



2212

**BUSH HOG®**

**FLEX-WING MECHANICAL LEVEL  
LIFT ROTARY CUTTER/SHREDDER**

Published 07/12

Part NO. 50058842

## OPERATOR'S MANUAL

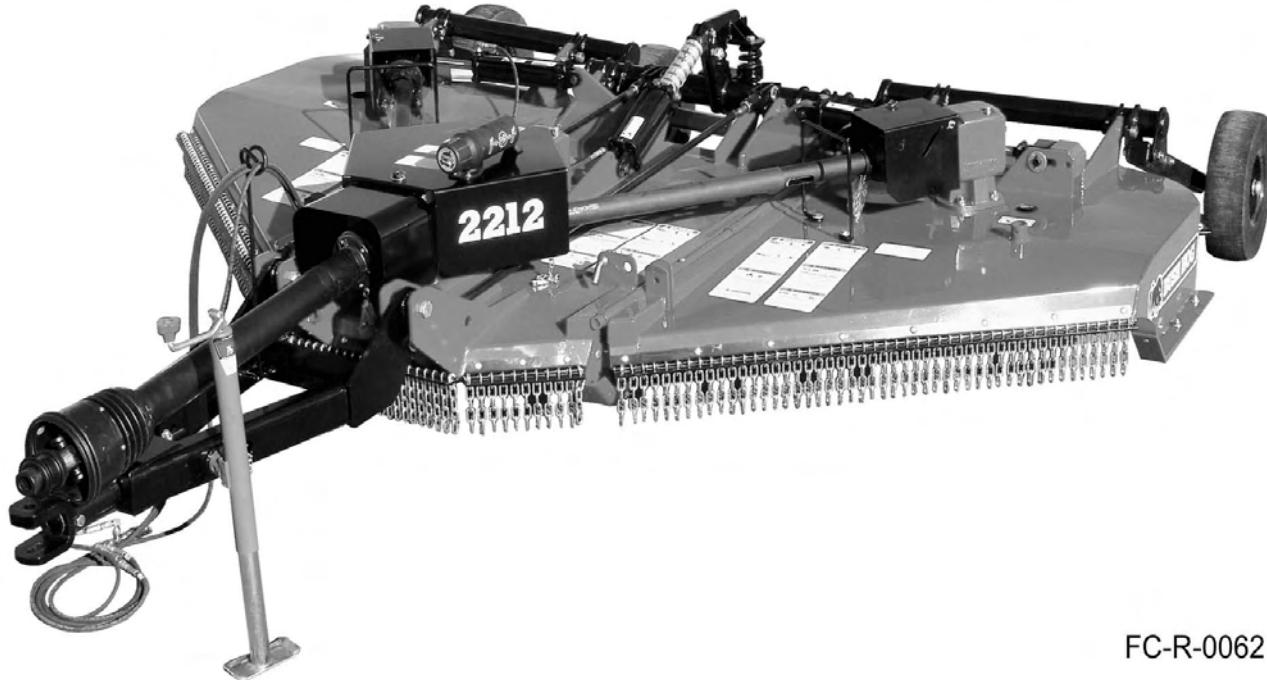


This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. **READ, UNDERSTAND, and FOLLOW** the Safety and Operation Instructions contained in this manual before operating the equipment. *C01-Cover\_B*

Safety Video



[www.algqr.com/bve](http://www.algqr.com/bve)



FC-R-0062

**BUSH HOG®**

2501 Griffin Ave.  
Selma, AL 36703  
334-874-2700  
[www.bushhog.com](http://www.bushhog.com)

Bush Hog Web Page



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Operator's & Parts Manuals



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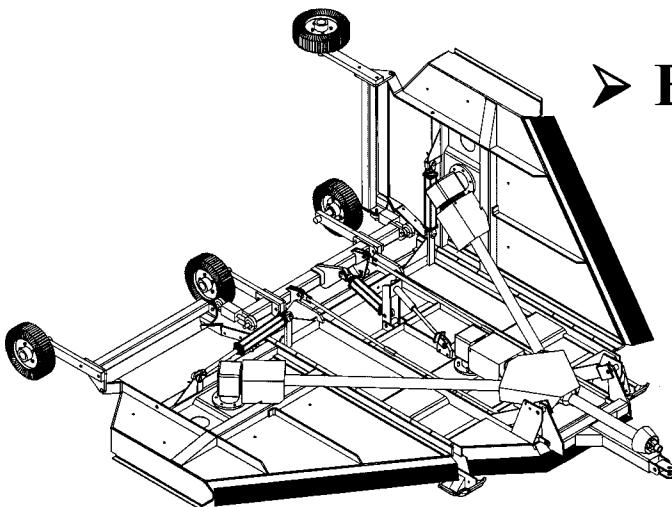
General Safety



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➤ BE SAFE!

Safety Video



➤ BE ALERT!

➤ BE ALIVE!



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➤ BE TRAINED  
before operating  
the Mower!



## *Safety Training Makes the Difference*

In order to reduce accidents and enhance the safe operation of mowers, *Bush Hog*, in cooperation with other industry manufacturers has developed the AEM/FEMA Industrial and Agricultural Mower Safety Practices video and guide book.

The video will familiarize and instruct mower-tractor operators in safe practices when using industrial and agricultural mowing equipment. It is important that Every Mower Operator be educated in the operation of their mowing equipment and be able to recognize the potential hazards that can occur while operating a mower. This video, along with the mower operator's manual and the warning messages on the mower, will significantly assist in this important education.

Your Authorized *Bush Hog* Dealer may have shown this video and presented you a DVD Video when you purchased your mower. If you or any mower operator have not seen this video, **Watch the Video, Read this Operator's Manual, and Complete the Video Guidebook** before operating your new mower. If you do not understand any of the instructions included in the video or operator's manual or if you have any questions concerning safety of operation, contact your supervisor, dealer or *Bush Hog*.

If you would like a VHS video tape of the video, please mail [AEMVideo@alamo-group.com](mailto:AEMVideo@alamo-group.com) or Fax AEM VHS Video at (830) 372-9529 or mail in a completed copy of the form on the back of this page to AEM VHS Video 1502 E. Walnut Street, Seguin, TX 78155. and request the VHS video version. Please include your name, mailing address, mower model and serial number.

Every operator should be trained for each piece of equipment (Tractor and Mower), understand the intended use, and the potential hazards before operating the equipment.

The information and material listed above along with this Operator's Manual can assist you in meeting the OSHA requirement for annual operator training.

### **OSHA TRAINING REQUIREMENTS**

**The following training requirements have been taken from Title 29, Code of Federal Regulations Part 1928.57 (a) (6). [www.osha.gov](http://www.osha.gov)**

Operator instructions. At the time of initial assignment and at least annually thereafter the employer shall instruct every employee who operates an agricultural tractor and implements in the safe operating practices and servicing of equipment with which they are or will be involved, and of any other practices dictated by the work environment.

**Bush Hog will provide  
one (1) AEM Mower Safety Practices Video**

Please Send Me:  VHS Format – AEM/FEMA Mower Operator Safety Video  
 DVD Format – AEM/FEMA Mower Operator Safety Video  
 Mower Operator's Manual  
 AEM Mower Operator's Safety Manual

Requester Name \_\_\_\_\_ Phone: \_\_\_\_\_

Requester Address: \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip Code \_\_\_\_\_

Mower Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Date Purchased: \_\_\_\_\_ Dealer Salesperson: \_\_\_\_\_

Dealership Name: \_\_\_\_\_ Dealership Location: \_\_\_\_\_

Mail to:

AEM Video Services

1502 E. Walnut Street

Seguin, TX 78155

Or Fax to:

(830) 372-9529

Or Email to:

AEMVideo@alamo-group.com

# To the Owner/Operator/Dealer

This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the implement at all times. A Manual canister is provided on the implement where this manual can be properly stored. If you lose or damage this manual a free replacement manual can be obtained from an authorized Bush Hog dealer or by down loading the manual from the Bush Hog website [www.bushhog.com](http://www.bushhog.com)

**BEFORE YOU START!! READ, UNDERSTAND, and FOLLOW the information provided in this manual, the AEM Mower Safety manual and the tractor operator's manual carefully to learn how to operate and service your machine properly. Failure to do so could result in personal injury to you and bystanders. All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.**

**SAFETY FIRST.** Completely read and understand the safety section of this manual before operating this equipment. Do not allow anyone to operate this equipment who has not fully read and understood this manual. Contact your Dealer to explain any instructions that you do not fully understand.

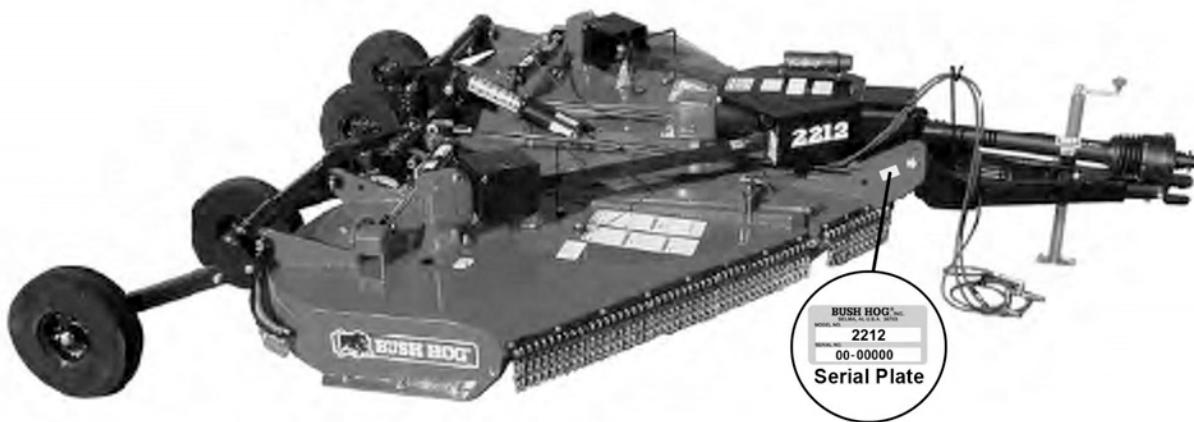
The care you give your Bush Hog Implement will greatly determine your satisfaction with its performance and its service life. Carefully read and follow the instructions in this manual to provide you with a thorough understanding of your new implement and its intended use and service requirements.

All references made in this manual to right, left, front, rear, top or bottom are as viewed facing the direction of forward travel with the implement properly attached to the tractor.

Replacement Parts information is located in a separate Parts Manual. Bush Hog mowers use balanced and matched system components for blade carriers, blades, cuttershafts, knives, knife hangers, rollers, drivetrain components, and bearings. These parts are made and tested to Bush Hog specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce mower performance, void warranties, and present a safety hazard. Use genuine Bush Hog mower parts for economy and safety.

For future reference, record your Bush Hog product model number and serial number.

Dealer		Telephone		Model Number	
Owner		Purchase Date:		Serial Number	



# DEALER to CUSTOMER Pre-Delivery/ Operation Instructions

Dealer should inform the Purchaser of this product of Warranty terms, provisions, and procedures that are applicable, to review the contents of the Operator's Manual including safety equipment, safe operation, and maintenance, to review the Safety Signs on the implement (and tractor if possible), and of Purchaser's responsibility to train his/her operators's in safe operation.

- **IMPLEMENTS:** I have explained that Deflectors, Chain Guards, or Solid Skirts must be installed and maintained in good repair.
- **DRIVELINES:** I have made certain that all driveline, gearbox, and other shields are in good repair and fastened securely in place to prevent injuries from entanglement or thrown objects.
- **HYDRAULIC MACHINES:** I have explained the necessity of using clean hydraulic oil, changing filters as instructed, stopping leaks, damage caused by operating with over-heated oil, caring for hoses, using hoses of proper rating, maintaining the specified operating pressure and the potential hazard of oil's penetrating the skin.
- **FOLDING-TYPE IMPLEMENTS:** I have explained that it is not possible to guard against thrown objects when the head is lifted off ground and that operator is responsible to watch out for persons in the area. I have explained that the lifted mower head or boom can contact overhead obstructions with damage to cables and telephone lines and possible injury. I have explained that the extended head or boom or retracted boom can contact power lines with resulting electrocution, injury or death and that operator is responsible for keeping clear of such hazards.

## PRE-DELIVERY SERVICE CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

### Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

#### LUBRICATION & HYDRAULICS

- Gearbox (Oil Levels)
- Hydraulic Oil Level (External Tank)
- Tractor Hydraulic Oil Level
- Hydraulic Hoses (Not Kinked Tighten Connections)
- Front Pump Drive (Assembly Is Tight And Shaft Properly Aligned)

#### MOWER

- Spindle And Motor Bolts Properly Torqued
- Spindle Oil Level
- Blade Carrier Bolts Properly Torqued/Retaining Pin In Place
- Mower Cutting Height And Level Adjusted
- Cutting Shaft Bearings Lubricated
- All Hardware Properly Torqued
- Tire and Air Pressure/Lug Nuts (Correct Torque)
- Wheel Bearings (Check, Grease, and Preload)

#### ATTACHMENTS & INSTALLATION

- Deflectors Front And Rear
- Shredding Attachments
- Correct Blade Rotation Direction
- Axle Arms And Beams
- Tongue And Control Rods (Installed And Adjusted)
- All Bolts - Pins And Nuts (Proper Torque)

#### MOWER TO TRACTOR CONECTIONS

- Draw Bar Length (Check And Set)
- A-Frame Pivot & Links
- Control Rods (Adjusted Equal)
- Axle Height (Adjusted)
- Cutting Height (Adjust)
- Mount Kit-Pre-Operation Check Complete
- Mower Wing (Adjust Level With The Center)
- Mower Wing (Check For Proper Raising Operation)
- C.V. Driveline (Check Max Turn Radius)
- Pull Type Hitch (Height Adjustment)
- Mounting Hardware Properly Torqued

#### SAFETY ITEMS

- Protective Shields (Operation And Installation)
- Driveline Clutch (Torque Limiter) (Adjust And Run In)
- Safety Decals (Installed)
- Operator's Manual (Supplied)
- Tractor PTO Shield (Installed)
- S.M.V. Emblem (Installed If Needed)
- Tongue Jack (Installation and Operation)
- Safety Tow Chain (Installed)
- ADMA Driveline Safety Manual Supplied
- AEM Mower Safety Manual (Supplied in Canister)
- AEM Mower Safety Video has been shown to Purchaser

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# **SAFETY SECTION**

Safety Section 1-1

# SAFETY

## SAFETY

## GENERAL SAFETY INSTRUCTIONS AND PRACTICES

A careful operator is the best operator. Safety is of primary importance to the manufacturer and should be to the owner/operator. Most accidents can be avoided by being aware of your equipment, your surroundings, and observing certain precautions. The first section of this manual includes a list of Safety Messages that, if followed, will help protect the operator and bystanders from injury or death. Read and understand these Safety Messages before assembling, operating or servicing this Implement. This equipment should only be operated by those persons who have read the manual, who are responsible and trained, and who know how to do so responsibly.



The Safety Alert Symbol combined with a Signal Word, as seen below, is used throughout this manual and on decals which are attached to the equipment. The Safety Alert Symbol means: "ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!" The Symbol and Signal Word are intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this equipment.

**Practice all usual and customary safe working precautions and above all---remember safety is up to YOU. Only YOU can prevent serious injury or death from unsafe practices.**



Indicates an imminently hazardous situation that, if not avoided, WILL result in DEATH OR VERY SERIOUS INJURY.



Indicates an imminently hazardous situation that, if not avoided, COULD result in DEATH OR SERIOUS INJURY.



Indicates an imminently hazardous situation that, if not avoided, MAY result in MINOR INJURY.



Identifies special instructions or procedures that, if not strictly observed, could result in damage to, or destruction of the machine, attachments or the environment.

**NOTE:** *Identifies points of particular interest for more efficient and convenient operation or repair.*

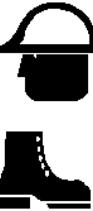
READ, UNDERSTAND, and FOLLOW the following Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in this Manual and in the Safety Messages on the implement. Always follow the instruction in this manual and use good common sense to avoid hazards.



**NOTE:** *If you want a translation of this safety section in one of the following Languages, please contact: Translations at 1502 E. Walnut Street Seguin, TX 78155; Fax: (830) 372-9529; Safety Section Translations are available in Spanish, Portuguese, French, German, Russian. PN GS01*

# SAFETY

## OPERATOR SAFETY

				
Read and understand Operator's Manual	Always wear Safety Glasses	Wear Hard Hat Safety Shoes	Never use Drugs or Alcohol when operating equipment	Wear Safety Vest when operating on or near roads



### TO AVOID SERIOUS INJURY OR DEATH DO THE FOLLOWING:

- **READ, UNDERSTAND and FOLLOW** Operator's Manual instructions, Warnings and Safety Messages.
- **WEAR SAFETY GLASSES**, safety shoes, hard hat, hearing protection and gloves when operating or repairing equipment
- **WEAR** appropriate breathing respirator when operating in dusty conditions to avoid respiratory diseases.
- **DO NOT WEAR** loose clothing or jewelry to avoid rotating parts entanglement injury.
- **DO NOT USE DRUGS or ALCOHOL** before or while operating equipment.
- **DO NOT ALLOW** anyone to operate equipment under the influence of drug or alcohol.
- **CONSULT** medical professional for medication impairment side effects.
- **STAY ALERT**, prolonged operation can cause fatigue, **STOP and REST**.

## GENERAL OPERATING SAFETY

### VISIBILITY CONDITIONS WHEN MOWING:

- **OPERATE IN DAYLIGHT** or with lights that gives at least 100 yards clear visibility.
- **BE ABLE TO SEE** and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects.

### GROUND SPEED WHEN MOWING:

- **NORMAL SPEED** range is between 2 to 5mph.
- **ADJUST MOWING SPEED** for terrain conditions and grass type, density and cut height.
- **REDUCE MOWING SPEED** when near steep slopes, ditches, drop-offs, overhead obstructions, power lines and to avoid debris and foreign objects.

### INSECT INFESTATION

- Do Not operate in areas where bees or insects may attack unless you **WEAR PROTECTIVE CLOTHING** or use enclosed tractor cab.

### PTO SPEED:

- **DO NOT EXCEED IMPLEMENT RATED PTO SPEED**
- **AVOID** exceeding rated PTO speeds that may result in broken drivelines or blade failures.

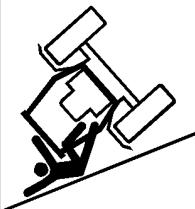
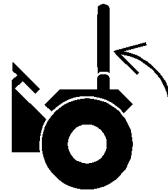
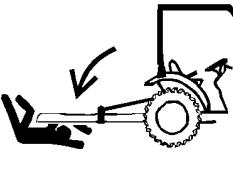
### SAFETY SIGNS:

- **REPLACE** missing, damaged or unreadable safety signs immediately. PN OS01

# SAFETY

## SAFETY

### CRUSHING HAZARDS

				
Crushing injury from roll over	Lock ROPS in up position	Always wear seatbelt	Crushing injury implement falling	Crushing injury wing falling

#### **DANGER**

TO AVOID SERIOUS INJURY OR DEATH FROM FALLING OFF TRACTOR, EQUIPMENT RUN OVER, ROLLOVER AND CRUSHING BY FALLING WING OR IMPLEMENT:

- USE ROPS and SEAT BELT equipped tractors for mowing operations.
- KEEP ROPS lock in up position.
- ALWAYS BUCKLE UP seat belt when operating tractor and equipment.
- ONLY OPERATE tractor and equipment while seated in tractor seat.

#### WHEN RAISING OR LOWERING WINGS:

- Raise or lower ONLY WHILE SEATED in tractor seat with seat belt buckled.
- Raise or lower ONLY when implement tongue is securely attached to tractor drawbar TO AVOID implement tip over.
- KEEP BYSTANDERS CLEAR of area TO AVOID crushing.
- KEEP sufficient clearance around implement and wings TO AVOID contacting buildings or overhead power lines.

LIFTED Equipment can fall from mechanical or hydraulic failure or inadvertent Control Lever movement.

#### **WARNING**

TO AVOID EQUIPMENT FALLING while working near or under lifted wings, components and implements raised by 3-Pointed tractor hitch:

- SECURELY SUPPORT or block up raised equipment, wings and components.
- BLOCK UP and securely support equipment before putting hands, feet or body under raised equipment or lifted components.
- KEEP BYSTANDERS CLEAR of folded wings until wings are blocked or locked up.

#### WHEN PARKING Implement and Tractor:

- LOWER implement, LOCK or BLOCK lifted parts before leaving equipment.
- NEVER leave implement unattended in a raised position.

#### **WARNING**

TO AVOID CHILDREN FALLING OFF OR BEING CRUSHED BY EQUIPMENT:

- NEVER ALLOW children to play on or around Tractor or Implement.

#### WHEN UNHITCHING IMPLEMENT:

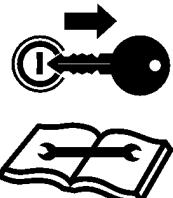
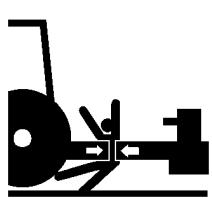
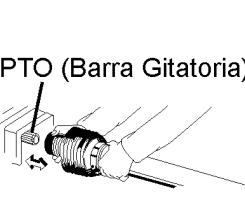
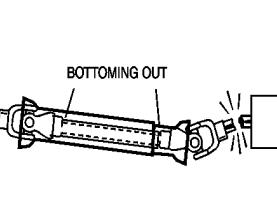
- LOWER implement, LOCK or BLOCK lifted parts before leaving equipment.
- USE tongue jack to control implement tongue movement.
- USE tongue JACK to lift heavy implement tongues.
- AVOID overloading jack to prevent jack failure and injury.(Refer to Instructions in Operation Section)

#### BEFORE REMOVING Wing Retaining Lock:

- ATTACH hoses to tractor.
- FILL Wing Cylinders with oil. (Refer to Instructions in Operation Section)
- KEEP bystanders away before operating wings.
- LOWER WINGS slowly and carefully. PN CH01

# SAFETY

## CONNECTING OR DISCONNECTING IMPLEMENT SAFETY

				
Stop Tractor Remove Key Read Manual	Crushing injury between tractor and implement	Crushing injury wing falling	Make sure PTO shaft is securely attached to tractor	Make sure PTO shaft are proper length



**TO AVOID SERIOUS INJURY OR DEATH FROM BEING CRUSHED BY TRACTOR OR IMPLEMENT:**

SAFETY

### WHEN BACKING tractor to implement hitch:

- **DO NOT ALLOW BYSTANDERS** between tractor and implement.

### BEFORE connecting and disconnecting implement hitch:

- **STOP TRACTOR ENGINE**, place transmission into park, engage parking brake and remove key.

### WHEN connecting and disconnecting implement hitch:

- **DO NOT crawl or walk under raised mower or wing.**
- **USE tongue JACK to lift heavy implement tongues to control implement tongue movement.**
- **AVOID overloading jack to prevent jack failure and injury. (Refer to Instructions in Operation Section)**

### WHEN CONNECTING IMPLEMENT DRIVELINE:

#### TO AVOID implement driveline coming loose during operation:

- **LUBRICATE** yoke spring locking collar to ensure it freely slides on PTO shaft.
- **SECURELY** seat yoke locking balls in PTO shaft groove.
- **PUSH and PULL DRIVELINE** on both the tractor and implement **PTO SHAFTS** to ensure it is **SECURELY ATTACHED**.

#### TO AVOID broken driveline during operations:

- **CHECK** driveline for proper length between PTO shaft and implement gearbox shaft. (Refer to Instructions in Operation Section)
- **Drivelines too short can pull apart or disengage.**
- **Drivelines too long can bottom out.**
- **Bottoming driveline telescoping assembly will stop sliding and become solid.**
- **Driveline bottoming can push through support bearings and break off PTO shaft.**

#### CONTACT DEALER if implement driveline does not match Tractor PTO shaft:

- **DO NOT USE PTO ADAPTER.**  
Using a PTO adapter can cause:
  - **Excessive vibration, thrown objects, blade and implement failures by doubling operating speed.**
  - **Increased working length exposing unshielded driveline areas and entanglement hazards.**

### BEFORE REMOVING WING RETAINING LOCKS:

- **ATTACH hoses to tractor.**
- **FILL Wing Cylinders with oil. (Refer to Instructions in Operation Section)**
- **KEEP bystanders clear of area before operating wings.**
- **LOWER WINGS** slowly and carefully.

**DO NOT connect the Mower to a tractor with the PTO directly connected to the Tractor transmission. PN CD01**

# SAFETY

## SAFETY

### THROWN OBJECTS HAZARDS

Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Raised Mower Thrown Objects	Inspect Area remove foreign objects	Do not let blades contact solid objects



**ROTARY MOWERS CAN THROW OBJECTS 300 FEET OR MORE UNDER ADVERSE CONDITIONS.**

#### TO AVOID SERIOUS INJURY OR DEATH TO OPERATOR OR BYSTANDERS FROM THROWN OBJECTS:

- *KEEP bystanders 300 feet away*

#### STOP MOWING IF PASSERSBY ARE WITHIN 300 FEET UNLESS:

- **All THROWN OBJECT SHIELDING** including, *Front and Rear Deflectors, Chains Guards, Steel Guards, Bands, Side Skirts and Skid Shoes in place and in good condition when mowing.*
- *Mower sections or wing are adjusted to be close and parallel to ground without exposing blades.*
- **MOWING AREA** has been inspected and foreign materials and debris have been removed.
- **PASSERSBY** are inside enclosed vehicle.

#### INSPECT AREA FOR POTENTIAL THROWN OBJECTS BEFORE MOWING:

- **REMOVE** debris, rocks, wire, cable, metal objects and other foreign material from area.  
*Wire, cable, rope, chains and metal objects can be thrown or swing outside deck with great velocity:*
  1. **MARK** objects that cannot removed.
  2. **AVOID** these objects when mowing.

#### HIGH GRASS and WEED AREA INSPECTION:

- **INSPECT** for and **REMOVE** any hidden large debris.
- **MOW** at Intermediate height
- **INSPECT** and remove remaining debris
- **MOW** at final height.

#### MOWER THROWN OBJECT SHIELDING:

- **KEEP** all thrown object shielding including, *Front and Rear Deflectors, Chains Guards, Steel Guards, Bands, Side Skirts and Skid Shoes in place and in good condition when mowing.*
- **DO NOT OPERATE** with any thrown object shielding missing, damaged or removed.

#### RIGHT OF WAY (Highway) MOWING

- **USE DOUBLE CHAIN GUARDS** for highway, right-of-way, parks or greenbelt mowing or all other mowing where *human dwellings, vehicles, or livestock could be within 300 feet of the mower.*
- *No shielding is 100% effective in preventing thrown objects. To Reduce Possibility of Injury:*
  1. **MAINTAIN MOWER SHIELDING**, side skirts, skid shoes, and blades in good operational condition,
  2. **RAISE CUTTING HEIGHT** to **6 INCHES** minimum,
  3. **INSPECT AREA** thoroughly before mowing to **REMOVE** potential **THROWN OBJECT HAZARDS**,
  4. **NEVER ALLOW BLADES** to **CONTACT SOLID OBJECTS** like wire, rocks, post, curbs, guardrails, or ground while mowing. *PN T001*

# SAFETY

## THROWN OBJECTS HAZARD (CONTINUED)

Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Raised Mower Thrown Objects	Inspect Area remove foreign objects	Do not let blades contact solid objects

### MOWER OPERATION:

- **DO NOT** exceed mower's rated *Cutting Capacity* or cut non-vegetative material.
- **USE ENCLOSED TRACTOR CABS** when two or more mowers are operating in mowing area.
- *Do Not mow in areas where bees or insects may attack unless you WEAR PROTECTIVE CLOTHING or use enclosed tractor cab.*
- **ADJUST** mower sections or wing close and parallel to ground without exposing blades.
- **ADJUST** cutting **HEIGHT** to **AVOID BLADE CONTACT** with solid objects like wire, rocks, posts, curbs, guard rails and fixed obstructions.
- **DO NOT** operate mower when mower wing(s) is raised or in transport position.
- **STOP MOWING** immediately if blades strike heavy objects, fixed structures, metal guard rails and concrete structures:
  1. **BLADES CAN FAIL** from impact and objects can be thrown with great velocity.
  2. **INSPECT** and **REPLACE** any damaged blades.
  3. **CHECK** blade carrier and **REPLACE** if damaged.
- **DO NOT** mow in standing water **TO AVOID** possible **BLADE FAILURE**.
- **AVOID MOWING** in reverse:
  1. **STOP PTO** and back up mower.
  2. **LOWER** mower, engage **PTO** and mow forward.
- **STOP PTO** and **BLADES** when raising wings or the mower to transport position.
- **DO NOT ENGAGE PTO** with mower in transport position.
- **STOP mowing** when **EXCESSIVE VIBRATION** occurs:
  1. **STOP PTO** and tractor **ENGINE**.
  2. **INSPECT** mower for vibration source.
  3. **REPLACE** any damage parts and bent or damaged **BLADES**. PN T001-X

SAFETY

# SAFETY

## SAFETY

### RUN OVER HAZARDS



**TO AVOID SERIOUS INJURY OR DEATH FROM FALLING OFF TRACTOR OR EQUIPMENT RUN OVER:**

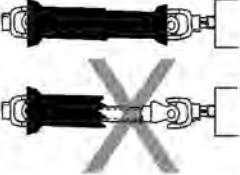
- **USE ROPS and SEAT BELT** equipped tractors for mowing operations.
- **KEEP ROPS locked in UP position.**
- **ONLY start tractor while seated in tractor seat.**
- **ALWAYS BUCKLE UP** seat belt when operating tractor and equipment.
- **ONLY OPERATE** tractor and equipment while seated in tractor seat.
- **NEVER ALLOW RIDERS** on tractor or implement.

**WHEN MOUNTING AND DISMOUNTING TRACTOR:**

- **ONLY** mount or dismount when tractor and moving parts are stopped.
- **STOP ENGINE AND PTO**, engage parking brake, lower implement, allow all moving parts to stop and remove key before dismounting from tractor. *PN R001*

# SAFETY

## PTO ENTANGLEMENT HAZARDS

			
Entanglement hazard Do Not approach or touch a rotating PTO driveshaft	Make sure PTO shaft is securely attached Do Not Use PTO Adapter	DO NOT Operate if PTO shields are damaged or missing	Make sure PTO shafts are proper length



**KEEP AWAY FROM ROTATING DRIVELINES AND ELEMENTS TO AVOID SERIOUS INJURY OR DEATH:**

**STAY AWAY** and **KEEP** hands, feet and body **AWAY** from rotating blades, drivelines and parts until all moving elements have stopped.

- **STOP, LOOK and LISTEN** before approaching the mower to make sure all rotating motion has stopped.
- **ROTATING COMPONENTS CONTINUE** to **ROTATE** after the PTO is shut off.

### **PTO SHIELDING:**

#### **TO AVOID SERIOUS INJURY OR DEATH FROM ENTANGLEMENT WHEN OPERATING IMPLEMENT:**

- **KEEP PTO** shields, integral driveline shields and input shields installed
- **DO NOT OPERATE** mower without shields and guards in place or missing
- **REPAIR OR REPLACE** if damage, broken or missing
- **ALWAYS REPLACE GUARDS** that have been removed for service or maintenance.
- Do Not use PTO or PTO guard as a step.

#### **TO AVOID** broken driveline during operations:

- **CHECK** driveline for proper length between PTO shaft and implement gearbox shaft. (*Refer to Instructions in Operation Section*)
- Drivelines too short can pull apart or disengage.
- Drivelines too long can bottom out.  
Bottoming driveline telescoping assembly will stop sliding and become solid.
- Driveline bottoming can push through support bearings and break off PTO shaft
- **AVOID** sharp turns or lift mower to heights to cause driveline "knocking".
- Lubricate driveshaft-telescoping components weekly.

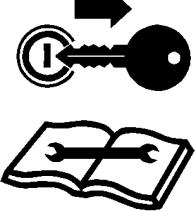
#### **CONTACT DEALER** if implement driveline does not match Tractor PTO shaft:

- **DO NOT USE PTO ADAPTER.**

Using a PTO adapter can cause excessive vibration, thrown objects, blade and implement failures by doubling operating speed. Increased working length exposing unshielded driveline areas. **PN PEO1**

# SAFETY

## MOWER BLADE CONTACT HAZARDS

		
Do not put fingers underneath mower	Do not put foot underneath mower	Stop Tractor Remove Key Read Manual



### KEEP AWAY FROM ROTATING BLADES TO AVOID SERIOUS INJURY OR DEATH FROM BLADE CONTACT:

- **STAY AWAY** and **KEEP HANDS, FEET** and **BODY AWAY** from rotating blades, drivelines and parts until all moving elements have stopped.
- **DO NOT** put hands or feet under mower decks
- **STOP** rotating **BLADES** disengage PTO and wait for blade to stop rotating before raising mower deck or wings
- **STOP LOOK** and **LISTEN** before approaching the mower to make sure all rotating motion has stopped. *PN MB01*

## HIGH PRESSURE OIL LEAK HAZARD

		
High pressure oil penetrating skin	High pressure oil eroding skin	Using cardboard to check for oil leaks



### TO AVOID SERIOUS INJURY OR DEATH FROM HIGH PRESSURE HYDRAULIC OIL LEAKS PENETRATING SKIN:

- **DO NOT OPERATE** equipment with oil or fuel leaks.
- **KEEP** all hydraulic hoses, lines and connections in **GOOD CONDITION** and **TIGHT** before applying system pressure.
- **RELIEVE HYDRAULIC PRESSURE** before disconnecting lines or working on the system.
- **REMOVE** and replace hose if you suspect it leaks. Have dealer test it for leaks.

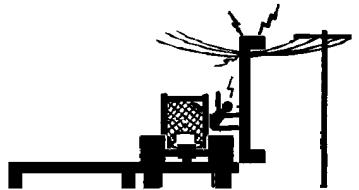
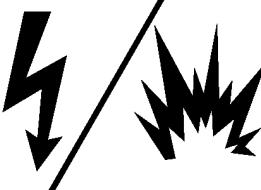
### HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE.

#### WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:

- **ALWAYS WEAR** safety glasses and impenetrable gloves.
- **USE** paper or cardboard to search for leaks.
- **DO NOT USE** hands or body parts to search for leak.
- **KEEP** hands and body **AWAY** from pin holes and nozzles ejecting hydraulic fluid.
- Hydraulic fluid may cause gangrene if not surgically removed immediately by a doctor familiar with this form of injury. *PN HP01*

# SAFETY

## ELECTRICAL & FIRE HAZARD

		
Wing contacting overhead electrical lines	Strike and explosion Hazard Blades Contacting Utility or Gas Lines	Do not operate near fires. Keep mower deck clear of debris



### **TO AVOID SERIOUS INJURY OR DEATH FROM ELECTRICAL CONTACT WHEN WORKING AROUND ELECTRICAL POWER LINES, GAS LINES AND UTILITY LINES:**

- **INSPECT** mowing area for overhead or underground electrical power lines, obstructions, gas lines, cables and Utility, Municipal, or other type structure.
- **KEEP** all raised wings at a 10 feet or greater distance from all power lines and overhead obstructions.
- **DO NOT** allow mower to contact with any Utility, Municipal, or type of structures and obstructions.
- **CALL 811** and 1-800-258-0808 for identify buried utility lines.

### **FIRE PREVENTION GUIDELINES while Operating, Servicing, and Repairing Mower and Tractor to reduce equipment and grass fire Risk:**

- **EQUIP** Tractor with a **FIRE EXTINGUISHER**
- **DO NOT OPERATE** mower on a tractor equipped with under frame exhaust
- **DO NOT SMOKE** or have open flame near Mower or Tractor
- **DO NOT DRIVE** into burning debris or freshly burnt area
- **AVOID FIRE IGNITION** by not allowing mower blade to contact solid objects like metal or rock.
- **ADJUST SLIP CLUTCHES** to avoid excessive slippage and clutch plate heating.
- **CLEAR** any grass clippings or debris buildup around mower drivelines, slip clutches, and gearboxes.
- **SHUT OFF ENGINE** while refueling. *PN EF01*

SAFETY

# SAFETY

## SAFETY

### TRANSPORTING HAZARDS

Use SMV signs and Flashing Lights	Loss of Control Stopping Hazard	Loss of Control Speeding Hazard	Use Safety Tow Chain - Tractor to Implement	Engage Transport Locks



#### TO AVOID SERIOUS INJURY AND DEATH WHEN TOWING OR TRANSPORTING EQUIPMENT:

- **KEEP** transport speed **B BELOW 20 mph to maintain control of equipment.**
- **REDUCE SPEED** on inclines, on turns and in poor towing conditions.
- **DO NOT TOW** with trucks or other vehicles.
- **USE** only properly sized and equipped tractor for towing equipment.
- **FOLLOW** all local traffic regulations.

#### TRACTOR REQUIREMENTS FOR TOWING OR TRANSPORTING IMPLEMENTS:

- **ONLY TRANSPORT** with tractor with **ROPS** in the raised position.
- **USE** properly sized and equipped tractor that exceeds implement weight by at least 20%.
- **KEEP** 20% of tractor weight on front wheels to maintain safe steering.

#### BEFORE TRANSPORTING OR TOWING IMPLEMENT:

##### TRACTOR INSPECTION:

- **CHECK** steering and braking for proper operation and in good condition.
- **CHECK SMV** sign, reflectors and warning lights for proper operation and visibility behind unit.
- **CHECK** that your driving vision is not impaired by tractor, cab, or implement while seated in tractor seat.
- **ADJUST** your operating position, mirrors, and implement transport for clear vision for traveling and traffic conditions.

#### PREPARE IMPLEMENT FOR TRANSPORTING OR TOWING:

##### ENGAGE TRANSPORT LOCKS AND SAFETY CHAINS:

- **RAISE MOWER** and **ENGAGE** center axle cylinder transport stops or pins.
- **RAISE WINGS** and **ENGAGE TRANSPORT LOCKS** or pins.
- **ATTACH** implement **SAFETY CHAIN** to tractor.
- **REMOVE** any cut material collected on mower deck.

#### DETERMINE STOPPING CHARACTERISTICS OF TRACTOR AND IMPLEMENT FOR TRANSPORTING OR TOWING:

##### BRAKING TESTS:

- **INSTALL** center axle cylinder transport stops or pins.
- Observe **STOPPING** distances increase with increased speeds.
- **DETERMINE** the maximum safe transport speed that does not exceed 20 mph.

#### DETERMINE MAXIMUM TURNING SPEED BEFORE OPERATING ON ROADS OR UNEVEN GROUND:

- **TEST** equipment in slowly increasing speed in turns to determine it can be operated at higher speeds.
- **USE REDUCED** turning speeds in sharp turns to avoid equipment turning over.

#### WHEN TOWING OR TRANSPORTING EQUIPMENT:

- Always **WEAR SEAT BELT** when operating or transporting mower.
- **USE** low speeds to avoid overturn with raised wings.
- **USE** low speeds and gradual steering on curves, hills, rough or uneven surfaces and on wet roads.
- **TURN ON** tractor **FLASHING WARNING LIGHTS**.
- **ALLOW** clearance for implement swing while turning.

**KEEP all raised wings at 10 feet or greater distance from all power lines and overhead obstructions. PN TH01**

# SAFETY

## HAZARDS WITH MAINTENANCE OF IMPLEMENT

Periodically inspect all moving parts, lubricate drivelines, and tighten all fasteners	Stop engine remove key before conducting maintenance	Block up implement before servicing Use large blocks on soft or wet soil	Engage cylinder transport locks	Inspect Blades for damage or cracks

### WARNING

AVOID SERIOUS INJURY OR DEATH FROM COMPONENT FAILURE BY KEEPING IMPLEMENT IN GOOD OPERATING CONDITION IN PERFORMING PROPER SERVICE, REPAIRS AND MAINTENANCE.

