i> Adaptor 10FB 12MB (not required on all models)
22	2	1027				Screw Hex Cap 5/16-18 x 2-1/4 Gr5
23	6	1045				Screw Hex Cap 3/8-16 x 1-1/2 Gr5
24	4	1513				Washer Flat 5/16 Gr5 USS
25	12	1525				Washer Flat 3/8 Gr5 SAE
26	2	1934				Lock Nut Center Dent 5/16 Gr5
27	6	1837				Lock Nut Center Dent 3/8 Gr5
28	2	6616				Grease Zerk 1/4-28TPI Self-Tap

NOTE: All parts are the same as 11372 except for those parts numbered under other sizes.

*ITEM may vary per Skid Steer -- Contact FFC for correct item.

PARTS ILLUSTRATION

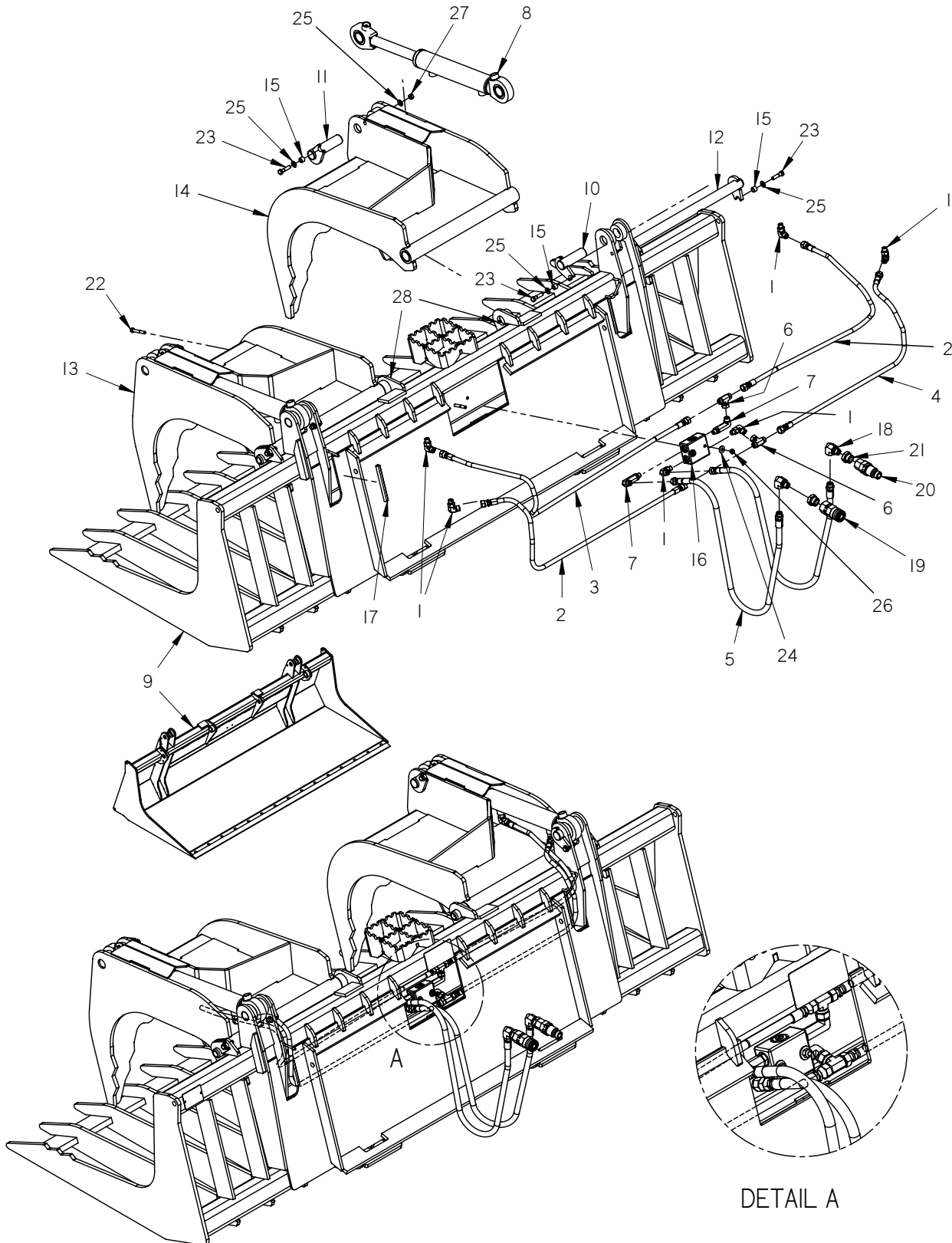


UTILITY SCRAP GRAPPLE PARTS LIST

ITEM	QTY	11860 60"	11866 66"	11872 72"	DESCRIPTION
1	6	30204			90° Elbow HP 6MFS 6MB
2	2	03-10107			Hose 1/4 x 44" 100R2 6FFS 6FFS Sheathed
3	1	03-10108			Hose 1/4 x 50" 100R2 6FFS 6FFS Sheathed
4	1	03-10109			Hose 1/4 x 36" 100R2 6FFS 6FFS Sheathed
*5	2	03-10110 <i>or</i> 03-10111 <i>or</i> 03-10027			Hose 3/8 x 59" 100R2 8MB 6FFS <i>or</i> Hose 3/8 x 79" 100R2 8MB 6FFS <i>or</i> Hose 3/8 x 87" 100R2 10MB 6FFS
6	2	30381			Branch Tee HP 6MFS 6MFS 6FFS
7	2	30380			90° Elbow HP 6MFS 6MB Long
8	2	107865			Hydraulic Cylinder 2 x 8-1/2 x 1-1/4 3000psi
