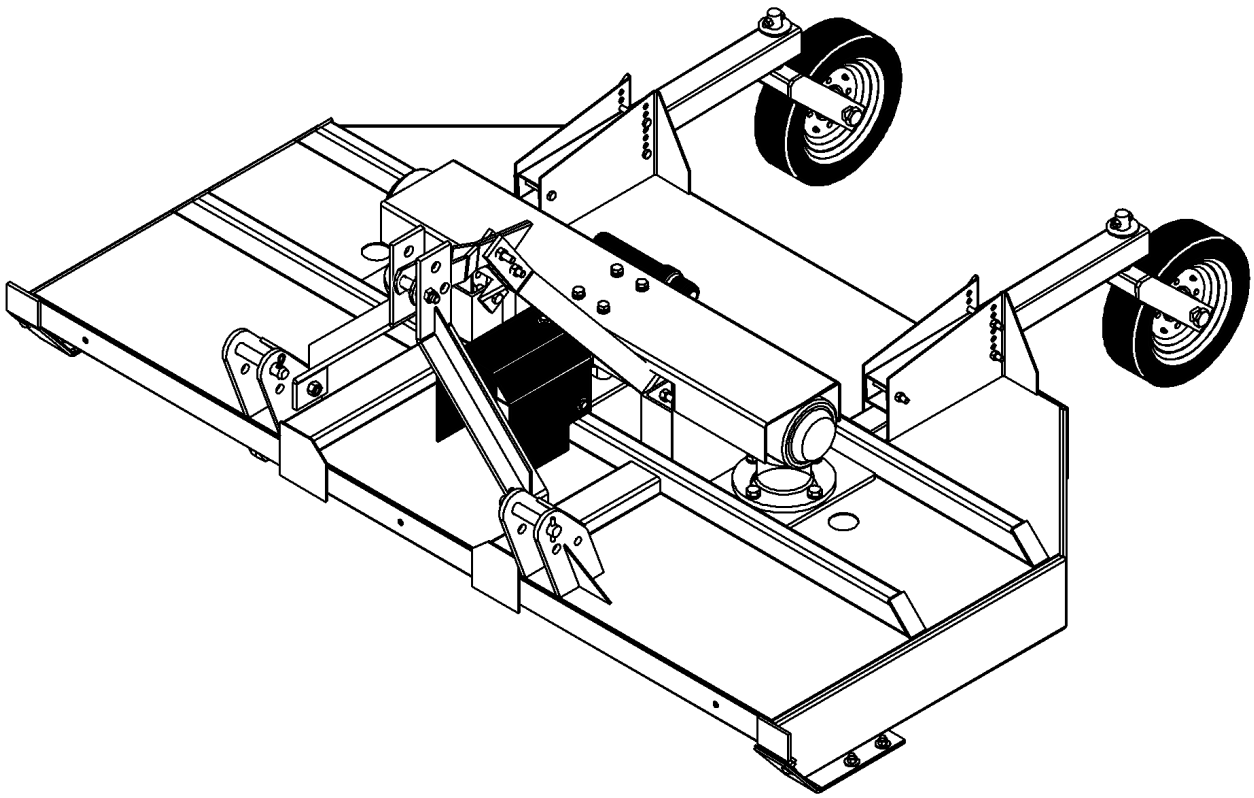
KODIAK
BY PALADIN

# OPERATOR'S MANUAL

# ROTARY CUTTER
# 8' & 10' Heavy Duty



**SERIAL NUMBER: _____**

**MODEL NUMBER: _____**

**Manual Number: KDK06-0189**

**Rev. 6**

800-433-6404 I www.paladinattachments.com 8822 Apison Pike, Ooltewah, TN 37363, United States of America 

2/12/19

## READ ENTIRE OPERATOR'S & PARTS MANUAL BEFORE OPERATING!

**DANGER!** **ROTATING BLADE HAZARD! STAY BACK!**
**OBJECTS CAN BE THROWN!**
**DO NOT operate near bystanders.**
**DO NOT place hands or feet under deck while in operation or with engine running.**

**DANGER!** **FLYING DEBRIS HAZARD. CLEAR AREA OF BYSTANDERS AND LIVESTOCK BEFORE OPERATING. THE BRUSH CUTTER IS CAPABLE OF PRODUCING LARGE AMOUNTS OF FLYING DEBRIS IN ALL DIRECTIONS.**

**WARNING!** **Before leaving the operator's seat: Lower the lift arms and place unit on the ground. Disengage PTO. Turn off engine. Engage parking brake. Remove key and wait for all blade rotation to stop.**

**WARNING!** **All rotating parts must be shielded. Do not operate without all PTO driveline, tractor and rotary cutters guards in place.**

**WARNING!** **These rotary cutters should not be operated with the back of the unit more than 12" (305 mm) above the ground.**

**If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer.**

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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 forward.

**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.**

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# SAFETYSTATEMENTS

**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

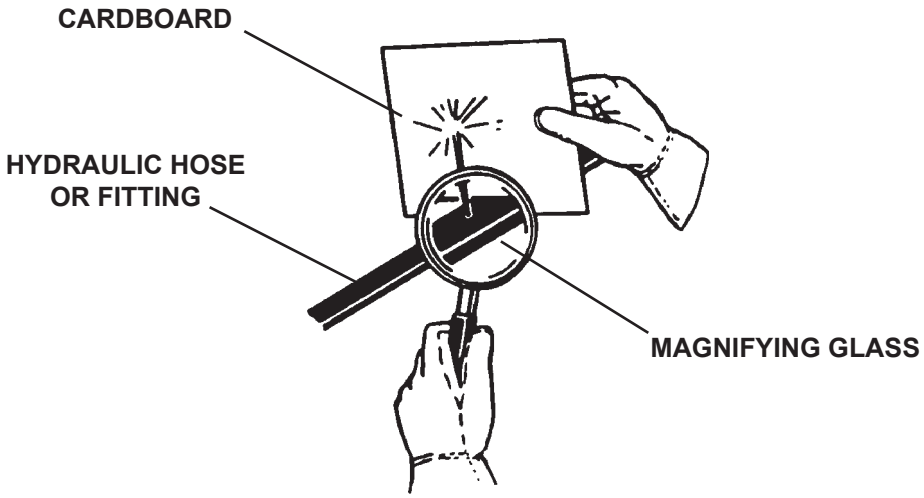
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground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

# 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

- PTO Operated Attachment: Rotating driveline contact can cause death. Do not operate without all driveline, tractor and equipment shields in place.
- Check driveline shields turn freely on driveline.
- Block off work area from bystanders, livestock, etc. Flying debris can cause severe injury or death.
- Make sure no one is behind the equipment or for several hundred feet in any direction around the equipment when in operation. Never allow anyone to ride on or approach the rotary cutter when in operation.
- Check driveline connections before operation. Be sure quick disconnect locks are operating and locked.
- Do not stand between prime mover and cutter during installation.
- Keep hands, feet and clothing away from power driven parts while tractor engine is running. Failure to do so will result in serious injury or death from rotating blades or PTO shaft.
- Clear work area of all objects that could be thrown or picked up by the cutter.
- Do not raise the attachment when the blades are rotating.
- Set tractor lift control stop at a position that will prevent the drive shaft from contacting the front edge of the cutter when at full lift (if required).
- Operate only from the operator's station.
- Do not exceed specified RPM of your cutter.
- Be sure all guards, shields, covers & deflector chains are properly installed before operating unit.

# EQUIPMENT SAFETY PRECAUTIONS

## OPERATING THE ATTACHMENT

- Never try to board or exit equipment while it is running.
- Test all controls before you begin operation.
- Keep mower deck clear of debris. There is a risk of fire when dry material accumulates and contacts heat generated from rotating blades.
- Always keep the blade carrier and blade bolts tight. Loose blades could easily penetrate a quarter inch steel plate and/or seriously injure personnel.
- When operating on slopes, drive up and down, not across. Avoid steep hillside operation, which could cause the prime mover to overturn and increases the chance for thrown objects.
- 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.
- Never leave the attachment unattended when in the raised position. Always make sure all rotation has stopped, both skids are on the ground, PTO is disengaged, parking brake is engaged, engine is turned off and the keys are removed before exiting the prime mover.

## 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.
- Disengage PTO before transporting.
- 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.

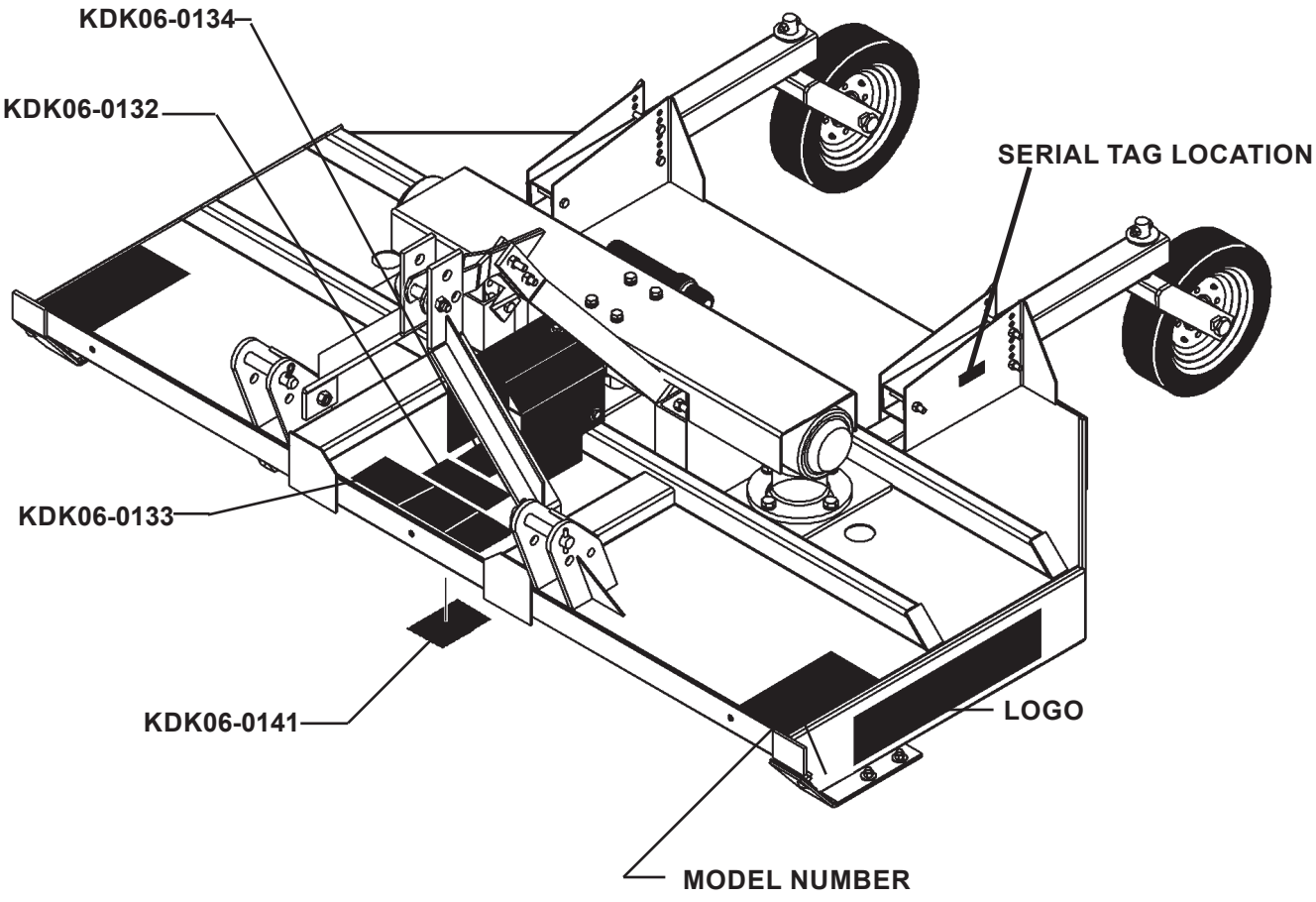
## MAINTAINING THE ATTACHMENT

- Before performing maintenance, lower the attachment to the ground, disengage the PTO, apply the brakes, turn off the engine and remove the key. Be sure all rotation has stopped before approaching the cutter. Disengage the PTO shaft before making any adjustments or repairs.
- 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.
- If attachment must be left raised for maintenance or any other reason, block the unit securely to prevent accidental release of the lifting mechanism. Serious damage or personal injury could result.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from Paladin.
- Never work under a raised attachment unless PTO has been disengaged and cutter is securely blocked.