### BEFORE PERFORMING SERVICE, REPAIRS AND MAINTENANCE ON THE IMPLEMENT:

#### SECURE EQUIPMENT FOR SERVICE

#### BLOCK OUT POTENTIAL ENERGY HAZARDS; Rotating Parts, Raised Components, Hydraulic Pressure.

- STOP ENGINE AND PTO, engage parking brake, lower implement, allow all moving parts to stop and remove key before dismounting from tractor.
- PLACE implement on ground or securely block up raised equipment. Use large blocks on soft or wet soil.
- SECURELY LATCH and LOCK raised implement wings
- BLOCK UP IMPLEMENT TONGUE with large blocks and tongue jack. DO NOT crawl or work under implement supported only by tongue jack.
- PUSH and PULL Remote Hydraulic Cylinder lever to relieve hydraulic pressure.
- DISCONNECT IMPLEMENT Hydraulic HOSES from tractor
- DISCONNECT IMPLEMENT driveline from tractor PTO SHAFT.

#### WEAR SAFETY GLASSES, PROTECTIVE GLOVES and follow SAFETY PROCEDURES when performing service, repairs and maintenance on the implement:

- Always WEAR protective GLOVES when handling blades, knives, cutting edges or worn component with sharp edges.
- Always WEAR GLOVES and SAFETY GLASSES when servicing hot components
- AVOID CONTACT with hot hydraulic oil tanks, pumps, motors, valves and hose connection surfaces.
- SECURELY support or BLOCK UP raised implement, framework and lifted components before working underneath equipment.
- STOP any implement movements and SHUT-OFF TRACTOR engine before doing any work procedures.
- USE ladder or raised stands to reach high equipment areas inaccessible from ground.
- ENSURE good footing by standing on solid flat surfaces when getting on implement to perform work.
- FOLLOW manufacturer's instructions in handling oils, solvents, cleansers, and other chemical agents.
- DO NOT change any factory-set hydraulic calibrations to avoid component or equipment failures.
- DO NOT modify or alter implement, functions or components.
- DO NOT WELD or repair rotating mower components. These may cause vibrations and component failures being thrown from mower.

#### PERFORM SERVICE, REPAIRS, LUBRICATION AND MAINTENANCE OUTLINED IN IMPLEMENT MAINTENANCE SECTION:

- INSPECT for loose fasteners, worn or broken parts, leaky or loose fittings, missing or broken cotter keys and washers on pins, and all moving parts for wear.
- REPLACE any worn or broken parts with authorized service parts.
- LUBRICATE unit as specified by lubrication schedule
- NEVER lubricate, adjust or remove material while it is running or in motion.
- TORQUE all bolts and nuts as specified.

#### BLADE INSPECTION:

- REPLACE bent, damage, cracked or broken blades immediately with new blades.
- AVOID blade failures and thrown broken blades. DO NOT straighten, weld, or weld hard-facing blades.

#### SAFETY SHIELDS, GUARDS AND SAFETY DEVICES INSPECTION:

- KEEP all Deflectors, Chain Guards, Steel Guards, Gearbox Shields, and PTO integral shields, Bands, Side Skirts and Skid Shoes in place and in good condition.
- REPLACE any missing, broken or worn safety shields, guards and safety devices.
- Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.
- Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. **PN HM01**

SAFETY

# SAFETY

## **PARTS INFORMATION**

### **PARTS INFORMATION**

Bush Hog mowers use balanced and matched system components for blade carriers, blades, cuttershafts, knives, knife hangers, rollers, drivetrain components, and bearings. These parts are made and tested to Bush Hog specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce mower performance, void warranties, and present a safety hazard. Use genuine Bush Hog mower parts for economy and safety. (SPBH-1)

**SEE YOUR BUSH HOG DEALER**

Operator's & Parts Manuals



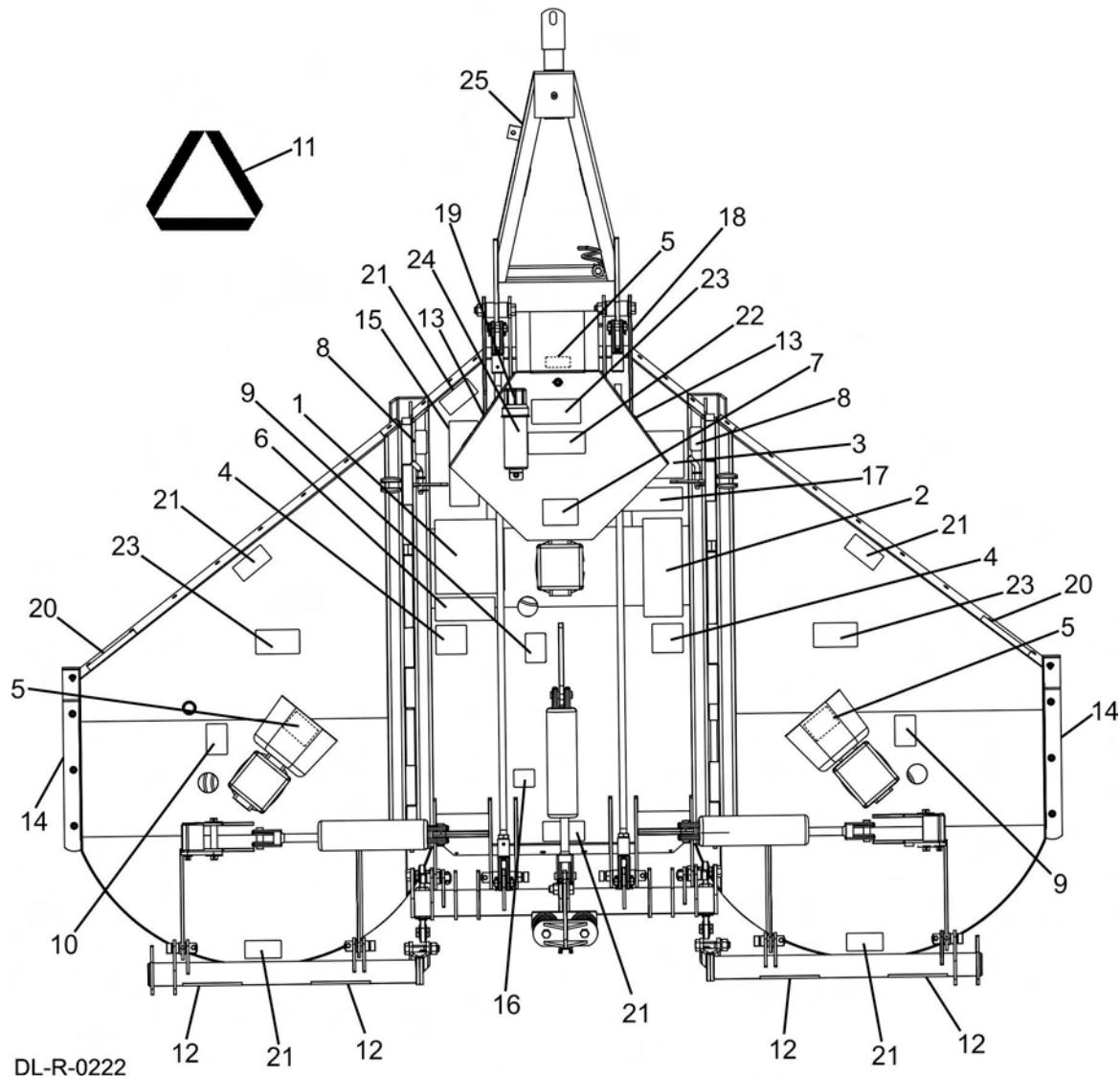
[www.algqr.com/bpm](http://www.algqr.com/bpm)

**SAFETY**

# SAFETY

## Decal Location

**NOTE:** Bush Hog supplies safety decals on this product to promote safe operation. Damage to the decals may occur while in shipping, use, or reconditioning. Bush Hog cares about the safety of its customers, operators, and bystanders, and will replace the safety decals on this product in the field, free of charge (Some shipping and handling charges may apply). Contact your Bush Hog dealer to order replacement decals.



SAFETY

# SAFETY

SAFETY

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D549	1	DANGER	Multi Hazard
2.	D553	1	WARNING	Pull Type Unit Hazards
3.	D547	1	DANGER	Driveline Hazards
4.	D565	2	DANGER	Wing Lowering Safety
5.	D546	3	DANGER	Shield Missing
6.	D813	1	DANGER	Multi Language
7.	50028366	1	WARRANTY	5 - Year Gearbox
8.	D555	2	DANGER	Crushing Hazard
9.	D551	2	WARNING	CCW Blade Rotation
10.	D552	1	WARNING	CW Blade Rotation
11.	94359	1	REFLECT	SMV
12.	50031214	4	REFLECT	Red Reflector
13.	50058768	2	NAME	2212
14.	50061049	2	NAME	Bush Hog
15.	D587	1	INSTRUCT	Lubrication Decal
16.	D544	1	IMPORTANT	Transport Latch
17.	D559	1	WARNING	Genuine Bush Hog Parts
18.	nfs	1	SERIAL PLATE	Serial Number Plate
19.	50035829	1	INSTRUCT	Canister, Operators Manual
20.	50031212	2	REFLECT	Amber Reflector
21.	D614	6	DANGER	Thrown Object Shield Missing
22.	87340	1	IMPORTANT	Driveline Lube
23.	91443	2	IMPORTANT	Slip Clutch
24.	50058842	1	-----	Operator's Manual (Inside Canister)
25.	D861	1	WARNING	Jack Positioning

# SAFETY

## Decal Description



# SAFETY

## SAFETY

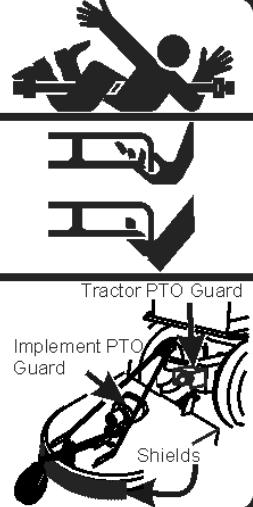
**DANGER**

### ENTANGLEMENT HAZARD

**TO AVOID SERIOUS INJURY OR DEATH:**

- DO NOT operate without guards in place and in good condition. PTO and gearbox guarding are SUBJECT TO WEAR.
- STAY AWAY and KEEP hands, feet and body AWAY from rotating blades, drivelines and parts that continue to move after power shut-off. WAIT until all moving elements have stopped.
- ALWAYS REPLACE GUARDS that have been removed for service or maintenance.
- STOP, LOOK and LISTEN for rotating motion before approaching implement.
- DO NOT STEP ON drivelines or guards.

D549\_2



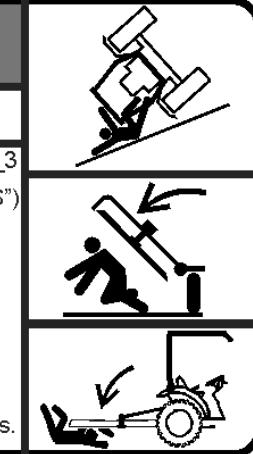
**DANGER**

### Crushing Hazard - Injury or Death

**TO AVOID SERIOUS INJURY OR DEATH:**

- USE tractor equipped with Rollover Protective Structure ("ROPS") including roll bar and seat belt. Keep roll bar in raised position.
- STAND CLEAR when removing transport latch, lowering or raising wings.
- IMPLEMENT CAN FALL from hydraulic failure or accidental operation of controls.
- BLOCK UP and securely support equipment before putting hands, feet or body under raised equipment or lifted components.

D549\_3



**DANGER**



**TO AVOID SERIOUS INJURY OR DEATH:**

- READ AND UNDERSTAND the provided Operator's Manuals, safety signs and information decals for tractor and implement before operating equipment.
- CONTACT DEALER immediately if you do not have manuals.
- CONTACT DEALER to explain any instructions not fully understood.
- ALWAYS WEAR safety glasses.
- WEAR hard hat, safety shoes and gloves for protection when operating equipment.

D549\_5

D549

D549\_2B

# SAFETY

SAFETY

## ! WARNING



### TO AVOID SERIOUS INJURY OR DEATH FROM HIGH PRESSURE HYDRAULIC OIL LEAKS PENETRATING SKIN:

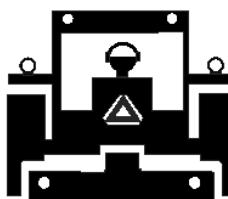
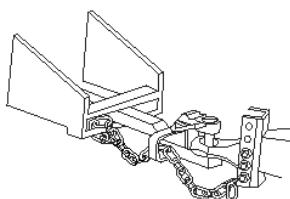
- DO NOT OPERATE equipment with oil or fuel leaks.
- KEEP all hydraulic hoses, lines and connections in good condition and tight before applying system pressure.
- Relieve hydraulic pressure before disconnecting lines or working on the system.
- REMOVE and replace hose if you suspect it leaks. Have dealer test it for leaks.

### HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE. WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:

- DO NOT use hands to check for leaks.
- ALWAYS WEAR safety glasses and impenetrable gloves.
- USE paper or cardboard to search for leaks.
- KEEP hands and body AWAY from pin holes and nozzles ejecting hydraulic fluid.
- Hydraulic fluid may cause gangrene if not surgically removed immediately by a doctor familiar with this form of injury.

D553\_1

## ! WARNING



### TO AVOID SERIOUS INJURY AND DEATH WHEN TOWING EQUIPMENT:

- DO NOT TOW with trucks or other vehicles.
- ONLY transport with properly sized and equipped tractor. (see Operator's Manual)
- ATTACH implement SAFETY CHAIN to tractor.
- CHECK SMV sign, reflectors and warning lights for visibility behind unit.
- TURN ON tractor flashing warning lights.

### TO AVOID LOSS OF TOWING CONTROL:

- DO NOT tow at speeds over 20 mph.
- REDUCE SPEED on inclines, in turns and in poor towing conditions.

D553\_2

D553\_1B

# SAFETY

## SAFETY

### ! WARNING

#### TO AVOID EQUIPMENT AND GRASS FIRES:

- CLEAR AWAY grass or debris from slip clutches, gearboxes, drivelines and decks.

#### TO AVOID FIRE IGNITION:

- DO NOT ALLOW BLADES TO CONTACT rocks, metal or solid objects.

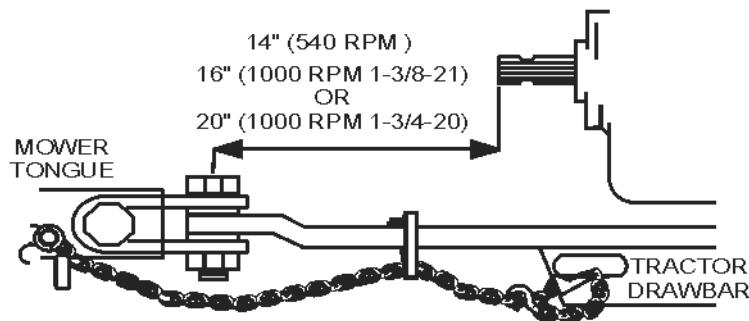


D553\_3

### IMPORTANT

Required for Standard Pull Type Units.

D553\_4



Attach Safety Chain securely.

D553

D553\_2B

### ! DANGER

D546



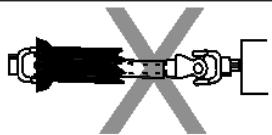
GUARD MISSING  
DO NOT OPERATE

D546\_B

# SAFETY

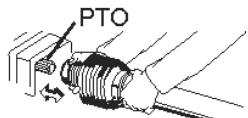
SAFETY

## DANGER



### TO AVOID SERIOUS INJURY OR DEATH FROM DRIVELINE CONTACT, DRIVELINE SEPARATION OR PTO STUB SHAFT FAILURE:

- STOP, LOOK and LISTEN for rotating motion before approaching implement.
- STAY AWAY and KEEP hands, feet and body AWAY from rotating parts until all moving elements have stopped.
- ALWAYS shut off PTO before dismounting.
- DO NOT operate if PTO shields are damaged or missing.
- PUSH AND PULL on yoke until collar clicks and locks yoke in place.
- CHECK driveline guards for free rotation and sufficient overlap to avoid unshielded areas.
- DO NOT USE PTO ADAPTER



## WARNING

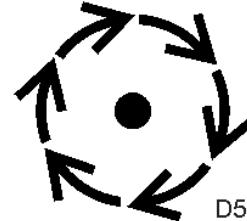
OPERATE THIS MACHINE AT

**540 RPM**

TRACTOR PTO SPEED ONLY.

Overspeeding PTO may cause component failure resulting in bodily injury.

TRACTOR PTO ROTATION: CLOCKWISE

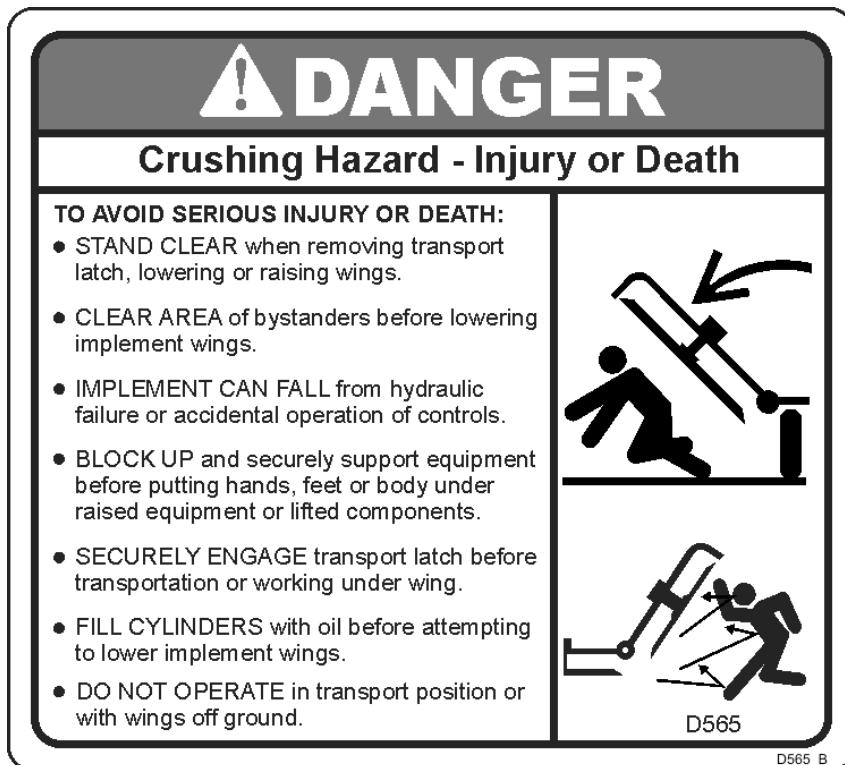


D547

D547\_B

# SAFETY

## SAFETY

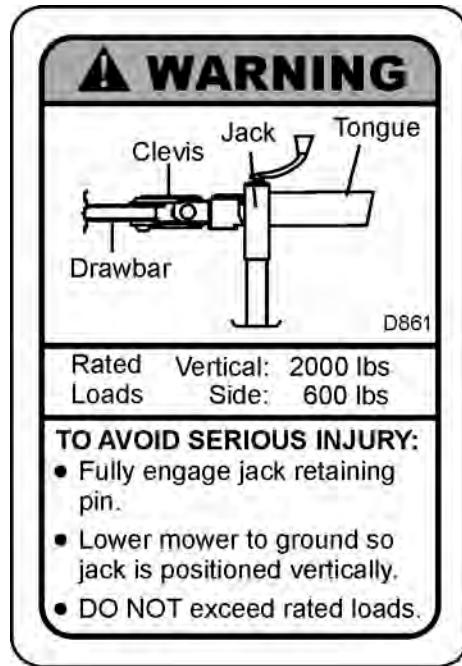


# SAFETY



# SAFETY

## SAFETY



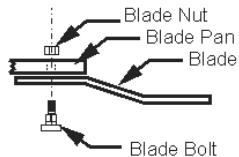
# SAFETY

SAFETY

## WARNING

TO AVOID SERIOUS INJURY OR DEATH FROM BLADE ATTACHMENT FAILURE:

- Torque blade bolt to 600 ft lbs.
- ALWAYS replace blades in pairs.
- ALWAYS replace blades with new bolts and nuts.

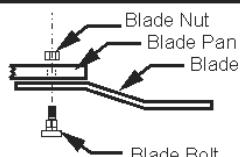


D551

## WARNING

TO AVOID SERIOUS INJURY OR DEATH FROM BLADE ATTACHMENT FAILURE:

- Torque blade bolt to 600 ft lbs.
- ALWAYS replace blades in pairs.
- ALWAYS replace blades with new bolts and nuts.



D552

## BLADE ROTATION



D551\_B

## BLADE ROTATION



D552\_B

## IMPORTANT

### TRANSPORT LATCH

Securely lock Transport Latch before transporting mower on roadway or working under implement.

D544

D544\_B

# SAFETY

## Federal Laws and Regulations

This section is intended to explain in broad terms the concept and effect of federal laws and regulations concerning employer and employee equipment operators. This section is not intended as a legal interpretation of the law and should not be considered as such.

### Employer-Employee Operator Regulations

U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

#### This Act Seeks:

“...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources...”

#### DUTIES

##### Sec. 5 (a) Each employer-

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.
- (b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

### OSHA Training Requirements

**Title 29, Code of Federal Regulations Part 1928.57(a)(6). [www.osha.gov](http://www.osha.gov)**

Operator instructions. At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee who operates an agricultural tractor and implements in the safe operating practices and servicing of equipment with which they are or will be involved, and of any other practices dictated by the work environment.

Keep all guards in place when the machine is in operation;

Permit no riders on equipment

Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.

Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine.

### Employer Responsibilities:

To ensure employee safety during Tractor and Implement operation, it is the employer's responsibility to:

1. Train the employee in the proper and safe operation of the Tractor and Implement.
2. Require that the employee read and fully understand the Tractor and Implement Operator's manual.
3. Permit only qualified and properly trained employees to operate the Tractor and Implement.
4. Maintain the Tractor and Implement in a safe operational condition and maintain all shields and guards on the equipment.
5. Ensure the Tractor is equipped with a functional ROPS and seat belt and require that the employee operator securely fasten the safety belt and operate with the ROPS in the raised position at all times.
6. Forbid the employee operator to carry additional riders on the Tractor or Implement.
7. Provide the required tools to maintain the Tractor and Implement in a good safe working condition and provide the necessary support devices to secure the equipment safely while performing repairs and service.
8. Require that the employee operator stop operation if bystanders or passersby come within 300 feet.

### Child Labor Under 16 Years of Age

Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situation. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

# **INTRODUCTION SECTION**

Introduction Section 2-1

## INTRODUCTION

We are pleased to have you as a Bush Hog customer. Your Rotary Cutter has been carefully designed with care and built with quality materials by skilled workers to give maximum service with minimum down time. This manual is provided to give you the necessary operating and maintenance instructions for keeping your rotary cutter in top operating condition. Careful use and timely service saves extensive repairs and costly downtime losses. Please read this manual thoroughly. Understand what each control is for and how to use it.

Bush Hog typically offers three types of shielding to protect the operator, passerby, livestock, and property from thrown objects... deflectors, single chain guards, and double chainguards. Shielding should be selected based on the intended use of the mower. Double chainguards or deflectors should be used for highway, right-of-way, parks or greenbelt mowing or all other mowing where human dwellings, vehicles, or livestock could be within 300 feet of the mower. Chainguards are more durable, provide a longer service life and require less maintenance and replacement than deflectors. Single chainguards may be sufficient for agriculture and other mower use only where passersby or property are not within 300 feet of the mower during operation.

No shielding is 100% effective in preventing thrown objects. The possibility of injury and property damage from this hazard can be substantially reduced by selecting proper shielding, maintaining the mower and shielding in good operational condition, inspecting the area for foreign debris before mowing, operating the mower at a minimum cutting height of 6", and keep unprotected persons at a minimum distance of 300 feet from the mower at all times during operation.

Safety is of primary importance to the owner/operator and to the manufacturer. Observe all safety precautions detailed on the machine and noted throughout the manual for safe operation of implement. If any assistance or additional information is needed, contact your authorized Bush Hog dealer. The owner/operator/dealer should know and understand the Safety Messages before assembly and be aware of the hazards of operating this cutter during assembly, use, and maintenance. The Safety Alert Symbol combined with a Signal Word, as seen below, is intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this machine.



**DANGER** Indicates an imminently hazardous situation that, if not avoided, WILL result in DEATH OR VERY SERIOUS INJURY.



**WARNING** Indicates an imminently hazardous situation that, if not avoided, COULD result in DEATH OR SERIOUS INJURY.



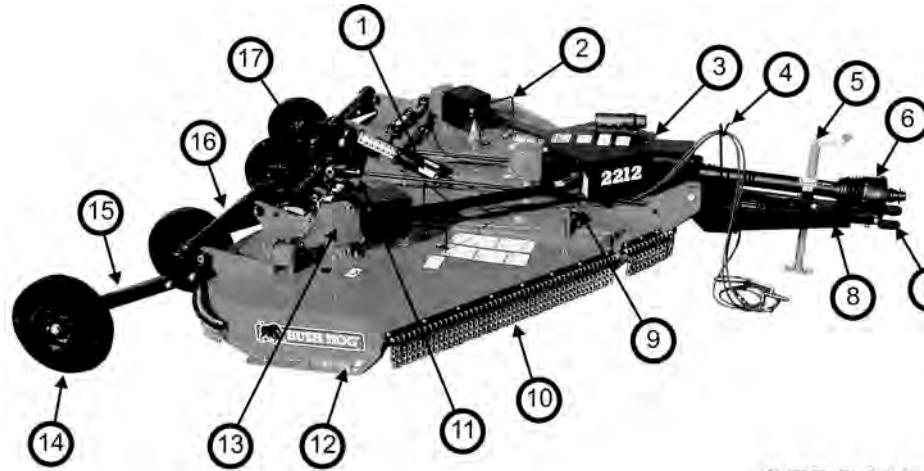
**CAUTION** Indicates an imminently hazardous situation that, if not avoided, MAY result in MINOR INJURY.



**Important** Identifies special instructions or procedures that, if not strictly observed, could result in damage to, or destruction of the machine, attachments or the environment.

# INTRODUCTION

## INTRODUCTION



INTR-P-0047

- 1 Height Adjustment Cylinder
- 2 Driveline Retainer
- 3 Power Divider & Center Gearbox Shields
- 4 Hose Holder Rod
- 5 Jackstand
- 6 CV - Joint
- 7 Clevis
- 8 Tongue
- 9 Wing Transport Lock
- 10 Discharge Shield (Chains)
- 11 Tongue Height Adjustment
- 12 Replaceable Wing Skid
- 13 Wing Gearbox
- 14 Laminated Tire
- 15 Axle Arm
- 16 Axle
- 17 Wing Cylinder

**NOTE:** All references made in this manual to right, left, front, rear, top or bottom are as viewed facing the direction of forward travel with implement properly attached to tractor.

The Bush Hog Model 2212 Flex Wing Rotary Cutter is designed primarily for weed, grass, and brush to 1-1/2" diameter and consists of a center unit with two variable position wings together having a cutting width of 12 feet. Wing operating angles and machine cutting height are independently controlled using hydraulic cylinders. A self-leveling linkage maintains a level cutter at all cutting heights. Power from the tractor PTO is split at the power divider gearbox and supplied to each of the blade gearboxes. Each blade gearbox has two free-swinging uplift blades designed to cut grass, corn stalks and light brush. Free-swinging blades reduce the shock of impact when a stationary object is hit. Slip clutches are installed on each gearbox for additional protection. Front and rear discharge shields are included as standard equipment.

Literature Page



[www.algqr.com/ble](http://www.algqr.com/ble)

## Equipment Specifications 2212

Cutting Width	12'
Transport Width	68"
Transport Height	77"
Overall Length	159"
Cutting Height	2 - 14"
HP Required (min)	50HP
HP (Max Tractor)	75HP
Cutting Capacity(max)	1-1/2"
Weight	3404 lbs
Wing Flex Up	90°
Wing Flex Down	22°
Hitch	Clevis Type Standard

### Blade Tip Speed 540 PTO

Center	15,834 FPM
Wing	15,604 FPM

### Blades

Blades	1/2" x 4" - Uplift
Blades Overlap	6"

### Gearbox Rating

Power Divider	160 HP
Center & Wings	75 HP

# INTRODUCTION

## **KEY OPERATION POINTS**

- Cutting performance and distribution are best when cutter is level from side to side. Mower front to rear pitch should be 1" or less.
- In extra heavy material, rear chains will allow better discharge and better distribution than solid rear deflectors or bands.
- Never operate the Flexwing below full PTO speed of 540 or 1000 rpm.
- For good distribution, the distribution baffles must be used.
- Make sure PTO driveline slip clutches are not frozen and are properly adjusted.
- To reduce uneven grass cutting and streaking.
  - make sure tractor rear tire spacing is a minimum of 60" between the inside of the tires.
  - make sure blades are not bent and are in good condition.
  - reduce ground speed to allow more cutting time.
- If Tractor engine is lagging down, shift tractor to a lower gear
- **ALWAYS OPERATE WITH THE WING HYDRAULIC CYLINDER CONTROL VALVES IN A FLOAT POSITION.**
- For maximum performance and service life, Always use Genuine Rhino replacement parts

## **Operating Noise Level/Sound Pressure**

The sound levels at the operator's ear from the attached machine (rotary cutter) are at least 10 dB(A) below the levels from typical Agricultural tractors used to power and transport this machine. Therefore, the Noise emission values given by the OEM of the Agricultural tractor used to power and transport this machine would be valid when this machine is attached to and operated by that Agricultural tractor in all OEM recommended applications.

# INTRODUCTION

## **LIMITED WARRANTY**

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Bush Hog dealer during regular working hours. Bush Hog reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

#### **DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES**

**DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES**

Bush Hog's obligation under this limited warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, **INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE** and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; cost of installation other than cost approved by Bush Hog; duty; taxes; charges for normal service or adjustment; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery of equipment or parts resulting from acts beyond the control of Bush Hog.

## **THIS LIMITED WARRANTY SHALL NOT APPLY:**

1. To vendor items which carry their own warranties, such as engines, tires, and tubes.
2. If the unit has been subjected to misapplication, abuse, misuse, negligence, fire or other accident.
3. If parts not made or supplied by Bush Hog have been used in connection with the unit, if, in the sole judgement of Bush Hog such use affects its performance, stability or reliability.
4. If the unit has been altered or repaired outside of an authorized Bush Hog dealership in a manner which, in the sole judgement of Bush Hog, affects its performance, stability or reliability.
5. To normal maintenance service and normal replacement items such as gearbox lubricant, hydraulic fluid, worn blades, or to normal deterioration of such things as belts and exterior finish due to use or exposure.
6. To expendable or wear items such as teeth, chains, sprockets, belts, springs and any other items that in the company's sole judgement is a wear item.

NO EMPLOYEE OR REPRESENTATIVE OF BUSH HOG IS AUTHORIZED TO CHANGE THIS LIMITED WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY UNLESS SUCH CHANGE IS MADE IN WRITING AND SIGNED BY BUSH HOG'S SERVICE MANAGER, 2501 GRIFFIN AVE., SELMA, ALABAMA 36703.

A row of twelve five-pointed stars, used as a decorative header for the record section.

## MODEL NUMBER

**SERIAL NUMBER**

MAKE CERTAIN THE WARRANTY  
HAS BEEN FILED WITH BUSH HOG  
SELMA, ALABAMA

**DATE OF RETAIL SALE**



# **ASSEMBLY SECTION**

Assembly Section 3-1

# ASSEMBLY

## ASSEMBLY

### DEALER SET-UP INSTRUCTIONS

The mower as received from the factory is virtually completely assembled and requires minimum time to complete assembly and is ready for sale.

#### **WARNING**

On a fully assembled unit, do not release the Wing Lock Pin until the hoses are attached to the tractor and the Wing Cylinders are filled with oil. Always keep bystanders away while raising and lowering the wings.

To lower the wings, hook the hydraulic hoses to the tractor. From the Operators Seat use the tractor hydraulic control levers to fill wing cylinders with oil (Refer to Operation Section). Keep coworkers and bystanders away from the implement while filling. For implements with the wings in the raised or transport position, filling the cylinders should raise the wings slightly and loosen the wing lock pin. DO NOT release the wing lock pin if there is a force on the lock. Use tractor hydraulic control levers to lower the wing(s). Continue to hold the control lever until both wings are down and the wing cylinders are fully retracted or extended. Continue to cycle the cylinders several times by raising and lowering the wings fully to remove any trapped air. If there is sponginess during the raising cycle, this may indicate that air is entrapped in the hydraulic circuit. Continue to cycle the cylinders until all sponginess is removed.

The implement wings should lower slowly when they are allowed to float down and are not powered down. This is a safety feature built into the system. If the wings fall rapidly, have the cylinders repaired before operating the implement.  
Asm-0004



### ASSEMBLY

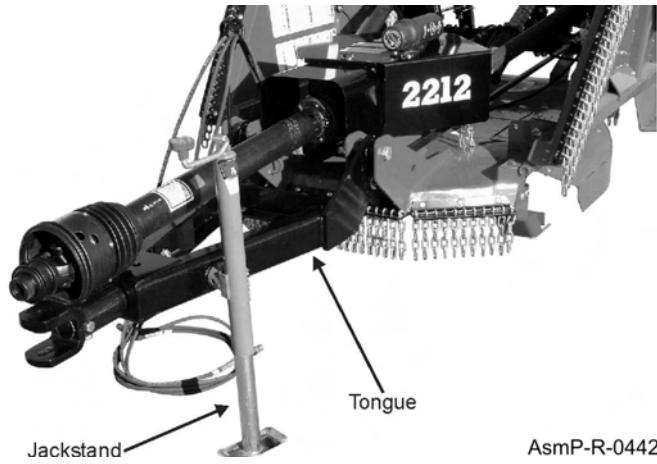
Select a suitable work area large enough to allow for lowering of the wings. Use extreme caution when connecting the mower to the tractor. The mower should be securely resting at ground level or sitting on blocks. Keep hands and feet from under the mower deck and clear of pinch points between the tractor and mower.

The unit comes with all axles and axle arms attached and tires on the center unit. Wing tires will need to be attached to the wing axle arms and if the unit has dual wheel center axle arms, two tires will be assembled to these axle arms.

# ASSEMBLY

## Tongue

During shipping tongue is tilted back toward unit. Roll tongue down and bolt to center section using 1" x 5-1/2" bolts, locknuts, and 3-17/32" bushing. Pin jackstand to tongue.



## LEVEL RODS

Pin the leveling rods assemblies to the tongue using pin, flatwasher and cotter pins shipped with assembly. The slotted casting end should be attached to the tongue (Position for greasing). It may be necessary to raise the tongue slightly for the attachment of the leveling rod. Connect the opposite end to the center axle weldment using the pin and cotter pins shipped in the leveling rod assembly. Attach hose holder rod to tongue using 5/8" x 2" bolt, nut, flatwasher and lockwasher **Figure Asm-R-0505.**

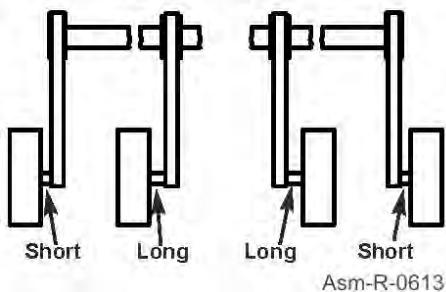


# ASSEMBLY

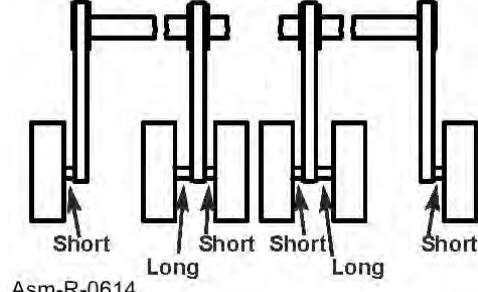
## ASSEMBLY

### TIRES AND WHEELS

Single Wheel Axle Arms

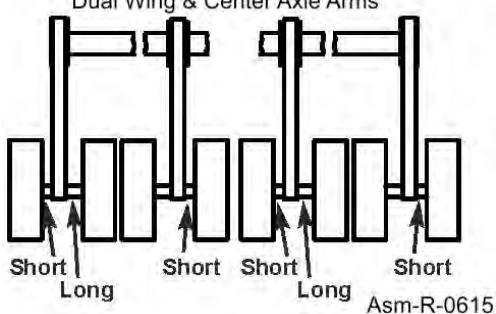


Dual Wheel Center Axle Arms

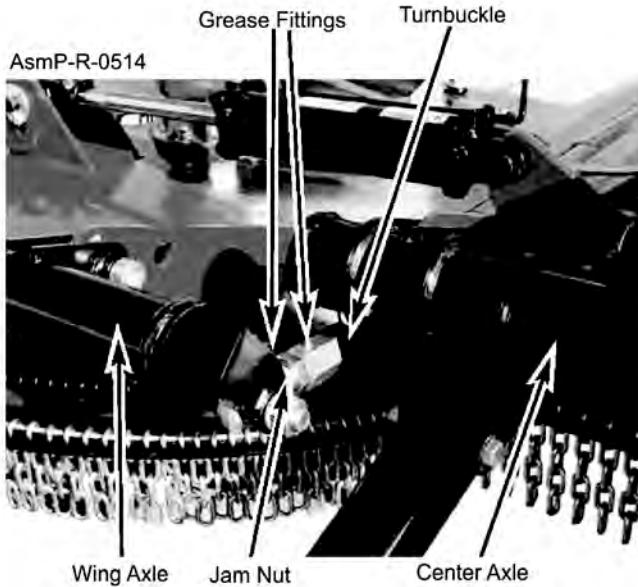


Dual Wing & Center Axle Arms

Note Arrangement of Spindles

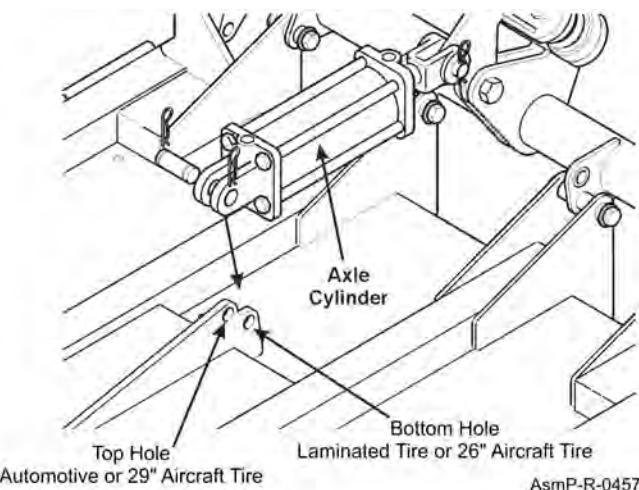


1. Mount wheels on hubs securing with lug nuts.  
**NOTE:** When using laminated tires and airplane tires, the flat side of the lug nut should be against the rim. When using automotive rims, the tapered side of the lug nut should be against the rim.
2. Attach turnbuckles adjustment links to the center and wing axles using 1" x 4-1/2" bolts, flatwashers, and nuts. **Figure AsmP-R-0514**



# ASSEMBLY

3. There are three types of wheels available for this machine. The automotive and airplane tires have approximately the same diameter, whereas the laminated tire will have a smaller outside diameter. Pin the base end of the cylinder according to the type tire being used. **Figure AsmP-R-0457.**

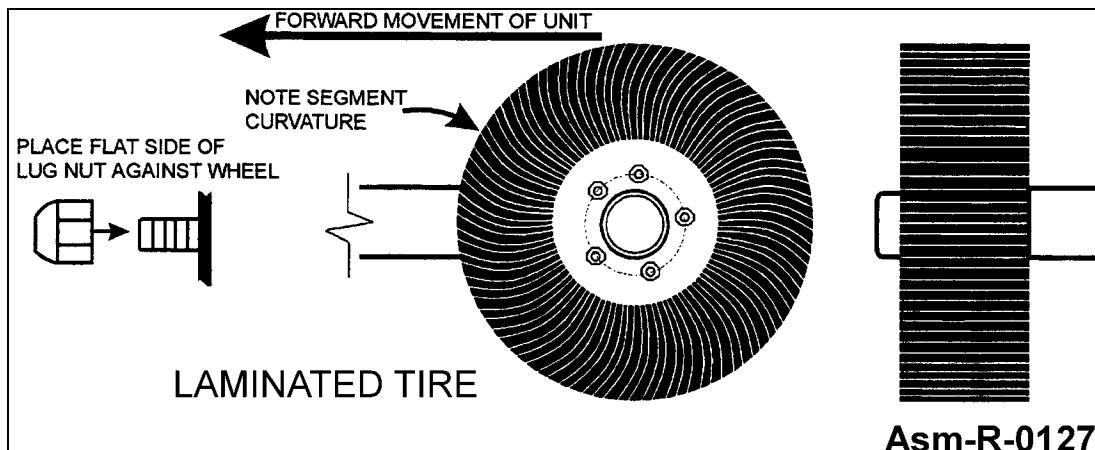


## TIRES AND WHEELS

Before installing any tires and wheels make certain the Cutter is jacked up high enough and is securely supported. When installing laminated or airplane tires, be sure the flat side of the lug nut is against the wheel. There are only three types of tires that can be used on this cutter DO NOT USE ANY OTHER TYPE OF TIRE OR WHEEL, such as automotive tires and rims. DO NOT EXCEED THE MAXIMUM SPEED FOR EACH TYPE OF TIRE. As excessive speed can cause damage to the machine, tire, and wheel.

