



OPERATOR'S AND PARTS MANUAL

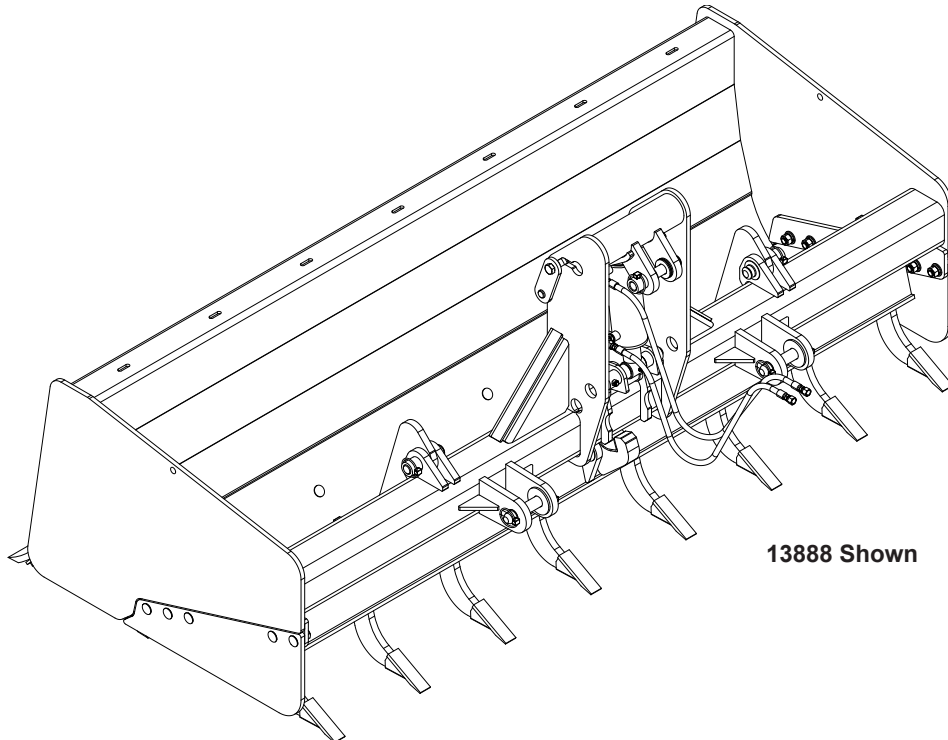


PALADIN
LIGHT CONSTRUCTION GROUP



The Power of Combined Excellence

BOX SCRAPER



13888 Shown

SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: MR15554
Part Number: 13884 & 13888
Rev. 2

TABLE OF CONTENTS

INTRODUCTION	2
GENERAL INFORMATION	2
SERIAL NUMBER	2
OWNER AND OPERATOR SAFETY INFORMATION	
SAFETY STATEMENTS	3
SAFETY PRECAUTIONS	4-5
SAFETY SIGNS	6-7
SPECIFICATIONS	8-9
MOUNTING	10
HYDRAULIC CONNECTION	11
SETUP	12
OPERATION	13
MAINTENANCE	14-15
SERVICE	16-17
PARTS ILLUSTRATION	18
PARTS LIST	19
WARRANTY	i

INTRODUCTION

Congratulations on your purchase of a new FFC Box Scraper. This product has been designed and built to excavate, backfill, grade, and scarify soil materials. 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): **13884** and **13888**. The difference between the models is the width and the end plates on 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 Box Scraper. 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 surface of the loader attachment plate of your Box Scraper.

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



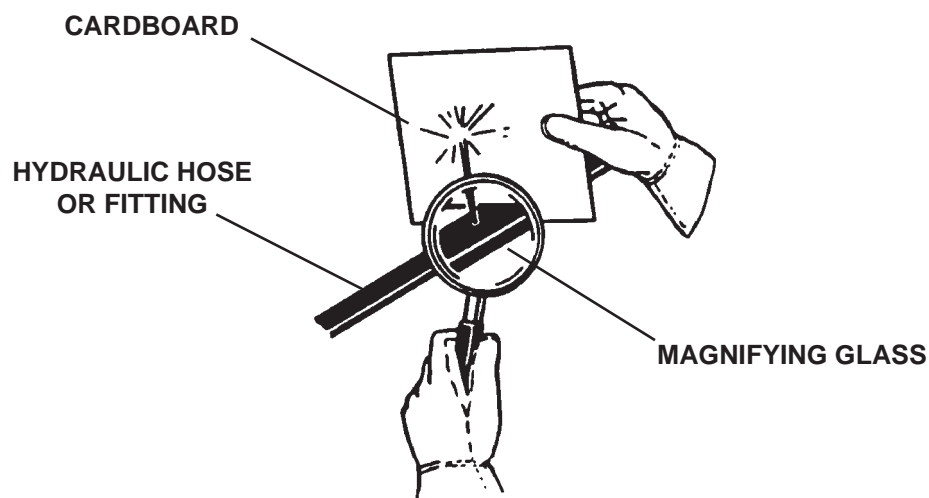
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground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