# DECALS

## GENERAL INFORMATION

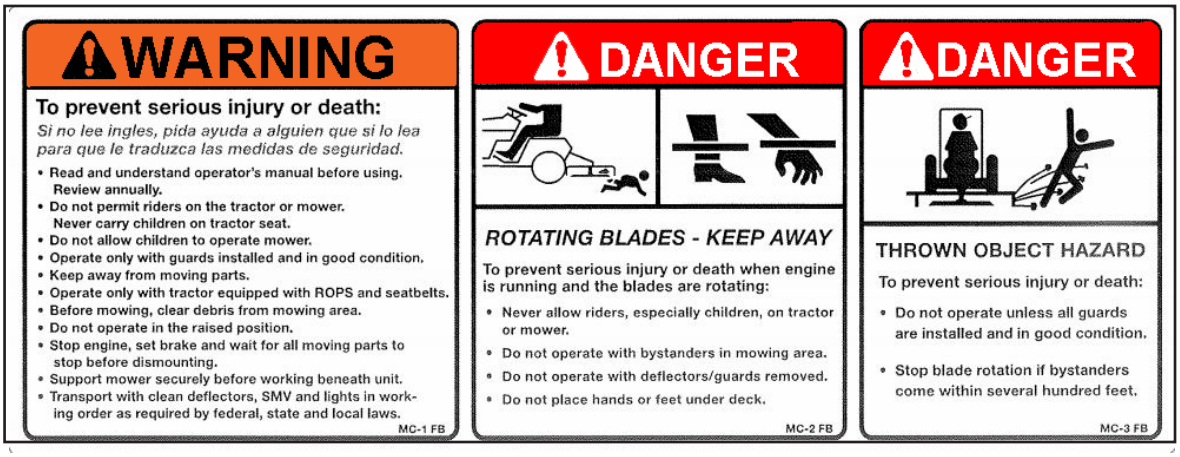
The diagram on this page shows the location of all the decals used on your attachment. The decals are identified by their part numbers, with reductions of the actual decals located on the following page. Use this information to order replacements for lost or damaged decals. Be sure to read all decals before operating the attachment. They contain information you need to know for both safety and attachment 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 #KDK06-0133**
**SAFETY DECAL SET (THREE DECALS)**


**PART #KDK06-0132**
**WARNING! NO RIDERS**


**PART #KDK06-0134**
**GEARBOX WARRANTY**


**PART #4285**
**LOCATED ON INSIDE OF PTO SHAFT**


**PART #KDK06-0121**
**DANGER! GUARD MISSING**
**(PTO / GEARBOX GUARD)**


**PART #KDK06-0141**
**DANGER! CRUSH HAZARD**
**(LOCATED ON BOTTOM SIDE OF DECK FOR SHIPPING PURPOSES)**


**PART #4286**
**LOCATED ON PTO**

**NOTE: CONTACT YOUR LOCAL DEALER TO PURCHASE MODEL NUMBER AND LOGO DECALS.**

# PREOPERATION

## TRACTOR REQUIREMENTS

Tractor horsepower (HP) and hitch category should be within the range noted below. Tractors outside the horsepower (HP) range must not be used on these cutters.

| ROTARY CUTTER | TRACTOR HP | HITCH CATEGORY | PTO SPEED | PTO SHAFT STYLE |
|---|---|---|---|---|
| 8' HEAVY DUTY CUTTER - LIFT-TYPE | 60-75 | CAT I & II | 540 | 1.38" 6-SPLINE |
| 8' HEAVY DUTY CUTTER - PULL-TYPE | 40-80 | NA | 540 | 1.38" 6-SPLINE W/CV PTO |
| 10' HEAVY DUTY CUTTER - LIFT-TYPE | 70-90 | CAT I & II | 540 | 1.38" 6-SPLINE |
| 10' HEAVY DUTY CUTTER - PULL-TYPE | 50-90 | NA | 540 | 1.38" 6-SPLINE W/CV PTO |

**WARNING!** **Ballast weights may need to be added to your tractor to maintain 20% weight on front axle. Refer to your tractor operator's manual to determine proper ballast requirements.**

**Always refer to the tractor operator's manual to ensure compatibility and maximum safety.**

## ADDITIONAL TRACTOR REQUIREMENTS

Tractor must be equipped with:

- Approved Roll-Over Protective Structure (ROPS) or ROPS cab. Keep ROPS locked in the UP position.
- Seatbelt.
- Slow Moving Vehicle (SMV) emblem
- PTO master shield.

**WARNING!** **Do not use a PTO drive adapter to attach your cutter driveline to a non-matching tractor PTO. Serious personal injury and/or equipment failure can result. Consult an authorized dealer for assistance if the cutter PTO does not match the tractor PTO.**

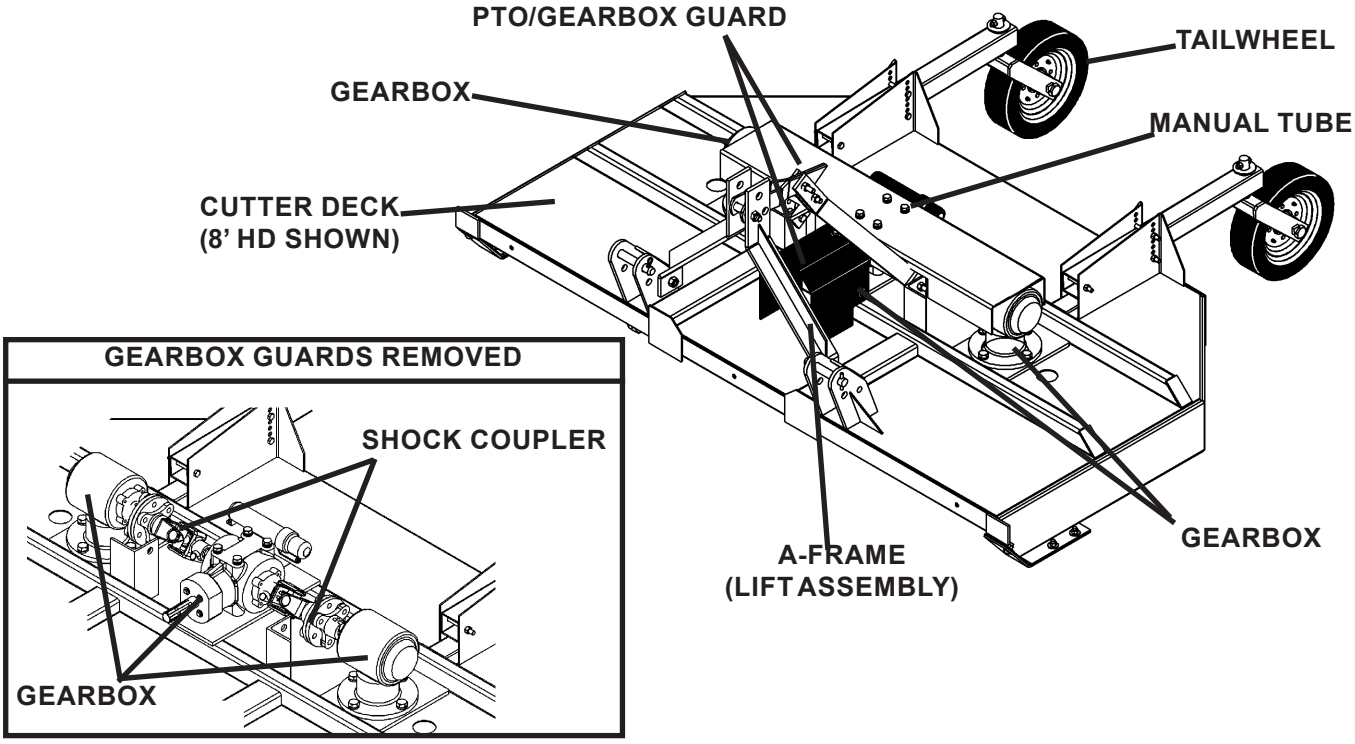
# PREOPERATION

## NOMENCLATURE

Throughout this manual, reference is made to various rotary cutter components. The purpose of this page is to acquaint you with the various names of these components. This knowledge will be helpful when reading through this manual or when ordering service parts.

## LIFT-TYPE

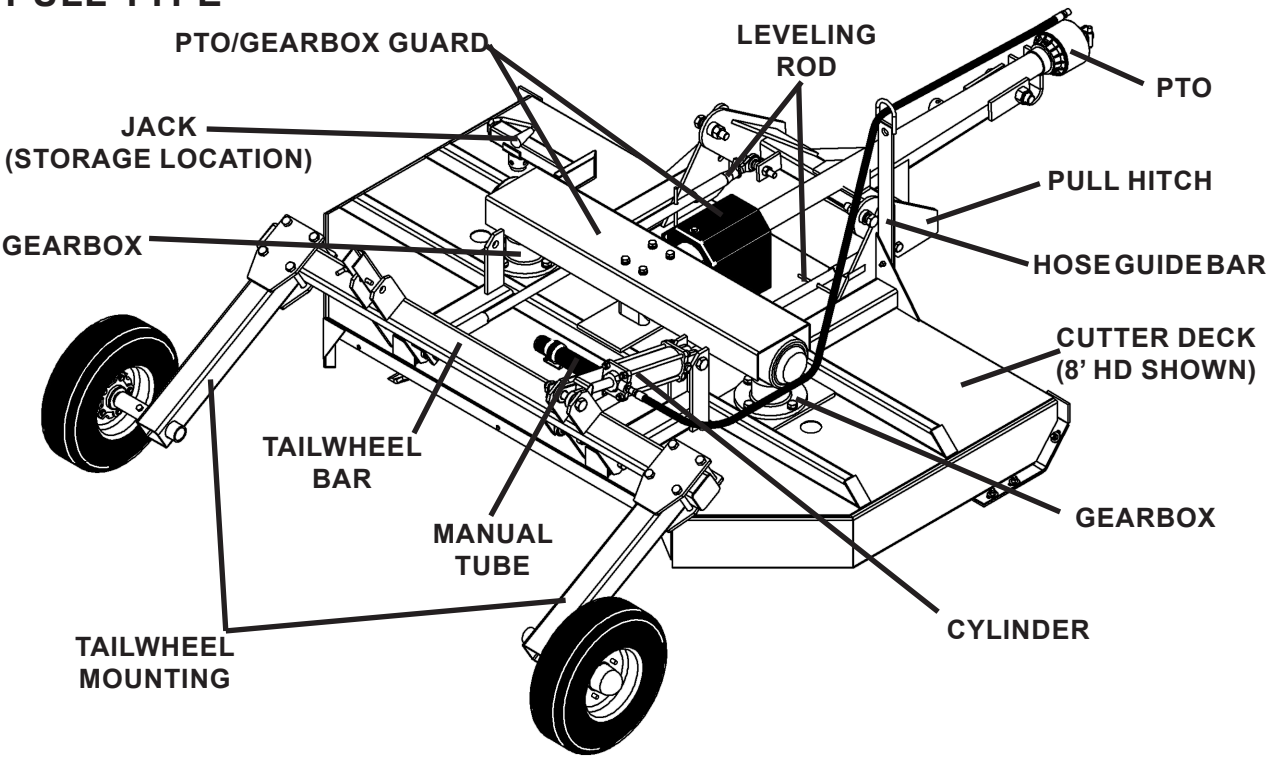
**(8' ROTARY CUTTER SHOWN)**







## PULL-TYPE



# INSTALLATION

## GENERAL INFORMATION

The following instructions will help you set up and install the rotary cutter onto your tractor. Read all safety warnings, decals and operating instructions before operating the cutter. If there is any portion of this manual that you do not understand, contact your dealer.

**REMOVE ROTARY CUTTER FROM SHIPPING STAND:**

Place the cutter on a flat, hard surface in a suitable work area with a hoist available.

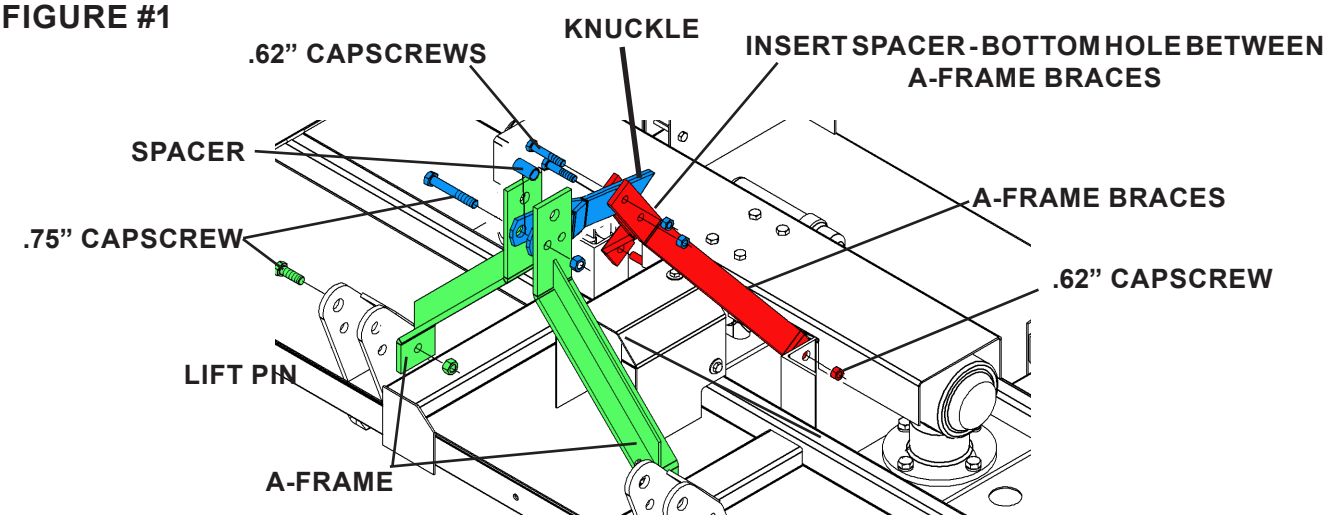
1. Attach a hoist to the top of the cutter assembly to prevent the cutter from inadvertently falling.
2. Remove the hardware securing the cutter to the shipping stand and carefully lift and lower the cutter assembly to the ground. Remove all shipping ties. **NOTE: Shipping stand is for shipping purposes only. Do not store cutter vertically.**

