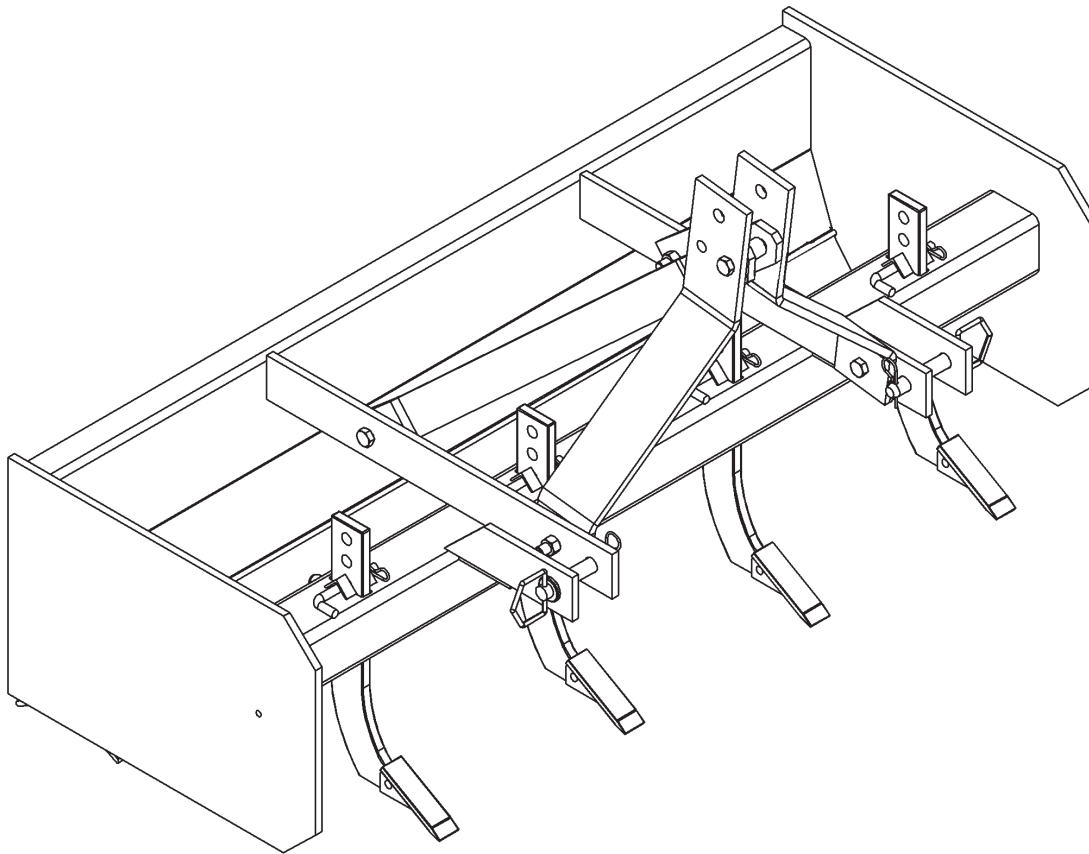




**KODIAK**  
BY PALADIN

# OPERATOR'S MANUAL

## BOX SCRAPERS



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

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

Manual Number: KDK06-0201

Rev. 3



# TABLE OF CONTENTS

<b>PREFACE</b> .....	5
<b>SAFETY PRECAUTIONS</b>	
SAFETY STATEMENTS .....	6
GENERAL SAFETY PRECAUTIONS .....	6-8
EQUIPMENT SAFETY PRECAUTIONS .....	9-10
<b>DECALS</b> .....	11-12
<b>INSTALLATION</b> .....	13
<b>OPERATION</b>	
INTENDED USE.....	14
OPERATION.....	14-15
EXCAVATING, GRADING AND BACKFILLING / SCARIFYING	
STORAGE .....	16
LIFT POINTS.....	16
TIE DOWN POINTS.....	16
<b>MAINTENANCE</b>	
GENERAL INFORMATION.....	17
SCARIFIER SHANK ADJUSTMENT & REPLACEMENT.....	18
LEVELING & PITCH ADJUSTMENT .....	18
REPLACEMENT OF CUTTING EDGES .....	18-19
<b>SPECIFICATIONS</b>	
BOX SCRAPER SPECIFICATIONS .....	20
BOLT TORQUE SPECIFICATIONS.....	21
<b>PARTS / WARRANTY</b> .....	23

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# PREFACE

## GENERAL COMMENTS

Congratulations on the purchase of your new product! 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.