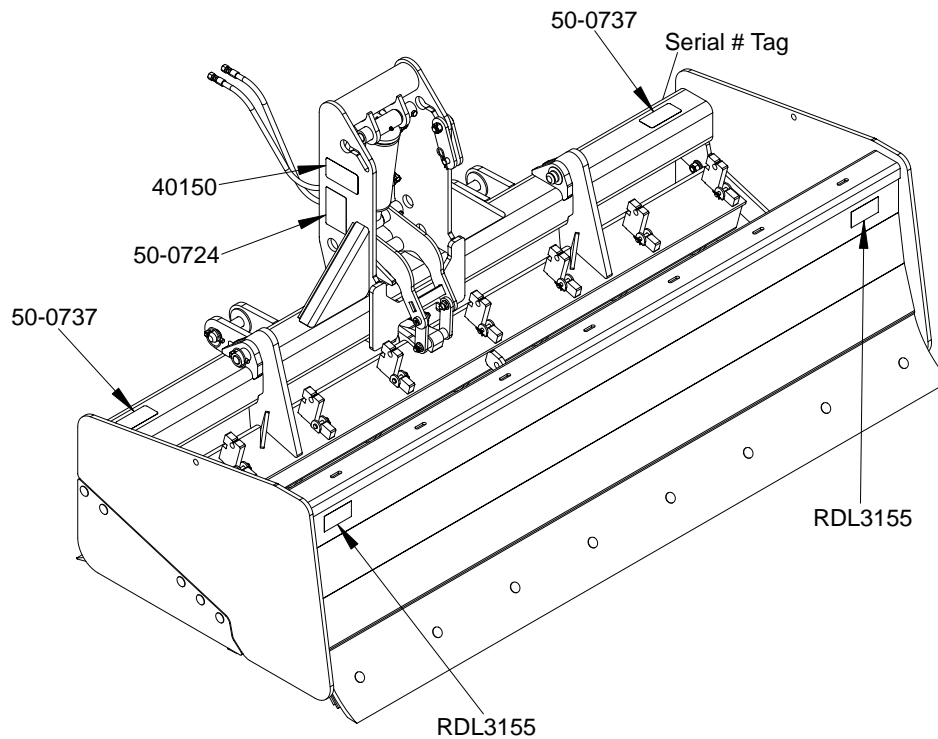
WARNING! KNOW WHERE UTILITIES ARE



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.

SAFETY SIGN LOCATIONS

The diagram on this page shows the location of the decals used on the FFC Box Scraper. 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.



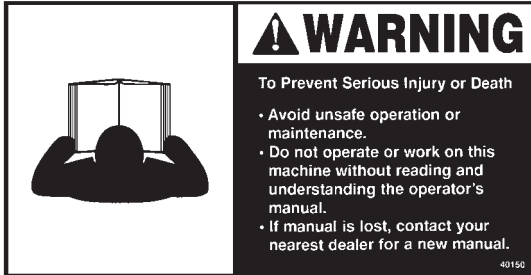
INSTRUCTIONS

- 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 HAZARD



PART # RDL3155
RED REFLECTIVE TAPE

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
Weight of Prime Mover without Box Scraper	20,000 lbs. maximum
Category of Prime Mover's 3-Point Hitch	Category II only
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, 3-point hitch, and quick hitch for ballasting needs.)