**WARNING! Keep hands and feet from under the cutter deck and stand back while placing the cutter flat on the ground.**

## *LIFT-TYPE CUTTER SET UP:*

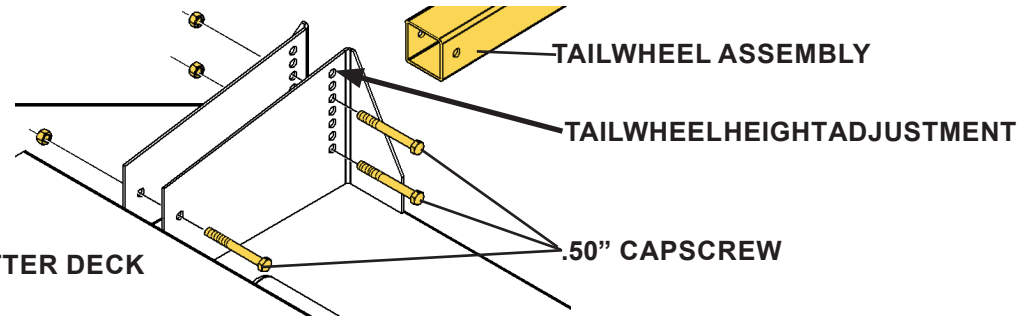
1. Install the A-frame, knuckle and A-frame braces using the hardware provided with your rotary cutter assembly. Install the capscrews loosely to allow for adjusting. **NOTE: knuckle must be installed to A-frame in the front hole location.** See Figure #1

**FIGURE #1**




2. Install tailwheel assemblies using the hardware provided. See Figure #2

**FIGURE #2**

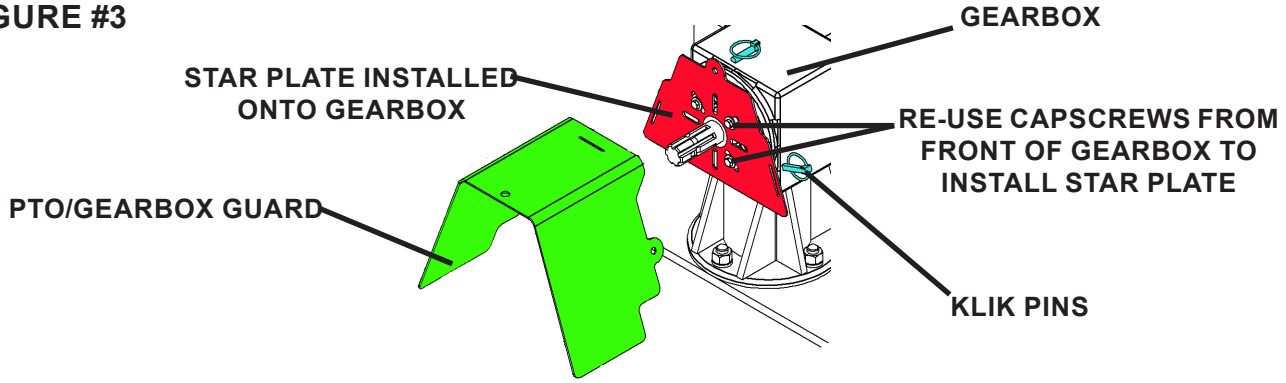


# INSTALLATION

**NOTE: The height of the tailwheels will help in determining cutting results. Positioning the front of the cutter slightly lower (up to 1" (25.4mm)) will decrease HP while increasing ground speed for heavier cutting applications. Positioning the front of the cutter slightly higher than the back will increase HP while decreasing ground speed for a more finished result.**

3. Remove vent plug from the gearbox and check that the EP-0 or equivalent grease level is visible. (Gearbox must contain grease/oil before starting although an accurate grease/oil level cannot be checked until the unit has been operated for 15-20 minutes.)
4. Disassemble the PTO/Gearbox guard by removing the three klik pins securing the guard to the star plate. Remove the capscrews from the front of the gearbox, position the star plate onto the front of the gearbox and reinstall capscrews. Reassemble the PTO/Gearbox guard onto the star plate and secure with klik pins. See Figure #3

**FIGURE #3**




5. Grease both universal joints of the PTO shaft along with the telescoping surfaces of the shaft.
6. Grease the gearbox shaft.
7. Grease tailwheel forks and hubs.
8. Install the gearbox end of the PTO shaft onto the gearbox.

## LIFT-TYPE CUTTER INSTALLATION

1. Either remove or place the tractor drawbar in its shortest position. Move the tractor into position in front of the rotary cutter. Back up slowly and carefully with the lower 3-point hitch arms positioned at the same height and to the outside of the hitch pins located on the A-frame. Do not allow anyone between the tractor and the cutter.
2. Turn off tractor engine.
3. Attach the two lower 3-point hitch lift arms on the tractor to the cutter using the hitch pins provided. Secure in place.
4. Attach the top link to the upper hitch point of the A-frame. **NOTE: Verify the top link is not extended enough to allow the PTO to contact the front of the cutter when raised.**
5. Adjust the lower link sway chains to prevent the cutter from swaying side to side and contacting the tractor tires.

# INSTALLATION

6. Attach the PTO from the cutter to the tractor: Slide the front section of the PTO into the back section and attach to the PTO shaft at the rear of the tractor. (Pull back on the driveline yoke collar and align the splines of the yoke with the PTO shaft. Push yoke onto the PTO shaft releasing the locking collar.) **NOTE: Push and pull the driveline back and forth until locked in place.**

**WARNING! The locking collar must slide freely and the locking balls seated in the groove on the tractor PTO shaft before operating. A driveline not attached correctly could come loose from the tractor resulting in personal injury and damage to the attachment.**

7. Attach front and back driveline chains to the cutter and tractor to prevent shields from turning. **NOTE: If chains are damaged or missing replace before operating cutter.**

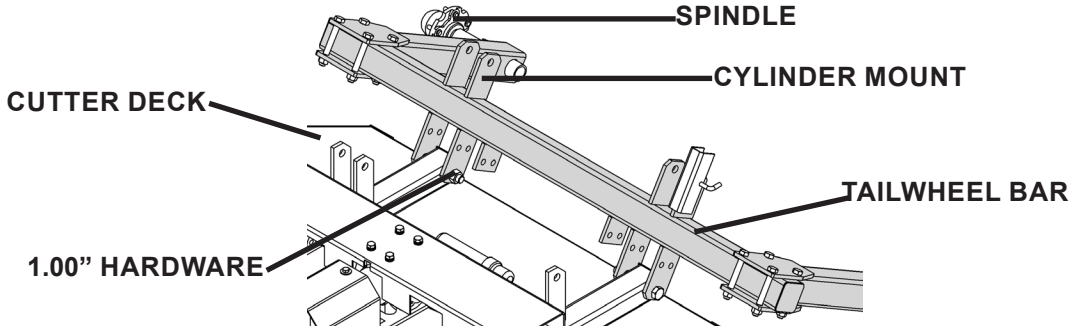
***NOTICE: The PTO is customized for your specific application. If the PTO shaft is too long, severe PTO and gearbox damage is possible. DO NOT FORCE THE PTO TO FIT. Warranty is void if the correct PTO is not installed. There should never be less than 5" of overlap within the PTO.***

**WARNING! Do not use a PTO adapter to attach your cutter to a non-matching tractor PTO. Serious personal injury and/or equipment failure can result. Consult an authorized dealer for assistance if the cutter PTO does not match the tractor PTO.**

## *PULL-TYPE CUTTER SET UP:*

1. With the cutter setting flat on the ground, bolt the pull hitch (tongue) assembly to the top hole of the cutter ears.
2. Install the tailwheel bar onto the cutter deck using the hardware provided with the cylinder mounting ears towards the top . (The tailwheel mountings should already be installed on the end of the tailwheel bar with the spindles to the outside.) See Figure #1

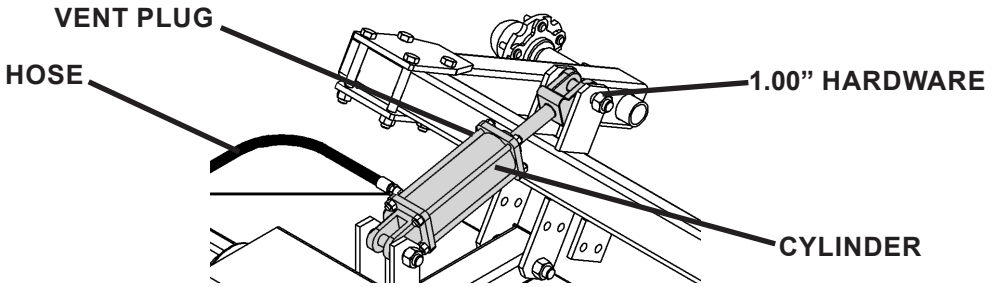
**FIGURE #1**




3. Install the cylinder assembly to the tailwheel bar using the 1" hardware provided. (This controls the wheel height of the rotary cutter.) Connect the hydraulic hose to the cylinder barrel end and vent plug to the rod end. See Figure #2

# INSTALLATION

**FIGURE #2**




4. Install the hose guide bar to the left front mounting ear gusset using the .38" UNC X 1.25" capscrew and nut provided. See Figure #3
5. Install the wheels to the spindles with the hardware provided.
6. Before installing the leveling rods, adjust each end so that 4-5 threads are showing. Connect the end of the leveling rod with the "T" handle to the tail-wheel assembly using the .75" hardware provided with the spacer tube to the outside. (The 8' cutter attaches to the front hole and the 10' cutter uses the hole to the back as shown) See Figure #4

**FIGURE #3**

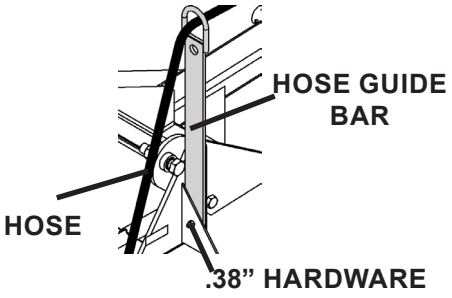
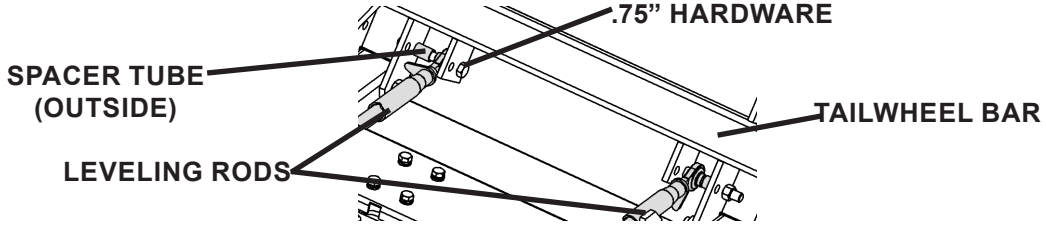
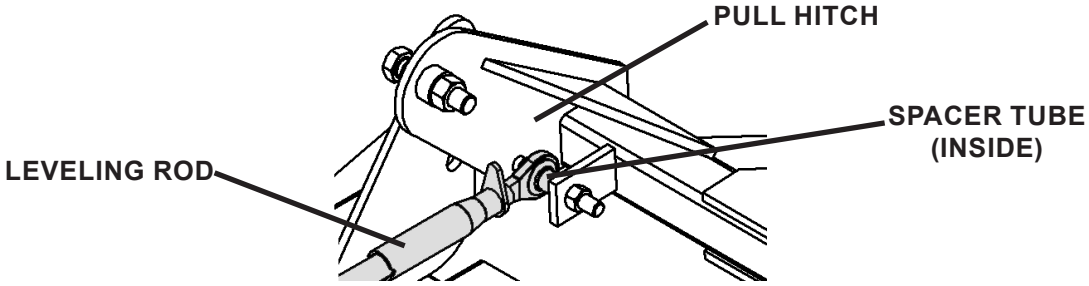



**FIGURE #4**




7. Attach the front of the leveling rods to the pull hitch using the hardware provided and positioning the spacer tubes to the inside of the cutter. **NOTE: the pull hitch will need to be jacked up to connect the leveling rods.** See Figure #5

**FIGURE #5**

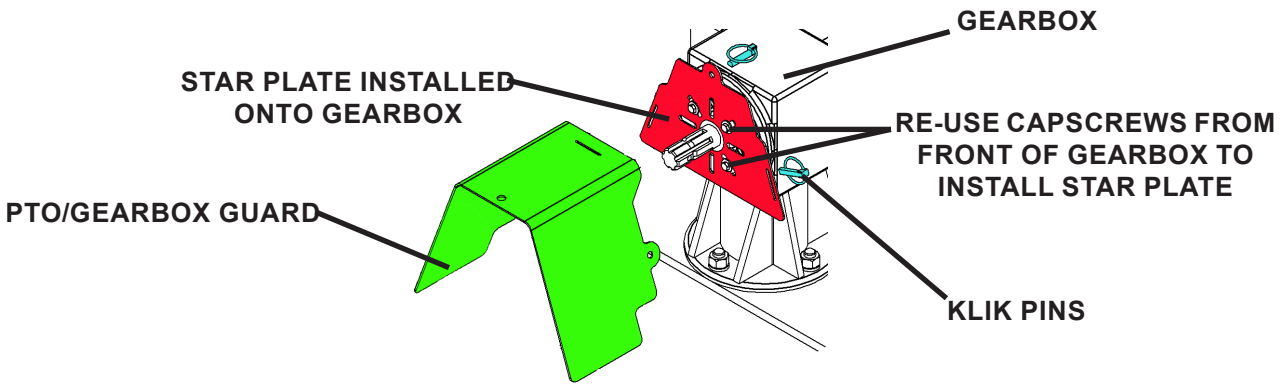



8. Tighten all hardware to specification. (See Bolt Torque Specifications)
9. Gearbox must contain grease/oil before starting although an accurate grease/oil level cannot be checked until the unit has been operated for 15-20 minutes.

# INSTALLATION

10. Disassemble the PTO/Gearbox guard by removing the three klik pins securing the guard to the star plate. Remove the capscrews from the front of the gearbox, position the star plate onto the front of the gearbox and reinstall capscrews. Reassemble the PTO/ Gearbox guard onto the star plate and secure with klik pins. See Figure #6

**FIGURE #6**




11. Grease both universal joints of the PTO shaft along with the telescoping surfaces of the shaft.
12. Grease the gearbox shaft.
13. Grease wheel hubs.
14. Install the gearbox end of the PTO shaft onto the gearbox.

