



# RMB 1660

## REAR MOUNTED BOOM MOWER

Published 12/13

Part No. 50068816

## 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

Important Operating and Safety Instructions are found in the Mower Safety Video that can be instantly accessed on the internet at: [www.algqr.com/bve](http://www.algqr.com/bve)



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



BC-0038

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Bush Hog Web Page



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Safety Video



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Operator's & Parts Manuals



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

General Safety



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➤ **BE SAFE!**

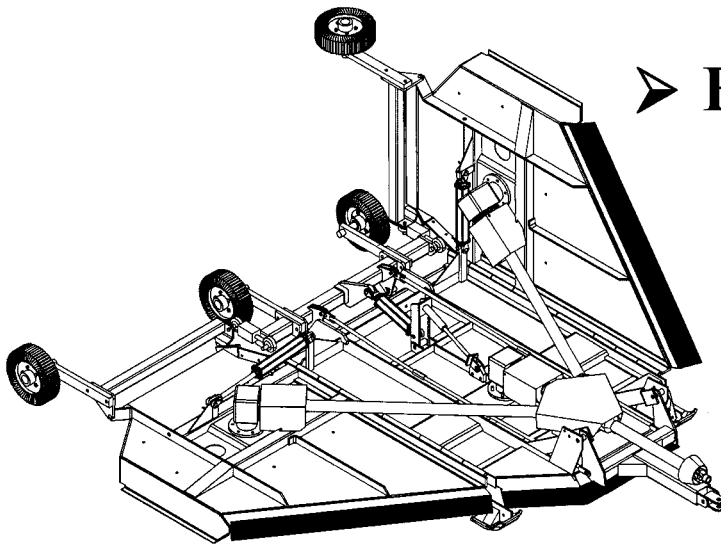
➤ **BE ALERT!**

➤ **BE ALIVE!**

➤ **BE TRAINED**  
**before operating**  
**the Mower!**



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***Safety Training***  
***Makes the Difference***

In order to reduce accidents and enhance the safe operation of mowers, *Bush Hog Division*, 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 email [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 Operator annual 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 or implement 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:

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Or Email to:

AEMVideo@alamo-group.com



## Bush Hog 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. Every effort has been made to ensure that this machine is safe, but operators must avoid engaging in unsafe practices and follow the written instructions provided. 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. Dealer should also inform the Purchaser 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 in safe operation procedures.

- **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 CONNECTIONS

- ☐ 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. Drivelines (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

## 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

### **WARNING**

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 CLEAR** of hot surfaces such as Mufflers, hydraulic pumps, valves and tanks.
- **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.
- Avoid backing up while mowing, vision may be limited, severe damage or injury can occur.
- **DO NOT** run tractor in enclosed building without adequate exhaust ventilation.

#### **GROUND SPEED WHEN MOWING:**

- **NORMAL SPEED** range is between 1 to 2 mph(1-3 kph).
- **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.

#### **TRACTOR and MOWER**

- **DO NOT** operate the tractor or mower unless the equipment is maintained and operating properly.
- **DISCONTINUE OPERATION** if tractor or mower electrical and hydraulic controls do not function properly.
- **DISCONTINUE OPERATION** of the tractor if the braking or steering systems do not function properly.
- **DO NOT** operate the tractor or mower if there are any hydraulic leaks.

#### **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:**

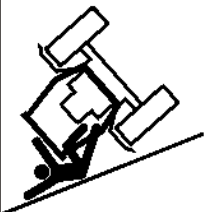
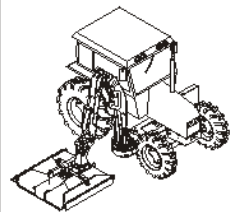

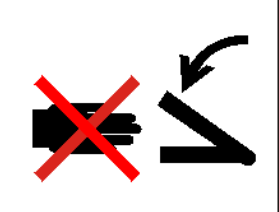

- **REPLACE** missing, damaged or unreadable safety signs immediately. **PN OSBM-01**



# SAFETY

## SAFETY

### CRUSHING HAZARDS

				
Crushing injury from roll over	Use Cab Tractor With Boom Mowers	Always wear seatbelt	Pinch Point Hazard Keep Hands and body parts clear of pinch points	Crushing injury from boom or mower head 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 BOOM MOWER:

- Raise or lower **ONLY WHILE SEATED** in tractor seat with seat belt buckled.
- **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 boom, components and Mower Head:

- **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 raised boom or mower head until **securely blocked up**.

#### WHEN PARKING Implement and Tractor:

- **LOWER** Mower Head to the ground or **BLOCK** lifted parts before leaving equipment.
- **NEVER** leave implement unattended in a raised position.

#### **⚠ WARNING**

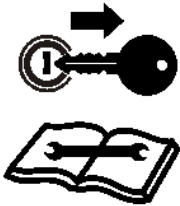


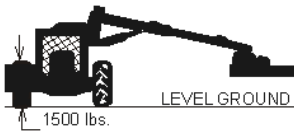
TO AVOID CHILDREN FALLING OFF OR BEING CRUSHED BY EQUIPMENT:

- **NEVER ALLOW** children to play on or around Tractor or Implement.
- **DO NOT** operate without operator CAB or OVERHEAD protection. Falling limbs and debris can cause injuries. **PN CHBM-01**



# SAFETY

## CONNECTING OR DISCONNECTING IMPLEMENT SAFETY

			
Stop Tractor Remove Key Read Manual	Crushing Hazard Do Not get under boom when connecting mower head to boom	Stability Hazard Ensure 20% of tractor weight is on front wheels	Stability Hazard Ensure 1500lbs down force on left tire with boom extended



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

**WHEN connecting mower head to the boom:**

- **KEEP BYSTANDERS AWAY** from tractor and mower.
- Ensure there is enough room to lift and swing the boom with out hitting objects

**BEFORE connecting and disconnecting the mower head or boom:**

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

**WHEN connecting and disconnecting the mower head or boom:**

- **DO NOT** crawl or walk under raised mower head or boom. (*Refer to Instructions in Operation Section*)

**WHEN CONNECTING IMPLEMENT DRIVELINE:(If equipped)**

**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.

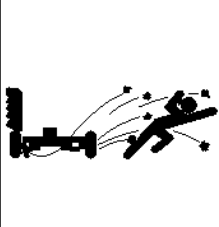

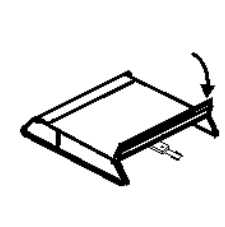

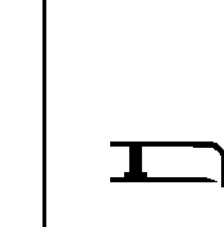
**CONTACT DEALER if implement driveline does not match Tractor PTO shaft:**

- **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. **PN CDBM-01**



# SAFETY

## THROWN OBJECTS HAZARDS

				
Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Keep mower door closed when traffic comes within 300 feet	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 is close and parallel to ground without exposing blades.
- **MOWING AREA** has been inspected and foreign materials and debris have been removed.
- **DO NOT** shred or mow loose or previously cut material if BYSTANDERS are within 300 feet.
- **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.

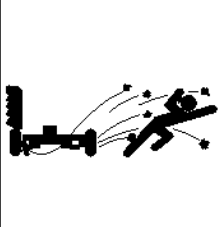

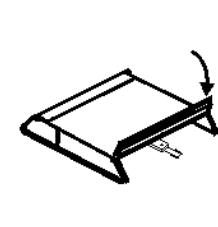

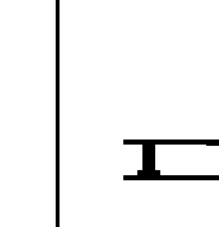
### RIGHT OF WAY (Highway) MOWING

- Stop mowing if any bystander comes 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 TOBM-01*



# SAFETY

## THROWN OBJECTS HAZARDS (Continued)

				
Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Keep mower door closed when traffic comes within 300 feet	Inspect Area remove foreign objects	Do not let blades contact solid objects

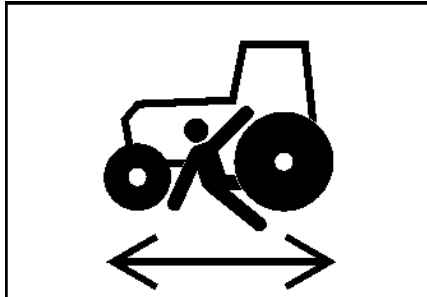
### MOWER OPERATION:

- **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 head 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.
- **CLOSE** Mower door and stop operating if bystanders come within 300 feet of the mower.
- Keep mower door closed when cutting close to the ground.
- Open door only to cut large brush or tree limbs. Close door immediately after cutting limb.
- **DO NOT** push mower head down onto material to cut it, use the front tips of the mower blades to cut into the material.
- **DO NOT** operate mower when mower is 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.
- **DISENGAGE** mower head and wait until **BLADES** stop rotating before raising 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 TOBM-02*

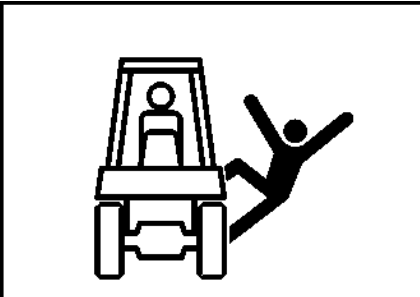


# SAFETY

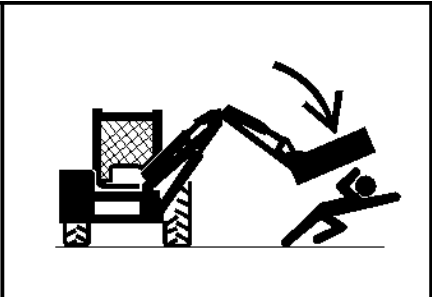
## RUN OVER HAZARDS



Operator run over hazard



Rider fall off run over hazard



Bystander run over hazard



**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 not mowing stow Boom and Mower head in transport location before moving.



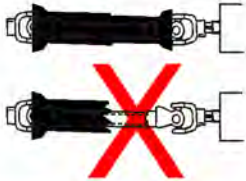
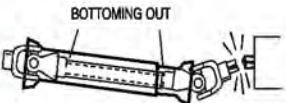
### **WHEN MOUNTING AND DISMOUNTING TRACTOR:**

- **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 ROBM-01*



# 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:




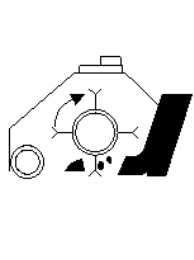
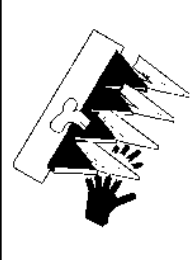
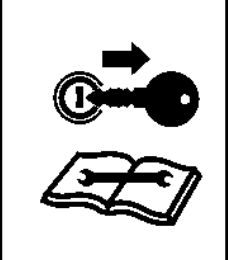
- **DO NOT USE PTO ADAPTER.**

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 PE01**



# SAFETY

## MOWER BLADE CONTACT HAZARDS

					
Do not put fingers underneath mower	Do not put hands underneath Flail Mower	Do not put foot underneath mower	Do not put foot underneath Flail Mower	Shearing Hazard from Sickle blades	Stop Tractor Remove Key Read Manual

### **DANGER**


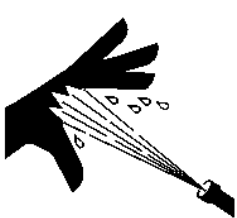


**KEEP AWAY FROM ROTATING BLADES TO AVOID SERIOUS INJURY OR DEATH FROM BLADE CONTACT:**

- **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 mower switch and PTO and wait for blade to stop rotating before raising mower head.
- **DO NOT** approach Sickle Bar head until Tractor Engine has been shut off.
- **STOP LOOK** and **LISTEN** before approaching the mower to make sure all rotating motion has stopped. *PN MBBM-01*



# SAFETY

## HIGH PRESSURE OIL LEAK HAZARD

			
High pressure oil penetrating skin	High pressure oil eroding skin	Using cardboard to check for oil leaks	Tank contents under pressure. Allow oil to cool before slowly removing cap



**TO AVOID SERIOUS INJURY OR DEATH FROM HIGH PRESSURE HYDRAULIC OIL LEAKS PENERATING 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.

**Use caution when removing Hydraulic Tank cap.**

- Tank contents maybe under pressure
- Allow oil to cool before removing cap.
- Relieve oil pressure before removing cap slowly.
- Stay away from hot oil that may spray from tank.

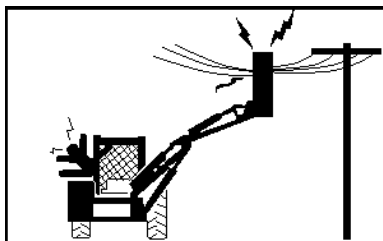
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**SAFETY**



# SAFETY

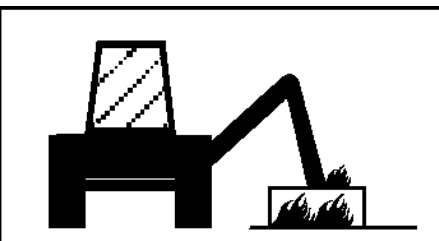
## ELECTRICAL & FIRE HAZARDS



Mower head or Boom contacting overhead electrical lines



Strike and explosion Hazard  
Blades Contacting Utility or Gas Lines



Fire Hazard Do Not operate near fires. Keep debris away from hydraulic pumps and valves



**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.
- **DO NOT** operate if oil is leaking. Repair oil leak and remove all accumulated oil before operating.
- **CLEAR** any grass clippings or debris buildup around mower hydraulic pumps, valves or tanks.
- **SHUT OFF ENGINE** while refueling. *PN EFBM-01*



# SAFETY

## TRANSPORTING HAZARDS

		
Use SMV signs and Flashing Lights	Loss of Control Stopping Hazard	Loss of Control Speeding Hazard

### **WARNING**

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

- **KEEP** transport speed **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:

- Store Boom and Mower in transport positions and engage transport locks if equipped.

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

##### BRAKING TESTS:

- Stopping distance with implement attached may increase
- Observe **STOPPING** distances increases with increased speeds.
- **DETERMINE** the maximum safe transport speed that does not exceed 20 mph.
- Reduce travel speed in wet or icy roads, stopping distances increase.

#### 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:



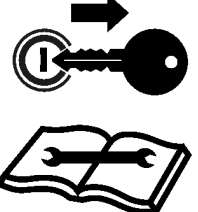

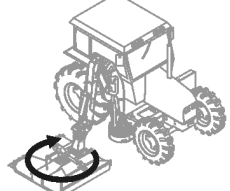
- Always **WEAR SEAT BELT** when operating or transporting mower.
- **USE** low speeds to avoid overturn with raised wings.
- **USE** low speeds and gradual steering on curves, hills, rough or uneven surfaces and on wet roads.
- **TURN ON** tractor **FLASHING WARNING LIGHTS**.
- **ALLOW** clearance for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

**KEEP** raised boom mower 10 feet or greater distance from all power lines and overhead obstructions. PN THBM-01



# SAFETY

## HAZARDS WITH MAINTENANCE OF IMPLEMENT

				
Periodically inspect all moving parts, lubricate drivelines, and tighten all fasteners	Lower mower head to ground or block up before servicing	Stop engine remove key before conducting maintenance	Set mower head securely on the ground before servicing blades	Thrown Objects Hazard Ensure blades rotate clockwise viewed from above mower head

### **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:**

- **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.
- **PUSH** and **PULL** Remote Hydraulic Cylinder lever to relieve hydraulic pressure.
- **DISCONNECT Pump solenoid valve or PTO driveline connection before servicing mower head.**
- **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.
- **FOLLOW INSTRUCTIONS** in maintenance section when replacing hydraulic cylinders to prevent component falling.
- **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.
- Inspect mower blade spindle to ensure bearing preload. If loose repair before operating.
- **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:**

- Inspect blade carrier and blades daily.
- Check blade and blade carrier **BOLT TORQUE** daily. Loose bolts can cause blade or blade bolt failures.
- **REPLACE**, bent, damage, cracked and 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 HMBM-01**



# 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)

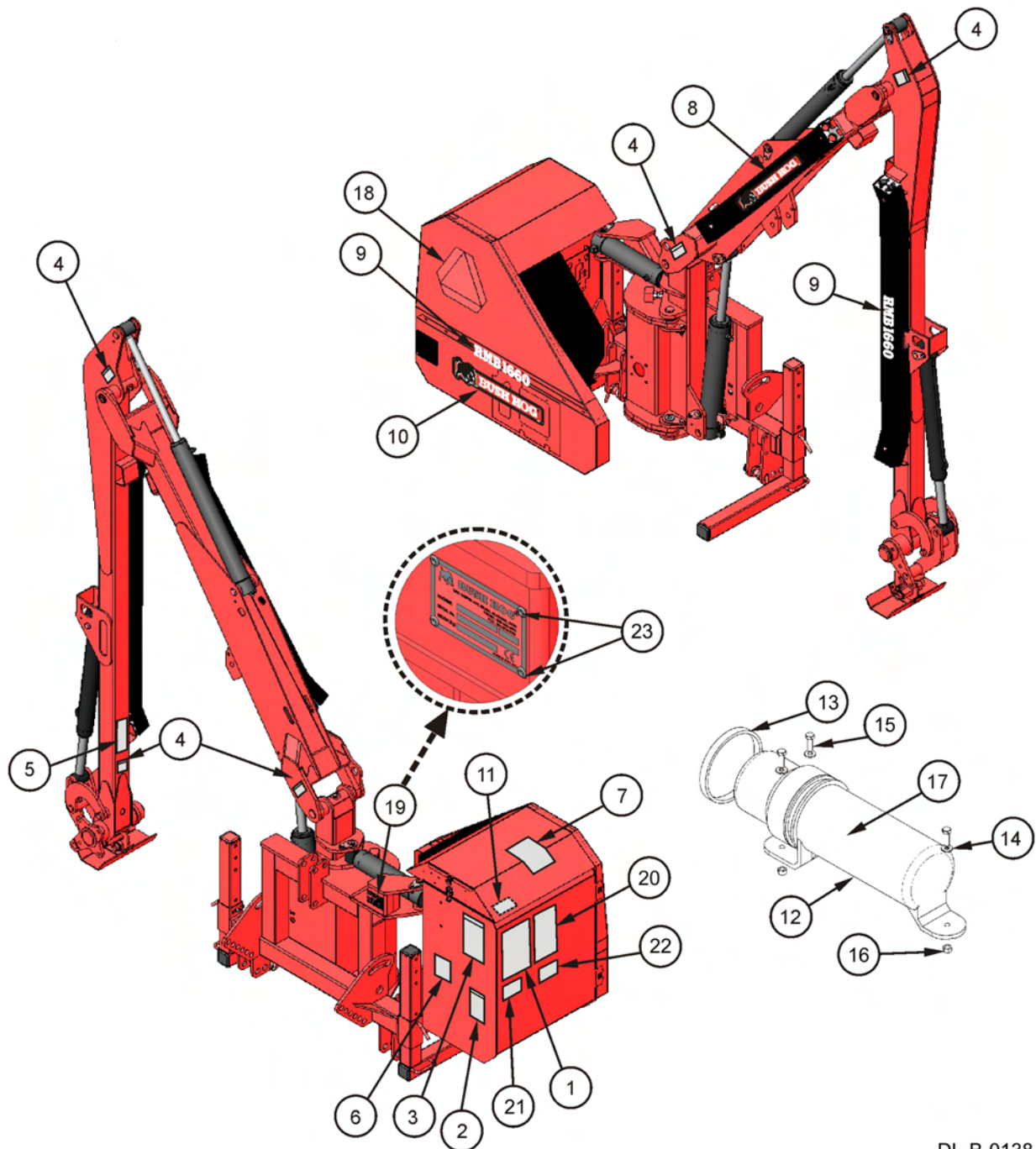
**SAFETY**



# 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.



DL-B-0138



# SAFETY

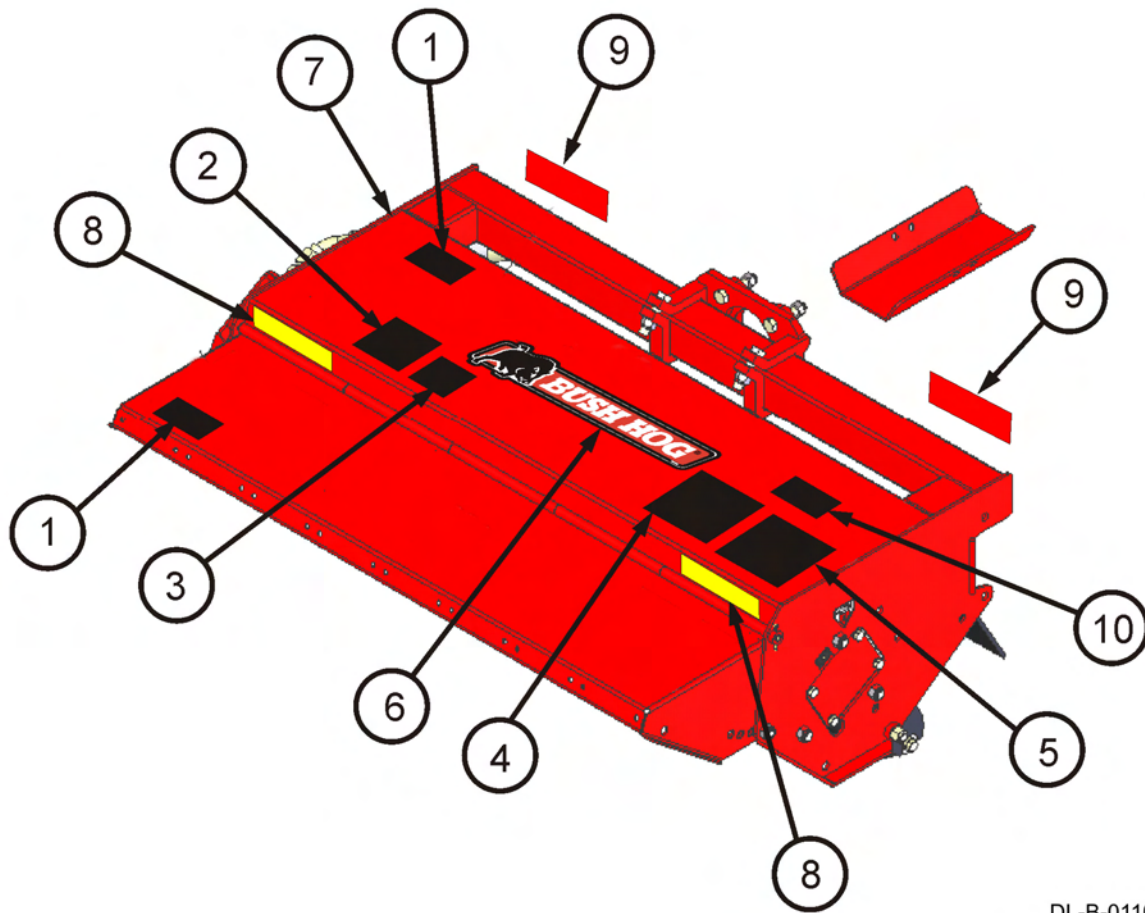
## SAFETY

ITEM	PART NO.	QTY.	TYPE	DESCRIPTION
1.	D823	1	DANGER	Multi-Hazard
2.	D617	1	WARNING	Oil Leaks
3.	D547	1	DANGER	Driveline Hazard
4.	D623	6	WARNING	Pinch Points
5.	D719	1	DANGER	Keep Clear-Automatic Breakaway Return
6.	D716	1	WARNING	Stabilizers in Position
7.	D618	1	WARNING	Boom Multi-Hazard
8.	50065309	4	LOGO	Bush Hog Logo (14.85")
9.	50068740	1	NAME	RMB 1660 Model Name
10.	1290632	1	LOGO	Bush Hog Logo (22")
11.	D625	1	WARNING	Pressurized Tank
12.	46505.01	1	_____	Canister (Operator's Manual Inside)
13.	46503.01	1	_____	Seal
14.	9100103	3	_____	Flatwasher
15.	9313043	3	_____	Bolt
16.	9143003	3	_____	Locknut
17.	50068816C	1	_____	Operator's Manual
18.	83380	1	REFLECT	SMV Sign
19.	NFS	1	SER PLT	Serial Number Plate
20.	D825	1	DANGER	Multi-Language
21.	D723	1	INSTRUCT	Lubrication Chart
22.	D628	1	DANGER	Crushing Hazard & Pinch Points
23.	10069088	4	_____	Pop Rivet



# SAFETY

## FLAIL HEAD



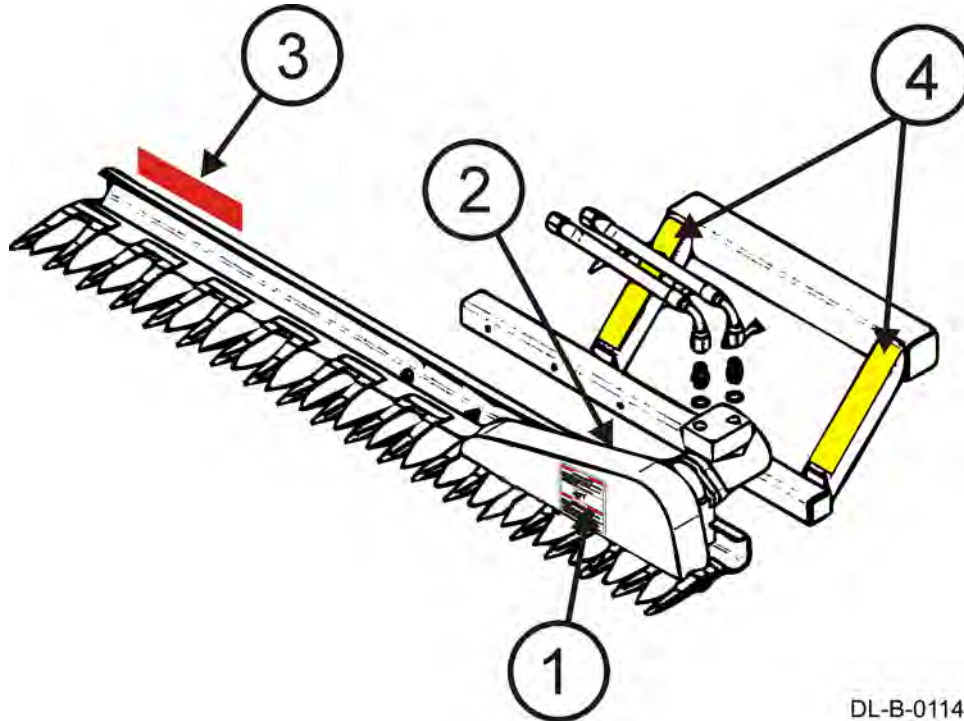
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ITEM	PART NO.	QTY.	LEVEL	DESCRIPTION
1.	D626	2	DANGER	Maintain Deflectors in good condition
2.	D720	1	WARNING	Blade Bolt Torque
3.	D724	1	INSTRUCT	Lubrication Chart
4.	D559	1	WARNING	Bush Hog Genuine Parts
5.	D717	1	DANGER	Thrown Objects Hazard
6.	50061049	1	LOGO	Bush Hog Logo
7.	NFS	1	SER PLT	Serial Number Plate
8.	1458393	2	REFLECTOR	Yellow Reflector
9.	1458392	1	REFLECTOR	Red Reflector
10.	D649	1	DANGER	Thrown Object Hazard



## SAFETY

### SICKLE BAR



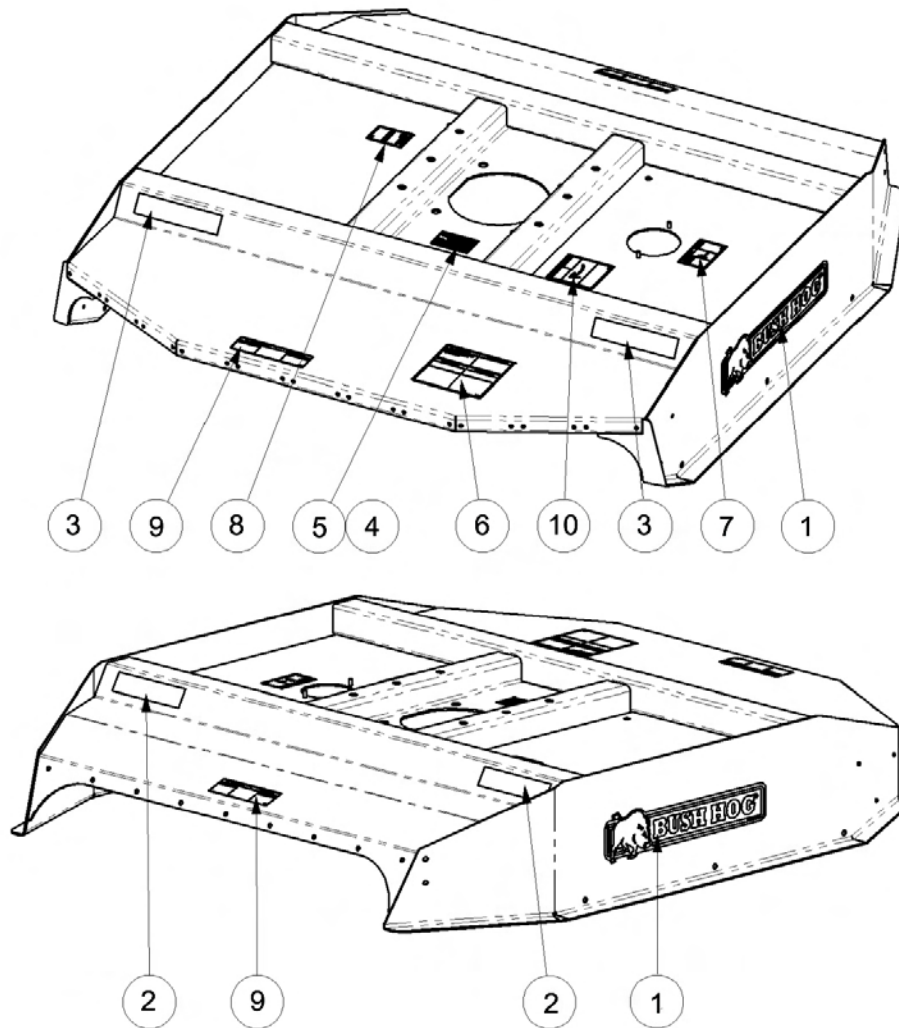
SAFETY

ITEM	PART NO.	QTY.	LEVEL	DESCRIPTION
1.	D731	1	DANGER	Sharp Blades
2.	nfs	1	SERIAL PLATE	Serial Number Plate
3.	1458392	1	REFLECT	Red Reflector
4.	1458393	2	REFLECT	Yellow Reflector



# SAFETY

## ROTARY HEAD

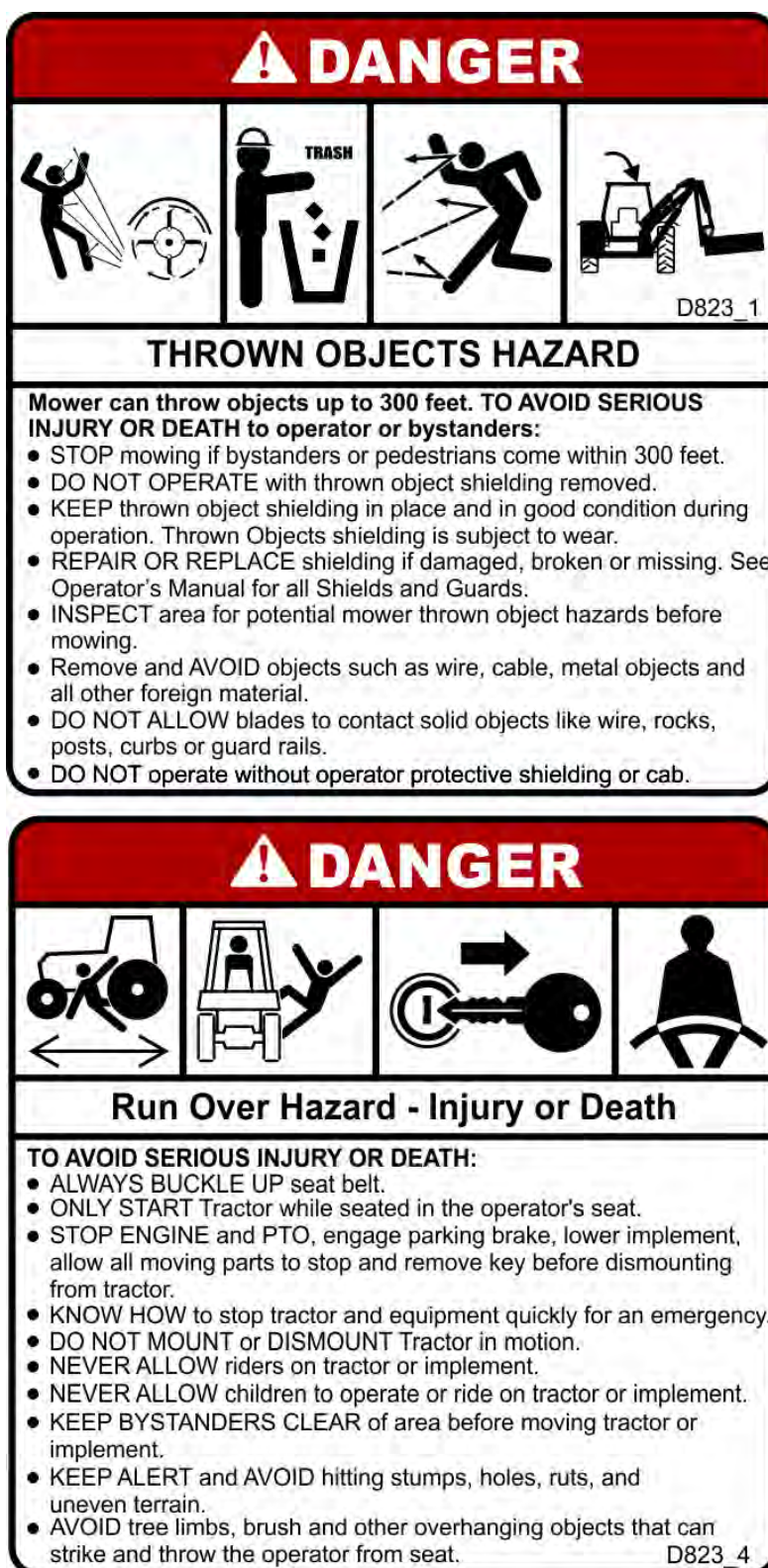


ITEM	PART NO.	QTY.	LEVEL	DESCRIPTION
1.	50061049	2	LOGO	Bush Hog
2.	1458392	2	REFLECT	Red Reflector
3.	1458393	2	REFLECT	Yellow Reflector
4.	nfs	4	SERIAL RIVET	Rivets
5.	nfs	1	SERIAL PLATE	Serial Number Plate
6.	D559	1	WARNING	Use Bush Hog Genuine Parts
7.	D620	1	WARNING	Blade Torque
8.	D621	1	IMPORTANT	Lube Spindle
9.	D626	2	DANGER	Thrown Object Hazard
10.	D619	1	WARNING	Blade Rotation



# SAFETY



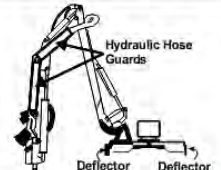
## Decal Description





# SAFETY

## SAFETY

<b>⚠ DANGER</b>	
<b>ENTANGLEMENT HAZARD</b>	
<p><b>TO AVOID SERIOUS INJURY OR DEATH:</b></p> <ul style="list-style-type: none"> <li>• DO NOT operate without guards in place and in good condition. PTO and gearbox guarding are SUBJECT TO WEAR.</li> <li>• 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.</li> <li>• ALWAYS REPLACE GUARDS that have been removed for service or maintenance.</li> <li>• STOP, LOOK and LISTEN for rotating motion before approaching implement.</li> </ul>	  <p style="text-align: right;">D823_2</p>


<b>⚠ DANGER</b>	
<b>Crushing Hazard - Injury or Death</b>	
<p><b>TO AVOID SERIOUS INJURY OR DEATH:</b></p> <ul style="list-style-type: none"> <li>• USE tractor equipped with <u>R</u>ollover <u>P</u>rotective <u>S</u>tructure ("ROPS") including roll bar and seat belt. Keep roll bar in raised position.</li> <li>• CLEAR AREA of bystanders before raising or lowering mower.</li> <li>• IMPLEMENT CAN FALL from hydraulic failure or accidental operation of controls.</li> <li>• BLOCK UP and securely support equipment before putting hands, feet or body under raised equipment or lifted components.</li> </ul>	  <p style="text-align: right;">D823_3</p>

<b>⚠ DANGER</b>			
			
D823_5	<a href="http://www.algqr.com/bbe">www.algqr.com/bbe</a>		
<p><b>TO AVOID SERIOUS INJURY OR DEATH:</b></p> <ul style="list-style-type: none"> <li>• READ AND UNDERSTAND the provided Operator's Manuals, safety signs and information decals for tractor and implement before operating equipment.</li> <li>• CONTACT DEALER immediately if you do not have manuals.</li> <li>• CONTACT DEALER to explain any instructions not fully understood.</li> <li>• ALWAYS WEAR safety glasses.</li> <li>• WEAR hard hat, safety shoes and gloves for protection when operating equipment.</li> </ul> <p style="text-align: right;">D823</p>			



## 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.

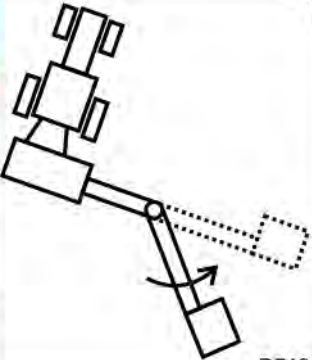
**HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE. WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:**

- 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.