When installing Laminated Tires and Wheels note the direction of travel and the curvature of rubber segments in the tire and install as shown in **Figure Asm-R-0127**. Do not exceed 20 M.P.H. on Laminated Tires. When removing Airplane Tires, let all of the air out of the tire before removing lug nuts or wheel bolts or nuts. Remove valve core to make certain that there is no air pressure left in tube before separating wheel halves to dismount tires. DO NOT LOOSEN WHEEL CLAMP BOLTS BEFORE PRESSURE IS REMOVED FROM TUBE AND TIRE TO PREVENT EXPLOSIVE SEPARATION OF WHEEL HALVES WITH POSSIBLE SERIOUS BODILY INJURY. Do not exceed 20 M.P.H. on Airplane or Rib Implement Tires.

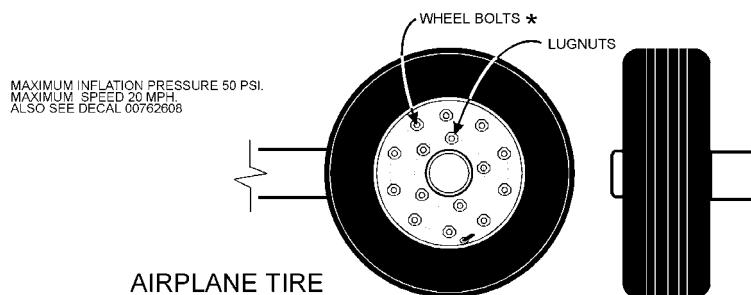
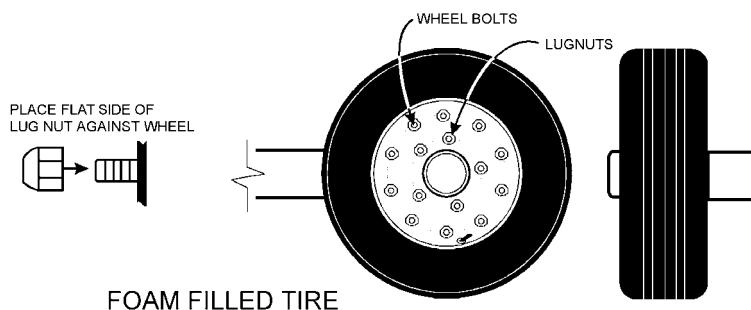
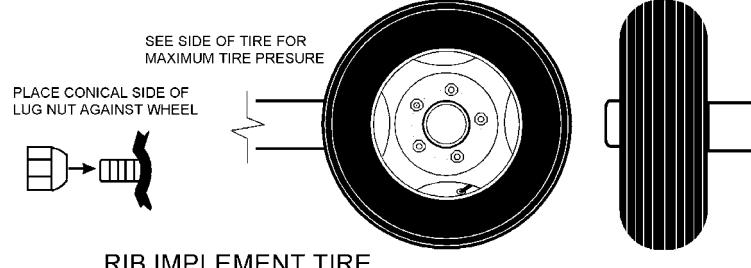
Maximum airplane tire inflation pressure is 50 PSI, minimum inflation pressure is 20 PSI. Inflate ribbed implement tires to manufacturer rated PSI as shown on the tire sidewall.



# ASSEMBLY

## ASSEMBLY

Asm-R-0213



## WARNING

## EXPLOSION HAZARD

**RELEASE ALL AIR PRESSURE BEFORE LOOSENING BOLTS.  
FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH  
MAX. SPEED: 20 MPH, MAX. WEIGHT: 4000 LBS., MAX. AIR PRESSURE: 40PSI**

1006348

Lubricate the PTO drivelines and wheel hubs according to the lubrication information found in the Maintenance Section.

\* Before loosening the airplane wheel bolts, make sure to relieve all air pressure from tire.

# ASSEMBLY

## HYDRAULICS

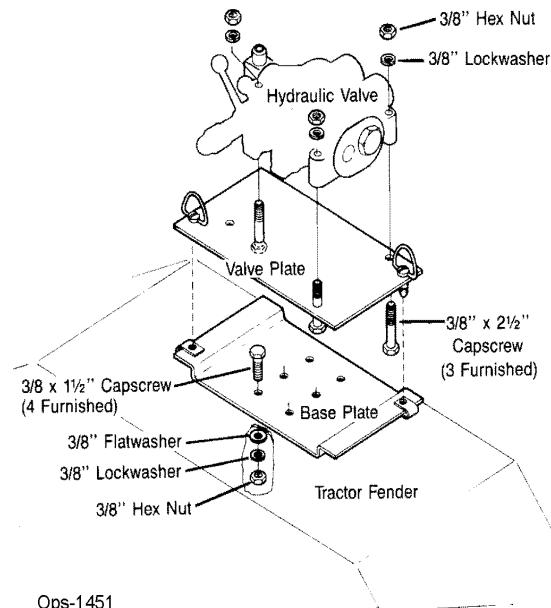
Plumb hydraulic cylinders as shown. Figure Asm-R-0616 and Asm-R-00617 (Hydraulic Hoses are supplied for attachment to three tractor remotes.) Plugs are supplied to adapt valve for either an open or closed center tractor hydraulic system. Consult your tractor dealer to determine which type system your tractor has. Use tie straps to secure hydraulic hoses to leveling rod.

**Important**

Failure to match valve to tractor hydraulic system by using incorrect plug will cause damage to tractor.

## OPTIONAL VALVE MOUNTING BRACKET INSTALLATION

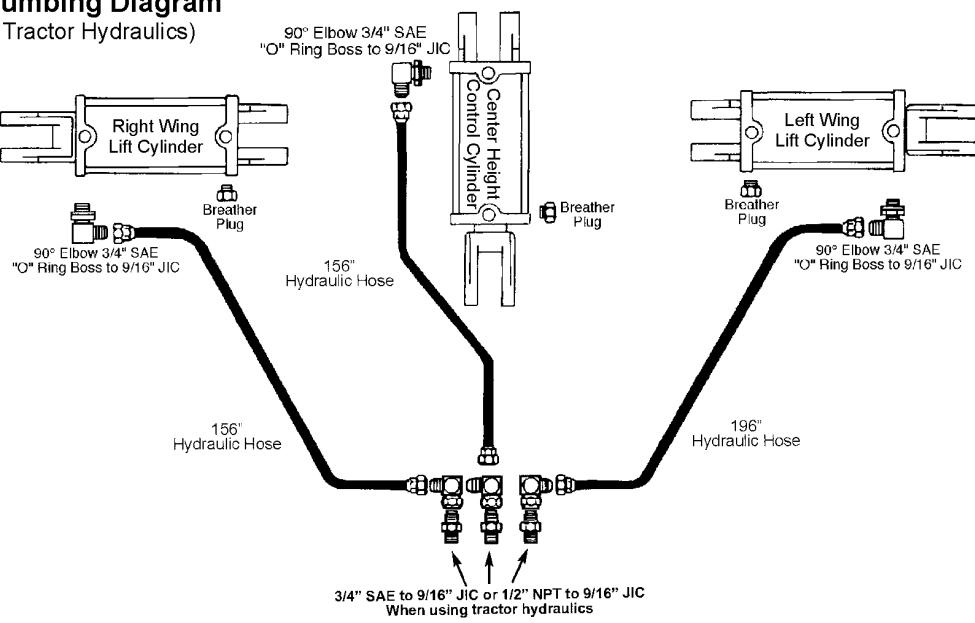
1. Place bottom bracket at desired mounting location. Mark 2-4 holes (as needed) for drilling using bracket as pattern. Drill holes using 13/32 drill bit.
2. Mount lower bracket using four 3/8" x 1-1/2" bolts, nuts, flatwashers, and lockwashers.
3. Attach valve to top bracket using three 3/8" x 2-1/2" bolts, nuts and lockwashers.
4. Mount top bracket to bottom bracket using quarter turn fasteners. Insert quarter turn fastener into clip-on receptacle and turn 90 degrees. **Ops-1451**



# ASSEMBLY

## ASSEMBLY

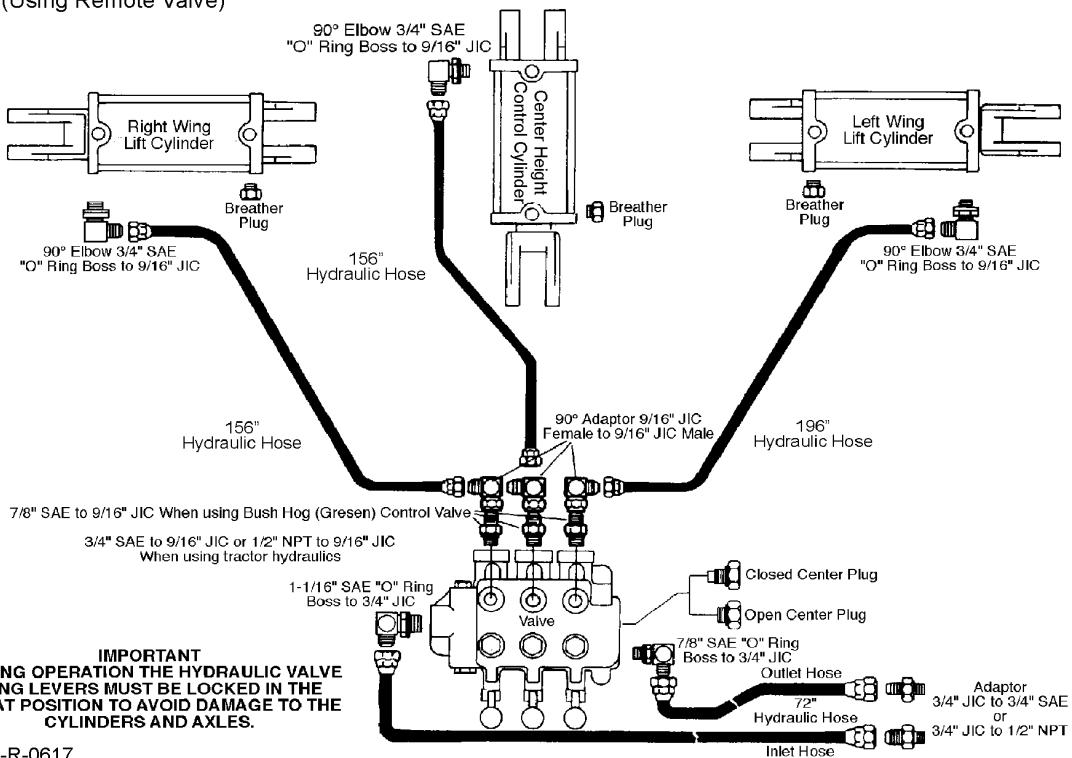
### 2212 Plumbing Diagram (Using Tractor Hydraulics)



**IMPORTANT**  
DURING OPERATION THE HYDRAULIC VALVE  
WING LEVERS MUST BE LOCKED IN THE  
FLOAT POSITION TO AVOID DAMAGE TO THE  
CYLINDERS AND AXLES.

Asm-R-0616

### 2212 Plumbing Diagram (Using Remote Valve)



**IMPORTANT**  
DURING OPERATION THE HYDRAULIC VALVE  
WING LEVERS MUST BE LOCKED IN THE  
FLOAT POSITION TO AVOID DAMAGE TO THE  
CYLINDERS AND AXLES.

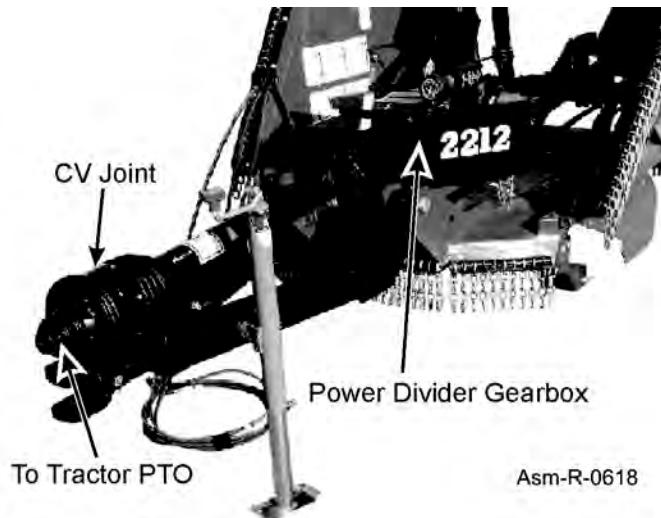
Asm-R-0617

# ASSEMBLY

## DRIVELINE ATTACHMENT TO IMPLEMENT

### CV DRIVELINE

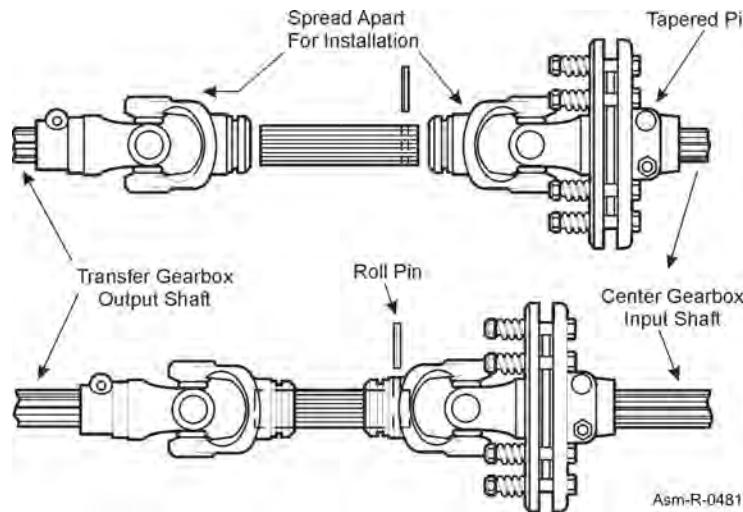
1. Secure the opposite end to the power divider gearbox using the tapered pin and locknut. Tighten nut to 30 ft. lbs.
2. Install driveline with the CV body attaching to the tractor PTO.
3. Pull on each driveline section to make certain it is securely attached.
4. Do not chain the CVF bell shielding. Attach all driveline shield chains to keep shields from turning.



### CENTER DRIVELINE

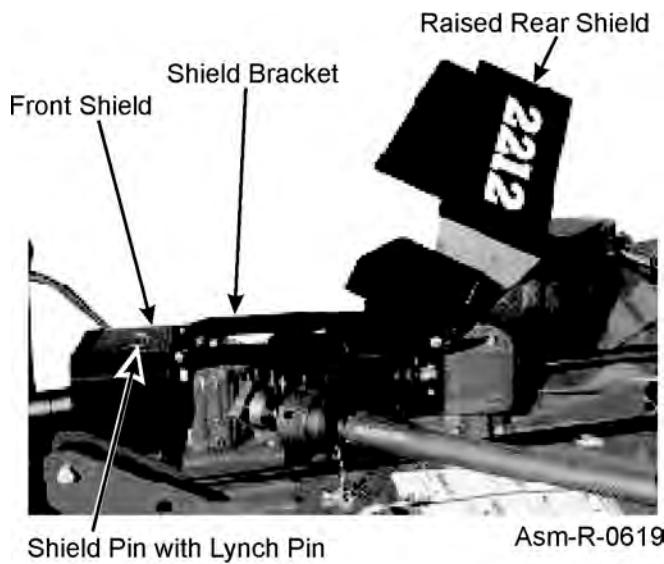
**NOTE:** The center driveline is assembled to the unit at the factory and these instructions are for reinstallation, should it be removed for repair. Follow reverse order for driveline removal.

1. Slide the center driveline clutch onto center gearbox input shaft until it bottoms out against casting. Asm-R-0481 Slide yoke assembly onto transfer gearbox output shaft until it bottoms out against casting. Place stub shaft between yokes, then slide clutch and yoke assembly until tapered pins can be installed to retain. **Tighten tapered pin retaining nut to 30 ft. lbs.** Install one roll pin through yoke and stub shaft.



# ASSEMBLY

2. Attach shield bracket to blade gearbox using four 8mm x 15mm bolts and flatwashers. Remove two top bolts from power divider gearbox and install two 8mm x 25mm bolts and flatwashers.
3. Install front shield with 3/8" x 1-1/4" bolts and locknuts. Fold both shields and retain with lynch pin. Figure Asm-R-0619

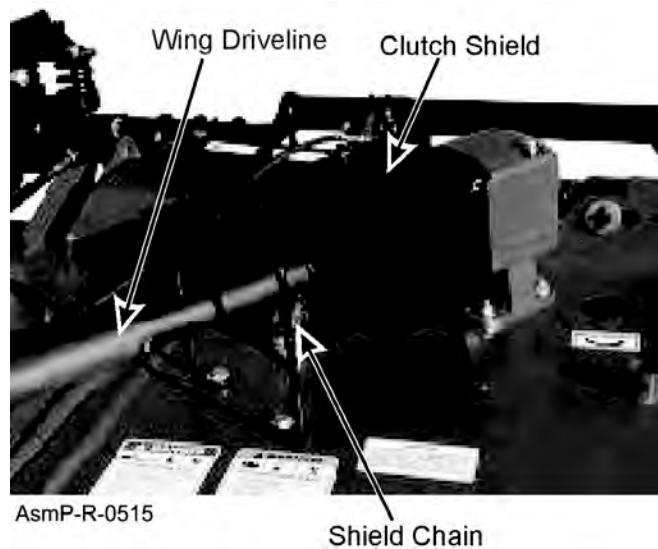


## ASSEMBLY

### WING DRIVELINE

**NOTE:** The Wing driveline is assembled to the unit at the factory and these instructions are for reinstallation, should it be removed for repair. Follow reverse order for driveline removal.

1. Install clutch shields on wing gearboxes using for 8mm x 15mm bolts and flatwashers per shield. Figure AsmP-R-0515
2. Install wing drivelines, attaching clutch to wing gearboxes. **Secure driveline with tapered pin, lockwasher, and nut. Tighten nut to 30 ft. lbs.** Pull on each driveline section to make certain it is securely attached.

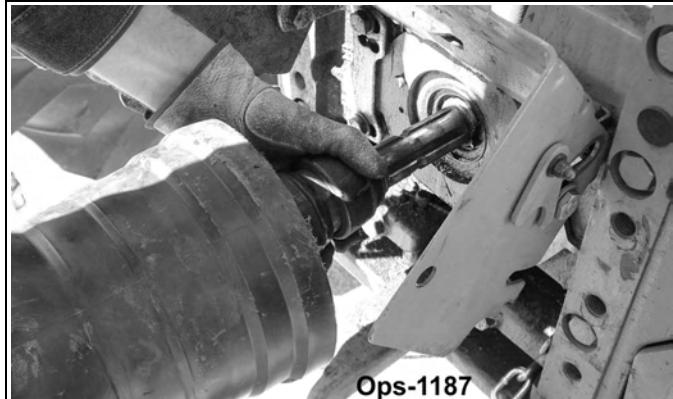


# ASSEMBLY

## DRIVELINE ATTACHMENT

The driveline yoke and tractor PTO shaft must be dirt free and greased for attachment.

To connect the mower driveline to the tractor PTO output shaft, pull the driveline yoke collar back and align the grooves and splines of the yoke with those of the PTO shaft. Push the driveline yoke onto the PTO shaft, release the locking collar, and position the yoke until the locking collar balls are seated onto the PTO shaft. Push and pull the driveline back and forth several times to ensure a secure attachment. *OPS-R-0003\_I*



### **CAUTION**

Many of the equipment components are HEAVY (60 lbs or greater) and Special Lifting Procedures are recommended. Use lifting assistance such as mechanical assistance, two people, and proper lifting techniques when connecting or installing the driveshaft to reduce the possibility of back injuries.

ASSEMBLY



# **OPERATION SECTION**

Operation Section 4-1

# OPERATION

## BUSH HOG 2212 ROTARY MOWER OPERATION INSTRUCTIONS

Bush Hog 2212 rotary mowers are manufactured with quality material by skilled workers. These mowers are designed to cut grass, weeds, crop stalks, small brush and other vegetative material up to 1-1/2" diameter. The mower is equipped with protective deflectors and/or chain guards to prevent objects being thrown from the mower by the blades, however, no shielding is 100% effective. All shields, guards, deflectors, and chains equipped on the unit must be maintained on the mower in good operational condition.

It is the operator's responsibility to be knowledgeable of all potential operating hazards and to take every reasonable precaution to ensure oneself, others, animals, and property are not injured or damaged by the mower, tractor, or a thrown object. Do not operate the mower if passersby, pets, livestock, or property are within 300 feet of the unit.

This section of the Operator's Manual is designed to familiarize, instruct, and educate safe and proper mower use to the operator. Pictures contained in this section are intended to be used as a visual aid to assist in explaining the operation of a flex-wing rotary mower and are not necessarily of a 2212 cutter. Some pictures may show shields removed for picture clarity. NEVER OPERATE this implement without all shields in place and in good operational condition. The operator must be familiar with the mower and tractor operation and all associated safety practices before operating the mower and tractor. Proper operation of the mower, as detailed in this manual, will help ensure years of safe and satisfactory use of the mower.

**IMPORTANT:** To avoid mower damage, retorque all bolts after the first 10 hours of operation. Retighten blade carrier retaining nut on gearbox lower shafts to 450 ft. lbs.

**READ AND UNDERSTAND THE ENTIRE OPERATING INSTRUCTIONS AND SAFETY SECTION OF THIS MANUAL AND THE TRACTOR MANUAL BEFORE ATTEMPTING TO USE THE TRACTOR AND IMPLEMENT.** If you do not understand any of the instructions, contact your nearest authorized dealer for a full explanation. Pay close attention to all safety signs and safety messages contained in this manual and those affixed to the implement and tractor. OPS-U- 0001

**READ, UNDERSTAND, and FOLLOW** the following Safety Messages. Serious injury or death may occur unless care is taken to follow the warnings and instructions stated in the Safety Messages. Always use good common sense to avoid hazards. (SG-2)



Si no lee inglés, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad. (SG-3)



# OPERATION

## OPERATION

## 1. OPERATOR REQUIREMENTS

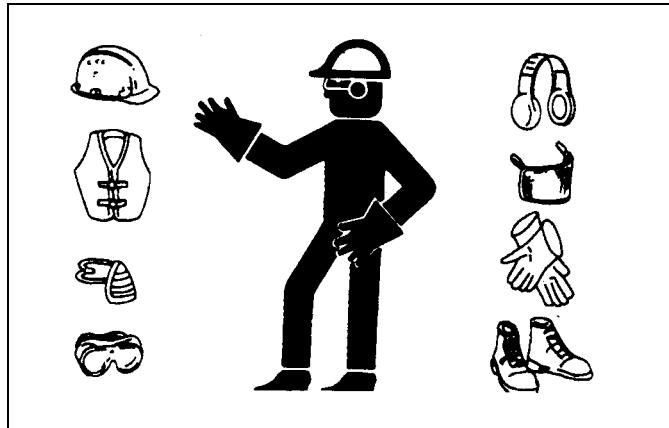
Safe operation of the unit is the responsibility of a qualified operator. A qualified operator has read and understands the implement and tractor Operator's Manuals and is experienced in implement and tractor operation and all associated safety practices. In addition to the safety messages contained in this manual, safety signs are affixed to the implement and tractor. If any part of the operation and safe use of this equipment is not completely understood, consult an authorized dealer for a complete explanation.

If the operator cannot read the manuals for themselves or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, safety practices, and operating instructions to the operator.

Safe operation of equipment requires that the operator wear approved Personal Protective Equipment (PPE) for the job conditions when attaching, operating, servicing, and repairing the equipment. PPE is designed to provide operator protection and includes the following safety wear:

### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

- Always Wear Safety Glasses
- Hard Hat
- Steel Toe Safety Footwear
- Gloves
- Hearing Protection
- Close Fitting Clothing
- Respirator or Filter Mask (depends on operating conditions) *OPS-U- 0002*



### **DANGER**

DO NOT use drugs or alcohol immediately before or while operating the Tractor and Implement. Drugs and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the equipment safely. Before operating the Tractor or Implement, an operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the Equipment safely. NEVER knowingly allow anyone to operate this equipment when their alertness or coordination is impaired. Serious injury or death to the operator or others could result if the operator is under the influence of drugs or alcohol. (SG-27)



# OPERATION

## **2. TRACTOR REQUIREMENTS**

The tractor used to operate the mower must have the power capacity to lift, pull, and operate the Power Take Off (PTO) at the mower's rated speed while traveling at a ground speed between 2 and 5 MPH. Operating the mower with a tractor that does not meet the following requirements may cause tractor or mower damage and be a potential danger to the operator and passersby.

### **Tractor Requirements and Capabilities**

- ASABE approved Roll-Over Protective Structure (ROPS) or CAB and seat belt.
- Tractor Safety Devices ..... Slow Moving Vehicle (SMV) emblem, lighting, PTO master shield
- Tractor Horsepower -Minimum ..... 50HP
- -Maximum ..... 75 HP
- Drawbar..... Set length according to operating speed of the mower and driveline type, rated to carry weight of the mower.
- Drawbar Vertical Load Minimum ..... 1150lbs.
- Hydraulics ..... 3 Hydraulic Ports are required - Without Remote Valve
- ..... 2 Hydraulic Ports are required - With Remote Valve
- Front End Weights..... As needed to maintain 20% weight on front axle
- Power Take Off ..... 540 RPM 6-Spline
- Tire Wheel Spacing ..... Set tires minimum width of 60" from inside to inside of tires.

### **2.1 ROPS and Seat Belt**

The tractor must be equipped with a Roll-Over-Protective-Structure (ROPS) (tractor cab or roll-bar) and seat belt to protect the operator from falling off the tractor, especially during a roll over where the driver could be crushed and killed. Only operate the tractor with the ROPS in the raised position and seat belt fastened. Tractor models not equipped with a ROPS and seat belt should have these life saving features installed by an authorized dealer. OPS-U- 0003

**WARNING**

Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Serious injury or even death could result from falling off the tractor--particularly during a turnover when the operator could be pinned under the ROPS. (SG-7)



### **2.2 Tractor Safety Devices**

If transporting or operating the tractor and implement near a public roadway, the tractor must be equipped with proper warning lighting and a Slow Moving Vehicle (SMV) emblem which are clearly visible from the rear of the unit. Lights and a SMV emblem must be equipped directly on implements if the visibility of the tractor warning signals are obscured.

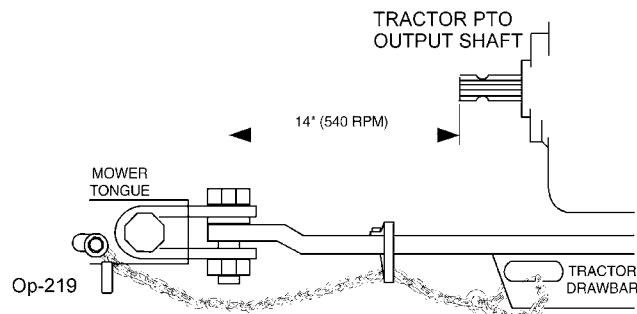
Maintain all manufacturer equipped safety shields and guards. Always replace shields and guards that were removed for access to connect, service, or repair the tractor or implement. Never operate the tractor PTO with the PTO master shield missing or in the raised position. OPS-U- 0004

# OPERATION

## 3. Tractor Horsepower

The horsepower required to operate the mower depends on several operating factors including the vegetation to be cut, terrain condition, operator experience, condition of the mower and tractor, and others. For most mowing conditions, the 2212 mower requires a tractor with a minimum of 50 HP. Operating the mower with a tractor that does not have adequate power may damage the tractor engine. Exceeding 75 HP for a 540 RPM drive may cause mower damage by overpowering the unit in heavy cutting conditions.

### 3.1 Drawbar



#### **Constant Velocity and Standard Driveline.**

Position the length of the drawbar from the end of the tractor PTO shaft to the drawbar hitch hole according to the operating speed of the mower. Position the drawbar length from shaft end to hitch hole at 14".

## 3.2 Tractor Hydraulics

The mower center section and each wing are positioned with hydraulic cylinders that are operated by the tractor hydraulic pump. The tractor must have a minimum of 2 hydraulic control valves devoted to the mower unless the tractor is fitted with a 3-spool control valve (extra equipment).

A 3-spool control valve is required if the tractor is equipped with a single valve and is recommended for those with two valves so that the center section and each wing can be controlled independent of one another. Refer to the Assembly Section of this manual for properly equipping the tractor with a 3-spool control valve. Tractors equipped with three hydraulic ports can position the center section and each wing independently with no extra equipment. If the tractor is equipped with only two hydraulic ports and a 3-spool control valve is not used, the wings cannot be operated independently and will raise and lower at different speeds.

## 3.3 Front End Weight

A minimum of 20% total tractor weight must be maintained on the tractor front end at all times. Front end weight is critical to maintain steering control and to prevent the tractor from rearing up while driving. If the front end is too light, add weight until a minimum of 20% total weight is reached on the front tires. Front weights and weight carriers can be purchased through an authorized tractor dealership. OPS-U-0005

# OPERATION

## 3.4 Power Take Off (PTO)

Depending on the unit, the mower is designed to operate at a PTO speed of 540 RPM. Most tractors operate at either 540, or a combination of 540 and 1000 RPM PTO speeds. The operating speed of the mower and tractor can be determined by the number of splines on the driveline yoke and PTO output shaft. Those operating at 540 RPM will have a 6-spline shaft and those operating at 1000 RPM will have a 21-spline shaft or a 1-3/4" 20 spline shaft. *Refer to the tractor owner's manual for instructions to change PTO speeds on models that operate at more than one speed.*

If operating an older model tractor where the tractor's transmission and PTO utilize one master clutch, an over-running clutch must be used between the PTO output shaft and the driveline of the mower. An authorized tractor dealer can provide the over-running clutch and its installation if needed. OPS-U- 0006\_E



**DO NOT** use a PTO adapter to attach a non-matching Implement driveline to a Tractor PTO. Use of an adapter can double the operating speed of the Implement resulting in excessive vibration, thrown objects, and blade and implement failure. Adapter use will also change the working length of the driveline exposing unshielded driveline areas. Serious bodily injury and/or equipment failure can result from using a PTO adapter. Consult an authorized dealer for assistance if the Implement driveline does not match the Tractor PTO. (S3PT-14)



**WARNING** Never operate the Tractor and Mower if the Implement input driveline is directly connected to the Tractor transmission. Tractor braking distances can be substantially increased by the momentum of the rotating Mower blades driving the Tractor transmission even though the Tractor clutch has been disengaged. Install an over running clutch between the Tractor PTO and the Mower driveline to prevent this potentially dangerous situation. (S3PT-16)



**DANGER** Do not connect the PTO driveline to the tractor or operate the implement unless the implement is securely connected to the tractor.

## 3.5 Tire Spacing

Tractor tires should be set a minimum of 60"(1.5 mm) apart measured from inside of tire to inside of tire. Refer to the tractor Operator's Manual or consult an authorized dealer for instructions to change tractor tire spacing. OPS-R- 0062



# OPERATION

## 4. GETTING ON AND OFF THE TRACTOR

Before getting onto the tractor, the operator must read and completely understand the implement and tractor operator manuals. If any part of either manual is not completely understood, consult an authorized dealer for a complete explanation. OPS-U- 0007



Do not mount or dismount the Tractor while the tractor is moving. Mount the Tractor only when the Tractor and all moving parts are completely stopped. (SG-12)



### 4.1 Boarding the Tractor

Use both hands and equipped handrails and steps for support when boarding the tractor. Never use control levers for support when mounting the tractor. Seat yourself in the operator's seat and secure the seat belt around you.

Never allow passengers to ride on the tractor or attached equipment. Riders can easily fall off and be seriously injured or killed from falling off and being ran over. It is the operator's responsibility to forbid all extra riders at all times. OPS-U- 0008



Never allow children to operate, ride on, or come close to the Tractor or Implement. Usually, 16-17 year-old children who are mature and responsible can operate the implement with adult supervision, if they have read and understand the Operator's Manuals, been trained in proper operation of the tractor and Implement, and are physically large enough to reach and operate the controls easily. (SG-11)



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)



### 4.2 Dismounting the Tractor

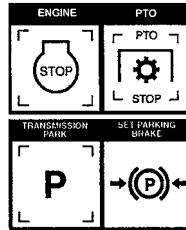
Before dismounting, park the tractor and implement on a reasonably level surface, apply the parking brake, idle the engine down, disengage the PTO, and lower the implement to the ground. Shut down the tractor engine according to the operator's manual, remove the key, and wait for all motion to completely stop. Never leave the seat until the tractor, its engine and all moving parts have come to a complete stop.

Use hand rails and steps when exiting the tractor. Be careful of your step and use extra caution when mud, ice, snow or other matter has accumulated on the steps or hand rails. Use all handrails and steps for support and never rush or jump off the tractor. OPS-U- 0009

# OPERATION

**DANGER**

BEFORE leaving the tractor seat lower the implement, set the parking brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling. Never dismount a Tractor that is moving or while the engine is running. Operate the Tractor controls from the tractor seat only. (SG-9)



## 5. STARTING THE TRACTOR

The operator must have a complete understanding of the placement, function, and operational use of all tractor controls before starting the tractor. Review the tractor operator's manual and consult an authorized dealer for tractor operation instructions if needed.

**Essential Tractor Controls:**

- Locate the light control switch.
- Locate the engine shut off control.
- Locate the brake pedals and the clutch.
- Locate the PTO control.
- Locate the 3-point hitch control lever.
- Locate the hydraulic remote control levers.

**Before starting the tractor ensure the following:**

- Conduct all pre-start operation inspection and service according to the tractor operator's manual.
- Make sure all guards, shields, and other safety devices are securely in place.
- The parking brake is on.
- The PTO control lever is disengaged.
- The 3-point hitch control lever is in the lowered position.
- The hydraulic remote control levers are in the neutral position.
- The tractor transmission levers are in park or neutral.

Refer to the tractor owner's manual for tractor starting procedures. Only start the tractor while seated and belted in the tractor operator's seat. Never bypass the ignition switch by short circuiting the starter solenoid.

After the tractor engine is running, avoid accidental contact with the tractor transmission to prevent sudden and unexpected tractor movement. OPS-U-0028

**DANGER**

Never run the Tractor engine in a closed building or without adequate ventilation. The exhaust fumes can be hazardous to your health. (SG-23)

**DANGER**

Start tractor only when properly seated in the Tractor seat. Starting a tractor in gear can result in injury or death. Read the Tractor operators manual for proper starting instructions. (SG-13)



# OPERATION

## **6. CONNECTING THE MOWER TO THE TRACTOR**

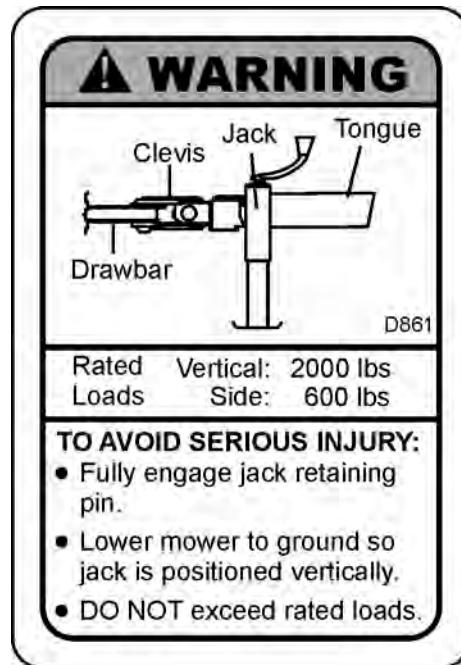
Use extreme caution when connecting the mower to the tractor. The mower should be securely resting at ground level or setting on blocks. Keep hands and feet from under the mower deck and clear of pinch points between the tractor hitch arms and mower pins. OPS-R-0001



Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15)

### **6.1 Connecting Mower Tongue to the Tractor**

1. Ensure the tractor is equipped with the correct PTO shaft and the drawbar is set at the correct length.
2. Using the parking jack, position the tongue clevis to the height of the tractor drawbar. Adjust the mower tongue to be level and parallel with the tractor drawbar using the control rod connecting the mower tongue to the deck.
3. Board the tractor and start the engine. Back the tractor to the mower aligning the drawbar hitch hole with the mower tongue clevis. Turn off the tractor engine, place the tractor in park, and set the parking brake before dismounting.



# OPERATION

4. To attach the mower, place two 1" flatwashers (1) positioned under top lip of tongue clevis and to the top of drawbar. Insert a 1" diameter grade 5 or 8 bolt (3) through clevis and drawbar and retain in position with a 1" locknut (4). Tighten the locknut securely but do not overtighten which could spring or break the clevis. NEVER attach mower to the tractor with a pin not having a nut.
5. Securely attach the mower safety chain to the tractor drawbar or drawbar support frame.
6. Lower the jack until the tongue is completely supported by the drawbar. Remove jack from the tongue and place on storage bracket of mower.

## Safety Tow Chain

If the mower is towed on a public roadway, a safety chain with tensile strength equal to or greater than the gross weight of the mower must be connected between the tractor and mower. This will help control the implement in the event the tongue becomes disconnected from the drawbar. Make sure the chain is attached to a secure location on the tractor and not to an intermediate support. After connecting both ends of the safety chain, drive the tractor to the right and left to check for proper chain length. Adjust length as necessary and allow only enough slack in the chain to make a maximum turn in both directions. Use chain intermediate support on tractor drawbar to minimize chain slack. When not in use, store the safety chain to protect it from mud or standing water by wrapping the chain around the tongue. Replace the safety chain if one or more links or end fittings are broken, stretched or otherwise damaged or deformed.

**IMPORTANT:** Scan this QR Code with your smart phone to link to the PAMI Safe Implement Hitching Manual for more information on correctly connecting agricultural tractors to implements. Or type in your internet browser the following web address: [www.algqr.com/hme](http://www.algqr.com/hme) Ops-0008-MISC



## 6.2 Connecting Mower Hydraulic Lines to the Tractor

With the tractor shut down and secured in position, relieve hydraulic pressure from the tractor by moving the control levers back and forth several times or placing the levers in the float position.

When connecting the mower hydraulic lines, keep hoses, quick couplers, and swivels free of contamination. Never leave a disconnected hose end open and cap the tractor hydraulic outlet ports when not in use. If the tractor ports or mower hydraulic hose ends become contaminated, wipe clean with a rag before connecting.