## PULL-TYPE CUTTER INSTALLATION

1. Move the tractor into position in front of the rotary cutter. Back up slowly and carefully with the lower 3-point hitch arms raised up to clear the pull hitch (tongue). Do not allow anyone between the tractor and the cutter.
2. Turn off tractor engine.
3. Alternate raising the pull hitch and extending the leveling rods a little at a time until the pull hitch is high enough to attach to the tractor. **NOTE: This process is easier and quicker with a second person.**
4. Connect the pull hitch to the tractor and install the hydraulic hose.
5. Raise and lower the deck to make sure the leveling rods have clearance between the cross shafts and the deck. Some fine tune leveling adjustments may be required before operating.
6. **To Adjust:** Loosen the jam nuts on both leveling rods and rotate the “T” handles equally until the back of the cutter is approximately 3/4” higher than the front. (Lengthening the leveling rods raises the back of the cutter.) Make sure that the right and left leveling rods are equally tight and then tighten the jam nuts.
7. Attach the PTO from the cutter to the tractor: Slide the front section of the PTO into the back section and attach to the PTO shaft at the rear of the tractor. (Pull back on the driveline yoke collar and align the splines of the yoke with the PTO shaft. Push yoke onto the PTO shaft releasing the locking collar.) **NOTE: Push and pull the driveline back and forth until locked in place.**

# INSTALLATION

**WARNING!** **The locking collar must slide freely and the locking balls seated in the groove on the tractor PTO shaft before operating. A driveline not attached correctly could come loose from the tractor resulting in personal injury and damage to the attachment.**

8. Attach front and back driveline chains to the cutter and tractor to prevent shields from turning. **NOTE: If chains are damaged or missing replace before operating cutter.**

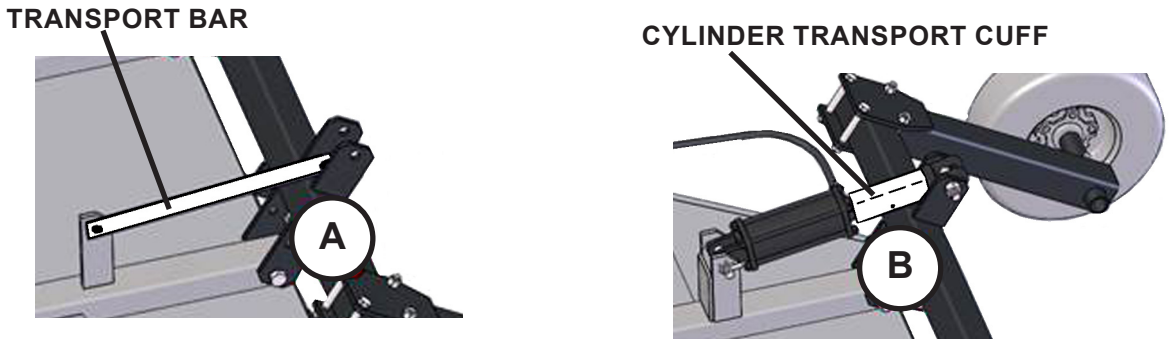
***NOTICE: The PTO is customized for your specific application. If the PTO shaft is too long, severe PTO and gearbox damage is possible. DO NOT FORCE THE PTO TO FIT. Warranty is void if the correct PTO is not installed. There should never be less than 5" of overlap within the PTO.***

**WARNING!** **Do not use a PTO adapter to attach your cutter to a non-matching tractor PTO. Serious personal injury and/or equipment failure can result. Consult an authorized dealer for assistance if the cutter PTO does not match the tractor PTO.**

## TRANSPORTING PULL-TYPE CUTTERS BETWEEN WORK SITES:

Install transporting bar to the cylinder rod capscrew or in lieu of the cylinder (A) for transporting between work sites or install cylinder transporting cuff (B) over the rod end of the cylinder for transporting. See Figure #1

**FIGURE #1**




## DISCONNECTING ROTARY CUTTER

1. Park on a level surface and lower the deck to the ground or on supporting blocks.
2. Engage tractor parking brake, shut off engine and remove the key. **IMPORTANT: Stay on the tractor until all blade movement has stopped.**
3. Disconnect driveline from tractor and unhook hitch from tractor.

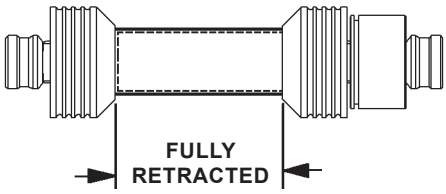
**NOTE: On Pull-Type Cutters: Remove the jack from the cutter deck and secure to the hitch by inserting the locking pin through the jack and hitch bracket. Disconnect the hydraulic hose from the tractor and store off the ground on the cutter deck.**

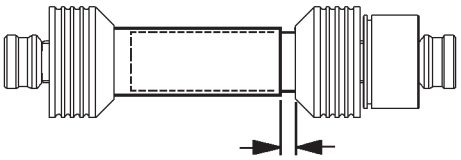
4. Drive tractor slowly forward several feet.
5. Reinstall hitch pins in cutter hitch.
6. Collapse tractor end driveline and place on cutter deck.

# INSTALLATION

## POWER (PTO) SHAFT ADJUSTMENT

Confirm the minimum and maximum working lengths of the driveshaft. The telescoping tubes must overlap by at least 1/3 of their length while in use. The (PTO) drive assembly may need to be shortened to fit up to your tractor correctly and to prevent the drive assembly from “bottoming out” and causing extensive damage to the tractor PTO drive assembly.



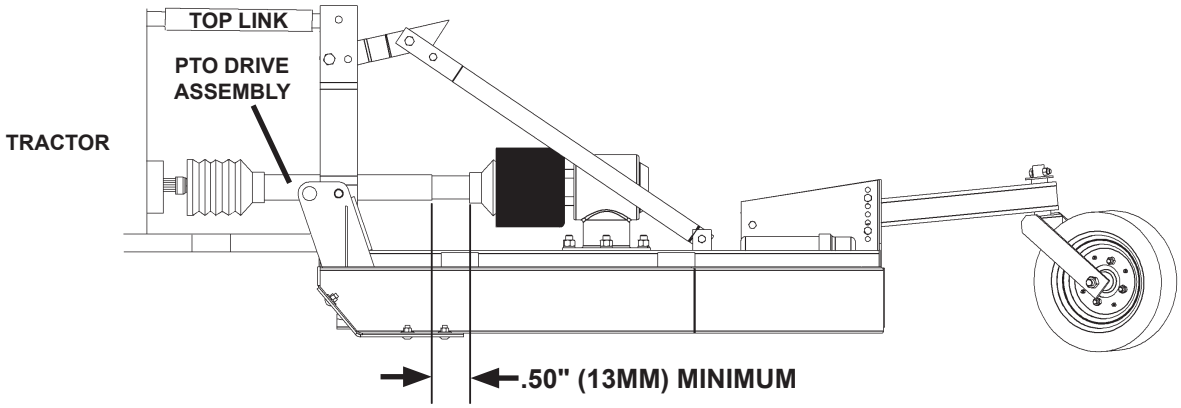




The shaft assembly is shortest when the shaft is straight inline with the attachment. There should be a minimum of .50" (13mm) of free travel before the shaft is fully retracted. To check:

a. Lower the attachment until the shaft is parallel to the ground and is straight inline with the attachment gearbox.
b. Check to see if there is a minimum of .50" free travel.

If there is not at least .50" (13mm) of free travel DO NOT OPERATE ATTACHMENT.

***NOTICE: IF THE DRIVE SHAFT “BOTTOMS OUT” BEFORE IT IS STRAIGHT INLINE WITH THE ATTACHMENT, STOP AND CALL YOUR NEAREST DEALER OR THE ATTACHMENT MANUFACTURER BEFORE OPERATING.***




**CAUTION** **FAILURE TO HAVE THE REQUIRED DISTANCE OF CLEARANCE WILL DAMAGE THE POWER TAKE OFF (PTO) OF YOUR TRACTOR.**

# OPERATION

**INTENDED USE:** The Heavy Duty Rotary Cutters are designed for cutting grass, weeds, brush and trees up to 3” (76mm) in diameter while still maintaining a 12” (305mm) maximum ground clearance. Use in any other way is considered contrary to the intended use.

## GENERAL INFORMATION

Simplicity of operation is one of the key features of your attachment. There are only a few adjustments to check. It is important however to be familiar with, and know the controls and adjustments on both the attachment and the tractor. Such knowledge is crucial for safe, efficient operation of equipment. Take the time to learn how they operate now.

## THE TRACTOR

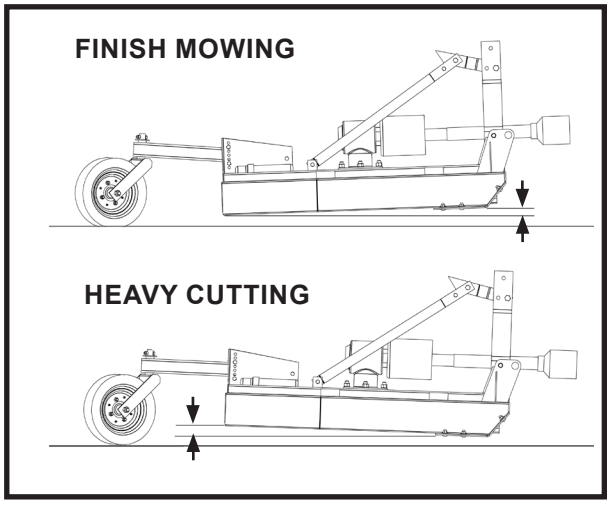
Your attachment mounts to the drawbar or 3-point hitch system of the tractor. Due to this arrangement, thorough knowledge of the tractor and all of its controls is necessary for attachment operation. Read your tractor owner’s manual for information regarding tractor operation before attempting to use the attachment.

## ADJUSTING CUTTER HEIGHT AND PITCH

### *LIFT-TYPE ROTARY CUTTERS*

Adjust the height of the front of the cutter by adjusting the lower 3-point hitch arms on your tractor. The 3-point lift arms will also be used to adjust side to side leveling. **NOTE: Set the 3-point control lever stop on the tractor to maintain your height adjustment when raising and lowering the cutter.**

Adjust the rear of the cutter by adjusting the top link on the tractor and the tailwheel height. The top link should be adjusted so when the mower is lifted the front of the mower will leave the ground a couple inches before the rear to allow for uneven terrain.




### *PULL-TYPE ROTARY CUTTERS*

Adjust cutter height using the hydraulic cylinder and the leveling rods. Loosen the nuts on the leveling rods and rotate the “T” handles until you have the desired height. Lengthening the leveling rods raises the back of the cutter. Make sure that the right and left leveling rods are equally tight and then tighten the nuts.

Positioning the cutter level with the ground during operation will maintain an even cutting pattern and even spreading of the cut grass.

If the cutter is slightly lower in the front (3/4” (20mm) it will decrease the required HP which will increase fuel efficiency and you can increase ground speed. We recommend setting the cutter lower (up to 1” (25.4mm) in the front for heavier cutting applications. Too low in the front will cause skipping, uneven cutting, excessive blade wear.

# OPERATION

If the cutter is slightly lower in the back it will increase HP and decrease ground speed. This will allow for increased mulching of the grass and improved distribution of cut material. We recommend setting the cutter slightly lower in the back for a more finished result. Too low in the rear will result in skipping, uneven cutting, excessive wear on tailwheels and the rear skirt dragging, causing balling up problems.

The blades contacting the ground can result in excessive slipping of the slip clutch and increased thrown objects from under the cutting deck.

## BEFORE OPERATING

Before operating your attachment, ensure that the attachment is in good working condition. Perform all routine maintenance and check that driveline is properly attached, chains attached to cutter and tractor and locked onto the PTO shaft by pushing and pulling the yoke several times.

**DANGER!** **All safety guards, shields and devices must be installed and inspected daily for missing or broken components. Replace broken, missing or worn items at once to reduce personal injury or death from thrown objects, entanglement, or blade contact.**

Visually verify that there is nothing under the cutter and all parts are assembled correctly. Inspect the work site, removing all foreign objects, rocks and debris that the blades could come into contact with. If objects are too big to remove, mark the area clearly and avoid blade contact. If the grass/weeds are too high to find the smaller debris that could be struck by the blades, it is recommended to mow the area high, keep all bystanders completely out of the area, then remove the smaller debris and mow again at a lower height.

***NOTICE: We recommend installing debris deflecting chains onto the cutter before operating.***

**DANGER!** **ROTATING BLADE HAZARD! STAY BACK!**
**OBJECTS CAN BE THROWN!**
**DO NOT operate near bystanders.**
**DO NOT place hands or feet under deck while in operation or with engine running.**

**DANGER!** **Do not allow riders on the attachment or tractor.**

**WARNING!** **Before leaving the operator's seat: Lower the attachment. Never leave the attachment in the raised position. Make sure all rotation has stopped, both skids are on the ground, PTO is disengaged, parking brake is engaged, engine is turned off and the keys are removed before exiting the prime mover.**

## CUTTING OPERATION

Ground speed will depend on the terrain, grass type and density along with height of vegetation. The PTO should be at full rated RPM to maintain a clean cut but do not exceed the rated 540 RPM for the attachment. For most cutting operations we recommend a ground speed of 3-5 MPH (5-8 K/H). Adjust ground speed to maintain the rated PTO speed to prevent overloading the cutter and tractor.

# OPERATION

Follow your tractor operator's manual and safety precautions for operating a rear mounted attachment. Operate only from the operator's seat with seatbelt securely fastened. Your tractor must be equipped with ROPS or an enclosed cab.

We recommend that you plan your driving pattern in advance to minimize turning and approach ditches at an angle to prevent over-collapse of the driveline.