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents.

**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 operators.

## 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 mover, 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.

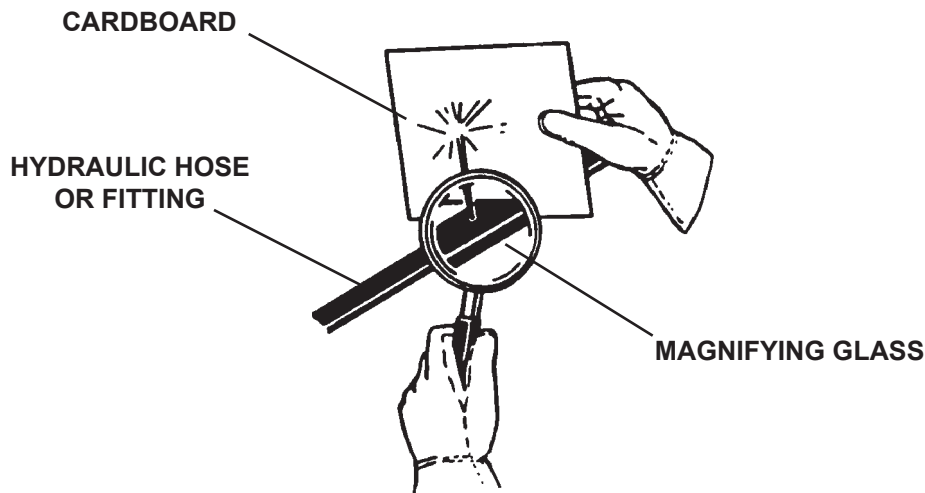
### WARNING!



#### 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.



#### OPERATING THE ATTACHMENT

- Do not stand between prime mover and attachment during installation.
- Operate only from the operator's station.
- 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, apply the brakes, turn off the engine and remove the key.

# EQUIPMENT SAFETY PRECAUTIONS



## TRANSPORTING THE ATTACHMENT

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When transporting on a trailer: Secure attachment using tie down accessories that are capable of maintaining attachment stability.
- Use extra care when loading or unloading the attachment onto a truck or trailer.
- 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 fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.