BOX SCRAPER SPECIFICATIONS

Model Number	Overall Width	Overall Height*	Overall Depth	Cutting Width	Excavation Capacity	Shipping Weight
13884	85"	39.63"	45.50"	84"	38.4 cu. ft.	1565 lbs.
13888	89"	39.63"	45.50"	88"		
All replacement hydraulics 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	

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

BOX SCRAPER 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).**

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, 3-point hitch, and quick hitch and follow the mounting instructions contained therein.
3. Carefully raise the 3-point hitch to check clearances and to verify that all mounting procedures have been successfully completed.
4. **IMPORTANT** Lubricate all grease fittings before connecting this product to your prime mover's hydraulic system. Refer to **BOX SCRAPER MAINTENANCE** and follow the instructions

BOX SCRAPER HYDRAULIC CONNECTION



READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals before beginning any Snow Blower 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. Remove all the protective plastic caps from the hose ends.
2. Make the connection to your prime mover using the appropriate method below for your prime mover:
 - If your prime mover has male or female threads for connecting the hydraulic hoses to the auxiliary hydraulic lines, make certain that the threads, as well as the inside of the fittings and hoses, are clean, then secure the hoses to the fittings using the torque specified in your prime mover's operator's manual.
 - If your prime mover has quick-couplers for connecting the hydraulic hoses to the auxiliary hydraulic lines, you may need to purchase the proper 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. Once all the quick-coupler fittings are properly installed, then the hoses can be coupled to the prime mover's hydraulic valve body or auxiliary hydraulic lines as per the instructions found in your prime mover's operator's manual.
3. Carefully raise the 3-point hitch to check hose clearances and to check for any interference. Operate the hydraulic cylinder(s) on this product to make the same checks.
4. Cycle the hydraulic cylinder(s) on this product several times from fully retracted to fully extended until all air has been completely removed from the cylinder(s).

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.



NOTICE: When shipped, the hydraulic cylinder(s) on this product contained air or an air-fluid mixture. 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 the controls are not being operated.

BOX SCRAPER SETUP



READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals before beginning any Snow Blower setup. 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.

EXCAVATING, GRADING, AND BACKFILLING

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 the level surface.
4. Make sure that the hydraulic cylinder is fully extended so that the ripper shanks are in the fully raised position.
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. Check to see that the cutting edges of this product are parallel to the level surface. If they are not parallel, make the edges and the level surface parallel by following the instructions for adjustment of the 3-point hitch as found in the operator's manual(s) for your prime mover and 3-point hitch.
7. Check to see that the bases of the main frame end plates are parallel to the level surface. If they are not parallel, make the bases and the level surface parallel by adjusting the 3-point hitch's top link as described in the operator's manual(s) for the prime mover and 3-point hitch.

SCARIFYING

1. Perform steps 1 through 6 above.
2. Check to see that the bases of the main frame end plates are leaning forward approximately 15 degrees relative to the level surface. If this is not the case, adjust the 3-point hitch's top link as described in the operator's manual(s) for your prime mover and 3-point hitch. Leaning this product forward 15 degrees will lift the cutting edges up a few inches off the level surface and will result in the straight upper portion of the ripper shanks being perpendicular (90 degrees) to the ground surface during operation.
3. Verify that the ripper shanks are set in the proper slot for performing the desired work. When the front edges of the main frame end plates are flush with the ground level, then:
 - positioning the ripper shanks in the lower slot will produce a 3-3/4" deep cut and
 - positioning the ripper shanks in the upper slot will produce a 6-1/4" deep cut.See RIPPER SHANK ADJUSTMENT AND REPLACEMENT in the Service section of this manual for instructions on how to reposition the ripper shanks.

IMPORTANT Operating this product with the ripper shanks only partially extended into the ground **CAN** result in damage to this product and **WILL** void all FFC warranties.

4. Restart your prime mover and raise the 3-point hitch. Completely retract the hydraulic cylinder to extend the ripper shanks to their lowest and locked position. Failure to lower the ripper shanks until the locking mechanism engages will result in excessive hydraulic cylinder strain and could cause permanent hydraulic cylinder damage.

BOX SCRAPER OPERATION



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.

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



- Make sure that a qualified individual or firm that specializes in locating underground utilities has inspected the work area. Do not operate this product where contact with a utility line of any kind is possible.
- Operate at a very slow ground speed where objects that are not easily moveable (i.e. stumps, concrete foundations, etc.) may be present.

IMPORTANT Striking objects that are not easily moveable (i.e. stumps, concrete foundations, etc.) at an excessive ground speed
CAN result in damage to this product and
WILL void all FFC warranties.

IMPORTANT Backing up with any portion of the ripper shanks below the ground surface
CAN result in damage to this product and
WILL void all FFC warranties.