9	1	13-52711	13-52712	13-52713	Frame Weldment Utility Scrap Grapple
10	2	13-52369			Pivot Pin Weldment 3.47"
11	2	13-52370			Pivot Pin Weldment 4.47"
12	2	13-52371			Pivot Pin Weldment 23.19"
13	1	13-52378			Grapple Weldment Utility LH
14	1	13-52379			Grapple Weldment Utility RH
15	6	81595			Tube Rnd .62 x .385 x .44 YDC
16	1	88536			Valve Pilot Operated Double Check
17	2	34114			Hose Guard 5"
*18	2	30442 <i>or</i> 89665			90° Elbow 8MB 8FB <i>or</i> 90° Elbow 10MB 10FB (not required on all models)
*19	1	22518			Quick Coupler Hydraulic Female End 12FB
*20	1	19632			Quick Coupler Hydraulic Male End 12FB
*21	2	30377 <i>or</i> 30198			Adaptor 8FB 12MB <i>or</i> Adaptor 10FB 12MB (not required on all models)
22	2	1027			Screw Hex Cap 5/16-18 x 2-1/4 Gr5
23	6	1045			Screw Hex Cap 3/8-16 x 1-1/2 Gr5
24	4	1513			Washer Flat 5/16 Gr5 USS
25	12	1525			Washer Flat 3/8 Gr5 SAE
26	2	1934			Lock Nut Center Dent 5/16 Gr5
27	6	1837			Lock Nut Center Dent 3/8 Gr5
28	2	6616			Grease Zerk 1/4-28TPI Self-Tap

NOTE: All parts are the same as 11860 except for those parts numbered under other sizes.
*ITEM may vary per Skid Steer -- Contact FFC for correct item.