## MAINTAINING THE ATTACHMENT

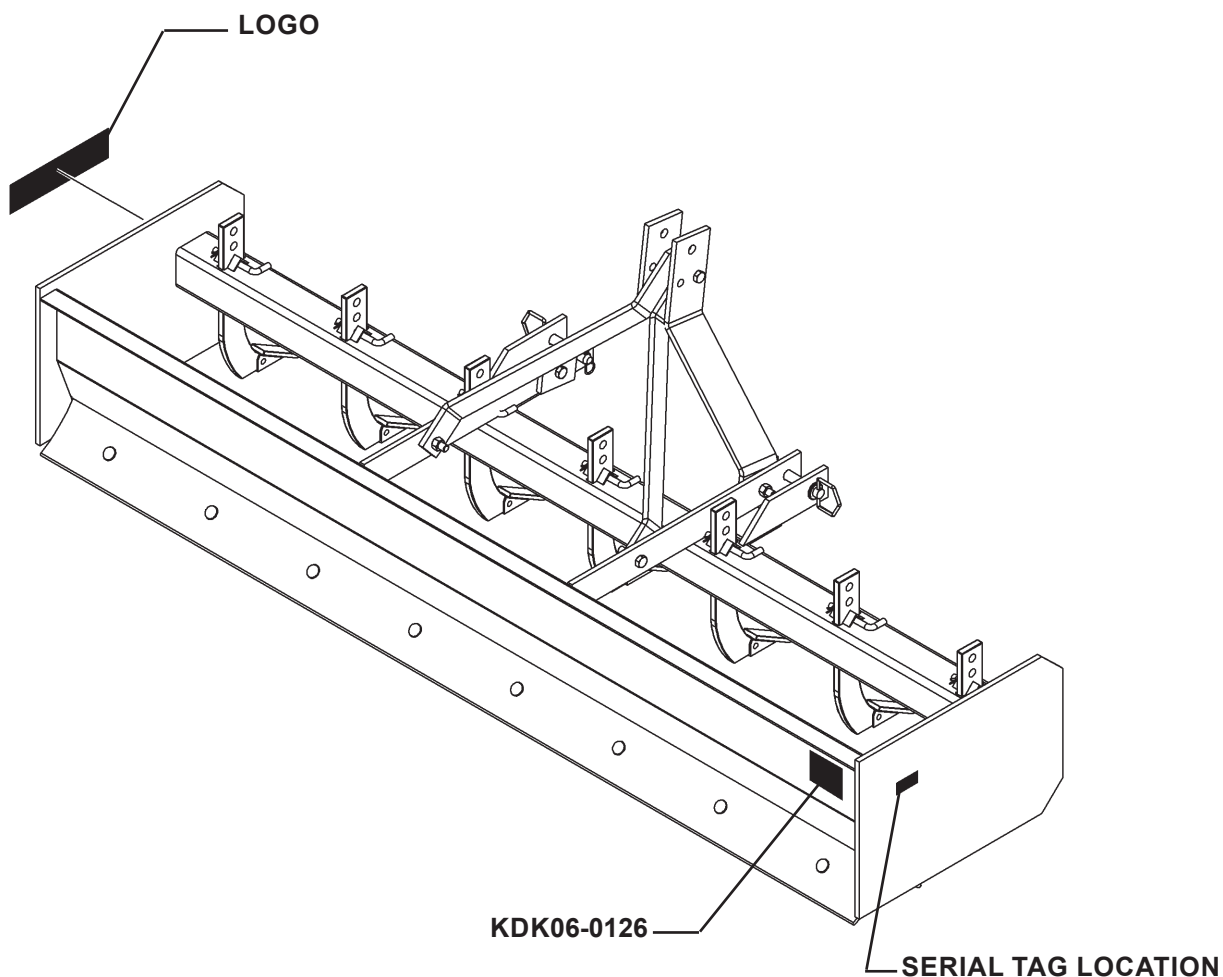
- Before performing maintenance, lower the attachment to the ground apply the brakes, turn off the engine and remove the key.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator manual's before any repair is made. After completing maintenance 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 Paladin.
- Never work under a raised attachment unless it is securely blocked.

# DECALS

## DECAL PLACEMENT

### GENERAL INFORMATION

The diagram on this page shows the location of the decals used on your attachment. 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.



**IMPORTANT:** Keep all safety decals clean and legible. Replace all missing, illegible, or damaged safety decals. When replacing parts with safety decals attached, the safety decals must also be replaced. Safety decals are available, free of charge, from your local dealer or Paladin.

**REPLACING SAFETY DECALS:** Clean the area of application with nonflammable solvent, then wash the same area with soap and water. Allow the surface to fully dry. Remove the backing from the safety decal, exposing the adhesive surface. Apply the safety decal to the position shown in the diagram above and smooth out any bubbles.

# DECALS



**PART # KDK06-0126**  
**WARNING! GENERAL WARNING**

**NOTE: CONTACT YOUR LOCAL DEALER FOR LOGO DECALS**

# INSTALLATION

## GENERAL INFORMATION

The Box Scraper is designed for attaching to a tractor and comes with Cat. I 3-point mounting only.

### **DANGER!**



**A crushing hazard exists when installing onto a tractor. Place the tractor in park, set parking brake, shut off engine and remove key before allowing anyone, including the operator, in the area between the tractor and the attachment during installation or detaching the attachment from the tractor. Do not operate the 3-point lift controls while anyone is directly behind the tractor or near the attachment.**

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.
  - a. Slowly back tractor up to the Box Scraper and use tractor's 3-point controls to align the lower links to the mounting holes on the box scraper.
  - b. Place the tractor in park, set the parking brake, shut off the engine and remove the key before dismounting from the tractor.
  - c. Align the lower links and the mounting holes on the box scraper A-frames and secure in place using the hitch pins provided.
  - d. Connect the top link to the upper porting of the A-frame using the capscrews provided.
3. Carefully raise the 3-point hitch to check clearances between the scraper, tractor tires and drawbar. (Reposition or remove drawbar if interference occurs.)
4. Ensure sway links/chains have been installed to prevent excessive side movement of the attachment.
5. Verify that all mounting procedures have been successfully completed.