### Operating Mower Hydraulics with Three Tractor Hydraulic Ports

Connect one hose into each hydraulic port. Connect lines to correspond with position of hydraulic control levers.

# OPERATION

## OPERATION

### Operating Mower Hydraulics with Two Tractor Hydraulic Ports

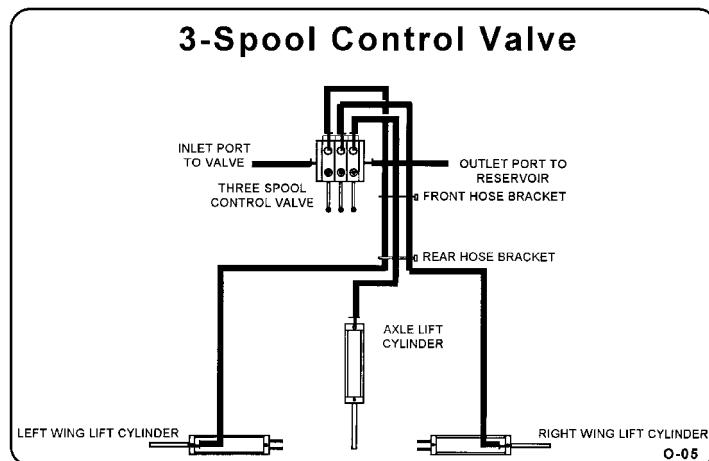
The lines that operate the wings must be plumbed together and will be controlled using one hydraulic control valve and the center section with the remaining control valve. Ensure that the operator is aware that each wing cannot be controlled independently nor will they raise and lower simultaneously.

### Operating the Mower Hydraulics with a 3-Spool Hydraulic Control Valve (Extra Equipment)

Ensure the valve matches the hydraulic operating system of the tractor (open or closed center). Refer to the Assembly Section for additional information on equipping the tractor with a 3-spool control valve.

Mount the valve bank to a tractor fender or other accessible location. Connect valve bank inlet and outlet lines to outlets of the same tractor hydraulic port. Connect the mower hydraulics to the control valve bank with the center section line to the right port. Connect the wing cylinder lines to the control valve positioned to correspond with the left and right wing.

To activate the 3-spool hydraulic control valve, tie the tractor's hydraulic control lever back to keep hydraulic oil continuously fed to the valve bank.



### Hydraulic Line Support

After connecting the mower hydraulic lines to the tractor, support the hoses with the equipped brackets. Ensure that hoses do not contact the driveline, do not bind while turning, and do not become pinched or kinked.

### Hydraulic Cylinder Priming

Hydraulic Cylinders must be filled with hydraulic oil before removing the wing transport braces to lower the mower wings. Hydraulic cylinders and lines are filled by holding the valve control levers in the raised position until the cylinders fully retract (wing cylinders) and extend (center cylinder). Place control levers in the float position and repeat process a second time. Ensure wings are entirely supported by the cylinders before removing the transport bars. NEVER drive out bar pins and NEVER remove bars that have tension on them.

# OPERATION

## 7. SETTING THE MOWER

Properly setting the cutting height is essential for efficient and safe operation. A properly set mower will make a more uniform cut, distribute clippings more evenly, require minimal tractor work, and follow the contour of uneven terrain. **NOTE:** *Avoid very low cutting heights, striking the ground with the blades gives the most damaging shock loads and will cause damage to the mower and drive. Blades contacting the ground may cause objects to be thrown out from under the mower deck. Always avoid operating the mower at a height which causes the blades to contact the ground.* OPS-U- 0010

### **DANGER**

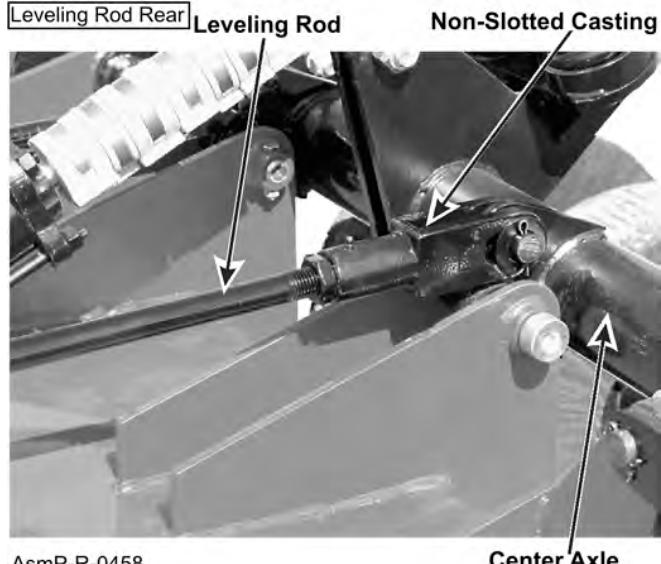
Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause serious injury or even death. (SG-14)



### 7.1 Setting Deck Height

#### LEVELING DECK CENTER SECTION

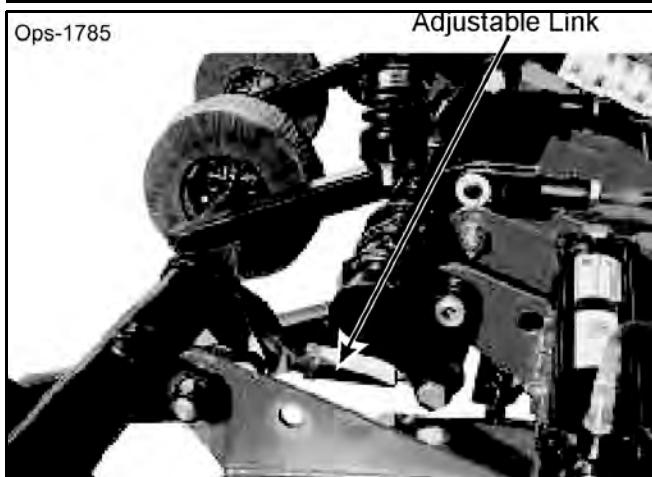
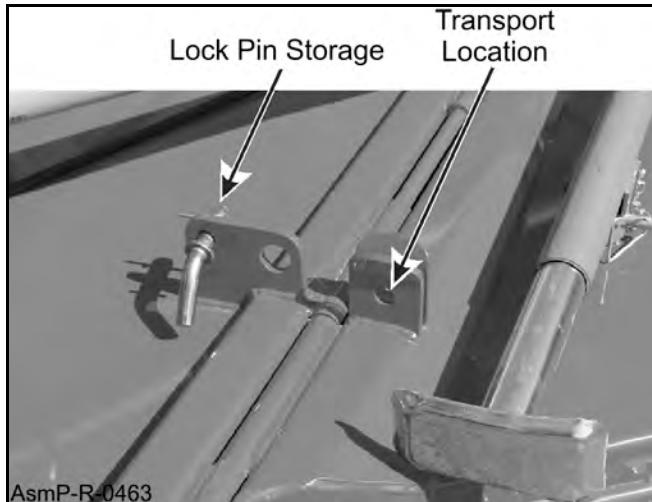
1. Place the tractor and mower on a level surface and lower both wings.
2. Using the center section hydraulic cylinder, position the mower so the skid shoes are 1" less off the ground than the desired final cut height. For example, for a 3" cut raise or lower the mower until the skid shoes are approximately 2" off the ground.
3. Shut down the tractor, place the transmission in park, and set the parking brake before dismounting.
4. Level the mower deck front to rear by adjusting the leveling rods linking the tongue to the rear axle. DO NOT allow feet or other body parts underneath the mower when making adjustments. To adjust rod length, loosen jamnut and screw turnbuckles. To lower the front, lengthen the rods and to raise the front, shorten the rods. DO NOT unscrew turnbuckles to the point that either rod threaded ends becomes disconnected which will cause the mower to fall. Re-tighten jamnuts when deck is leveled.
5. **IMPORTANT:** Alternate adjustments between rods and adjust at equal lengths to maintain equal tension. Improper adjustments may cause rods to snap or bend.
6. Place split collar assemblies on the center axle hydraulic cylinder rod to maintain a set cutting height each time the mower is raised and lowered.



# OPERATION

## LEVELING WING SECTIONS WITH CENTER

Wings should be adjusted before use if they are not level with center deck section. Lower cutter until skids on center section are approximately 1-2 inches off ground. Remove wing transport lock pins(s) and place in pin storage hole. **(AsmP-R-0463)** Lower wing(s) to ground allowing weight to rest on wheel(s). If wing(s) ar not level (parallel) to center section, loosen jam nut and turn turnbuckle body to adjust. **(AsmP-R-1785)** Adjust shorter to raise the wing outside edge and longer to lower the wing outside edge. It may be necessary to use wing lift cylinder to relieve pressure from the linkage retaining pin. Tighten jam nut.



# OPERATION

## 7.2 Setting Deck Pitch

### Lower Horse Power - Better Fuel Efficiency

To increase fuel efficiency and lower horsepower requirements for mower operation, the mower should be operated with the deck approximately **3/4" LOWER IN THE FRONT THAN THE REAR**. Operating the mower at this pitch will allow the mower to cut the grass only once and requires less work from the tractor.

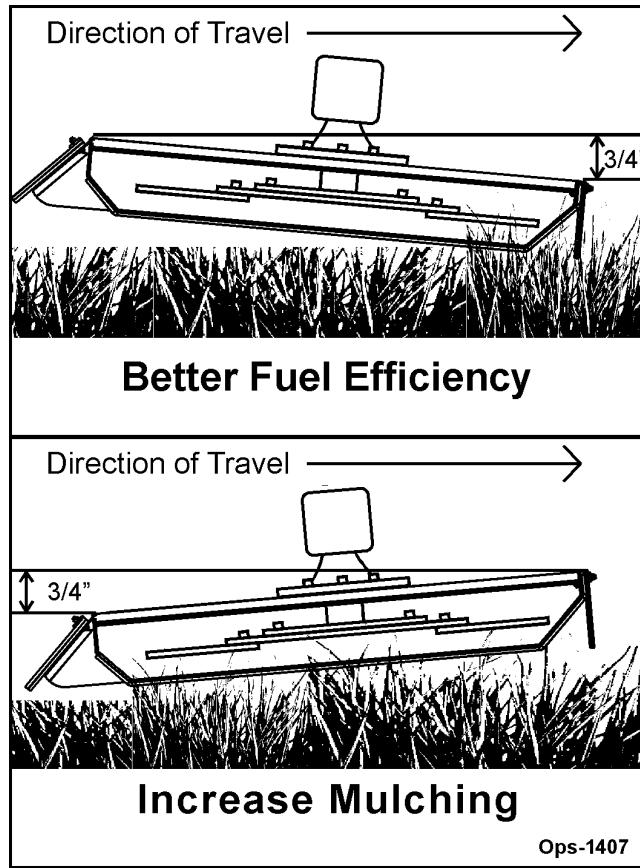
### Increase Mulching

To increase mulching of the grass or crop material during mower operation, the mower should be operated with the deck approximately **3/4" HIGHER IN THE FRONT THAN THE REAR**.

Operating the mower at this pitch will allow the mower to cut the grass twice and can result in a more even cut and improved distribution of the cut material.

#### IMPORTANT:

*Adjust the leveling rods the same amount and maintain equal tension in the rods. Improper adjustment may cause rods to snap or bend. Retighten the jamnuts after the deck pitch has been set. OPS-U-0041*



Ops-1407

# OPERATION

## 8. DRIVELINE ATTACHMENT

The driveline yoke and tractor PTO shaft must be dirt free and greased for attachment.

To connect the mower driveline to the tractor PTO output shaft, pull the driveline yoke collar back and align the grooves and splines of the yoke with those of the PTO shaft. Push the driveline yoke onto the PTO shaft, release the locking collar, and position the yoke until the locking collar balls are seated onto the PTO shaft. Push and pull the driveline back and forth several times to ensure a secure attachment. OPS-R-0003\_A



### **WARNING**

When attaching the Implement input driveline to the Tractor PTO, it is important that the connecting yoke spring activated locking collar slides freely and the locking balls are seated securely in the groove on the Tractor PTO shaft. Push and pull the driveline back and forth several times to ensure it is securely attached. A driveline not attached correctly to the Tractor PTO shaft could come loose and result in personal injury and damage to the Implement. (S3PT-17)

### 8.1 Driveline Length Check

### **WARNING**

Before operating the Implement, check to make sure the Implement input driveline will not bottom out or become disengaged. Bottoming out occurs when the inner shaft penetrates the outer housing until the assembly becomes solid-it can shorten no more. Bottoming out can cause serious damage to the Tractor PTO by pushing the PTO into the Tractor and through the support bearings or downward onto the PTO shaft, breaking it off. A broken driveline can cause personal injury. (S3PT-18)

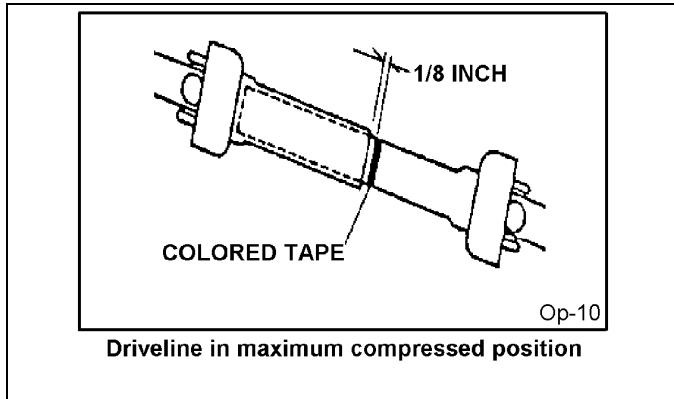
When fitting the mower to the tractor, the telescoping driveline must be inspected to ensure that at its most compressed position, the profiles do not "bottom out", and when at its farthest extended position, there is sufficient engagement between the profiles to operate safely. At its shortest length, there must be at least a 1" clearance between each profile end and opposite profile universal joint. At its farthest operating extension, a minimum profile engagement of 6" must be maintained for a Constant Velocity (CV) tube type driveline and a minimum engagement of 6" for non-CV solid shaft drivelines.

# OPERATION

# OPERATION

## “Bottoming Out” Check Procedure

- Disconnect driveline from the tractor and slide the profiles together until fully compressed.
- Place a mark on the inner shield 1/8" from the end of the outer shield and reattach the driveline to the PTO shaft.
- With the **PTO NOT TURNING**, slowly drive the tractor with mower attached through the sharpest turn possible and watch shaft movement. With the **PTO NOT TURNING**, slowly drive the tractor with the mower attached through the most severe terrain conditions expected and watch shaft movement.
- If the distance between the mark and the outer shield becomes less than 2" at any point there is a potential problem bottoming out the driveline and the driveline should be replaced with shorter driveline. Contact your local dealer or Technical Service for proper directions. OPS-R-0004\_J



**NOTE:** If tractor has a 540 RPM PTO, adjusting to a 16 inch position will gain additional 2 inches of telescoping length.

## Engagement Check Procedure

- With the driveline attached, position the mower to the point where the telescoping driveline is at its maximum extension. Completely shut down the tractor and secure in position.
- Mark the inner driveline shield 1/8" from the end of the outer shield.
- Disconnect the driveline from the tractor and separate the two driveline halves.
- Measure the distance from the mark to the end of the inner profile. This length is the amount the driveline profiles were engaged.
- If the engaged length is less than 6", the shaft is considered too short and should be replaced with a longer shaft. Consult an authorized dealer to purchase the required driveline length.

**NOTE:** If the driveline cannot be shortened and still maintain the required profile engagement, the operator must be made aware of terrain conditions and avoid situations which pose a potential problem to avoid damaging the driveline or move drawbar to 16" or 20" position for required clearance. OPS-R-0005\_O

# OPERATION

## OPERATION

### **8.2 Constant Velocity (CV) Driveline**

For mowers equipped with a Constant Velocity (CV) driveline, the maximum turning angle between the tractor and mower must be determined to ensure the joint angle does not over-extend which can cause CV joint damage. Constant Velocity joints enable the driveline to operate smoothly with no vibrations and clattering at angles up to 80°. Angles greater than 80° can result in mechanical damage to the CV joint and mower driveline.

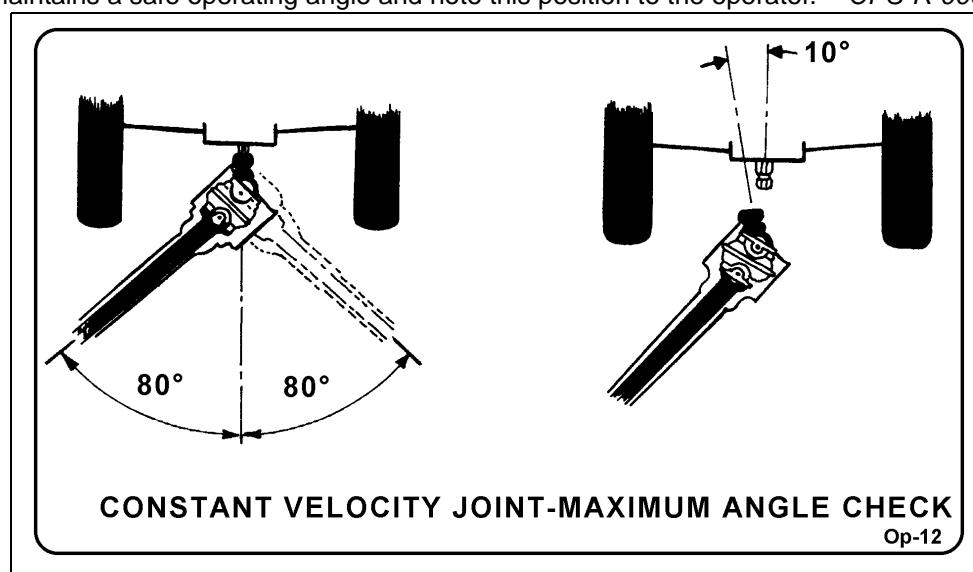
The Constant Velocity joint must be lubricated every 8 hours of operation as specified in the Maintenance Section. Failure to properly lubricate the joint will result in accelerated wear and joint component failure.

#### **CV Driveline Maximum Angle Check Procedure**

- With the **mower attached** to the tractor and the **driveline disconnected** from the tractor PTO stub make a hard left turn until there is approximately a 1" clearance between the left rear tractor tire and mower frame or tongue.
- Stop and completely shut down the tractor. Place the tractor in Park and apply the Parking Brake before dismounting.
- Check the CV joint at this maximum turning radius by holding the driveline yoke above the PTO shaft and then angle the CV joint to its maximum angle. A minimum difference of 10 degrees between the center line of the yoke and the PTO shaft must be maintained to ensure the joint will not be over angled. If the joint cannot be angled at least 10°, there is a potential problem of over-angling the joint while making sharp turns.
- Solutions: To ensure the joint is not damaged, check the following:  
Check the drawbar length to ensure that it is at the proper length for the RPM speed of the mower.

Move the tractor rear tires wider apart to limit the tractor turning radius.

Position the mower at multiple angles and perform the above procedure. Determine the sharpest turning radius that maintains a safe operating angle and note this position to the operator. OPS-R-0006\_B



# OPERATION

**CAUTION**

The Constant Velocity PTO driveline is **HEAVY** (70 lbs or greater) and Special Lifting Procedures are recommended. Use lifting assistance such as mechanical assistance, two people, and proper lifting techniques when connecting or installing the driveshaft to reduce the possibility of back injuries.

**DANGER**

Do not turn so sharp or lift mower so high to produce a severe "knocking" of the Driveline which will cause accelerated wear and breakage of drive train components and could result in possible injury from the separated Driveline sections. (SRM-04)

## **9. PRE-OPERATION INSPECTION AND SERVICE**

Before each use, a pre-operation inspection and service of the implement and tractor must be performed. This includes routine maintenance and scheduled lubrication, inspecting that all safety devices are equipped and functional, and performing needed repairs. DO NOT operate the unit if the pre-operation inspection reveals any condition affecting safe operation. Perform repairs and replacement of damaged and missing parts as soon as noticed. By performing a thorough pre-operation inspection and service, valuable down time and repair cost can be avoided. OPS-U-0029

**DANGER**

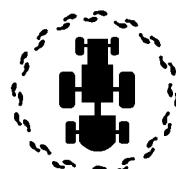
Always disconnect the main PTO Driveline from the Tractor before performing service on the Implement. Never work on the Implement with the tractor PTO driveline connected and running. Rotating Parts, Blades or Drivelines could turn without warning and cause immediate entanglement, injury or death. (S3PT-11)

**DANGER**

**DO NOT** allow any person under a folded wing unless wing is securely locked up or supported. **DO NOT** approach the Implement unless the Tractor is turned off and all motion has ceased. Never work under the frame work, or any lifted component unless the implement is securely supported or blocked up. A sudden or inadvertent fall by any of these components could cause serious injury or even death. (STI-03)

**WARNING**

Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working order. (SG-21)



# OPERATION

## OPERATION

<b>WARNING</b> Non-genuine parts can fail catastrophically. TO AVOID SERIOUS INJURY OR DEATH: <ul style="list-style-type: none"><li>• ONLY use genuine Bush Hog replacement parts.</li><li>• Non-genuine parts can fail creating hazardous conditions for operator and bystanders.</li></ul> Contact local dealer or Bush Hog about repair parts at: 2501 Griffin Ave., Selma, AL 36701 Customer Service: 800-363-6096. Email: <a href="mailto:contactus@bushhog.com">contactus@bushhog.com</a> <a href="http://www.algqr.com/bpm">www.algqr.com/bpm</a> D559_1	<b>IMPORTANT</b> <b>BE AWARE</b> <b>BE ALERT</b> <b>BE TRAINED</b> <b>BE ALIVE</b> <b>Before Operating this Mower</b> To prevent serious injury to yourself and/or bystanders, be trained in Safe Mowing Practices. Alamo Group Companies as well as AEM and FEMA provide training material that is critical for your Safety and the Safety of others when operating this equipment. Make these Safety Procedures an important part of every workday. Read and understand the Operator's Manual. Do not let untrained individuals operate this equipment. Contact your Dealer, AEM ( <a href="http://www.aem.org">www.aem.org</a> ), FEMA (314-878-2304, <a href="http://www.FarmEquip.org">www.FarmEquip.org</a> ), or Alamo Group ( <a href="http://www.Alamo-Group.com">www.Alamo-Group.com</a> ) for information on training material or courses that provide training in Safer Operating Practices for Mowers. D559_2 <a href="http://www.algqr.com/bve">www.algqr.com/bve</a> D559_2
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### 9.1 Tractor Pre-Operation Inspection/Service

Refer to the tractor operator's manual to ensure a complete pre-operation inspection and scheduled service is performed according to the manufacturers recommendations. The following are some of the items that require daily service and inspection:

- Tire condition/air pressure
- Wheel lug bolts
- Steering linkage
- PTO shield
- SMV sign is clean and visible
- Tractor's lights are clean and functional
- Tractor Seat belt is in good condition
- Tractor ROPS is in good condition
- ROPS is in the raised position
- No tractor oil leaks
- Radiator free of debris
- Engine oil level and condition
- Engine coolant level and condition
- Power brake fluid level
- Power steering fluid level
- Fuel condition and level
- Sufficient lubrication at all lube points
- Air filter condition OPS-U-0030



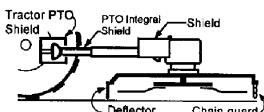
# OPERATION

## **9.2 Mower Pre-Operation Inspection/Service**

Before each mower use, a complete inspection and service is required to ensure the mower is in a good and safe working condition. Damaged and/or broken parts should be repaired and/or replaced immediately. To ensure the mower is ready for operation, conduct the following. *OPS-R-0007*



All Safety Shields, Guards and Safety devices including (but not limited to) - the Deflectors, Chain Guards, Steel Guards, Gearbox Shields, PTO integral shields, and Retractable Door Shields should be used and maintained in good working condition. All safety devices should be inspected carefully at least daily for missing or broken components. Missing, broken, or worn items must be replaced at once to reduce the possibility of injury or death from thrown objects, entanglement, or blade contact. *(SGM-3)*



Replace bent or broken blades with new blades. NEVER ATTEMPT TO STRAIGHTEN, WELD, OR WELD HARDFACING ON BLADES SINCE THIS WILL LIKELY CRACK OR OTHERWISE DAMAGE THE BLADE WITH SUBSEQUENT FAILURE AND POSSIBLY CAUSE SERIOUS INJURY FROM THROWN BLADES. *(SGM-10)*

The operator's manual and safety signs affixed on the unit contain important instructions on the safe and proper use of the equipment. Maintain these important safety features on the implement in good condition to ensure the information is available to the operator at all times.

- Ensure the manual canister is secured to the equipment with the operator's manual inside.
- Ensure all safety signs are in place and legible. Replace missing, damaged, and illegible decals. *OPS-U-0011*



Op-14

- Ensure the mower hitch is securely attached to the tractor drawbar with a proper size bolt and secured nut.
- Ensure that a properly rated safety tow chain is equipped securing the mower to the tractor.
- Check that the main driveline is securely attached to the tractor and the clamping cone is seated in the groove of the PTO shaft.
- Ensure the divider drivelines are secure at both ends. *OPS-R-0008*



Op-15

# OPERATION

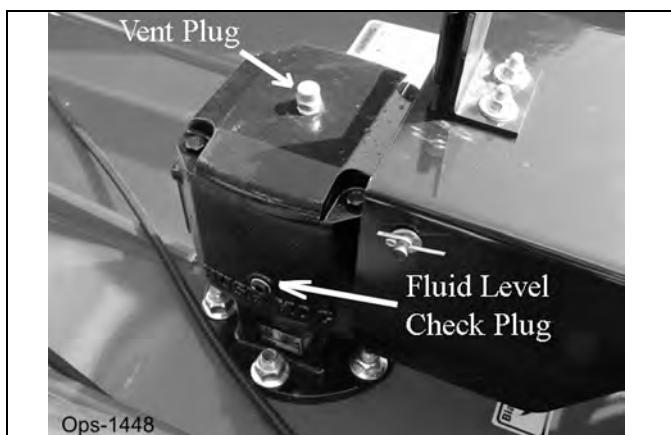
- Ensure chain guards and/or rubber deflectors are in position and not damaged. Replace worn, broken, and missing sections immediately.
- Ensure the driveline integral shields are in good condition and rotate freely.
- Inspect that all bolts and screws are in position and are properly torqued. *OPS-R-0009*



- Ensure the tractor PTO master shield is in place, lowered and in good condition.
- Ensure each mower slip clutch shield is secured in place and in good condition.
- Ensure the driveline slip clutches are properly adjusted and the friction plates are not frozen together. Reference the Maintenance Section for proper slip clutch maintenance. *OPS-R-0010*



- Perform scheduled lubrication as specified in the maintenance section.
- Inspect each gearbox oil level removing level indicator plug. The oil should be level with the bottom of the hole the plug was removed from. Replenish if needed. Replace the plug. A low oil level is a warning sign that the gearbox may be cracked or its seal is damaged and needs to be replaced.
- Ensure all gearbox vents are in place and free from clogs. *OPS-R-0011\_N*



## OPERATION

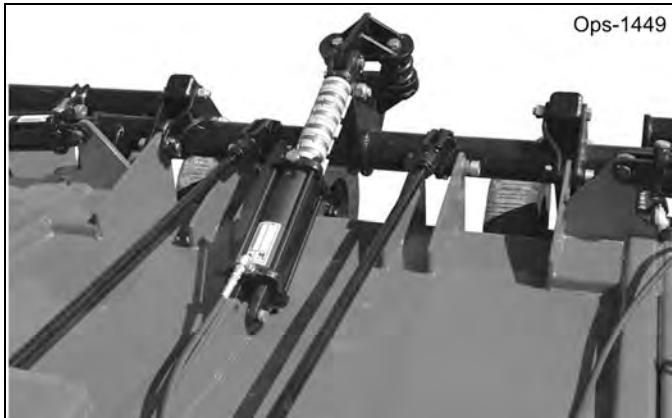
- Inspect blades and blade bolts for looseness and excessive wear. Make sure the mower is securely blocked up before crawling beneath. Replace damaged, worn, and missing blades as complete sets to maintain rotary balance.
- Ensure carrier hub nuts are tightened with the cotter pin inserted and spread.
- Inspect the condition of the deck skid shoes and the skid shoe attaching hardware.

OPS-R-0012



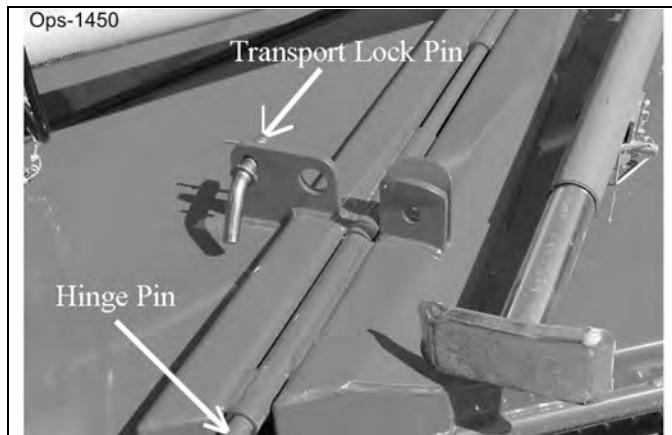
- Ensure each hydraulic cylinder is installed and retained correctly. Ensure the proper size pins are used to retain the cylinders in place and are secured with pins.
- Check for hydraulic oil leaks on the cylinders, along the hydraulic lines, and at tractor hydraulic ports. **IMPORTANT:** DO NOT use your hands to check for oil leaks. Use a piece of heavy paper or cardboard to check for hydraulic oil leaks.

OPS-R-0013\_I



- Ensure that the mower is equipped and secured with wing transport locks.
- Check the condition of the wing hinge pins.
- Check the condition of the mower axle suspension spring.
- Inspect mower tire condition, wheel bearings, and lug nut torque.

OPS-R-0014\_F



# OPERATION

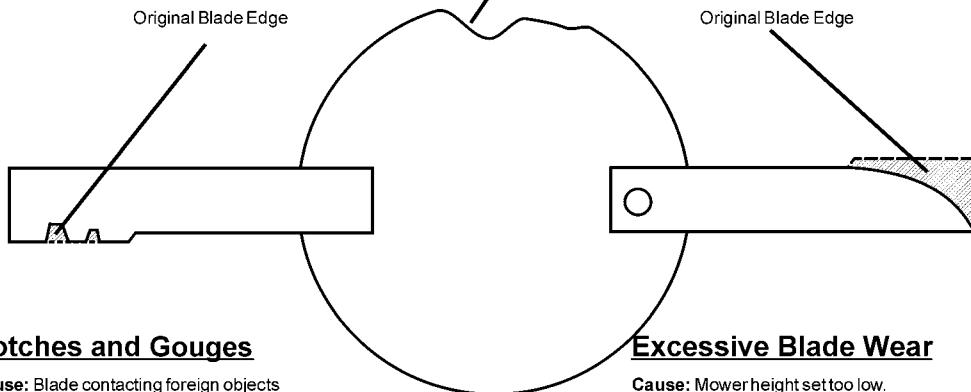
## 9.3 Cutting Component Inspection

Inspect blade pan and blade assembly for the following:

### Damaged Pan

**Cause:** Blade Pan contacts an immovable object while mower was in motion.

**Remedy:** Inspect the area before mowing to determine where the immovable objects are located and place visible hazard markers to identify the areas. Avoid mowing in the area where immovable foreign objects exist.



### Notches and Gouges

**Cause:** Blade contacting foreign objects

**Remedy:** Inspect the area to be mowed and remove foreign objects that could cause damage to the blades

### Excessive Blade Wear

**Cause:** Mower height set too low. Blade used past intended life.

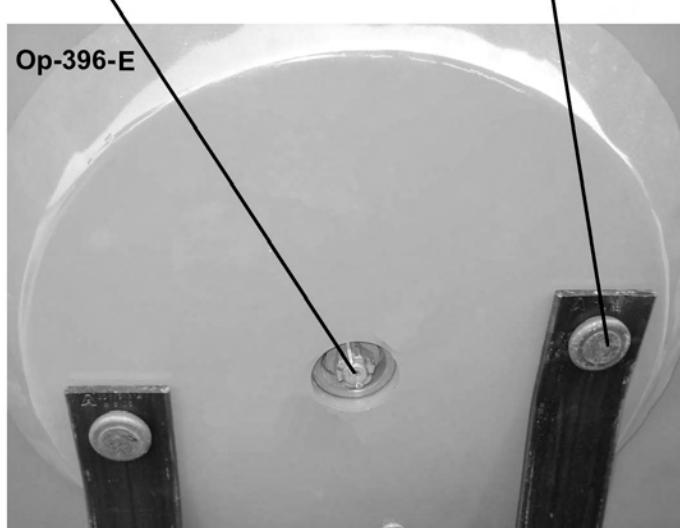
**Remedy:** Replace blades more often. Adjust mower height for mowing conditions to eliminate blade-to-ground contact

Op-22

OPS-U-0031

Check Output Shaft Nut Torque  
Torque to 450 ft-lbs.

Check Blade Bolt Torque.  
Torque to 600 ft-lbs.



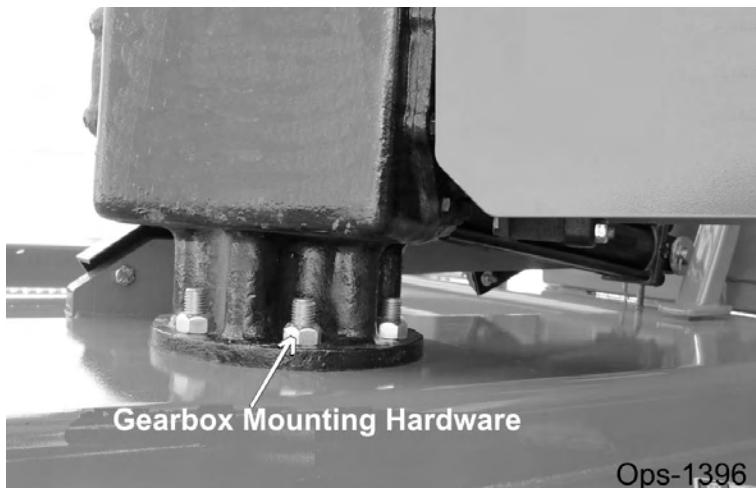
## OPERATION

**WARNING**

Operating the mower with loose blade hardware will damage the blade holder or blades and can result in blade breakage or blade fastener failure. Broken blades or bolts can be thrown out from under the mower for distances up to 300 feet. When the blades are replaced, the fastening hardware must be replaced. Check and retighten the blade hardware after the first eight hours of operation. In severe cutting conditions, recheck the blade carrier and blade bolt torque every 50 hours.

**Important**

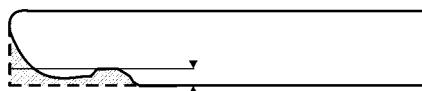
To help prevent structural damage caused by loose hardware, tighten gearbox mounting hardware as specified. Check the fastener torque after first 8 hours of use and every 50 hours thereafter.

**DANGER**

Inspect the Blades daily for abnormal wear. REPLACE BOTH BLADES on that carrier IMMEDIATELY if either blade has:

- Become bent or deformed from it's original shape or
- Any cracks are visible, or
- Deep gouges in the blade's surface are present, or
- Gouges or chipped areas in the cutting edge are larger than 1/2"(12.7mm), or
- The material on the leading edge has been worn away by more than 1/2(12.7mm)"

Failure to replace abnormally worn blades may lead to catastrophic failure of the blades and ejection of the broken part with tremendous force which may cause serious bodily injury or death. OPS-U-0032



Original Blade Edge

**NOTE:**

Replace Blades in pairs after no more than 1/2" (12.7mm) wear

Op-23

# OPERATION

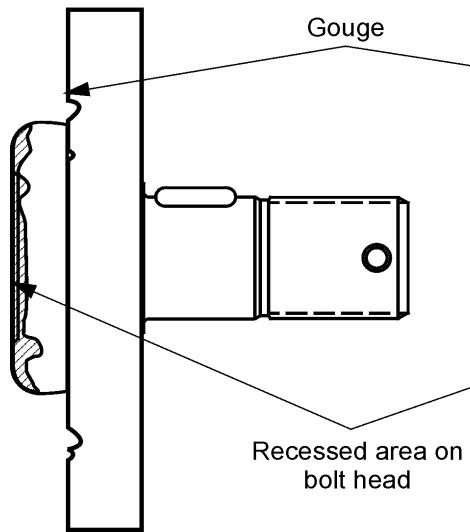
## 9.4 Blade Bolt Inspection

Inspect Blade Bolt Head daily for wear as followed:

### Excessive Blade Bolt Wear

**Cause:** Blade Bolt contacts a foreign or solid object while Blade is in motion.

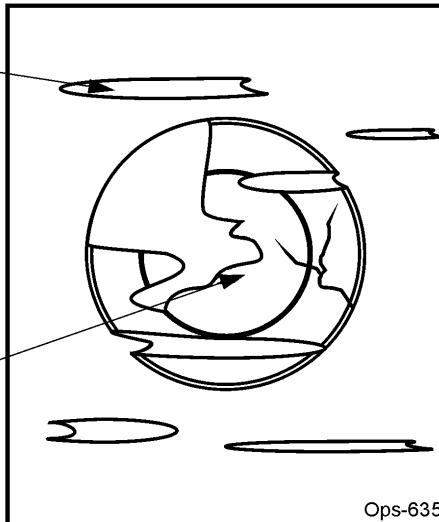
**Remedy:** Inspect the area before mowing to determine where the foreign objects are located and place visible hazard markers to identify the areas where immovable foreign objects exist, and avoid hitting the objects.



### Notches and Gouges

**Cause:** Blade Bolt contacting foreign objects.

**Remedy:** Inspect area to be mowed and remove foreign objects that could cause damage to the blade bolt.



Inspect the Blade Bolt Heads daily for abnormal wear. **REPLACE BOTH BLADE BOLTS** on the Blades **IMMEDIATELY** if either blade bolts has:

- Visible cracks or
- If the recessed area on blade bolt is worn off or
- If Blade Bolt has gouges or chipped areas.

Failure to replace abnormally worn blade bolts may lead to catastrophic failure of the blades and ejection of the broken part which may cause serious bodily injury or death.

**Always replace Blade Bolts with new bolts whenever replacing the Blades. OPS-U-0037**

## OPERATION

## Rotary Mower PRE-OPERATION Inspection



Mower ID# \_\_\_\_\_

Date: \_\_\_\_\_

**IMPORTANT:** Scan this QR Code for an electronic copy of this inspection sheet.


[www.algqr.com/rmi](http://www.algqr.com/rmi)
**WARNING**

Before conducting the inspection, make sure the tractor engine is off, all rotation has stopped and the tractor is in park with the parking brake engaged. Make sure the mower is resting on the ground or securely blocked up and all hydraulic pressure has been relieved.

Item	Condition at Start of Shift	Specific Comments if not O.K.
The Operator's Manual is in the canister on the mower		
All safety decals are in place and legible		
The tongue/hitch connection bolts & pins are tight		
There are no cracks in tongue or hitch		
The tow chain is secured to the tractor & mower		
The hydraulic cylinders pins are tight		
There are no leaking or damaged hoses		
The mower deck is clear of cut grass and debris		
Chain guards/deflectors are in place & in good condition		
Driveline/gearbox shields are in good condition		
Driveline clutches are in good condition; not frozen		
Driveline telescoping members & U-joints are lubricated		
Driveline yokes are securely attached to PTO & mower		
Gearbox mounting bolts are tight		
Gearbox oil is at the proper level		
Blade carrier retaining nut is tight		
Blades are not chipped, cracked or bent		
Blade bolts are tight		
Wheel lug nuts are tight		
Transport locks are in good condition		

Make \_\_\_\_\_

Shift \_\_\_\_\_

Operator's Signature: \_\_\_\_\_

**DO NOT OPERATE an UNSAFE TRACTOR or MOWER**

# OPERATION

## Tractor PRE-OPERATION Inspection



Tractor ID#: \_\_\_\_\_ Make: \_\_\_\_\_

Date: \_\_\_\_\_ Shift: \_\_\_\_\_

**WARNING**

Before conducting the inspection, make sure the tractor engine is off, all rotation has stopped and the tractor is in park with the parking brake engaged. Make sure the implement is resting on the ground or securely blocked up and all hydraulic pressure has been relieved.