D617

**⚠ DANGER**

**KEEP AWAY**  
**AUTOMATIC BREAKAWAY**  
**RETURN**  
**Keep clear of the front of the arm and head.**




D719



# 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

**⚠ WARNING**

**PINCH POINTS**

D623





# SAFETY

**⚠ WARNING**

**TO AVOID INJURY OR EQUIPMENT DAMAGE:**

- Make certain stabilizers and sway blocks are positioned to stabilize boom and prevent sideways motion.




**⚠ WARNING**





**TO AVOID SERIOUS INJURY AND DEATH DURING TRANSPORTATION:**

- ALWAYS BUCKLE UP seat belt.
- PLACE boom securely in Transport Rest and turn off master switch.
- CHECK SMV sign, reflectors and warning lights for visibility behind unit.
- TURN ON tractor flashing warning lights.

**TO AVOID LOSS OF TRANSPORTATION CONTROL:**

- DO NOT travel at speeds over 20 mph.
- REDUCE SPEED on inclines, in turn and in poor weather conditions.

D618\_1

**⚠ WARNING**




**TO AVOID SERIOUS INJURY AND DEATH DURING OPERATION:**

- DO NOT lift implement while on steep slopes.
- KEEP AWAY from soft ditch banks and holes.
- ALWAYS MAINTAIN 1500 pounds of contact between wheels and surface. Widen wheel tread or add weight if needed. (see Operator's Manual)
- ALWAYS MAINTAIN 20% of tractor weight on front wheels.
- DO NOT start or accelerate suddenly.
- KEEP mower AT LEAST 10 FEET AWAY from electric lines and pipe lines.

D618\_2




**⚠ WARNING**

**TO AVOID EQUIPMENT AND GRASS FIRES:**

- CLEAR AWAY grass or debris from hydraulic lines, circuits and decks.

**TO AVOID FIRE IGNITION:**

- DO NOT ALLOW BLADES TO CONTACT rocks, metal or solid objects.
- DO NOT ALLOW OIL TO SPRAY on hot equipment or components.

D618

D618\_3





# SAFETY

## SAFETY

**⚠ WARNING**

**PRESSURIZED TANK**  
OIL FILLER CAP IS  
PRESSURE RELIEF CAP

**TO AVOID SERIOUS INJURY AND DEATH FROM HOT OIL:**

- STAY AWAY from hot oil that may spray out of tank.
- ALLOW oil to cool down BEFORE removing cap .
- SLOWLY remove cap to relieve pressure BEFORE removing completely.



D625

**⚠ DANGER**

**CRUSHING HAZARD AND PINCH POINTS**



**TO AVOID SERIOUS INJURY OR DEATH:**

- KEEP AWAY from moving machinery parts that can pinch, crush or fall.

D628

**⚠ DANGER**

**THROWN OBJECTS HAZARD**

**Mower can throw objects up to 300 feet. TO AVOID SERIOUS INJURY OR DEATH to operator or bystanders:**

- DO NOT operate with Shield removed.
- KEEP Shield in place and in good condition during operation.



D649



# SAFETY


SAFETY


<p><b>! PELIGRO</b></p>	<p><b>! DANGER</b></p>
<p>Si no puede leer inglés: antes de poner en funcionamiento este equipo, solicite que alguien le traduzca los mensajes de seguridad o vaya al sitio web para consultar los mensajes de seguridad y las etiquetas ya traducidos.</p>	<p>Si vous ne savez pas lire le français: avant d'utiliser l'équipement, demandez à une personne de vous traduire les messages de sécurité ou allez sur le site Internet pour voir la traduction des autocollants et des messages de sécurité.</p>
<p>El Manual del Operador Seguridad vídeo</p> <div data-bbox="358 768 532 894"> </div> <div data-bbox="558 753 711 905"> </div> <div data-bbox="737 753 889 905"> </div> <p><a href="http://www.algqr.com/bbs">www.algqr.com/bbs</a>   <a href="http://www.algqr.com/avs">www.algqr.com/avs</a></p>	<p>Manuel de l'Opérateur</p> <div data-bbox="932 768 1105 894"> </div> <div data-bbox="1131 753 1284 905"> </div> <p><a href="http://www.algqr.com/bbf">www.algqr.com/bbf</a></p>
<p><b>! PERIGO</b></p>	<p><b>! GEFAHR</b></p>
<p>Caso você não leia inglês: antes de operar o equipamento, peça para alguém traduzir as mensagens de segurança ou visite a web e obtenha tais mensagens ou os decalques traduzidos.</p>	<p>Falls Sie Deutsch nicht lesen können: Lassen Sie sich, bevor Sie das Gerät in Betrieb nehmen, die Sicherheitshinweise von einer geeigneten Person in Ihre Sprache übersetzen. Oder suchen Sie auf unserer Website nach Übersetzungen von Schilderaufschriften und Sicherheitshinweisen.</p>
<p>Manual do Operador</p> <div data-bbox="371 1377 545 1503"> </div> <div data-bbox="578 1362 729 1514"> </div> <p><a href="http://www.algqr.com/bbp">www.algqr.com/bbp</a></p>	<p>Benutzerhandbuch</p> <div data-bbox="812 1377 985 1503"> </div> <div data-bbox="1034 1362 1185 1514"> </div> <p><a href="http://www.algqr.com/bbg">www.algqr.com/bbg</a> D825</p>

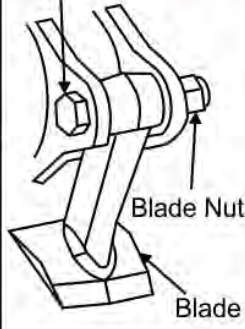


# SAFETY

## SAFETY

<b>⚠ DANGER</b>	
<b>THROWN OBJECT HAZARD</b>	
<p><b>TO AVOID SERIOUS INJURY OR DEATH:</b> DO NOT OPERATE if Thrown Object Shielding is damaged or missing.</p> <ul style="list-style-type: none"> <li>• Maintain Rubber Deflectors in good condition.</li> <li>• Inspect Rubber Deflectors frequently.</li> </ul> <p>MAINTAIN Thrown Object Shielding</p> <p>↙ HERE ↘</p>	 <p>D626</p>  <p>Rubber Deflector</p>  <p>Chain Guards</p>

<b>⚠ DANGER</b>	
<b>AMPUTATION HAZARD</b>	
 <p>D731</p>	<p><b>TO AVOID SERIOUS INJURY FROM BLADE CONTACT:</b></p> <ul style="list-style-type: none"> <li>• Keep away until all motion has stopped.</li> <li>• Keep fingers clear of cutterbar when folding cutterbar into transport position.</li> <li>• KEEP all persons AWAY from sickle blades.</li> </ul>

<b>⚠ WARNING</b>	
<p><b>TO AVOID SERIOUS INJURY OR DEATH FROM BLADE ATTACHMENT FAILURE:</b></p> <ul style="list-style-type: none"> <li>• Check blade bolts DAILY for tightness.</li> <li>• Torque blade bolt to 150 ft lbs.</li> <li>• ALWAYS replace blades with new bolts and nuts.</li> </ul>	<p>Blade Bolt</p> <p>D720</p>  <p>Blade Nut</p> <p>Blade</p>



# SAFETY

## IMPORTANT

- Lubricate spindle every 40 hours of use or weekly.
- With tractor and mower off, inject lubricant into spindle.
- See Operator's Manual for substitute lubricant and detailed instructions.

D621



## WARNING

**Non-genuine parts can fail catastrophically. TO AVOID SERIOUS INJURY OR DEATH:**

- ONLY use genuine Bush Hog replacement parts.
- Non-genuine parts can fail creating hazardous conditions for operator and bystanders.

Contact local dealer or Bush Hog about repair parts at:

2501 Griffin Ave., Selma, AL 36701

Customer Service: 800-363-6096.

Email: [contactus@bushhog.com](mailto:contactus@bushhog.com)



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

D559 1

## IMPORTANT

**BE AWARE  
BE ALERT  
BE ALIVE**

**BE TRAINED**

**Before Operating this Mower**

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 ([www.aem.org](http://www.aem.org)), FEMA (314-878-2304, [www.FarmEquip.org](http://www.FarmEquip.org)), or Alamo Group ([www.Alamo-Group.com](http://www.Alamo-Group.com)) for information on training material or courses that provide training in Safer Operating Practices for Mowers. D559 2

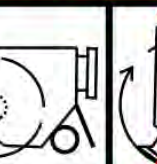
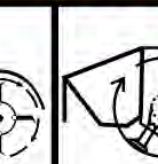


[www.algqr.com/bve](http://www.algqr.com/bve)

D559



## DANGER



### THROWN OBJECTS HAZARD

**Mower can throw objects up to 300 feet. TO AVOID SERIOUS INJURY OR DEATH to operator or bystanders:**

- CLOSE MOWER DOOR and STOP operating if bystanders or traffic come within 300 feet.
- KEEP door fully closed when cutting grass and weeds.
- OPEN door ONLY to cut large brush. Keep door closed for all other mowing conditions.
- Deflectors are SUBJECT TO WEAR. Replace if worn or damaged.
- DO NOT OPERATE with door removed.
- ALWAYS transport with door closed.

**IF MOWER DOOR IS OPEN:**

- DO NOT OPERATE if blades are rotating in reverse rotation (opposite to the tractor tires during forward travel).

D717

SAFETY



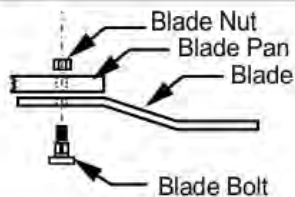
# SAFETY

## 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.



D620

### **⚠ WARNING**

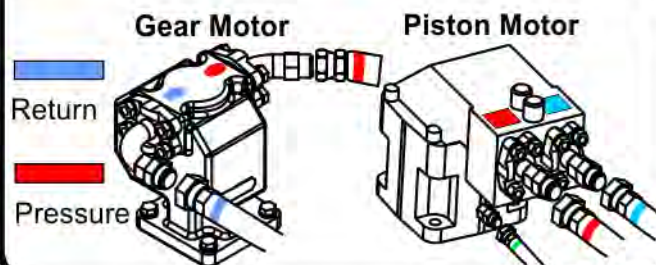
**TO AVOID SERIOUS INJURY AND DEATH FROM THROWN OBJECTS:**

- MAKE CERTAIN blades rotate the correct direction.

### **BLADE ROTATION**



D619





# 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

## INTRODUCTION

This Boom Mower is designed with care and built with quality materials by skilled workers. Proper assembly, maintenance, and operating practices, as described in this manual, will help the owner/operator get years of satisfactory service from the machine.

The purpose of this manual is to familiarize and instruct. The Assembly Section instructs the owner/operator in the correct assembly of the Mower using standard and optional equipment. The Parts Listing section is designed to familiarize the owner/operator with replaceable parts on the Mower. This section provides exploded assembly drawings of each mower component illustrating each piece and the corresponding part number.

Careful use and timely service saves extensive repairs and costly downtime losses. The Operation and Maintenance Sections of the manual train the owner/operator how to work the Mower correctly and attend to appropriate maintenance. The Troubleshooting Guide helps diagnose difficulties with mower and offers solution to the problems.

Safety is of primary importance to the owner/operator and to the manufacturer. 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. Many of the Safety Messages will be repeated throughout the manual. The owner/operator/dealer should know these Safety Messages before assembly and be aware of the hazards of operating this mower 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.



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.

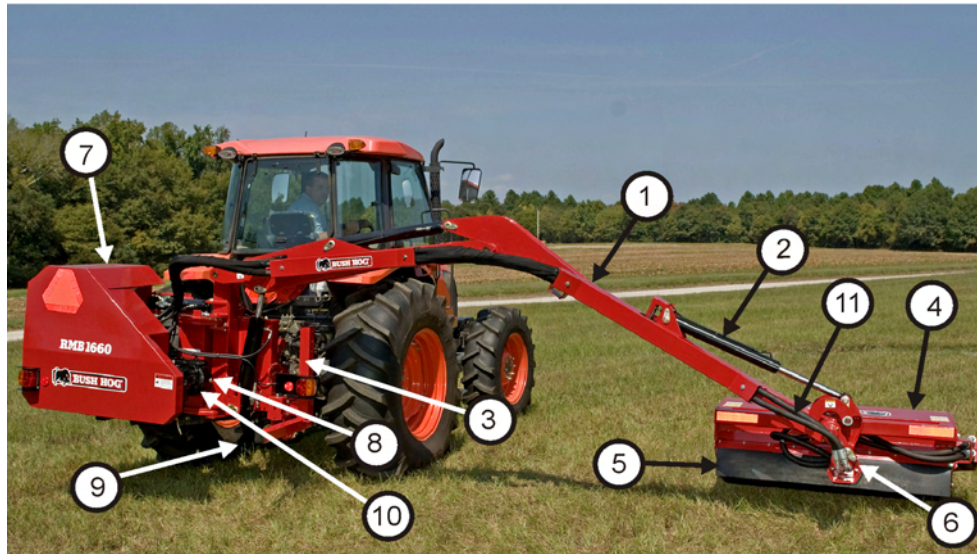


Identifies special instructions or procedures that, if not strictly observed, could result in damage to, or destruction of the machine, attachments or the environment.

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



# INTRODUCTION



- 1 Boom Arm
- 2 Boom Arm Cylinders
- 3 Frame
- 4 Flail Head
- 5 Rubber Deflector
- 6 Motor
- 7 Hydraulic Tank
- 8 Gearbox
- 9 Driveline
- 10 Pump
- 11 Hydraulic Hose

INTR-B-0011

Flail Head Shown

INTRODUCTION

These hydraulically driven hedge cutters are designed for light-duty work. They can control grass and weeds on highways or industrial sites.

Literature Page



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

## Features

Boom Reach (with flail) - 16'-5".

Minimum Tractor Requirement - 60 PTO HP

Parallel arm geometry allows reach adjustment without requiring constant height adjustment.

Totally independent hydraulics with dual rotor rotation for upward or downward cutting.

Hydraulic break-away safety mechanism

Simple cable controlled in-cab controls.

"Wire Trap" system is included on each flail head to keep loose wires from rotor entanglement.

Flail head includes adjustable front guard for protection from thrown objects.

## POWER ARM ATTACHMENTS

Flail Mower

Sickle Bar Mower

Rotary Mower

## DIRECTION

Throughout this Manual front and rear, left and right are determined by the normal direction of travel, the same as driving an automobile.



# INTRODUCTION

## INTRODUCTION

### ATTENTION OWNER/ OPERATOR

BEFORE OPERATING THIS MACHINE:

1. Carefully read the Operator's Manual, completely understand the Safety Messages and instructions, and know how to operate correctly both the Mower and Power Unit.
2. Fill out the Warranty Card in full. Be sure to answer all questions, including the Serial Number of the Mower. Mail promptly using the return envelope included with the Operator's Manual.

**NOTE:** Warranties are honored only if completed "Owner Registration and Warranty" forms are received by Alamo Group within thirty days of delivery of the mower.

3. Record the Mower Model and Serial Numbers on the Warranty page at the end of the Operator's Manual. Keep this as part of the permanent maintenance file for the Mower.

**WARNING**

**Non-genuine parts can fail catastrophically.  
TO AVOID SERIOUS INJURY OR DEATH:**

- ONLY use genuine Bush Hog replacement parts.
- Non-genuine parts can fail creating hazardous conditions for operator and bystanders.

Contact local dealer or Bush Hog about repair parts at:  
2501 Griffin Ave., Selma, AL 36701  
Customer Service: 800-363-6096.  
Email: [contactus@bushhog.com](mailto:contactus@bushhog.com) [www.algqr.com/bpm](http://www.algqr.com/bpm)




D559 1

**IMPORTANT**

**BE AWARE  
BE ALERT  
BE ALIVE**

**BE TRAINED  
Before Operating this Mower**



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 ([www.aem.org](http://www.aem.org)), FEMA (314-878-2304, [www.FarmEquip.org](http://www.FarmEquip.org)), or Alamo Group ([www.Alamo-Group.com](http://www.Alamo-Group.com)) for information on training material or courses that provide training in Safer Operating Practices for Mowers.

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

D559 2 D559



# INTRODUCTION

## LIMITED WARRANTY



Bush Hog warrants to the original purchaser of any new Bush Hog equipment, purchased from an authorized Bush Hog dealer, that the equipment be free from defects in material and workmanship for a period of one (1) year for non-commercial, state and municipalities' use and ninety (90) days for commercial use from date of retail sale. The obligation of Bush Hog to the purchaser under this warranty is limited to the repair or replacement of defective parts.

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

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.



Record the model number, serial number and date purchased. This information will be helpful to your dealer if parts or service are required.

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

## TRACTOR SELECTION

### MINIMUM TRACTOR WEIGHTS - including ballast weight if necessary:

All models – 6,600 lbs.

### MINIMUM HP REQUIREMENTS: All models – 60 PTO HP

### LINKAGE:

Category 2

### P.T.O. SHAFT:

Tractor must be equipped with a live drive PTO to enable forward motion to be stopped while the flail head continues to operate.

### CHECK CHAINS/STABILIZERS:

Check chains or stabilizers must be fitted and tightened.

### TRACTOR OPERATOR STATION:

Bush Hog recommends installing the 1660 Boom Mower on fully enclosed cab tractors equipped with impact resistant glass windows. Do Not Operate if Tractor Cab is damaged.





# ASSEMBLY

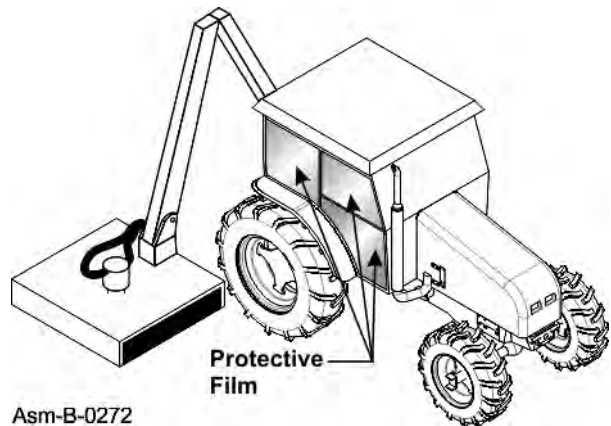
## TRACTOR PREPARATION

### Installation Instructions: Window and Door Protective Film



The protective film (Provided in the Film Kit that came with your rotary head) must be installed before operating the boom mower. This protective film will provide added protection from mower thrown objects. Read instructions in operator's manual on mower thrown objects before operating the boom mower. DO NOT install or operate the boom mower unless the Tractor has a ROPS rated CAB and the windows and structure are in proper working condition.

Install the Protective film on inside glass of right hand tractor cab door (& window if applicable) which is between the Boom Mower Head and the operator when the mower is extended to the right side of the tractor in the cutting position.



### Prepare the film for mounting

Precut the protective film to size to fit the inside door or window. Apply the film to door or window with liner on film and trim film to proper size of door or window. If your Tractor Cab has a door with obstructions (door latches, door handles) it may be easier to trim the film on the outside of the Tractor Cab. To ensure that the film is properly cut to adhere to the inside door and window you must ensure that the film is oriented correctly. If trimming from the outside of the Tractor Cab, the adhesive side should be facing you. To check this apply a small piece of masking tape to both sides of the film and slowly pull the two pieces of tape apart. If trimming film from the inside of the Tractor Cab, the adhesive part of the film should be facing away from you.

### Preparation of mounting solution

- Use baby shampoo and distilled water (mounting solution) for several reasons. First, better visual clarity is achieved after dry out period. The second is it eases the application and accelerates evaporation of the mounting solution (dry out time).
- Clean the inside surface of the cab door and window with the mounting solution.
- Once the window and surrounding frame has been thoroughly cleaned and dried you are ready to mount the film. When you are removing the liner, spray the adhesive side of the film with enough mounting solution to work the film, leaving no dry spots. Repeat this procedure on the glass surface. After spraying both surfaces, you now can position the film properly on the glass.

### Wetting the film surface for squeegeeing

- Spray the film surface so you can squeegee the film to the glass surface leaving no dry spots so squeegee will glide smoothly over the film. Only use enough mounting solution to accomplish this task.

### SQUEEGEEING TECHNIQUE

This part of your installation is the most important in achieving proper results. Use both hands and use your body as leverage to your advantage. Each pass should overlap the previous pass by 50%. Angle the squeegee blade slightly away from the previous pass. This is similar to a tractor blade when grading a dirt road. Use slow strokes, applying good pressure to push the mounting solution out. Squeegee blade should be 45 degrees from glass surface.



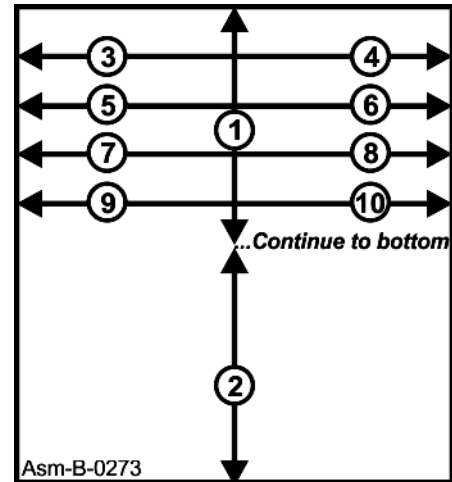
# ASSEMBLY

## ASSEMBLY

### **STEP #1 FIRST SQUEEGEE PASS**

**NOTE:** Please read all instructions thoroughly before starting the procedure of applying film to window surface.

Spray the surface of the film with the mounting solution. Start at the center of the film and follow squeegee directions 1 and 2, squeegeeing horizontally (sideways) as displayed in **Figure Asm-B-0273**. Hold the film in place with your free hand as you proceed with your first squeegee stroke. This will keep the film from moving around on the glass. Following squeegee directions 1 & 2 will vertically divide the window into left and right halves and set the film in place on the glass. Complete pass 3 & 4 and if not already done, trim film along top of window now. Make sure you thoroughly squeegee and tack film to glass completely across top with pass 3 & 4. After doing this, wipe excess mounting solution from top frame and gasket area to avoid solution from running down between glass and film. Continue passes as until you completely squeegee film surface. If film is not exactly pre-cut to fit, trim sides and bottom at this time.



**NOTE:** Use steady, consistent extreme pressure and very slow strokes on the first pass to avoid doing a second pass. Drive the mounting solution out from between film and glass.

This is very important! This thick safety film can absorb some of your squeegee pressure, therefore not allowing adequate pressure to be applied to adhesive. If you perform this step properly, a second pass will not be needed. If pressure is greater on a second pass, champagne bubbles can occur. If champagne bubbles do occur during second squeegee pass, stop and restart installing safety film with one pass.

### **STEP #2 SECOND SQUEEGEE PASS**

Spray the surface of the film. Repeat the above squeegee pass using the same pattern shown in **Figure Asm-B-0273**. This time making sure you have left no trapped water/air pockets and squeegee all excess mounting solution out from between the film and glass surface. Step back a foot or two and inspect your work from straight on and from an angle. Make sure all excess mounting solution has been removed.

### **STEP #3 DRY SQUEEGEE PASS**

Use two layers of a paper towel wrapped around the edge. Start from an upper corner, using short strokes approximately six to eight inches long, push any trapped, excess mounting solution out from between film and glass, working from approximately 6 inches away from edge to frame. Repeat this procedure and continue around the perimeter of the window.

### **STEP#4 FINAL INSPECTION OF WATER POCKETS**

Step back a few feet and inspect the installed safety film from a straight on view and from an angle. You should not have any water pockets. If you do work them out with the squeegee.

Upon completing your installation it is recommended to clean the surface of the recently installed film by using a window film cleaner or simply spray the interior surface with your mounting solution and lightly squeegee off the surface and dry the edges with a paper towel. This will leave your window surface clear and clean of any streaks or residue of water and soap that were used in the installation process. Presenting your installation to your customer in this manner will enable them to see through the recently treated window clearly.

### **STEP#5 APPLYING STRUCTURE SEALANT TO FILM & FRAME**

After final inspection of verifying that there is no water pockets or air bubbles. Start applying the Structural Silicone Sealant (**GE SCS2000 SilPruf**) that came with your film kit to edges of frame and film. This will anchor the film to the window and door frame.

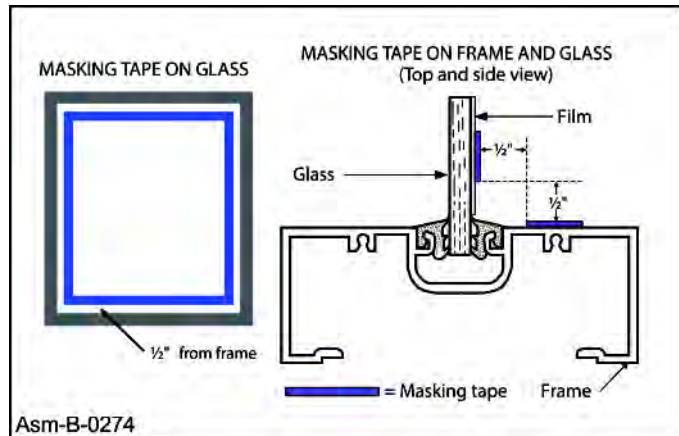
Follow the instructions below on how to apply Structural Silicone Sealant below:



# ASSEMBLY

## Preparation for Sealant Installation

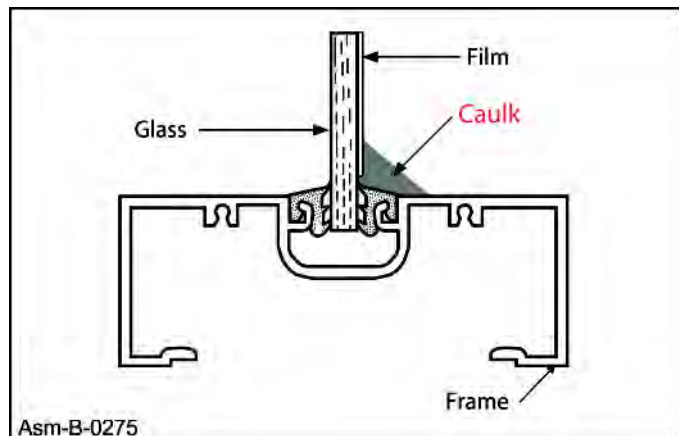
- The best way to clean the frames is to use 90% or higher isopropyl alcohol with a lint free towel. Simply wipe the frames and immediately wipe dry with a dry lint free towel. Stubborn stains may require some rubbing to remove. Make sure frames are dry prior to installing sealant.
- Mask area to be caulked. Using a good grade of painter's masking tape, mask around the entire perimeter of the filmed glass and the frame. Masking tape should be a minimum of 1 to 1 1/2" in width to provide adequate protection. For best protection, you should mask the film a minimum of 1/2" away from the frame and 1/2" away from glass.



## Application of Sealant

- Dry the filmed glass and framing members:** Using a dry towel, make certain that all the surfaces where you need to apply sealant are dry to the touch. Any residual water will negatively affect the sealant's ability to bond to the surfaces.
- Preparing the caulking gun:** The tip of the caulking gun should be cut to allow the correct amount of sealant to be discharged from the gun. If you are sealing with a 1/2" coverage on the film and the frame, the opening should be 3/4" to 1" in diameter. If you are sealing with a 1/4" coverage on the film and the frame, the opening should be 1/2" to 3/4" in diameter. Make certain to use drop cloths in any areas where the sealant could possibly drip
- Applying the sealant:** Place the tip of the caulking gun in the center of the channel formed by the masking tape and apply the sealant. Do this in as continuous a manner as possible avoiding stops and starts and go around the entire perimeter of the window. Make certain that sealant is completely filling the cavity between the frame and the glass.
- "Tooling" the sealant: Smooth or 'tool' the sealant bead with a flat plastic putty knife or spatula to create a flat triangular bead when finished (see illustration Asm-B-0275). This should be done immediately after application of the sealant. The tool should be wide enough to cover the width of the bead but not so wide as to bridge it.

Once the entire perimeter is tooled, the masking tape can be removed. This should be done as soon as tooling is completed so the excess sealant will come away cleanly. Use every precaution when removing the tape since the excess sealant might come into contact with surroundings. Any residual sealant can be wiped away with a dry towel if done quickly. If not, then Xylene can be used to clean away the sealant that the towel could not remove.





# ASSEMBLY

## ASSEMBLY

### **Wheel Width:**

Set wheel widths as wide as possible.

Lift Links: Adjust lift links until they are equal length.

Tractor Ballast: It is imperative when attaching 'third-party' equipment to a tractor that the maximum possible stability of the machine and tractor combination is achieved – this can be accomplished by the utilization of 'ballast' in order to counter-balance the additional equipment added.

Front weights may be required to place 20% of total outfit weight on the front axle for stable transport on the road and to reduce 'crabbing' due to the drag of the cutting unit when working on the ground.

Rear weights may be required to maintain a reasonable amount of rear axle load on the opposite wheel from the arms when in work; for normal off-ground work i.e. hedge cutting this should be 20% of rear axle weight or more for adequate control, and for ground work i.e. grass mowing with experienced operators, this can be reduced to 10%. All factors must be addressed in order to match the type and nature of the equipment added to the circumstances under which it will be used. The center of gravity on a Bush Hog 1660 Boom Mower will constantly change as the boom or cutting attachment moves. Maintaining proper balance during operation and transport is critical.

### **Factors that affect stability:**

- Center of gravity of the tractor/machine combination.
- Geometric conditions, e.g. position of the cutting head and ballast.
- Weight, track width and wheelbase of the tractor.
- Acceleration, braking, turning and the relative position of the cutting head during these operations.
- Ground conditions, e.g. slope, grip, load capability of the soil/surface.
- Rigidity of implement mounting.

### **Suggestions to increase stability:**

- Increasing rear wheel track; a tractor with a wider wheel track is more stable.
- Ballasting the wheel; it is preferable to use external weights but liquid can be added to around 75% of the tire volume – water with anti-freeze or the heavier Calcium Chloride alternative can be used.
- Addition of weights – care should be taken in selecting the location of the weights to ensure they are added to a position that offers the greatest advantage.
- Front axle locking; a cylinder can be used to 'lock' the front axle in work only – locking the axle moves the 'balance line' and can be used to transfer weight to the front axle from the rear (check with tractor manufacturer).

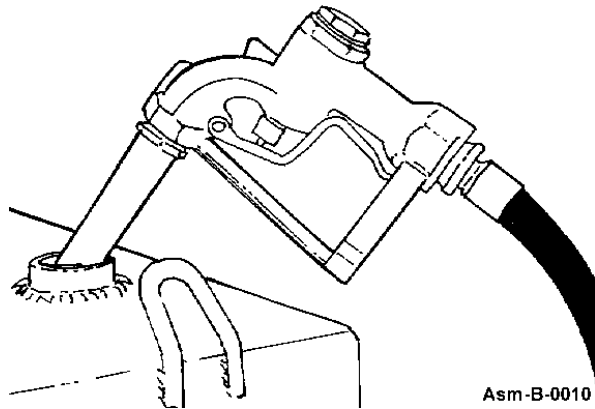
The advice above is offered as a guide for stability only and is not a guide to tractor strength - it is therefore recommended that you consult your tractor manufacturer or local dealer to obtain specific advice on this subject, additionally advice should be sought from a tire specialist with regard to tire pressures and ratings suitable for the type and nature of the machine you intend to fit.



# ASSEMBLY

## DEALER SETUP INSTRUCTIONS

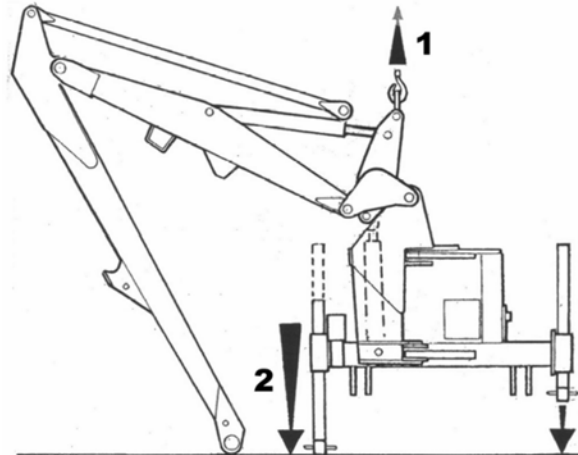
1. The machine will be delivered in a partially dismantled condition, secured with transport strap and banding.
2. Choose a firm level site.
3. Remove the transport strap, banding straps and loose items.
4. The machine is delivered from the factory filled with oil. Check the oil to confirm.



5. Raise the machine using overhead lifting equipment with a minimum capacity of 3307 lbs. LEAVE IN POSITION AT THIS STAGE.
6. Lower the legs and pin in position selecting the holes that position the machines gearbox stub shaft approx. 3" below the tractors P.T.O. shaft.

**Note:** Leg pin position used.

7. Unbolt stabilizer from machine and remove the stabilizer nose quadrant pin.



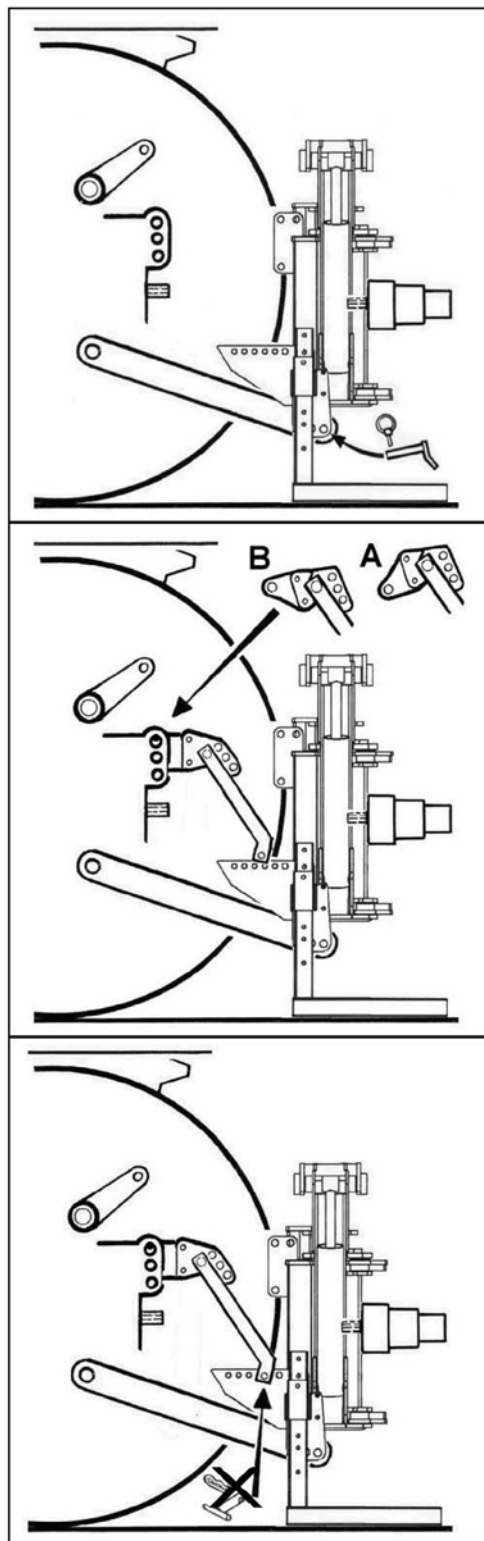


# ASSEMBLY

## ASSEMBLY

### ATTACHMENT TO TRACTOR

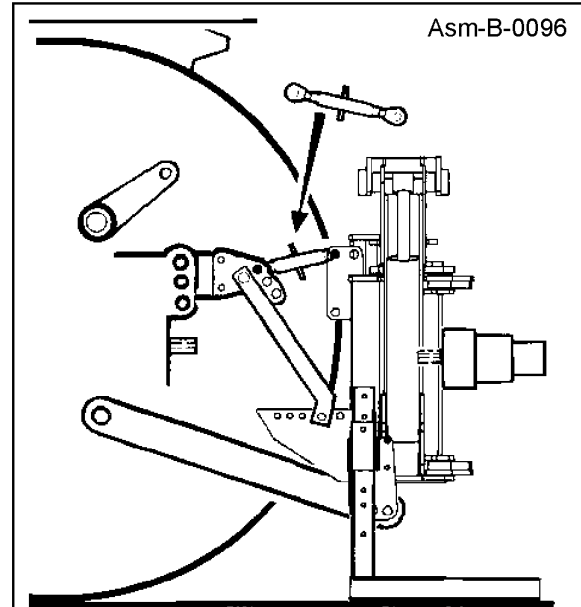
- Reverse tractor squarely up to the machine.
- Connect the tractors sway bars - selecting the rear most hole in the machines lower link brackets that allow the machine to be mounted without contacting the tractor.
- Ensure that the same hole is used on both sides.
- If necessary fit the spacers supplied (as required) to minimise sideways movement of the tractor sway bars within the hitch brackets.
- Tighten tractor's stabilizers.
- The lifting equipment may now be removed.
- Fit the stabilizer tongue (A or B) into the tractors top link position. Use the highest position available avoiding any load sensing properties.
- The bolt-on tongue of the stabilizer is reversible to accommodate a variety of tractor linkage designs.
- Stretch out the stabilizer and rest the bottom legs on the lower rail.
- Do not fit stabilizer lower pins at this stage.