**WARNING! Exceeding the rated PTO speed for your attachment (540 RPM) can result in serious injury or death along with driveline and attachment damage.**

1. Position the height and pitch of the cutter for your terrain, grass type and density.
2. Block off the work area from all bystanders, children, livestock and vehicles. Never operate the cutter in populated areas where thrown objects could injure people or damage property.

**WARNING! Never engage the PTO with the mower deck raised, exposing yourself or anyone else to the rotating blades. If blades are visible then the unit is raised too high.**

3. Following your tractor operator's manual for starting procedures, start the tractor and set the engine speed at idle (approximately 1000 RPM) before engaging the tractor PTO.
4. Slowly increase engine speed until the PTO is running at the rated speed (540 RPM).

**WARNING! Initial start up vibration is normal and should stop after approximately 3-5 seconds. If you encounter unusual or excessive vibration or noise disengage the PTO immediately. Inspect the attachment to determine the cause and repair or tag "DO NOT OPERATE" until all problems are corrected.**

5. Slowly proceed forward into the work area adjusting ground speed to accommodate the terrain and vegetation height and density.

**IMPORTANT: Grease level in the gearbox must be checked after 15-20 minutes of initial operation. Grease should be level with pipe plug.**

6. **LIFT- TYPE CUTTER:** When you get to the end of a pass be sure to leave additional clearance for the added length of the tractor with cutter. Slightly raise the cutter before turning but do not raise the cutter entirely while the blades are turning. If the cutter must be raised higher than 12" (305mm) from the ground, disengage the tractor PTO and wait for all blade rotation to stop before proceeding to raise cutter.
   **PULL-TYPE CUTTER:** When you get to the end of a pass be sure to leave additional clearance for the added length of the tractor with cutter. The angle between the tractor and cutter should not be so great that a clattering of the U-joints occurs. Sharp turns cause premature failure of the joints and damage to the cutter and tractor.
7. When done mowing for the day, Disconnect PTO shaft and check the blade pan (stumpjumper) to make sure it is tight on the gearbox output shaft. If loose, torque the castle nut to **200-210** ft. lbs. (271-285 N.m) and replace cotter pin. Check blade hardware for tightness or excessive blade wear. Tighten blades to 450 ft. lbs. (610 N.m) or replace as required.

# OPERATION

## TROUBLESHOOTING OPERATING CONDITIONS:

Below are listed a few operating conditions and suggestions on how to possibly correct them.

**DANGER!**  **Rotary cutters are capable of throwing objects a great distance causing serious injury or death. Keep all bystanders several hundred feet away from mowing area.**

**GRASS TOO LONG OR THICK**: If cutting heavy vegetation, you may need to slow travel speed or make smaller passes (less than full cut).

**BRUSH TOO BIG IN DIAMETER:** The rotary cutter is NOT designed to cut trees larger than the specifications indicated in the Intended Use.

**CUTTING LARGE BRUSH AND SMALL TREES:** If brush is within recommendations and the cutter is not cutting satisfactorily, check sharpness of the blades (see “Maintenance”) and cut by approaching the area with the brush or tree to the right side of center. This will bend the tree in such a fashion that the cutting blades will cut from the top (outside) of the bend and not the bottom (inside) for a cleaner cut. DO NOT BACK OVER LARGE BRUSH OR SMALL TREES.

**BRUSH TOO THICK OR HEAVY:** If cutting heavy or thick brush, you may need to slow travel speed or make smaller passes (less than full cut), to prevent overloading. If the blades seem to be unable to handle the volume of brush, slow down the travel speed until the unit reaches full speed before proceeding. If still not obtaining a uniform cut see “CUTTING LARGE BRUSH AND SMALL TREES”.

**SCALPING THE GROUND or BOTTOMING OUT:** Be aware of changes in the terrain. Stay alert for drop-off’s and holes. Check the terrain and the deck position before proceeding to cut.

**CROSSING DITCHES AND/OR STEEP INCLINES:** Cut ditches and inclines at an angle. DO NOT travel up and down ditches or steep inclines that will allow the main driveline inner profile to penetrate into the outer housing until the assembly becomes solid (driveline at its extreme shortest length). This can cause serious damage to the tractor and cutter by pushing the PTO into the tractor, through the support bearings or downward breaking the PTO shaft.

**WARNING!**  **Damage caused by over-collapsing the driveline may allow the driveline to come loose from the tractor which could result in severe personal injury to the operator or bystanders and/or extensive damage to the tractor or attachment.**

**STRIKING FOREIGN OBJECTS:** Stay alert for rocks, fencing, abandoned wells, septic tanks or other foreign objects. If the cutter comes into contact with a foreign object, stop the unit, shut off the engine and disconnect the PTO. Inspect the unit and repair any damage before restarting and continuing cutting. (Never try to weld or straighten damaged blades.) Inspect the work area for any other items, and if they are too large to be removed from the area, they should be clearly flagged.

# OPERATION

## STORAGE

The following storage procedure will help you to keep your attachment in top condition. It will also help you get off to a good start the next time your rotary cutter is needed. We therefore strongly recommend that you take the extra time to follow these procedures whenever your unit will not be used for an extended period of time.

- Clean the unit thoroughly, removing all mud, dirt, and grease.
- Sharpen or replace blades. Replace all blades at the same time and do not try to weld or straighten damaged blades; loss of integrity may result.
- 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. **NOTE: Purchase only approved replacement parts.**
- Tighten all loose capscrews and nuts.
- Check the drive bearing housing for proper lubricant level.
- Replace decals if damaged, or in unreadable condition.
- Apply a rust-preventive spray to all moving parts and to the bottom of the deck.
- Place the driveline / yoke off the ground and away from water, dirt or other contaminants.
- Coat exposed portions of the cylinder rods with grease.
- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage.
- Store the 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 and exposed areas with paint, to prevent rust.

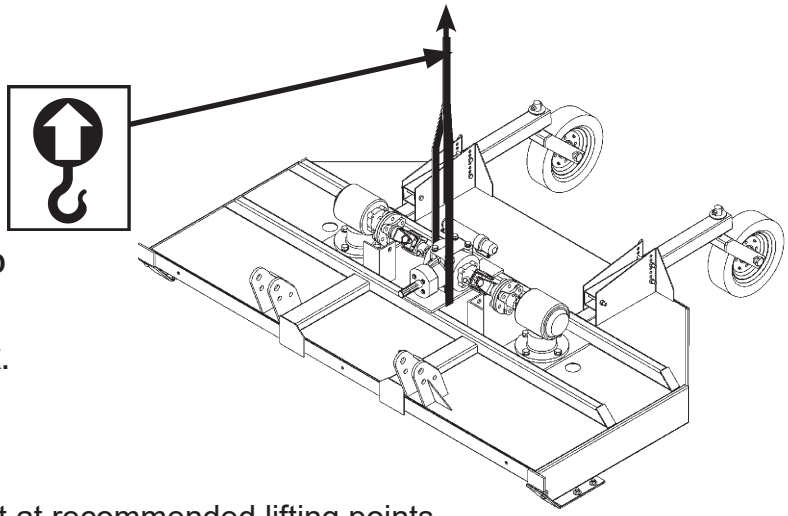
## REMOVING FROM STORAGE

- Remove all protective coverings.
- Check all nuts and bolts for proper tightness, especially those securing the motor, bearing housing and blades.
- Check hydraulic hoses for damage and leaks. Replace if required.
- Inspect slip clutch lining plates to ensure they are not seized from rust or corrosion. See Maintenance section and correct before operating.

## 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. See Diagram

# OPERATION



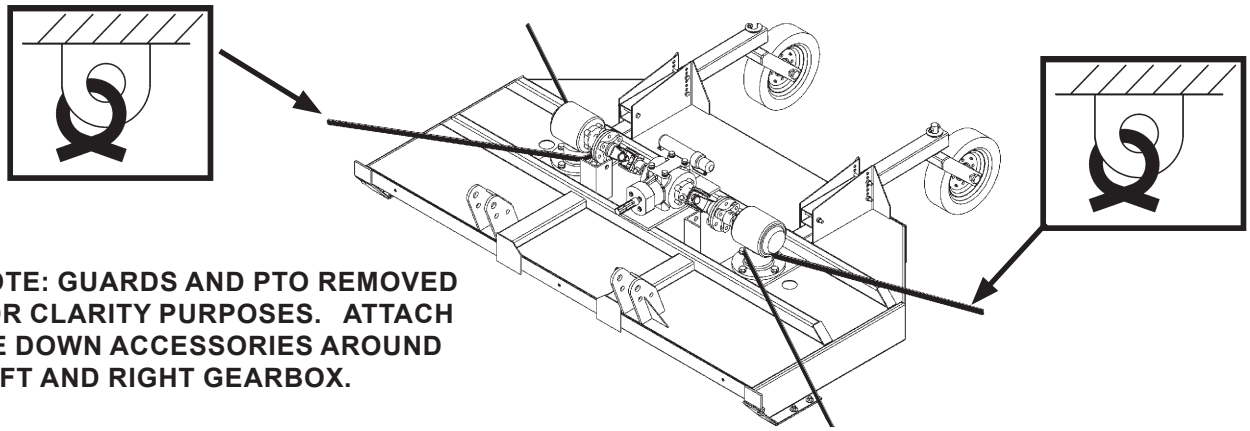
**NOTE: GUARDS AND PTO REMOVED FOR CLARITY PURPOSES. ATTACH LIFTING ACCESSORY BETWEEN SPLITTER PLATE AND CUTTER DECK.**

- 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. See Diagram



**NOTE: GUARDS AND PTO REMOVED FOR CLARITY PURPOSES. ATTACH TIE DOWN ACCESSORIES AROUND LEFT AND RIGHT GEARBOX.**

- 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.**

# OPERATION

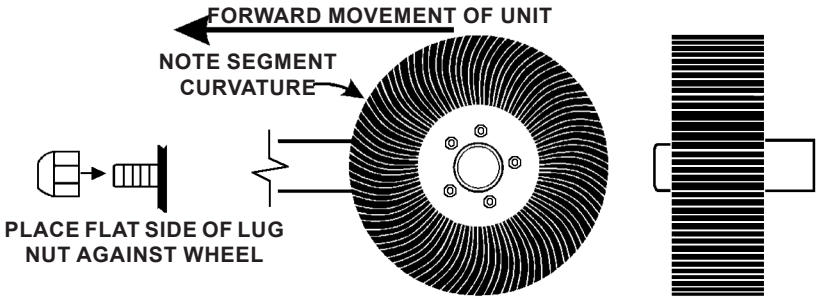
## TRANSPORTING

Follow all local government regulations that may apply along with recommended tie down points and any equipment safety precautions at the front of this manual when transporting your attachment.

Only transport with tractor ROPS in the raised position, seatbelt on and PTO disengaged. Lift the lift-type cutters when transporting between sites taking extra care that you do not obscure tractor SMV emblem. If transporting pull-type cutters using tailwheels: laminated tires should not exceed 15 MPH (24 K/H), excessive speeds can cause damage to the tires and cutter.

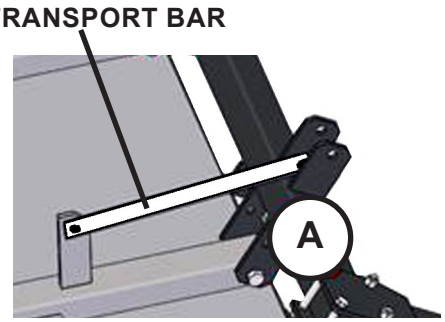
**LAMINATED TIRE**

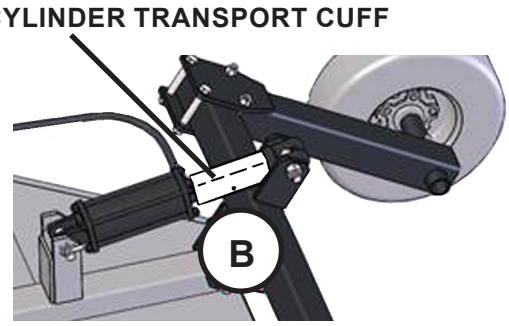
Sectional tires must be installed with the rubber segments laying with the ground.




### TRANSPORTING PULL-TYPE CUTTER BETWEEN WORK SITES WITH TRACTOR:

Install transporting bar to the cylinder rod capscrew or in lieu of the cylinder (A) for transporting between work sites or install cylinder transporting cuff (B) over the rod end of the cylinder for transporting.



# LUBRICATION

## GENERAL INFORMATION

Economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant. Neglect leads to reduced efficiency, heavy draft, wear, breakdown, and needless replacement parts.

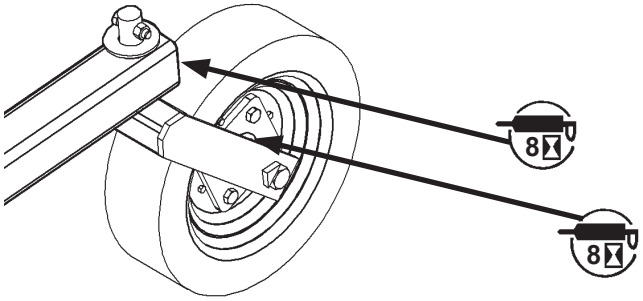
All parts provided with grease fittings should be lubricated as indicated. If any grease fittings are missing, replace them immediately. Clean all fittings thoroughly before using grease gun.