# OPERATION

**INTENDED USE:** This Scraper is designed solely for excavating, grading, back filling and scarifying . Use in any other way is considered contrary to the intended use. Compliance with and strict adherence to operation, service and repair conditions as specified by the manufacturer, are also essential elements of the intended use.

## OPERATION

Before beginning any work call 811 and have the entire work area inspected for underground utility lines. The operator should also visually check the 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 your Box Scraper is not a 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 top link 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.

1. Park your prime mover on a flat, level surface.
2. Lower box scraper to the ground, place the prime mover in park, engage the parking brake, shut off the engine and remove the key.
3. Check to see that the cutting edges are parallel to the ground. If they are not parallel, follow the instructions for "Leveling and Pitch Adjustment" in the Maintenance Section of this manual.

## EXCAVATING, GRADING, AND BACKFILLING

Excavate by lowering the scraper to the ground and driving forward. The blades should begin the leveling process while the excess material accumulates in the box. The material can be transferred to a nearby location and then slowly raise the box scraper to deposit the material.

Grading is achieved by adjusting the box scraper to shave off the high spots and deposit material in the low spots.

## SCARIFYING

When grading very hard ground it may require ripping to loosen the soil so the Box Scraper can achieve the desired effects. Lowering the shanks completely on extremely hard surfaces may actually stop the tractor. In that application it may require making multiple shallow ripping passes to get the same outcome and reduce the possibility of actually stopping the tractor by being too aggressive. The Box Scraper performs best in dry to slightly damp soil.

When scarifying, the best method for achieving your desired digging depth is to perform several test passes. This is the best way to select the correct scarifier depth, speed, and the 3-point hitch control settings due to many differences in operators and ground conditions.

## OPERATION

1. Check to see that the box frame side plates are leaning forward approximately 15 degrees relative to the surface. If this is not the case, adjust the 3-point hitch 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 scarifier shanks being perpendicular (90 degrees) to the ground surface during operation.
2. Verify that the scarifier shanks are set in the proper position for performing the desired work.
  - positioning the scarifier shanks in the lower slot will produce a 1.20" deep cut and
  - positioning the scarifier shanks in the upper slot will produce a 4.20" deep cut.

See "SCARIFIER ADJUSTMENT AND REPLACEMENT" in the Maintenance section of this manual for instructions on how to reposition the scarifier shanks.

***NOTICE: Operating this product with the scarifier shanks only partially extended into the ground CAN result in damage to this product and WILL void all warranties.***

1. Raise or lower the Box Scraper and scarifiers to determine how much or how little material you would like to move.
2. The deeper you set the scarifiers, the slower you will need to travel with your tractor and the more stress applied to the box scraper and tractor. It is better to move less material and make more trips than to try to do it all in one pass.
3. This unit is designed to be pulled. If you are pushing, be careful not to over bind the lift and tie arms on the Box Scraper. Damage can occur to the top link on the tractor, as well as the lift arms.
4. Lower the blade to the ground and start moving forward. Your speed will be determined by the condition of the soil. You may need to use more/less angle depending on the job.
5. The speed of the tractor should not exceed 5 mph.
6. Lift the box scraper off the ground when turning.
7. Pass diagonally through sharp dips and avoid sharp drops to prevent "hanging up" the tractor and scraper.
8. Watch for hidden hazards on the terrain during operation.

***NOTICE! 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 warranties.***

***NOTICE! Backing up with any portion of the scarifier shanks below the ground surface CAN result in damage to this product and WILL void all warranties.***

# OPERATION

## STORAGE

- Clean the unit thoroughly, removing all mud, dirt and grease.
- Inspect for visible signs of wear, breakage or damage. Order any parts required and make the necessary repairs to avoid delays upon removal from storage.
- Tighten loose nuts and capscrews.
- Store unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

### Additional Precautions for Long Term Storage:

- Touch up all unpainted surfaces with paint to avoid rust.


## REMOVAL FROM STORAGE:

- Remove cover.
- Wash unit and replace any damage and/or missing parts.