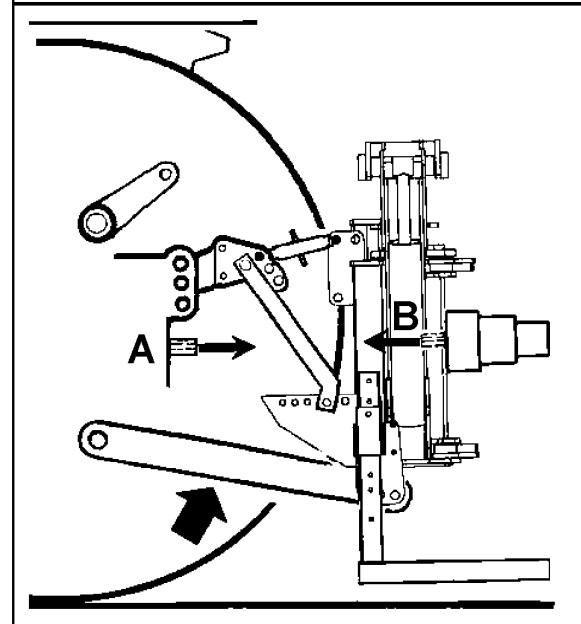
# ASSEMBLY

- Fit the machine to top link



- Raise machine on tractor linkage until the tractors PTO and the machines gearbox stub shaft are approximately in line.

**NOTE:** As lift occurs be aware the machine may tilt slightly.



## **WARNING**

The four levers of machine controls must be operated from the tractor seat. During this operation ensure no one is standing on or among the linkage arms or bars. Set tractor hydraulics to position control. Never allow anyone below the frame unless it is securely blocked up.



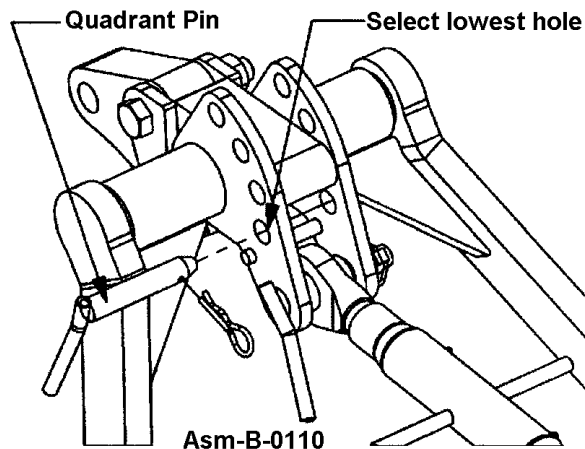
# ASSEMBLY

## ASSEMBLY

- Replace the stabilizer quadrant pin and secure with the clip pin.

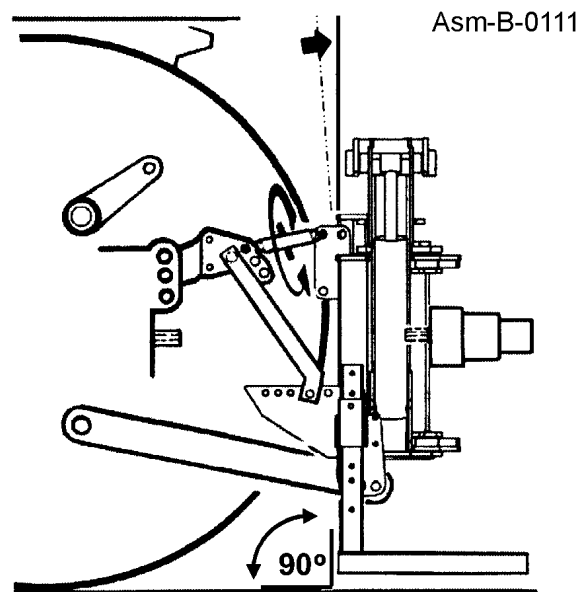
**NOTE:** The quadrant pin must be fitted in the lowest hole on the stabilizer in order that it acts as a “Bottom Stop”. This will prevent the machine from dropping when stopped and permit the tractor’s in-built transport protection system to function correctly during operation and transportation.

- Ensure the tractor’s linkage is in “Position Control” and the linkage raised sufficiently to hold the sicklebar at the correct height and remove the load from the quadrant pin



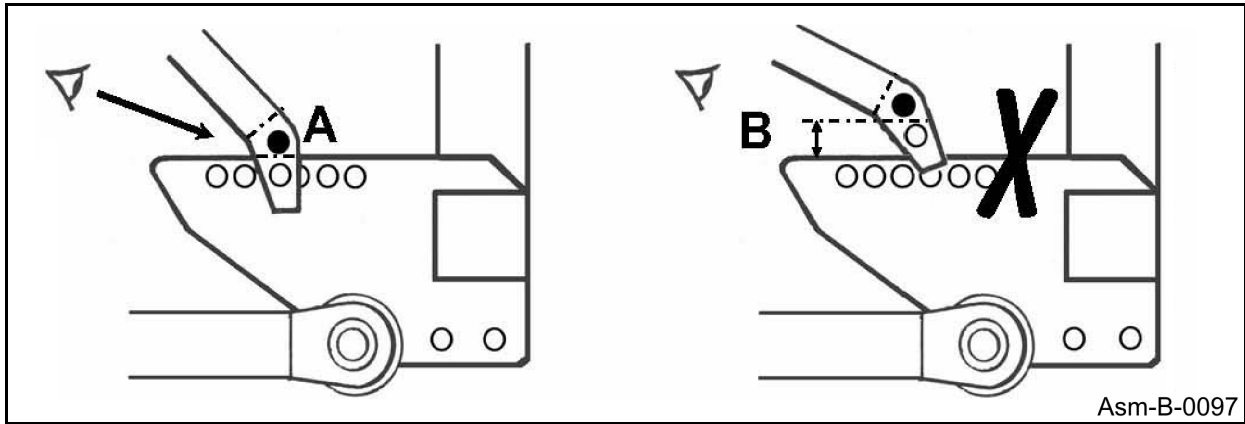
**NOTE:** Never fit the quadrant pin in a location hole that locks the stabilizer as this can cause damage to the machine and/or tractor.

- Adjust the top link to bring the machine frame into the vertical position.

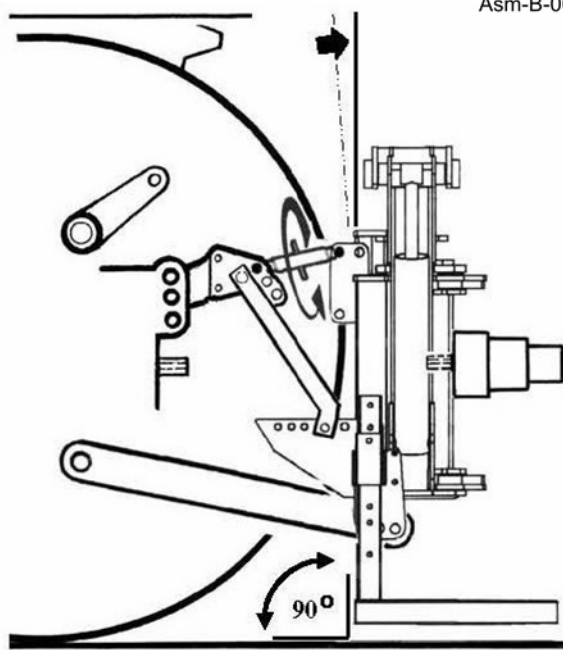




# ASSEMBLY



Check that the welded in pins between the stabilizers jaws are in contact with the mounting rail. If not the machine must be lowered to the ground and the next higher hole on the stabilizer valve selected, the machine raised and contact checked. Repeat again in the third hole if necessary. On subsequent fitting to the same tractor the hole selected is always used.



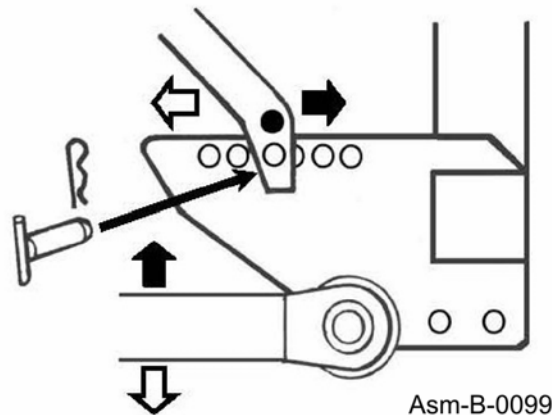
- Adjust the top link to bring the frame of the machine into the vertical position.



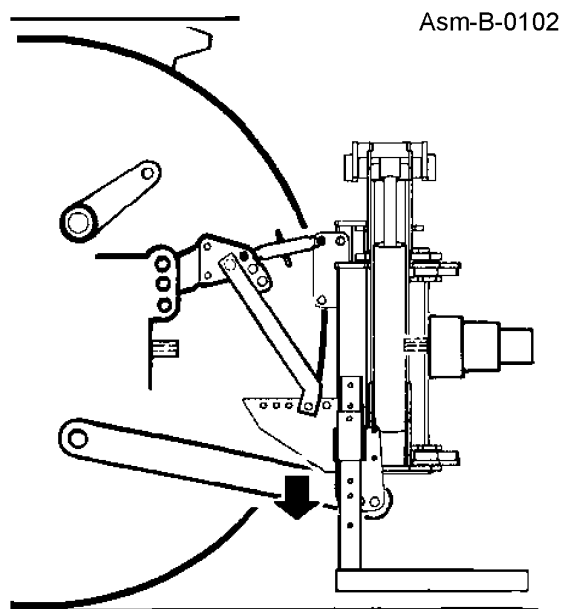
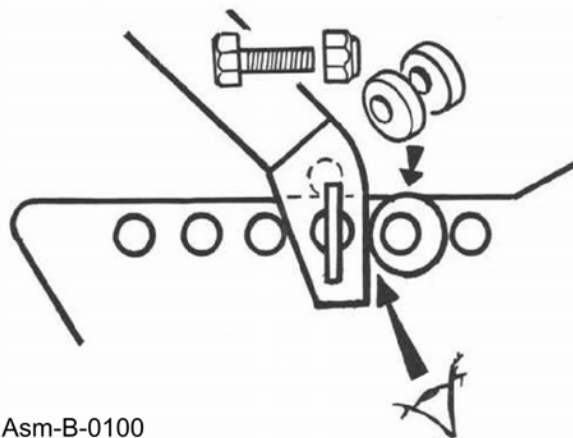
# ASSEMBLY

## ASSEMBLY

- Adjust using the mounting hole that allows the P.T.O. and gearbox shaft to align as near as possible.



- Fit positioning stops - these remain in position until tractor is changed



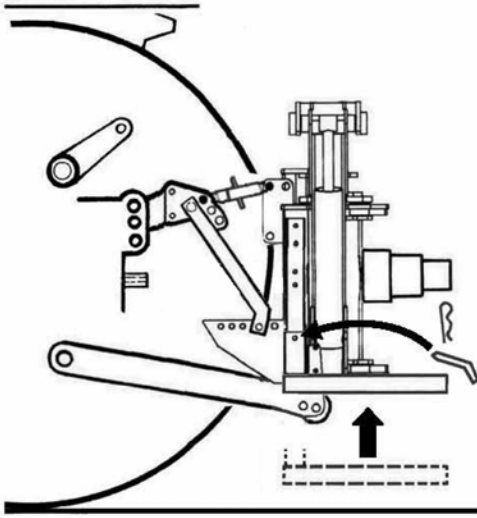
- Lower tractor linkage control so that the machine weight is taken by the yoke.



# ASSEMBLY

Asm-B-0104

- Raise the stand legs into the work position and secure with lock pins.



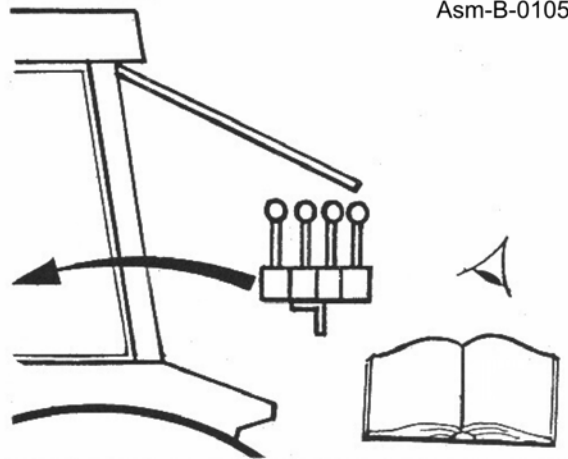
ASSEMBLY



# ASSEMBLY

## ASSEMBLY

- Tighten check chains and/or stabilizer bars.
- Fit machine controls into the cab.

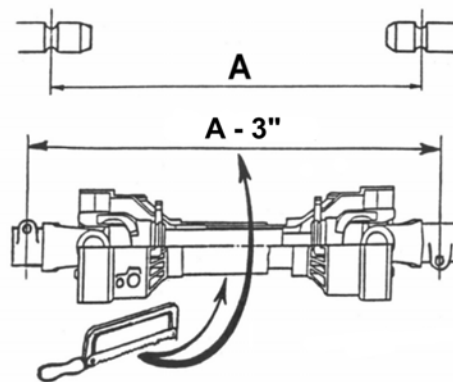


**IMPORTANT:** Scan this QR Code with your smart phone to link to the PAMI Safe Implement Hitching Manual for more information on correctly connecting agricultural tractors to implements. Or type in your internet browser the following web address: [www.algqr.com/hme](http://www.algqr.com/hme) Ops-0008-MISC



- Measure P.T.O. and cut to dimension shown.

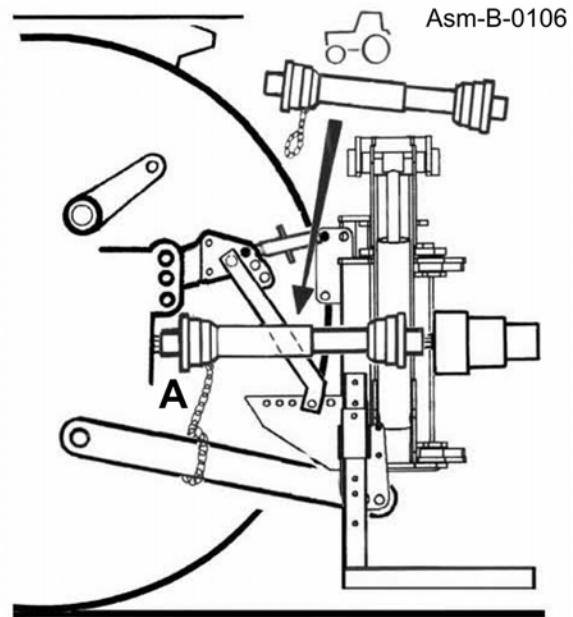
**Note:** For subsequent use on different tractors measure again - there must be a minimum shaft overlap of 6".





# ASSEMBLY

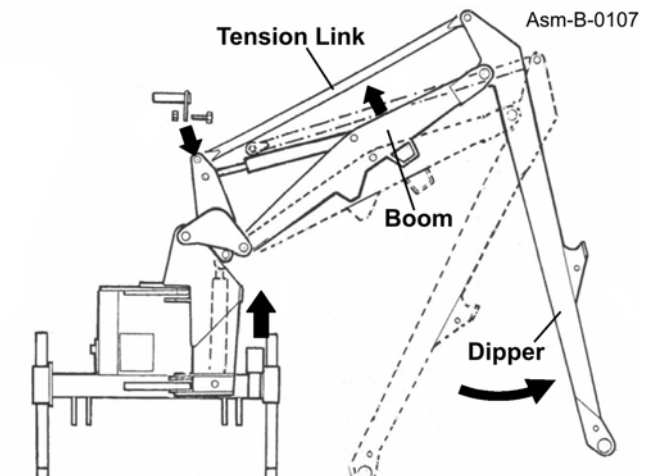
- Fit PTO shaft in position.
- Attach safety chains (A) on driveline to a convenient location to prevent rotation of the shaft guarding.



**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



- Ensure the Lift Cylinder shut-off valve and Slew Cylinder shut-off valve are open.
- Operate the lift up controls and raise the dipper arm end just enough to clear the ground.
- Pivot out the dipper arm until the tension link can be connected.





# ASSEMBLY



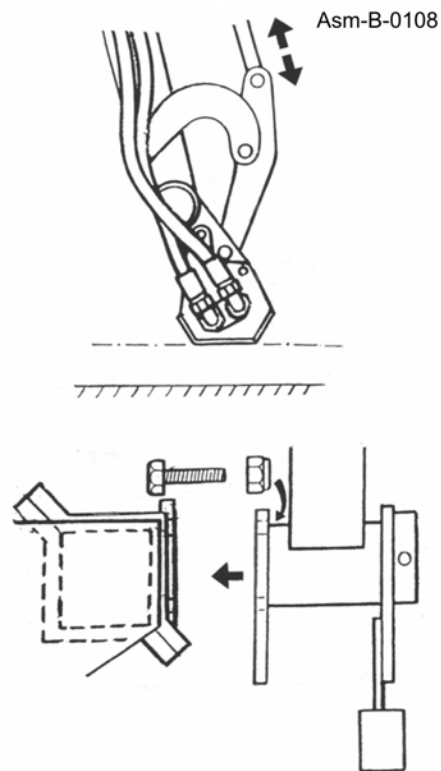
Do Not attempt to raise or lower the boom or mower head unless the Implement is securely attached to the Tractor. The Implement could tip over and cause equipment damage and possible serious injury or death. Do Not use the boom controls to assist in installing the implement on the tractor. Raise or Lower the boom and mower head only while seated in the Tractor operator's seat with the seat belt securely fastened. Inadvertent contact with the boom controls could allow a component to fall. A sudden or inadvertent fall by any of these components could cause serious injury or even death. (SBM-23)



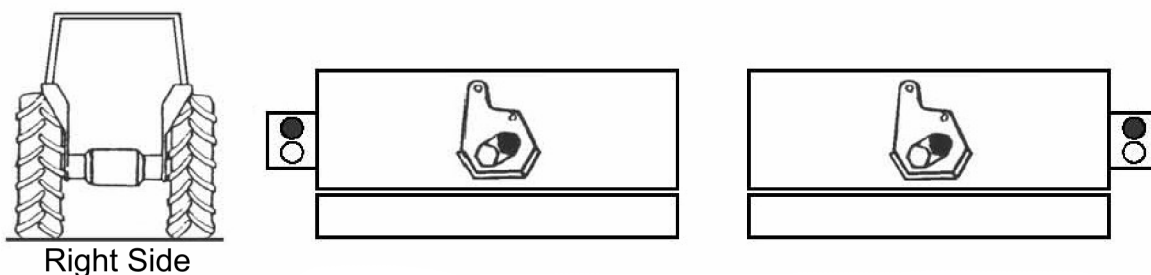
# ASSEMBLY

## Flail head Attachment

Operate machine controls to maneuver boom arm into flailhead attachment. The bottom of the hose connection bracket must be parallel with the ground. Refer to torque chart for correct bolt torque settings.



Connect flail hoses as indicated in the diagrams below



With the arms at half reach and the flailhead clear of the ground carry out final adjustment of the lift arm leveling box to bring the main frame horizontal. Carefully operate the machine through its full range of movements while checking that the hoses are not strained, pinched, chafed or kinked and that all movements are functioning correctly. Fold the machine into the transport position. The machine is now ready to proceed to the work site.



# ASSEMBLY

## OIL REQUIREMENTS

**NOTE:** The machine is filled at the factory with Nuto 46 hydraulic fluid. It is recommended not to mix different brands of hydraulic fluid.

### Tank

Fill reservoir to approximately 2" below the top of the tank. The capacity is approximately 193 liters (51 gallons). Do not overfill the tank.

Supplier	Cold or Temperature Climate	Hot Climate
Castrol	Agricastrol hydraulic oil Hy-spin AWS46	Hy-spin AWS68
Shell	Tellus 46	Tellus 68
Mobil	D.T.E. 25	D.T.E. 26
Esso	Nuto "H" or "A" 46	Nuto "H" or "A" 68
Texaco	Rando HD 46	Rando D 68
Gulf	Hydrasil 46	Hydrasil 68
B.P.	Energol HLP 46	Energol HLP 68
Dalton	Silkolene Dove 46 or Derwent 46	Silkolene Dove 68 or Derwent 68
Elf	Hydrelf 46	Hydrelf 68

## FITTING CONTROL UNIT IN CAB

### CABLE CONTROLLED MODELS.

The control unit is bolted to a mounting bracket.

This bracket may be bolted to the fender or cab bracket in a convenient location ensuring that no structural member of the cab or roll bar is drilled.

In deciding the final position of the control box remember not to exceed the minimum acceptable bend -radii of 8" for the cables.

The control lever for the cable operated rotor control valve is mounted in a similar fashion adopting the same precautions pertaining to drilling and cable runs.



# ASSEMBLY

## RUNNING UP PROCEDURE

1. Ensure that the rotor control valve is in "STOP" position, start tractor, engage P.T.O. allow the oil to circulate through the return line filter for about 5 minutes without operation of the armhead control lever.
2. Operate the armhead levers through their complete range ensuring that all movements are functioning correctly.
3. Place the flail head at a safe attitude and move the rotor control to "START" position. After initial fluctuation the rotor should settle to a steady speed. Increase P.T.O. speed to approximately 360 rpm. and run for a further five minutes before disengaging and stopping tractor.
4. Check the hose runs and observe that they are free from any pinching, chafing, straining or kinks. Recheck the oil level in the tank and top up as necessary.

### Important

Do not allow the pump to continue working if the rotor does not turn. Overheating and serious pump damage to the pump can be caused in a very short time.

5. After running up the machine, increase PTO speed to approximately 360 RPM. Run machine further for five minutes before disengaging the PTO and stopping tractor. The reason for this running period under a no load condition is to thoroughly circulate the oil in the reservoir through the return line filter.
6. Check the hose runs and observe that they are free from any pinching, chafing, straining or kinks. Recheck the oil level in the tank and top up as necessary.



# ASSEMBLY

## REMOVAL FROM TRACTOR



**DANGER**

Read carefully before commencing to remove the machine from the tractor.

The order of the following steps must be followed exactly. Disconnecting the top link must be the last operation prior to driving the tractor away from the machine.



**WARNING**

Do not operate valve lever or machine controls through the rear cab window while standing on or among linkage components. Always seek assistance.

- Select a firm level site for parking the machine.
- Replace parking legs in their sockets and secure in their lowest position.
- Raise the machine on the tractor linkage until the weight is taken off the stabilizer.
- Remove the lower stabilizer pins.
- Unscrew the lift cylinder hydraulic shut-off valve.
- Lower the machine to be ground.
- Extend the arms and place the flail head on the ground at half reach.
- Disengage tractor PTO and remove.
- Disconnect stabilizer bars or loosen check chains as applicable.
- Unbolt the control unit from the mounting bracket, remove from tractor cab and stow the levers or switchbox clear of the ground. For units that have quick attach cables, uncouple the cables and leave the control unit in the cab of the tractor.
- Disconnect the stabilizer from the tractors top hitch position. Allow the stabilizer to slide along the rail until it contacts the eccentric stops.
- Remove draft link pins and drive tractor away from machine.

## STORAGE

If machine is to be left standing for an extended period of time, lightly coat the exposed portions of the cylinder rods with grease. Subsequently this grease should be wiped off before the rods are moved. If the machine has to be stored outside tie a piece of tarpaulin or canvas over the control assembly. Do not use a plastic fertilizer bag which could lead to rapid corrosion.

## SUBSEQUENT ATTACHMENT TO IDENTICAL TRACTOR

Refer to and follow steps on 'initial attachment to tractor' found on previous pages.

- Connect stabilizer into tractors top hitch position used previously.
- Raise the machine on the tractor linkage until the stabilizer contacts the eccentric stops.
- Fit stabilizer lower pins.
- Mount controls in the tractor cab.
- Fit PTO shaft and attach torque chain to a convenient point to prevent the shaft guard rotating.
- Place arms in work position at half reach and adjust lift arm levelling box to bring frame horizontal.
- Tighten check chains.
- Stow parking legs.
- Fold machine into transport position.
- Proceed to the work site.
- SUBSEQUENT ATTACHMENT TO DIFFERENT TRACTOR
- Remove stabilizer and top link from machine and separate.
- Refer to and follow steps 'initial attachment to tractor'.)



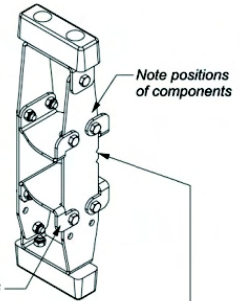
# ASSEMBLY

## DECK STOP

A Stop assembly is provided for placement on the connecting boom of the operating machine; it is multi-adjustable for use on 100mm square section or 100/110mm tapered section booms.

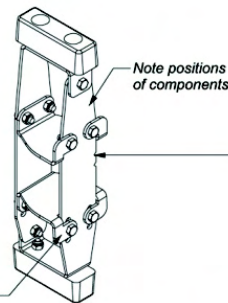
Its function is primarily to stop the deck coming into contact with the machines arm components when the head is fully angled, but also acts as a support for the unit during transportation.

The stop should be assembled to the required configuration to fit the specific boom and positioned on the boom at a height where the rubber buffers contact an outer point on the top of the deck when the unit is fully angled in either direction.

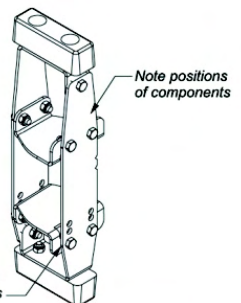


Note positions of components  
ASSEMBLED FOR:  
100MM SQUARE ARM SECTION

ASSEMBLY NOTE:  
The notches should be nearest to the top of the dipper arm and facing towards the head pivot tube.



Note positions of components  
ASSEMBLED FOR:  
100MM WIDE TAPERED ARM SECTION



Note positions of components  
ASSEMBLED FOR:  
110MM WIDE TAPERED ARM SECTION

ASSEMBLY







# OPERATION SECTION

Operation Section 4-1



# OPERATION

## OPERATION

### Bush Hog RMB 1660 BOOM MOWER OPERATING INSTRUCTIONS

Bush Hog Boom Mowers are manufactured with quality material by skilled workers. These mowers are designed for cutting grass and small weeds. The mower is equipped with protective deflectors to prevent objects being thrown from the mower by the blades, however, no shielding is 100% effective. All shields, guards, and deflectors equipped on the mower must be maintained 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.

- **ALL THROWN OBJECT SHIELDING** including, Front and Rear Deflectors and Skid Shoes are in place and in good condition when mowing.
- Mower is 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.

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 boom mower and are not specific to any model. Some pictures may show shields removed for picture clarity. **NEVER** operate implement without all shields in place and in good operational condition. The operator must be familiar with the mower and tractor 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. Refer to the Torque Chart at the end of the Maintenance Section to ensure bolts are properly tightened.

**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 ingles, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad. (SG-3)





# OPERATION

## **1. Standard Equipment and Specifications**

### **Tractor Requirements**

Minimum Tractor HP Requirements	60 HP PTO
Minimum Tractor Weight	6614 lbs

### **Machine Specifications**

Maximum Machine Reach	16'-5"
Machine weight with flailhead	2434 lbs
Power Arm Horsepower	54 HP
Oil Tank Capacity	51 gal

### **Hydraulics**

Gear Totally Independent	Standard
--------------------------	----------

### **Method of Attachment**

3-Point Linkage-Mounted	Standard
-------------------------	----------

### **Controls**

Cable Control	Standard
---------------	----------

### **Machine Equipment**

Safety Breakaway - Hydraulic	Standard
Road Light Kit	Standard
Power Slew	Standard
Cable Rotor Control	Standard
Window Guards	Standard



# OPERATION

## OPERATION

### 2. OPERATOR REQUIREMENTS

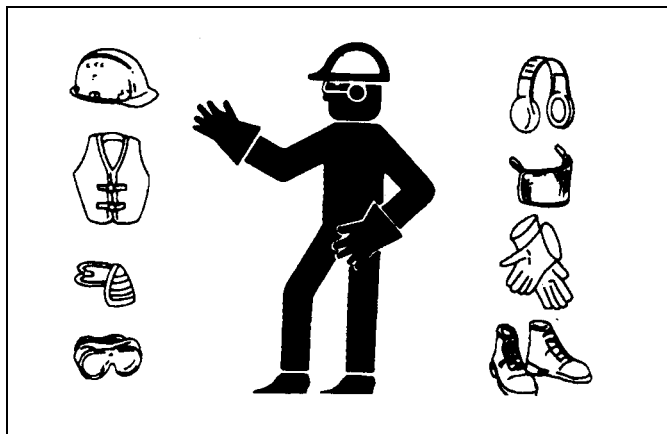
Safe operation of the unit is the responsibility of a qualified operator. A qualified operator has read and understands the implement and tractor Operator's Manuals and is experienced in implement and tractor operation and all associated safety practices. In addition to the safety messages contained 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:

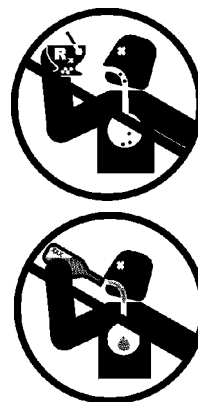
#### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

- 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

## 3. TRACTOR REQUIREMENTS

In addition to tractor horsepower and size required to operate the mower unit, the tractor must also be properly equipped to provide operator protection, to alert approaching vehicle drivers of the tractor's presence, and to ensure tractor stability when mowing with the boom fully extended.

### Tractor Requirements and Capabilities

- Certified approved Roll-Over Protective Structure (ROPS) or ROPS cab and seat belt.
- Operator Protection ..... Tractor must be equipped with protective structure such as operator cage or lexan window to protect operator from thrown object and falling objects
- Tractor Safety Devices ..... Slow Moving Vehicle (SMV) emblem, lighting,
- Tractor Ballast ..... As required to maintain at least 1500 lbs. on left rear tire

### 3.1 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

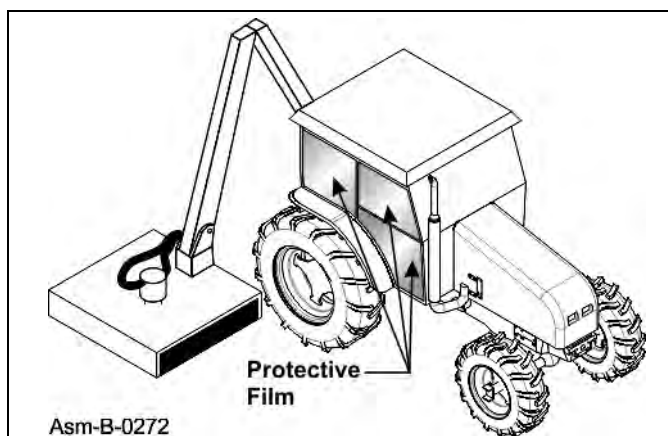


Operate this Equipment only with a Cab Tractor. Always wear seat belts. (SG-45)



### Operator Thrown Object Protection

The tractor must be equipped with protective equipment to shield the operator from falling and thrown objects. For cab tractors, the tractor must be equipped with operator protective film on right side windows and door, or must be fitted with a shatter proof safety window. For non-cab tractors, the tractor must be equipped with a ROPS and operator protective safety cage that provides protection to the right and above the operator seat. DO NOT remove the ROPS from non-cab tractors to equip a safety cage.



Never operate the Tractor and Mower Unit without an OPS (Operators Protective Structure) or Cab to prevent injury from objects thrown from ground or from overhead trimming. Stop mowing if workers or passersby are within 300 feet. (SBM-9)





# OPERATION

## 3.2 Tractor Lighting and SMV Emblem

If the tractor will be operated near or traveled on a public roadway it must be equipped with proper warning lighting and a Slow Moving Vehicle (SMV) emblem which are clearly visible from the rear of the unit. Most tractor's have different settings for operating and transporting lighting. Refer to the tractor operator's manual for using the tractor's light switch and operating the turn signals.

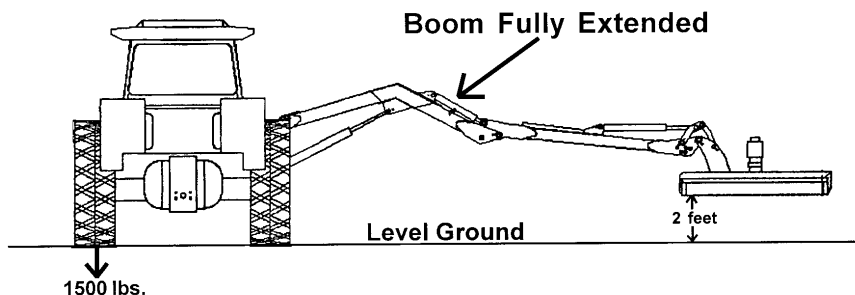
OPS-B- 0017



Op-86

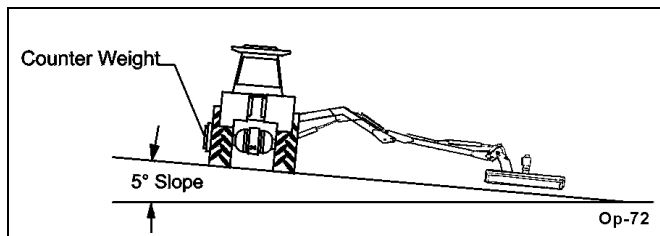
## 3.3 Tractor Ballast

To ensure tractor stability when operating on flat surfaces the left rear tractor tire **MUST** exert a minimum down force (weight) of 1500 lbs. on the ground when the tractor is on level ground, its boom is fully extended and the mower head is horizontal and two feet above the ground. A tractor that does not meet this criteria is **DANGEROUS** and should not be operated as upset of the unit can occur resulting in possible serious injury and property damage.



Op-71

If the unit is operated on slopes greater than 5°, additional counterweight will be required. Operation of the unit on slopes greater than 11 percent (6.4 degrees) is not recommended under any circumstances. On a tractor with a 96" outside to outside tire spread, an 11 percent (6.4 degrees) slope occurs when one rear tractor tire is about 8" lower than the other rear tire. OPS-B- 0018\_C



Op-72



# OPERATION

## 3.4 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

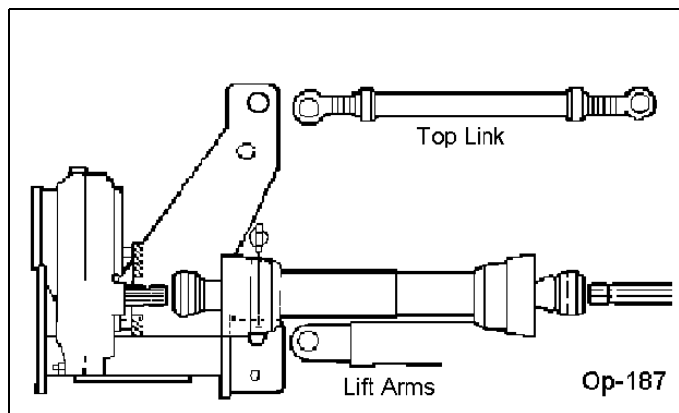
## 3.5 Tractor Horsepower

The horsepower required to operate the mower depends on many factors including vegetation to be cut, terrain condition, operator experience, and condition of the mower and tractor. For most mowing condition, the 1660 boom mower requires a tractor with at least 60 HP PTO. Operating the mower with a tractor that does not have adequate power may damage the tractor engine.

## 3.6 3-Point Hitch

1660 boom mowers can attach to tractors with a CAT I or II hitch. Refer to the tractor operator's manual for the category of the tractor used. If the hitch does not conform to ASABE Cat I and II dimensions, the mower may not fit or raise properly. Consult an authorized dealer for possible modification procedures to mount nonconforming hitches.

Use the correct hitch pins for the hitch category being used. For Cat II hitches, it requires 1-1/8" lower and 1" upper diameter hitch pins.



**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





# OPERATION

## **3.7 Hydraulics**

The 1660 is available with a Totally Independent Hydraulic System complete with Rotor Rotation Control. The fully independent system is operated by an extra lever on the control console, which allows selection of rotor rotation and all other functions.

## **3.8 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

## **3.9 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.

**Note:** 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\_B



**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)



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)

## **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



# OPERATION



## WARNING

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



## 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)



## DANGER

Never allow children to operate or ride on the Power Unit or Implement. (SPU-17)



### 4.2 Dismounting the Tractor

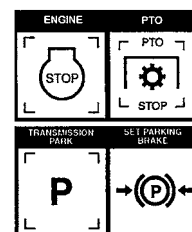
Before dismounting, park the tractor and implement on a reasonably level surface, apply the parking brake, idle the engine down, disengage the PTO, and lower the implement to the ground. Shut down the tractor engine according to the operator's manual, remove the key, and wait for all motion to completely 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



## 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)





# OPERATION

## OPERATION

### **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 ignition key/switch
- Locate the engine shut off control
- Locate the hydraulic control levers
- Locate the light control lever
- Locate the brake pedals and clutch
- Locate the PTO control
- Locate the 3 point hitch control lever
- Locate the boom operating controls (joystick or valve bank)

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 tractor transmission levers are in park or neutral.
- The boom operating controls are in the neutral and off position.
- The PTO control lever is disengaged.
- The hydraulic remote control levers are in the neutral position.

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-B- 0003*



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



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)





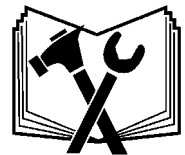
# OPERATION

## 6. 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



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

### 6.1 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

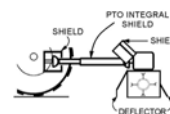
## 6.2 Boom Unit Pre-Operation Inspection and Service

Inspect and service the boom arm and head prior to operation. Damaged and/or broken parts should be repaired and/or replaced immediately. To ensure the unit is ready for operation, conduct the following:

OPS-B- 0020



All Safety Shields, Guards and Safety devices including (but not limited to) - the Deflectors, 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. (SFL-5)



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



**NOTE:** The mower Operator's Manual and affixed Decals contain important instructions on the safe and proper use of the mower. Maintain these important safety features on the mower in good condition to ensure the information is available to the operator at all times.