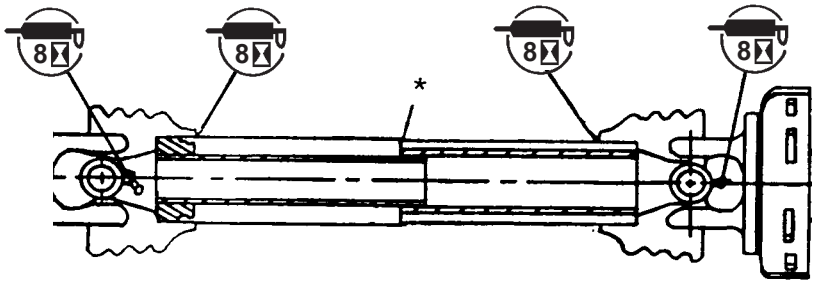
**IMPORTANT: Avoid excessive greasing. Dirt collects on exposed grease and greatly increases wear. After greasing, wipe off excessive grease from fittings.**

### LUBRICATION

Lubricate grease fittings every (8) eight hours. (PTO driveline U-joints and shield bearings. Tailwheel hub and spindle tube.)

Grease PTO driveline inner tube before putting attachment into operation and every 20 hours thereafter.

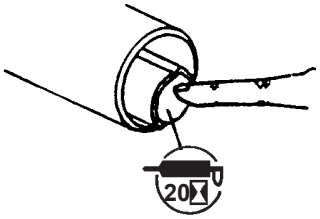



(Swing joint sideways for greasing.)

*** When used in winter the outer tube must be greased to prevent it freezing solid!**

**GREASE INSIDE OF OUTER TELESCOPING TUBE (EVERY 20 HOURS)**



# LUBRICATION

## WEEKLY

The grease/oil level in the gear box should be checked once a week. Proper level of lubricant in the gear box is approx. 26 oz (.77L) in the 90 HP gearbox and 48 oz (1.42L) in the center gearbox. Fill as necessary with EP-0 or equivalent grease.

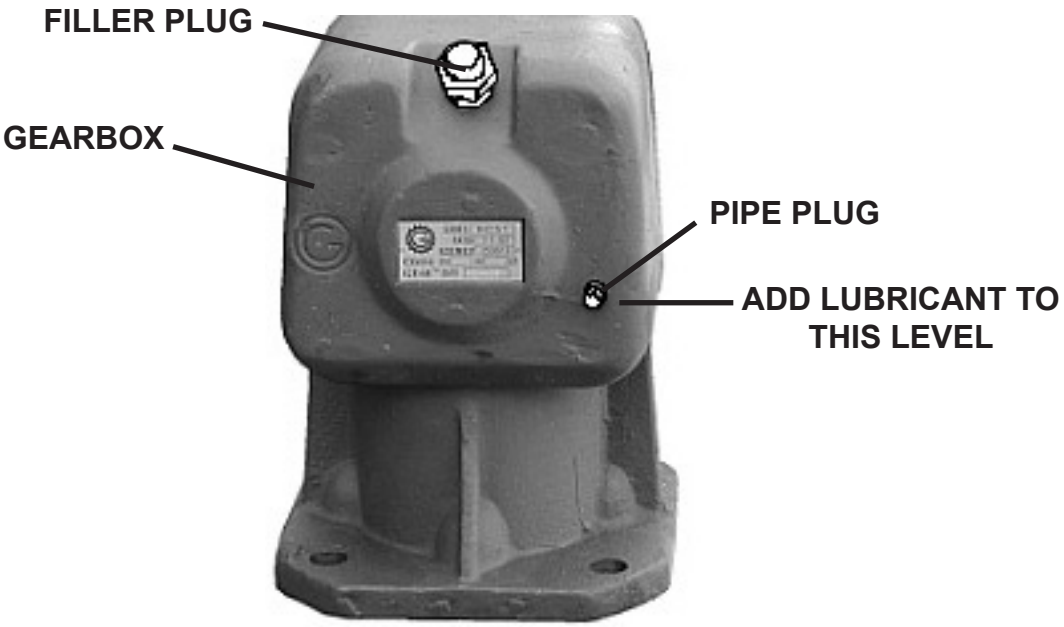
### TO CHECK:

Remove pipe plug from end of gearbox. Lubricant should be at the same level as the plug.

### TO ADD:

Remove pipe plug from end of gearbox. Remove filler plug (pressure relief plug) from top end of gearbox and add EP-0 or equivalent grease up to the same level as the pipe plug. Replace pipe plug and filler plug.

**IMPORTANT: DO NOT OVERFILL, AS TOO MUCH LUBRICANT MAY RUPTURE THE GEAR BOX SEALS.**




*NOTE: YOUR GEARBOX MAY VARY SLIGHTLY FROM DIAGRAM.*

**GEARBOX IDENTIFICATION**
**CURRENT PRODUCTION CHINA GEARBOX HAS A ROUND SMOOTH BACK MOLDING. THE OLDER OMNI GEARBOX HAS RAISED RINGS IN THE MOLDING WITH A FLAT BACK. (OMNI GEARBOX IS SHOWN)**

# 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.

**WARNING!**  **Before leaving the operator's seat: Lower the attachment. Never leave the attachment in the raised position. Make sure all rotation has stopped, both skids are on the ground, PTO is disengaged, parking brake is engaged, engine is turned off and the keys are removed before exiting the prime mover.**

| PROCEDURE | DAILY | EVERY 40 HOURS |
|---|---|---|
| Check mounting hardware on blades and tighten to 450 ft. lbs. (610 N.m). | ✔ | |
| Check all other hardware and tighten, if necessary. See Bolt Torque Specifications. | ✔ | |
| Check blades and blade pan (stumpjumper) for damage and replace or sharpen as required. | ✔ | |
| Check all Safety Guards and Devices are installed correctly. | ✔ | |
| Replace any missing or damaged bolts or nuts with approved replacement parts. | ✔ | |
| Inspect attachment for any worn parts or cracked welds. Repair as required. | ✔ | |
| Check hydraulic system for leaks or damaged hoses. Tighten or replace as necessary. | ✔ | |
| Check for missing or illegible Safety / Warning Decals. | ✔ | |
| Check oil level in gearbox and add if necessary. See Lubrication Section | | ✔ |

## INSPECT BLADES FOR DAMAGE:

Inspect blades for abnormal wear. Check for cracks, notches or chipped areas, bent or deformed blades or if the cutting edge has been excessively worn (more than .50" or 13mm). Always replace all of the blades at the same time and all blades must have the same offset.

## INSPECT BLADE PAN (STUMPJUMPER) FOR DAMAGE:

Inspect blade pan for damage caused by contacting an immovable object. This could cause excessive vibration and/or noise. Replace as required.

## SLIP CLUTCH

Perform a slip clutch operational check and adjustment if attachment has been in storage for 30 days or longer. See Maintenance section.

# MAINTENANCE

## SLIP CLUTCH OPERATIONAL CHECK AND ADJUSTMENT

The slip clutch serves as overall protection for the tractor, driveline, and gearbox. Even though new clutch assemblies are “run-in” and checked for proper torque before shipment, re-adjustment may be advisable if the clutch has been exposed to weather for an extended period of time. The clutch facing and plates should be inspected for rust and/or corrosion. After attachment has been stored for 30 days or more, perform an operational check.

## OPERATIONAL CHECK

1. Make a trial run in the heaviest operating conditions expected. If clutch slips noticeable, tighten the 8 adjusting bolts, no more than 1/2 turn, between trial runs until the clutch slippage is reduced.
2. Scribe a mark across the clutch facing. When subjected to shock loads, a separation of the marks will assure that the clutch setting is correct. **NOTE: Check the clutch periodically during the first hour of operation for excessive heat build-up.**

## REBUILT CLUTCH

If the clutch is being rebuilt (new facing and/or plates), it is necessary to “run-in” these parts prior to final adjustment. The plates should be thoroughly cleaned and free of foreign material as well as being checked with a straight edge for warping. Warped plates cannot be adjusted properly and will not hold adjustment. Perform the following “run-in” for rebuilt clutch.

1. Tighten all adjusting bolts evenly until the clutch cannot be slipped by hand.
2. With the blade carrier locked in a stationary position, operate with the PTO at idling speed (approximately 100 RPM) until evidence of heating is noted. **IMPORTANT: DO NOT ALLOW OVERHEATING OF THE CLUTCH.**
3. Discontinue operation and it is very important to allow the clutch to cool completely.
4. After the clutch has cooled, tighten all the adjusting bolts down evenly and proceed with operational check and clutch adjustment.

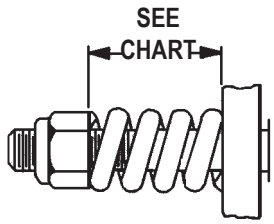
## SLIP CLUTCH ADJUSTMENT

The slip clutch is factory preset to the correct torque for protecting attachment and tractor. Periodic check and adjustment is recommended. If adjustment if needed:

1. Check to verify all spring lengths are the same.

**INITIAL SPRING LENGTH**

| PTO PART NUMBER | SPRING DIAMETER | SPRING LENGTH |
|---|---|---|
| KDK03-0009 | .236” (6 mm) | 1.10” (28 mm) |
| KDK03-0024 | .236” (6 mm) | 1.06” (27 mm) |




2. Adjust nut on any spring that is unequal.
3. Adjust all eight spring retaining nuts 1/3 of a turn (2 flats on a nut).
4. Check clutch slippage.
5. If further adjustment is required, do so in 1/3 turn increments. **IMPORTANT: Adjust only to provide sufficient torque to prevent slippage under normal conditions.** Occasional slippage for drive train protection is normal. If satisfactory results cannot be obtained, contact you nearest Kodiak dealer.

***NOTICE: DO NOT OVERTIGHTEN NUT AND CAUSE SPRING TO BECOME “SOLID”. THIS WILL CAUSE SHAFT FAILURE.***

# MAINTENANCE

**WARNING!** **Avoid serious injury. Lower the rotary cutter to the ground, set the parking brake, shut off the engine, remove the key and wait for all blade rotation to stop before leaving the operator's seat. If unit must be left raised for maintenance, block the unit securely to prevent accidental release of the lifting mechanism. Disconnect the PTO.**

## REPLACING OR SHARPENING BLADES

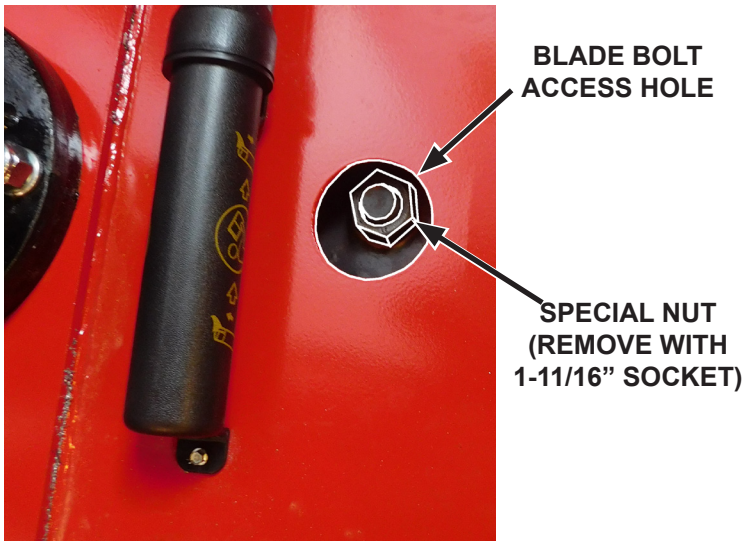
When replacing, or sharpening the blades, the unit must be blocked securely off the ground to gain access to the blades.

The blades should be inspected regularly (every 8 hours) to ensure they are sharp, tightened correctly, and intact. Always replace all blades at the same time and NEVER try to weld or straighten damaged blades, as loss of blade integrity may result.

**Removing Blades:**

1. Remove blades with unit securely blocked off the ground and PTO disconnect from tractor and cutter.
2. Remove PTO shield to gain access to blade bolt access hole.
3. Rotate until one of the blades is positioned under the access hole on the top of the deck and using a 1-11\16" socket, remove the special nut and lock washer. (Blade bolt is keyed and will not turn freely.) You can now remove the blade mounting bolt and the blade.
4. Repeat step #3 for the remaining blade.

**FIGURE #1**




**TOP OF CUTTER DECK**

**Sharpening Blades:**

- Be sure to sharpen both blades and at the same angle as the original edge to maintain proper balance.
- Do not remove more material than necessary.
- Do not heat and pound out a cutting edge.
- Do not grind to a razor edge. Leave a blunt cutting edge approximately 1/16" (2mm) thick.
- Always grind so end of blade remains square to the cutting edge.
- Do not sharpen back side of any single edge cutting blade.
- Both blades should weigh the same after sharpening with no more the 1.5 oz. (.68kg) difference.

# MAINTENANCE

**Installing Blades:**
Carefully check blade orientation to ensure correct blade placement. Blade rotation is counter-clockwise, leading with the cutting edge and blade lift towards the top of the deck.

1. Install blades with unit securely blocked off the ground and PTO disconnect from tractor and cutter.
2. Position the blade with the key of the mounting bolt in alignment with the keyway, and either prop up in place or have an assistant hold in place while the special nut and lock washer is installed onto the bolt through the blade access hole. Torque nut to 450 ft. lbs. (610 N.m).
3. Repeat step #1 and #2 for the remaining blade.