PARTS ILLUSTRATION



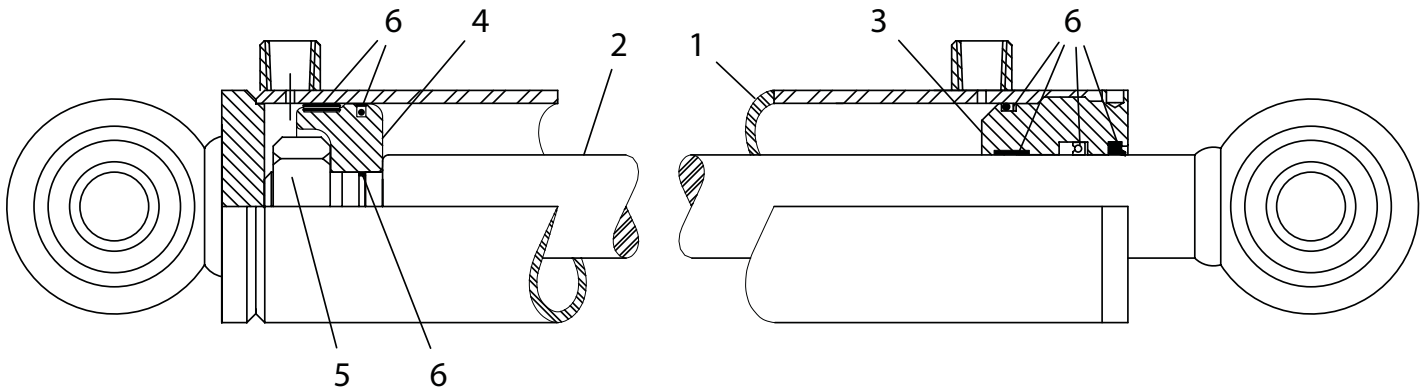
CONSTRUCTION SCRAP GRAPPLE PARTS LIST

ITEM	QTY	11876 76"	11882 82"	11888 88"	DESCRIPTION
1	6	30204			90° Elbow HP 6MFS 6MB
2	2	03-10107			Hose 1/4 x 44" 100R2 6FFS 6FFS Sheathed
3	1	03-10108			Hose 1/4 x 50" 100R2 6FFS 6FFS Sheathed
4	1	03-10109			Hose 1/4 x 36" 100R2 6FFS 6FFS Sheathed
*5	2	03-10110 <i>or</i> 03-10111 <i>or</i> 03-10027			Hose 3/8 x 59" 100R2 8MB 6FFS <i>or</i> Hose 3/8 x 79" 100R2 8MB 6FFS <i>or</i> Hose 3/8 x 87" 100R2 10MB 6FFS
6	2	30381			Branch Tee HP 6MFS 6MFS 6FFS
7	2	30380			90° Elbow HP 6MFS 6MB Long
8	2	107865			Hydraulic Cylinder 2 x 8-1/2 x 1-1/4 3000psi
9	1	13-52714	13-52715	13-52716	Frame Weldment Construction Scrap Grapple
10	2	13-52369			Pivot Pin Weldment 3.47"
11	2	13-52370			Pivot Pin Weldment 4.47"
12	2	13-52371			Pivot Pin Weldment 23.19"
13	1	13-52376			Grapple Weldment Construction LH
14	1	13-52377			Grapple Weldment Construction RH
15	6	81595			Tube Rnd .62 x .385 x .44 YDC
16	1	88536			Valve Pilot Operated Double Check
17	2	34114			Hose Guard 5"
*18	2	30442 <i>or</i> 89665			90° Elbow 8MB 8FB <i>or</i> 90° Elbow 10MB 10FB (not required on all models)
*19	1	22518			Quick Coupler Hydraulic Female End 12FB
*20	1	19632			Quick Coupler Hydraulic Male End 12FB
*21	2	30377 <i>or</i> 30198			Adaptor 8FB 12MB <i>or</i> Adaptor 10FB 12MB (not required on all models)
22	2	1027			Screw Hex Cap 5/16-18 x 2-1/4 Gr5
23	6	1045			Screw Hex Cap 3/8-16 x 1-1/2 Gr5
24	4	1513			Washer Flat 5/16 Gr5 USS
25	12	1525			Washer Flat 3/8 Gr5 SAE
26	2	1934			Lock Nut Center Dent 5/16 Gr5
27	6	1837			Lock Nut Center Dent 3/8 Gr5
28	2	6616			Grease Zerk 1/4-28TPI Self-Tap

NOTE: All parts are the same as 11876 except for those parts numbered under other sizes.