Before beginning any work, have a qualified individual or firm inspect the entire work area for underground utility lines. The operator should carefully inspect the entire area for stumps, concrete foundations, large rocks, posts, or any other solid object that would not easily move when struck by any part of this product. Remember that you Box Scraper is not your bulldozer and is not designed to remove pavement, uproot trees, etc.

When excavating, grading or back filling, the performance of this product can be fine-tuned by adjusting the length of the upper arm of your prime mover's 3-point hitch to increase or decrease digging capabilities. Changes can also be made by varying your prime mover's speed and by changing control settings for your prime mover's 3-point hitch.

When scarifying, the best method for achieving a desired digging depth is to perform several test passes. With there being so many variables in operators and ground conditions, this is the best way to select the correct ripper shank depth slot, the correct speed, and the correct 3-point hitch control settings.

BOX SCRAPER MAINTENANCE



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.

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 to specifications and that there are no leaks in any fittings or hoses.
(SEE THE HYDRAULIC CONNECTION SECTION)
- Make sure that all safety signs are in place, are clean, and are legible.
(SEE THE SAFETY SIGN SECTION.)
- Replace any damaged parts and excessively worn parts.

AFTER EVERY 10 HOURS OF USE

- Grease 4 fittings: one on the rear face of the pivot tube of the lift linkage weldment;
three on the hydraulic cylinder cross tubes: one on the rod end, and
two on the barrel end.

BOX SCRAPER SERVICE



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.

RIPPER SHANK ADJUSTMENT, RE-POINTING, AND REPLACEMENT

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 the ground with the ripper shanks fully raised.
4. Shut off your prime mover's engine, remove the starter key, wait for all moving parts to come to a stop.
5. Lock the scarifier tube in the fully raised position. While standing behind the center of the rear cutting edge, slide the lockout links to the top of the slot in the mast of the main frame. Remove the hairpin cotter pin and the clevis pin from the lockout links. Place one lockout link on each side of the tab on the scarifier tube and secure the lockout links to the tab with the clevis pin and the hairpin cotter pin.
6. While still standing behind the rear cutting edge, reach forward across the scarifier tube and remove the rue ring cotter pin, the clevis pin, and the shank block that secures the ripper shank.
7. With one hand, grasp the portion of the ripper shank that extends to the front side of the scarifier tube and lift up while pushing down with the other hand on the opposite end of the ripper shank. When clear of the ripper shank slot, slide the ripper shank to the other slot or completely out to the rear of the scarifier tube, whichever is the desired option.

(For ripper shank adjustment or replacement, skip to step 11. To replace the shank point, continue with step 8.)

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



- Read and understand the operator's manuals that came with your cutting torch and compressed gases before starting any work. Never operate a cutting torch near any flammable objects or fluids.
9. Cut open the existing shank point using a cutting torch. Make sure that the shank is not being damaged while the shank point is being cut. Remove and properly dispose of the existing shank point.
 10. Slide a new point onto the ripper shank. Make sure that the cutting face of the shank point is on top of the hooked end of the ripper shank when the ripper shank is held in the normal scarifying position.
 11. Crimp the shank point onto the ripper shank by pressing the sides of the shank point into the depressions on each side face of the ripper shank tip. Make sure that the deforming force is applied directly over the ripper shank depressions and that sufficient deformation occurs for the shank point to be securely attached to the ripper shank.
 12. Reinsert the ripper shank into the scarifier tube and seat the ripper shank in the desired slot.
 13. Replace the shank block and then the clevis pin. Secure the clevis pin with the rue ring cotter pin.

BOX SCRAPER SERVICE (continued)



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.