Item	Condition at Start of Shift	Specific Comments if not O.K.
The flashing lights function properly		
The SMV Sign is clean and visible		
The tires are in good condition with proper pressure		
The wheel lug bolts are tight		
The tractor brakes are in good condition		
The steering linkage is in good condition		
There are no visible oil leaks		
The hydraulic controls function properly		
The ROPS or ROBS Cab is in good condition		
The seatbelt is in place and in good condition		
The 3-point hitch is in good condition		
The drawbar pins are securely in place		
The PTO master shield is in place		
The engine oil level is full		
The brake fluid level is full		
The power steering fluid level is full		
The fuel level is adequate		
The engine coolant fluid level is full		
The radiator is free of debris		
The air filter is in good condition		

Operator's Signature: \_\_\_\_\_

**DO NOT OPERATE an UNSAFE TRACTOR or IMPLEMENT**

OPERATION

# OPERATION

## **10. DRIVING THE TRACTOR AND IMPLEMENT**

Safe tractor transport requires the operator possess a thorough knowledge of the model being operated and precautions to take while driving with an attached implement. Ensure the tractor has the capacity to handle the weight of the implement and the tractor operating controls are set for safe transport. To ensure safety while driving the tractor with an attached implement, review the following. *OPS-U- 0012*

**DANGER**

This Implement may be wider than the Tractor. Be careful when operating or transporting this equipment to prevent the Implement from running into or striking sign posts, guard rails, concrete abutments or other solid objects. Such an impact could cause the Implement and Tractor to pivot violently resulting in loss of steering control, serious injury, or even death. Never allow the Implement to contact obstacles. (S3PT-12)

**WARNING**

Transport only at speeds where you can maintain control of the equipment. Serious accidents and injuries can result from operating this equipment at high speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly.

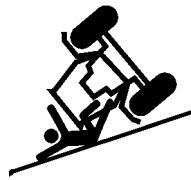


Before transporting the Tractor and Implement, determine the proper transport speeds for you and the equipment. Make sure you abide by the following rules:

Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum transport speed not to exceed 20 mph (30 kph) for transporting this equipment.

Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that the equipment can be operated at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum turning speed for you and this equipment before operating on roads or uneven ground.

Only transport the Tractor and Implement at the speeds which allow you to properly control the equipment.



Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes or worn tires. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)

# OPERATION

## **10.1 Starting the Tractor**

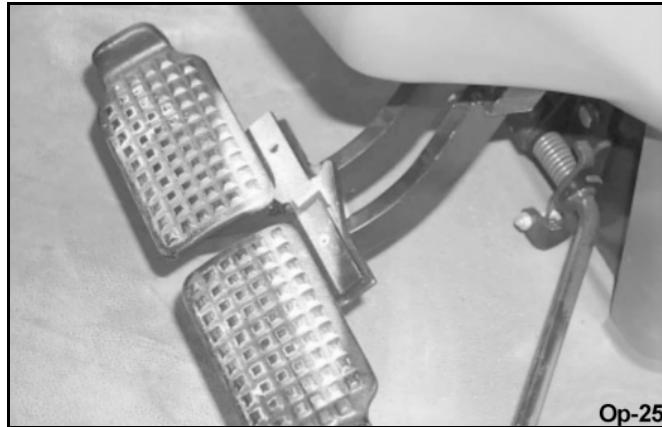
The procedure to start the tractor is model specific. Refer to the tractor operator's manual for starting procedures for your particular tractor. Consult an authorized dealer if the starting procedure is unclear. Ensure the 3-point control lever is in the lowered position and the PTO is disengaged before starting the tractor. OPS-U-0033



## **10.2 Brake and Differential Lock Setting**

Make sure the tractor brakes are in good operating condition. Tractor brakes can be set to operate independently allowing single rear wheel braking action or locked together to provide simultaneous rear wheel braking. FOR MOST DRIVING AND OPERATING CONDITIONS, THE BRAKE PEDALS SHOULD BE LOCKED TOGETHER TO PROVIDE THE MOST EFFECTIVE BRAKING ACTION.

Always disengage the tractor differential lock when turning. When engaged the differential lock will prevent or limit the tractor from turning. During normal cutting conditions, locking the differential provides no benefit and should not be used. OPS-U-0013



### **WARNING**

Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes. When operating down a hill or on wet or rain slick roads, the braking distance increases; use extreme care and reduce your speed in these conditions. When operating in traffic, always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy.

## **10.3 Operating the Mower Wings**

Wings are positioned with hydraulic cylinders. It is recommended that the tractor be equipped with three hydraulic ports or a 3-spool control valve be used so that each section can be controlled independently. Ensure the hydraulic cylinders and lines are filled with oil by holding the valve control levers in the raised position until the cylinders fully retract (wings) and extend (center). Only operate the mower with both wings fully lowered, NEVER operate the mower with a raised wing. Wait until the blades are at a complete stop before raising wings. OPS-R-0015

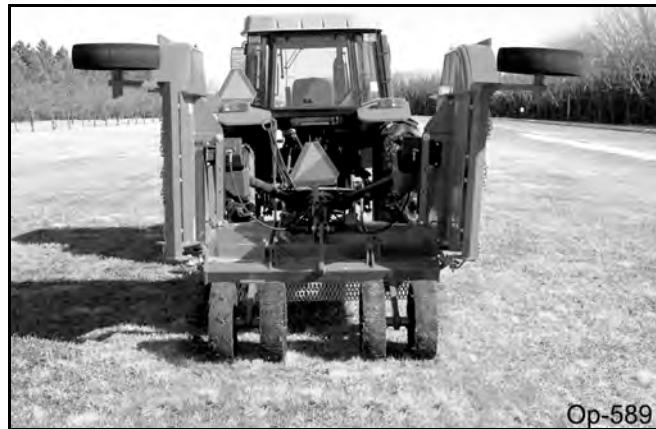
# OPERATION

## **10.4 Transport Position**

To raise mower wings, drive the unit to a level area and retract the wing hydraulic cylinders. DO NOT raise wings with the mower positioned on an embankment or other inclined position to prevent overturning the mower. After the wings are fully raised, install transport lock braces to prevent wings from inadvertently falling. **NOTE:** *If the transport lock braces can not be easily installed, lower the mower wings and remove rod end of cylinder and adjust the rod clevis in or out to match the transport brace length.*

The center of gravity is raised and the mower more prone to tipping when the wings are in the raised position. When transporting, raise the center section high enough to clear ground obstacles.

OPS-R-0016



Op-589

### **DANGER**

When the Wings are folded for transport, the center of gravity is raised and the possibility of overturn is increased. Drive slowly and use extreme caution when turning on hillsides. Overturning the Implement could cause the Implement to overturn the Tractor and vice versa resulting in serious injury or even death. Never fold wings on a hillside...the Implement or unit may overturn. (STI-02)

## **10.5 Operating Position**

To lower the wings, remove the transport lock braces and secure braces on storage bracket. DO NOT drive out transport brace pins. The wing cylinder may need to be retracted to remove tension for brace removal. After removing brace bars, extend wing hydraulic cylinders and fully lower wings.

The valves operating wing cylinders should be placed in the float position while mowing to allow the mower to follow the contour of uneven terrain and to prevent the wings from creeping up. When extending a wing over a ditch for mowing, place the control valve lever detents in the center position. This will give the mower more stability and prevent the opposite wing from raising. DO NOT operate the mower with the valves in the detent position for extended periods of time to prevent deck frame damage. OPS-R-0017



Op-590

# OPERATION

## WARNING

Use extreme care when lowering or unfolding the implement's wings. Make sure no bystanders are close by or underneath the wings. Allow ample clearance around the implement when folding or unfolding the wings. Use extreme caution around buildings or overhead power lines. (S3PT-05)

### **10.6 Driving the Tractor and Cutter**

Start off driving at a slow speed and gradually increase your speed while maintaining complete control of the tractor and mower. Moving slowly at first will also prevent the tractor from rearing up and loss of steering control. The tractor should never be operated at speeds that cannot be safely handled or which will prevent the operator from stopping quickly during an emergency. If the power steering or engine ceases operating, stop the tractor immediately as the tractor will be difficult to control.

Drive the tractor with the 3-Point lift arms in the raised position and lock the control lever in the transport detent position to prevent damage to the mower driveline and tongue when turning.

Perform turns with the tractor and mower at slow speeds to determine how the tractor with an attached mower handles a turn. Determine the safe speed to maintain proper control of the tractor when making turns. When turning with a towed implement, the overall working length of the unit is increased. Allow additional clearance for the mower when turning..



To avoid overturns, drive the tractor with care and at safe speeds, especially when operating over rough ground, crossing ditches or slopes, and turning corners. Tractor wheel tread spacing should be increased when working on inclines or rough ground to reduce the possibility of tipping.

Use extreme caution when operating on steep slopes. Keep the tractor in a low gear when going downhill. DO NOT coast or free-wheel downhill.  
OPS-R-0018

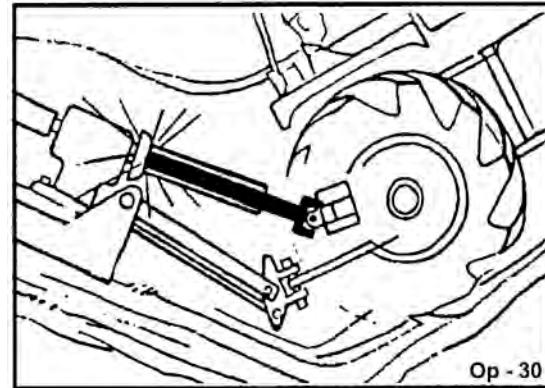


OPERATION

## OPERATION

**10.7 Crossing Ditches and Steep Inclines**

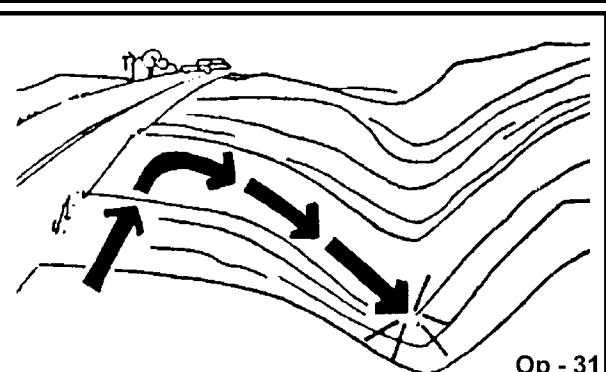
When crossing ditches with steep banks or going up sharp inclines, it is possible that the main driveline inner profile will penetrate into the outer housing to its maximum depth until the assembly becomes solid (driveline is at its extreme shortest length). This type of abusive operation can cause serious damage to the tractor and mower drive by pushing the PTO into the tractor and through the support bearings or downward onto the PTO shaft, breaking it off.

**WARNING**

Damage resulting from over-collapse of the driveline's inner profile and its outer housing may allow the driveline to come loose from the Tractor which could cause bodily injury to the operator or bystanders and/or extensive damage to the Tractor or Implement. OPS-R-0020

When confronted with an incline or ditch, do not approach from an angle which is perpendicular or straight on as damaged to over collapse of the driveline may occur.

When crossing such terrain, the implement should be fully lowered for a lower center of gravity and added stability. OPS-R-0021



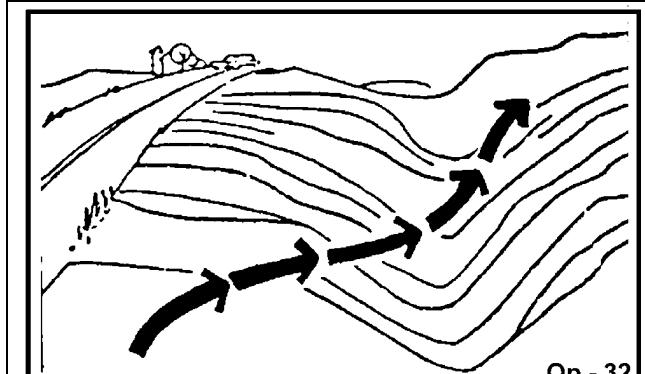
INCORRECT: DO NOT approach ditch straight on

# OPERATION

Inclines and ditches should be approached along a line which is at an angle as shown. This type of path will reduce the possibility of over-collapse of the driveline and resulting damage. If the gradient is so steep that such an approach increases the possibility of a tractor roll-over, select an alternate crossing path.

When operating the tractor and mower across slopes and inclines, through ditches, and other uneven terrain conditions, it is important to maintain sufficient deck to ground clearance. Blade contact with the ground may cause soil, rocks and other debris to be thrown out from under the mower resulting in possible injury and/or property damage. Ground contact also produces a severe shock load on the mower drive and to the mower blades resulting in possible damage and premature wear.

OPS-R-0022



**CORRECT: Approach ditch at an angle**

## 11. OPERATING THE TRACTOR AND IMPLEMENT

**THE OPERATOR MUST COMPLETELY UNDERSTAND HOW TO OPERATE THE TRACTOR AND IMPLEMENT AND ALL CONTROLS BEFORE ATTEMPTING TO OPERATE.** The operator must read and understand the Safety and Operation Sections of the implement and tractor operator's manuals. These manuals must be read and explained to any operator who cannot read. Never allow someone to operate the implement and tractor without complete operating instructions.

Before starting any operation, the operator must become familiar with the area to be worked in and any obstacles and hazards contained within to ensure safety to the operator, bystanders, and equipment. Special attention should be paid to foreign debris, rough terrain, steep slopes, and passersby and animals in the area.

OPS-U- 0015

### **WARNING**

Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Inspect the area before mowing. Foreign objects should be removed from the site to prevent machine damage and/or bodily injury or even death. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator. Stop mowing immediately if blades strike a foreign object. Repair all damage and make certain rotor or blade carrier is balanced before resuming mowing. (SGM-05)



# OPERATION

**WARNING**

Many varied objects, such as wire, cable, rope, or chains, can become entangled in the operating parts of the mower head. These items could then swing outside the housing at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the cutting area for such objects before mowing. Remove any like object from the site. Never allow the cutting blades to contact such items. (SGM-06)

## **11.1 Foreign Debris Hazards**

Before mowing, inspect the area to make sure there are no foreign objects that the mower blades could hit or become entangled with. Remove all foreign objects and debris. If objects are too big to remove, mark them clearly and be sure to prevent the mower blades from contacting them.

If you hit a solid object or foreign debris, stop the mower and tractor at once. Immediately idle the engine speed and disengage the PTO. Wait for all mower rotating motion to stop, then raise the mower and move the tractor and implement off the object. Inspect the area and remove, or mark the location of the debris. Inspect the condition of the mower and make any needed repairs immediately. Make sure the blades are not damaged and the carrier is balanced before resuming operation.

Always wear your seat belt securely fastened and only operate the tractor and mower with the ROPS in the raised position. If the tractor or mower hits a tree stump, rock, or bump, a sudden movement could throw you off of the seat and under the tractor and/or mower. The seat belt is your best protection from falling off the tractor and the ROPS provides protection from being crushed during a tractor roll-over. OPS-R-0023



Op - 33

### **Remove Foreign Material**



Op-151

### **Raise Mower over solid objects**

## **11.2 Bystanders/Passersby Precautions**

If a bystander comes within 300 feet of the tractor while the mower is being operated, stop the tractor at once, idle the engine and disengage the PTO. Do not engage the PTO again until all bystanders are well past the 300 foot distance. OPS-R-0024

# OPERATION

## **DANGER**

Rotary Mowers are capable under adverse conditions of throwing objects for great distances (300 ft (100 m) or more) and causing serious injury or death. Follow safety messages carefully.



### **STOP MOWING IF PASSERSBY ARE WITHIN 300 Feet (100 m) UNLESS:**

- Front and Rear Deflectors, Chain Guards, or Bands are installed and in good, workable condition;
- Mower sections or Wings are running close to and parallel to the ground without exposed Blades;
- Passersby are outside the existing thrown-object zone;
- All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass, and general debris has been removed.

**NOTE:** Where there are grass and weeds high enough to hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height, inspected, closely with any remaining debris being removed, and mowed again at desired final height. (This will also reduce power required to mow, reduce wear and tear on the Mower drivetrain, spread cut material better, reduce streaking, and make the final cut more uniform). (SRM-01)

# OPERATION

### **11.3 Engaging the Power Take Off (PTO)**

Before engaging the PTO, make certain that the area is clear of bystanders and passersby. The implement must be completely lowered and the deck positioned at a safe operating height. NEVER engage the PTO with the implement in the raised position.

Set the tractor engine speed at approximately 1,000 RPM before engaging the PTO. Shift the PTO control to the on position, and slowly increase the engine speed until the PTO is operating at the rated speed. If you hear unusual noises or see or feel abnormal vibrations, disengage the PTO immediately. Inspect the implement to determine the cause of the noise or vibration and repair the abnormality. OPS-U- 0027

## **WARNING**

Do not let the Blades turn when the Mower Deck is raised for any reason, including clearance or for turning. Raising the Mower deck exposes the Cutting Blades which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the Blades. (SRM-07)



## **WARNING**

Do not put hands or feet under mower decks. Blade Contact can result in serious injury or even death. Stay away until all motion has stopped and the decks are securely blocked up. (SGM-09)



# OPERATION

## **11.4 PTO RPM and Ground Speed**

Ground speed for mowing will depend upon the height, type, and density of vegetation to be cut. Recommended speed for efficient mower performance is between 2 and 5 mph(3-8 kph). Operate the mower at its full rated PTO speed to maintain blade speed for a clean cut. Refer to the tractor operator's manual or the tractor instrument panel for the engine speed and gear to provide the required PTO and desired ground speed. Make sure that the mower is operating at its full rated speed before entering the vegetation to be cut. If it becomes necessary to temporarily regulate engine speed, increase or decrease the throttle gradually.

Ground speed is achieved by transmission gear selection and not by the engine operating speed. The operator may be required to experiment with several gear range combinations to determine the best gear and range which provides the most ideal performance from the mower and most efficient tractor operation. As the severity of cutting conditions increase, the ground speed should be decreased by selecting a lower gear to maintain the proper operating PTO speed. OPS-R-0025

** **WARNING****

Do not exceed the rated PTO speed for the Implement. Excessive PTO speeds can cause Implement driveline or blade failures resulting in serious injury or death. (SG-26)

** **WARNING****

Mow at the speed that you can safely operate and control the tractor and mower. The correct mowing speed depends on terrain condition and grass type, density, and height of cut. Normal ground speed range is from 2 to 5 mph(3-8 kph). Use slow mowing speeds when operating on or near steep slopes, ditches, drop-offs, overhead obstructions, power lines, or when debris and foreign objects are to be avoided. (SGM-07)

## **11.5 Operating the Mower**

Only operate the mower from the tractor operator's seat with the seatbelt securely fastened. The tractor must be equipped with a ROPS in the raised position or a ROPS cab.

The mower is designed to cut vegetation up to 1-1/2" in diameter. Sharp blades will produce a cleaner cut and require less power. Travel at a speed that allows the mower sufficient time to cut through the vegetation and maintain the PTO operating speed to prevent overloading the mower and tractor. Choose a driving pattern that provides the maximum pass length and minimizes turning.

Under certain conditions, tractor tires may roll some grasses down preventing them from being cut at the same height as the surrounding area. When this occurs, reduce the tractor ground speed while maintaining the operating speed of the mower. A slower ground speed will permit grasses to at least partially rebound and be cut. Taking a partial cut and/or reversing the direction of travel may also help produce a cleaner cut. Check tire spacing as noted in Tractor Operators Manual.

Avoid mowing in the reverse direction when possible. In situations where the mower must be backed to access areas to be cut, make sure there are no persons or other foreign debris behind the mower before mowing in reverse. When mowing in reverse, operate the tractor and mower at a reduced ground speed to ensure tractor and mower control is maintained

# OPERATION

## WARNING

Do not mow with two machines in the same area except with Cab tractors with the windows closed. (SGM-11)

## WARNING

Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see at least 300 feet (90 m) in front and to the sides of the tractor and mower. Make sure that you can clearly see and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects. If you are unable to clearly see these type of items discontinue mowing. (SGM-1)

## WARNING

Avoid mowing in reverse direction when possible. Check to make sure there are no persons behind the mower and use extreme care when maneuvering in reverse. Mow only at a slow ground speed where you can safely operate and control the tractor and mower. Never mow an area that you have not inspected and removed debris or foreign material. (SGM-08)

## WARNING

Follow these guidelines to reduce the risk of equipment and grass fires while operating, servicing, and repairing the Mower and Tractor:



- Equip the Tractor with a fire extinguisher in an accessible location.
- Do Not operate the Mower on a Tractor with an underframe exhaust.
- Do Not smoke or have an open flame near the Mower and Tractor.
- Do Not drive into burning debris or freshly burnt areas.
- Ensure slip clutches are properly adjusted to prevent excessive slippage and plate heating.
- Never allow clippings or debris to collect near drivelines, slip clutches, and gearboxes. Periodically shut down the Tractor and Mower and clean clippings and collected debris from the mower deck. (SGM-12)

## OPERATION

When you get to the end of a pass, slightly raise the mower (2-4") before turning. Never raise the mower entirely while the blades are turning. If the mower must be raised higher than 12" from ground level, disengage the tractor PTO and wait for all mower rotation to come to a complete stop before proceeding to raise the mower. NEVER raise the mower wings while the blades are turning.

When turning, the angle between the tractor and mower should not be so great that a clattering of the U-joints occurs. Sharp turns can cause premature failure of the joints and place pressure on the tractor PTO shaft and could cause extensive mechanical damage to the mower and tractor.

If the mower is operated in conditions that require frequent sharp turning, the mower should be equipped with a Constant Velocity driveline. CV joints enable the tractor PTO shaft and mower driveline to be angled safely up to 80 degrees with no damage to the mower or driveline. OPS-R-0027



Op-34

**WARNING**

Do not let the Blades turn when the Mower Deck is raised for any reason, including clearance or for turning. Raising the Mower deck exposes the Cutting Blades which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the Blades. (SRM-07)



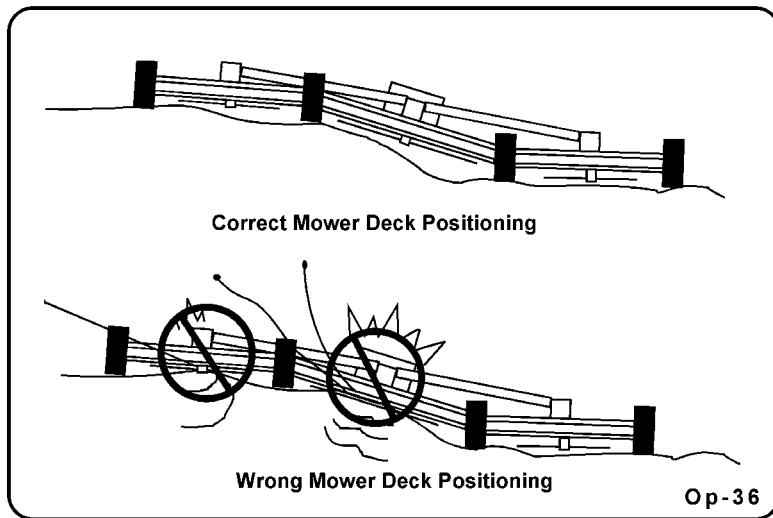
Stay alert and watch for trees, low hanging limbs, power lines, and other overhead obstacles and solid ground objects while you are operating. Use care to avoid hitting these items. OPS-R-0028



Op-594

# OPERATION

When mowing across uneven areas such as road shoulders, ditch edges, and other uneven terrain, position mower so that one support wheel is near the highest point to prevent blades from cutting into gravel or dirt which can cause rapid blade wear and extremely severe shock loads on the drivetrain resulting in rapid wear or damage to these components. Blades contacting the ground may cause objects to be thrown out from under the mower deck. Always avoid operating the mower at a height or position which may cause the blades to contact the ground. Cutting into the berm or edge of the ditch will cause abnormal and accelerated blade wear and possible blade component failure. OPS-R-0029



# OPERATION

## **11.6 Right of Way (Highway) Mowing**

- **USE DOUBLE CHAIN GUARDS** for highway, right-of-way, parks, greenbelt mowing, or all other mowing where human dwellings, vehicles, or livestock could be within 300 feet of the mower.
- No shielding is 100% effective in preventing thrown objects. To Reduce Possibility of Injury:
  1. **MAINTAIN MOWER SHIELDING** in good operational condition,
  2. **DAILY INSPECT** the condition of the Thrown Object Guards, mower Side Skirts, and skid shoes: Replace or repair worn or damaged guards.
  3. **DAILY INSPECT** the condition of the Blades and Blade Bolts. Replace any cracked, worn, bent or damage blades. Always replace blade bolts and nuts when replacing blades. Make sure the blade bolts are properly tightened.
  4. **RAISE CUTTING HEIGHT** to **6 INCHES** minimum.
  5. **INSPECT AREA** thoroughly before mowing to **REMOVE** potential **THROWN OBJECT HAZARDS**.
  6. **NEVER ALLOW BLADES** to **CONTACT SOLID OBJECTS** like wire, rocks, posts, curbs, guardrails, or ground while mowing.



**ROTARY MOWERS CAN THROW OBJECTS 300 FEET OR MORE UNDER ADVERSE CONDITIONS.**

**TO AVOID SERIOUS INJURY OR DEATH TO OPERATOR OR BYSTANDERS FROM THROWN OBJECTS:**

**INSPECT AREA FOR POTENTIAL THROWN OBJECTS BEFORE MOWING:**

- **REMOVE** debris, rocks, wire, cable, metal objects and other foreign material from area.

Wire, cable, rope, chains and metal objects can be thrown or swung outside deck with great velocity:

1. **MARK** objects that cannot be removed.
2. **AVOID** these objects when mowing.

**STOP MOWING IF PASSERSBY IS WITHIN 300 FEET UNLESS:**

- All **THROWN OBJECT SHIELDING** including Front and Rear Deflectors, Chain Guards, Steel Guards, Bands, Side Skirts and Skid Shoes are in place and in good condition when mowing.
- Mower sections or wings are adjusted to be close and parallel to ground without exposing blades.
- **MOWING AREA** has been inspected and foreign materials and debris have been removed.
- **PASSERSBY** are inside enclosed vehicle. OPS-U-0040

# OPERATION

## 11.7 Shutting Down the Implement

To shut down attached mower head, first bring the tractor to a complete stop. Decrease engine RPM to idle then disengage cutterhead. The mower head will come to a complete stop within a suitable amount of time. Do not engage or disengage the cutterheads at a high RPM unless there is an emergency situation.

Park the tractor on a level surface, place the transmission in park or neutral and apply the parking brake, lower the attached implement to the ground, shut down the engine, remove the key, and wait for all motion to come to a complete stop before exiting the tractor. *OPS-U- 0016*



Op-37



Op-38

## 12. DISCONNECTING THE MOWER FROM THE TRACTOR

Before disconnecting the mower, the PTO must be disengaged and blade rotation at a complete stop. Move the mower to a level storage location and lower the center section and both wings to the ground. If the mower will be stored with the wings in the raised position, install both wing transport lock braces. If the mower is not resting securely on the ground, block the mower up securely before attempting to disconnect it from the tractor.

Use extreme care to keep feet and hands from under the mower and clear of any pinch points. *OPS-R-0030*



Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15)

# OPERATION

**WARNING**

Never unhitch without using the Tongue Jack. The Tongue is very heavy. Attempting to lift the Tongue without using the Tongue Jack could cause strains or other injury. Allowing the tongue to fall suddenly and unexpectedly could result in crushing injury. Use the Tongue Jack for lifting the Implement only. Overloading the Tongue Jack can cause failure with possible serious bodily injury or even death. (STI-04)

When disconnecting the mower the tractor should be completely shut down and secured in position. Relieve hydraulic pressure by moving the control levers back and forth several times. Lower the parking jack and raise the mower until the tongue clevis is no longer resting on the tractor drawbar and is supported solely by the jack. The jack should be in a near vertical position with the ground and can be adjusted by loosening the positioning nut and moving the jack up to 15 degrees in each direction. Also make sure that the jack foot is securely resting at ground level or securely supported by a block before raising the mower. Once the mower tongue is being supported entirely by the jack, remove the hitch bolt, locknut, and washers. Remove the hydraulic hoses from the tractor and secure to the mower to prevent contact with dirt.

After disconnecting the mower hitch, remove the mower driveline from the tractor PTO shaft. Place the driveline in its storage bracket to prevent it from contacting mud or dirt which can contaminate the universal joint bearings and shorten the life of the driveline.

After the driveline has been removed from the tractor, place the PTO master shield back in the operating position. OPS-R-0031



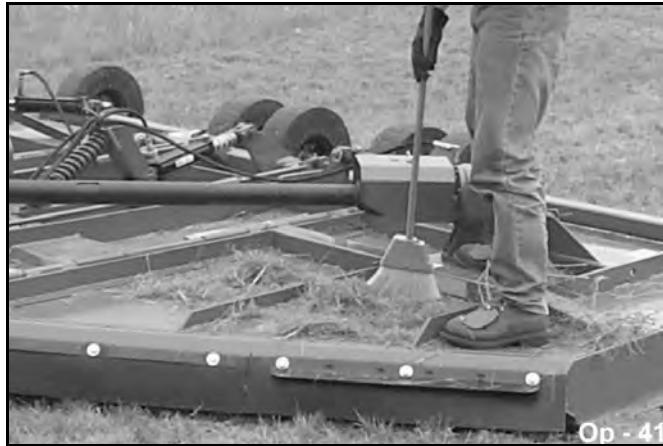
# OPERATION

## **13. MOWER STORAGE**

It is recommended that the mower be stored with the center section and both wings fully lowered to ground level. If the mower is stored with the wings in the raised position, select a level area and install wing transport braces to prevent the wings from falling BEFORE disconnecting the mower hitch from the tractor.

Properly preparing and storing the mower at the end of the season is critical to maintaining its appearance and to help ensure years of dependable service. The following are suggested storage procedures:

- Thoroughly clean all debris off the mower to prevent damage from rotting grass and standing water.
- Lubricate all mower grease points and fill gearbox oil levels as detailed in the maintenance section.
- Tighten all bolts and pins to the recommended torque.
- Check the mower for worn and damaged parts. Perform repairs and make replacements immediately so that the mower will be ready for use at the start of the next season.
- Store the mower in a clean, dry place with the mower housing resting securely on blocks or at ground level.
- Keep the driveline yoke from sitting in water, dirt and other contaminants.
- Use spray touch-up enamel where necessary to prevent rust and maintain the appearance of the mower.



Op - 41

It is critical that driveline clutches slip when an obstacle or heavy load is encountered to avoid mower and/or tractor damage. If the mower sits outside for an extended period of time or is exposed to rain and/or humid air, the clutch lining plates must be inspected to ensure they are not frozen together from rust or corrosion. If the mower has been exposed to such conditions, at the start of each mowing season, and any time it is suspected that the slip clutch plates may be frozen together, readjust the slip clutch as detailed in Seasonal Clutch Maintenance of the maintenance section in this manual. OPS-R-0032



**DANGER** Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be injured or killed. Inadvertent contact with controls can cause the Implement to shift or fall crushing themselves or others. (SG-25)

## **14. TRANSPORTING THE TRACTOR AND IMPLEMENT**

Inherent hazards of operating the tractor and implement and the possibility of accidents are not left behind when you finish working in an area. Therefore, the operator must employ good judgement and safe operation practices when transporting the tractor and implement between locations. By using good judgement and following safe transport procedures, the possibility of accidents while moving between locations can be substantially minimized. OPS-U- 0017

## OPERATION



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)



Before transporting the tractor and mower, idle the tractor engine, disengage the PTO and wait for all mower moving parts to come to a complete stop. Once all mower parts are completely stopped, raise the mower to transport height. **NOTE:** When raising the mower, maintain at least 1" clearance between the driveline and mower deck. If additional mower deck height is needed for safe transport, disconnect the driveline from the tractor and secure its end to the mower deck. The mower can then be raised to the maximum lift height.. OPS-R-0033



Op-37

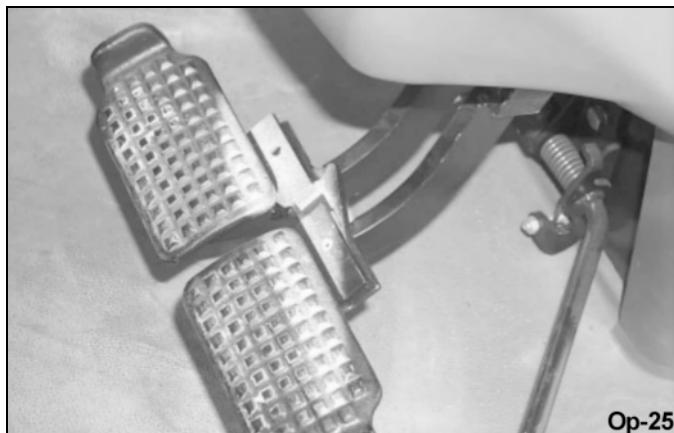
If the tractor's hydraulic pump is not independent of the tractor PTO, or if the tractor PTO has to be run to have hydraulic power, disconnect the mower driveline from the tractor PTO output shaft. Secure the driveline to the mower deck to prevent driveline damage or loss during transport. OPS-R-0034



Op-15

Before transporting the tractor on a public roadway or boarding a trailer for transport, the tractor brake pedals should be locked together. Locking the pedals ensures that both wheels brake simultaneously while stopping, especially when making an emergency stop.

Use extreme caution and avoid hard applications of the tractor brakes when towing heavy loads at road speeds. Never tow the implement at speeds greater than 20 MPH (32 kph). OPS-U- 0018

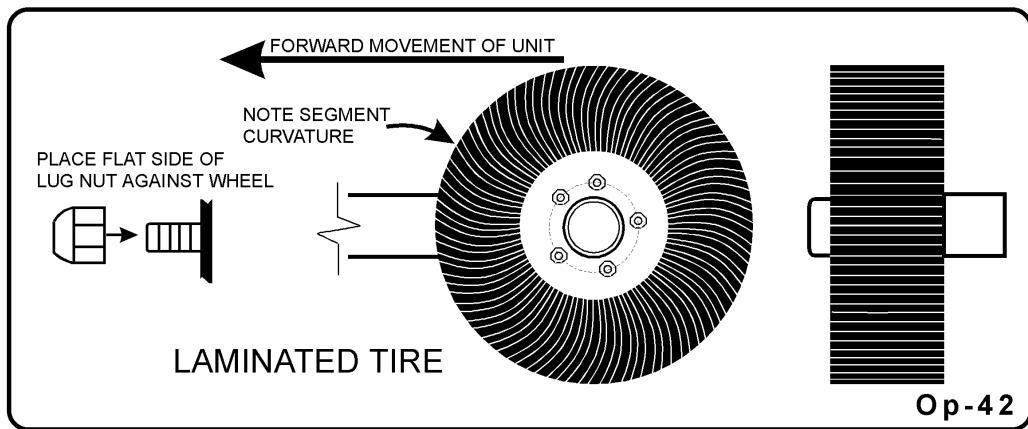


Op-25

# OPERATION

## 14.1 Tire and Wheels

**Laminated Sectional Tires** are designed for conditions where puncture proof performance is required and the mower will not be transported for long distances on roadways. Transport speed for laminated tires should not exceed 15 MPH. Excessive speed can cause damage to the machine and tire sections. Laminated tires must be installed such that the rubber segments lay with the ground.



**Foam Filled used Airplane Tires** are ideal for conditions where a puncture proof tire is needed and the mower is frequently transported between locations. *OPS-R-0035\_D*

### Tire Size and Matching requirements - Center Axle

Tire assemblies when mounted on center axle duals should always be within limits listed.

Laminated Tires - Maximum difference between tire diameters on a center axle should be 1/2 inch or less.

Foam Filled Airplane Tires - Maximum difference between tire diameters on a center axle should be 1 inch or less.

When replacing a tire assembly on center axle always check diameters to make sure tires fall within allowed range for maximum tire and wheel life. It may be necessary to move one or more tires from wing axles to remain within size limit.

### 14.2 Transporting on Public Roadways

Extreme caution should be used when transporting the tractor and mower on public roadways. The tractor must be equipped with all required safety warning features including a SMV emblem and flashing warning lights to alert drivers of the tractor's presence. Remember that roadways are primarily designed for automotive drivers and most drivers will not be looking out for you, therefore, you must look out for them. Check your side view mirrors frequently and remember that vehicles will approach quickly because of the tractor's slower speed. Be extremely cautious when the piece of equipment that you are towing is wider than the tractor tire width and/or extends beyond your lane of the road.

Make sure that a proper size safety tow chain is secured between the tractor, flex arm and mower before entering a public road. Secure the center section at a safe transport height by placing additional stroke control spacers on the center axle cylinder and then lower the mower. Secure the mower wings in the raised position with the transport lock braces. *OPS-R-0036*

## OPERATION

**WARNING**

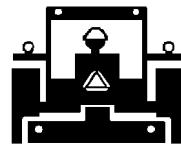
Only tow the Implement behind a properly sized and equipped Tractor which exceeds the weight of the Implement by at least 20%. DO NOT tow the Implement behind a truck or other type of vehicle. Never tow the Implement and another Implement connected in tandem. Never tow the Implement at speeds over 20 MPH. (STI-06)

**DANGER**

Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death. (SG-10)

**WARNING**

Make certain that the "Slow Moving Vehicle" (SMV) sign is installed in such a way as to be clearly visible and legible. When transporting the Equipment use the Tractor flashing warning lights and follow all local traffic regulations. (SG-6)



The SMV (Slow-Moving Vehicle) emblem is universal symbol used to alert drivers of the presence of equipment traveling on roadways at a slow speed. SMV signs are a triangular bright orange with reflective red trim for both easy day and night visibility. Make sure the SMV sign is clean and visible from the rear of the unit before transporting the tractor and implement on a public roadway. Replace the SMV emblem if faded, damaged, or no longer reflective. OPS-U- 0020



Op-43

Make sure that all tractor flashing warning lights, headlights, and brake/tail lights are functioning properly before proceeding onto public roads. While newer model tractors have plenty of lighting to provide warning signals and operating lighting, most older models are only equipped with operating lights. Consult an authorized tractor dealer for lighting kits and modifications available to upgrade the lighting on older tractor models. OPS-U- 0021



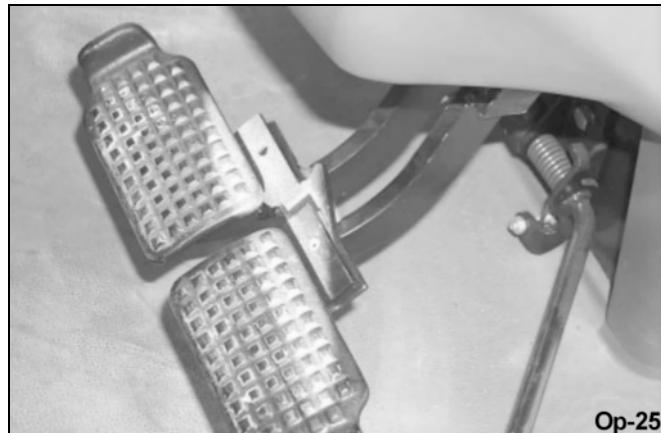
Op-595

# OPERATION

When operating on public roads, have consideration for other road users. Pull to the side of the road occasionally to allow all following traffic to pass. Do not exceed the legal speed limit set in your country for agricultural tractors. Always stay alert when transporting the tractor and implement on public roads. Use caution and reduce speed if other vehicles or pedestrians are in the area. OPS-U- 0022



Reduce speed before turning or applying the brakes. Ensure that both brake pedals are locked together when operating on public roads. OPS-U- 0023



# OPERATION

## **14.3 Hauling the Tractor and Implement**

Before transporting a loaded tractor and implement, measure the height and width dimensions and gross weight of the complete loaded unit. Ensure that the load will be in compliance with the legal limits set for the areas that will be traveled through

Use adequately sized and rated trailers and equipment to transport the tractor and implement. Consult an authorized dealer to determine the proper equipment required. Using adequately sized chains, heavy duty straps, cables and/or binders, securely tie down both the front and rear of the tractor utilizing the proper tie down locations as specified by the tractor manufacturer.