**WARNING! Avoid serious injury. Lower the rotary cutter to the ground, set the parking brake, shut off the engine, remove the key and wait for all blade rotation to stop before leaving the operator's seat. If unit must be left raised for maintenance, block the unit securely to prevent accidental release of the lifting mechanism. Disconnect the PTO.**

## REPLACING AN OUTBOARD GEARBOX

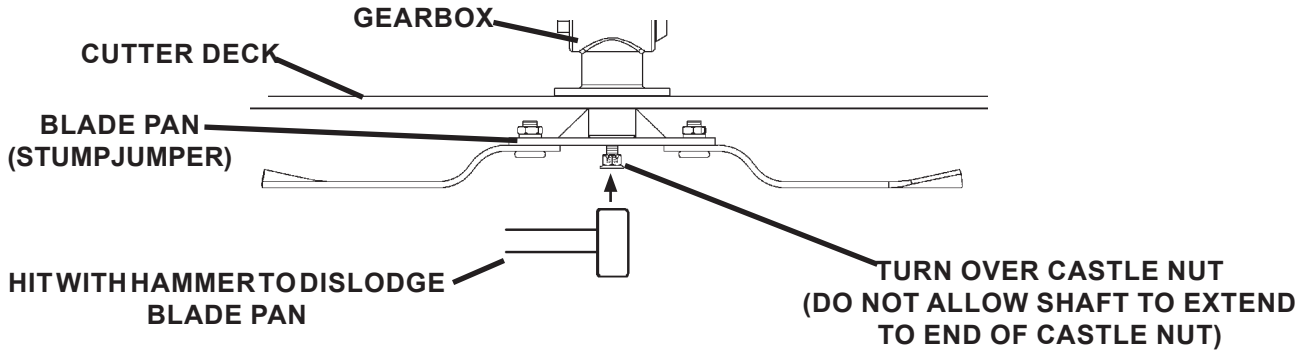
When replacing one of the outboard gearboxes (left or right) , the unit must be blocked securely off the ground to gain access to the castle nut holding the blade pan (stumpjumper) to the lower end of the gearbox.

1. With unit securely blocked off the ground and PTO disconnected from the tractor and cutter and the gearbox cover removed, remove the cotter pin and castle nut holding the blade pan (stumpjumper) to the lower end of the gearbox.

**NOTE: Be prepared for the weight of the blade pan (stumpjumper) with the blades attached to fall when the castle nut is removed.**

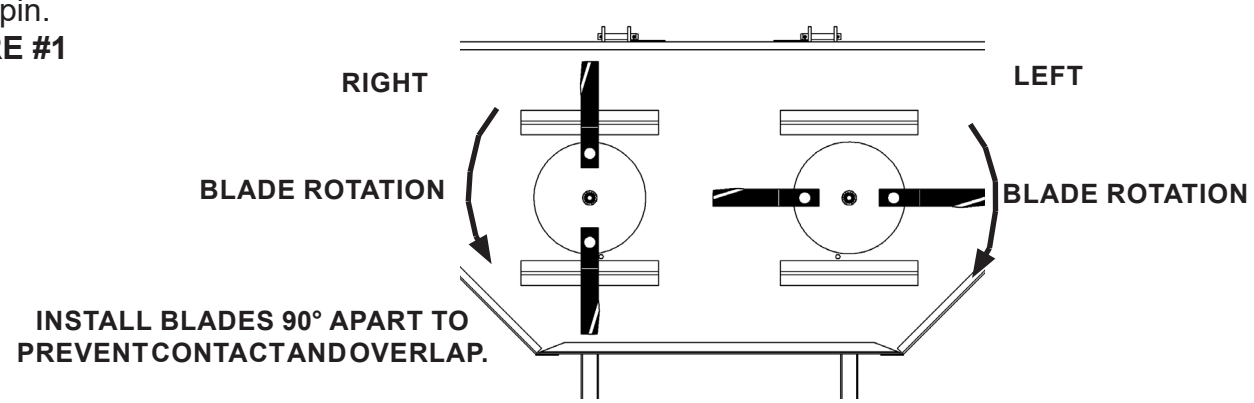
2. If the blade pan (stumpjumper) does not fall when the castle nut is removed it may be necessary to turn the castle nut around and partially thread the nut back onto the gearbox shaft. Tap the end of the ***nut*** to dislodge the pan from the shaft. Take care that the shaft does not extend past the end of the nut as shaft damage will occur if it comes into contact with the hammer. (Blade pan will drop to the castle nut once it is free from the shaft.)

# MAINTENANCE




3. With the blade pan dislodged from the shaft, hold in place while you remove the castle nut. Be prepared for the weight of the blade pan to fall once the castle nut is removed.
4. Remove the four capscrews securing the gearbox to the cutter deck, and lift the gearbox off the cutter by pivoting it away from the center gearbox.
5. Install the new gearbox by positioning the gearbox in place and install one of the bolts removed in Step #4 to the outside hole, holding the gearbox in place.
6. Tilt the gearbox away from the center gearbox and twist the shock coupler shaft so it lines up with the center gearbox. Pivot the outboard gearbox into position while connecting to the shock coupler.
7. Install the remaining three bolts removed in Step #4 and tighten all four bolt securing the gearbox to the cutter deck. Reinstall gearbox shield using existing hardware.
6. Position the blade pan (with blades) onto the lower shaft of the gearbox taking care to time blades on each side 90° apart to prevent blade contact and overlap. (See Figure #1) Reinstall the castle nut and torque to 200-210 ft. lbs. (271-285 N.m) Reinstall cotter pin.

**FIGURE #1**




***NOTICE: When removing the pan assembly or blades, take care to reinstall on the same side they were removed from. Installing them on the wrong side will result in the cutting edge of the blade being on the back side. When looking from the rear of the cutter to the front the left pan assembly and blades rotate in a clockwise rotation while the right pan assembly and blades rotate in a counter-clockwise rotation.***

7. Check grease level in the gearbox is visible and add EP-0 or equivalent grease as required. RECHECK grease level after 15 - 20 minutes of operation. See Lubrication section.

# MAINTENANCE

## REPLACING CENTER GEARBOX

1. Disconnect PTO from the tractor and cutter and remove gearbox cover. (Label the "TOP" of the gearbox before removing. If the center gearbox is reinstalled upside down the blade rotation will be reversed.)
2. Remove the four capscrews securing the gearbox to the splitter plate on the cutter deck, and lift the gearbox off the cutter.
3. Position the new gearbox in the same orientation as the old one. (Refer to the Step #1). (If the gearbox is installed upside down the blade rotation will be reversed.)

***NOTICE: When looking from the rear of the cutter to the front the left pan assembly and blades rotate in a clockwise rotation while the right pan assembly and blades rotate in a counter-clockwise rotation.***

4. Connect the shock couplers to the center gearbox.
5. Secure the gearbox to the splitter plate on the cutter deck by installing the four existing bolts removed in Step #2 using Locktite #242 to prevent premature loosening of the bolts.
6. Reinstall gearbox cover using existing hardware.
7. Check grease level in the gearbox is visible and add EP-0 or equivalent grease as required. RECHECK grease level after 15 - 20 minutes of operation. See Lubrication section.

## REPLACING GEARBOX SEALS

1. Remove the gearbox from the cutter by following the instructions under either "RE-PLACING AN OUTBOARD GEARBOX" or "REPLACING CENTER GEARBOX".
2. Remove the old input seal and replace with the new seal.
3. The output shaft seal on the outboard gearboxes require removal of the bottom cap to gain access to the seal. The output seal on the center gearbox requires removing the side cap.
4. Re-install the gearbox by following the instructions under either "REPLACING AN OUTBOARD GEARBOX" or "REPLACING CENTER GEARBOX".

***Further disassembly or field replacement of gearbox components will void warranty.***

## INSTALLING / REPLACING CHAIN DEFLECTOR ASSEMBLIES

Chain deflector assemblies come completely assembled. To install bolt the rear and front chain deflector assembly (angle to the outside) to your rotary cutter using the hardware supplied. Install with the capscrew going through the chain assembly and then the rotary cutter followed by the flat washer and lock nut. Torque to specification. See Bolt Torque Specifications

# MAINTENANCE & SERVICE

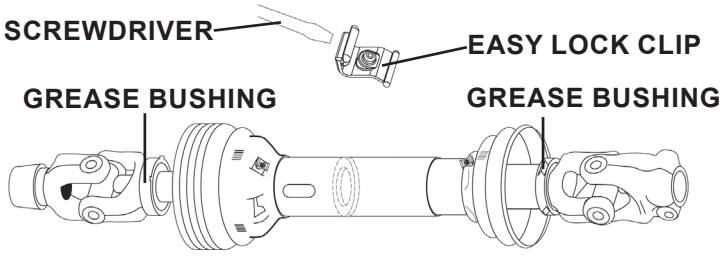
## PTO DRIVE ASSEMBLY

The following instructions will assist in replacing the safety shields on your PTO drive assembly. Keep all PTO guards and shields in place at all times.

**IMPORTANT**: Cutter maintenance does not require you to go between the tractor and the cutter with the driveline installed. Before replacing, servicing or removing the cutter from the tractor, shut off the tractor, set the parking brake and remove the keys.

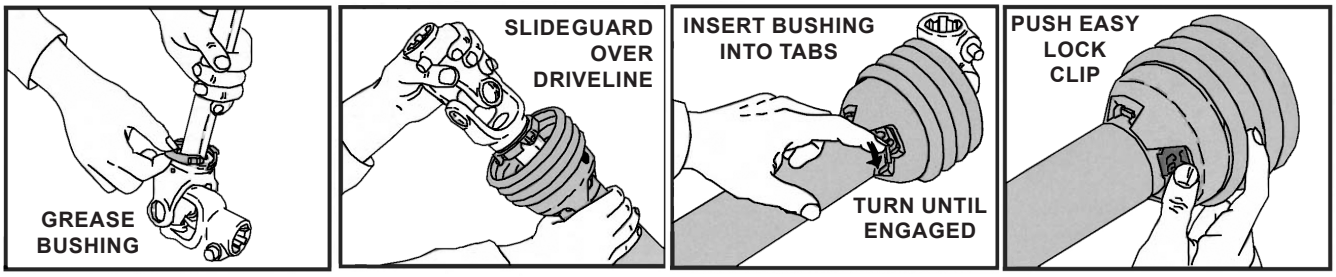
When replacing damaged or missing PTO shields, disconnect the rotary cutter from the tractor and remove the driveline from the cutter.

1. To remove damaged guards, use a screwdriver to release the "*easy lock*" clip on the driveline. Turn the bushing to disengage and remove the guard.




**IMPORTANT**: Check that the "***Guard Missing***" decal on the steel tube under the inner guard and "***Rotating Driveline***" decal on the outer guard are both firmly affixed and legible. If not, replace them before re-connecting the driveline to the cutter.

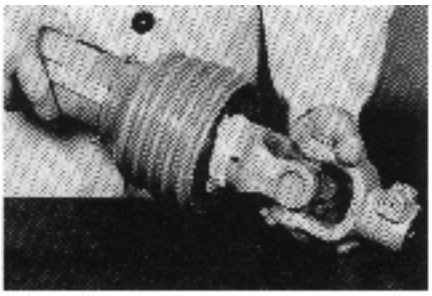
2. Clean and grease the bushing groove before installing the bushing. Grease any remaining bushings in the guard.
3. Slide the new guard half over the driveline and insert bushing tabs into the openings in the guard.




4. Turn the bushing until it engages into the guard.
5. Push the "*easy lock*" clip into position. The bushing and guard are now secure.

# MAINTENANCE
## SAFETY SHIELD

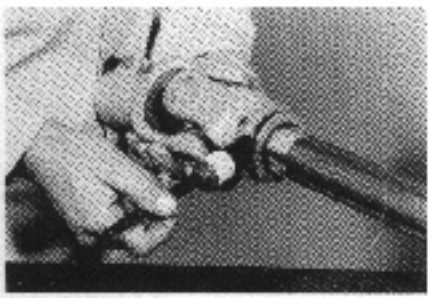
### DISASSEMBLY



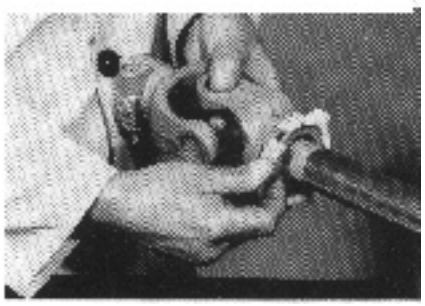
Use special tool SW21 to release bearing locking tabs and remove the shield from PTO drive shaft half.

Or, clamp the PTO yoke in the vise as shown to create pressure on the locking tabs and use a flat bladed screw driver to release one tab at a time to remove shield.

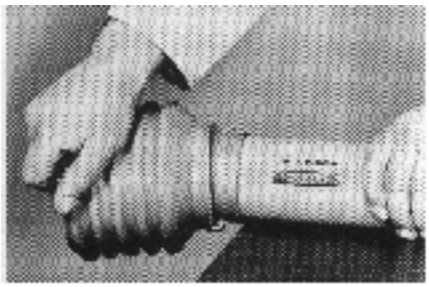
### ASSEMBLY



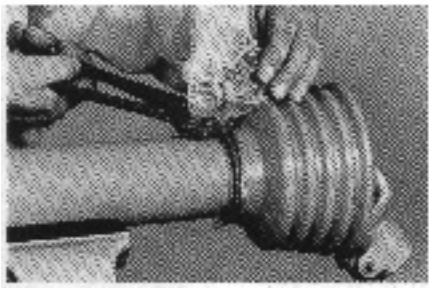
Grease the shield bearing groove on the yoke and the telescoping tube before assembly.



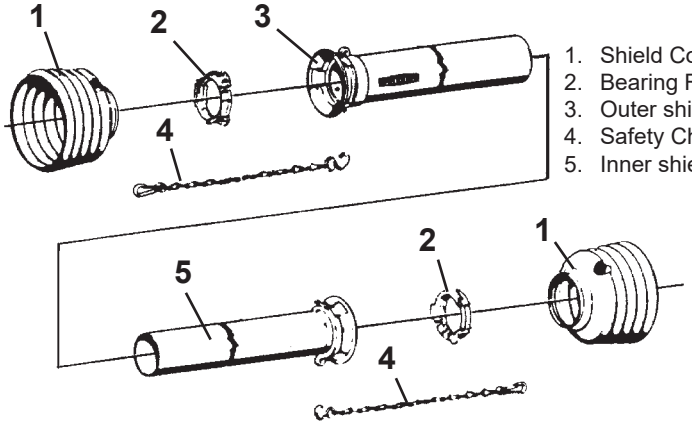
Place bearing ring in groove with the locking tabs nearest the telescoping tube side.