KEEP AWAY FROM ROTATING ELEMENTS to prevent entanglement and possible serious injury or death. (SG-24)





# OPERATION

## FRAME ASSEMBLY

- Ensure all bolts and screws are in position and are properly torqued.
  - Ensure all pins are in place and fastened with screws.
  - Ensure frame is properly mounted to tractor and hardware is properly installed and tightened.
- OPS-B- 0021\_H*



## BOOM ARM ASSEMBLY

- Inspect condition of each arm section weldment
- Ensure all pins are in place.
- Ensure all bolts and screws are properly installed.
- Check condition of teflon bushings at boom pivot points.
- 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 properly.
- Ensure that all joints are lubricated. See Maintenance Section for Lubrication Chart. *OPS-B-0022\_K*



Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. (SG-20)

## HYDRAULIC LINE INSPECTION

- Check for hydraulic leaks along hoses, cylinders and fittings. **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.
  - Inspect the condition of the valve weldment.
  - Ensure fitting is properly connected
  - Inspect condition of nylon bushings.
- OPS-B- 0023\_J*





# OPERATION

## OPERATION

### **WARNING**

Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Mower Head on the ground or securely supported on blocks or stands, disengage the PTO, and turn off the engine. Push and pull the control Levers or Joystick several times to relieve pressure prior to starting any maintenance or repair work. (SBM-6)

### **WARNING**

Never Leave the mower unattended while the head is in the raised position. The mower could fall causing serious injury to anyone who might inadvertently be under the mower (SBM-4)



### **WARNING**

Do not operate this Equipment with hydraulic oil or fuel leaking. Oil and fuel are explosive and their presence could present a hazard. Do not check for leaks with your hand! High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. To check for a hose leak, SHUT the unit ENGINE OFF and remove all hydraulic pressure. Wear oil impenetrable gloves, safety glasses and use Cardboard to check for evidence of oil leaks. If you suspect a leak, REMOVE the HOSE and have it tested at a Dealer. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)



## HYDRAULIC PUMP/OIL RESERVOIR

- Check oil reservoir level and oil condition. (Add specific type oil if low)
- Change hydraulic oil filter and hydraulic oil according to maintenance schedule.
- Ensure there are no oil leaks and fitting are properly connected
- Inspect overall condition of hydraulic pump.
- Inspect pump drive shaft.



Check the fluid level in the Hydraulic Tank on the Tractor, and add oil if required. As the air has been forced out of the Cylinders and Hoses, it goes into the Hydraulic Tank and reduces the volume of oil. Maintain the oil level within the sight gauge located on the side of the reservoir. Never fill the tank above the sight gauge to allow for the expansion of the oil. The tank maintains pressure after the mower has been run. Stand off to one side when removing the breather cap element to prevent possible injury. To relieve pressure remove the breather cap element and depress the spring loaded pressure valve to release any excess air. OPS-B- 0024\_H



# OPERATION

## **WARNING**

Attention: Oil Filler Cap is also the Pressure Relief Cap.

Remove cap slowly to relieve pressure before removing cap completely. Stay clear to prevent being scalded with hot oil that may spray out of the tank that is still pressurized and may cause serious injury to eyes, face, and exposed skin. (Ops-0001-MISC)

## **WARNING**

Avoid contact with hot surfaces including hydraulic oil tanks, pumps, motors, valves and hose connections. Relieve hydraulic pressure before performing maintenance or repairs. Use gloves and eye protection when servicing hot components. Contact with a hot surface or fluid can cause serious injury from burns or scalding. (SG-34)

## **WARNING**

Do not operate this Equipment with hydraulic oil or fuel leaking. Oil and fuel are explosive and their presence could present a hazard. Do not check for leaks with your hand! High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. To check for a hose leak, SHUT the unit ENGINE OFF and remove all hydraulic pressure. Wear oil impenetrable gloves, safety glasses and use Cardboard to check for evidence of oil leaks. If you suspect a leak, REMOVE the HOSE and have it tested at a Dealer. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)



OPERATION

## FLAIL HEAD INSPECTION

- Inspect blades and blade bolts for looseness and excessive wear. Rotate to 90° to make for checking easier. Replace damaged, worn, and missing blades as complete sets to maintain cuttershaft balance.
- Ensure rubber deflectors are in position and not damaged. Replace worn, broken, and missing sections immediately.
- Ensure the rollers are in good condition and rotate freely.
- Inspect that all bolts and screws are in position and are properly torqued.
- Ensure hydraulic lines are properly connected to the hydraulic motor. Check for hydraulic leaks along hoses and fittings. DO NOT use your hands to check for oil leaks. Use a piece of heavy paper or cardboard to check for hydraulic oil leaks.
- Remove any grass or other debris which may be wrapped around the cuttershafts ends.
- Inspect the condition of deck skid shoes and hardware. OPS-B- 0026\_C





# OPERATION

## OPERATION

### SICKLE BAR INSPECTION

- Inspect blades and blade bolts for looseness and excessive wear. Replace damaged, worn, and missing blades.
- Ensure guards are in position and not damaged. Replace worn, broken, and missing guards.
- Inspect that all bolts and screws are in position and are properly torqued.
- Ensure hydraulic lines are properly connected to the hydraulic valve and cylinders. Check for hydraulic leaks along hoses and fittings. DO NOT use your hands to check for oil leaks. Use a piece of heavy paper or cardboard to check for hydraulic oil leaks.
- Ensure hydraulic cylinder is installed and retained correctly. Ensure the proper size pins are used to retain the cylinder in place and are secured with pins.
- Remove any grass or other debris which may be wrapped around the cutterbar. OPS-B- 0063



#### **WARNING**

Do not operate this Equipment with hydraulic oil or fuel leaking. Oil and fuel are explosive and their presence could present a hazard. Do not check for leaks with your hand! High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. To check for a hose leak, SHUT the unit ENGINE OFF and remove all hydraulic pressure. Wear oil impenetrable gloves, safety glasses and use Cardboard to check for evidence of oil leaks. If you suspect a leak, REMOVE the HOSE and have it tested at a Dealer. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)



#### **WARNING**

Do not put hands or feet near the cutter bar. Blade contact can result in serious injury. Stay away until all motion has stopped and the mower is securely blocked up. (SSM-1)



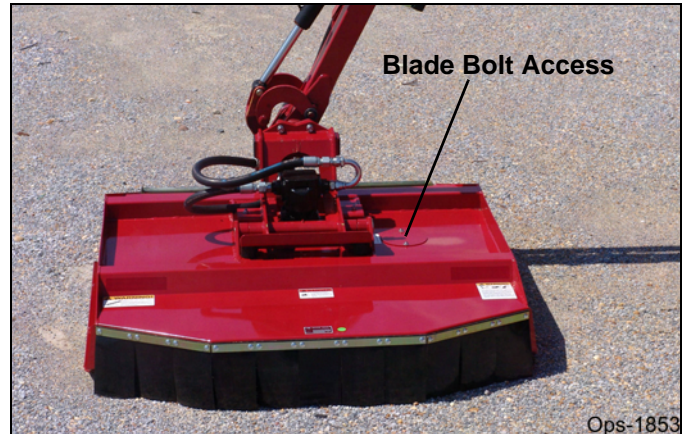


# OPERATION

## OPERATION

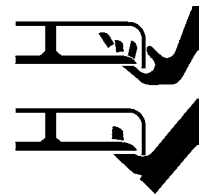
### ROTARY HEAD INSPECTION

- Inspect blades and blade bolts for looseness and excessive wear. Rotate to 90° to make for checking easier. 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.
- Ensure rubber deflectors are in position and not damaged. Replace worn, broken, and missing sections immediately.
- Ensure hydraulic lines are properly connected to the hydraulic motor. Check for hydraulic leaks along hoses and fittings. DO NOT use your hands to check for oil leaks. Use a piece of heavy paper or cardboard to check for hydraulic oil leaks.
- Inspect the condition of deck and hardware.



#### **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)



#### **DANGER**

All Safety Shields, Guards and other safety devices including (but not limited to) - Deflectors, Steel Guards and Gearbox Shields must 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. (SSM-07)



# OPERATION

## Tractor PRE-OPERATION Inspection



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

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



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 ROPS 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

## BUSH HOG Boom Mower PRE-OPERATION Inspection



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

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

Make \_\_\_\_\_

Shift \_\_\_\_\_

### IMPORTANT:

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

Inspection Sheet



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



**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 Mounting frame bolts are in place and tight		
The Boom connection bolts & pins are tight		
There are no cracks in boom		
The Hydraulic Cylinders pins are tight		
The Hydraulic Pump hose connections are tight		
The Hydraulic Valve hose connections are tight		
The Hydraulic Valve controls function properly		
There are no leaking or damaged hoses		
The Hydraulic Oil level is full		
There is no evidence of Hydraulic leaks		
The Blades are not chipped, cracked or bent		
The Blade bolts are tight		
The Deflectors are in place and in good condition		
The Mower shields are in place and in good condition		
The Skid shoes are in good condition & tight		
There are no cracks or holes in mower deck		
The Hyd. motor mounting bolts are tight		
The mower head spindle housing is tight and lubricated		

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

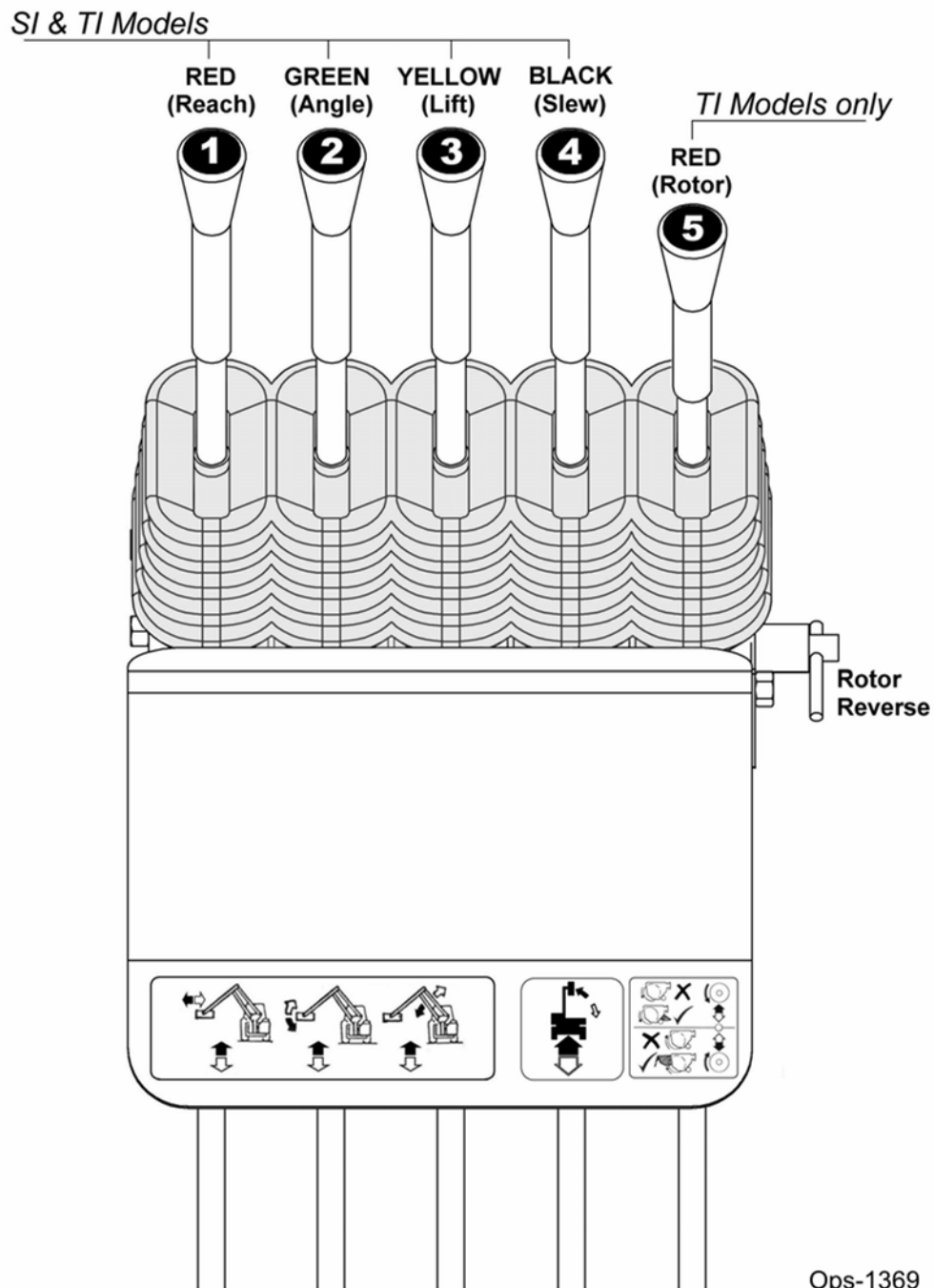
**DO NOT OPERATE an UNSAFE TRACTOR or MOWER**



# OPERATION

## 7. MACHINE CONTROLS

### 7.1 Cable Controls - Identification & Function

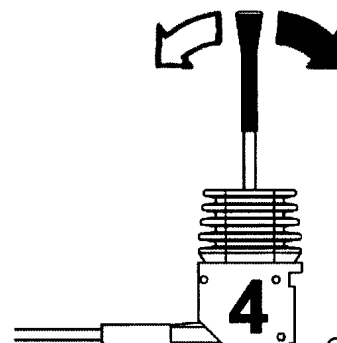
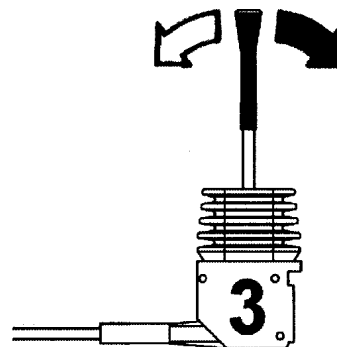
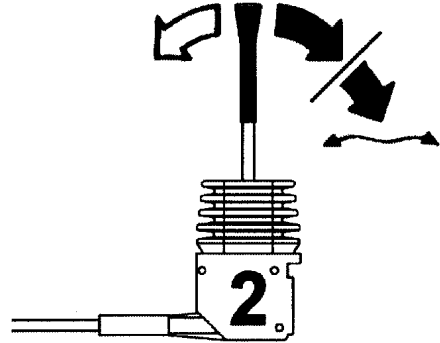
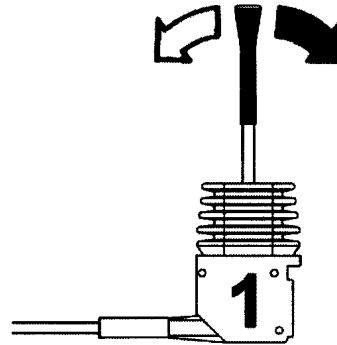
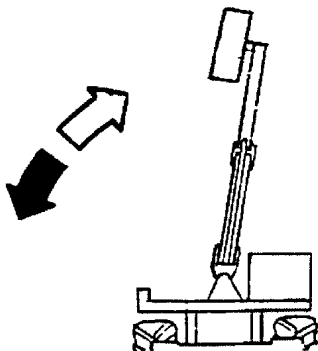
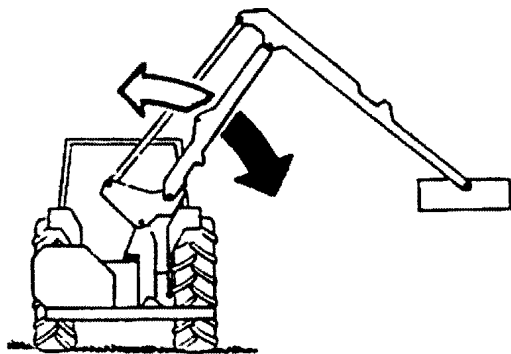
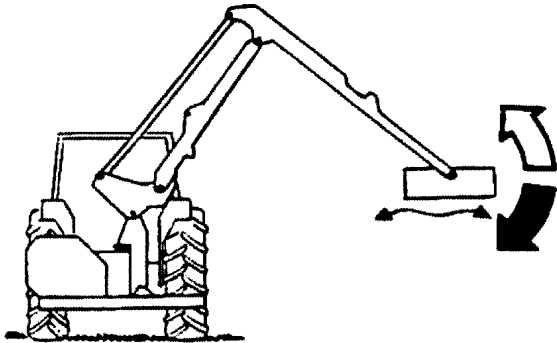
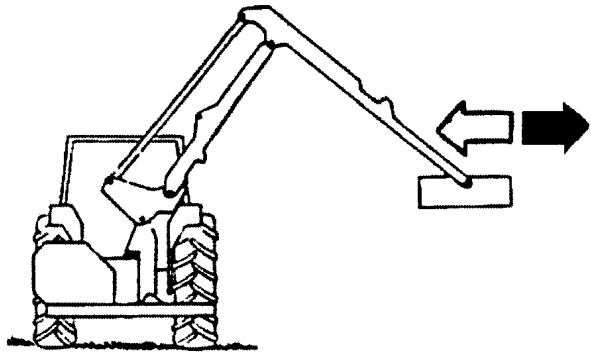




# OPERATION

## OPERATION

### 7.2 Lever Functions



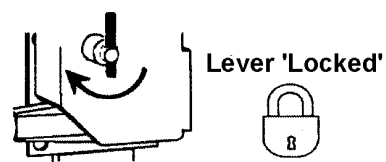
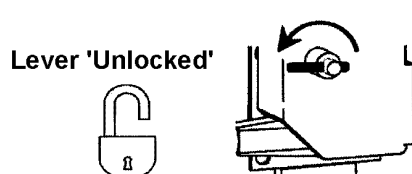
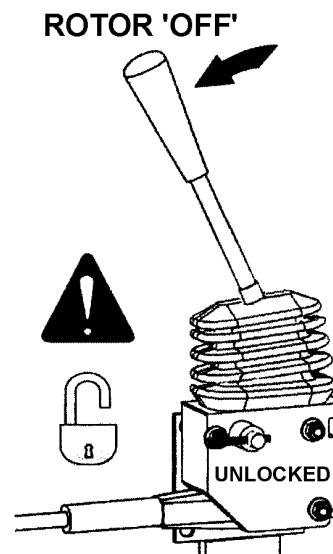
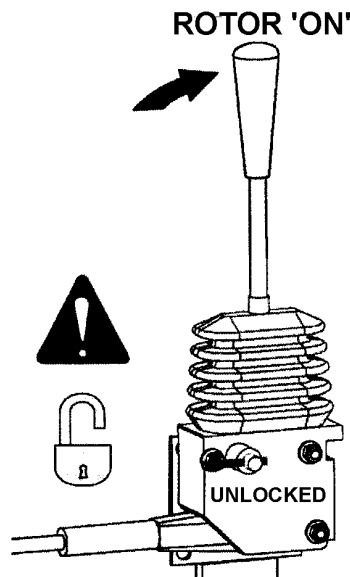
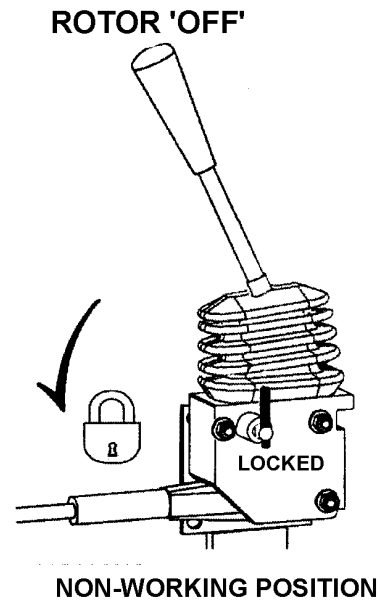
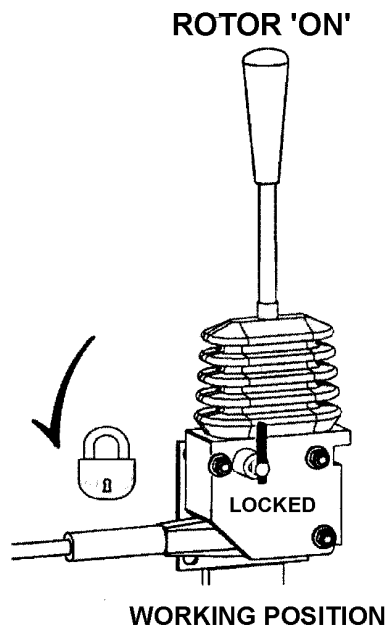
Ops-1370



# OPERATION

## OPERATION

### 7.3 Rotor Control



Ops-1371



# OPERATION

## 8. BREAKAWAY

The machine is fitted with a hydraulic breakaway device which protects the structure of the machine should an unforeseen obstacle be encountered.

**NOTE:** The breakaway function does not relieve the operator of his responsibility to drive carefully, be alert and AVOID OBVIOUS HAZARDS BEFORE CONTACT OCCURS.

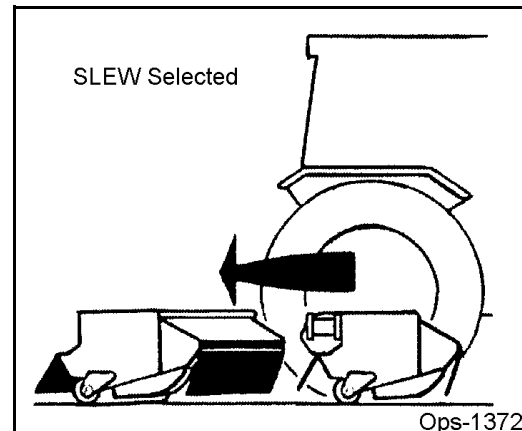
Breakaway may occur momentarily during normal work should an extra thick or dense patch of vegetation be encountered. In these instances tractor forward motion may be maintained with care. Where breakaway has occurred as a result of contacting a post or tree etc. the tractor must be halted and the controls of the machine utilized to maneuver the head away from the obstacle. NEVER CONTINUE FORWARD MOTION TO DRAG THE HEAD AROUND THE OBSTACLE IN BREAKBACK POSITION.

**NOTE:** The force required to activate the breakaway system will vary dependent upon the gradient of work. It will require less force when working uphill and vice versa.

### With 'SLEW' selected:

When the slew relief valve setting is exceeded oil is displaced from the slew cylinder allowing the arm to pivot backwards horizontally and the obstacle to be cleared.

Re-setting the head into the working position is done automatically by selecting 'SLEW OUT' on the control assembly.

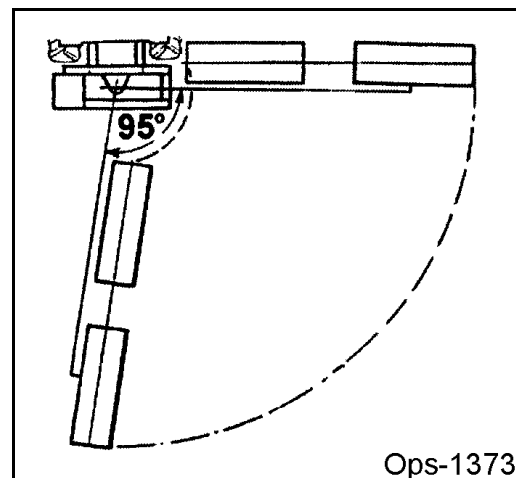


### Powered Slew:

The slew feature allows a 95° arc of powered arm movement on the working side from right angles to the tractor to 5° beyond the direct line back.

The feature is required to place the machine in the transport position but can also be used to swing the arm back and forth while cutting awkward areas and corners to avoiding the need to constantly re-position the tractor. To operate in this way, 'SLEW' must be selected on the control assembly.

If breakaway occurs the slew motion must be reversed to allow the slew breakaway relief valve to re seat and the ram to become operable again.





# OPERATION

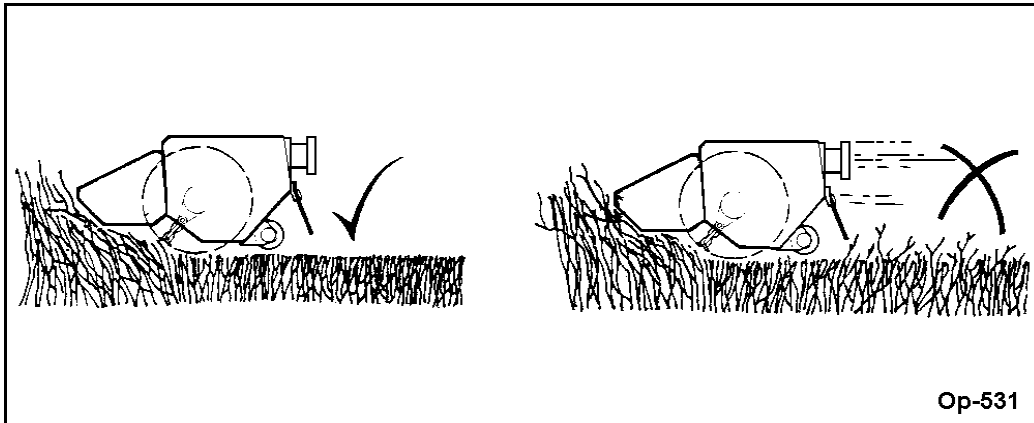


Extra care must be taken when working in 'SLEW' mode with the reach fully in – IT IS POSSIBLE FOR THE FLAILHEAD TO HIT THE TRACTOR OR MACHINE FRAME.

## 9. Rotor Operating Speed

Ensure that the rotor control lever is in the 'STOP' position before engaging the PTO shaft. Allow the oil to circulate for a minute or so before operating the armhead levers. Position the flail head in a safe position, increase the engine speed to a high idle and move rotor control lever to 'START'. After initial surging the rotor will run at an even speed.

## 10. Forward Speed



The material being cut determines tractor forward speed. Forward speed can be as fast as that which allows the flail head sufficient time to cut the vegetation properly.

Too fast a speed will be indicated by over frequent operation of the breakaway system, a fall off in tractor engine revs and a poor finish to the work leaving ragged uncut tufts and poorly mulched cuttings.



# OPERATION

## 11. High Voltage Cables

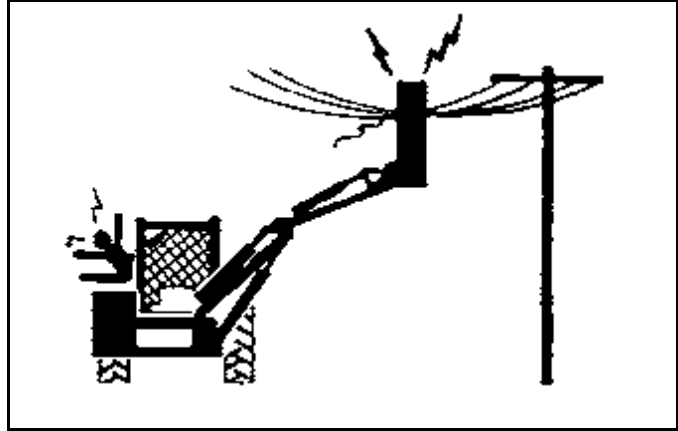


Depending on the voltage of the cables and the weather conditions there is a danger of electric flashover if the head or arms approach the cables too closely.

ALWAYS MAINTAIN A MINIMUM CLEARANCE DISTANCE OF 10 FEET WHEN OPERATING NEAR HIGH VOLTAGE CABLES.

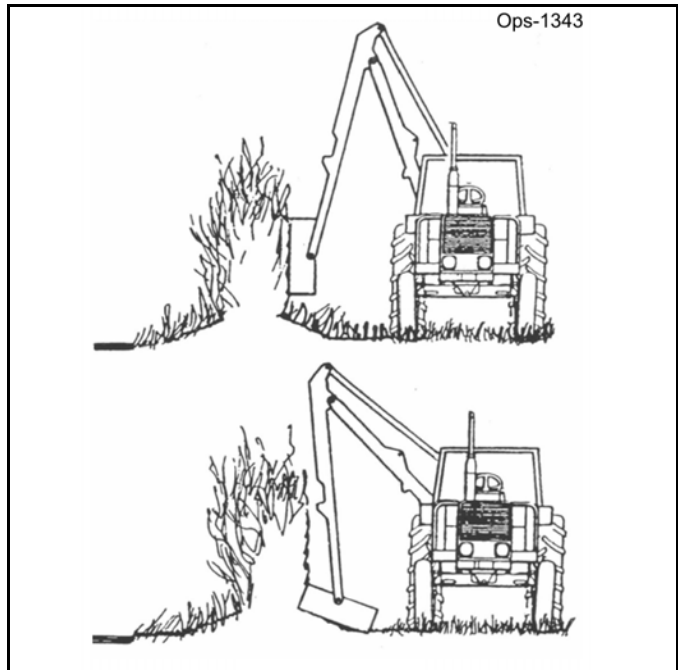
If in any doubt consult your local electric company regarding a safe procedure for work.

**OVERHEAD OBSTRUCTIONS** Always be aware that the machine is approximately 13 ft. high when folded - take care when maneuvering in areas with overhead obstacles especially power cables, low bridges etc. or when entering buildings.



## 12. Hedge Cutting Procedure

Cut the side and bottom of the field side first. This leaves the maximum thickness of hedge on the road side to prevent the possibility of any debris being thrown through the hedge into the path of oncoming vehicles.

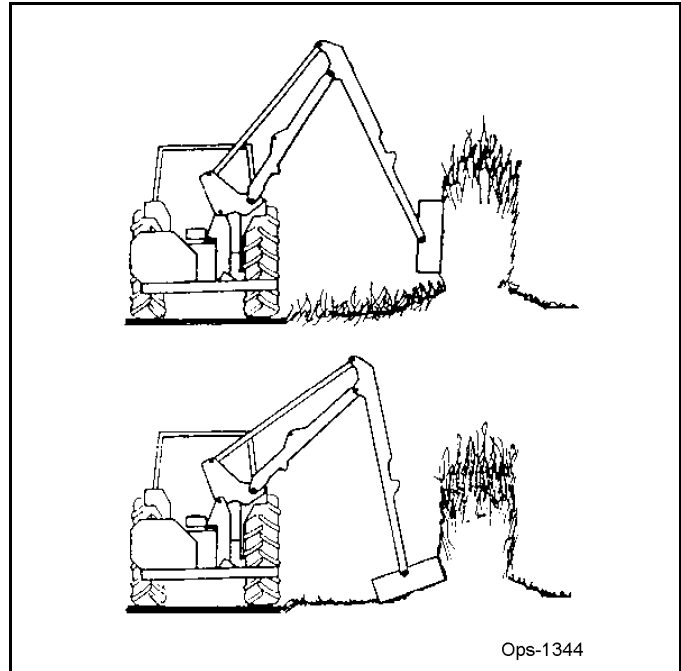




# OPERATION

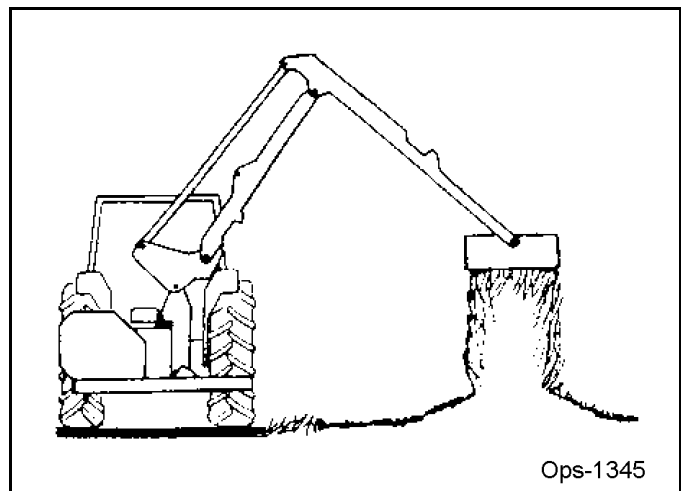
## OPERATION

Cut the side and bottom of the road side.



Top cut the hedge to the height required.

**NOTE:** Never cut over the far side of the hedge. It is impossible to see any potential hazards and the position of the flail head will allow the possibility of debris being thrown through the hedge towards the tractor and operator.



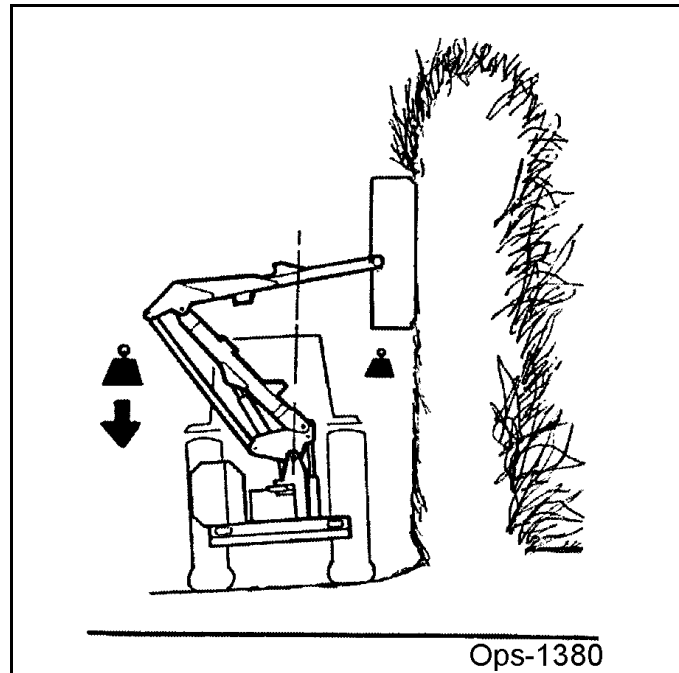


# OPERATION

## **12.1 Working on Adverse Slopes**

When working high with the reach fully extended, it is possible for the main arm balance to go 'Over-Center' and take the weight off the lift cylinder. A restrictor in the gland connection of the lift ram prevents sudden unpredictable movements should this occur.

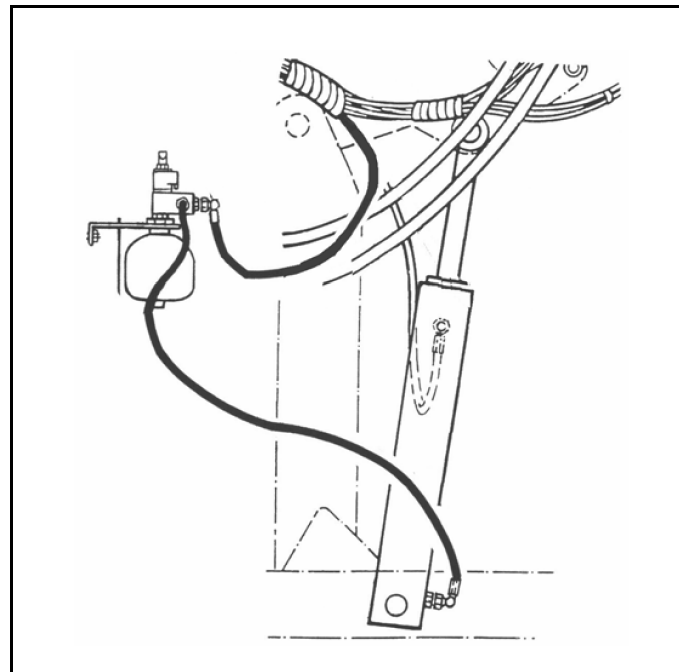
**NOTE:** Always inspect the work area prior to cutting to remove hazardous material and note any immovable objects.



## **13. Lift Float Kit (Optional)**

### Fitting Location

The hydraulic float kit should be mounted to the special bracket in such a position that it does not foul any other component during the slewing motion.





# OPERATION

## OPERATION

### 14. DRIVING THE TRACTOR AND IMPLEMENT

Safe tractor transport requires the operator to 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 boom and the tractor operating controls are set for safe transport. To ensure safety while driving the tractor with a boom, review the following.

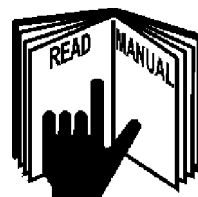
Read all safety instructions. Decals on the Boom warn you of particular and multiple hazards. Some decals are attached close to part of the Boom where there is a possible hazard. Read and make sure you understand the safety messages before you operate the implement. Keep all decals clean and readable. Replace lost or damaged decals, refer to safety section for more information.

Power for operating the mower is supplied from the tractor PTO. Refer to your tractor manual instructions for engaging and disengaging the PTO. Start the tractor and bring the engine speed up to normal operating 540 PTO speed. Always engage the PTO at low engine RPM and run the mower for a short period until all air is removed from the hoses. Keep all person's well clear of mower since blades can throw objects with great velocity for a considerable distance! KEEP CLEAR! OPS-B- 0005

#### DANGER

Never operate the Tractor or Implement until you have read and completely understand this Manual, the Tractor Operator's Manual, and each of the Safety Messages found in the Manual or on the Tractor and Implement. Learn how to stop the tractor engine suddenly in an emergency. Never allow inexperienced or untrained personnel to operate the Tractor or Implement without supervision. Make sure the operator has fully read and understood the manuals prior to operation.