Arrange the chains so that when tightened, the chains are pulling downward and against themselves. Carefully tighten the securing chains or other fasteners using boomer or binders to apply maximum tension. Use extreme care when attaching and removing the securing devices as the extreme tension involved when released has the potential to inflict serious injury.

While hauling the tractor and implement, make occasional stops to check that the tractor and implement have not moved or shifted and that the securing chains have maintained tension. If during transport a hard braking, sharp turning, or swerving action was performed, stop at the next safe location to inspect the security of the load.

# OPERATION

## OPERATION

### 15. TROUBLE SHOOTING GUIDE

Problem	Possible Cause	Remedy
Excessive Vibrations	<p>Check Gearbox bolts.</p> <p>Check for loose nuts on Blade holder and Blades</p> <p>Check for bent output shaft.</p> <p>If shaft is bent oil will normally leak from the bottom seal.</p> <p>Check to see if blades are free swinging.</p> <p>Check for even wear on each blade tip. Were both blades changed at the same time?</p> <p>Blade Broken.</p> <p>Blade carrier bent.</p> <p>Blade hub not properly seated on shaft</p> <p>New Blade or bolts matched</p> <p>Drivelines not phased correctly. Implement &amp; tractor yokes must be in line.</p>	<p>Tighten if loose.</p> <p>Tighten if loose.</p> <p>Replace shaft if bent.</p> <p>Free blades so they swing</p> <p>Weigh blades. Weight should be within 1 oz. Always replace both blades</p> <p>Replace blades, in sets.</p> <p>Replace carrier.</p> <p>Remove hub, check tapered spline shaft, clean and replace.</p> <p>Replace blades or bolts in sets</p> <p>Replace Drivelines.</p>
Gearbox Overheating	<p>Low on lubricant.</p> <p>Improper type lubricant.</p> <p>Excessive trash build-up around gear box</p> <p>Bearing or gears set up improperly</p>	<p>Fill to level plug.</p> <p>Replace with NLGI 000 lubricant.</p> <p>Remove trash.</p> <p>Consult your dealer.</p>
Gearbox Noisy	<p>Rough gears.</p> <p>Worn bearing.</p>	<p>Run in or change gears.</p> <p>Replace bearing</p>
Gear Box Leaking	<p>Damaged oil seal</p> <p>Bent shaft.</p> <p>Shaft rough in oil seal area.</p> <p>Oil seal installed wrong.</p> <p>Oil seal not sealing in the housing.</p> <p>Oil level too high.</p> <p>Sand hole in casting.</p> <p>Gasket damaged.</p> <p>Bolts loose.</p>	<p>Replace Seal.</p> <p>Replace oil seal and shaft.</p> <p>Replace or repair shaft.</p> <p>Replace seal.</p> <p>Replace seal or use a sealant on OD of seal.</p> <p>Drain oil to proper level.</p> <p>Replace castings or gearbox.</p> <p>Replace gasket.</p> <p>Tighten bolts.</p>
Clutch Slips Excessively	<p>Clutch linings badly worn or plates warped.</p> <p>Too much power for clutch.</p> <p>Oil on facings.</p> <p>Friction facings glazed.</p>	<p>Repair clutch per maintenance section of manuals.</p> <p>Reduce ground speed and material intake.</p> <p>Replace facings.</p> <p>Clean with emery cloth.</p>

# OPERATION

Uneven Cut	Excessive ground speed. Blades worn, dull, or bent.  Mower not level side to side. Improper height adjustment.  Low tractor tire pressure on one side.	Reduce ground speed. Replace blades. (Refer to "Maintenance" section). Adjust. (Refer to "Assembly" section) Adjust Mower height. (Refer to "Assembly" section) Adjust tire pressure. (Refer to your tractor operator's manual)
	Turning too fast. Tractor tires push grass down.  Damaged Mower pan.	Reduce ground speed when turning. Adjust your tractor wheel spacing. (Refer to "Operation" section) Repair or replace as necessary.
Uncut Material	Excessive ground speed RPM too low  Improper blade for direction of cut.	Reduce ground speed. Use full PTO speed. (Refer to your tractor operator's manual) Install blades so rotation is correct.
Poor Shredding	Excessive ground speed.  Cutting too high.	Raise the front of Mower relative to the rear to hold and circulate material longer. (Refer to the "Operation Section-Setting the Mower-Setting Deck Height") Reduce ground speed. Lower cutting height. (Refer to the "Operation Section-Setting the Mower-Setting Deck Pitch")
Windrowing or Uneven Material Distribution	Material heavy and lush.  Excessive ground speed Conditions too wet.	Raise the front of Mower relative to the rear. (Refer to the "Operation Section-Setting the Mower- Setting Deck Height") Reduce ground speed. Wait for conditions to dry. Reduce ground speed.

# **MAINTENANCE SECTION**

Maintenance Section 5-1

# MAINTENANCE

## MAINTENANCE

### HAZARDS WITH MAINTENANCE OF IMPLEMENT

Stop engine remove key before conducting maintenance	Entanglement hazard Do Not approach or touch a rotating PTO driveshaft	Block up implement before servicing Use large blocks on soft or wet soil	Crushing injury wing falling. Engage wing locks	Inspect Blades for damage or cracks



**AVOID SERIOUS INJURY OR DEATH FROM COMPONENT FAILURE BY KEEPING IMPLEMENT IN GOOD OPERATING CONDITION IN PERFORMING PROPER SERVICE, REPAIRS AND MAINTENANCE.**

#### BEFORE PERFORMING SERVICE, REPAIRS AND MAINTENANCE ON THE IMPLEMENT:

##### SECURE EQUIPMENT FOR SERVICE

##### BLOCK OUT POTENTIAL ENERGY HAZARDS; Rotating Parts, Raised Components, Hydraulic Pressure.

- **STOP ENGINE AND PTO**, engage parking brake, lower implement, allow all moving parts to stop and remove key before dismounting from tractor.
- **PLACE** implement on ground or securely block up raised equipment. Use large blocks on soft or wet soil.
- **SECURELY LATCH** and **LOCK** raised implement wings
- **BLOCK UP IMPLEMENT TONGUE** with large blocks and tongue jack. **DO NOT** crawl or work under implement supported only by tongue jack.
- **PUSH** and **PULL** Remote Hydraulic Cylinder lever to relieve hydraulic pressure.
- **DISCONNECT IMPLEMENT** Hydraulic **HOSES** from tractor
- **DISCONNECT IMPLEMENT** driveline from tractor **PTO SHAFT**.

#### WEAR SAFETY GLASSES, PROTECTIVE GLOVES and follow SAFETY PROCEDURES when performing service, repairs and maintenance on the implement:

- Always **WEAR** protective **GLOVES** when handling blades, knives, cutting edges or worn component with sharp edges.
- Always **WEAR GLOVES** and **SAFETY GLASSES** when servicing hot components
- **AVOID CONTACT** with hot hydraulic oil tanks, pumps, motors, valves and hose connection surfaces.
- **SECURELY** support or **BLOCK UP** raised implement, framework and lifted components before working underneath equipment.
- **STOP** any implement movements and **SHUT-OFF TRACTOR** engine before doing any work procedures.
- **USE** ladder or raised stands to reach high equipment areas inaccessible from ground.
- **ENSURE** good footing by standing on solid flat surfaces when getting on implement to perform work.
- **FOLLOW** manufacturer's instructions in handling oils, solvents, cleansers, and other chemical agents.
- **DO NOT** change any factory-set hydraulic calibrations to avoid component or equipment failures.
- **DO NOT** modify or alter implement, functions or components.
- **DO NOT WELD** or repair rotating mower components. These may cause vibrations and component failures being thrown from mower.

#### PERFORM SERVICE, REPAIRS, LUBRICATION AND MAINTENANCE OUTLINED IN IMPLEMENT MAINTENANCE SECTION:

- **INSPECT** for loose fasteners, worn or broken parts, leaky or loose fittings, missing or broken cotter keys and washers on pins, and all moving parts for wear.
- **REPLACE** any worn or broken parts with authorized service parts.
- **LUBRICATE** unit as specified by lubrication schedule
- **NEVER** lubricate, adjust or remove material while it is running or in motion.
- **TORQUE** all bolts and nuts as specified.

#### BLADE INSPECTION:

- **REPLACE** bent, damage, cracked or broken blades immediate with new blades.
- **AVOID** blade failures and thrown broken blades. **DO NOT** straighten, weld, or weld hard-facing blades.

#### SAFETY SHIELDS, GUARDS AND SAFETY DEVICES INSPECTION:

- **KEEP** all Deflectors, Chain Guards, Steel Guards, Gearbox Shields, and PTO integral shields, Bands, Side Skirts and Skid Shoes in place and in good condition.
- **REPLACE** any missing, broken or worn safety shields, guards and safety devices.
- Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.
- Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. **PN HM02**

# MAINTENANCE

## PARTS INFORMATION

### PARTS INFORMATION

Bush Hog mowers use balanced and matched system components for blade carriers, blades, cuttershafts, knives, knife hangers, rollers, drivetrain components, and bearings. These parts are made and tested to Bush Hog specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce mower performance, void warranties, and present a safety hazard. Use genuine Bush Hog mower parts for economy and safety. (SPBH-1)

### SEE YOUR BUSH HOG DEALER

Before operating your Rotary Cutter, make sure it is properly lubricated and thoroughly inspected. Only a minimum of time and effort is required to regularly lubricate and maintain this machine to provide long life and trouble free operation.



Always disengage the PTO before raising the Rotary Cutter for transporting or making adjustments.

**NOTE:** *Some guards and shields have been removed from the illustrations and pictures for instructional clarity. DO NOT operate implement with out all shields and guards in place and in good condition.*

## Lubrication

Do not let excess grease collect on or around parts, particularly when operating in sandy areas. The accompanying illustration shows lubrication points. The chart gives the frequency of lubrication in hours, based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

Add EP80W-90 oil, if necessary, to bring oil level to check plug located on side of housing. Capacity of center and wing gearboxes is 3 quarts, 6ozs. (3L). Capacity of power divider gearbox is 1 quart, 29 oz. (1.8L). Use N.L.G.I #2 type grease for all locations designated with grease gun. Be sure to clean the fitting thoroughly before using grease gun. Failure to maintain proper lubrication will result in damage to U-joints, gearbox, and/or driveshaft.

MAINTENANCE

# MAINTENANCE

## Mower Grease & Oil Points

### MAINTENANCE



#### Driveline

Input Driveline	40 Hours
Main Telescoping Tube	8 Hours
Wing Telescoping Tube	8 Hours
Shield Bearings	8 Hours

#### Gearbox

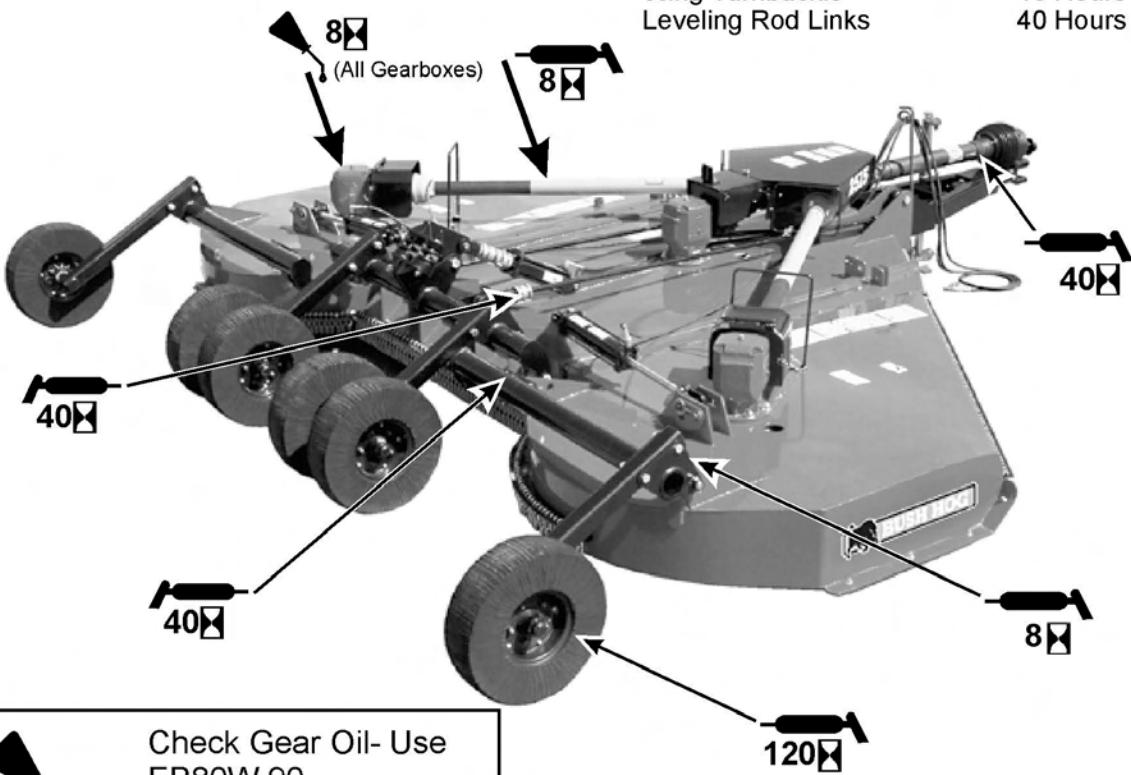
Left Gearbox	8 Hours
Right Gearbox	8 Hours
Center Gearbox	8 Hours
Divider Gearbox	8 Hours

#### Tailwheel

Wheel Hubs	120 Hours
Axle Pivot	8 Hours
Tongue Pivot	8 Hours

#### Miscellaneous

Wing Turnbuckle	40 Hours
Leveling Rod Links	40 Hours



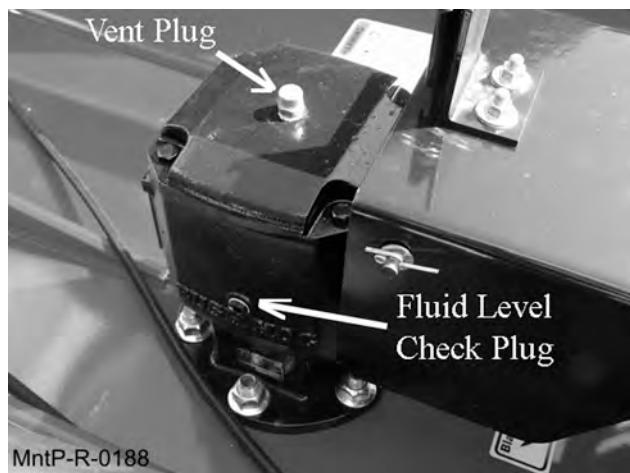
Mnt-R-0552

# MAINTENANCE

## CENTER & WING GEARBOXES

The Gearboxes have been filled with lubricant to the proper Level prior to shipment. However, you should check the oil level before each use.

The gearbox should not require additional lubricant unless the box is cracked or a seal is leaking. Add EP80W-90 oil, if necessary, to bring oil level to check plug located on side of housing. Capacity of center and wing gearboxes is 3 quarts, 6ozs. (3L). **FIGURE MntP-R-0188.**



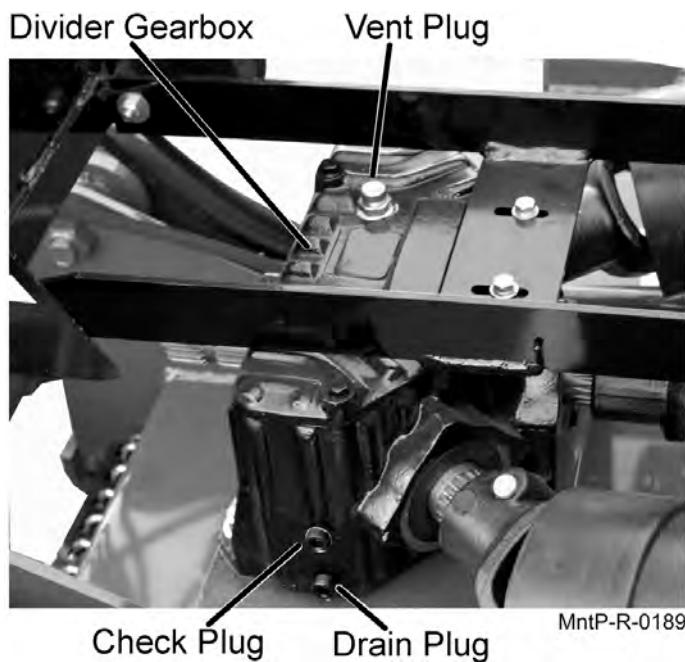
## DIVIDER GEARBOX

Add oil, if necessary, to bring oil level to check plug located on side of housing. **FIGURE MntP-R-0189**



**CAUTION** Do not over-fill. If gearboxes are filled above the Dipstick level, Pressure under working conditions may cause grease seals to leak.

Use EP80W-90 oil. Capacity of power divider gearbox is 1 quart, 29ozs. (1.8L).

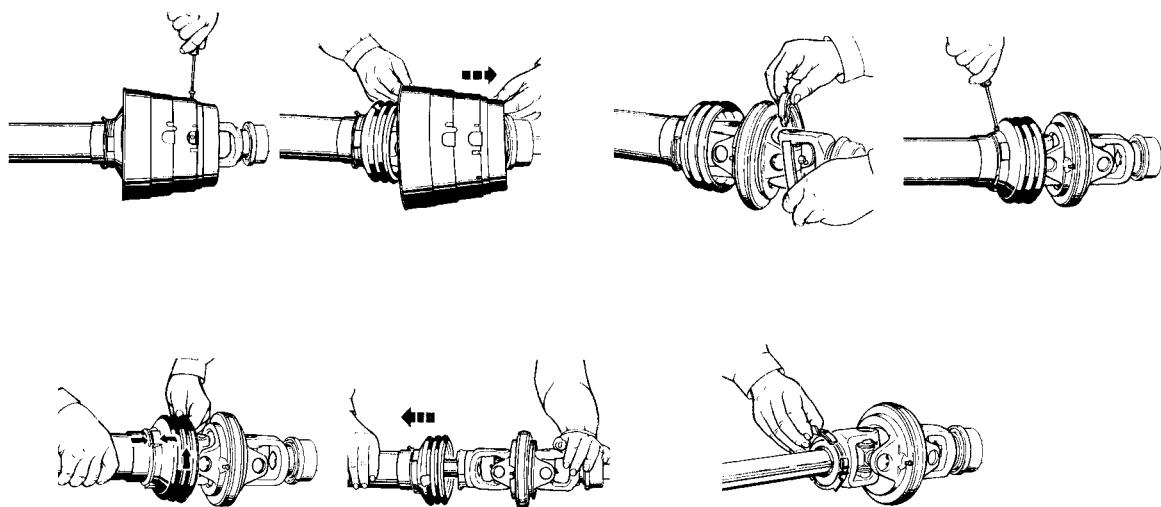


# MAINTENANCE

## MAINTENANCE

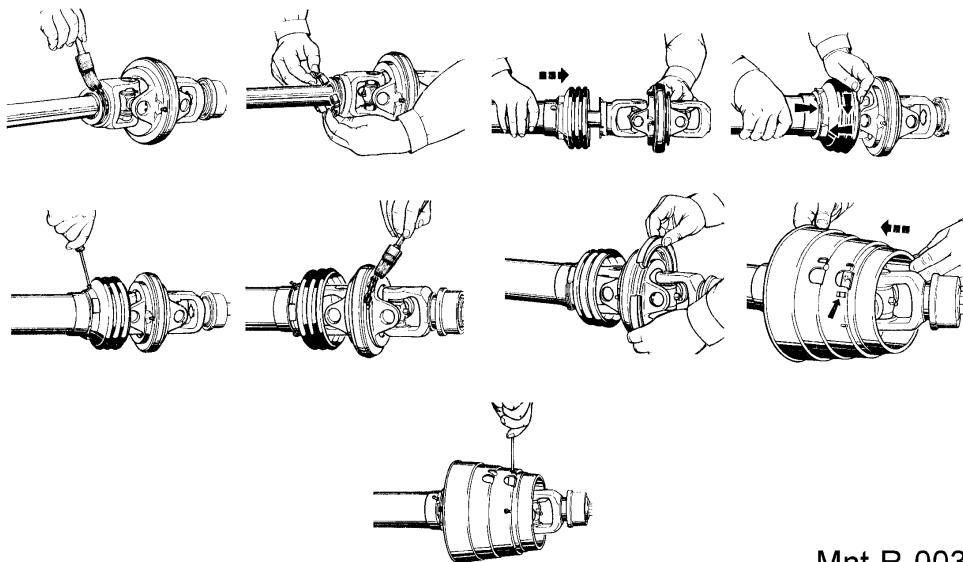
### MAIN CV DRIVELINE SAFETY SHIELD

To remove the outer CV cone, remove the locking screws from shield cone. Remove cone over yoke. Figure Mnt-R-0038 Remove bearing ring and remove the locking screws from inner shield cone. Figure Mnt-R-0038. Turn inner cone to assembly position and remove half shield. Remove bearing ring. FIGURE MNT-R-0038.



**Mnt-R-0038**

To assemble outer CV driveline, grease yoke groove and inner profile tube. Attach bearing ring on groove with recesses facing profile tube. FIGURE MNT-R-0039. Slide on half shield with cone. Turn cone until it engages correctly. FIGURE MNT-R-0039. Tighten locking screws. Grease bearing groove in double yoke. FIGURE MNT-R-0039. Insert bearing ring. Slide guard cone for double yoke over cam from the connecting end. Make sure holes for screws are visible. FIGURE MNT-R-0039. Tighten locking screws. FIGURE MNT-R-0039.

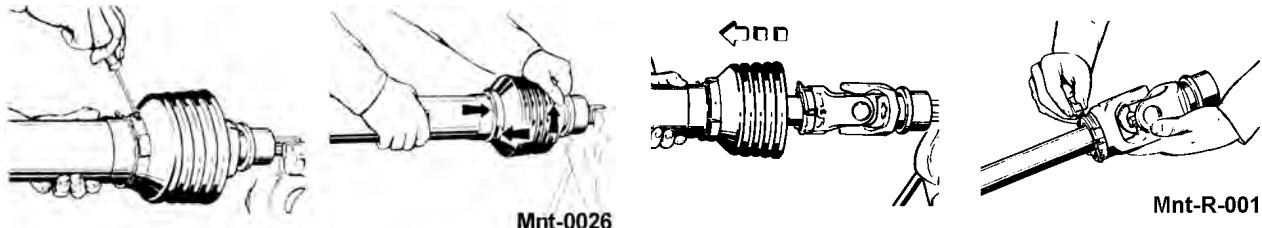


**Mnt-R-0039**

# MAINTENANCE

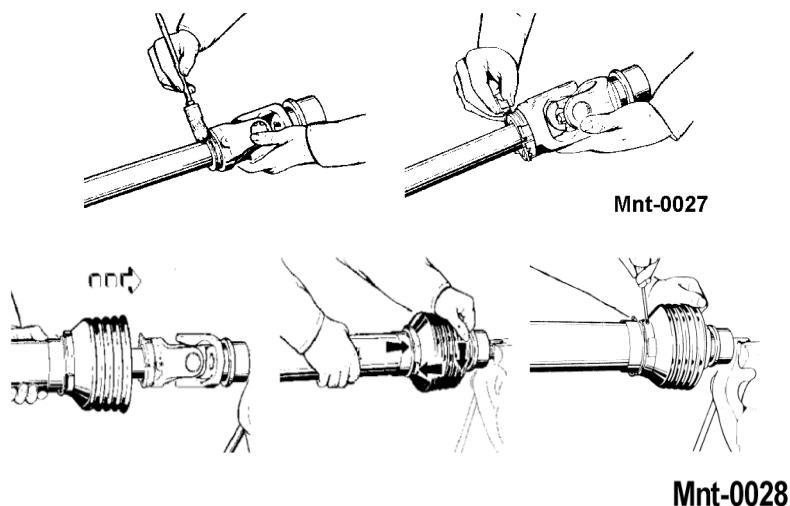
## CAT IV WING DRIVELINE SHIELDS

To remove the main inner driveline shield, Remove the locking screws. Align the bearing tabs with the cone pockets. FIGURE Mnt-0026. Remove the half-guard and remove the bearing ring. FIGURE Mnt-R-0012.



Inspect the driveline shield for worn areas or cracks. If the shield has any dents or cracks, replace the Shield. While the Shields are off, examine the Driveline for signs of abnormal wear, bent or twisted shafts, or cracks in the shafts or tubes. Check to see that the Drivelines telescope easily. If the Drivelines do not telescope properly or show signs of abnormal wear, the shaft should be repaired or replaced.

To assemble the main inner driveline shield, grease the yoke groove and inner profile tube. Attach the bearing ring in groove with recesses facing profile tube. FIGURE Mnt-0027. Slide on the half shield. Turn the cone until it engages correctly. Install locking screws. FIGURE Mnt-0028.



### IMPORTANT!

Check that Guard Missing decal on steel under inner guard and Rotating Driveline Decal are firmly affixed, undamaged and readable. If not, replace.



**IMPORTANT:** Scan this QR Code with your smart phone to link to the ADMA Driveline Safety Manual for more information on the safe use of a driveline during normal operation and maintenance. Or type in your internet browser the following web address: [www.algqr.com/dme](http://www.algqr.com/dme) Ops-0009-MISC



# MAINTENANCE

## MAINTENANCE

### SEASONAL CLUTCH MAINTENANCE

It is important that the clutches slip when an obstacle or load heavier than the clutch setting is encountered. Therefore, if the machine sits outside longer than 30 days and is exposed to rain and/or humid air it is important to make sure that the clutch lining plates are not rusted/frozen together. Before using the cutter use the following procedure to make sure the clutch will slip and give the overload protection required.

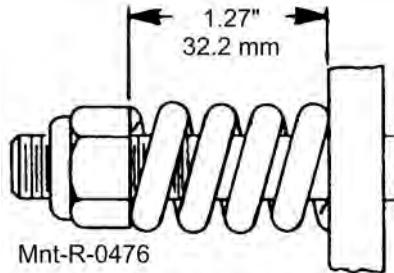
1. Loosen eight nut retaining clutch springs 1/3 turn or until spring can be turned with fingers.
2. With Tractor at idle speed, engage tractor PTO drive for 2-3 seconds. Clutch should slip without turning blades. If clutch does not slip, contact your authorized Bush Hog dealer.
3. Retighten nuts to within 1/64" of original position. Initial spring lengths are shown in **Figure Mnt-R-0476**.

**Important**

Failure to retighten spring nuts to original position may cause damage to implement and/or tractor due to improper slip clutch torque setting.

**Important**

Do not over-tighten nut and cause spring to become solid as this will cause shaft to fail.



### SLIP CLUTCH ADJUSTMENT

The slip clutch is factory present to the correct torque for protecting implement and tractor. Periodic adjustment is recommended. Should adjustment be needed, first check to be sure all spring lengths are the same. Initial spring lengths are shown in **Figure Mnt-R-0476**. If necessary, adjust nut on a spring that is unequal. Adjust all eight spring retaining nuts 1/3 of a turn (2 flats on a nut) and check clutch slippage. If further adjustment is necessary, do so in 1/3 turn increments. Adjust only to provide sufficient torque to prevent slippage under normal conditions. Occasional slippage is normal for drivetrain protection. If satisfactory results cannot be obtained consult your Bush Hog dealer.

# MAINTENANCE

## BLADE SERVICING

Inspect blades before each use to determine that they are properly installed and in good condition. Replace any blade that is bent, excessively nicked, worn, or has any other damage. Small nicks can be ground out when sharpening.

### **WARNING**

Use only original equipment blades on this cutter. They are made of special heat-treated alloy steel. Substitute blades may not meet specifications and may fail in a hazardous manner that could cause injury.

### **DANGER**

Replace bent or broken blade with new blades. NEVER ATTEMPT TO STRAIGHTEN OR WELD ON BLADES SINCE THIS WILL LIKELY CRACK OR OTHERWISE DAMAGE THE BLADE WITH SUBSEQUENT FAILURE AND POSSIBLE SERIOUS INJURY FROM THROWN BLADES. (SGM-10)

- Manually wiggle the glade carriers to check for any looseness.
- Retighten any loose parts.
- Recheck torque every 50 hours.

### **Important**

Operating with loose blade hardware will damage the blade holder and blades. Whenever the blades have been removed or replaced, the hardware must be retightened after the first eight hours of operation. On new units check blade hardware and the blade nut torque after first 8 hours.

### **Important**

Operating with loose blade holder will damage the blade holder and output shaft, two initial tightenings are required. Retighten after one hour and again after the day of operation. In severe cutting conditions or commercial use, a daily inspection is required.

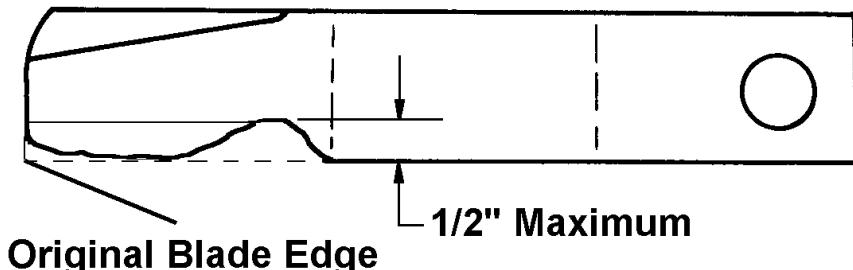
### **Important**

To help prevent structural damage caused by loose hardware, tighten gear case hardware as specified. Check torque after first 8 hours of use and every 50 hours thereafter.

### **DANGER**

Inspect Blades daily for abnormal wear. If Blades have a notch worn into the leading edge at the lower bend more than a 1/2" DEEP (due to running in gravel and/or the ground), REPLACE BOTH BLADES ON THAT CARRIER IMMEDIATELY. Failure to replace such abnormally worn blades may lead to catastrophic failure of the blade and ejection of the broken part with tremendous force which may cause bodily injury or death.

NOTE: Replace Blades in pairs after no more than 1/2" notch wear!



Mnt-R-0034

# MAINTENANCE

## MAINTENANCE

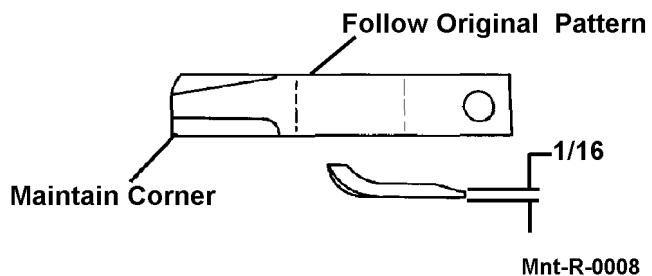
### BLADE SHARPENING

Always sharpen both blades at same time to maintain balance. Follow original sharpening pattern as shown in FIGURE Mnt-R-0008. Always sharpen blades by grinding. DO NOT heat and pound out edge. Do not sharpen blade to a razor edge, but leave a 1/16" blunt edge. Do not sharpen back side of blade.

IMPORTANT: When sharpening blades, grind each blade the same amount to maintain balance. The difference in blade weights should not exceed 1 ounce. Unbalanced blades will cause excessive vibration which can damage gear box bearings. Vibration may also cause structural cracks in cutter housing.



Never work under equipment supported by a hydraulic device because it may drop if the control is actuated (even with the engine stopped) or in the event of hose failure, etc. Always use a secure support for equipment which must be serviced while in the raised position.



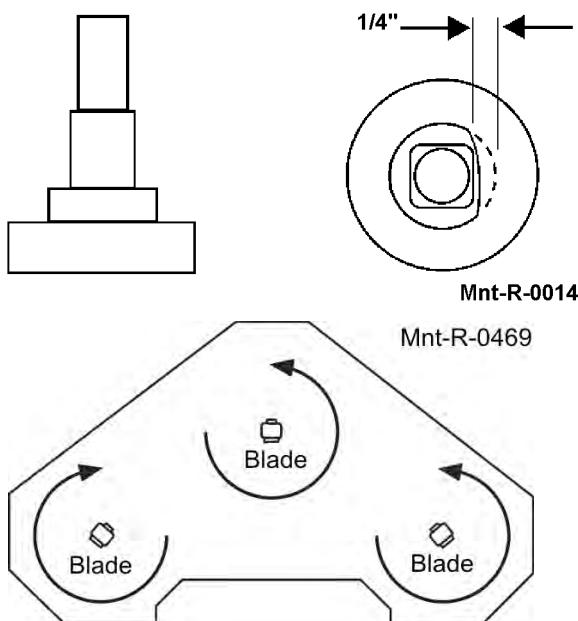
Mnt-R-0008

*NOTE: Replace Blades in pairs after no more than 1/2" notch wear!*

### BLADE REMOVAL

It is not necessary to remove the complete blade holder assembly to replace the blades. Blade bolts are accessible through a hole in the top of the cutter deck. Always replace both blades on a spindle using two blades having the same weight. Use only genuine Bush Hog replacement blades.

1. Remove nuts from blade bolts. A blade nut socket (Part No. 6432) can be bought at your Bush Hog dealer and used with an adjustable wrench (not supplied) to remove blade nut. Blade nut can also be removed with a 1-11/16" socket.
2. Inspect blade bolt shoulder for wear. Replace if necessary.
3. Assemble new blades to blade holder using blade bolts, nuts and lockwashers. Refer to BLADE ROTATION DIAGRAM for blade placement. Tighten nuts to 450ft./lbs if lubed, 600 ft./lbs. if dry. Strike blade bolt head with heavy hammer to seat, then retighten.
4. Check to be sure blades swing 360° freely. If blades will not swing freely, remove, locate problem, and repair. Operating cutter when blades will not swing freely will cause excessive vibration, damaging implement.



Mnt-R-0469

# MAINTENANCE

## WARNING

Avoid personal injury. Blade and/or blade carrier removal should be done only with the tractor engine shut off, key removed, in neutral, parking brake on, PTO disengaged, and the cutter blocked in the raised position.

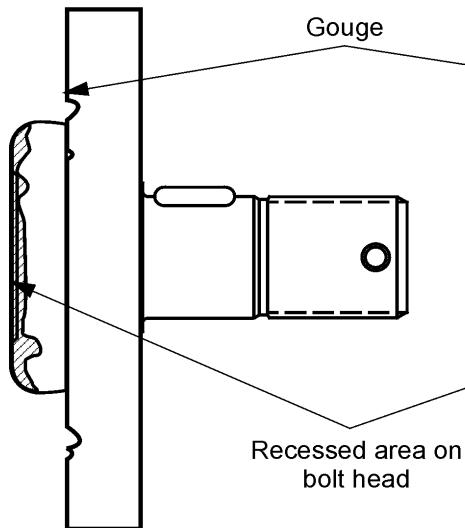
## Blade Bolt Inspection

Inspect Blade Bolt Head daily for wear as followed:

### Excessive Blade Bolt Wear

**Cause:** Blade Bolt contacts a foreign or solid object while Blade is in motion.

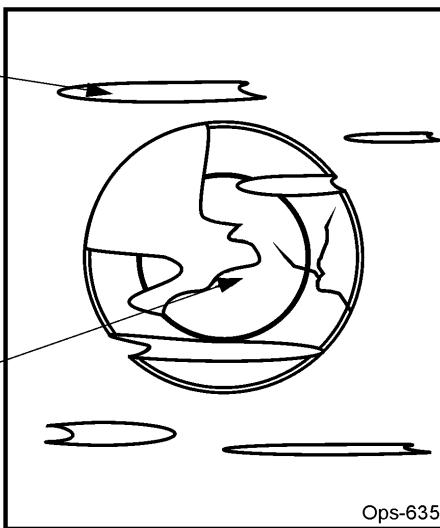
**Remedy:** Inspect the area before mowing to determine where the foreign objects are located and place visible hazard markers to identify the areas where immovable foreign objects exist, and avoid hitting the objects.



### Notches and Gouges

**Cause:** Blade Bolt contacting foreign objects.

**Remedy:** Inspect area to be mowed and remove foreign objects that could cause damage to the blade bolt.



## DANGER

Inspect the Blade Bolt Heads daily for abnormal wear. REPLACE BOTH BLADE BOLTS on the Blades IMMEDIATELY if either blade bolts has:

- Visible cracks or
- If the recessed area on blade bolt is worn off or
- If Blade Bolt has gouges or chipped areas.

Failure to replace abnormally worn blade bolts may lead to catastrophic failure of the blades and ejection of the broken part which may cause serious bodily injury or death.

**Always replace Blade Bolts with new bolts whenever replacing the Blades.**

## BLADE HOLDER ASSEMBLY

### Blade Removal

1. Remove cotter pin and blade holder assembly retaining nut and washer. Retaining nut can be removed or tightened with a 1-3/16" socket.
2. Wearing heavy gloves, grasp blade holder and pull off shaft. If stuck, align blade bolt with access hole in top of cutter deck. Using hammer and a piece of pipe, strike blade bar. Repeat until blade holder comes off. Care should be taken not to damage blade bolt threads.

# MAINTENANCE

## MAINTENANCE

### Installation

1. Align the blade holder so the cotter pin hole is positioned 90° to the blade bar (for ease of installing the cotter pin).
2. Place blade holder assembly, washer, and retaining nut on lower shaft. Torque nut to 450 ft. lbs. Strike the head of the blade bolt with a sledge hammer on one side and then the other. this will help seal the pan to the gearbox output shaft. Always recheck the torque of the nut after using the sledge hammer.
3. Install cotter pin. It may be necessary to tighten nut slightly to install cotter pin. Always tighten slightly more so that the cotter pin may be installed. Do not "Back Off" on the nut to align slots with hole.

**NOTE:** After a few hours of operation always recheck blade carrier retaining nut torque.

**Important**

Operating the mower with a loose blade pan or holder can damage the taper connection on the gearbox output shaft. To ensure proper seating between the blade holder and output shaft check and tighten the retaining nut after the first day of operation. Recheck the blade carrier attachment each morning before operating. Grasp the carrier firmly with both hands and try to push and pull the carrier with one hand while pulling and pushing with the other hand to try to rock or oscillate the blade carrier. If the carrier is loose retighten the retaining nut before operating the mower.

**WARNING**

Avoid personal injury. Do not work under cutter without support blocks to keep frame from falling.

### WHEEL HUB ASSEMBLY



The Wheel Hub Assemblies need to be lubricated every 120 hours. **FIGURE MntP-R-0032.**

# MAINTENANCE

## TIRES AND WHEELS

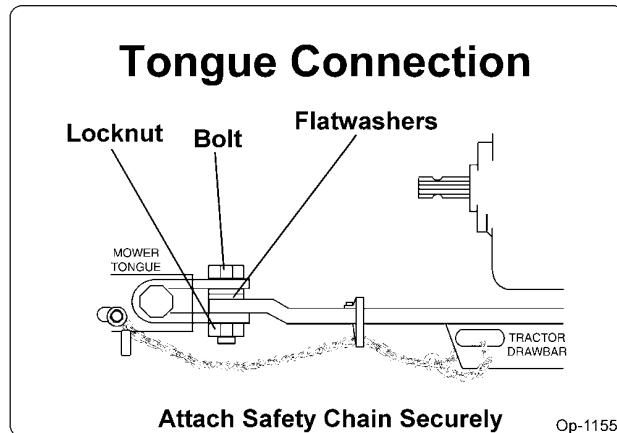
Before working on any tires and wheels make certain the Cutter is jacked up high enough and securely supported. When installing laminated or airplane tires, be sure the flat side of the lug nut is against the Wheel.