REPLACEMENT OF CUTTING EDGES

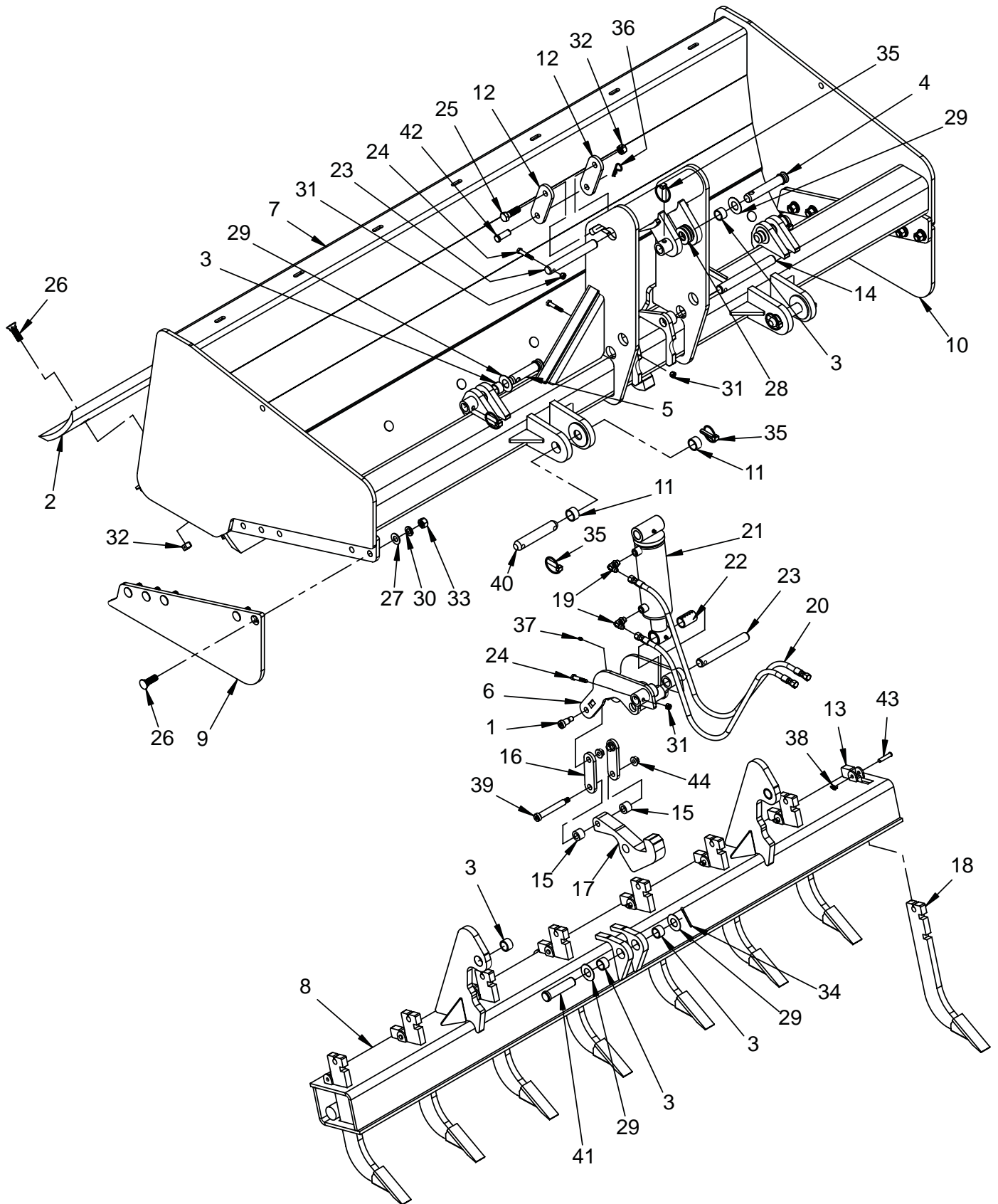
1. Park your prime mover on a level surface with this product properly attached.
2. Place your prime mover's transmission in "Park" and engage the parking brake.
3. With the ripper shanks fully lowered and locked into position, lower end plates of the main frame of this product onto pre-placed blocking as specified below:

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



- Do not use blocking made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Do not use wood or steel blocking that shows any signs of material decay. Do not use blocking that is warped, twisted, or tapered.
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.
 5. Make sure that this product is completely stable on the blocking. If the blocking appears to be unstable or is even of questionable stability, restart your prime mover, raise this product off the blocking, and move away from the blocking. After the blocking has been repositioned in a more stable fashion, repeat steps 1 through 5 until a completely stable condition exists.
 6. **TWO WORKERS ARE REQUIRED** to remove a cutting edge. From the rear of this product, reach under the rear cutting edge, loosen and remove the center five nuts, then remove the corresponding bolts.
 7. Loosen the remaining two nuts. While the first worker holds up one end of the cutting edge, the second worker must remove the nut and bolt from that end so that the first worker can lower that end of the cutting edge to the surface below. Repeat this process for the remaining bolt.
 8. The cutting edge can then be turned end for end and be reinstalled or, if both edges are worn out, the old cutting edge should be properly discarded. Whether reversing the cutting edge or installing a new one, replacement of all bolts is recommended. Replacement of all locknuts and any damaged or worn bolts is required.
 9. Reverse the removal process in Step 7 and loosely secure the cutting edge with two bolts: one in each end hole. Install the other five bolts, then gradually and uniformly tighten all the bolts to 100 ft. lbs. + or - 6.0 ft. lbs., drawing the cutting edge into the proper operating position.
 10. If necessary, repeat steps 6 through 9 for the second cutting edge.