*ITEM may vary per Skid Steer -- Contact FFC for correct item.

HYDRAULIC CYLINDER ILLUSTRATION (107865)



HYDRAULIC CYLINDER PARTS LIST

ITEM	QTY	107865	DESCRIPTION
1	1	107916	Barrel 2" ID x 8-1/2" Stroke
2	1	107913	Shaft 1-1/4" Diameter
3	1	18994	Head
4	1	108342	Piston
5	1	1482	Nut
6	1	45136	Seal Kit (includes all seals, o-rings, etc.)

Limited Warranty

Except for the Excluded Products as described below, all new products are warranted to be free from defects in material and/or workmanship during the Warranty Period, in accordance with and subject to the terms and conditions of this Limited Warranty.

1. Excluded Products. The following products are excluded from this Limited Warranty:

(a) Any cable, part that engages with the ground (i.e. sprockets), digging chain, bearing, teeth, tamping and/or demolition head, blade cutting edge, pilot bit, auger teeth and broom brush that either constitutes or is part of a product.

(b) Any product, merchandise or component that, in the opinion of Paladin Light Construction¹, has been (i) misused; (ii) modified in any unauthorized manner; (iii) altered; (iv) damaged; (v) involved in an accident; or (vi) repaired using parts not obtained through Paladin Light Construction.

2. Warranty Period. The Limited Warranty is provided only to those defects that occur during the Warranty Period, which is the period that begins on the first to occur of: (i) the date of initial purchase by an end-user, (ii) the date the product is first leased or rented, or (iii) the date that is six (6) months after the date of shipment by Paladin Light Construction as evidenced by the invoiced shipment date (the "Commencement Date") and ends on the date that is twelve (12) months after the Commencement Date.

3. Terms and Conditions of Limited Warranty. The following terms and conditions apply to the Limited Warranty hereby provided:

(a) Option to Repair or Replace. Paladin Light Construction shall have the option to repair or replace the product.

(b) Timely Repair and Notice. In order to obtain the Limited Warranty, (i) the product must be repaired within thirty (30) days from the date of failure, and (ii) a claim under the warranty must be submitted to Paladin Light Construction in writing within thirty (30) days from the date of repair.

(c) Return of Defective Part or Product. If requested by Paladin Light Construction, the alleged defective part or product shall be shipped to Paladin Light Construction at its manufacturing facility or other location specified by Paladin Light Construction, with freight PRE-PAID by the claimant, to allow Paladin Light Construction to inspect the part or product.

Claims that fail to comply with any of the above terms and conditions shall be denied.

LIMITATIONS AND EXCLUSIONS.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY BASED ON A COURSE OF DEALING OR USAGE OF TRADE.

IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGES.

IN NO EVENT SHALL PALADIN LIGHT CONSTRUCTION BE LIABLE FOR ANY LOSS OR CLAIM IN AN AMOUNT IN EXCESS OF THE PURCHASE PRICE, OR, AT THE OPTION OF PALADIN LIGHT CONSTRUCTION, THE REPAIR OR REPLACEMENT, OF THE PARTICULAR PRODUCT ON WHICH ANY CLAIM OF LOSS OR DAMAGE IS BASED. THIS LIMITATION OF LIABILITY APPLIES IRRESPECTIVE OF WHETHER THE CLAIM IS BASED ON BREACH OF CONTRACT, BREACH OF WARRANTY, NEGLIGENCE OR OTHER CAUSE AND WHETHER THE ALLEGED DEFECT IS DISCOVERABLE OR LATENT.

¹Attachment Technologies Inc., a subsidiary of Paladin Brands Holding, Inc. (PBHI) is referred to herein as Paladin Light Construction.