When installing Sectional Tires and Wheels note the direction of travel and the curvature of rubber segments in the tire (See Assembly Section). Do not exceed 15 M.P.H. on Sectional Tires. When removing Airplane Tires, let all of the air out of the tire before removing lug nuts or wheel bolts or nuts. Remove valve core to make certain that there is no air pressure left in tube before separating wheel halves to dismount tires. **DO NOT LOOSEN WHEEL CLAMP BOLTS BEFORE PRESSURE IS REMOVED FROM TUBE AND TIRE TO PREVENT EXPLOSIVE SEPARATION OF WHEEL HALVES WITH POSSIBLE SERIOUS BODILY INJURY.** Do not exceed 15 M.P.H. on Airplane or Rib Implement Tires.

Maximum airplane tire inflation pressure is 50 PSI, minimum inflation pressure is 20 PSI.

## TONGUE

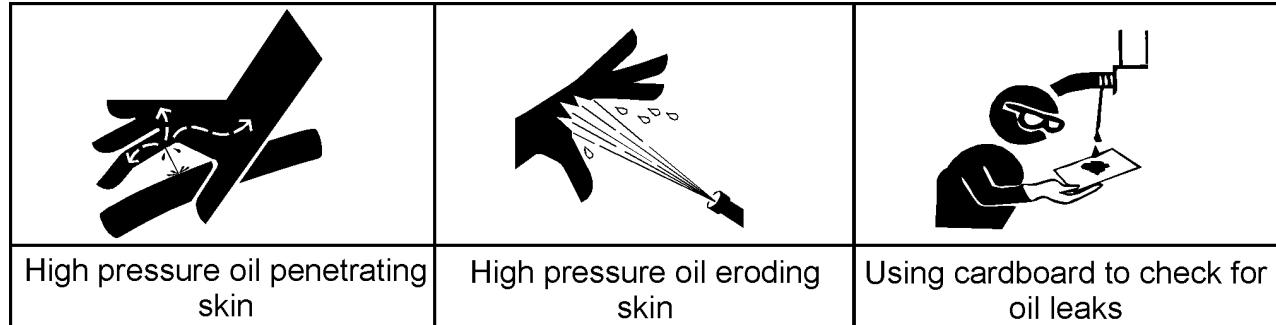
The Tongue Hitch Pins attach the Tongue to the Center Section and should be checked for signs of wear or cracking. Replace as needed. The Drawbar 1" Bolt fastens the mower to the tractor Drawbar. When the mower is unhitched and this 1" Bolt is removed, examine for signs of cracking or wear. Replace the Drawbar 1" Bolt at first sign of either problem. **FIGURE Op-1155**



# MAINTENANCE

## MAINTENANCE

### HIGH PRESSURE OIL LEAK HAZARD



High pressure oil penetrating skin

High pressure oil eroding skin

Using cardboard to check for oil leaks



#### TO AVOID SERIOUS INJURY OR DEATH FROM HIGH PRESSURE HYDRAULIC OIL LEAKS PENETRATING SKIN:

- **DO NOT OPERATE** equipment with oil or fuel leaks.
- **KEEP** all hydraulic hoses, lines and connections in **GOOD CONDITION** and **TIGHT** before applying system pressure.
- **RELIEVE HYDRAULIC PRESSURE** before disconnecting lines or working on the system.
- **REMOVE** and replace hose if you suspect it leaks. Have dealer test it for leaks.

#### HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE.

#### WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:

- **ALWAYS WEAR** safety glasses and impenetrable gloves.
- **USE** paper or cardboard to search for leaks.
- **DO NOT USE** hands or body parts to search for leak.
- **KEEP** hands and body **AWAY** from pin holes and nozzles ejecting hydraulic fluid.
- Hydraulic fluid may cause gangrene if not surgically removed immediately by a doctor familiar with this form of injury.

PN HP01

### HYDRAULIC HOSES

Replace pinched and broken Hydraulic Hoses at once. Tighten any Hydraulic Fitting with fluid leaking from it. If fluid still leaks, loosen the fitting, apply a pipe thread compound to the threads and tighten. Care must be exercised when tightening Hydraulic Fittings. Too much tightening can cause the fittings to crack and require replacement fittings.

Although a small amount of oil will be present from bleeding at all Hydraulic Fittings, significant amounts of oil leaking around the Breather Plug on the Cylinder indicates that the seal in the Cylinder is worn out. Replace the seals in the Cylinder immediately before the Cylinder is damaged or too much hydraulic fluid is lost.

### MAXIMUM ALLOWABLE OPERATING OIL TEMPERATURE

Do not operate this implement if the tractor hydraulic oil temperature exceeds 200°F

# MAINTENANCE

## Flex Wing Hydraulic Cylinder Replacement Instructions

### Implement Cylinders Removal and Replacement

Follow these Steps:

1. Clear the area of all personnel before lowering the wings.
2. From the tractor seat with your seat belt fastened around you, Lower the implement wings to the ground. Do Not attempt to replace the cylinder with the wings in the raised position.
3. Shut off the tractor, engage the parking brake, place the tractor transmission in the park position, and remove the key before dismounting.
4. Block up the center and wing sections with blocks or jack stands
5. Release all oil pressure from the circuit by moving the valve controls handles back and forward.
6. Remove the Implement Input Driveline from the tractor PTO shaft.
7. Remove the hydraulic hoses from tractor quick disconnects.
8. Wear Safety Glass and impenetrable gloves when working with hydraulic hoses and fittings.
9. Check to see that the cylinder is not under pressure by moving the cylinder pins by hand. The pins should be loose. If the cylinder pins are in a bind and can not be moved the cylinder maybe under pressure. Make sure the implement decks and axles are supported by blocks and then carefully remove one of the cylinder pins.
  - Do Not allow any one or any part of your body to be underneath the implement wing.
  - Do not loosen the hydraulic connections to the cylinder until all pressure has been relieved.
10. Slowly loosen the hydraulic hose connection to the cylinder.
11. Remove the other cylinder pin and remove the cylinder. The cylinder maybe heavy, use proper lifting techniques to lift and handle the cylinder and if needed get assistance in lifting from another person.
12. Measure the distance between the cylinder pin holes and extend the new cylinder to that length before installing.
13. Install the new cylinder in place and install both cylinder pins and retaining clips in place.
14. Reconnect hydraulic hose(s) to the cylinder, and tighten the fittings.
  - Wing cylinder has a special adapter with a small hole drilled in it to control the lowering speed on the wing. Make sure this adaptor is installed. Without this adaptor, the wing can fall rapidly.
  - Make sure the transport lock device(s) are reattached when inserting the cylinder pins.
15. Reconnect the implement hoses to the tractor.
16. Get into the Tractor seat and fasten your seat belt. Clear the area of all persons before attempting to raise the wing. From the tractor seat, start the tractor and operate the control valve to raise the wing.
17. Look for sign of oil leak. If an oil leak exists, shut the tractor down and remove all oil pressure in the lines by moving the valve control handles back and forward.
  - Retighten any lose fittings or connections.
  - If a hose is leaking, replace the hose with a new hose.
18. If there are no leaks raise and lower the wing completely at least three full cycles to remove any air trapped in the circuit.
19. Check the hydraulic reservoir of the tractor to ensure there is sufficient oil.
20. If the wing is to remain in the raised position attached the wing transport latch.

MAINTENANCE

# MAINTENANCE

## MAINTENANCE

### SKID SHOES

Skid shoes are made of carbon steel to reduce wear and increase service life. Premature wear can be caused by the mower Center or Wing sections being set too low which allows the Wing Skid Shoes to drag on the ground. Dragging the Skid Shoes on the ground or running the Skid Shoes into solid objects can contribute to early frame failure on the mower. Replace worn Skid Shoes as required.

### STORAGE

Your rotary cutter represents an investment from which you should get the greatest possible benefit. Therefore, when the season is over, the cutter should be thoroughly checked and prepared for storage so that a minimum amount of work will be required to put it back into operation for the next season. The following are suggested storage procedures:

1. Thoroughly clean the cutter.
2. Lubricate the cutter as covered in Maintenance Section.
3. Tighten all bolts and pins to the recommended torque.
4. Check the cutter for worn or damaged parts. Make replacements immediately.
5. Store the cutter in a clean, dry place with the cutter housing resting on blocks.
6. Use spray touch-up enamel where necessary to prevent rust and maintain the appearance of the cutter.

# MAINTENANCE

## PROPER TORQUE FOR FASTENERS

The chart lists the correct tightening torque for fasteners. When bolts are to be tightened or replaced, refer to this chart to determine the grade of bolts and the proper torque except when specific torque values are assigned in manual text.

**RECOMMENDED TORQUE IN FOOT POUNDS UNLESS OTHERWISE STATED IN THE MANUAL\***

*NOTE: These values apply to fasteners as received from supplier, dry or when lubricated with normal engine oil. They do not apply if special graphited or molydisulphide greases or other extreme pressure lubricants are used. This applies to both UNF fine and UNC coarse threads.*

MAINTENANCE

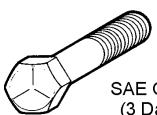
### TORQUE SPECIFICATIONS

#### AMERICAN

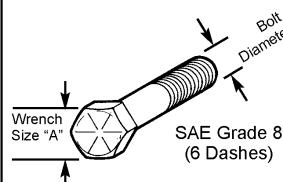
Bolt Head Markings



SAE Grade 2  
(No Dashes)



SAE Grade 5  
(3 Dashes)

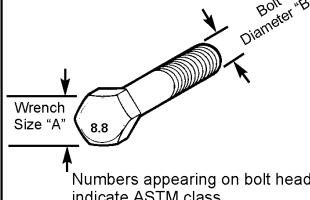


SAE Grade 8  
(6 Dashes)

Proper torque for American fasteners.  
Recommended Torque in Foot Pounds (Newton Meters).\*

WRENCH SIZE (IN.) "A"	BOLT DIAMETER (IN.) "B" AND THREAD SIZE	SAE GRADE 2	SAE GRADE 5	SAE GRADE 8
7/16	1/4 - 20 UNC	6 (7)	8 (11)	12 (16)
7/16	1/4 - 28 UNF	6 (8)	10 (13)	14 (18)
1/2	5/16 - 18 UNC	11 (15)	17 (23)	25 (33)
1/2	5/16 - 24 UNF	13 (17)	19 (26)	27 (37)
9/16	3/8 - 16 UNC	20 (27)	31 (42)	44 (60)
9/16	3/8 - 24 UNF	23 (31)	35 (47)	49 (66)
5/8	7/16 - 14 UNC	32 (43)	49 (66)	70 (95)
5/8	7/16 - 20 UNF	36 (49)	55 (75)	78 (106)
3/4	1/2 - 13 UNC	49 (66)	76 (103)	106 (144)
3/4	1/2 - 20 UNF	55 (75)	85 (115)	120 (163)
7/8	9/16 - 12 UNC	70 (95)	109 (148)	153 (207)
7/8	9/16 - 18 UNF	79 (107)	122 (165)	172 (233)
15/16	5/8 - 11 UNC	97 (131)	150 (203)	212 (287)
15/16	5/8 - 18 UNF	110 (149)	170 (230)	240 (325)
1-1/8	3/4 - 10 UNC	144 (195)	266 (360)	376 (509)
1-1/8	3/4 - 16 UNF	192 (260)	297 (402)	420 (569)
1-5/16	7/8 - 9 UNC	166 (225)	430 (583)	606 (821)
1-5/16	7/8 - 14 UNF	184 (249)	474 (642)	668 (905)
1-1/2	1 - 8 UNC	250 (339)	644 (873)	909 (1232)
1-1/2	1 - 12 UNF	274 (371)	705 (955)	995 (1348)
1-1/2	1 - 14 UNC	280 (379)	721 (977)	1019 (1381)
1-11/16	1-1/8 - 7 UNC	354 (480)	795 (1077)	1288 (1745)
1-11/16	1-1/8 - 12 UNF	397 (538)	890 (1206)	1444 (1957)
1-7/8	1-1/4 - 7 UNC	500 (678)	1120 (1518)	1817 (2462)
1-7/8	1-1/4 - 12 UNF	553 (749)	1241 (1682)	2013 (2728)
2-1/16	1-3/8 - 6 UNC	655 (887)	1470 (1992)	2382 (3228)
2-1/16	1-3/8 - 12 UNF	746 (1011)	1672 (2266)	2712 (3675)
2-1/4	1-1/2 - 6 UNC	870 (1179)	1950 (2642)	3161 (4283)
2-1/4	1-1/2 - 12 UNF	979 (1327)	2194 (2973)	3557 (4820)

#### METRIC



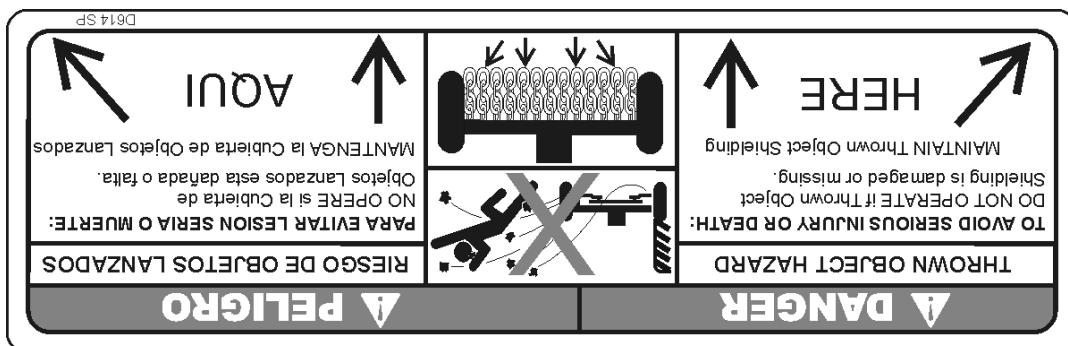
Numbers appearing on bolt heads indicate ASTM class.

Proper torque for Metric fasteners.  
Recommended torque in Foot Pounds (Newton Meters).\*

WRENCH SIZE (mm) "A"	BOLT DIA. (mm) "B"	ASTM 4.6	ASTM 8.8	ASTM 9.8	ASTM 10.9
8	5	1.8 (2.4)		5.1 (6.9)	6.5 (8.8)
10	6	3 (4)		8.7 (12)	11.1 (15)
13	8	7.3 (10)		21.1 (29)	27 (37)
16	10	14.5 (20)		42 (57)	53 (72)
18	12	25 (34)	74 (100)	73 (99)	93 (126)
21	14	40 (54)	118 (160)	116 (157)	148 (201)
24	16	62 (84)	167 (226)	181 (245)	230 (312)
30	20	122 (165)	325 (440)		449 (608)
33	22		443 (600)		611 (828)
36	24	211 (286)	563 (763)		778 (1054)
41	27		821 (1112)		1138 (1542)
46	30	418 (566)	1119 (1516)		1547 (2096)

Mnt-B-0005





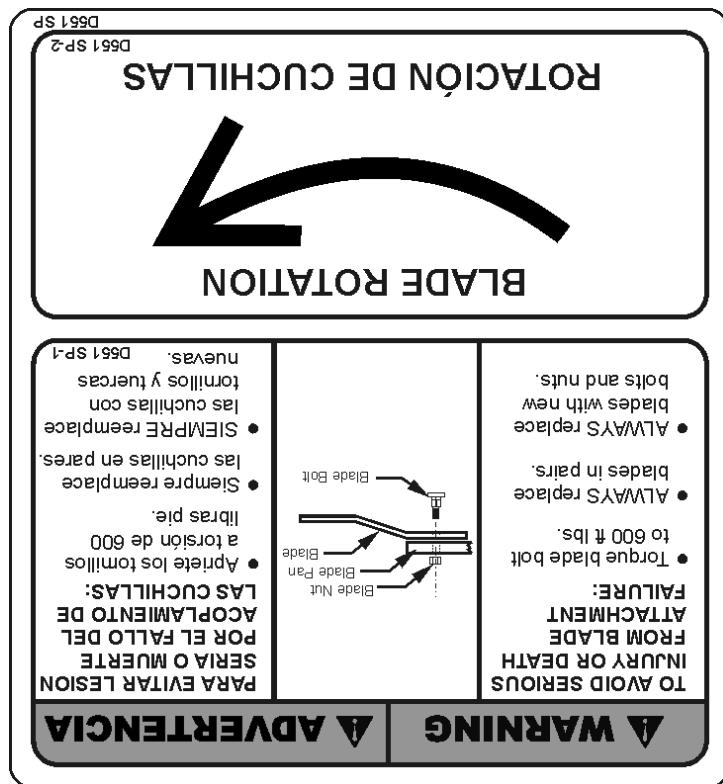
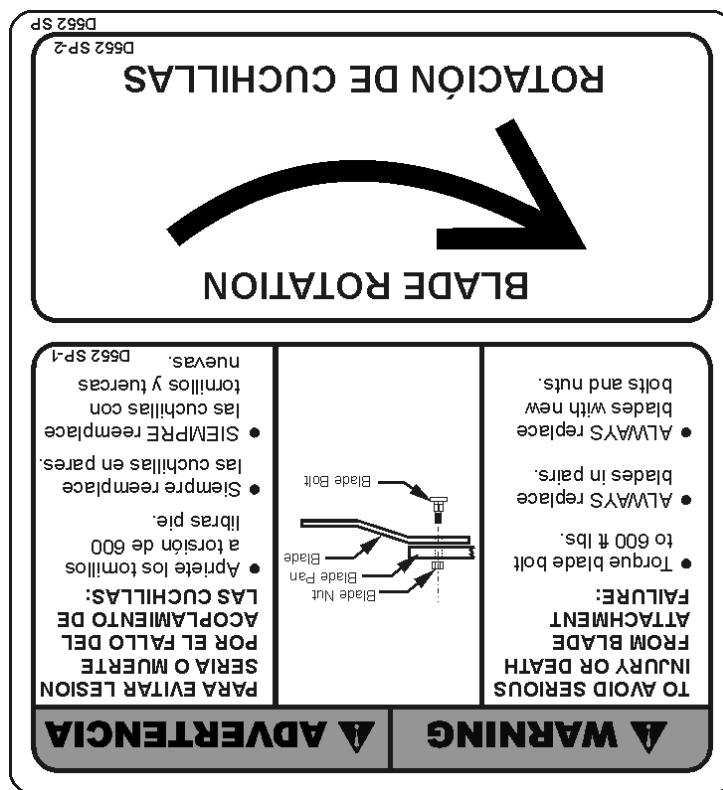
## SEGURIDAD

SEGURIDAD

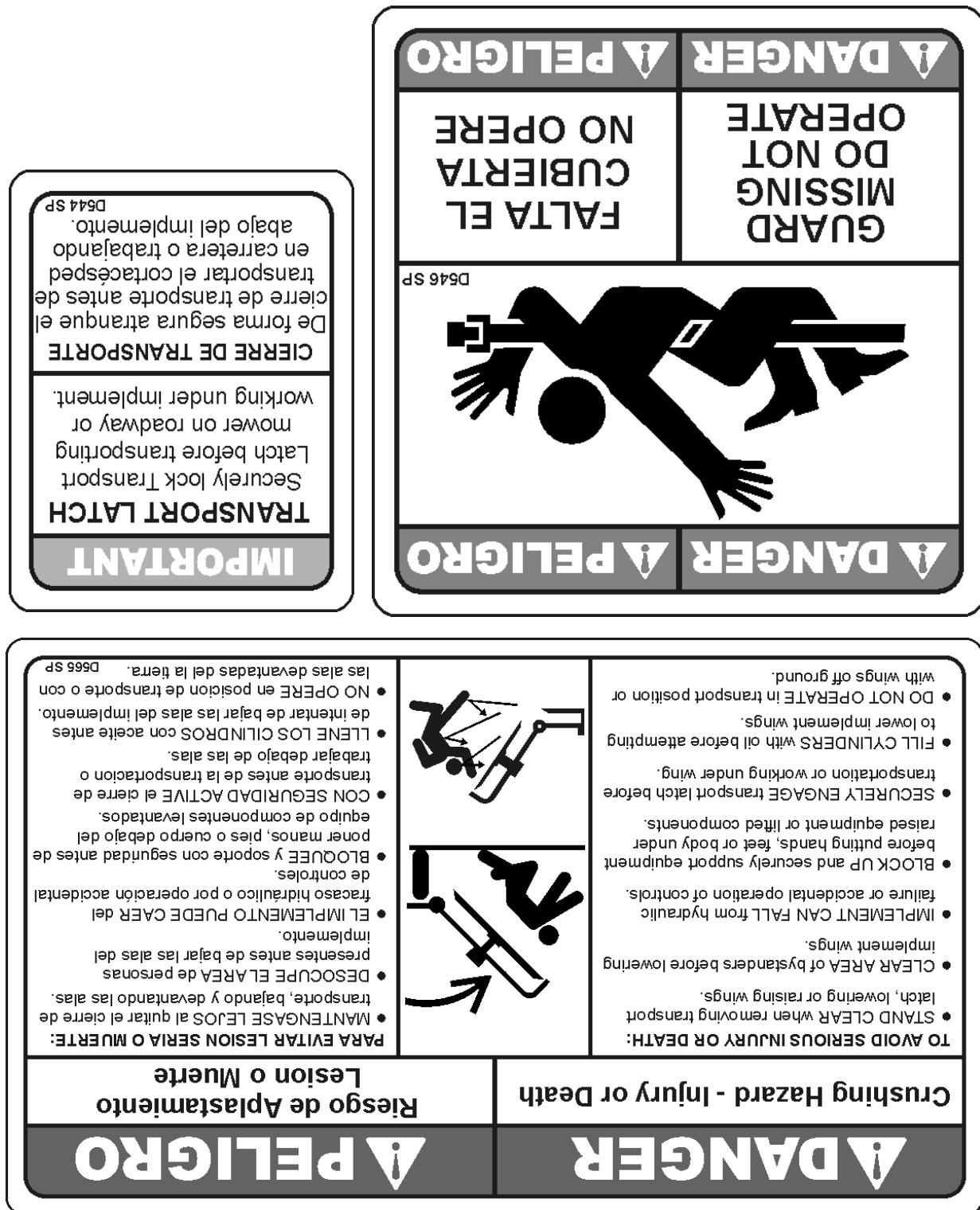
ADVERTENCIA

- ONLY use genuine BUSH HOG®
- **PARA EVITAR LESIÓN SERIA O MUERTE:**
  - Use SOLAMENTE las partes de reemplazo que se mencionan más abajo.
- **TO AVOID SERIOUS INJURY OR DEATH:**
  - Use SOLAMENTE las partes de reemplazo que se mencionan más abajo.

# SEGURIDAD



# SEGURIDAD



## SEGURIDAD

**ADVERTENCIA**

**540 RPM**

OPERE ESTA MÁQUINA A

SOLAMENTE OPERE ESTA MÁQUINA A

VELOCIDAD DE PTO (TOMA DE FUEZA) O BARRA

GITATORIA) DEL TRACTOR DE 540 RPM. EL SOBRE

EXCESO DE VELOCIDAD DE PTO PUEDE CAUSAR EL TRACTOR

DE COMPONENTE QUE RESULTARÁ EN LESIÓN. ROTACIÓN DE

PTO DEL TRACTOR: EN SENTIDO HORARIO D547 SP

**540 RPM**

OPERATE THIS MACHINE AT

TRACTOR PTO SPEED ONLY.

OVERSPEEDING PTO MAY CAUSE

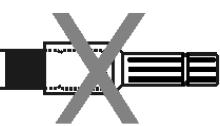
COMPONENT FAILURE RESULTING IN

BODILY INJURY. TRACTOR PTO

ROTATION: CLOCKWISE

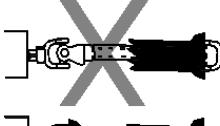
**D547-1**

- NO UTILICE UN ADAPTADOR PARA LA
- TRANSLAP PARA EVITAR AREAS SIN COBERTURA.
- CONEXIÓN POR GIRACIÓN LIBRE Y SUFFICIENTE
- REVISE LAS GUARDIAS DE LINEA DE
- TO MADE FUEZA (Barra Gitatoria).



- DO NOT USE PTO ADAPTER
- AND SUFFICIENT OVERLAP TO AVOID
- UNSHIELDED AREAS.

- EMPUJE Y JALE EL YUGO HASTA QUE EL
- COLLAR DE Fijación Haga clic y el yugo se
- trabe en lugar.
- NO OPERE SI LAS CUBIERTAS DE Toma De
- FUEZA (Barra Gitatoria) ESTAN DESMONTADAS.
- SIEMPRE APAGUE LA Toma De Fueza
- (Barra Gitatoria) ANTES DE DESMONTAR.
- MANTENGA MANOS, PIES Y CUERPO
- LEJOS DE PARTES GIRANTES, HASTA QUE
- TODOS LOS ELEMENTOS DE MOVIMIENTO SE
- SEAN PARADOS.



- DO NOT OPERATE IF PTO SHIELDS ARE
- DAMAGED OR MISSING.
- ALWAYS SHUT OFF PTO BEFORE
- DISMANTLING.

- MANTENGA LAS ALAS Y
- MOVIMIENTO DE ROTACIÓN ANTES DE
- ACERCARSE A LOS ELEMENTOS.
- PARA, MIRE Y ESCUCHA POR EL
- MOVIMIENTO DE ROTACIÓN ANTES DE
- FRACCASO DEL EJE DE PTO.



- STAY AWAY AND KEEP HANDS, FEET AND
- MOTION BEFORE APPROACHING IMPLEMENT.
- STOP, LOOK AND LISTEN FOR ROTATING
- BODY AWAY FROM ROTATING PARTS UNTIL ALL
- MOVING ELEMENTS HAVE STOPPED.

**PELIGRO**

PARA EVITAR LESIÓN SERIA O

MUERTE POR CONTACTO A LA LÍNEA

DE CONDUCCIÓN, SEPARACIÓN DE

LÍNEA DE CONDUCCIÓN, SEPARACIÓN DE

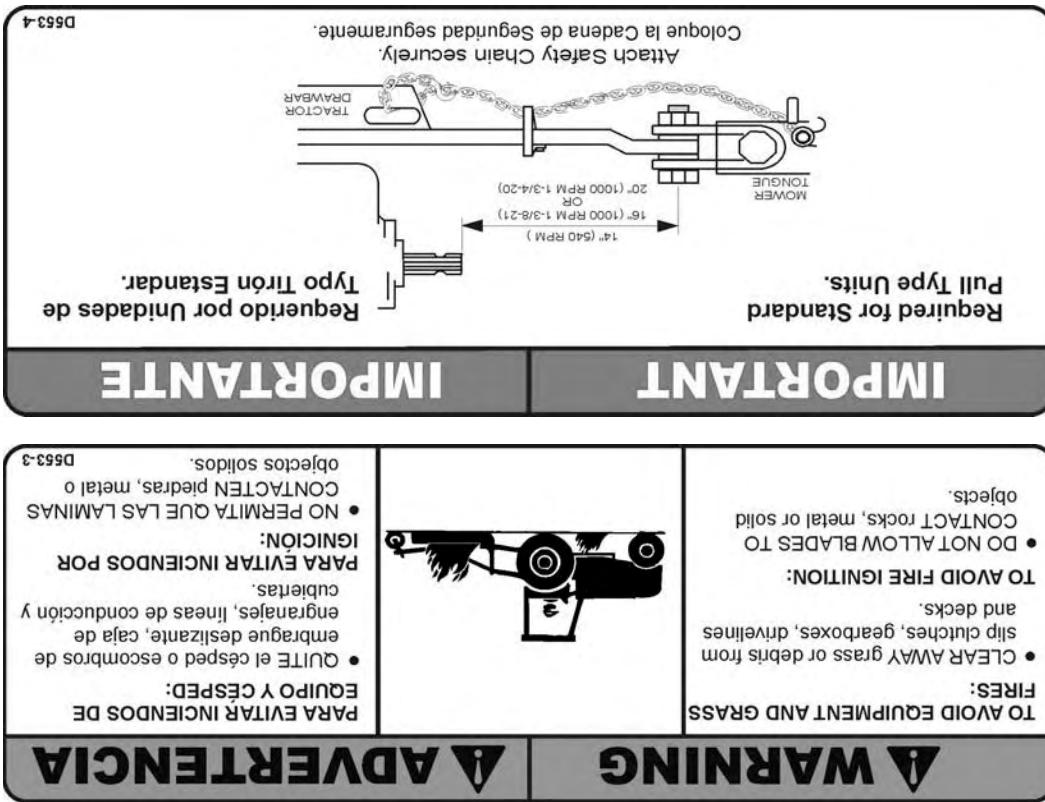
DRIVELINE SEPARATION OR PTO STUB

SHAF FAILURE:

TO AVOID SERIOUS INJURY OR DEATH

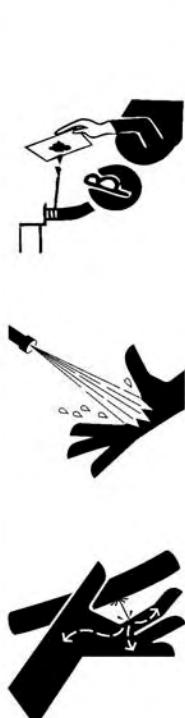
FROM DRIVELINE CONTACT,

SEPARATION OF PTO STUB



# ADVERTENCIA

## WARNING



## ADVERTENCIA

## WARNING

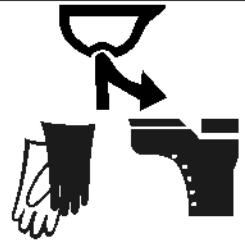
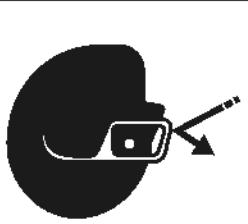
## SEGURIDAD

SEGURIDAD

D549 SP 5

- WEAR hard hat, safety shoes and gloves for protection when operating equipment.
- ALWAYS WEAR safety glasses.
- CONTACT DEALER to explain any instructions not fully understood.
- CONTACT DEALER immediately if you do not have manuals.
- READ AND UNDERSTAND the provided Operator's Manuals, safety signs and information decals for tractor and implement before operating equipment.

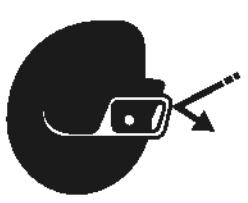
TO AVOID SERIOUS INJURY OR DEATH:



## ▲ DANGER

- USE in case, zapatos de seguridad y guantes para su protección cuando esta operando el equipo.
- SIEMPRE USE lentes de seguridad.
- CONTACTE AL DISTRIBUIDOR para que le explique cualquier instrucción que no entiende completamente.
- CONTACTE AL DISTRIBUIDOR inmediatamente si no tiene los manuales.
- LEA Y ENTIENDA el Manual de Operador proporcionado, signos de seguridad y cartas de información para el tractor y implemento antes de operar el equipo.

PARA EVITAR LESIÓN SERIA O MURERTE:



## ▲ PELIGRO

**RIESGO de Aplastamiento - Lesión o Muerte**

- USE un tractor equipado con Estructura Protectora Contra Vuelcos ("ROPS"), incluyendo barra anti vuelco y cinturon de seguridad. Mantenga la barra anti vuelco en la posición elevada.
- PERMANEZA ALJADO al sujetar el seguruo de transporte, y al bajar o subir las alas.
- EL IMPLEMENTO SE PUEDE CAER por el mal funcionamiento hidráulico o operación accidental de los controles.
- BLOQUEE y sostenga con seguridad el equipo antes de poner manos, pies o cuerpo debajo del equipo o componentes levantados.

PARA EVITAR LESIÓN SERIA O MUERTE:

**A PELIGRO**

**TO AVOID SERIOUS INJURY OR DEATH:**

- USE tractor equipado with Roll-over Protective Structure ("ROPS") including roll bar and seat belt. Keep roll bar in raised position.
- STAND CLEAR when removing transport latch, lowering or raising wings.
- IMPLEMENT CAN FAIL from hydraulic failure or accidental operation of controls.
- BLOCK UP and securely support equipment before putting hands, feet or body under raised equipment or lifted components.

**D549 SP 4**

**RIESGO DE ENREDAMIENTO**

PARA EVITAR LESIÓN SERIA O MUERTE:

- NO opere sin la cubierta protectora en su lugar y en buen estado. Tome Fuerza (Barra Gิตตอห์) y guardias de caja de engranaje son SUJETO AL ESGASTE.
- MANTENGASE ALEJADO Y MANTENGA manos, pies y cuerpo LEJOS de las cubiertas girando, líneas de cuero(Cubierta de PTO) y partes que siguen moviéndose después de que el poder es apagado. ESPERE hasta que todos los elementos móviles se han parado.
- SIEMPRE REMPLACE CUBIERTAS que han sido quitadas para servicio o mantenimiento.
- DETENGASE, OBSERVE Y ESCUCHE por el movimiento de rotación antes de accercarse al implemento.
- NO PISE EN las líneas de conducción o cubiertas.

**ENTANGLMENT HAZARD**

TO AVOID SERIOUS INJURY OR DEATH:

- DO NOT operate without guards in place and in good condition. PTO and gearbox guarding are SUBJECT TO WEAR.
- STAY AWAY and KEEP hands, feet and body AWAY from rotating blades, drivelines and parts that continue to move after power shut-off. WAIT until all moving elements have stopped.
- ALWAYS REPLACE GUARDS that have been removed for service or maintenance.
- STOP, LOOK and LISTEN for rotating motion before approaching implements.
- DO NOT STEP ON drivelines or guards.

**SEGURO**

DO NOT OPERATE WITH CUBEDRA (Cubierta de PTO) Guard (Cubierta de PTO) and Tactor PTO Guard (Cubierta de PTO) removed.

**ALWAYS USE GUARDS**

DO NOT OPERATE WITH CUBEDRA (Cubierta de PTO) Guard (Cubierta de PTO) and Tactor PTO Guard (Cubierta de PTO) removed.

**ALWAYS USE GUARDS**

DO NOT OPERATE WITH CUBEDRA (Cubierta de PTO) Guard (Cubierta de PTO) and Tactor PTO Guard (Cubierta de PTO) removed.

### Run Over Hazard - Injury or Death

**DANGER**

**ARA EVITAR LESION SERIA O MUERTE:**

- SIEMPRE ABRLOCHE el cinturon de seguridad.
- SOLO ENCIENDA el tractor mientras que esta sentado en el asiento del operador.
- PARA EL MOTOR Y Toma De Fuerza (Barro Gibratora), aplique el freno de mano, baje el implemento, y deje que todadas las partes movil ENTIENDA COMO parar el tractor y equiplo rápidamente en caso de una emergencia.
- NO MONTE o DESMONTE el tractor en movimiento.
- NUNCA PERMITA pasajeros en el tractor o implemento.
- NUNCA PERMITA que niños operen o se monten en el tractor o implemento.
- MANTENGA LAS PERSONAS PRESENTES LEjos de la area MANTENGA LAS PERSONAS PRESENTES LEjos de la area
- EVITE que nadie se acerque a la maquinaria.
- EVITE las ramas de arbol, maleza y algun otros objetos que posan o terreno en desnivel.
- MANTENGASE ALERTO y EVITE golpes en troncos, agujeros, pozos o terreno en desnivel.
- EVITE que nadie se acerque a la maquinaria.
- Sobresalen que pueden golpear y tumbar el operador del asiento.

### Riesgo de Atropello Lesión o Muerte

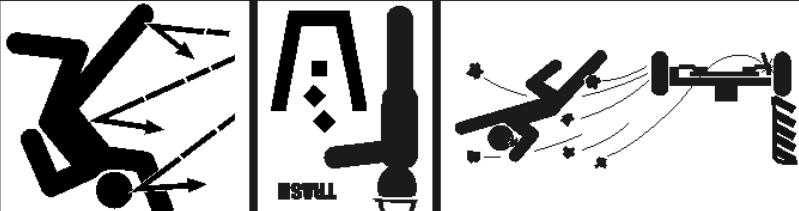


PELIGRO

## SEGURIDAD

**SEGURO**

**RIESGO DE OBJETOS LANZADOS**



**PELIGRO**

**LESIÓN SERIA O MUERTE A OPERADORES Y PERSONAS PRESENTES:**

Corracaespado puede lanzar objetos hasta 300 pies. PARA EVITAR

- NO OPERE sin la cubierta para objetos lanzados.
- Pare de segar si personas o tráfico se acercan entre 300 pies del área de segar.
- NO OPERE sin la cubierta para objetos lanzados.
- MANTENGA la cubierta para objeto lanzado en su lugar y en buenas condiciones. Los protectores de objetos lanzados son quebradas, o si faltan.
- REPARAR O REEMPLACE cubiertas si son dañadas, sujetos al desgaste.
- INSPECCIÓN de la área por si hay riesgos potenciales de objetos lanzados antes de segar.
- REMUEVA y EVITE objetos como alambre, cable, objetos de metal y todo otro material extrañero.
- NO DEJE que las cuchillas contacten los objetos sólidos como alambre, rocas, postes, bordes de bandejeta, o barandillas.
- NO OPERE en posición de transporte o con las alas levantadas.
- STOP mowing if bystanders or traffic come within 300 feet.
- DO NOT OPERATE with thrown objects come within 300 feet.
- KEEP thrown object shielding in place and in good condition during operation. Thrown objects shielding is subject to wear.
- REPAIR OR REPLACE object shielding if damaged, broken or missing. See Operator's Manual for all Shields and Guards.
- INSPECT area for potential mower thrown object hazards before mowing.
- REMOVE and AVOID objects such as wire, cable, metal objects and all other foreign material.
- DO NOT ALLOW blades to contact solid objects like wire, rocks, posts, curbs or guard rails.
- DO NOT OPERATE in transport position or with wings off ground.

**D549 SP 1**

**INJURY OR DEATH to operator or bystanders:**

Mower can throw objects up to 300 feet. TO AVOID SERIOUS

**THROWN OBJECTS HAZARD**

**DANGER**

**INJURY OR DEATH to operator or bystanders:**

Mower can throw objects up to 300 feet. TO AVOID SERIOUS

**DO NOT OPERATE in transport position or with wings off ground.**

2212 07/12

Sección de Seguridad 1-14

Translations, dirección 1502 E. Walnut Street Seguin, TX 78155; Fax: (830) 372-9529

NOTA: Si necesita un manual completamente en español por favor de ponerse en contacto a:

[www.algqr.com/bpm](http://www.algqr.com/bpm)



Manuals de Partes Y Operador

### CONTACTE A SU DISTRIBUIDOR BUSH HOG

Las cortadoras BUSH HOG usan balancas y componentes de sistema seleccionado para los portadores de cuchillas, cuchillas, eje de cortar, navaja, suspensiones de navajas, los rodillos, los componentes de línea motriz, y cojinetes. Estas partes son echas y probadas a la especificaciones de BUSH HOG. Partes que no son auténticas no regularmente llegan con estas especificaciones. El uso de partes que no son auténticas puede reducir el funcionamiento de la cortadora, anular garantías, y presentar un peligro de seguridad. Use partes de cortadora auténticas de BUSH HOG por economía y seguridad. (SPH-1 SP)

### INFORMACIÓN DE PARTES

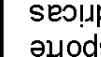
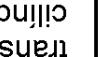
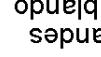
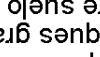
### INFORMACIÓN DE PARTES

**SEGURIDAD**

**SEGURIDAD**

## SEGURIDAD

**ADVTERNCI**A MANTENGA LOS IMPLEMENOS EN BUEÑAS CONDICIONES DE FUNCIONAMIENTO, A TRAVES DE UN SERVICIO, REPARACION O MANTENIMIENTO APROPAIDO.