## LIFT POINTS

Lifting points are identified by lifting decals where required. Lifting at other points is unsafe and can damage attachment. Do not attach lifting accessories around cylinders or in any way that may damage hoses or hydraulic components.


- Attach lifting accessories to unit at recommended lifting points.
- Bring lifting accessories together to a central lifting point.
- Lift gradually, maintaining the equilibrium of the unit.

**WARNING!**  **USE LIFTING ACCESSORIES (CHAINS, SLINGS, ROPES, SHACKLES AND ETC.) THAT ARE CAPABLE OF SUPPORTING THE SIZE AND WEIGHT OF YOUR ATTACHMENT. Secure all lifting accessories in such a way to prevent unintended disengagement. Failure to do so could result in the attachment falling and causing serious personal injury or death.**

## TIE DOWN POINTS

Tie down points are identified by tie down decals where required. Securing to trailer at other points is unsafe and can damage attachment. Do not attach tie down accessories around cylinders or in any way that may damage hoses or hydraulic components.

- Attach tie down accessories to unit as recommended.
- Check unit stability before transporting.

**WARNING!**  **VERIFY THAT ALL TIE DOWN ACCESSORIES (CHAINS, SLINGS, ROPES, SHACKLES AND ETC.) ARE CAPABLE OF MAINTAINING ATTACHMENT STABILITY DURING TRANSPORTING and are attached in such a way to prevent unintended disengagement or shifting of the unit. Failure to do so could result in serious personal injury or death.**



# MAINTENANCE

## GENERAL INFORMATION

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

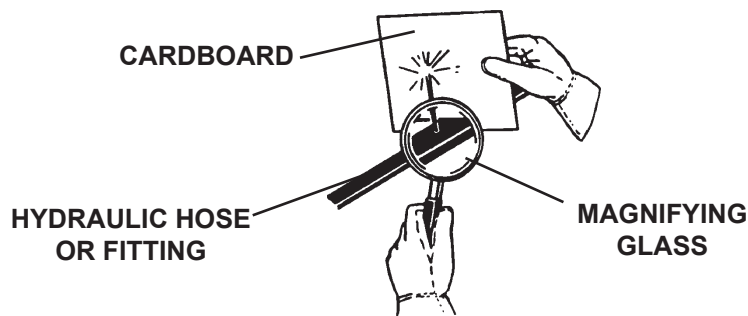
Procedure	Before Each Use	After Each Use
Check all hardware and tighten if necessary. (See Bolt Torque Specifications)	✓	
Check for missing or illegible Safety / Warning Decals. Replace as needed.	✓	
Replace any missing or damaged bolts or nuts with approved replacement parts	✓	
Clean Unit- Remove all mud and dirt		✓

**WARNING!** Escaping hydraulic / diesel fluid under pressure can penetrate the skin causing serious injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.



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.


Stop the engine and relieve pressure before connecting or disconnecting lines. Tighten all connections before starting engine or pressurizing lines.



# MAINTENANCE

## SCARIFIER SHANK ADJUSTMENT AND REPLACEMENT

1. Park your prime mover on a level surface.
2. Raise the box scraper with tractor's 3-point lift arms and securely block the scraper off the ground using jacks or wooden blocks.

**WARNING!**  **Never work around or under any attachment that is supported by hydraulics. Hydraulics can drop an attachment if controls are bumped or hydraulic lines burst even when power to the hydraulic is shut off.**


3. Using your prime movers safety shut down procedure, apply the brakes, shut down your tractor and remove the key.
4. Remove the hairpin and pin securing the scarifier shank in place and slide up or down to obtain your desired digging depth. If you are replacing the scarifier shank slide down and out of the shank tube.
5. Install the new scarifier shank by positioning with the tooth pointing forward and insert into the shank tube.
6. Secure in place using the pin and hairpin removed in Step #4.

## LEVELING AND PITCH ADJUSTMENT

1. Raise scarifier shanks by following the instructions under "Scarifier Shank Adjustment and Replacement".
2. Park your prime mover on a flat, level surface and lower the Box Scraper to the ground.
3. Place the tractor in park, set the parking brake, shut off the engine and remove the key before dismounting from the tractor.
4. Place a level on the front shank bar. Manually adjust tractor 3-point lower arms to level the scraper left and right.
5. Rotate the level and adjust tractor's top link until unit the scraper is level front to back.