(SG-4)



#### WARNING

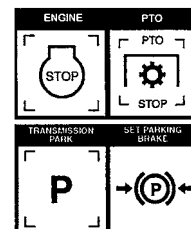
Always maintain the safety signs in good readable condition. If the safety signs are missing, damaged, or unreadable, obtain and install replacement safety signs immediately. (SG-5)

#### 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)

#### 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)





# OPERATION

## 14.1 Starting the Tractor

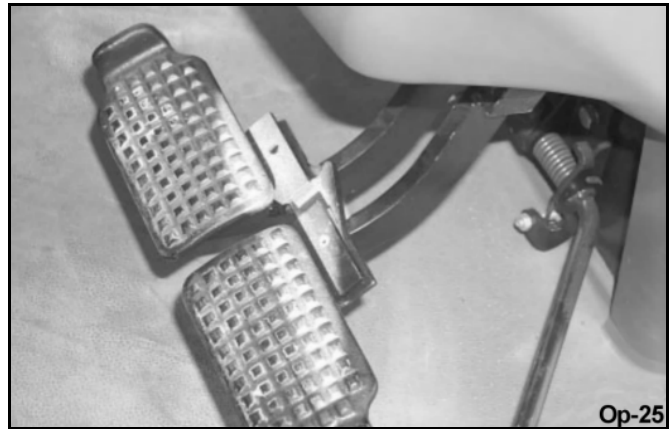
The procedure to start the tractor is model specific. Refer to the tractor operator's manual for starting procedures for your particular tractor. Consult an authorized dealer if the starting procedure is unclear. Ensure the 3-point control lever is in the lowered position and the PTO is disengaged before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



## 14.2 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.



# OPERATION

## OPERATION

### 14.3 Driving the Tractor and Boom

Start off driving at a slow speed and gradually increase your speed while maintaining complete control of the tractor. Never operate the tractor 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.

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

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. 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-B- 0006



Never Leave the mower unattended while the head is in the raised position. The mower could fall causing serious injury to anyone who might inadvertently be under the mower (SBM-4)



Always keep a careful lookout and use extreme care when working around overhead obstructions. Never allow the Mower head or boom within 10 feet of any power line. When working close to overhead power lines consult your electric company for a safe code of operation. (SBM-7)





# OPERATION

## **15. 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*

### **15.1 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.



Op - 33

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-F-0010*



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# OPERATION

## OPERATION

### **15.2 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



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



STOP MOWING IF PASSERSBY ARE WITHIN 300 FEET 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;
- 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, eliminate streaking, and make the final cut more uniform.) (SFL-6)

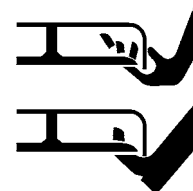
### **15.3 Engaging the Power Take Off (PTO)**

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



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

## **15.4 Operating Speed and Ground Speed**

Ground speed for mowing will depend upon the height, type, and density of vegetation to be cut. Do Not exceed 2 MPH while operating. 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 operating and desired ground speed. Make sure that the mower is operating at its full rated speed before entering the vegetation to be cut. Always start and stop cutting blades with engine near idle.

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 implement 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-B- 0009



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)



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)

## **15.5 Operating the Mower**

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.

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. OPS-R-0026\_N



# OPERATION

## OPERATION

### **⚠ DANGER**

There are obvious and hidden potential hazards in the operation of this Mower. REMEMBER! This machine is often operated in heavy brush and in heavy weeds. The Blades of this Mower can throw objects if shields are not properly installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not operate this machine with anyone in the immediate area. Stop mowing if anyone is within 300 feet of mower. (SGM-02)



### **⚠ 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 accesible 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

## **15.6 Operating the Attached Mower Heads**

Refer to the Assembly Section of this manual to ensure the head is properly attached to the boom hitch and hydraulic lines are properly connected.

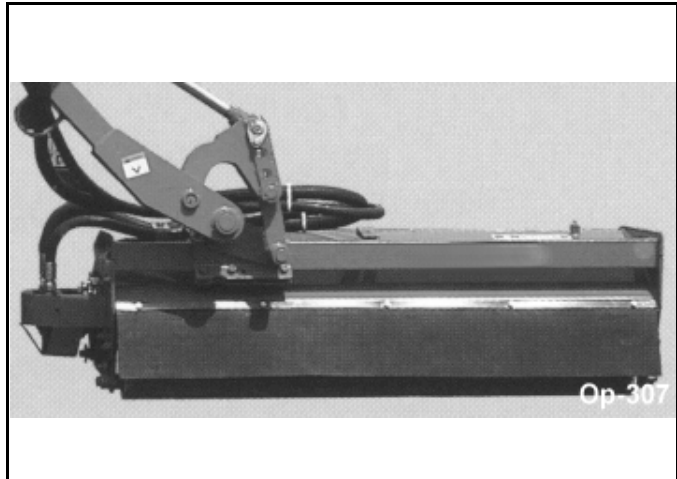
### **⚠ DANGER**

There are obvious and hidden potential hazards in the operation of this Mower. REMEMBER! This machine is often operated in heavy brush and in heavy weeds. The Blades of this Mower can throw objects if shields are not properly installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not operate this machine with anyone in the immediate area. Stop mowing if anyone is within 300 feet of mower. (SGM-02)



### **Grass Flail**

- The Grass Flail head is rated for cutting grass and small brush up to 1-1/2".
- The Grass Flail operates attached to the boom arm, and is ideal for cutting hard to reach areas where a smooth cut is required.
- Cutting height ranges from 3/4" to 4" in vegetation. Cutting height is set by adjusting the height of the roller assembly.
- When operating near the ground or when mulching be particularly careful that there are no bystanders or animals within a 300 feet. Debris tends to fly out at great speed and can injure or even cause death. OPS-B- 0040\_B



### **Sickle Bar**

- The Sickle Bar Cutter will cut a 5' swath through tough weeds and grass.
- The Sickle Bar Cutter is operated attached to the boom arm and is ideal for vegetation maintenance
- When operating the Sickle Bar correctly it will give you a fast, efficient, and cost-effective method of vegetation maintenance.
- The Sickle Bar will also cut vegetation through tough weeds under water, ideal for maintaining ponds, creeks, and other areas that may be under shallow water.
- When operating the unit be sure there are no bystanders or animals within 300 feet of the unit. OPS-B- 0049





# OPERATION

## OPERATION

### Rotary Cutter

- The Rotary Cutting Head is rated to cut bush and foliage up to 4" in diameter.
- Objects tend to be thrown out from under the head in the direction of blade rotation and toward the raised edge of the shroud. Avoid cutting with the head tilted at an angle that objects would be thrown towards the unit operator position.
- It is recommended that the direction of cutting should always be such that the blades are cutting away from the operator at the point where the material first enters the machine.
- When clearing brush and small trees, operate unit at 1 mph ground speed and position cutter head at an angle that will cut 2' to 3' into the growth. Make the first pass just above ground level. This will remove the low branches and allow operator a better view of the material to plan for the next pass. After repeated passes, each elevated approximately 4' above the last, the main trunks of the trees will be exposed and they can be cut as desired. This avoids clogging the head with cut and mulched material.
- Open the hydraulically operated door to allow blades to reach large diameter vegetation. Operate the mower with the door closed when cutting grass, weeds, and light brush to reduce thrown objects for safer mower operation.
- When operating near the ground or when mulching be particularly careful that there are no bystanders or animals within 300 feet. Debris tends to fly out at great speed and can injure or even cause death.



### Side Skids

The side skids have 2 mounting positions allowing the machine to cut at a height of either 2" (50mm) or 3" (75mm). Altering the cutting height is by selection of either the upper or lower skid mounting holes on the main frame; ensure that the same hole positions are selected on both sides of the machine. Never attempt to use the machine without skids fitted or with the skids mounted at different heights.

### Pivoted Mounting

The mounting bracket is pivoted to permit the unit deviation from the horizontal by  $\pm 4^\circ$ ; this allows the machine to follow the contours of the terrain on ground cutting work, thus providing a cleaner finish.



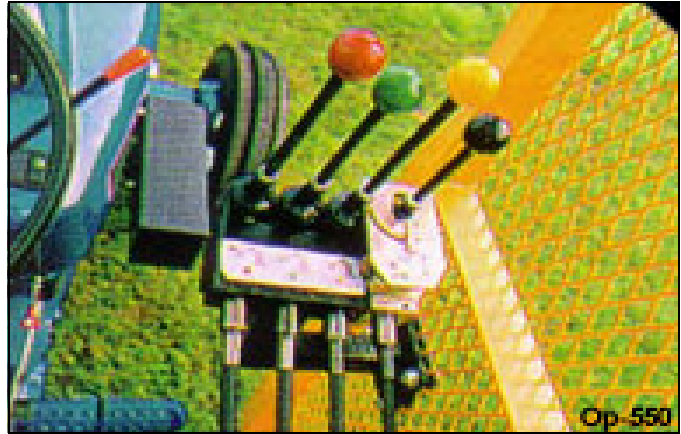


# OPERATION

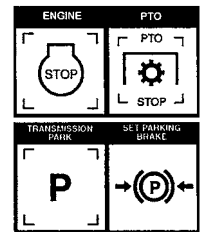
## 15.7 Shutting Down the Attached Head

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, shut down the engine, remove the key, and wait for all motion to come to a complete stop before exiting the tractor. OPS-B- 0011\_G



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)



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)



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





# OPERATION

## OPERATION

### 16. TRACTOR, BOOM, AND ATTACHED HEAD STORAGE

Properly preparing and storing the unit 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 from boom and head to prevent damage from rotting grass and standing water.
- Lubricate all grease points and fill oil levels according to the maintenance lubrication schedule.
- Tighten all bolts to the proper torque. Ensure all pins and other hardware are in place.
- Check the boom arm and head for worn and damaged parts. Perform repairs and make replacements so that the mower will be ready for use at the start of the next season.
- Store the unit in a clean and dry location.
- Use spray touch-up enamel where necessary on bare metal surfaces to prevent rust and to maintain the appearance of the mower.

OPS-B- 0012\_G



### 17. 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



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



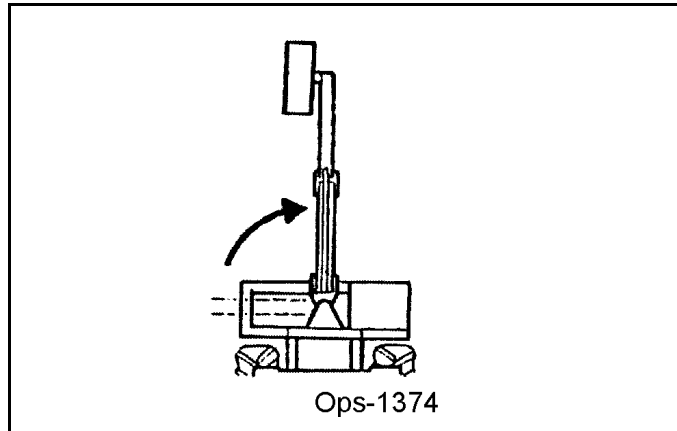


# OPERATION

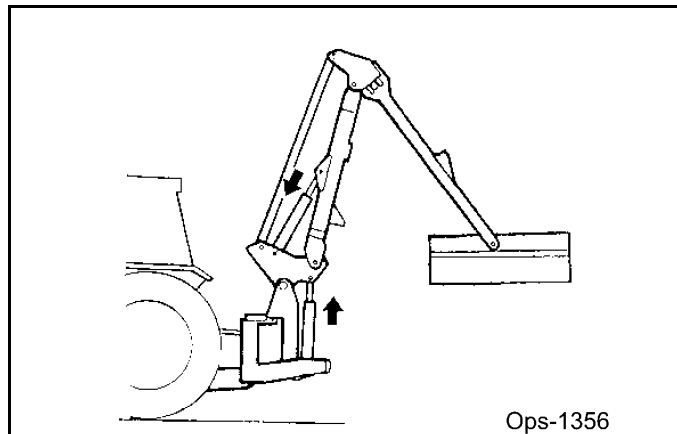
## OPERATION

### 17.1 Transport Position

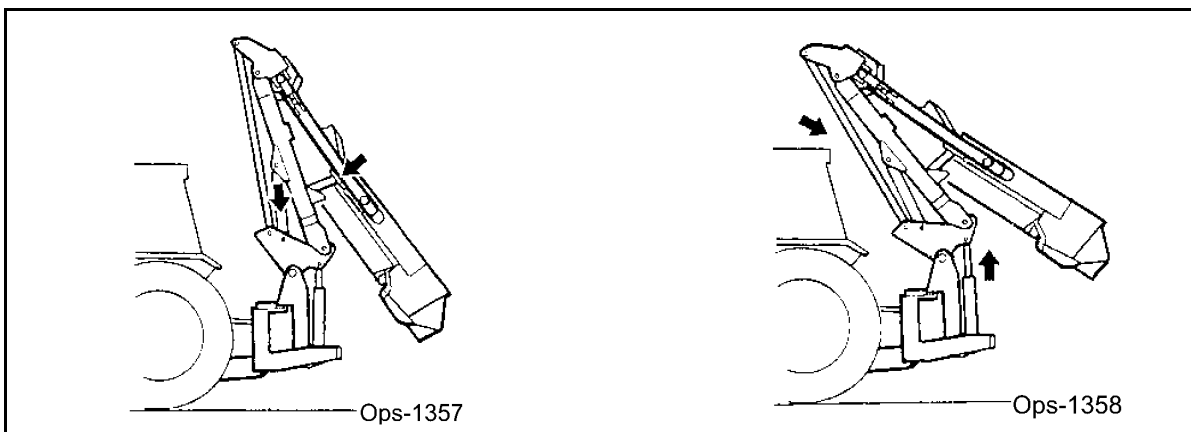
- Select ROTOR OFF and wait until rotor has stopped turning
- Ensure that the "LIFT" and "ANGLE FLOAT" are switched "OFF"
- Select "SLEW" mode on the control assembly.
- Operate "SLEW IN"



- Operate "LIFT" and "REACH" to position the machine.



- Operate "REACH IN" until dipper arm contacts the transport cradle
- Select "LIFT UP" and raise the arms until the tension link is 300mm (12") from the tractor cab.
- Operate "ANGLE" and position the flail head in as compact position as possible. (See Transport Position)
- Fully screw in the lift and slew cylinder shut-off valve.
- Fully close the lift and slew cylinder hydraulic shut-offs.

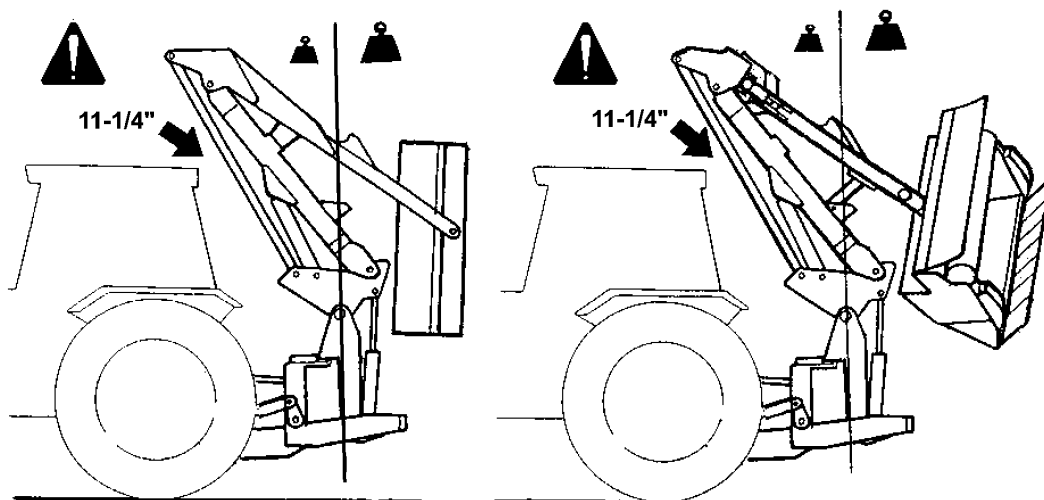




## OPERATION

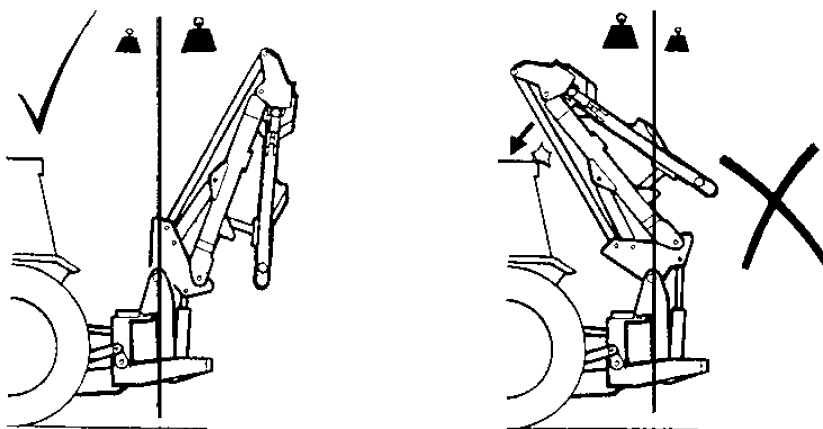
### 18. TRANSPORT POSITION-Head Attached

The machine is transported in line to the rear of the tractor with a minimum of 11-1/4" clearance between the tension link and the rear cross member of the tractor cab.



Ops-1359

### 19. TRANSPORT POSITION-Head Removal



Ops-1360

With the flail head removed the arms are fully folded but the lift ram remains retracted. If the lift ram is extended the weight of the arms will cause the balance of the machine to go over center causing the tension link to crash into the rear cross member of the tractors cab.



During transport the 'SLEW' mode must ALWAYS be selected on the control assembly.

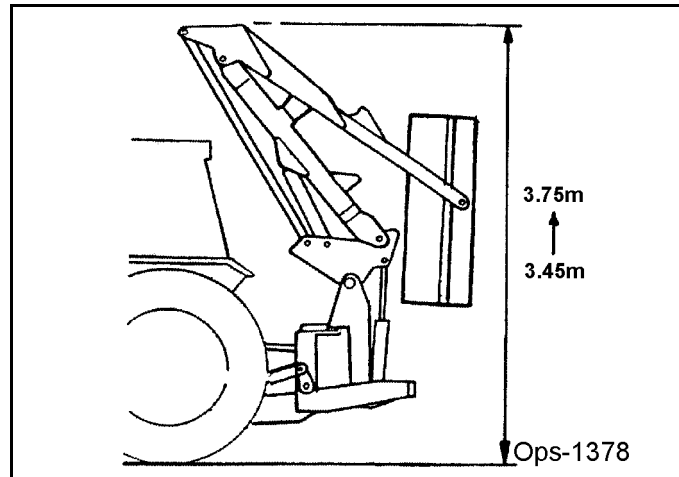


# OPERATION

## **19.1 Transport Height**

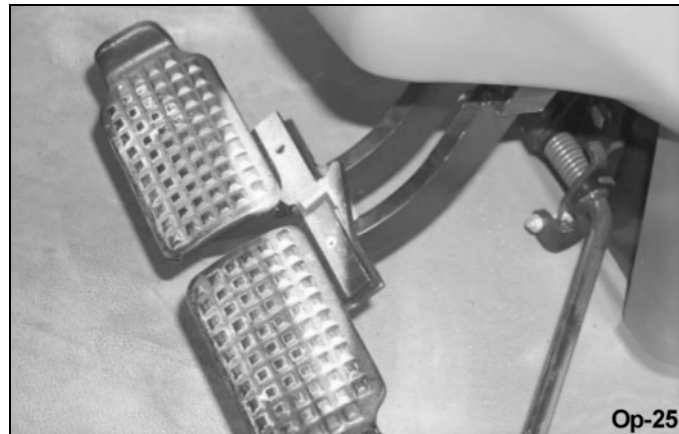
There is no fixed dimension for transport height. It will vary depending on the height that the machine is carried and the degree of arm fold that the rear of the cab will allow.

For the majority of installations the transport height will generally fall between a minimum of 3.45m (11'1/2") and a maximum of 3.65m (12') when the machine is correctly folded.



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



## **19.2 Transporting on Public Roadways**

Extreme caution should be used when transporting the tractor and implement 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 and implement before entering a public road. OPS-U- 0019

**NOTE:** Ensure that the mower sections are fully raised and that the transport locks are engaged for each section.



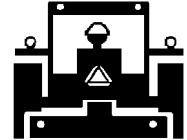
# OPERATION



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



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)



## OPERATION

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/taillights 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 were 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-B-0015



Op-103



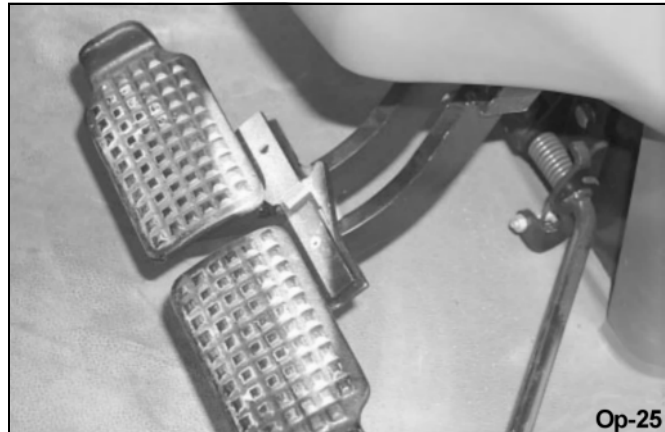
# OPERATION

## 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 state or municipality for agricultural tractors. Always stay alert when transporting the tractor and mower on public roads. Especially in busy cities, the boom extends to right farther than the tractors width, so be careful there are no bystanders, poles, large obstructions or any vehicles that may be in path of the mower head or boom. Use caution and reduce speed if other vehicles or pedestrians are in the area. OPS-B- 0016



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



### **⚠ DANGER**

When transporting Boom Mower on a truck or trailer, the height or width may exceed legal limits when the boom is in the transport position. Contact with side or overhead structures or power lines can cause property damage or serious injury or death. If necessary lower boom to reduce height and/or remove mowing head to reduce width to the legal limits. (SBM-8)





# OPERATION

## **19.3 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. OPS-U- 0024\_TK



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. OPS-U- 0025





## OPERATION

Arrange the chains so that when tightened, the chains are pulling downward and against themselves. Carefully tighten the securing chains or other fasteners using boomers 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.



**NOTE:** Always transport per you state law regulations for tie down requirements. OPS-U- 0026\_TK

OPERATION



# OPERATION

## OPERATION

### 20.TROUBLESHOOTING GUIDE

<b>Problem</b>	<b>Possible Cause</b>	<b>Remedy</b>
<b>Boom Breaks Back Too Easily</b>	Work Port Relief Malfunction or Failure Swing Cylinder Failure Cutting head "Plowing" in Ground Operator Travelling Too Fast	Test to confirm, Adjust or Replace as needed Test to Confirm, Rebuild or replace as needed Operator Error, Operator Training Operator Error, Operator Training
<b>Boom Drops When Two Functions Actuated</b>	Low Oil Level on Boom Function System  Failed One way Flow Restrictor in valve Defective or damaged Controller Incorrect Hose Size to Cylinder(s)	Fill oil and bleed system of air  (Gravity Aided Functions Only) Confirm and replace Repair or Replace as needed Replace with proper OEM part
<b>Boom Moves on Its Own (Under Power w/ no function actuated) Electronic Joystick Models</b>	Defective or Damaged Joystick Controller  Improper adjustment of Joystick potentiometer gear timing Solenoid Valves stuck due to contamination Failed O-ring on Solenoid Valves C.A.N. System Improperly Adjusted Valve Main Spool Bent or Stuck Improper Wiring Defective or Damaged Control Module(s)	Repair or Replace as required.  Adjust to locate proper neutral setting per the Service Manual Repair or replace as required. Flush and fill Hydraulic System Replace the O-ring with proper replacement parts Consult a Factory Trained Service Technician to facilitate the proper adjustment of the system Replace the Valve Section Confirm and Repair Replace the module(s)
<b>Boom Moves on Its Own (Under Power w/ no function actuated) Mechanical Joysticks with Cables</b>	Defective or Damaged Joystick  Cables Sticking Bent too sharply  Overheated due to contact with hydraulic components Connection at valve damaged or failed Main Spool in Valve Stuck or bent	Repair or replace as required  Install new cable and route to provide adequate bend radius Replace Cables and insulate from Hydraulic Components Repair or replace as required Repair or replace as required



# OPERATION

## OPERATION

### Problem

**Cylinder Excessive Drift**

### Possible Cause

May be normal Operation

Cylinder Piston Seals Bypass

Damaged or Defective Work Port Relief Valves

Main Valve Spool Leakage

Oil Contamination

Related to Issues described in Previous section: Boom moves under its own power

Loose Fittings

### Remedy

Check Allowable Drift rates in Service Manual

Test to confirm and repair or replace

Check Relief Pressures. Repair or replace as required

Confirm with tests, Repair or replace as required

May be root cause of any internal Leakage. Test oil and replace as required.

review the previous section

**Cylinder Leaks at Fittings**

Wrong Fittings Installed

**Damaged or defective fitting (cracked)**

Check for cracks and retighten

Replace with Correct fittings

**due to over tightening, replace hose or fitting**

**Cylinder Leaks at Rod**

Fitting Port cracked

Faulty Seals on Cylinder Gland

Damaged Cylinder Rods

Cylinder Rods Bent

Repair or replace Cylinder or port

Disassemble and Replace

Clean or Replace the Rod as required.

Determine Cause of Overload. Replace the Rod

**Cylinder Moves Wrong Way (Not the function that was actuated)**

Incorrect Hose Routing

Wire Harness improperly Installed

Operator Perception of Correct Operation is incorrect

Check Hose Diagram in the Service Manual and route the hoses correctly

Confirm incorrect placement and Re attach the harness connectors as needed.

Consult the Operator's Manual for Correct operation and communicate with the Operator.

**Cylinder Moves intermittent (all functions)**

Cylinder Control Pump Failure (all functions affected)

Load Sense Signal Not reaching the pump

Low Or Improper Oil in Hydraulic system

Contamination of Oil causing restricted flow in the valve.

No voltage to Joystick Controller

Faulty Joystick Controller

Test pump to confirm. Rebuild or replace as required.

Check valve Pilot pressure and Load sense check valves.

Replace or fill as required.

Replace oil, and clean components.

Check Fuses, wires etc and repair as required

Test then replace or repair as required.



# OPERATION

## OPERATION

### Problem

**Cylinder Moves  
Spongy or Jerky**

### Possible Cause

Air in oil

### Remedy

Identify the source of the Air. Replace Oil if Required, or cycle the mower several times to purge the oil

Wrong Oil Used

Check Specifications for proper oil, and replace

Oil is cold

System must be warmed to at least 40degrees F for proper operation.

Faulty Pump or Pump drive

Check or test then replace or repair as required.

Workport reliefs set too low

Test relief pressure and replace with proper Work port relief valve.

**Cylinder Moves Some  
Functions (But Not All)**

Faulty Joystick Controller

Test the joystick and repair or replace as required

Oil Level too low

Fill the hydraulic tank as required

Faulty Solenoid valve

Test and repair or replace as required

Contamination in valve

Flush system and clean the valve as required

Faulty main spool or valve section

Replace the valve section

Bad Control Module

Replace the module

Incorrect Hose Routing

Check for proper hose routing in the Service manual and correctly install

Incorrect Work port Relief installed

Check work port relief pressure and replace as needed

Work Port relief failure

Test work port relief pressure and replace if required

Cylinder Failure

test cylinder, repair or replace as needed

One way Flow restrictor installed in wrong port, or backwards

Check proper installation in Service Manual. One way flow restrictors are required on most Gravity aided functions and both directions of the swing functions

Pump Worn out

test to confirm, repair or replace as required

Air in oil

Locate the source of the air and repair. Flush and fill oil as required

Engine RPM too slow

rated rpm is 540 PTO speed as indicated on the tachometer

**Cylinder Rod Bent**

Operator Abuse

Operator training, Travel speed too fast, or impact with solid objects while mowing

Misalignment of Cylinder Lugs (bent boom)

Operator abuse, Excessive loading of boom components

Work Port Relief improper setting or failure

Check for proper setting. Replace as needed

Interference with another component

Operator abuse or components interfering with boom movement



# OPERATION

## OPERATION

<b>Problem</b>	<b>Possible Cause</b>	<b>Remedy</b>
<b>Cylinder Rod Came Out of Cylinder</b>	Piston Nut backed off of the Rod	Improper retaining of nut, replace or rebuild as required
	Relief Valve setting Too High	Test relief valve and adjust or replace as required
	Operator abuse	Overloading cylinder in the extend position
<b>Deck Cracks</b>	Severe Use or Abuse	Excessive ground speed, Overload or impact with solid objects
	Vibration	Blades or blade bar bent, or blade missing
	Poor or missing welds	Manufacturing defect
<b>Deck Worn On Underside (Cutting Head Only)</b>	Mowing over sand or rocks	Operator abuse
	Abusive operation, mowing heavy debris	Operator abuse
	Normal operational wear	Normal wear over time can result in cracks or damage. Check deflectors and guards. Replace as required.
<b>Hydraulic System Noise (Squeal)</b>	Restrictions to oil flow in the system	Identified by concentration of heat, due to Line restriction bent hoses or contamination.
	Relief Valve Malfunction	Relief setting too low, will result in generation of heat, Adjust or replace as needed.
	Cavitation	induction of air into the system due to leakage
	Wrong Oil Used	Flush and refill as required
<b>Hydraulic System Overheating</b>	Excessive Engine RPM	Engine RPM should not exceed 540 PTO speed as indicated on the tractor tachometer
	Restriction in Hydraulic System	Identified by a concentration of heat due to crimped hydraulic line, relief valve failure or contamination.
	Relief Valve Set too low	Test and adjust or replace as required
	Internal Leakage due to wear	Test pump and motor. Replace or repair as required
	Excessive Pump or Motor Wear	Test pump and motor. Replace or repair as required
	Wrong Oil	Flush and refill as required with proper oil
	Abusive Operation (Heavy Material or debris)	Operator abuse
<b>Motor Flange or Motor Housing Breaking</b>	Excessive Torque load due to abuse	Impact with solid objects or excessive loading of mower due to high ground speed.
	Loss of Bolt torque at flange or at motor section	Due to excessive loading. Check bolts daily, and replace or repair as required



# OPERATION

## OPERATION

### Problem

**Motor Inoperative  
(Won't Run)**

### Possible Cause

Low Oil level or No Oil

Improper Oil Used

Solenoid valve Failure or  
O-ring Failure at the  
Solenoid Valve

No voltage to Solenoid  
Valve

Incorrect Wiring at  
Solenoid valve

Spindle Locked up

### Remedy

Fill or replace as required

flush and replace the oil

Remove the solenoid valve and inspect.

Replace as required

Check harness connections, fuses and wires

Wrong plug installed (Maverick and Machete).  
Timbercat harness plug used in place of Other  
mower plug. Reconnect with proper plug

Check by spinning blades. See Section on  
spindle failures

### Motor Overheating

Oil Level Too Low

Incorrect Oil Used

Air in Oil

Engine RPM too high

Excessive ground speed  
for mowing conditions

Excessive ground contact  
with blades

Internal leakage in pump  
or motor

Relief valve malfunction

Restrictions in the system

Fill or replace as required

Flush and fill as required

Locate the source and repair. Flush and fill the  
oil as required

Tractor must be operated at the 540PTO speed  
as indicated on the tachometer

Operator abuse

Operator abuse

Test to confirm. Repair or replace as required

Test relief valve setting. Adjust or replace as  
required

Identified by concentration of heat, due to Line  
restriction bent hoses or contamination.

### Motor Shaft Seal Leaking

Excessive Back Pressure  
on return side of the  
motor.

Incorrect oil used

Shaft Seal worn

Failed Seal Retainer

Defective Motor Flange  
casting

Due to bent fittings or crimped hoses. Inspect  
the system and repair as required

Replace with correct oil.. Flush and fill

Due to heat from the spindle or failure of  
spindle components. Check spindle section

Manufacturing defect. Consult customer  
service for proper repair or replacement

Manufacturing defect. Consult customer  
service for proper repair or replacement



# OPERATION

## OPERATION

### Problem

**Motor Runs Too Slow  
(or Slows Down Under  
Load)**

**Motor Stops (Stops  
under Load)**

### Possible Cause

Engine RPM too slow

Pump Drive Damaged  
Logic Valve O-ring Failure  
(Gear Systems)

Damaged O-ring on  
Solenoid Valve

Pump Worn or Defective  
Motor Damaged or  
defective

Incorrect Oil in System

Air in the oil

Excessive Ground Speed  
for Mowing Conditions

Excessive Internal  
Leakage in pump/motor  
Low Relief Valve Setting

Restrictions in the system

**Pump Seizure (Pump  
Locks Up)**

**Pump Wear (Rapid  
Excessive Wear)**

Lack of Oil

Inadequate or lack of pump  
Prime during initial start up.

Improper assembly

Contamination

Defective Pump

### Remedy

Tractor must be operated at the 540PTO speed  
as indicated on the tachometer

Check drive shaft attachment to the tractor  
Remove logic valves and inspect seals.  
Replace as required

Remove solenoid valve. Replace seals as  
required.

Test to confirm, Repair or replace as required  
Confirm Pump is Working correctly, Check that  
spindle is not locking up, Replace or repair the  
motor as required

Flush and fill with proper oil per the  
specifications

Locate the source of the air intake and fix.  
Flush and fill the oil as required

Operator Abuse

Confirm with pressure/flow test and replace or  
repair as required

Check the Setting using a pressure/flow meter  
with a restrictor valve. Adjust or replace as  
needed

Identified by a concentration of heat due to  
crimped hydraulic line, relief valve failure or  
contamination.

Repair or replace the pump or motor. Fill the  
oil to the correct level and check for leaks

Pumps must be properly primed prior to initial  
startup. Consult the Technical Service manual  
or contact Customer Service for proper  
procedures

Pump may have been reassembled incorrectly  
by the dealer following a prior failure. Rebuild  
or replace

Contaminants in the system will damage the  
components. Repair or replace the affected  
components, then flush and refill with clean oil.  
Inspect the tank for debris.

Confirm defect with customer service and  
replace



# OPERATION

## OPERATION

### Problem

#### Spindle Leaking At Motor

### Possible Cause

Due to Motor Seal Failure (hydraulic Oil leak)  
Motor Loose or bolts missing  
Gasket torn due to movement of motor on spindle flange  
Excessive Backpressure in Spindle

### Remedy

See section on motor seal failure and repair as needed  
Bolts should be checked every 8 hrs. Loss of torque will result in seal failure and leakage  
See above

#### Spindle Leaking Around Bottom Seal

Seal Damaged due to Debris  
Bearings Loose

Remove the Spindle vent plug and check for clogs or contamination.  
Replace as required. Check for damaged or missing seal guard  
Disassemble the Spindle and inspect the bearings for damage. Re-assemble and properly pre-load the bearings based on the technical service manual.

#### Spindle Leaking At Relief Vent

Seal blown out due to excessive back pressure  
Relief fitting installed in the fill hole (wrong hole)

Remove the Spindle vent plug and check for clogs or contamination.  
Install the vent in the top most hole or even with the top of the top bearing race. The lower hole is the fill hole and should have a grease zerk or plug installed.

#### Spindle Overheating

Spindle Overfilled  
Low Grease Level in the spindle  
Excessive Bearing Pre-load

Overfilling will result in the lubricating oil being expelled from the vent.  
Fill lubricant until it can be seen in the top most (vent plug) hole.  
Disassemble the spindle and inspect the bearings for wear. Re-assemble following the bearing pre-load specifications in the Technical Service Manual.

#### Spindle Shaft Loose or Falls Out

Blade bar bolts are too long  
Bearing Pre-load adjusting nut and/or lock nut failure  
Bearing cups or cones not installed properly  
Severe upper bearing failure.

Installing the incorrect bolts (too long) for the blade carrier will allow the bolts to contact the lower bearing and will lock up the spindle. Install the correct bolts.  
Locking washers are provided to retain the pre-load lock nut in place. Improper installation of the washer and locking mechanism will allow the lock nuts to back off. Re-assemble following the recommended procedures  
Disassemble and check for wear. Follow reassembly procedures indicated in the Technical Service Manual  
Usually due to lack of lube. Replace the bearing(s) and make sure the spindle is properly filled. Also check for leakage and repair as needed.



# OPERATION

## OPERATION

### Problem

**Spindle Locks Up  
(Seizes and Won't Turn)**

### Possible Cause

Loss of lubrication in spindle  
Excessive bearing pre-load

### Remedy

Indicated by catastrophic failure of the upper bearing. See the previous section  
Disassemble the spindle and inspect the bearings for wear. Re-assemble following the bearing pre-load specifications in the Technical Service Manual.

Blade bar bolts too long

Installing the incorrect bolts (too long) for the blade carrier will allow the bolts to contact the lower bearing and will lock up the spindle. Install the correct bolts.

Interference due to bent seal protector

Inspect the seal guard ring (welded to the blade carrier or bar) Replace or repair as needed.

**Starter on Tractor Won't Crank**

Wire harness incorrectly installed

Check harness attachment to the ignition switch and to the battery. Also, check for proper ground.

**Tractor Battery Dead or Low (Continuous Power Draining)**

On/Off switch malfunction

Inspect to ensure power to switch is interrupted when the switch is in the off position

Short to ground in wire harness

Inspect for damage or heat stress to the harness. Check for shorted wires or melted insulation. Check proper connection to the ignition switch and battery.

Battery failure

Test the battery and replace per the tractor manufacturers recommendation

Tractor issues

Follow tractor manufacturer recommendations for troubleshooting electrical problems with the tractor.