BOX SCRAPER PARTS ILLUSTRATION



BOX SCRAPER PARTS LIST

ITEM	QTY.	13884	13888	DESCRIPTION
1	2		07-10058	Shoulder Screw .63" X .75" (.5"-13) Zinc Plated
2	2	LAF3871	07-10163	Reversible Cutting Edge .63" X 8" Curved with Square Holes
3	10		07-10187	Tube Round 1.244" X 1.010" X .75" Hardened
4	1		07-10188	Pin Cat II Top Link 1" X 5.38" Usable
5	2		07-10189	Pin Top Link 1" X 3" Usable
6	1		13-50343	Lift Linkage Weldment
7	1	13-53235	13-52719	Main Frame Weldment
8	1	13-53236	13-52721	Scarifier Tube Weldment
9	1	n/a	13-53195	Bolt-On End Plate Right
10	1	n/a	13-53229	Bolt-On End Plate Left
11	4		LAF3857	Tube Round 1.369" X 1.125" X .75" Hardened
12	2		LAF3858	Lockout Link
13	8		LAF3859	Scarifier Lock
14	1		LAF3867	Lift Linkage Pivot Pin 1" x 8.5"
15	2		LAF3870	Tube Round 1.125" x .640" x .81"
16	2		LAF3883	Lift Linkage Bar
17	1		LAF3886	Latch Hook
18	8		LAF3896	Ripper Shank (with Shank Point Attached)
19	2		3434	Hydraulic Elbow 90° #6 Male JIC x #6 Male O-Ring
20	2		LAF4460	Hydraulic Hose .25" x 48.5" #6 Female JIC x #6 Female JIC Fittings
21	1		LAF4639	Hydraulic Cylinder 3" Piston x 6" Stroke x 1.75 Shaft
22	1		LAF9401	Split Sleeve 1.25" x 1" x 2" with Ext. Grease Groove
23	2		LAF9798	Cylinder Pin 1" x 7.5"
24	3		1047	Hex Head Cap Screw .38" x 2" Grade 5
25	1		1116	Hex Head Cap Screw .63" x 2" Grade 5
26	varies	(14)	(26) 10150	Plow Bolt .63" x 2" Grade 8
27	10	n/a	1528	Flat Washer SAE .63" Grade 5
28	6		1706	Flat Washer SAE 1" Grade 8 Yellow
29	5		RHW5973	Machinery Bushing 2" x 1" x 0.048"
30	10	n/a	1506	Lock Washer .63" Grade 5
31	3		1837	Locknut .38" Center Dent Grade 5
32	varies	(15)	(17) 1839	Locknut .63" Center Dent Grade 5
33	10	n/a	RHW7651	Hex Nut .63" Grade 8
34	1		1793	Cotter Pin .19" x 2" Grade 2
35	7		RHW8064	Lynch Pin .44" x 1.63" Usable Large Ring
36	1		RHW8075	Hairpin Cotter Pin .12" x 2.38"
37	1		6616	Grease Zerk .25" with 28 TPI Self-Tapping
38	8		RHW8114	Rue Ring Cotter Pin .38" Shaft
39	1		RHW8207	Allen Shoulder Screw .63" x 4" Alloy
40	2		RHW8209	Cat II Pin 1.115" x 6.31" Usable Zinc Plated
41	1		RHW8216	Clevis Pin 1" x 4" Usable Zinc Plated
42	1		RHW8218	Clevis Pin .63" x 1.5" Usable Zinc Plated
43	8		RHW8225	Clevis Pin .38" x 1.5" Usable Zinc Plated
44	3		RHW8601	Locknut .5" Flanged Top Lock High Strength Grade 8

NOTE: All parts are the same as the 13888 except for those parts numbered under the other model.

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.