 <p>Inspección de los cuchillas para detectar daños o fisuras</p>	 <p>Coloque las tronas de transpotre para detectar daños o fisuras</p>	 <p>Bloduje el motor. Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>	 <p>Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>	 <p>Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>
<p>Apague el motor. Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>	<p>Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>	<p>Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>	<p>Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>	<p>Quite la llave de repararlo. Utilice el implemento antes de reemplazar cilindricas</p>

## RIESGOS CON EL MANTENIMIENTO DE IMPLEMENTO

SEGURIDAD

# SEGURIDAD

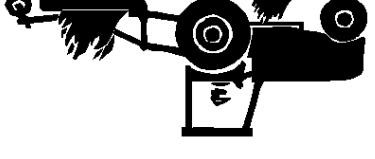
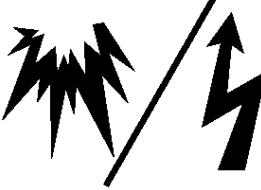
**RIESGOS DE TRANSPORTE**

**ADVERTENCIA** PARA EVITAR LESIONES GRAVES O LA MUERTE AL REMOLCAR O TRANSPORTAR EQUIPOS:

- MANTENGA LA VELOCIDAD EN TERRENO DE 20 millas por hora para mantener el control del equipo.
- NO REMOLQUE camiones u otros vehículos.
- USE un tractor de tamaño adecuado y equipado en función del equipo de remolque.
- SIGA todas las reglamentaciones de tránsito locales.
- REQUISITOS DEL TRACTOR PARA REMOLCAR O TRANSPORTAR IMPLEMENTOS:
  - SÓLO TRANSPORTAR en el tractor con el mecanismo ROPS (antivuelco) en posición elevada.
  - USE un tractor de tamaño adecuado y equipado en función del equipo de remolque.
  - VERIFIQUE la dirección y los frenos para asegurarse el correcto funcionamiento y las condiciones adecuadas.
  - VERIFIQUE que no haya impedimentos a la visión mientras conduce, en el tractor, la cabina o el implemento, sentado en el asiento del tractor.
  - AJUSTE su posición de conducción, los espesos y el transporte del implemento para tener una visión clara para condiciones de conducción y tránsito.
  - PREPARA EL IMPLEMENTO PARA EL TRANSPORTAR O EL REMOLQUE:
    - ELEVÉ LA CORTADORA e INSTALE topes o pasadores de transporte cilíndricos en el eje central.
    - ELEVÉ LAS ALAS e INSTALE topes o pasadores de transporte cilíndricos en el eje central.
    - AJUSTE LA CADENA DE SEGURIDAD del implemento al tractor.
    - QUITE todo material cortado que se acumule en la plataforma del tractor.
    - DETERMINE la velocidad de transporte máxima que no supera las 20 millas por hora.
    - OBSERVE las distancias de DETENCIÓN con el aumento de velocidad.
    - FRENÉ a velocidades de aumento.
    - DETERMINE LA VELOCIDAD DE GIRO MAXIMA ANTES DE OPERAR EN CARRERAS O TERRENO
    - PONGA A PRUEBA el equipo aumentando lentamente la velocidad en las curvas para determinar si se puede operar a mayor velocidad.
    - USE MENORES velocidades de giro en las curvas pronunciadas para evitar el vuelco.
    - SIEMPRE USE EL CINTURÓN DE SEGURIDAD al operar o transportar la cortadora.
    - USE bajas velocidades y dirigir la velocidad en las curvas, colinas, o en superficies irregulares o poco uniformes, y en curvas moderadas.
    - ENCIENDA LAS BALIZAS DE ADVERTENCIA del tractor.
    - TENGÁ EN CUENTA el espacio necesario para el vuelo en las curvas.
    - MANTENGA TODAS LAS ALAS elevadas a 3 metros (10 pies) o una mayor distancia de todos los cables de alimentación y obstrucciones elevadas. PN TH01 SP
- TRANSPORTAR LAS CARGAS DE SEGURIDAD:
  - PREBAS DE FRENADO:
    - DETERMINAR LAS CARGAS DE DETENCIÓN DEL TRACTOR Y EL IMPLEMENTO PARA EL TRANSPORTE O REMOLQUE:
      - QUITE todo material cortado que se acumule en la plataforma del tractor.
      - DETERMINE la velocidad máxima que no supera las 20 millas por hora.
      - OBSERVE las distancias de DETENCIÓN con el aumento de velocidad.
      - FRENÉ a velocidades de aumento.
      - DETERMINE LA VELOCIDAD DE GIRO MAXIMA ANTES DE OPERAR EN CARRERAS O TERRENO
      - PONGA A PRUEBA el equipo aumentando lentamente la velocidad en las curvas para determinar si se puede operar a mayor velocidad.
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      - MANTENGA TODAS LAS ALAS elevadas a 3 metros (10 pies) o una mayor distancia de todos los cables de alimentación y obstrucciones elevadas. PN TH01 SP

RIESGOS DE TRANSPORTE	SEGURIDAD
• Use señales de SV (vehículo de movimiento) de modo que las tramas de remolque de la cadena de la máquina no golpeen las balizas.	• Use la cadena de remolque de la máquina para detener el tractor a velocidad lenta y bajarla.
• Peligro de detención por velocidad - Tractor a velocidad de remolque de la máquina.	• Peligro de velocidad excesiva por exceso de control.
• Peligro de velocidad excesiva por pérdida de control - Tractor a velocidad de remolque de la máquina.	• Perdida de control - Tractor a velocidad de remolque de la máquina.
• Peligro de velocidad excesiva por pérdida de control - Tractor a velocidad de remolque de la máquina.	• Perdida de control - Tractor a velocidad de remolque de la máquina.

# SEGURIDAD

<b>RIESGOS ELÉCTRICOS Y DE FUEGO</b>					
	<p><b>PARA EVITAR LESIONES GRAVES O LA MUERTE POR CONTACTO ELÉCTRICO AL TRABAJAR CERCA DE CABLES ELÉCTRICOS, LÍNEAS DE GAS Y DE SERVICIOS:</b></p> <p><b>AL PELIGRO</b></p> <table border="1"><tr><td>Contacto de la línea de servicios con cables eléctricos elevados</td><td>Riesgo de choque y explosión</td><td>No opere cerca de la línea de servicios o gas</td><td>Mantenimiento eléctrico de la línea de servicios</td></tr></table> 	Contacto de la línea de servicios con cables eléctricos elevados	Riesgo de choque y explosión	No opere cerca de la línea de servicios o gas	Mantenimiento eléctrico de la línea de servicios
Contacto de la línea de servicios con cables eléctricos elevados	Riesgo de choque y explosión	No opere cerca de la línea de servicios o gas	Mantenimiento eléctrico de la línea de servicios		

**PARA EVITAR LESIONES GRAVES O LA MUERTE POR CONTACTO ELÉCTRICO AL TRABAJAR CERCA DE CABLES ELÉCTRICOS, LÍNEAS DE GAS Y DE SERVICIOS:**

**AL PELIGRO**

- **INSPECCIÓN** el área de corte para que no interfiere con cables de aluminación eléctrica subterráneos, obstrucciones, líneas de gas, cables y servicios que no interfiere con cables de otro tipo.
- **MANTENGA** todas las altas elevadas a 3 metros (10 pies) o una mayor distancia de todos los cables de aluminación y obstrucciones elevadas.
- **NO** ponga en contacto la cortadora con ninguna estructura o obstrucción de servicios subterráneos.
- **LLAME** al 811 y al 1-800-258-0808 para identificar cables de servicios subterráneos.
- **PAUTAS DE PREVENCIÓN DE INCENDIOS** durante la operación, reparación, servicio de la cortadora y el tractor, a fin de reducir el riesgo de incendio del equipo y de la vegetación:
- **NO OPERE** la cortadora sobre un tractor equipado con escape debajo del bastidor
- **NO FUME** ni accione fuego directo a la cortadora o el tractor
- **NO CONDUZCA** sobre residuos encendidos o en áreas recientemente quemadas
- **EVITE LA FORMACIÓN DE CHISPAS** al no permitir que la hoja de la cortadora entre en contacto con objetos sólidos como metal o roca.
- **AJUSTE LOS EMBRAGUES DESLIZANTES** para evitar el deslizamiento excesivo y el calentamiento de la placa del embrague.
- **LIMPIE** todo resto de hierba o residuo acumulado alrededor de las líneas de conducción de la cortadora, los embragues deslizantes y cajas de cambios.
- **APAGUE EL MOTOR** al cargar combustible. PN EFO1 SP

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Sección de Seguridad 1-10

- **MANTENGA** las manos y el cuerpo **LEJOS** de los orificios de clavijas y bocanillas de eyeción de fluido hidráulico.
- **NO USE** las manos o partes del cuerpo para detectar filtraciones.
- **USE** papel o cartón para verifcar si hay filtraciones.
- **SIEMPRE USE** gafas de seguridad y guantes impenetrables.
- **AL VERIFICAR FILTRACIONES HIDRÁULICAS Y TRABAJAR CERCA DE LOS SISTEMAS HIDRÁULICOS:** LAS FILTRACIONES DE LÍQUIDO DE ALTA PRESIÓN PUEDEN NO SER VISIBLES.
- **QUITE** y reemplace la mangüera si sospecha que tiene filtraciones. Solicite al distribuidor que verifique si hay filtraciones.
- **LIBERÉ LA PRESIÓN HIDRÁULICA** antes de desconectar las líneas o trabajar en el sistema.
- **MANTENGA** todas las mangüeras hidráulicas, líneas y conexiones en **BUEN ESTADO** y AJUSTADAS antes de aplicar presión al sistema.
- **NO OPERE** el equipo con filtraciones de aceite o combustible.

**A PELIGRO** PARA EVITAR LESIONES GRAVES O LA MUERTE POR PENETRACIÓN DE FILTRACIONES DE ACEITE HIDRÁULICO DE ALTA PRESIÓN:

Penetración de aceite de alta presión en la piel	Erosión de la piel por el aceite de alta presión	Usar cartón para detectar filtraciones de aceite

## RIESGO DE FILTRACIÓN DE ACEITE HIDRÁULICO DE ALTA PRESIÓN

- **DETENGА** la cortadora, **EXAMINELA** y **PRESTE ATENCIÓN A LOS SONIDOS** antes de acercarse a la cortadora para asegurarse de que se haya detenido todo el movimiento giratorio. PN MB01 SP
- **DETENGА** las cuchillas giratorias antes de elevar la plataforma de la cortadora o las alas.
- **NO** ponga las manos o los pies debajo de las plataformas móviles de la cortadora.
- **MANTENGASE LEjos Y NO ACERQUE LAS MANOS, LOS PIES Y EL CERPO** a las cuchillas giratorias, líneas de conducción y partes hasta que todos los elementos móviles se hayan detenido.

**A PELIGRO** MANTENGASE LEjos DE LAS CUCHILLAS GIRATORIAS PARA EVITAR LESIONES GRAVES O LA MUERTE POR CONTACTO CON LA CUCHILLA:

No ponga los dedos debajo de la cortadora	No ponga el pie debajo de la cortadora	No ponga el tractor. Quite la llave. Lea el Manual

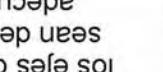
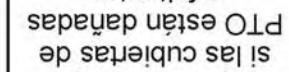
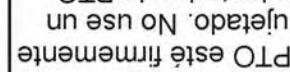
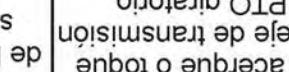
## RIESGO DEL CONTACTO A LAS CUCHILLAS DE CORTADORA

**SEGURIDAD**

**SEGURIDAD**

## SEGURIDAD

## SEGURIDAD

 <p>Assegúrese de que los ejes de PTO sean del largo adecuado</p>	 <p>No opere la máquina si las cubiertas de PTO están dañadas</p>	 <p>Assegúrese de que el eje de PTO esté firmemente sujetado. No use un adaptador de PTO o flattenantes</p>	 <p>Peligro de entredos de PTO giratorio. No se accione o toque ningún eje de transmisión de PTO giratorio</p>
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RIESGO DE ENREDO POR EL PTO

**PELIGRO** GIRTADORES PARA EVITAR LESIONES GRAVES O LA MUERTE: MANTENGASE ALSEADO DE LAS LINEAS DE CONDUCCION Y OTROS ELEMENTOS

**MÁTIN ENGA** insistió en los protocolos, las cuadernas integrantes de las líneas de conductores y las cuadernas de apuntes

• **NO OPERE** la cortadura si los protectores o cubiertas no están bien colocados o faltan.

REEMPLACE O REPARA LOS SI TALLEN, ESTAN DANADOS O ROTOS

SIMPLIFICAZIONE DEI PROBLEMI que se han quedado para trataras de repartacion o material minimo.

**PHAKA EVITAK** que la linea de conducción se rompa durante las operaciones:

**VERIFICAR** que la imagen de condensación tenga el rango adecuado entre el eje de F10 y el eje de la caja de cambios de los miembros del panel.

• Las líneas de conductcción demasiado cortas se pueden soltar o romper

• Las líneas de condensación demasiado largas pueden tocar el suelo.

Si el 1993 es considerado como el año en el que se establecieron las bases para la creación de la OEA, el año 1994 es considerado como el año en el que se establecieron las bases para la creación de la OEA.

EVILLE hacer curvas pronunciadas o elevar la corriodora a alturas que puedan hacer caer la linea de conducción.

L'abordure des compromis telescopicos del eje de transmision en la linea secundaria.

PROBLEMAS DE MATEMÁTICAS CON 77 SISTEMAS DE ECUACIONES

• NO UTILICE UN ADAPTADOR DE PTO.

El uso de un adaptador de **T** para causar rotación excesiva, causa de objetos, triadas de los cuadros y el implemento como consecuencia de la duplicación de la velocidad operativa. El aumento de la longitud de trabajo puede exponer áreas desprotegidas de la línea de conducción. **PN PE01 SP**

SEGURIDAD

**PELIGRO**

Riesgo de atrapamiento del operador	Riesgo de atrapamiento por calida	Riesgo de atrapamiento por calida del operador

## **RIESGO DE ATROPELLO**

SEGURIDAD

**OPERACIÓN DE LA CORTADORA:**

- **NO** exceda la capacidad de corte nominal de la cortadora, ni corte elementos que no sean vegetación.
- **USE CABINAS DE TRACTOR CERRADAS** cuando haya dos o más cortadoras operando en un mismo sector.
- **NO** opere la cortadora en áreas susceptibles al ataque de abejas o insectos, salvo que **USE PRENDAS** PROTECTORAS o una cabina de tractor cerrada.
- **AJUSTE LA ALTURA** de corte para **EVITAR EL CONTACTO DE LAS CUCHILLAS** con objetos sólidos, como alambres, postes, cordones, guardarrailles y obstrucciones fijas.
- **DETENGÁ LA CORTADORA** de inmediato si las cuchillas entran en contacto con objetos pesados, estructuras fijas, guardarrailles de metal y estructuras de cemento.
- **1. LAS CUCHILLAS PUEDEN FALLAR** con el impacto y los objetos pueden ser arrojados a gran velocidad.
- **2. INSPECCIÓN Y REMPLACE** las cuchillas dañadas.
- **3. VERIFIQUE** el equilibrio del porta cuchillas y **REEMPLACE** si está dañado.
- **NO** opere la cortadora en agua **PARA EVITAR** una posible **FALLA DE LAS CUCHILLAS**.
- **EVITE OPERAR LA CORTADORA** en reversa.
- **1. DETENGÁ EL PTO** y retroceda la cortadora.
- **2. DESCENDA** la cortadora, encienda el **PTO** y corte hacia adelante.
- **DETENGA EL PTO** y las **CUCHILLAS** al elevar las alas o la cortadora a posición de transporte.
- **NO ENCENDA EL PTO** con la cortadora en posición de transporte.
- **DETENGÁ LA CORTADORA** cuando se produzca **VIBRACIÓN EXCESIVA**.
- **1. DETENGÁ EL PTO** y el tractor.
- **2. DESCENDA** la cortadora, encienda el **PTO** y corte hacia adelante.
- **DETENGA EL PTO** y las **CUCHILLAS** al elevar las alas o la cortadora a posición de transporte.
- **NO ENCENDA EL PTO** con la cortadora en posición de transporte.
- **DETENGÁ LA CORTADORA** cuando se produzca **VIBRACIÓN EXCESIVA**.
- **1. REEMPLACE** toda parte dañada o las **CUCHILLAS** dobladas o dañadas. **PN T001-X SP**
- **2. INSPECCIÓN** la cortadora para detectar la fuente de la vibración
- **3. REEMPLACE** la cortadora cuando se produzca **VIBRACIÓN EXCESIVA**.

PELIGRO DE	OBJETOS LANZADOS DESDE LA CORTADORA	OBJETOS LANZADOS DESDE LA CORTADORA	OBJETOS LANZADOS DESDE LA CORTADORA	OBJETOS LANZADOS DESDE LA CORTADORA
lanzados por la cortadora que las cuchillas entren en contacto con objetos sólidos	lanzados desde el área. Quite los cuchillas entrén en contacto con objetos extraños	lanzados desde la cortadora elevada	lanzados desde la cortadora elevada	lanzados por la cortadora elevada

## RIESGO DE OBJETOS LANZADOS Continuado

SEGURIDAD

SEGURIDAD

PARA EVITAR LESIONES GRAVES O LA MUERTE AL OPERADOR O TRANSEUNTES COMO CONSECUENCIA DE OBJETOS ARRONDADOS:

NO OPERE LA CORTADORA SI HAY PERSONAS A MENOS DE 100 METROS(300 PIESES), SALVO QUE:

• TODOS LOS PROTECTORES CONTRA OBJETOS ARROJADOS ESTEN COLLOCADOS Y EN BUEN FUNCIONAMIENTO AL OPERAR LA CORTADORA, ENTRE LOS PROTECTORES Y LAS ZAPATAS ANTIDESILIZANTES.

• LOS TRANSEUNTES ESTEN EN EL INTERIOR DE UN VEHICULO CERRADO.

• SE HA INSPECIONADO EL AREA DE CORTE Y SE HAN QUITADO TODOS LOS MATERIALES EXTRAHOS Y RESIDUOS.

• LAS PARTES DE LA CORTADORA A LA ALTA VELOCIDAD, SIN EXPONER LAS CUCHILLAS.

• QUITA RESIDUOS, PIEDRAS, CABLES, ALAMBRES, OBJETOS METALICOS Y CUALQUIER OTRO OBJETO EXTRAHO.

• QUITA ALAMBRES, CABLES, SOGAS, CADENAS Y OBJETOS METALICOS QUE PUEDEN SER ARROJADOS O SALIR DESPRENDIDOS DE LA PLATAFORMA A GRAN VELOCIDAD.

• 1. MARQUE LOS OBJETOS QUE NO SE PUEDAN QUITAR.

• 2. EVITE LOS OBJETOS CUANDO USE LA CORTADORA.

• INSPECCION DEL AREA PARA DETECTAR HIERBA ALTA Y MALLEZAS:

• QUITA RESIDUOS, PIEDRAS, CABLES, ALAMBRES, OBJETOS METALICOS Y CUALQUIER OTRO OBJETO EXTRAHO.

• 1. MARQUE LA CORTADORA A UNA ALTA VELOCIDAD.

• 2. INSPECCION Y QUITA CUALQUIER RESIDUO OCULTO DE GRAN TAMAÑO.

• 3. PROTECCION CONTRA OBJETOS ARROJADOS DE LA CORTADORA:

• MANTENGA TODOS LOS PROTECTORES DE CADENA DOBLES PARA AUTOPISTAS, DERECHO DE PASEO, PARQUES O CORTES EN CINTURON VERDE DONDE PUEDA HABER VIVIENDAS, VEHICULOS O GANADO DENTRO DE LOS 100 METROS (300 PIESES) DE LA CORTADORA.

• UTILICE PROTECTORES DE CADENA DOBLES PARA AUTOPISTAS, DERECHO DE PASEO, PARQUES O CORTES EN CINTURON VERDE DONDE PUEDA HABER VIVIENDAS, VEHICULOS O GANADO DENTRO DE LOS 100 METROS (300 PIESES) DE LA CORTADORA.

• Ninguna proteccion ofrece una eficacia del 100% en la prevencion de objetos arrojados. Para reducir la posibilidad de que se produzcan lesiones:

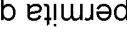
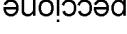
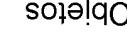
• 1. MANTENGA LOS PROTECTORES DE LA CORTADORA, LOS FALDONES LATERALES, LA ZAPATAS ANTIDESILIZANTES Y LAS CUCHILLAS EN BUEN ESTADO DE FUNCIONAMIENTO.

• 2. ELEVÉ LA ALTURA DE CORTE A 15 CM (6 PULGADAS) COMO MINIMO.

• 3. INSPECIONE EL AREA CON CUIDADO ANTES DE PASAR LA CORTADORA PARA ELIMINAR EL POSIBLE RIESGO DE OBJETOS ARROJADOS.

• 4. NUNCA PERMITA QUE LAS CUCHILLAS EN MOVIMIENTO ENTREN EN CONTACTO CON OBJETOS SOLIDOS COMO ALAMBRES, PIEDRAS, POSTES, CORDONES, GUARDARRAILLES O EL SUELO. PN T001 SP

CONDICIONES ADVERSAIS.  
LAS CORTADORES GIRATORIAIS PUEDEN ARROJAR OBJETOS A 90 METROS (300 PIES) O MAS EN  
A PELIGRO

 <p>Peligro de lanzados por la cuchillas entren en cuando que las objetos desde lanzados desde área. Quite los objetos extraños contacto con objetos sólidos</p>	 <p>No permita que las cuchillas entren en cuando que las objetos desde lanzados desde área. Quite los objetos extraños contacto con objetos sólidos</p>	 <p>Objetos desde lanzados desde área. Quite los objetos extraños contacto con objetos sólidos</p>	 <p>Objetos desde lanzados desde área. Quite los objetos extraños contacto con objetos sólidos</p>	 <p>Objetos desde lanzados desde área. Quite los objetos extraños contacto con objetos sólidos</p>
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## RIESGO DE OBJETOS LANZADOS

PARA EVITAR LESIONES GRAVES O LA MUERTE POR APLASTAMIENTO POR EL TRACTOR O				
Detenga el tractor mientras la llave quite la llave	Lesión operativa entre tractor e eje de TDF	Lesión operativa asegurarse de que el eje de TDF sea delante del tractor	Lesión operativa asegurarse de que el eje de TDF esté firmemente apoyado al tractor	AL DAR MARCHA ATRAS el tractor hacia el enganche del implemento:

- NO PERMITA QUE HAYA PERSONAS entre el tractor y el implemento
- APAGUE EL MOTOR DEL TRACTOR, coloque la palanca en "estacionar", ponga el freno de mano y saque la llave.
- ANTES de conectar y desconectar el enganche del implemento:
- NO se agarre a un poste de cercado o a la tierra en posición elevada.
- USE el GATO con lengüeta para elevar la lengüeta de implementos pesados a fin de controlar el movimiento de la lengüeta del implemento.
- LUBRIQUE el sello de cierre del resorte del yugo para asegurarse de que se deslice libremente sobre el eje de PTO.
- ASSEGURE las boletas de cierre del yugo en la muñeca del eje de PTO.
- PRESIONE y JALE DE LA LINEA DE CONDUCCION del eje de PTO Y el eje de la caja de cambios del implemento para asegurarse de que la línea de conducción tenga el largo adecuado entre el eje de PTO y el eje de la caja de cambios del implemento.
- PARA EVITAR que la línea de conducción se rompa durante la operación:
- VERIFIQUE que la línea de conducción tenga el largo adecuado entre el eje de PTO y el eje de la caja de cambios del implemento.
- LAS líneas de conducción demasiado cortas se pueden soltar o romper.
- LAS líneas de conducción demasiado largas pueden tocar el suelo.
- UN ensamblaje telescópico de la línea de conducción que toque el suelo no se deslizará y se solidificará.
- SI la línea de conducción toca el suelo, puede arrastrar los cojinetes de soporte y romper el eje de PTO.
- COMUNIQUESE CON EL DISTRIBUIDOR SI la línea de conducción del implemento no coincide con el eje de TDF del tractor:
- NO UTILICE UN ADAPTADOR DE PTO.
- SI la línea de conducción toca el suelo, puede arrastrar los cojinetes de soporte y romper el eje de PTO.
- UN adaptador de PTO puede ocasionar:
- VIBRACIÓN excesiva, cada de objetos, fallas de la hoja y el implemento como consecuencia de la duplicación de la velocidad operativa.
- MAYOR extensión de trabajo, lo que deja expuestas áreas desprotegidas de la línea de conducción e implica el riesgo de enredo con otros objetos.
- MÁS uso de un adaptador de PTO.
- CONECTE las mangüeras al tractor.
- LLENE los cilindros de las alas con lubricante.
- MANTENGA a los transmisores lejos del área de operar las alas.
- DESCENDA LAS ALAS de manera lenta y cuidadosa.
- NO conecte la cortadora a un tractor con la TDF directamente conectada a la transmisión del tractor. PN CD01 SP

SEGURIDAD

## **RIESGO DE APLASTAMIENTO**

SEGURIDAD

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Sección de Seguridad 1-3

- **REEMPLACE** cualquier señal de seguridad fallante, dañada o ilegible. PN 0501 SP

**SEÑALES DE SEGURIDAD:**

- **EVITE** superar las velocidades nominales de PTO, porque puede causar roturas en la línea de conducción o fallas de las cuchillas.

**NO EXCEDA LA VELOCIDAD DE PTO NOMINAL DEL IMPLEMENTO****VELOCIDAD DE PTO:**

- No opere en áreas susceptibles al ataque de abejas o insectos, salvo que **USE PRENDAS PROTECTORAS** o una cabina de tractor cerrada.

**INFESTACIÓN CON INSECTOS**

- REDUZCA LA VELOCIDAD DE CORTE al acercarse a incisiones empinadas, pozos, desniveles, obstrucciones elevadas, cables de alimentación y para evitar residuos y objetos extraños.

- **AJUSTE LA VELOCIDAD NORMAL** es de entre 2 y 5 millas por hora.

**VELOCIDAD RESPECTO AL USAR LA CORTADORA:**

- DEBE PODER VISUALIZAR e identificar transientes, terrenos empinados, pozos, desniveles, obstrucciones elevadas, cables de alimentación, residuos y objetos extraños.

- **OPERE LA CORTADORA CON LUZ SOLAR** o con luz que proporcione una visibilidad nítida de más de 90 metros (100 yardas).

**CONDICIONES DE VISIBILIDAD AL USAR LA CORTADORA:****SEGURIDAD DE OPERACIÓN GENERAL**

- **MANTENGASE ALERTA**, la operación prolongada puede causar fatiga. **HAGA UNA PAUSA Y DESCANSÉ.**

- **CONSULTE** a un médico para conocer los efectos desfavorables de la medicación sobre los sentidos.

- **NO PERMITA** que nadie opere el equipo bajo los efectos negativos de las drogas o el alcohol.

- **NO CONSUMA DROGAS O ALCOHOL** antes o durante la operación del equipo.

- **NO USE** prendas sueltas o joyas que se puedan enganchar con las partes giratorias y causar una lesión.

- **USE** un aparato de respiración apropiado al operar en condiciones polvorulentas a fin de evitar contrarrevertidares.

- **USO GAFAS DE SEGURIDAD**, calzado protector, casco, protección auditiva y guantes al operar o preparar el equipo Seguridad.

- **LEA, COMPRENDA Y SIGA** las instrucciones del Manual del Operador, al igual que las Advertencias y Mensajes de Seguridad.

**ADVERTENCIA**

Lea con atención el Manual del Operador	Siempre use gafas de casco y Nunca consuma drogas o alcohol mientras opera el equipo	Use casco y gafas o alcohol para proteger el operador en caso de caídas	Utilice chaleco de seguridad al operar en o cerca de carreteras	Utilice chaleco de seguridad al operar en o cerca de carreteras

**SEGURIDAD DEL OPERADOR****SEGURIDAD**

**NOTA:** Si desea obtener una traducción de esta sección de seguridad en alguno de los siguientes idiomas, comuníquese con: Translations, a la dirección 1502 E. Walnut Street Seguin, TX 78155; Fax: (830) 372-9529. La Sección de Seguridad está disponible en español, portugués, francés, alemán, ruso. PN 601 SP



LEA CON ALIENCIÓN Y RESPÉTELE los siguientes mensajes de seguridad. Si no se siguen cuidadosamente las advertencias las instrucciones indicadas en este Manual de los Mensajes de Seguridad del implemento, se pueden producir lesiones graves o la muerte. Siempre siga las instrucciones de este manual y use el sentido común para evitar situaciones peligrosas.

**NOTA:** Identifica aspectos de particular interés para lograr una operación o preparación más eficiente y segura.

dentífrica instrucciones o procedimientos específicos que, de no observarse estrictamente, podrían ocasionar daños o la destrucción de la maquinaria, los accesorios o el entorno.

indica una situación peligrosa imminente que, de no ser evitada, PODRIA OCASIONAR UNA LESIÓN MENOR.

Indica una situaci髇 peligrosa imminente que, de no ser evitada, PODRIA OCASIONAR la MUERTE O UNA LESIN MUY GRAVE.

lndicacions de peligrosa ilminente que, de no ser evitada, OCASIONARÀ la MUERTE O UNA LESIÖN MUY GRAVE.

Adopte todas las medidas habituales para trabajar en forma segura y, sobre todo, recuerde que la seguridad depende de USTED. Solo USTED puede impedir una lesión grave o la muerte a causa de prácticas no seguras.

## INSTRUCCIONES DE SEGURIDAD Y PRÁCTICAS GENERALES

SEGURIDAD

SEGURIDAD

Sección de Seguridad 1-1

# SECCIÓN DE SEGURIDAD





AEMVideo@alamo-group.com

O enviar por correo electrónico a:

(830) 372-9529

O enviar por fax a:

Seguin, TX 78155

1502 E. Walnut Street

AEM Video Services

Enviar por correo a:

Nombre del distribuidor \_\_\_\_\_ Dirección del distribuidor \_\_\_\_\_

Fecha de compra \_\_\_\_\_ Vendedor del distribuidor \_\_\_\_\_

Modelo de cortadora \_\_\_\_\_ Número de serie \_\_\_\_\_

Código postal \_\_\_\_\_

Estado \_\_\_\_\_

Ciudad \_\_\_\_\_

Dirección del solicitante \_\_\_\_\_

Nombre del solicitante \_\_\_\_\_ Teléfono: \_\_\_\_\_

Manual de Seguridad del Operador de la Cortadora AEM

Manual del Operador de la Cortadora

Vídeo de Seguridad para el Operador de Cortadoras AEM/FEMA - formato DVD

Vídeo de Seguridad para el Operador de Cortadoras AEM/FEMA - formato VHS

**Bush Hog está dispuesto a suministrar un (1) Vídeo de Prácticas de Seguridad para Cortadoras AEM**

Por favor enviar:

instrucciones del operador. A la hora de la asignación inicial y por lo menos anualmente despus de eso, el empleador mandará a cada empleado quien opera un tractor agrícola o implemento en las prácticas de operación segura y el mantenimiento de el equipo con el cual el empleado este, o estará implicado y de igual modo otras prácticas dictadas por el ambiente laboral.

Los seguidores de los redactores de *Entrenamiento* se an tomoda del Título 29, Código de la Pilea de regulaciones federales 1928.57 (a) (6). [www.osha.gov](http://www.osha.gov)

## REQUISITOS DE ENTRENAMIENTO DEL OSHA

La información y material mencionado en la formación anterior junto con el Manual de Operador puede asistir en cumplir con los requisitos de OSHA para el entrenamiento anual del Operador.

Cada uno de los operadores debe recibir capacitación para cada equipo (tráctores y cortadoras), comprender el uso previsto, y comprender los posibles peligros antes de operar el equipo.

dorsos de esta página a AEM VHS Video 1502 E Walnut Street, Seguin, TX 78155, y solicite la versión en VHS. Indique su nombre, dirección postal, modelo de corredora y número de serie.

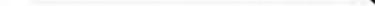
Si deseas recibir una copia del video en VHS, envíe un mensaje de correo electrónico a [AEVideo@alamo-group.com](mailto:AEVideo@alamo-group.com) o fax al (830) 372-9529, o envíe por correo una copia rellenada del formulario que se encuentra al final de este documento.

comprende algunas de las instrucciones del video o del manual del operador, o si tiene alguna pregunta acerca de la operación se dirá, comuniquese con su proveedor, con el distribuidor o con Bush Hog.

Es posible que su distribuidor autorizado de Bush Hog le haya mostrado este video y le haya entregado una copia en DVD cuando adquirió su cortadora. Si usted o alguien operador de cortadora no vió el video: mire el

El video explíca a los operadores y contratadores las prácticas seguras que deben adoptar cuando utilizan contratadores industriales y agrícolas. Es importante que todos los operadores de contratadores aprendan como operar sus equipos de corta y gruesa recogida para los posibles peligros que pueden surgir al operar una cortadora. Este video, en conjunto con el manual del operador de la cortadora y los mensajes de advertencia que se encuentran en la Carta de seguridad para contratadores, servirán muy bien para cumplir este objetivo.

A fin de reducir la tasa de accidentes y mejorar la operación segura de las controladoras, Bush Hog se ha asociado con otros fabricantes de la industria para desarrollar el video y la guía de Prácticas de Seguridad para controladoras industriales y Agrícolas AEM/FEMA.

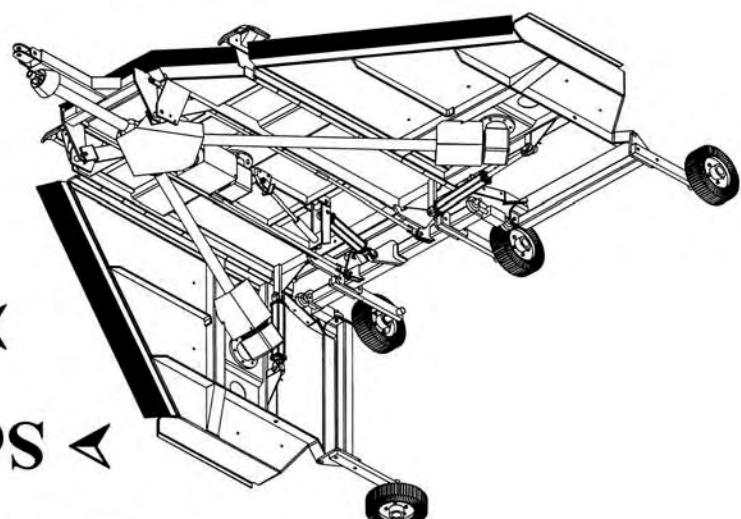
**Entrenamiento de Seguridad** *Hace la Diferencia* 

Se a Entrenado  
antes de funcionar  
el cortacésped

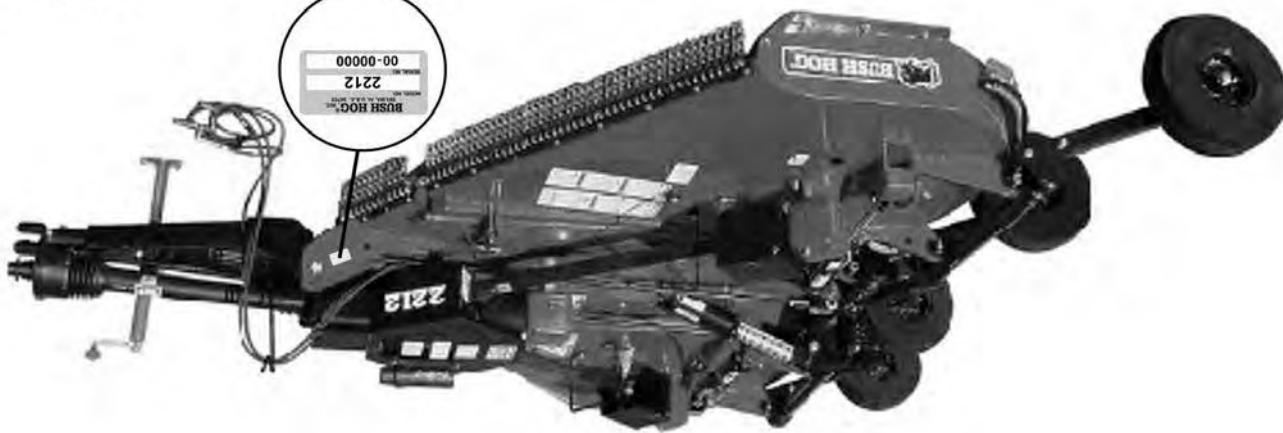
Sea Vivo [www.aligdp.com/dvs](http://www.aligdp.com/dvs)



Sea Seguro



## Video de Seguridad



Distribuidor	Teléfono	Fecha de compra:	Número de Serie

Para referencia futura, registre el número de modelo y el número de serie de Bush Hog que ha adquirido.

seguridad.

La información sobre repuestos se encuentra por separado en el Manual de Partes. Las cortadoras Bush Hog utilizan componentes del sistema equilibrados y coincidentes para porta cuchillas, cuchillas, ejes de corte, hojas, ganchos para hojas, rodillos, componentes de los engranajes, y cojinetes. Estas partes se fabrican y se prueban según las especificaciones de Bush Hog. Las partes compatibles no genuinas no cumplen con estas especificaciones. El uso de partes no genuinas puede perjudicar el desempeño de la cortadora, anular la garantía y presentar un riesgo para la seguridad. Use partes genuinas Bush Hog para ahorrar dinero y maximizar la seguridad.

Todas las referencias que se hacen en este manual a derecha, izquierda, frontal, trasero, arriba y abajo corresponden a la perspectiva en el sentido del desplazamiento hacia delante con el implemento correctamente colocado al tractor.

Los cuidados que brinda a su nuevo implemento, su uso previsto, y sus requisitos de servicio, desempeño y vida útil del equipo. Lea con atención y siga las instrucciones de este manual para comprender cabalmente su nuevo implemento, su uso previsto, y sus requisitos de servicio.

Los cuidados que brinda a su nuevo implemento Bush Hog determinarán en gran medida su satisfacción con el desempeño y la vida útil del equipo. Lea con atención y siga las instrucciones de este manual para comprender cabalmente su nuevo implemento, su uso previsto, y sus requisitos de servicio.

La SEGURIDAD PRIMERO. Lea con atención la totalidad de la sección de seguridad de este manual antes de operar el equipo. No permita que nadie opere el equipo sin haber leído y comprendido la totalidad de este manual. Comuníquese con el distribuidor si necesita explicación sobre alguna instrucción que no haya comprendido del todo.

ANTES DE COMENZAR LEA, COMPRENDA Y SIGA la información incluida en este manual, el Manual de reparación de la máquina y el manual del operador para conocer cómo operar la máquina y realizar tareas de servicio. De lo contrario, podría sufrir lesiones u ocasionar lesiones a terceros. Todos los implementos con partes móviles son potencialmente peligrosos. No hay manera de sustituir un operador cuidadoso y consciente de la seguridad que reconoce los posibles peligros y adopta prácticas de seguridad razonables. El fabricante ha diseñado este implemento para ser usado con todos sus equipos de seguridad razonables. El fabricante ha diseñado este implemento para minimizar la probabilidad de accidentes.

Este Manual del Operador es una parte esencial de la operación segura de esta máquina y se debe mantener con la misma frecuencia que la máquina. El implemento incluye un porta manual donde se puede guardar el manual de manejo adicional siempre. El implemento se extraña o se guarda, puede solicitar otra copia sin cargo a un distribuidor autorizado de la unidad siemprev. Este Manual del Operador es una parte esencial de la operación segura de esta máquina y se debe mantener con la misma frecuencia que la máquina. El implemento se extraña o se guarda, puede solicitar otra copia sin cargo a un distribuidor autorizado de la unidad siemprev.