# **MAINTENANCE SECTION**



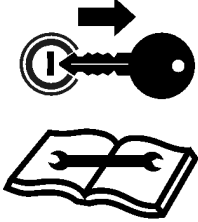

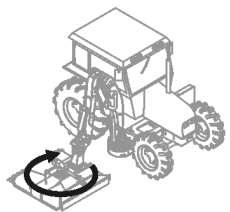
Maintenance Section 5-1



# MAINTENANCE

## MAINTENANCE

### HAZARDS WITH MAINTENANCE OF IMPLEMENT

				
Periodically inspect all moving parts, lubricate drivelines, and tighten all fasteners	Lower mower head to ground or block up before servicing	Stop engine remove key before conducting maintenance	Set mower head securely on the ground before servicing blades	Thrown Objects Hazard Ensure blades rotate clockwise viewed from above mower head

#### **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:**

- **STOP ENGINE AND PTO**, engage parking brake, lower implement, allow all moving parts to stop and remove key before dismantling from tractor.
- **PLACE** implement on ground or securely block up raised equipment. Use large blocks on soft or wet soil.
- **PUSH and PULL** Remote Hydraulic Cylinder lever to relieve hydraulic pressure.
- **DISCONNECT** Pump solenoid valve or PTO driveline connection before servicing mower head.
- **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.
- **FOLLOW INSTRUCTIONS** in maintenance section when replacing hydraulic cylinders to prevent component falling.
- **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.
- Inspect mower blade spindle to ensure bearing preload. If loose repair before operating.
- **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:**

- Inspect blade carrier and blades daily.
- Check blade and blade carrier **BOLT TORQUE** daily. Loose bolts can cause blade or blade bolt failures.
- **REPLACE**, bent, damage, cracked and 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 HMBM-01**



# MAINTENANCE

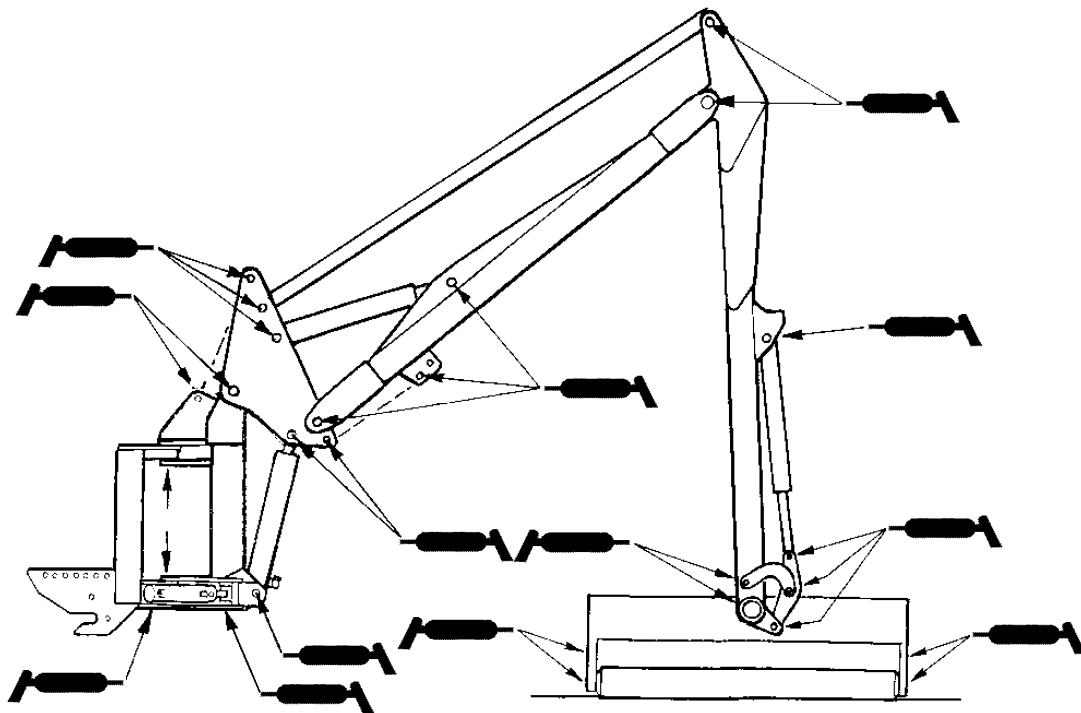
## PARTS INFORMATION

### 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**

## LUBRICATION INFORMATION



Mnt-B-0057

Grease all locations shown daily.



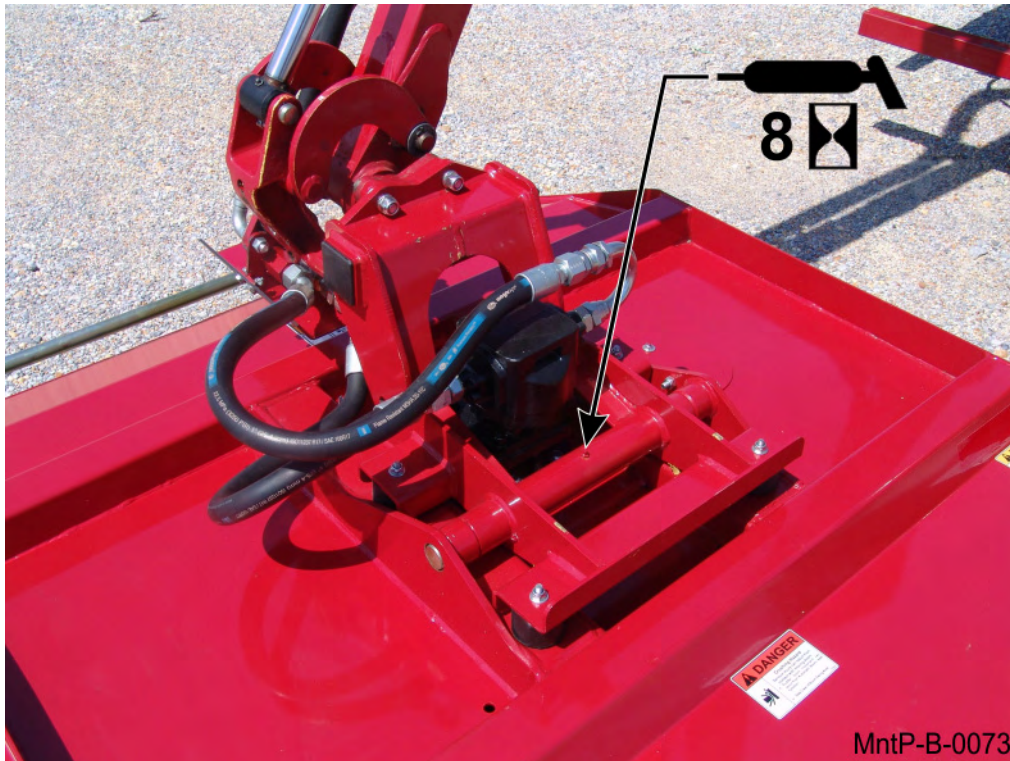
# MAINTENANCE

## ROTARY HEAD LUBRICATION

Lubricate all the points indicated in the diagram below at the intervals stated. Grease point should be lubricated on a daily basis prior to work and level of oil in the bearing housing checked. Fill oil up to plug level (as required) using EP90 gearbox oil. Oil capacity is 19.9 fl. oz. Check oil leaks around the spindle assembly on a daily basis.

After work and always prior to storage the machine should be cleaned removing dirt and debris from deck. Grease as indicated prior to storage. Always try whenever possible to store unit in a clean dry location protecting it from the elements.

MAINTENANCE





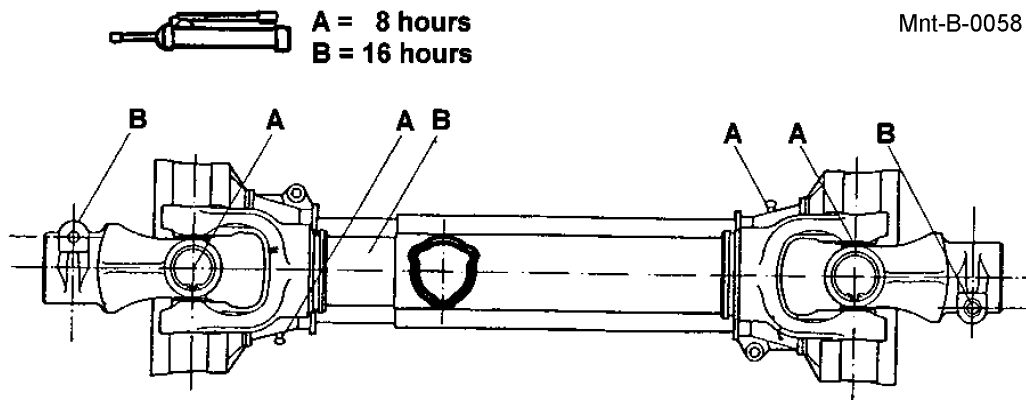
# MAINTENANCE

## PTO SHAFT INSPECTION

Regularly check the PTO guards for damage and ensure the anti rotation chains are in place and that their anchor points are in good condition. Do not operate the machine with any damaged guards - replace suspect items immediately.

## PTO SHAFT LUBRICATION

Lubricate all the points indicated in the diagram below at the intervals stated using a general purpose lithium based grease.



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



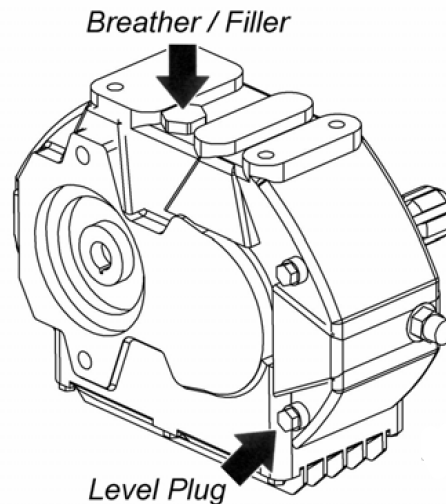
# MAINTENANCE

## MAINTENANCE

### PTO GEARBOX

Refill the gearbox after the first initial 50 hours and thereafter yearly or 500 hour intervals, or whichever comes first.

Drainage of the gearbox for an oil change is via the drain plug located on the base of the gearbox. To refill or for 'topping up' remove both plugs indicated below and fill gearbox via the filler plug to a point where the oil starts to run from the level plug orifice – replace plugs and tighten securely. Fill with multipurpose gearbox oil P/N 00786250.



Mnt-B-0060

### HYDRAULIC SYSTEM

#### Oil Supply

Check daily the oil level in the reservoir.

No fixed time period can be quoted for oil changes as operating conditions and maintenance standards vary so widely. Burnt and scorched oil odors and the oil darkening and thickening are all signs of oxidation and indicate the oil should be changed.

Moisture which results from condensation can become entrapped in the oil and cannot be removed by filtration so that contamination is a progressive factor.

Contamination can be reduced by:

1. Cleaning off around the reservoir cap before removal, and keeping that area clean.
2. Using clean containers when replenishing the system.
3. Regular servicing of the filtration system.

#### Filtration Maintenance

A 125-micron suction strainer and a low-pressure 10-micron full flow return line filter protect the machine.

##### Suction strainer

The strainer is permanently fixed within the reservoir.

Should symptoms of pump cavitation or spongy intermittent operation occur the tank must be drained and flushed out with a suitable cleaning agent e.g. clean diesel oil.

##### Return Line Filter

The elements should be changed after the first 50 hours and thereafter at 500-hour intervals. It is important to note hours worked as if the filter becomes blocked an internal by-pass within the canister will operate and no symptoms of filter malfunction will occur to jog your memory.



# MAINTENANCE

## HYDRAULIC HOSES

The condition of all hoses should be carefully checked during routine service of the machine. Hoses that have been chafed or damaged on their outer casing should be securely wrapped with waterproof adhesive tape to stop the metal braid from rusting. Hoses that have been suffered damage to the metal braid should be changed at the earliest opportunity.

### Hose Replacement

1. Replace one hose at a time to avoid the risk of wrong connections.
2. When the hose is screwed to an additional fitting or union, use a second spanner on the union to avoid breaking both seals.
3. Do not use jointing compound on the threads.
4. Avoid twisting the hose. Adjust the hose line to ensure freedom from rubbing or trapping before tightening hose end connections.

Before changing hoses, study the installation. These are carefully calculated to prevent hose damage during operation. Always replace hoses in exactly the same manner. This is especially important for the flail hoses where they must be crossed, upper to lower, at the dipper and head pivots.

### Hose Warranty

Warranty is limited to replacement of hoses which have failed due to faulty materials of manufacture. Warranty will not be considered on hoses that have suffered damage by abrasion, cuts or being pinched or trapped while in work. Neither will a claim be considered where a hose end has been damaged by a blow or where the threads or unions have been damaged by overtightening.

RECOMMENDED HOSE END TORQUE VALUES FOR 37 DEGREE ANGLE STEEL HOSE END FITTINGS			
DASH SIZE	NOMINAL SIZE (IN.)	TORQUE (IN.LBS.)	VALUE* (FT.LBS.)
-4	1/4	140	12
-6	3/8	230	19
-8	1/2	450	38
-10	5/8	650	54
-12	3/4	900	75
-16	1	1200	100
-20	1-1/4	1600	133
-24	1-1/2	2000	167
-32	2	2800	233
* Straight threads do not always seal better when higher torques are used. Too much torque causes distortion and may lead to leakage.			
Mnt-B-0004			

Soft Seal hose connections are capable of holding pressure when the nut is only 'finger tight'. It is therefore recommended that when dismantling, the hose be manually flexed to relieve any residual pressure with the retaining nut slackened prior to complete disassembly.



# MAINTENANCE

## CABLES

The cables operate on a push/pull system with the spool centering springs always returning the spool to the neutral position when the handle is released.

Care should be taken during installation and operation to ensure that the cables are not trapped or kinked. Any abrasion or damage to the outer casing should be sealed with plastic insulation tape to avoid moisture penetrating.

No routine adjustment of the cables are necessary as they do not stretch. The threaded collar is correctly adjusted when the lever is in a vertical position in its housing allowing an equal amount of travel in either direction.



**CAUTION** On no account should any attempt be made to lubricate the cables which are assembled with a special lubricant during manufacture.

**NOTE:** Be careful in determining the correct cable connections on both the control unit and the valve in the event of cable replacement.

## CYLINDER ROD MAINTENANCE

It is important to visually inspect the hydraulic cylinder rods daily before use. It is highly recommended that while the machine is stored or getting very little use that a protectant is applied to the hydraulic cylinder rods to prevent degradation. If the machine receives more frequent use, be sure to fully cycle each cylinder function so that the cylinder rod is coated by the systems hydraulic fluid. Depending on your operating environment it may be necessary, under normal operating conditions, to apply a protective lubricant to the cylinder rods for protection against rust and pitting. Hydraulic fluid may provide a suitable amount of protection, but remember any protectant can attract dust and debris so attention must be given to the cylinder rods daily. Also remember that any other protectant must be compatible with hydraulic fluid. Bush Hog is not responsible for rust or pitting of the cylinder rod due to weather exposure or impacts from normal operation or mounting. If hydraulic cylinders and or the cylinder rods are damaged as a result of the rods rusting or pitting, the hydraulic cylinders and rods will not be covered under warranty by Bush Hog.



# MAINTENANCE

## MAINTENANCE

### Boom Cylinder Removal and Replacement Instructions

1. Clear the area of all personnel before lowering the boom mower head.
2. From the tractor seat with your seat belt fastened around you, Lower the boom mower head to the ground. Extend the boom to the furthest reach and lower the mower head flat on the ground. DO NOT attempt to replace the cylinders with the boom in the raised or transport 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. Allow the system to cool to room temperature before removing any hydraulic components.
5. Wear Safety glasses and impenetrable gloves when working with hydraulic hoses and fittings.
6. Release all oil pressure from the hydraulic circuit by manually stroking each valve section with the tractor engine off. Utilize the Manual Override function if the unit is equipped with an electric over hydraulic valve.
7. Utilize blocks, jack stands or a suitable over head hoist to support the weight of the boom section and remove pressure from the cylinder mounting pins.
8. Check to see that the cylinder to be replaced is not under pressure by moving the cylinder pins by hand. The pins should be loose and should slide from the pin bore easily. If the pins are tight and cannot be moved, the cylinder may be under pressure. Make sure the boom components are properly supported and that the pressure is relieved from the circuit.
9. Cylinder assemblies are heavy and can fall when the pins are removed. Support the hydraulic cylinder with a suitable hoist or jack.
10. Slowly loosen the hydraulic connections to the cylinder. Carefully unscrew hose fitting and allow any remaining pressure to bleed off. Use Extreme Care. Oil must be cool, and the technician should stand to the side to prevent exposure to any hydraulic oil. Always consult the Material Safety Data Sheet and wear any required Personal Protective Equipment. A catch pan may be required to retain any spilled oil.
11. Cap both ends of the fitting with suitably sized metal caps.
12. Remove the cylinder pins starting with the ROD end cylinder pin. Make sure the cylinder is properly supported, and remove the base end cylinder pin. The cylinder may be heavy, use proper lifting techniques to lift and handle the cylinder. If needed, get assistance from another person to safely lift the cylinder from the machine.
13. Measure the distance between the cylinder pin holes and extend the new cylinder the correct length prior to attempting an installation.
14. Install the new cylinder in place and install both cylinder pins and retaining hardware.
15. Remove the metal caps, and re-install the hydraulic hoses.
16. Check the hydraulic reservoir of the boom mower to ensure there is sufficient oil. Follow the manufactures recommendations for proper oil type and filtering techniques and requirements to add oil to the system.
17. Clear the area of all persons prior to starting the tractor.
18. Consult the Operator's Manual for instruction in regard to the proper operating procedure.
19. From the tractor seat, with the seat belt fastened, operate the boom to ensure proper operation of the boom function.
20. From the tractor seat, with the seat belt fastened, operate the boom controls to fully extend and retract the new cylinder several times to purge any trapped air from the system.
21. From the tractor seat, with the seat belt fastened, look for signs of and oil leak. If an oil leak is observed, shut the tractor down and follow the steps to remove pressure from the hydraulic circuit. Identify the source of the leak, and resolve the issue.
22. Upon completion of the required repairs, return to Step # 16 to recheck the cylinder for proper operation.



# MAINTENANCE

## Hydraulic Component Maintenance Schedule

	Hours of Operation											
Component	Installation	200	400	600	800	1000	1200	1400	1600	1800	2000	2200
Pump Drive Shaft Check and Lubricate	x	x	x	x	x	x	x	x	x	x	x	x
Pump Mounting Bolt torque check (Inspect Daily)	x	x	x	x	x	x	x	x	x	x	x	x
Charge Pump Filter	Installation	x			x				x			
Pressure Filter to the Control Valve	Installation	x			x				x			
Return Canister Filter Element	Installation	x			x				x			
Hydraulic Oil Change	Installation	x							x			
Hydraulic Oil Particle Count Testing	x	x			x				x			
Hydraulic Tank Breather Filter	Installation	Inspect							Replace			
Hydraulic Tank Suction Screen	Installation	Inspect							Inspect			
Hydraulic Hose Inspection/Replacement	Installation	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Cooling Fan Clean and Inspect	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily
Check Hydraulic Fluid Level (Inspect Daily)	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily
Mower Blades Replace (INSPECT DAILY)		x	x	x	x	x	x	x	x	x	x	x
Blade Bolts Replace (INSPECT DAILY)		x	x	x	x	x	x	x	x	x	x	x
Blade Bar Assembly Replace	Installation					x					x	
Spindle Lube Replacement (INSPECT DAILY)	x					x					x	
Spindle Bearing Pre-load Inspection	x	x	x	x	x	x	x	x	x	x	x	x
Mower Debris Guard Inspect/Replace	x	x	x	x	x	x	x	x	x	x	x	x
Pivot Point Lubrication	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily
King Pin Bearing Replacement	Installation								x			
Pivot Pin Bearing replacement (Steel)	Installation								x			
Pivot Pin Bearing Replacement (Fiber)	Installation					x					x	
Inspect Operation And Safety Decals Replace when faded, torn or missing.	x	x	x	x	x	x	x	x	x	x	x	x

**Repeat the Maintenance Schedule based on the hours indicated for the life of the machine**

## 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 graphitic or molydisulphide greases or other extreme pressure lubricants are used. This applies to both UNF fine and UNC coarse threads.



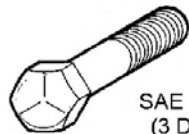
# MAINTENANCE

## TORQUE SPECIFICATIONS

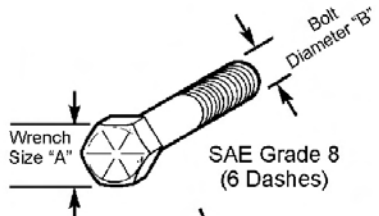
### AMERICAN Bolt Head Markings



SAE Grade 2  
(No Dashes)



SAE Grade 5  
(3 Dashes)



SAE Grade 8  
(6 Dashes)

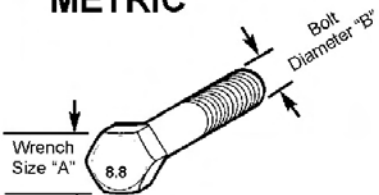


All Capscrews  
SAE Grade 8

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 UNF	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.

\*Use 75% of the specified torque value for plated fasteners. Use 85% of the specified torque values for lubricated fasteners.

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



# MAINTENANCE

## MAINTENANCE

### FLAILHEAD

1. Frequently inspect the rotor assembly for damaged or missing flails. Bolts and nuts securing the flails to the rotor should be regularly checked and kept tight. The correct torque setting for these locknuts is 135 Nm (100 lbs/ft.). Use only the correct flail bolt and locking nut. Check the flail pivot bushes for possible damage or wear. They do not require oil.
2. Do not attempt to run the rotor with flails missing. Imbalance will cause severe vibration and can rapidly damage the rotor shaft bearings. As an emergency measure, if a flail is broken off or lost, remove another on the opposite site of the rotor to retain balance. Always replace flails in opposite pairs and never match up a new flail with a resharpener one which will of course be lighter.
3. Blunt flails absorb a lot of power and leave an untidy finish to work. They should be sharpened on a grindstone or with a portable grinder periodically. Blades **MUST BE** sharpened in pairs.
4. Wear protective gear when sharpening flails.
5. Ensure that the bearing housings and hydraulic mounting nuts and bolts are kept tight. They should be checked during servicing.



# MAINTENANCE

## Flail Blades Inspection



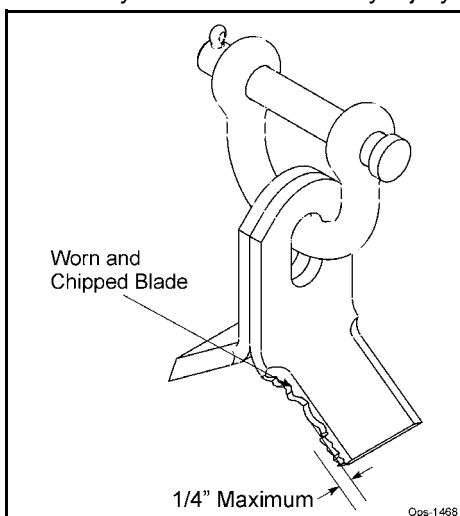
**DANGER**

Inspect the Blades daily for abnormal wear. REPLACE ALL BLADES on the carrier IMMEDIATELY if any blades have:

- Become bent or deformed from its original shape, or
- Wear inside the blade bolt hole, 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 1/4"(8mm), or
- The material on the leading edge has been worn away by more than 1/4"(8mm)

**DO NOT** straighten, sharpen, weld or hard-face blades

Failure to replace worn or damaged 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.



Always replace blades in sets

- Blades that are damaged may indicate severe service or abuse. If one blade is worn or damaged other blades on the same shaft will have been subjected to the same severe service or abuse.
- The Flail rotor turns at speeds exceeding 2000 RPM and is dynamically balanced at the factory. Differences in blade weight between used blades with loss of material from gouges or wear as compared to new blades can cause severe vibration and damage to the Flail rotor. Always replace blades as complete sets.

### Important

Use only genuine Bush Hog replacement blades and fasteners. Other blades and fasteners may not meet the Bush Hog requirements and could fail during operation resulting in part being thrown out from under the mower.



**CAUTION**

Never attempt to sharpen blades. OPS-U-0046



# MAINTENANCE

## Blade Pins and D-Ring Inspection

Blade Pins and D-Rings daily for wear or damage as follows:

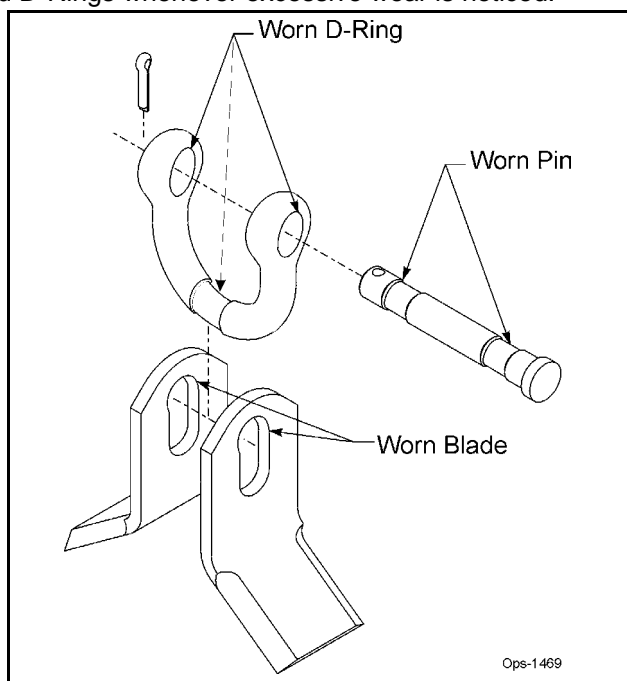


Inspect the Blade pins and D-Rings daily for abnormal wear. Make sure the cotter pins are in place and properly spread. REPLACE BLADE Pins and D-Rings IMMEDIATELY if they have:

- Visible cracks or
- If a Pin or D-Ring has visible worn areas, or
- If a Pin or D-Ring has gouges or chipped areas

Failure to replace abnormally worn pins or D-Rings may lead to catastrophic failure and ejection of the broken part which may cause serious bodily injury or death.

Always replace the pins and D-Rings whenever excessive wear is noticed.



### Important

If the cotter pins are broken by contact with other flail blades, remove the pin and reverse the direction the pin is inserted through the D-Ring so that the cotter pin is on the opposite side of the D-Ring. This will prevent the next set of blades from swinging back and hitting the cotter pin. OPS-U-0045



# MAINTENANCE

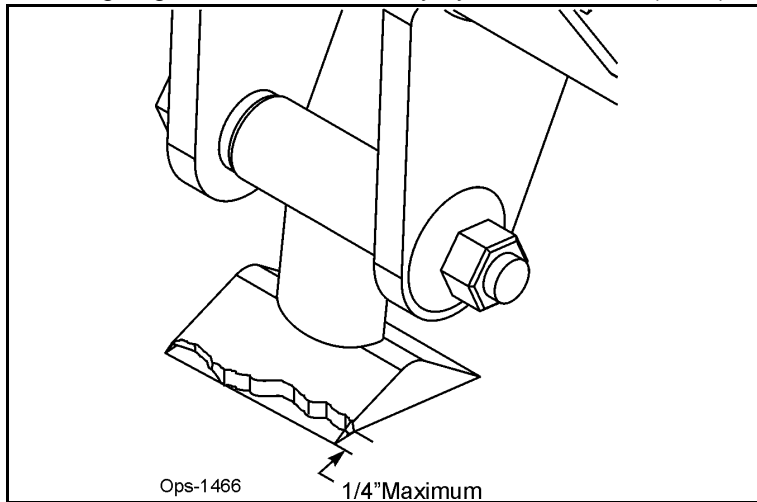
## Flail Axe Blades Inspection



**DANGER**

Inspect the Blades daily for abnormal wear. REPLACE ALL BLADES on the carrier IMMEDIATELY if any blades have:

- Become bent or deformed from its original shape, or
- Oval shape wear inside the blade bolt hole, 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 1/4"(8mm), or
- The material on the leading edge has been worn away by more than 1/4"(8mm)



Failure to replace worn or damaged 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.

Always replace blades in sets

- Blades that are damaged may indicate severe service or abuse. If one blade is worn or damaged other blades on the same shaft will have been subjected to the same severe service or abuse.
- The Flail Axe rotor turns at speeds exceeding 2000 RPM and is dynamically balanced at the factory. Differences in blade weight between used blades with loss of material from gouges or wear as compared to new blades can cause severe vibration and damage to the Flail Axe rotor. Always replace blades as complete sets.

**Important**

Use only genuine Bush Hog replacement blades, blade bolts and fasteners. Other blades and bolts may not meet the requirements of Bush Hog and fail during operation resulting in part failing and being thrown out from under the mower.



**CAUTION**

Never attempt to sharpen blades. **OPS-U-0049**



# MAINTENANCE

## Flail Axe Blade Bolt Inspection

Inspect Blade Bolts daily for wear or damage as follows:

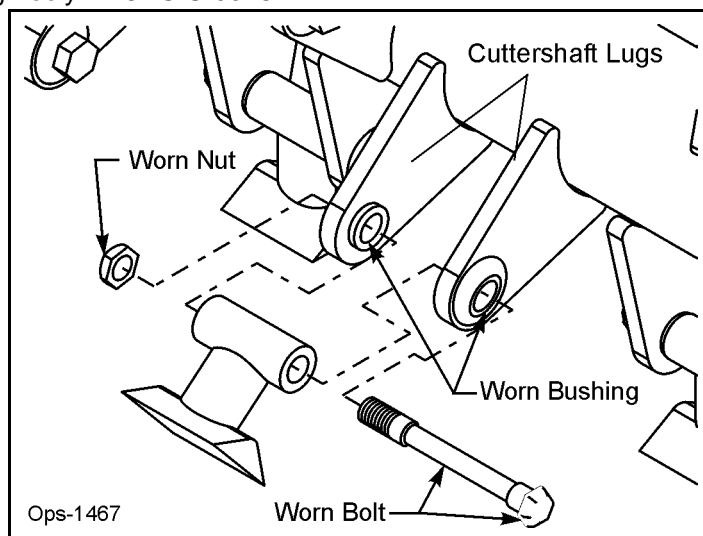


Inspect the Blade Bolt daily for abnormal wear. REPLACE ALL BLADE BOLTS on the carrier IMMEDIATELY if any bolts have:

- Visible cracks or
- If the blade bolt is worn or any recessed area is visible on the bolt, or
- If Blade Bolt has gouges or chipped areas. or
- If Bushing fits loose in the Rotor Shaft.

Failure to replace abnormally worn bolts or bushings 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 and new bushings whenever replacing the Blades. To tighten bolts and nuts, first apply thread lock to nut. Make sure to tighten bolts and nuts just enough to allow the blades to swing freely, and not bend the cuttershaft lugs. If cuttershaft lugs are bent together because of over tightening the blades will not swing freely. OPS-U-0043





# MAINTENANCE

## BLADES

Check the Blades for cracks and wear and Blade Bolts for tightness, daily. Blades should be replaced when they are worn excessively, bent, deformed, or out of balance.

### CAUTION

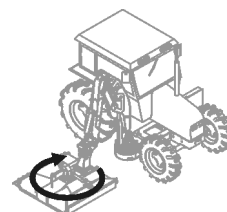
Blades should always be replaced in pairs. Blades of different weights can cause serious imbalance and damage to the machine and personnel. When replacing blades, take care to replace the blade bolts, nuts, and washers.

### Important

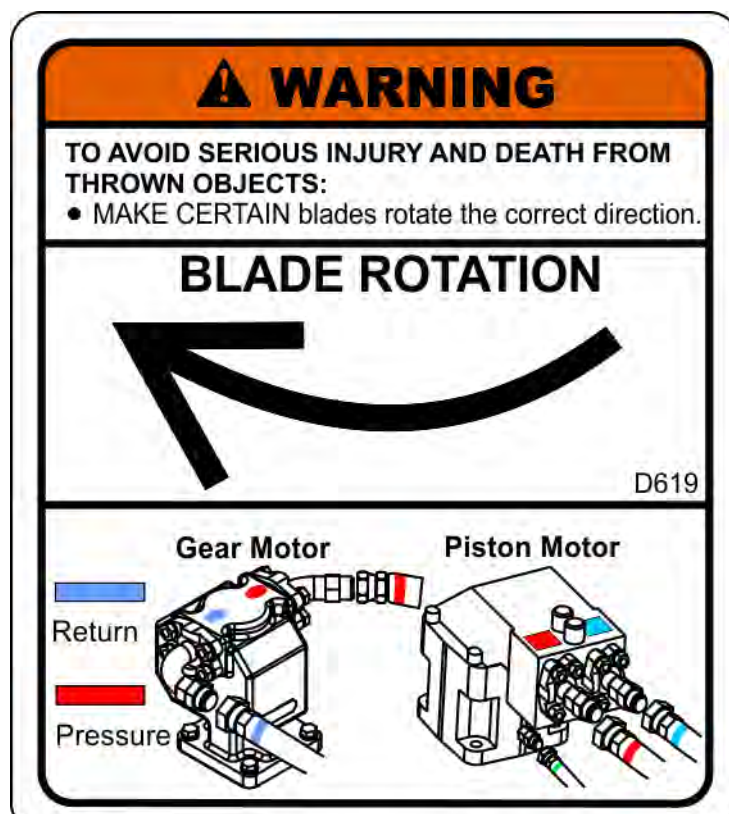
Make sure the mower blades are turning clockwise when looking down from the top of the mower. Follow the color coding on the hydraulic hoses and fittings to make sure the motor and hydraulic hoses are assembled properly. Connect the red hose connection only to red fitting. Connect the blue hose connection only to the blue fitting. The blade rotation on the leading edge of the mower should discharge the cut material away from the tractor and operator.

### WARNING

If the leading edge of the mower blades are rotating backwards they can discharge material toward the operator. If this occurs discontinue mowing immediately and reverse the direction of the motor rotation by correctly installing the motor pressure and return hoses. Contact your dealer or Alamo Industrial for specific information on the hose routing.



MAINTENANCE





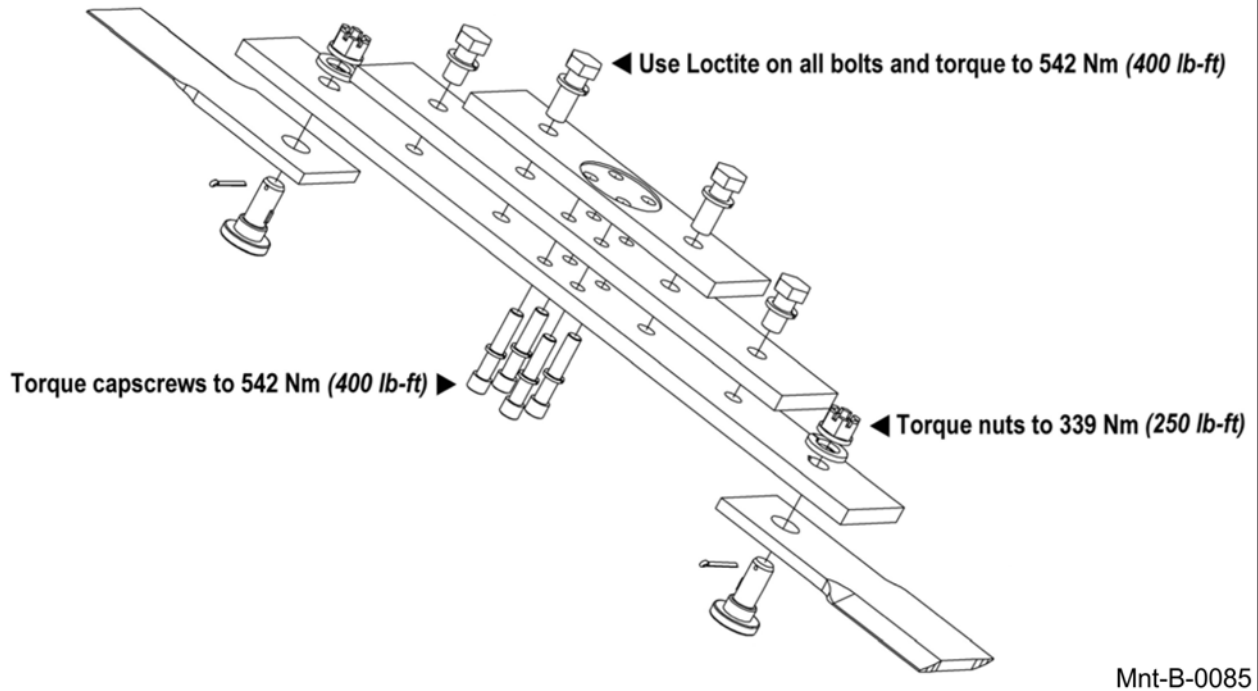
# MAINTENANCE

## HARDWARE

Most nuts and bolts will stay tight and therefore need only periodic checking. However, the following nuts and bolts are extremely important and should receive special attention:

### Rotary Head Torque

#### Blade Bar Torque Figures





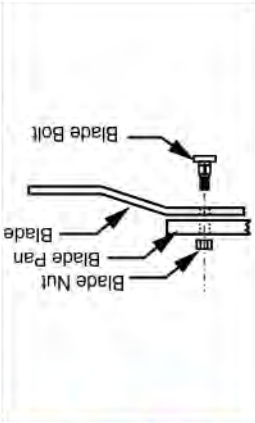




**▲ WARNING**

**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.



**PARA EVITAR LESION SERIA O MUERTE POR EL FALLO DEL ACOPLAMIENTO DE LAS CUCHILLAS:**

- Siempre reemplace las cuchillas en pares.
- Apriete los tornillos a torsión de 600 p/lbs.
- SIEMPRE reemplace las cuchillas con tornillos y tuercas nuevas.

**▲ ADVERTENCIA**

**PARA EVITAR LESION SERIA O MUERTE POR EL FALLO DEL ACOPLAMIENTO DE LAS CUCHILLAS:**

- Siempre reemplace las cuchillas en pares.
- Apriete los tornillos a torsión de 600 p/lbs.
- SIEMPRE reemplace las cuchillas con tornillos y tuercas nuevas.