## REPLACEMENT OF CUTTING EDGES

1. Park your prime mover on a flat, level surface.
2. With the scarifier shanks fully lowered and locked into position, lower side plates of the main frame onto pre-spaced blocking.

**WARNING!**  **Do not use blocking made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse or shift positions. Do not use wood or steel blocking that shows any signs of material decay. Do not use blocking that is warped, twisted, or tapered.**

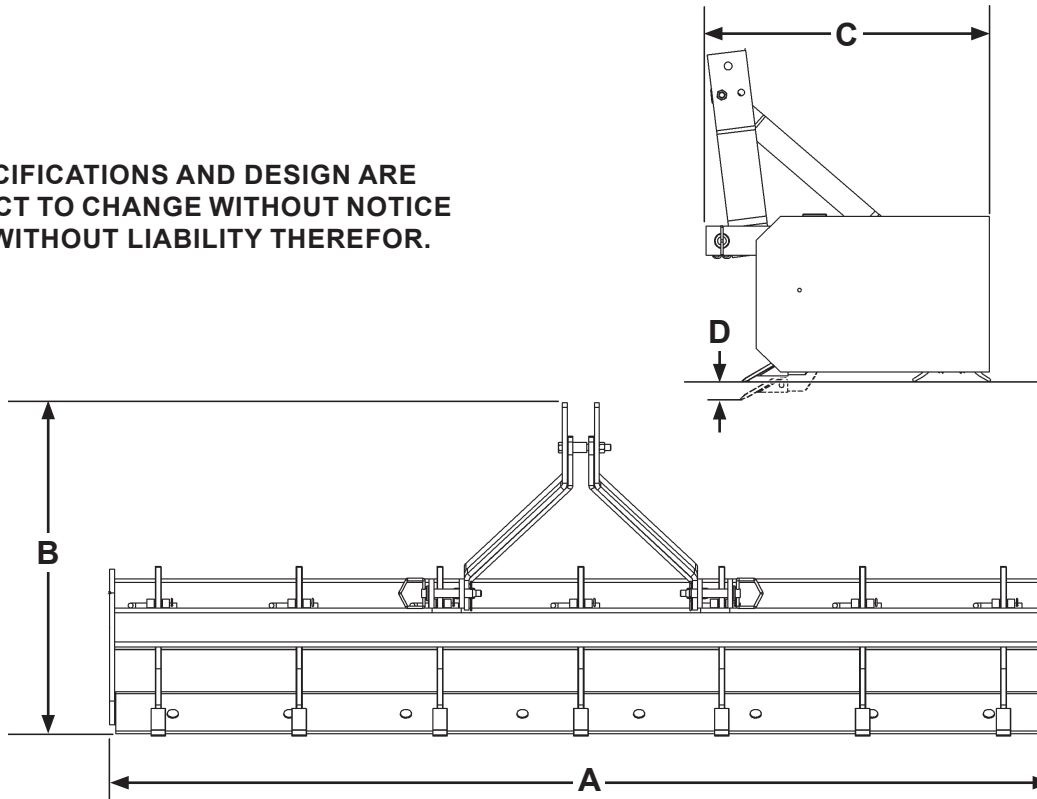
3. Place the prime mover in park, engage the parking brake, shut off the engine and remove the key.

## MAINTENANCE

4. Make sure that the scraper is completely stable on the blocking. If the blocking appears to be unstable or is even of questionable, restart your prime mover, raise the unit off the blocking, and move away from the blocking. After the blocking has been repositioned in a more stable fashion, repeat steps 1 through 4 until a completely stable condition exists.
5. TWO WORKERS ARE REQUIRED to remove a cutting edge. From the rear of this product with one person under both ends of the rear cutting edge, loosen and remove the center nuts leaving one nut on each outside end, then remove the corresponding bolts.
6. 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 it can be lower to the ground. Repeat this process for the remaining bolt on the other end.
7. The cutting edge can be either turned end for end and reinstalled or properly discarded if both edges are worn out. Whether reversing the cutting edge or installing a new one, replacement of all bolts is recommended while replacement of all locknuts and any damaged or worn bolts is required.
8. Reverse the removal process in Step 6 and loosely secure the cutting edge with two bolts: one in each end. Install the remaining bolts and then tighten all the bolts to 128 ft. lbs.
9. If necessary, repeat steps 5 through 8 for the second cutting edge.