To remove the old shield cone, cut the cone near the bearing cap being careful not to damage the cap. Heat the new shield cone by placing the contact portion in water heated to approximately 180° F. until it is very flexible. Then, pull it over the tube and on to the bearing cap. As it cools, the cone will return to its natural size and become secure for normal function.



To mount the shield on to the half shaft, place it over the telescoping member, align the locking tabs on the bearing in the appropriate channels of the bearing cap and push the shield into place or apply light blows until all three locking tabs are visible in the openings.

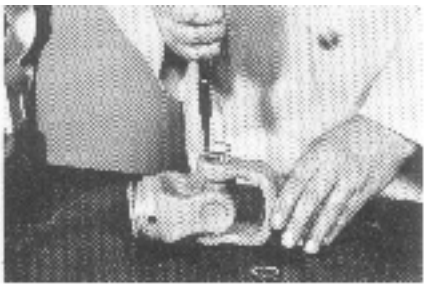



1. Shield Cone
2. Bearing Ring
3. Outer shield tube with bearing cap
4. Safety Chain
5. Inner shield tube with bearing cap

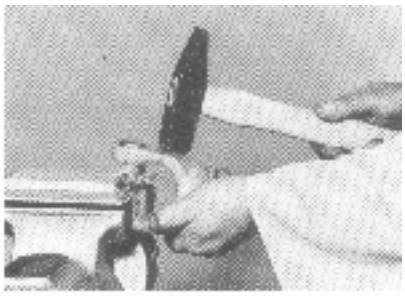
# MAINTENANCE

U-JOINT

## DISASSEMBLY

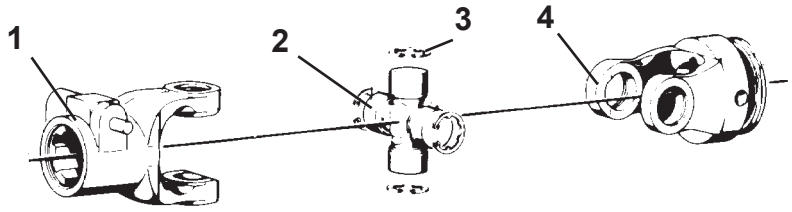


Remove retaining rings (3).



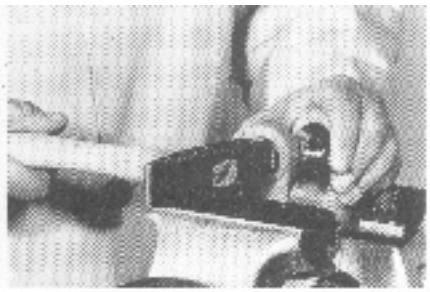
Place joint in the vise as illustrated (do not clamp tight) and with light hammer blows, drive up the bearing bushing.

Use special tool SW23 or SW27 to clamp the bearing bushing in the vise. Using either light hammer blows or by twisting the yoke, remove the bearing bushing.



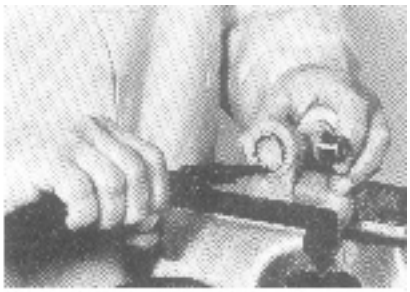

1. Quick-disconnect yoke coupling
2. Cross and bearing kit coupling
3. Retaining ring
4. Inboard yoke

## ASSEMBLY

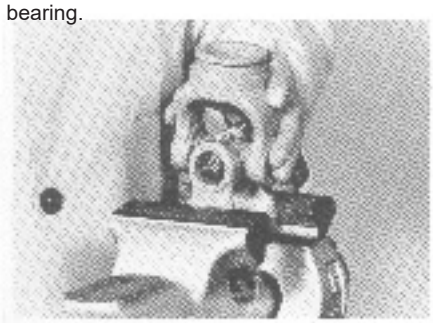


Clamp the yoke in the vise as illustrated. Remove the bearing bushing from the cross kit and place the cross into one of the yokes. Begin mounting the bearings by extending the cross journal out through the bearing bore. Place a bearing on it and holding the cross with one hand to position the bearing, tap with light hammer blows until you notice resistance. Do the same for the opposite bearing.

Using a flat surfaced drift punch or special tool SW28 drive the bearing in until the annular groove is visible.

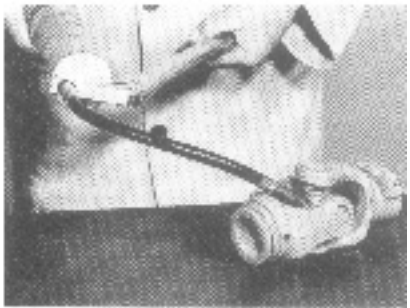


Replace the retaining ring, make sure it is properly seated.



When installing the second yoke and bearings, make sure the grease zerk is positioned on the proper side for easy access when lubricating. Replace the bearings as described previously using the cross journal to help guide the bearings into the bore.

Relieve the stress from the bearings and yoke by applying several sharp hammer blows to the yoke ears.



Grease the joint. Note that all four bearings are properly purged and rotate to make sure the U-joint will move freely.

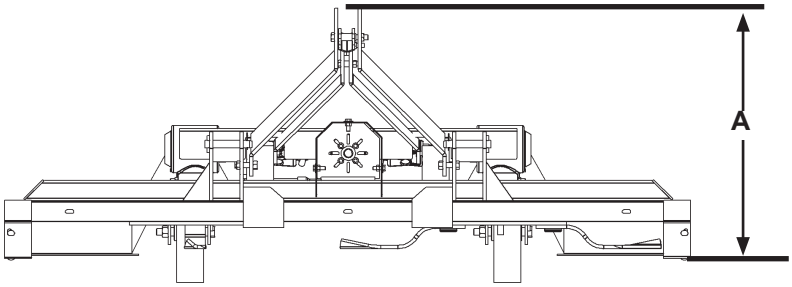
# TROUBLESHOOTING

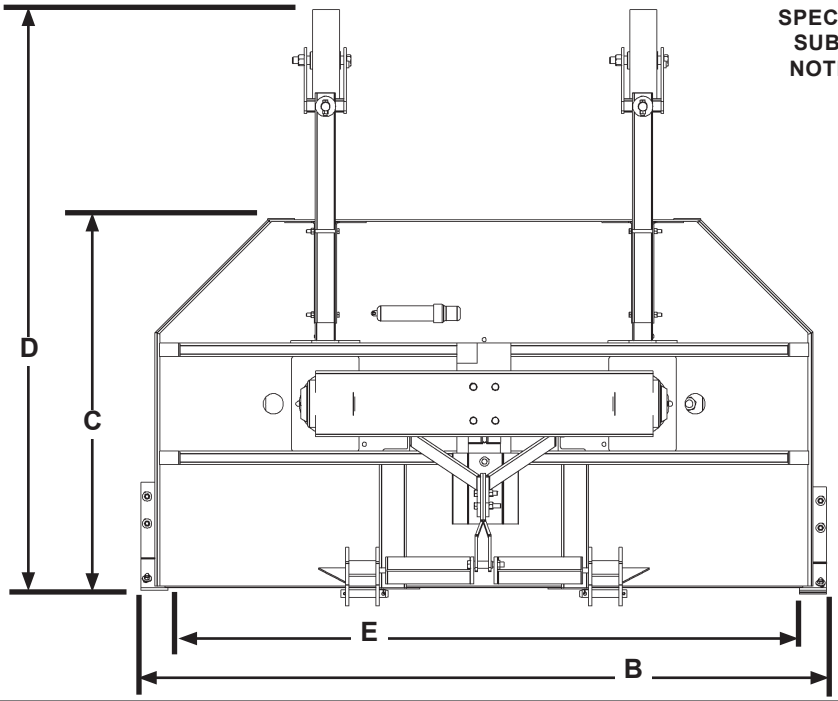
| PROBLEM | POSSIBLE CAUSE | POSSIBLE SOLUTION |
|---|---|---|
| **EXCESSIVE VIBRATION** | Blades damaged or worn. | Replace worn blades as a set. |
| | Blades not swinging freely. | Check for obstructions, bolt torque or blade damage. Make adjustment or replace blades to ensure blade movement. |
| **UNUSUAL NOISE** | Loose blade bolts. | Tighten bolts. |
| | Bent blade carrier or blades. | Replace blade carrier or blades. |
| | Deck bent causing contact with blades. | Straighten deck. |
| | Gearbox grease insufficient. | Check seals in gearbox and fill to proper level. |
| **POOR CUTTING** | Not maintaining proper PTO speed. | Check PTO speed with tachometer and operate at proper RPM. |
| | Improper clutch adjustment. | Adjust according to Operator's Manual. |
| | Forward travel exceeds blade speed for material type. | Adjust forward speed. |
| | Blades dull. | Sharpen or replace blades. |
| **MACHINE STREAKING** | Cutting height too high, leaving wheel tracks. | Adjust for shorter cut height and decrease forward travel speed. |
| | Not maintaining proper RPM speed. | Maintain proper RPM speed. |
| | Excessive travel speed. | Decrease forward travel speed. |
| **PTO WILL NOT TELESCOPE** | Improper lubrication. | Separate and fill female tube half full of grease. |
| | PTO twisted. | Replace twisted portion. Caution operator not to ground out machine. |
| | Bent PTO. | PTO too long. Size to tractor according to manual. |
| | Shields damaged. | Replace. |
| **PTO TWISTED** | Over torqued. | Do not allow blades to come into contact with the ground. |
| | Not maintaining correct PTO speed. | Maintain proper PTO speed. |
| **EXCESSIVE CLUTCH SLIPPAGE** | Improper clutch adjustment. | Adjust according to Operator's Manual. |
| | Burnt or damaged facing. | Rework or replace clutch according to manual. |

# TROUBLESHOOTING

| PROBLEM | POSSIBLE CAUSE | POSSIBLE SOLUTION |
|---|---|---|
| **UNEVEN CUT** | Blades damaged or worn. | Replace worn blades as a set. |
| | Excessive ground speed. | Reduce ground speed. |
| | Turning too fast. | Reduce ground speed when turning. |
| | Damaged blade carrier. | Replace or repair as needed. |
| | Improper height adjustment. | Adjust rotary cutter height. |
| **WINDROWING** | Material heavy and dense. | Raise the front of the cutter higher than the rear. |
| | Excessive ground speed. | Reduce ground speed. |
| | Conditions too wet. | Wait for material to dry and reduce ground speed. |
| **GEARBOX NOISY** | Low lubricant level. | Add grease. See Lubrication Section |
| **GEARBOX OVERHEATING** | Low lubricant level. | Add grease. See Lubrication Section |
| | Improper type of lubricant. | Replace with proper lubricant. See Lubrication Section |
| | Excessive trash buildup around gearbox. | Clean around gearbox. |

# SPECIFICATIONS




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

## HEAVY DUTY (LIFT-TYPE CUTTERS)

| DESCRIPTION | 96" (243.8cm) | 120" (304.8cm) |
|---|---|---|
| A. Overall Height | 37" (94.0cm) | 37" (94.0cm) |
| Shipping Height | 78" (198.1cm) | 86" (218.4cm) |
| B. Overall Width | 102" (259.1cm) | 125" (317.5cm) |
| C. Overall Length | 55" (139.7cm) | 61" (154.9cm) |
| D. Overall Length with Tailwheel | 88" (223.5cm) | 94" (238.8cm) |
| E. Cutting Width | 93.50" (237.5cm) | 114.50" (290.8cm) |
| Weight | 1125 lbs (510kg) | 1407 lbs (638kg) |
| Cutting Height (3" Blade Offset) | 2.50"- 8" (6-20cm) | |
| Cutting Capacity (Max. Cutting Diameter) | 3.00" (7.6cm) | |
| Deck Thickness 8HD | 10 GA Steel | |
| Deck Thickness 10HD | 3/16" or 7 GA Steel | |
| Hitch Type | CAT II | |
| PTO Drive Shaft | Series 5 | |
| Gearbox | 90 HP (100 HP Splitter) | |
| Slip Clutch | Standard | |
| Stump Jumper | .62" Solid Round | |
| Wheel Type | 4x8 Laminated | |

# BOLT TORQUE SPECIFICATIONS

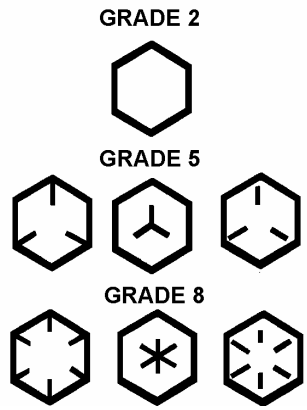
## GENERAL TORQUE SPECIFICATION TABLES

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.**

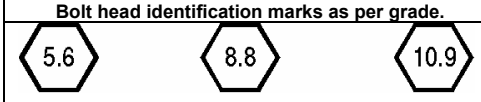
| Bolt Size | | SAE GRADE 5 TORQUE | | | | SAE GRADE 8 TORQUE | | | | Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Pounds Feet | | Newton-Meters | | Pounds Feet | | Newton-Meters | | |
| Inches | Millimeters | UNC | UNF | UNC | UNF | UNC | UNF | UNC | UNF | |
| 1/4 | 6.35 | 8 | 9 | 11 | 12 | 10 | 13 | 14 | 18 | |
| 5/16 | 7.94 | 14 | 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 | |




## 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 |

# 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***. 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***.