D620 SP

**▲ WARNING**

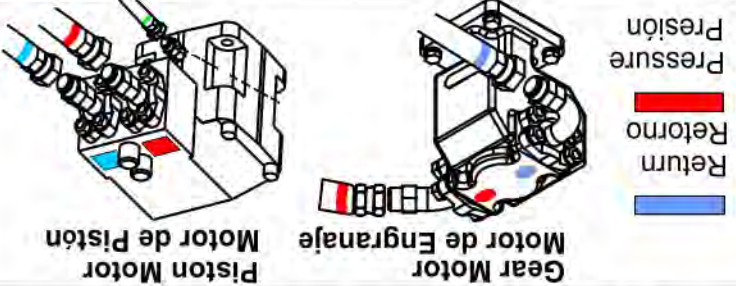
**TO AVOID SERIOUS INJURY AND DEATH FROM THROWN OBJECTS:**

- MAKE CERTAIN blades rotate the correct direction.

**BLADE ROTATION**



**ROTACIÓN DE CUCHILLAS**



**▲ ADVERTENCIA**


**PARA EVITAR LESION SERIA O MUERTE POR OBJETOS LANZADOS:**

- ASEGURE que las cuchillas giran en la dirección correcta.

D619 SP







<div><b>! DANGER</b></div>		<div><b>! PELIGRO</b></div>	
<b>THROWN OBJECTS HAZARD</b>		<b>RIESGO DE OBJETOS LANZADOS</b>	
<p>Mower can throw objects up to 300 feet. TO AVOID SERIOUS INJURY OR DEATH to operator or bystanders:</p> <ul style="list-style-type: none"><li>• DO NOT operate with Shield removed.</li><li>• KEEP Shield in place and in good condition during operation.</li></ul>		 <p>Cortacésped puede lanzar objetos hasta 300 pies. PARA EVITAR LESION SERIA O MUERTE a operadores y personas presentes:</p> <ul style="list-style-type: none"><li>• NO opere con la Cubierta quitada.</li><li>• MANTENGA la Cubierta en su lugar y en buen estado durante la operacion. D649</li></ul>	

<div><b>! DANGER</b></div>		<b>AMPUTATION HAZARD</b>	
<p>TO AVOID SERIOUS INJURY FROM BLADE CONTACT:</p> <ul style="list-style-type: none"><li>• Keep away until all motion has stopped.</li><li>• Keep fingers clear of cutterbar when folding cutterbar into transport position.</li><li>• KEEP all persons AWAY from sickle blades.</li></ul>			
<div><b>! PELIGRO</b></div>		<b>RIESGO DE AMPUTACIÓN</b>	
<p>PARA EVITAR LESION SERIA POR EL CONTACTO A LA CUCHILLA:</p> <ul style="list-style-type: none"><li>• Mantengase alejado hasta que todo movimiento a parado.</li><li>• Mantenga los dedos alejados de la barra de corte al devantar la barra de corte a la posición de transporte.</li><li>• MANTENGA todas las personas ALEJADAS de las cuchillas del la barra de hoz. D731</li></ul>			


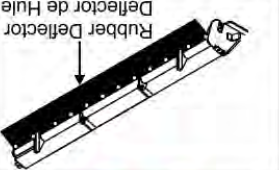
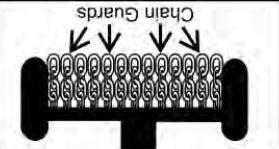


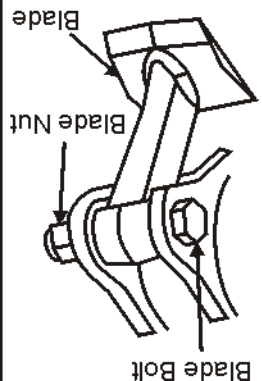
<div><div><b>DANGER</b></div><div>THROWN OBJECTS HAZARD</div></div>		<div><div><b>PELIGRO</b></div><div>RIESGO DE OBJETOS LANZADOS</div></div>	
<p>Mower can throw objects up to 300 feet. TO AVOID SERIOUS INJURY OR DEATH to operator or bystanders:</p> <ul style="list-style-type: none"><li>● CLOSE MOWER DOOR and STOP operating if bystanders or traffic come within 300 feet.</li><li>● KEEP door fully closed when cutting grass and weeds.</li><li>● OPEN door ONLY to cut large brush. Keep door closed for all other mowing conditions.</li><li>● Deflectors are SUBJECT TO WEAR. Replace if worn or damaged.</li><li>● ALWAYS transport with door closed.</li></ul> <p><b>IF MOWER DOOR IS OPEN:</b></p> <ul style="list-style-type: none"><li>● DO NOT OPERATE if blades are rotating in reverse rotation (opposite to the tractor tires during forward travel).</li></ul>		<div></div> <p><b>SI LA PUERTA DE LA CORTADORA ESTA ABIERTA:</b></p> <ul style="list-style-type: none"><li>● NO OPERE si las cuchillas estan girando en la rotación reversa (opuesto a las llantas del tractor durante el avance de viaje). D717</li></ul>	



<b>WARNING</b>		<b>ADVERTENCIA</b>	
<p>Non-genuine parts can fail catastrophically. TO AVOID SERIOUS INJURY OR DEATH:</p> <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> <p>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></p>  <p><a href="http://www.algqr.com/bpm">www.algqr.com/bpm</a></p>		<p>Partes que no son auténticas pueden fallar catastróficamente. PARA EVITAR LESIÓN SERIA O MUERTE:</p> <ul style="list-style-type: none"><li>• Use SOLAMENTE las partes de reemplazo auténticas de BUSH HOG.</li><li>• Partes que no son auténticas pueden fallar y causar condiciones peligrosas para el operador y personas presentes.</li></ul> <p>Contacte a su distribuidor local o BUSH HOG sobre partes de reparo a: 2501 Griffin Ave., Selma, AL 36701 Servicio al Cliente: 800-363-6096 Correo Electrónico: <a href="mailto:contactus@bushhog.com">contactus@bushhog.com</a></p>  <p><a href="http://www.algqr.com/bpm">www.algqr.com/bpm</a></p>	
<b>IMPORTANT</b>		<b>IMPORTANTE</b>	
<p><b>BE AWARE</b> <b>BE ALERT</b> <b>BE TRAINED</b> <b>Before Operating this Mower</b></p>		<p><b>ESTE CONSCIENTE</b> <b>ESTE ALERTO</b> <b>ESTE VIVO</b> <b>Antes de Funcionar Cortacésped</b></p>	
<p>To prevent serious injury to yourself and/or bystanders, be trained in Safe Mowing Practices.</p> <p>Alamo Group Companies, Alamo Industrial, Bush Hog, M&amp;W, Rhino, Schulte, Tiger and Terrain King 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.</p> <p>Read and understand the Operator's Manual. Do not let untrained individuals operate this equipment. Contact your Dealer, AEM (www.aem.org), FEMA (314-878-2304, www.FarmEquipment.org), or Alamo Group (www.Alamo-Group.com) for information on training material or courses that provide training in Safer Operating Practices for Mowers.</p>  <p><a href="http://www.algqr.com/bve">www.algqr.com/bve</a></p>		<p>Para prevenir lesiones graves a usted y/o personas presentes, sea entrenado en la Práctica de Segar Seguro.</p> <p>Compañías de Alamo Group, Alamo Industrial, Bush Hog, M&amp;W, Rhino, Schulte y Tiger así como AEM y FEMA proporcionan material para entrenar que es esencial para su seguridad y la seguridad de otros al operar este equipo. Haga estos procedimientos de seguridad una parte importante de su día de trabajo. Lea y entienda el Manual de Operadores. No permita que personas sin entrenamiento funcionen este equipo. Contacte a su distribuidor, AEM (www.aem.org), FEMA (314-878-2304, www.FarmEquipment.org), o Alamo Group (www.Alamo-Group.com) para la información sobre el material de entrenamiento o cursos que ofrecen el entrenamiento de Prácticas de Operación para Cortadoras.</p>  <p><a href="http://www.algqr.com/bvs">www.algqr.com/bvs</a></p>	
<p>D569 SP</p>		<p>D569 SP</p>	



<b>⚠ DANGER</b>		<b>THROWN OBJECT HAZARD</b>	
<b>TO AVOID SERIOUS INJURY OR DEATH:</b> <ul style="list-style-type: none"><li>• Maintain Rubber Deflectors in good condition.</li><li>• Inspect Rubber Deflectors frequently.</li></ul>			
<b>PARA EVITAR LESION SERIA O MUERTE:</b> <ul style="list-style-type: none"><li>• Mantenga Los Deflectores de Hule en buenas condiciones.</li><li>• Inspeccione Los Deflectores de Hule con frecuencia.</li></ul>			
<b>RIESGO DE OBJETOS LANZADOS</b>			
<b>D626 SP</b>			

<b>⚠ WARNING</b>		<b>TO AVOID SERIOUS INJURY OR DEATH FROM BLADE ATTACHMENT FAILURE:</b> <ul style="list-style-type: none"><li>• Check blade bolts DAILY for tightness.</li><li>• Torque blade bolt to 150 ft lbs.</li><li>• ALWAYS replace blades with new bolts and nuts.</li></ul>	
			
<b>PARA EVITAR LESION SERIA O MUERTE POR EL FALLO DEL ACOPLAMIENTO DE LAS CUCHILLAS:</b> <ul style="list-style-type: none"><li>• Verifique los tornillos de las cuchillas DIARIAMENTE para si estan apretados.</li><li>• Apriete los tornillos a torsión de 150 libras pie.</li><li>• SIEMPRE reemplaze las cuchillas con tornillos y tuercas nuevas.</li></ul> <b>D720</b>			



SEGURIDAD

<div><b>PELIGRO</b></div> <div><p>Si no puede leer inglés: antes de poner en funcionamiento este equipo, solicite que alguien le traduzca los mensajes de seguridad o vaya al sitio web para consultar los mensajes de seguridad y las etiquetas ya traducidos.</p></div> <div> <a href="http://www.algqr.com/bbs">www.algqr.com/bbs</a></div> <div><b>El Manual del Operador Seguridad video</b></div>	<div><b>DANGER</b></div> <div><p>Si vous ne savez pas lire le français: avant d'utiliser l'équipement, demandez à une personne de vous traduire les messages de sécurité ou allez sur le site Internet pour voir la traduction des autocollants et des messages de sécurité.</p></div> <div> <a href="http://www.algqr.com/bbf">www.algqr.com/bbf</a></div> <div><b>Manuel de l'Opérateur</b></div>
<div><b>PERIGO</b></div> <div><p>Caso você não leia inglês: antes de operar o equipamento, peça para alguém traduzir as mensagens de segurança ou visite a web e obtenha tais mensagens ou os decalques traduzidos.</p></div> <div> <a href="http://www.algqr.com/bbp">www.algqr.com/bbp</a></div> <div><b>Manual do Operador</b></div>	<div><b>GEFAHR</b></div> <div><p>Falls Sie Deutsch nicht lesen können: Lassen Sie sich, bevor Sie das Gerät in Betrieb nehmen, die Sicherheitshinweise von einer geeigneten Person in Ihre Sprache übersetzen. Oder suchen Sie auf unserer Website nach Übersetzungen von Schilderaufschriften und Sicherheitshinweisen.</p></div> <div> <a href="http://www.algqr.com/bbg">www.algqr.com/bbg</a> D825</div> <div><b>Benutzerhandbuch</b></div>



<b>⚠️ WARNING</b>	
<b>TO AVOID EQUIPMENT AND GRASS FIRES:</b> <ul style="list-style-type: none"><li>• CLEAR AWAY grass or debris from hydraulic lines, circuits and decks.</li><li>• DO NOT ALLOW BLADES TO CONTACT rocks, metal or solid objects.</li><li>• DO NOT ALLOW OIL TO SPRAY on hot equipment or components.</li></ul>	 D618
<b>⚠️ ADVERTENCIA</b>	
<b>PARA EVITAR INCENDIOS DE EQUIPO Y CÉSPED:</b> <ul style="list-style-type: none"><li>• QUITÉ el césped y escombros de las líneas hidráulicas, circuito, y las cubiertas.</li><li>• NO PERMITA QUE LAS CUCHILLAS CONTACTEN piedras, metal o objetos sólidos.</li><li>• NO PERMITA QUE EL ACEITE CAIGA en el equipo o componentes calientes.</li></ul>	

<b>⚠️ WARNING</b>	
<b>PRESSURIZED TANK OIL FILLER CAP IS PRESSURE RELIEF CAP</b>	<b>TO AVOID SERIOUS INJURY AND DEATH FROM HOT OIL:</b> <ul style="list-style-type: none"><li>• STAY AWAY from hot oil that may spray out of tank.</li><li>• ALLOW oil to cool down BEFORE removing cap .</li><li>• SLOWLY remove cap to relieve pressure BEFORE removing completely.</li></ul>
	
<b>TANQUE PRESURIZADO LA TAPA DE DEPOSITO DE PETROLEO ES LA TAPA DE ALIVIO DE PRESION.</b>	
<b>⚠️ ADVERTENCIA</b>	
<b>PARA EVITAR LESION SERIA O MUERTE POR ESCALDADURA DE PETROLEO CALIENTE:</b> <ul style="list-style-type: none"><li>• MANTENGASE ALEJADO del aceite caliente que puede salir a presión del tanque.</li><li>• Remueva LENTAMENTE la tapa para relevar la presión ANTES de remover la tapa completamente.</li><li>• PERMITA que el petróleo se enfríe ANTES de remover la tapa.</li></ul>	



## SEGURIDAD

## SEGURIDAD

# ⚠ ADVERTENCIA

**PARA EVITAR LESION SERIA Y MUERTE DURANTE LA**

- SIEMPRE ABROCHE el cinturón de seguridad.

- COLOCAR el brazo seguramente en transporte y apague el interruptor principal.

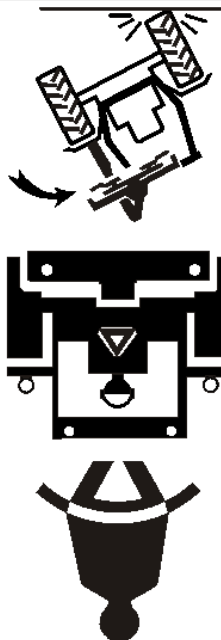
- VERIFIQUE QUE EL SMV, reflectors, y luces intermitentes de advertencia

- PRIENDA las luces intermitentes de

**PARA EVITAR LA PÉRDIDA DEL CONTROL DE TRANSPORTACION:**

- NO l'entouque en velocidades arriba de 20 mph

- REDUZCA LA VELOCIDAD en curvas y en pendientes, y en vueltas y en pobres condiciones de



## ⚠️ ADVERTENCIA

**PARA EVITAR LESION SERIA Y MUERTE DURANTE LA OPERACION:**

- NO levante el implemento al estar en pendientes pronunciados..

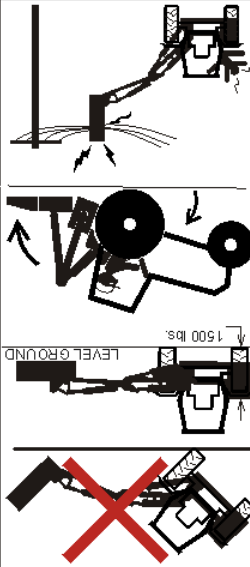
- agujeros y zanjas blandas..

- Amplíe el rodamiento de la llanta o  
agreguele peso si es necesario. (Vea

- MANTENGA SIEMPRE el 20% de

- NO comience ni acelerar

- 10 pies de distancia de las líneas eléctricas y líneas de tubo. D618.2

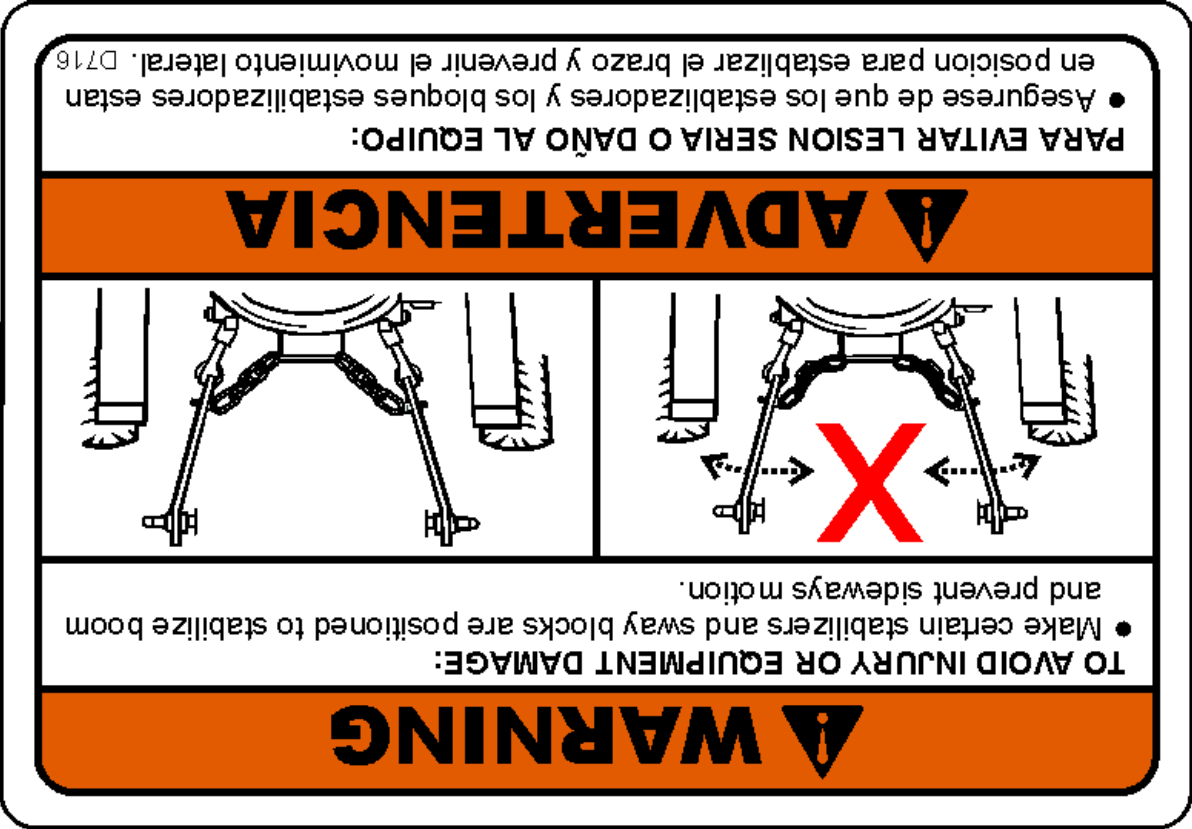


**PARA EVITAR LESION SERIA Y MUERTE DURANTE LA OPERACION:**

- NO levante el implemento al estar en pendientes pronunciados..
- MANTENGASE ALEJADO DE agujeros y zanjas blandas..
- SIEMPRE MANTENGA 1500 libras de contacto entre las llantas y tierra. Amplíe el rodamiento de la llanta o agregue peso si es necesario. (Vea el Manual de Operadores)
- MANTENGA SIEMPRE el 20% de peso del tractor en las ruedas delanteras.
- NO comience ni acelere repentinamente.
- MANTENGA la unidad, por lo menos 10 pies de distancia de las líneas eléctricas y líneas de tubo.

D618-2







SEGURIDAD



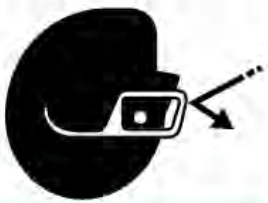
<div><div>⚠ PELIGRO</div><div>MANTENGASE ALEJADO DESMONTABLE DE REGRESO AUTOMATICO</div><div>Mantégase alejado de la parte delantera del brazo y cabeza.</div></div>		<div><div>⚠ DANGER</div><div>KEEP AWAY AUTOMATIC BREAKAWAY RETURN</div><div>Keep clear of the front of the arm and head.</div></div>	
<div><div>⚠ ADVERTENCIA</div><div>OPERE ESTA MAQUINAA 540 RPM</div><div>SOLAMENTE OPERE ESTA MAQUINAA LA VELOCIDAD DE PTO (TOMA DE FUERZA O BARRA GITATORIA) DEL TRACTOR DE 540 RPM. El sobre exceso de velocidad de PTO puede causar el fracaso de componente que resultara en lesión. ROTACION DE PTO DEL TRACTOR: EN SENTIDO HORARIO D547 SP</div></div>		<div><div>⚠ WARNING</div><div>OPERATE THIS MACHINE AT 540 RPM</div><div>TRACTOR PTO SPEED ONLY. Over speeding PTO may cause component failure resulting in bodily injury. TRACTOR PTO ROTATION: CLOCKWISE</div></div>	
<div><div>⚠ PELIGRO</div><div>PARA EVITAR LESION SERIA O MUERTE POR CONTACTO A LA LINEA DE CONDUCCION, SEPARACION DE LINEA DE CONDUCCION O EL FRACASO DEL EJE DE PTO:</div><div>• PARE, MIRE Y ESCUCHE por el movimiento de rotación antes de acercarse al implemento.</div><div>• MANTENGASE ALEJADO y MANTENGA manos, pies y cuerpo LEJOS de partes girando, hasta que todos los elementos de movimiento se han parado.</div><div>• SIEMPRE apague la Toma De Fuerza (Barra Gítoria) antes de desmontar.</div><div>• NO opere si las cubiertas de Toma De Fuerza (Barra Gítoria) estan dañadas.</div><div>• EMPUJE Y JALE el yugo hasta que el collar de fijación hace clic y el yugo se traba en lugar.</div><div>• REVISE las guardias de línea de conducción por giracion libre y suficiente trasape para evitar areas sin cobertura.</div><div>• NO UTILICE UN ADAPTOR PARA LA TOMA DE FUERZA (Barra Gítoria).</div></div>		<div><div>⚠ DANGER</div><div>TO AVOID SERIOUS INJURY OR DEATH FROM DRIVE LINE CONTACT, DRIVE LINE SEPARATION OR PTO STUB SHAFT FAILURE:</div><div>• STOP, LOOK and LISTEN for rotating motion before approaching implement.</div><div>• STAY AWAY and KEEP hands, feet and body AWAY from rotating parts until all moving elements have stopped.</div><div>• ALWAYS shut off PTO before dismounting.</div><div>• DO NOT operate if PTO shields are damaged or missing.</div><div>• PUSH AND PULL on yoke until collar clicks and locks yoke in place.</div><div>• CHECK driveline guards for free rotation and sufficient overlap to avoid unshielded areas.</div><div>• DO NOT USE PTO ADAPTER</div></div>	<div></div> <div></div> <div></div> <div></div>









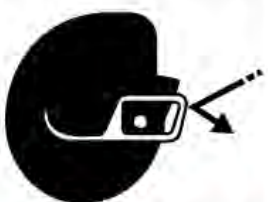
SEGURIDAD



**PELIGRO**

**PARA EVITAR LESION SERIA O MUERTE:**

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



**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.



						
<b>PELIGRO</b>			<b>DANGER</b>			
<b>Riesgo de Aplastamiento - Lesion o Muerte</b>			<b>Crushing Hazard - Injury or Death</b>			
<b>PARA EVITAR LESION SERIA O MUERTE:</b>			<b>TO AVOID SERIOUS INJURY OR DEATH:</b>			
<ul style="list-style-type: none"><li>• USE un tractor equipado con Estructura Protectora Contra Vuelcos ("ROPS") incluyendo barra antivuelco y cinturón de seguridad. Mantenga la barra antivuelco en la posición elevada.</li><li>• Despeje el área de personas presentes antes de bajar o subir la cortadora.</li><li>• EL IMPLEMENTO SE PUEDE CAER por el mal funcionamiento hidráulico o operación accidental de los controles.</li><li>• BLOQUEE y soporte con seguridad el equipo antes de poner manos, pies o cuerpo debajo del equipo o componentes levantados.</li></ul>			<ul style="list-style-type: none"><li>• USE tractor equipped with Rollover Protective Structure ("ROPS") including roll bar and seat belt. Keep roll bar in raised position.</li><li>• CLEAR AREA of bystanders before raising or lowering mower.</li><li>• IMPLEMENT CAN FALL from hydraulic failure or accidental operation of controls.</li><li>• BLOCK UP and securely support equipment before putting hands, feet or body under raised equipment or lifted components.</li></ul>			
D823 SP4			D823 SP4			



SEGURIDAD

					
					
					
<b>PELIGRO</b>		<b>RIESGO DE ENREDAMIENTO</b>		<b>ENTANGLEMENT HAZARD</b>	
<p><b>PARA EVITAR LESION SERIA O MUERTE:</b></p> <ul style="list-style-type: none"><li>• No opere sin la cubierta protectora en su lugar y en buen estado. Toma De Fuerza (Barra Gritatoria) y guardias de caja de engranaje son SUJETO AL ESGASTE.</li><li>• MANTENGASE ALEJADO y MANTENGA manos, pies y cuerpo LEJOS de las cuchillas girando, líneas de conducción, y partes que siguen moviendose después de que el poder es apagado. ESPERE hasta que todos los elementos móviles se han parado.</li><li>• SIEMPRE REEMPLACE CUBIERTAS que han sido quitadas para servicio o mantenimiento.</li><li>• DETENGASE, OBSERVE y ESCUCHE por el movimiento de rotación antes de acercarse al implemento.</li></ul>					
<p><b>TO AVOID SERIOUS INJURY OR DEATH:</b></p> <ul style="list-style-type: none"><li>• DO NOT operate without guards in place and in good condition. PTO and gearbox guarding are SUBJECT TO WEAR.</li><li>• 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.</li><li>• ALWAYS REPLACE GUARDS that have been removed for service or maintenance.</li><li>• STOP, LOOK and LISTEN for rotating motion before approaching implement.</li></ul>					

D823 SP3



**PELIGRO**



**Riesgo de Atropello Lesión o Muerte**

**PARA EVITAR LESION SERIA O MUERTE:**

- SIEMPRE ABROCHE el cinturón de seguridad.
- SOLO ENCIENDA el tractor mientras que esta sentado en el asiento del operador.
- PARE EL MOTOR Y Toma De Fuerza (Barro Gritatoria), aplique el freno de mano, baje el implemento, y deje que todas las partes movi- paren completamente, y quite la llave antes de desmontar el tractor.
- ENTIENDA COMO parar el tractor y equipo rapidamente 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 antes de mover el tractor o implemento.
- MANTENGASE ALERTO y EVITE golpes en troncos, agujeros, pozos o terreno en desnivel.
- EVITE las ramas de árbol, maleza y algun otros objetos que sobresalen que puedan golpear y tumbar el operador del asiento.

**! DANGER**

**Run Over Hazard - Injury or Death**


**TO AVOID SERIOUS INJURY OR DEATH:**





- ALWAYS BUCKLE UP seat belt.
- ONLY START Tractor while seated in the operator's seat.
- STOP ENGINE and PTO, engage parking brake, lower implement, allow all moving parts to stop and remove key before dismounting from tractor.
- KNOW HOW to stop tractor and equipment quickly for an emergency.
- DO NOT MOUNT or DISMOUNT Tractor in motion.
- NEVER ALLOW riders on tractor or implement.
- NEVER ALLOW children to operate or ride on tractor or implement.
- KEEP BYSTANDERS CLEAR of area before moving tractor or implement.
- KEEP ALERT and AVOID hitting stumps, holes, ruts, and uneven terrain.
- AVOID tree limbs, brush and other overhanging objects that can strike and throw the operator from seat.

D823 SP2



Descripción de Calcomanía

**PELIGRO**



**RIESGO DE OBJETOS LANZADOS**

**Cortacésped puede lanzar objetos hasta 300 pies. PARA EVITAR LESION SERIA O MUERTE a operadores y personas presentes:**

- 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 sujetos al desgaste.
- REPARE O REEMPLACE cubiertas si son dañadas, quebradas, o si faltan.
- INSPECCIONE el 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 extraño.
- NO DEJE que las cuchillas contacten los objetos sólidos como alambre, rocas, postes, borde de banqueta, o barandillas.
- NO OPERE en posición de transporte o con las alas levantadas.

**! DANGER**

**THROWN OBJECTS HAZARD**

**Mower can throw objects up to 300 feet. TO AVOID SERIOUS INJURY OR DEATH to operator or bystanders:**

- STOP mowing if bystanders or traffic come within 300 feet.
- DO NOT OPERATE with thrown object shielding removed.
- KEEP thrown object shielding in place and in good condition during operation. Thrown Objects shielding is subject to wear.
- REPAIR OR REPLACE 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 without operate protective shielding or cab

D823 SP1



# SEGURIDAD

## INFORMACIÓN DE PARTES

### INFORMACIÓN DE PARTES

Las cortadoras BUSH HOG usan balancías y componentes de sistema seleccionado para los portadores de cuchillas, cuchillas, eje de cortar, navaja, suspensiones de navajas, los rodillos, los componentes de línea de cuchillas, 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. (SPBH-1 SP)

### CONTACTE A SU DISTRIBUIDOR BUSH HOG

Manuales de Partes Y Operador



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

**NOTA:** Si necesita un manual completamente en español por favor de ponerse en contacto a; Translations, dirección 1502 E. Walnut Street Seguin, TX 78155; Fax: (830) 372-9529

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Sección de Seguridad 1-15



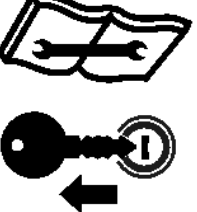

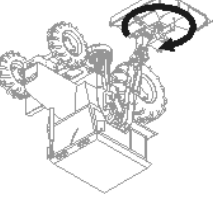
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SEGURIDAD



SEGURIDAD

RIESGOS CON EL MANTENIMIENTO DEL IMPLEMENTO


	Inspeccione periódicamente todas las partes móviles, lubrique las líneas de conducción y ajuste todas las sujeciones.
	Baje el cabezal de la cortadora hasta el suelo o bloquéelo antes de repararlo.
	Apague el motor. Quite la llave antes de realizar tareas de mantenimiento.
	Baje el cabezal a una posición segura sobre el suelo antes de reparar las cuchillas.
	Riesgo de objetos arrojados por la cortadora. Asegúrese de que las cuchillas giren en sentido horario vistas desde arriba del cabezal de la cortadora.

**ADVERTENCIA** MANTENGA LOS IMPLEMENTOS EN BUENAS CONDICIONES DE FUNCIONAMIENTO, A TRAVÉS DE UN SERVICIO, REPARACIÓN O MANTENIMIENTO APROPIADO.

- ANTES DE REALIZAR TAREAS DE SERVICIO, REPARACIÓN Y MANTENIMIENTO DEL IMPLEMENTO:**
- **APAGUE EL MOTOR Y EL PTO**, coloque el freno de mano, descienda el implemento, espere a que se detengan todas las partes móviles y quite la llave antes de bajarse del tractor.
  - **COLOQUE** el implemento sobre el suelo o trabe de manera segura los equipos elevados. Utilice bloques grandes sobre suelo blando o húmedo.
  - **EMPÚJE Y JALE** la palanca del Cilindro Hidráulico Remoto para liberar la presión hidráulica.
  - **DESCONECTE** la válvula de solenoide de la bomba o la conexión de la línea de conducción de la TDF de antes de reparar el cabezal de la cortadora.
  - **USE GAFAS DE SEGURIDAD Y GUANTES PROTECTORES** y siga todos los **PROCEDIMIENTOS DE SEGURIDAD** al realizar tareas de servicio, reparación y mantenimiento sobre el implemento.
  - Siempre **USE GUANTES** protectores al manipular las hojas, cuchillas, bordes filosos o un componente desgastado con bordes filosos.
  - Siempre **USE GUANTES Y GAFAS DE SEGURIDAD** al reparar componentes en caliente
  - **EVITE EL CONTACTO** con tanques de aceite hidráulico, bombas, motores, válvulas y superficies de conexión de mangueras calientes.
  - **SUJETE FIRMEMENTE** o **TRABE EN POSICIÓN ELEVADA** todos los implementos, bastidores y componentes elevados antes de trabajar sobre los equipos que se encuentran debajo.
  - **SIGA LAS INSTRUCCIONES** de la sección de mantenimiento al reemplazar los cilindros hidráulicos para evitar la caída de componentes.
  - **DETENGA** el movimiento de todos los implementos y **APAGUE EL MOTOR DEL TRACTOR** antes de realizar ninguna tarea.
  - **USE** una escalera o gradas elevadas para alcanzar áreas altas del equipo a las que no se pueda acceder desde la tierra.
  - **ASEGURESE** de estar bien apoyado sobre superficies sólidas planas al subirse al implemento para realizar tareas.
  - **SIGA** las instrucciones del fabricante sobre cómo manipular los lubricantes, solventes, impliadores y otros agentes químicos.
  - **NO** cambie ninguna calibración hidráulica de fábrica para evitar fallas de los componentes o equipos.
  - **NO** modifique o altere el implemento, las funciones o componentes.
  - **NO** **SUELDE** o repare los componentes de la cortadora. Esto puede causar vibraciones y fallas de los componentes que se desprendan de la cortadora.
- REALICE LAS TAREAS DE SERVICIO, REPARACIÓN, LUBRICACIÓN Y MANTENIMIENTO QUE SE DESCRIBEN EN LA SECCIÓN DE MANTENIMIENTO DEL IMPLEMENTO:**
- **INSPECCIONE** el implemento para detectar sujeciones sueltas, partes gastadas o rotas, ajustes sueltos o con filtraciones, que los pasadores tengan chavetas y arandelas, y las partes móviles para detectar el desgaste.
  - **REEMPLACE** todas las partes gastadas o rotas con repuestos autorizados.
  - **INSPECCIONE** el huso de la cuchilla de la cortadora para asegurar la carga previa de los rodamientos. Si está suelto, repárelo antes de operar.
  - **LUBRIQUE** la unidad tal como se especifica en el cronograma de lubricación.
  - **NUNCA** lubrique, ajuste o quite material mientras el equipo está en funcionamiento o movimiento.
  - **AJUSTE** todas las tuercas y pernos tal como se especifica.
- INSPECCION DE CUCHILLAS:**
- Inspeccione el soporte de la cuchilla y las cuchillas a diario.
  - Inspeccione el **AJUSTE DE LOS PERNOS** del soporte de la cuchilla y las cuchillas a diario. Los pernos sueltos pueden causar fallas de la cuchilla o del perno de la cuchilla.
  - **REEMPLACE** las cuchillas dobladas, dañadas, agrietadas o rotas inmediatamente por cuchillas nuevas.
  - **EVITE** fallas de las cuchillas y que vuelen trozos de cuchillas. **NO** enderece, suelde o suelde con superficies rígidas.
- INSPECCION DE PROTECTORES DE SEGURIDAD, GUARDAS Y DISPOSITIVOS DE SEGURIDAD:**
- **MANTENGA** en su lugar y en buen estado todos los defletores, protectores de cadena, protectores de acero, cubiertas de caja de engranajes, cubiertas integrales de PTO, bandas, faldones laterales y zapatas antideslizantes.
  - **REEMPLACE** cualquier protector, cubiérta o dispositivo de seguridad faliente, roto o gastado.
  - El escape del motor, al igual que algunos de sus componentes, y determinados elementos del vehículo contienen o emiten agentes químicos que el estado de California ha determinado que causan cáncer, defectos de nacimiento y otros daños reproductivos. **PN HMBM-01 SP**
  - Las terminales de baterías y los accesorios relacionados contienen plomo y componentes de plomo, que el estado de California ha determinado son químicos que causan cáncer, defectos de nacimiento u otros daños reproductivos.



RIESGOS EN TRANSPORTE

		
Use señales de SMV (vehículo de movimiento lento) y balizas	Riesgo de pérdida de control al detenerse	Riesgo de pérdida de control al acelerar

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

**ADVERTENCIA**

- **MANTENGA** la velocidad de transporte **POR DEBAJO DE 20** millas por hora para mantener el control del equipo.
- **REDUZCA LA VELOCIDAD** en terreno inclinado, en las curvas y en condiciones de remolque desfavorables.
- **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 TRANSPORTE** en el tractor con el mecanismo **ROPS** (antivuelco) en posición elevada.
- **USE** un tractor de tamaño adecuado y equipado, que supere el peso del implemento en al menos un 20% **MANTENGA EL 20%** del peso del tractor en las ruedas frontales para mantener la dirección en forma segura.
- **ANTES DE TRANSPORTAR O REMOLCAR EL IMPLEMENTO:**

INSPECCIÓN DEL TRACTOR:

- **VERIFIQUE** la dirección y los frenos para asegurarse el correcto funcionamiento y las condiciones adecuadas.
- **VERIFIQUE LLEVAR EL AVISO DE SMV**, los reflectores y las luces de advertencia para la adecuada operación y visibilidad detrás de la unidad.
- **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 espejos y el transporte del implemento para tener una visión clara para condiciones de conducción y tránsito.
- **PREPARE EL IMPLEMENTO PARA EL TRANSPORTE O EL REMOLQUE:**
- **Guarde el brazo y la cortadora en posición de transporte y conecte las trabas de transporte si existen.**

DETERMINAR LAS CARACTERÍSTICAS DE DETENCIÓN DEL TRACTOR Y EL IMPLEMENTO PARA EL TRANSPORTE O REMOLQUE:

PRUEBAS DE FRENADO:

- La distancia de frenado puede aumentar con el implemento conectado
- Observe las distancias de **DETENCIÓN** con el aumento de velocidad.
- **DETERMINE** la velocidad de transporte máxima segura que no supere las 20 millas por hora
- Reduzca la velocidad en caminos mojados o cubiertos de hielo; las distancias de frenado aumentan.
- **DETERMINE LA VELOCIDAD DE GIRO MÁXIMA ANTES DE OPERAR EN CARRETERAS O TERRENO IRREGULAR:**

**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.
- **AL REMOLCAR O TRANSPORTAR EL EQUIPO:**
- Siempre **USE EL CINTURÓN DE SEGURIDAD** al operar o transportar la cortadora.
- **USE** bajas velocidades para evitar el vuelco con el implemento elevado.
- **USE** bajas velocidades y dirección gradual en las curvas, colinas, o en superficies irregulares o poco uniformes, y en carreteras mojadas.
- **ENCIENDA LAS BALIZAS DE ADVERTENCIA** del tractor.
- **TENGA EN CUENTA** el espacio necesario para el vaivén del implemento en las curvas.
- **MANTENGA** el brazo y cortadora elevadas a 3 metros (10 pies) o una mayor distancia de todos los cables de alimentación y obstrucciones elevadas.