# SPECIFICATIONS

**SPECIFICATIONS AND DESIGN ARE  
SUBJECT TO CHANGE WITHOUT NOTICE  
AND WITHOUT LIABILITY THEREFOR.**



## STANDARD DUTY SPECIFICATIONS

DESCRIPTION	4' SD	5' SD	5.5' SD	6' SD	7' SD	8' SD
A. Overall Width	48.38" (122.8 cm)	60.38" (153.4 cm)	66.50" (168.9 cm)	72.50" (184.2 cm)	84.50" (214.6 cm)	96.50" (245.1 cm)
B. Overall Height (A-Frame)	34.00" (86.4 cm)					
C. Overall Length	23.20" (58.9 cm)		26.20" (66.5 cm)			
D. Scarifier Cutting Depth	1.20" - 4.20" (3.0 - 10.7 cm)					
Number of Scarifiers	3	4	5	5	6	7
Weight	261 lbs. (118.4 kg)	310 lbs. (140-6 kg)	393 lbs. (178.3 kg)	412 lbs. (186.9 kg)	462 lbs. (209.6 kg)	512 lbs. (232.2 kg)
Recommended HP (2WD)	17-24	24-35	30-39	35-42	38-46	45-55
Recommended HP (4WD)	14-20	20-29	24-33	29-35	32-38	37-45

## HEAVY DUTY SPECIFICATIONS

DESCRIPTION	5' HD	6' HD	7' HD	8' HD
A. Overall Width	61.00" (154.9 cm)	73.00" (185.4 cm)	85.00" (215.9 cm)	97.00" (246.4 cm)
B. Overall Height (A-Frame)	34.00" (86.4 cm)			
C. Overall Length	29.20" (74.2 cm)			
D. Scarifier Cutting Depth	1.20" - 4.20" (3.0 - 10.7 cm)			
Number of Scarifiers	4	5	6	7
Weight (lbs.)	430 lbs. (195.0 kg)	480 lbs. (217.7 kg)	530 lbs. (240.4 kg)	581 lbs. (263.5 kg)
Recommended HP (2WD)	32-40	35-42	38-46	45-60
Recommended HP (4WD)	26-32	29-35	32-38	37-49

# BOLT TORQUE SPECIFICATION

## GENERAL TORQUE SPECIFICATION TABLES

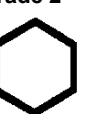
Use the following charts when determining bolt torque specifications, when special torques are not given. Always use grade 5 or better when replacing bolts.

## 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
		Ft-lbs		Newton-Meter		Ft-lbs		Newton-Meter		
Inches	mm	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	17	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







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.		

Bolt Size	Grade No.	Pitch (mm)	Ft-lbs	Newton-Meter	Pitch (mm)	Ft-lbs	Newton-Meter
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

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## PARTS

In order to provide you with the most UP-TO-DATE part information, all parts for this attachment have been moved to our website at [www.paladinattachments.com/Manuals](http://www.paladinattachments.com/Manuals). Please use these diagrams and parts lists to locate replacement parts.

When servicing your attachment, remember to use only original manufacturer replacement parts. Substitute parts may not meet the standards required for safe, dependable operation.

To facilitate parts ordering when contacting the factory, please have the product control number (PCN or C/N) or model and serial number of your product ready to ensure that you receive the correct parts for your specific attachment.

The product control number, model and serial number for your attachment should be recorded in the space provided on the cover of this manual. This information may be obtained from the serial number identification plate located on your attachment.

**NOTE: Most daily and emergency parts orders (in stock) received by 10:30 A.M. (Eastern Standard Time) will be shipped UPS Ground the same day received. UPS Next Day orders must be received by 1:30 PM (Eastern Standard Time.)**

### SERVICE DEPARTMENT

(734) 996-9116

(800) 456-7100

### For Fax and E-mail Orders

PLC\_Sales@paladinattachments.com

(734) 996-9014

## 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).