PN THBM-01 SP



SEGURIDAD

RIESGOS ELÉCTRICOS Y DE FUEGO

	Cabezal o brazo en contacto con cables eléctricos elevados
	Riesgo de choque y explosión Contacto de paletas con líneas de servicios o gas
	Riesgo de incendio. No opere cerca de fuego. Mantenga los residuos legos de las válvulas y las bombas hidráulicas.

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

- **INSPECCIONE** el área de corte para que no interfiera con cables de alimentación eléctricos subterráneos, obstrucciones, líneas de gas, cables y servicios, estructuras municipales o de otro tipo.
- **MANTENGA** todas las alas elevadas a 3 metros (10 pies) o una mayor distancia de todos los cables de alimentación y obstrucciones elevadas.
- **NO** ponga en contacto la cortadora con ninguna estructura u obstrucción de servicios o municipales.
- **LLAME** AL 811 y al 1-800-258-0808 para identificar cables de servicios subterráneos.
- **PAUTAS DE PREVENCIÓN DE INCENDIOS** durante la operación, reparación y servicio de la cortadora y el tractor, a fin de reducir el riesgo de incendio del equipo y de la vegetación:
- El tractor debe estar **EQUIPADO CON MATAFUEGOS**
- **NO OPERE** la cortadora sobre un tractor equipado con escape debajo del bastidor
- **NO FUME** ni acerque 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.
- **NO OPERE** el equipo con filtraciones de aceite o combustible. Repare cualquier filtración de aceite y retire el aceite acumulado antes de operar.
- **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 EFBM-01 SP*



SEGURIDAD

RIESGO DE FILTRACION DE ACEITE HIDRAULICO DE ALTA PRESION

	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
	Los contenidos del tanque están bajo presión Permita que el aceite se enfríe antes de quitar la tapa.

**▲ PELIGRO** PARA EVITAR LESIONES GRAVES O LA MUERTE POR PENETRACIÓN DE FILTRACIONES DE ACEITE HIDRAULICO DE ALTA PRESION:

- **NO OPERE** el equipo con filtraciones de aceite o combustible.
- **MANTENG A** todas las mangueras hidráulicas, líneas y conexiones en **BUEN ESTADO** y **AJUSTADAS** antes de aplicar presión al sistema.
- **LIBERE LA PRESIÓN HIDRAULICA** antes de desconectar las líneas o trabajar en el sistema.
- **QUIT E** y reemplace la manguera si sospecha que tiene filtraciones. Solicite al distribuidor que verifique si hay filtraciones.

**LAS FILTRACIONES DE LÍQUIDO DE ALTA PRESIÓN PUEDEN NO SER VISIBLES. AL VERIFICAR FILTRACIONES HIDRAULICAS Y TRABAJAR CERCA DE LOS SISTEMAS HIDRAULICOS:**


- **SIEMPRE USE** gafas de seguridad y guantes impenetrables.
- **USE** papel o cartón para verificar si hay filtraciones.
- **NO USE** las manos o partes del cuerpo para detectar filtraciones.
- **MANTENG A** las manos y el cuerpo **LEJOS** de los orificios de clavijas y boquillas de eyección de fluido hidráulico. El fluido hidráulico puede causar gangrena si no es extirpado quirúrgicamente de inmediato por un médico especializado en este tipo de lesiones..

**Tenga cuidado cuando retire la tapa del tanque hidráulico.**

- Los contenidos del tanque pueden estar bajo presión.
- Siempre permita que el aceite se enfríe antes de quitar la tapa.
- Libere la presión de aceite antes de retirar la tapa lentamente.
- Alejese del aceite caliente que pueda rociarse desde el tanque. *PN HPBM-01 SP*



RIESGO DEL CONTACTO A LAS CUCHILLAS DE CORTADORA

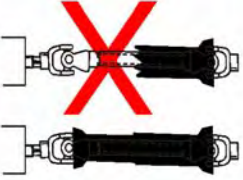
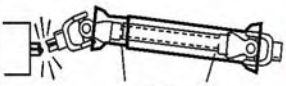
	No ponga los dedos debajo de la cortadora
	No ponga las manos debajo de la cortadora
	No ponga el pie debajo de la cortadora
	No ponga el pie debajo de la cortadora
	Riesgo de cizallamiento por las cuchillas de hoz
	Detenga el tractor. Quite la llave. Lea el Manual

**▲ PELIGRO** MANTÉNGASE LEJOS DE LAS CUCHILLAS GIRATORIAS PARA EVITAR LESIONES GRAVES O LA MUERTE POR CONTACTO CON LA CUCHILLA:

- MANTÉNGASE LEJOS y NO ACERQUE LAS MANOS, LOS PIES y EL CUERPO a las cuchillas giratorias, líneas de conducción y partes hasta que todos los elementos móviles se hayan detenido.
- NO ponga las manos o los pies debajo de las plataformas de la cortadora
- DETENGA las CUCHILLAS giratorias, desconecte el interruptor de la cortadora y la TDF (PTO) y espere que la cuchilla deje de girar antes de levantar el cabezal de la cortadora.
- NO se acerque el cabezal de la cortadora de hoz hasta que el motor del tractor haya sido apagado.
- DETENGA la cortadora, EXAMÍNELA y PRESTE ATENCIÓN A LOS SONIDOS antes de acercarse a la cortadora para asegurarse de que se haya detenido todo el movimiento giratorio. *PN MBM-01 SP*



RIESGO DE ENREDO POR EL PTO

	Peligro de enredo No se acerque o toque ningún eje de transmisión de PTO giratorio
	Asegúrese de que el eje de PTO esté firmemente sujetado. No use un adaptador de PTO
	No opere la máquina si las cubiertas de PTO están dañadas o faltantes
	Asegúrese de que los ejes de PTO sean del largo adecuado

**▲ PELIGRO** MANTÉNGASE ALEJADO DE LAS LÍNEAS DE CONDUCCIÓN Y OTROS ELEMENTOS GIRATORIOS PARA EVITAR LESIONES GRAVES O LA MUERTE:

**MANTÉNGASE LEJOS Y NO ACERQUE** las manos, los pies y el cuerpo a las cuchillas giratorias, líneas de conducción y partes hasta que todos los elementos móviles se hayan detenido.

- **DETENGA** la cortadora, **EXAMÍNELA Y PRESTE ATENCIÓN A LOS SONIDOS** antes de acercarse a la cortadora para asegurarse de que se haya detenido todo el movimiento giratorio.
- **LOS ELEMENTOS GIRATORIOS SIGUEN ROTANDO** una vez apagada la PTO.

PROTECCIÓN DE LA PTO:

**PARA EVITAR LESIONES GRAVES O LA MUERTE POR ENREDO AL OPERAR EL IMPLEMENTO:**

- **MANTENGA** instalados los protectores, las cubiertas integrales de las líneas de conducción y las cubiertas de entrada
- **NO OPERE** la cortadora si los protectores o cubiertas no están bien colocados o faltan.
- **REEMPLACE O REPARÉLOS** si faltan, están dañados o rotos
- **SIEMPRE REEMPLACE LOS PROTECTORES** que se han quitado para tareas de reparación o mantenimiento.

**PARA EVITAR** que la línea de conducción se rompa durante las operaciones:

- **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 atravesar los cojinetes de soporte y romper el eje de **PTO**.
- **EVITE** hacer curvas pronunciadas o elevar la cortadora a alturas que puedan hacer caer la línea de conducción.
- Lubrique los componentes telescópicos del eje de transmisión en forma semanal.

**COMUNIQUESE CON EL DISTRIBUIDOR** si la línea de conducción del implemento no coincide con el eje de **PTO** del tractor:

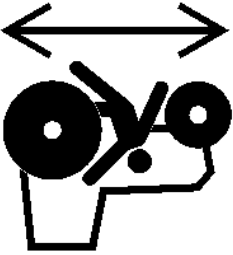

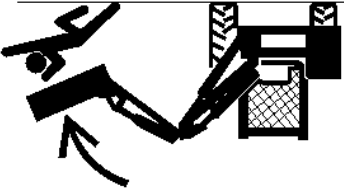
- **NO UTILICE UN ADAPTADOR DE PTO.**

El uso de un adaptador de **PTO** puede causar vibración excesiva, caída de objetos, fallas de las cuchillas 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

RIESGO DE ATROPELLO

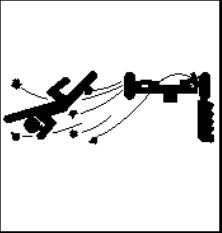
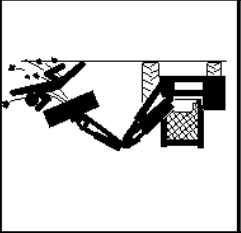
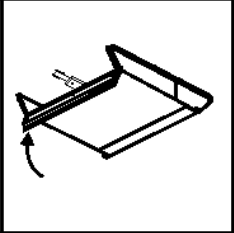
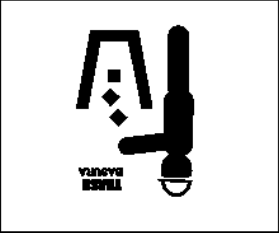
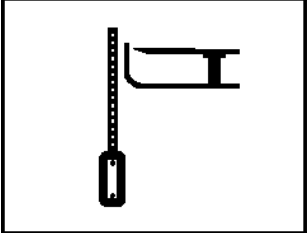
		
Riesgo de atropello del operador	Riesgo de atropello por caída del operador	Riesgo de atropello de personas presentes

**▲ PELIGRO**  
PARA EVITAR LESIONES GRAVES O LA MUERTE POR CAÍDA DEL TRACTOR O ATROPELLO DEL EQUIPO:

- **USE** tractores equipados con **SISTEMA ANTIVUELCO (ROPS) y CINTURONES DE SEGURIDAD** para las operaciones de corte.
- **MANTENGA EL SISTEMA ROPS** trabado en posición vertical.
- **SÓLO ENCIENDA** el tractor sentado en el asiento del tractor.
- **SIEMPRE ABRÓCHESE** el cinturón de seguridad al operar el tractor y los equipos.
- **SÓLO OPERE** el tractor y el equipo sentado en el asiento del tractor.
- **NUNCA LLEVE A OTRAS PERSONAS** en el tractor o implemento.
- Cuando no esté cortando, coloque el brazo y el cabezal de la cortadora en el espacio de transporte antes de moverse.
- **AL SUBIR Y BAJAR DEL TRACTOR:**
  - **SÓLO** suba o baje del tractor cuando éste y sus partes móviles estén detenidos.
  - **• APAGUE EL MOTOR Y LA TDF**, coloque el freno de mano, descienda del implemento, espere a que se detengan todas las partes móviles y quite la llave antes de bajarse del tractor. *PN ROB-M-01 SP*



RIESGO DE OBJETOS LANZADOS Continuada

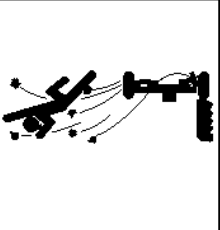
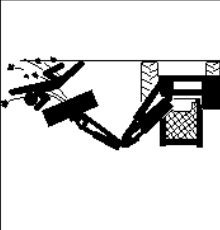
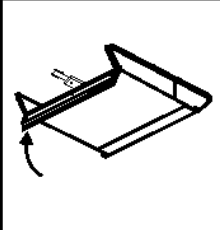

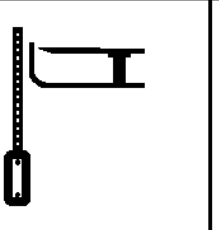
	Peligro de objetos lanzados por la cortadora
	Objetos lanzados desde cortadora elevada
	Mantenga la puerta de la cortadora cerrada si el tráfico se encuentra al menos de 300 pies
	Inspeccione el área. Quite los objetos extraños
	No permita que las cuchillas entren en contacto con objetos sólidos

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 el cabezal de la cortadora paralelo al suelo y cerca de él sin exponer las cuchillas.
- AJUSTE LA ALTURA de corte para EVITAR EL CONTACTO DE LAS CUCHILLAS con objetos sólidos, como alambres, piedras, postes, cordones, guardarrailles y obstrucciones fijas.
- CIERRE la puerta de la cortadora y detenga la operación si se acercan transeúntes a 100 metros (300 pies) a la redonda de la cortadora.
- Mantenga la puerta de la cortadora cerrada cuando corte cerca del suelo.
- Abra la puerta sólo para cortar ramas grandes de arbustos o árboles. Cierre la puerta inmediatamente después de cortar la rama.
- NO empuje el cabezal de la cortadora hacia abajo sobre el material para cortarlo, use las puntas frontales de las cuchillas de la cortadora para cortar el material.
- NO opere la cortadora cuando la cortadora esté en posición de transporte.
- DETENGA 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. INSPECCIONE y REEMPLACE las cuchillas dañadas.
- 3. VERIFIQUE el equilibrio del porta cuchillas y REEMPLÁCELO si está dañado.
- NO opere la cortadora en agua PARA EVITAR una posible FALLA DE LAS CUCHILLAS.
- EVITE OPERAR LA CORTADORA en reversa:
- 1. DETENGA EL PTO y retroceda la cortadora.
- 2. DESCienda la cortadora, encienda el PTO y corte hacia adelante.
- DESCONECTE el cabezal de la cortadora y espere hasta que las CUCHILLAS dejen de rotar antes de levantar la cortadora a la posición de transporte.
- NO ENCienda EL PTO con la cortadora en posición de transporte.
- DETENGA la cortadora cuando se produzca VIBRACIÓN EXCESIVA:
- 1. DETENGA EL PTO Y EL MOTOR del tractor.
- 2. INSPECCIONE la cortadora para detectar la fuente de la vibración
- 3. REEMPLACE toda parte dañada o las CUCHILLAS dobladas o dañadas. PN TOBM-02 SP



RIESGO DE OBJETOS LANZADOS

	Peligro de objetos lanzados por la cortadora
	Objetos lanzados desde cortadora elevada
	Mantenga la puerta cerrada si el tráfico se encuentra al menos de 300 pies
	Inspeccione el área. Quite los objetos extraños
	No permita que las cuchillas entren en contacto con objetos sólidos

**⚠ PELIGRO** LAS CORTADORAS GIRATORIAS PUEDEN ARROJAR OBJETOS A 90 METROS (300 PIES) O MÁS EN CONDICIONES ADVERSAS.

PARA EVITAR LESIONES GRAVES O LA MUERTE AL OPERADOR O TRANSEÚNTES COMO CONSECUENCIA DE OBJETOS ARROJADOS:

- **MANTENGA** a los transeúntes a 100 metros de distancia (300 pies)
- **NO OPERE LA CORTADORA SI HAY PERSONAS A MENOS DE 100 METROS(300 PIES), SALVO QUE:**
  - Todos los **PROTECTORES CONTRA OBJETOS ARROJADOS** estén colocados y en buen funcionamiento al operar la cortadora, entre los que se incluyen los deflectores frontales y traseros, los protectores de cadena, los protectores de acero, las bandas, los faldones laterales y las zapatas antideslizantes.
  - El Cabezal de la cortadora esta ajusta cerca y paralela al suelo, sin exponer las cuchillas.
  - Se ha inspeccionado el **ÁREA DE CORTE** y se han quitado todos los materiales extraños y residuos.
  - **NO** corte material suelto o cortado previamente si hay **TRANSEÚNTES** dentro de 100 metros a la redonda.
- **ANTES DE OPERAR LA CORTADORA, INSPECCIONE EL ÁREA PARA DETECTAR LA POSIBILIDAD DE OBJETOS QUE PUEDAN SER LANZADOS:**
  - **QUITE** residuos, piedras, cables, alambres, objetos metálicos y cualquier otro objetos extraños del área.
  - Los alambres, cables, sogas, cadenas y objetos metálicos pueden ser arrojados o salir desprendidos de la plata-forma a gran velocidad:
  - 1. **MARQUE** los objetos que no se puedan quitar.
  - 2. **EVITE** estos objetos cuando use la cortadora.

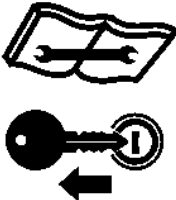


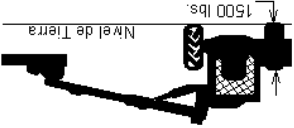
- **INSPECCION DEL ÁREA PARA DETECTAR HIERBA ALTA Y MALEZAS:**
  - **INSPECCIONE Y quite** cualquier residuo oculto de gran tamaño.
  - **PASE LA CORTADORA** a una altura intermedia
  - **INSPECCIONE** y quite el residuo restante
  - **PASE LA CORTADORA** a la altura final
- **PROTECCIÓN CONTRA OBJETOS ARROJADOS DE LA CORTADORA:**
  - **MANTENGA** todos los protectores contra objetos arrojados en su lugar y en buen funcionamiento al operar la cortadora, entre los que se incluyen los deflectores frontales y traseros, los protectores de cadena, los protectores de acero, las bandas, los faldones laterales y las zapatas antideslizantes.
  - **NO OPERE LA CORTADORA** si falta algún protector contra objetos arrojados, o si estos están dañados.
- **DERECHO DE PASO (autopista) CON LA CORTADORA**

- Ninguna protección ofrece una eficacia del 100% en la prevención de objetos arrojados. Para reducir la posibilidad de que se produzcan lesiones:
- **1. MANTENGA LOS PROTECTORES DE LA CORTADORA**, los faldones laterales, las zapatas antideslizantes y las cuchillas en buen estado de funcionamiento,
- **2. ELEVE LA ALTURA DE CORTE a 15 CM (6 PULGADAS)** como mínimo,
- **3. INSPECCIONE EL ÁREA** 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 SÓLIDOS** como alambres, piedras, postes, cordones, guardarrailes o el suelo. *PN TOBM-01 SP*



SEGURIDAD

CONECTAR O DESCONECTAR EL IMPLEMENTO DE SEGURIDAD

	<p>Detenga el tractor Quite la llave Lea el Manual</p>
	<p>Riesgo de aplastamiento. NO se coloque debajo del brazo cuando conecte el cabezal de la cortadora al brazo</p>
	<p>Riesgo de estabilidad. Asegúrese de que el 20% del peso del tractor esté en las ruedas.</p>
	<p>Riesgo de estabilidad. Asegúrese de que haya una fuerza hacia abajo de 1500lb sobre la rueda izquierda con el brazo extendido.</p>

**⚠ PELIGRO**

PARA EVITAR LESIONES GRAVES O LA MUERTE POR APLASTAMIENTO POR EL TRACTOR O IMPLEMENTO:

CUANDO conecte el cabezal de la cortadora al brazo:

- MANTENGA A LOS TRANSEÚNTES LEJOS del tractor y la cortadora.
- Asegúrese de que haya espacio suficiente para elevar y mover el brazo sin golpear objetos

ANTES de conectar y desconectar el cabezal de la cortadora o el brazo:

- APAQUE EL MOTOR DEL TRACTOR, coloque la palanca en "estacionar", ponga el freno de mano y saque la llave.

CUANDO conecte y desconecte el cabezal de la cortadora o el brazo:

- NO se agache o camine debajo del cabezal o el brazo de la cortadora en posición elevada. (*Consulte las instrucciones en la sección de Operación*)

AL CONECTAR LA LÍNEA DE CONDUCCIÓN DEL IMPLEMENTO: (Si está equipado)

PARA EVITAR que la línea de conducción del implemento se suelte durante la operación:

- LUBRIQUE el anillo de cierre del resorte del yugo para asegurarse de que se deslice libremente sobre el eje de TDF
- ASEGURE las bolas de cierre del yugo en la muesca del eje de TDF.
- PRESIONE y JALE LA LÍNEA DE CONDUCCIÓN del EJE DE TOMA DE FUERZA del tractor y del implemento para asegurarse de que estén FIRMEMENTE SUJETADOS

PARA EVITAR que la línea de conducción se rompa durante las operaciones:

- VERIFIQUE que la línea de conducción tenga el largo adecuado entre el eje de PTO y el eje de la caja de cambios del implement (*Consulte las instrucciones en la sección de Operación*)
- Las líneas de conducción demasiado cortas se pueden soltar o romper.
- Las líneas de conducción demasiado largas pueden tocar el suelo.
- Un ensamble 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 atravesar los cojinetes de soporte y romper el eje de TDF(PTO).

**COMUNIQUESE CON EL DISTRIBUIDOR si la línea de conducción del implemento no coincide con el eje de TDF(PTO) del tractor:**

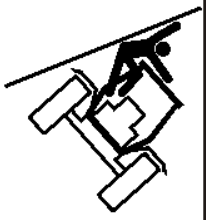
**NO UTILICE UN ADAPTADOR DE TDF(PTO).**

- El uso de un adaptador de TDF(PTO) puede ocasionar:
  - Vibración excesiva, caída de objetos, fallas de la cuchilla 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. *PN CDBM-01*



SEGURIDAD

RIESGO DE APLASTAMIENTO

	Lesión aplastante por vuelco	Use un tractor con cabina con las cortadoras con brazo		Siempre utilice cinturón de seguridad		Riesgo de punto de compresión. Mantenga las manos y el cuerpo lejos de los puntos de compresión	Lesión por aplastamiento causada por la caída del brazo o el cabezal de la cortadora
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**PELIGRO** PARA EVITAR LESIONES GRAVES O LA MUERTE POR CAÍDA DEL TRACTOR O ATROPELLO DEL EQUIPO, VUELCO O APLASTAMIENTO POR LA CAÍDA DE DEL BRAZO O EL IMPLEMENTO:

- **USE** tractores equipados con **SISTEMA ANTIVUELCO (ROPS)** y **CINTURONES DE SEGURIDAD** para las operaciones de corte.
- **MANTENGA EL SISTEMA ROPS** trabado en posición vertical.
- **SIEMPRE ABROCHESE** el cinturón de seguridad al operar el tractor y los equipos.
- **SÓLO OPERE** el tractor y el equipo sentado en el asiento del tractor.

**AL ELEVAR EL BRAZO DE LA CORTADORA:**

- Eleve o descienda **SÓLO CUANDO ESTÉ SENTADO** en el asiento del tractor, y con el cinturón de seguridad ajustado.
- **MANTENGA A LOS TRANSEÚNTES FUERA** del área de operación **PARA EVITAR** accidentes por aplastamiento.
- **MANTENGA** suficiente espacio libre alrededor de los implementos **PARA EVITAR** el contacto con edificios o cables elevados.

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

**ADVERTENCIA** PARA EVITAR LA CAÍDA DEL EQUIPO al trabajar cerca o debajo del brazo izado, los componentes y el cabezal de la cortadora:

- **SUJETE CON FIRMEZA** o bloquee en posición vertical todos los equipos, aletas y componentes elevados.
- **BLOQUEE EN POSICIÓN VERTICAL** y sujete con firmeza el equipo antes de poner las manos, los pies o el cuerpo debajo de los equipos o componentes elevados.
- **MANTENGA A LOS TRANSEÚNTES LEJOS** del brazo elevado o el cabezal de la cortadora hasta que estén bloqueados de forma segura.

**AL ESTACIONAR el implemento y el tractor:**

- **DESCIENDA** el cabezal de la cortadora hasta el suelo o **BLOQUEE** las partes elevadas antes de alejarse del equipo.
- **NUNCA** deje un implemento sin atención en posición elevada.

PARA EVITAR LA CAÍDA O EL APLASTAMIENTO DE NIÑOS POR EL EQUIPO:








- **NUNCA DEJE** que los niños jueguen sobre el tractor o los implementos, ni en sus alrededores.
- **NO OPERE** el equipo sin **CABINA CERRADA o PROTECCIÓN SUPERIOR**. Las ramas y los residuos que caen pueden causar lesiones. *PN CHBM-01*



SEGURIDAD

SEGURIDAD DEL OPERADOR

	Lea con atención el Manual del Operador
	Siempre use gafas de seguridad
	Use casco y calzado protector
	Nunca consuma drogas o alcohol mientras opera el equipo
	Utilice chaleco de seguridad al operar en o cercas de carreteras

PARA EVITAR LESIONES GRAVES O LA MUERTE, SIGA LAS SIGUIENTES INSTRUCCIONES:



- **LEA, COMPRENDA Y SIGA** las instrucciones del Manual del Operador, al igual que las Advertencias y Mensajes de Seguridad.
- **USE GAFAS DE SEGURIDAD**, calzado protector, casco, protección auditiva y guantes al operar o reparar el equipo
- **USE** un aparato de respiración apropiado al operar en condiciones polvorrientas a fin de evitar contraer enfermedades respiratorias.
- **NO USE** prendas sueltas o joyas que se puedan enredar con las partes giratorias y causar una lesión.
- **NO CONSUMA DROGAS** o **ALCOHOL** antes o durante la operación del equipo.
- **NO PERMITA** que nadie opere el equipo bajo los efectos negativos de las drogas o el alcohol.
- **CONSULTE** a un médico para conocer los efectos desfavorables de la medicación sobre los sentidos
- **EVITE EL CONTACTO** con superficies calientes tales como silenciadores, bombas hidráulicas, válvulas y tanques.
- **MANTÉNGASE ALERTA**, la operación prolongada puede causar fatiga. **HAGA UNA PAUSA** y **DESCANSE**.

SEGURIDAD DE OPERACIÓN GENERAL

- **CONDICIONES DE VISIBILIDAD AL USAR LA CORTADORA:**
  - **OPERE LA CORTADORA CON LUZ SOLAR** o con luz que aporte una visibilidad nítida de más de 90 metros (100 yardas).
  - **DEBE PODER VISUALIZAR** e identificar transeúntes, terrenos empinados, pozos, desniveles, obstrucciones elevadas, cables de alimentación, residuos y objetos extraños.
  - Evite retroceder mientras opera la cortadora: la visión es limitada y pueden ocurrir daños o lesiones severas.
  - **NO OPERE** el tractor en un recinto cerrado sin ventilación adecuada de los gases de escape.
- VELOCIDAD RESPECTO AL SUELO AL USAR LA CORTADORA:**
- El rango de **VELOCIDAD NORMAL** es de entre 1 y 2 millas por hora (1-3kph).
  - **AJUSTE LA VELOCIDAD DE CORTE** según las condiciones del terreno y el tipo de césped, la densidad y la altura del corte.
  - **REDUZCA LA VELOCIDAD DE CORTE** al acercarse a inclinaciones empinadas, pozos, desniveles, obstrucciones elevadas, cables de alimentación y para evitar residuos y objetos extraños.

TRACTOR Y CORTADORA

- **NO OPERE** el tractor o la cortadora a menos que hayan recibido el mantenimiento adecuado y funcionen correctamente
- **DETENGA LA OPERACIÓN** si los controles eléctricos o hidráulicos del tractor o la cortadora no funcionan correctamente.
- **DETENGA LA OPERACIÓN** del tractor si los sistemas de frenado o dirección no funcionan correctamente.
- **NO OPERE** el tractor o la cortadora si hay pérdidas de líquido hidráulico.

INFESTACIÓN CON INSECTOS

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

**NO EXCEDA LA VELOCIDAD NOMINALES DE RPM DEL IMPLEMENTO.**

- **EVITE** superar las velocidades nominales de RPM de la cabeza cortadora, porque puede resultar sobrecalentamiento o fallas en el componente y las cuchillas.

**SEÑALES DE SEGURIDAD:**

- **REEMPLACE** cualquier señal de seguridad faltante, dañada o ilegible **PN OSBM-01 SP**



INSTRUCCIONES DE SEGURIDAD Y PRÁCTICAS GENERALES

El mejor operador es un operador cuidadoso. La seguridad es de importancia fundamental para el fabricante, y también debería serlo para el propietario u operador. La mayoría de los accidentes se pueden evitar prestando suma atención al equipo, al ambiente circundante, y tomando algunas precauciones. La primera sección de este manual incluye una lista de Mensajes de Seguridad que deben observarse para contribuir a la protección del operador y otras personas frente a lesiones o la muerte. Lea con atención estos Mensajes de Seguridad antes de ensamblar, operar o reparar este implemento. Este equipo sólo debe ser operado por personas que hayan leído el manual, responsables y calificadas, que sepan cómo hacerlo de manera responsable.



El Símbolo de Alerta de Seguridad se utiliza en combinación con una Señal Verbal, tal como la que se muestra a continuación, en todo este manual y en los autoadhesivos adheridos a los equipos. El Símbolo de Alerta de Seguridad significa:

**“¡ATENCIÓN! ¡MANTÉNGASE ALERTA! ¡SU SEGURIDAD ESTÁ EN JUEGO!”** El Símbolo y la Señal Verbal tienen el objetivo de advertir al propietario/operador sobre un riesgo inminente y el grado de lesión que se puede producir al operar este equipo.

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

Indica una situación peligrosa inminente que, de no ser evitada, **OCASIONARÁ** la **MUERTE O UNA LESIÓN MUY GRAVE**.



Indica una situación peligrosa inminente que, de no ser evitada, **PODRÍA OCASIONAR** la **MUERTE O UNA LESIÓN MUY GRAVE**.



Indica una situación peligrosa inminente que, de no ser evitada, **PODRÍA OCASIONAR** una **UNA LESIÓN MENOR**.



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



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



**LEA CON ATENCIÓN Y RESPETE** los siguientes Mensajes de Seguridad. Si no se siguen cuidadosamente las advertencias e instrucciones indicadas en este Manual y en 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:** 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 6501 SP*



# SECCIÓN DE SEGURIDAD

Sección de Seguridad 1-1







## Instrucciones de operaciones antes de la entrega del DISTRIBUIDOR al CLIENTE

El distribuidor deberá informar al comprador de este producto las condiciones, disposiciones y procedimientos de garantía aplicables; informar la responsabilidad del comprador de capacitar a sus operadores para la operación segura; revisar el contenido del Manual del Operador, incluido el equipo de seguridad, la operación segura y el mantenimiento; y revisar las Señales de Seguridad que se encuentran en el implemento (y en el tractor, de ser posible).

- **IMPLEMENTOS:** He explicado que los deflectores, protectores de cadena o faldones sólidos se deben mantener en buenas condiciones de reparación y se deben instalar, excepto en zonas donde personas, vehículos, ganado u otros bienes no corran peligro por objetos arrojados, y en los casos en que dichos equipos de seguridad impedirían un desempeño razonable de la cortadora en su tarea asignada.

- **LÍNEAS DE CONDUCCIÓN:** Me he asegurado de que todos los protectores de líneas de conducción, de caja de engranajes y otros están en buenas condiciones de reparación y firmemente sujetos para prevenir lesiones por enredos u objetos arrojados.
- **MÁQUINAS HIDRÁULICAS:** He explicado la necesidad de usar aceite hidráulico limpio, cambiar los filtros según las instrucciones, detener filtraciones, prevenir daños por operar con aceite demasado caliente, cuidar las mangueras, usar mangueras del tipo correcto, mantener la presión operativa especificada y prevenir el posible riesgo de que el aceite penetre en la piel.

- **IMPLEMENTOS PLEGABLES:** He explicado que no es posible proteger contra objetos arrojados cuando el cabezal está elevado del suelo y que el operador es responsable de verificar que no existan personas en las inmediaciones. He explicado que el brazo o cabezal de cortadora elevado puede entrar en contacto con obstrucciones elevadas y dañar cables y líneas telefónicas, y posiblemente causar lesiones. He explicado que el brazo o cabezal extendido, o el brazo retraído, puede entrar en contacto con cables de alimentación y causar lesiones o la muerte por electrocución, y que el operador es responsable de evitar dichos riesgos.

### SERVICIO ANTES DE LA ENTREGA VERIFIQUE Y AJUSTE O LUBRIQUE SEGÚN SEA NECESARIO

Consulte los detalles en el Manual del Operador  
Inspección realizada – Garantía y procedimientos de seguridad explicados – Instalación realizada

#### CONEXIONES DE CORTADORA A TRACTOR

- ☐ Longitud de barra de enganche (verificar y fijar)
- ☐ Pivote y conexiones de bastidor en A
- ☐ Barras de control (ajustadas iguales)
- ☐ Altura de eje (ajustar)
- ☐ Altura de corte (ajustar)
- ☐ Verificación de pre-operación de kit de montaje
- ☐ Alea de cortadora (ajustar nivel con el centro)
- ☐ Alea de cortadora (verificar operación de elevación correcta)
- ☐ Líneas de conducción C.V. (verificar radio de giro máx.)
- ☐ Enganche de tracción (ajuste de altura)
- ☐ Piezas metálicas de montaje bien ajustadas

#### ELEMENTOS DE SEGURIDAD

- ☐ Protectores (operación e instalación)
- ☐ Embrague de línea de conducción (limitador de ajuste)
- ☐ (ajustar y poner en marcha)
- ☐ Autoadhesivos de seguridad (colocados)
- ☐ Manual del Operador (entregado)
- ☐ Protector de TDF del tractor (instalado)
- ☐ Emblema S.M.V. (instalado de ser necesario)
- ☐ Gato con lengüeta (instalación y operación)
- ☐ Cadena de remoique de seguridad (instalada)
- ☐ Manual de Seguridad de Línea de Conducción ADMA (entregado)
- ☐ Manual de Seguridad de Cortadora AEM (entregado en porta manual)
- ☐ Se mostró el Video de Seguridad de Cortadora AEM al comprador

#### LUBRICACIÓN E HIDRÁULICA

- ☐ Caja de engranajes (niveles de aceite)
- ☐ Nivel de aceite hidráulico (tanque externo)
- ☐ Nivel de aceite hidráulico del tractor
- ☐ Mangueras hidráulicas (no retorcidas y ajustadas)
- ☐ Propulsor de bomba frontal (conjunto ajustado y eje bien alineado)

#### CORTADORA

- ☐ Pernos de husillo y motor bien ajustados
- ☐ Nivel de aceite del husillo
- ☐ Pernos de porta cuchillas bien ajustados/pasadores de retención colocados
- ☐ Nivel y altura de corte de la cortadora ajustados
- ☐ Cojinetes del eje de corte lubricados
- ☐ Todas las piezas metálicas bien ajustadas
- ☐ Presión de aire y neumáticos/tuercas de rueda (bien ajustadas)
- ☐ Cojinetes de rueda (verificar, engrasar y hacer carga previa)

#### ACCESORIOS E INSTALACIÓN

- ☐ Deflectores frontales y traseros
- ☐ Accesorios de trituración
- ☐ Sentido de giro de las hojas correcto
- ☐ Vigas y brazos de eje
- ☐ Lengüeta y barras de control (instaladas y ajustadas)
- ☐ Todos los pernos, pasadores y tuercas (ajuste correcto)



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

Por favor enviar:

☐ Video de Seguridad para el Operador de Cortadoras AEM/FEMA – formato VHS

☐ Video de Seguridad para el Operador de Cortadoras AEM/FEMA – formato DVD

☐ Manual del Operador de la Cortadora

☐ Manual de Seguridad del Operador de la Cortadora AEM

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

Dirección del solicitante: \_\_\_\_\_

Ciudad: \_\_\_\_\_

Estado: \_\_\_\_\_

Código postal: \_\_\_\_\_

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

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

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

Enviar por correo a:

AEM Video Services

1502 E. Walnut Street

Seguin, TX 78155

☐ enviar por fax a:

(830) 372-9529

☐ enviar por correo electrónico a:

AEMVideo@alamo-group.com

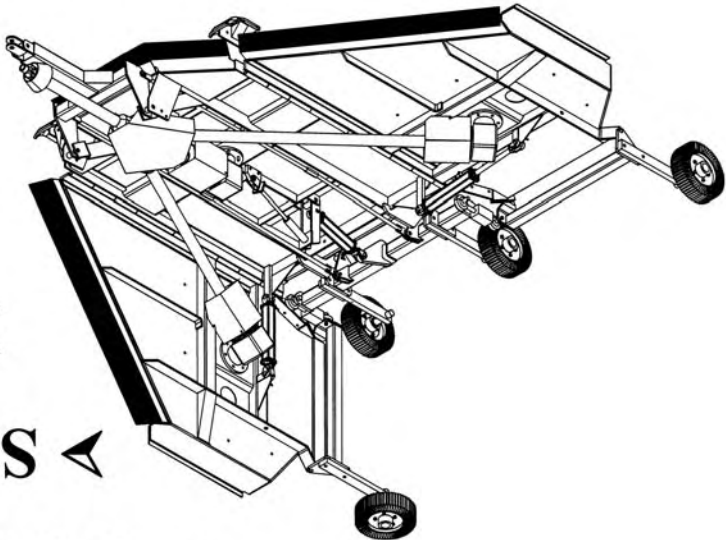


Video de Seguridad



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

➤ Sea Seguro  
➤ Sea Alerto  
➤ Sea Vivo  
➤ Sea Entrenado  
antes de funcionar  
el cortacésped



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

Bush Hog Image\_SF

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

El video explica a los operadores de tractores y cortadoras las prácticas seguras que deben adoptar cuando utilizan cortadoras industriales y agrícolas. Es importante que todos los operadores de cortadoras aprendan cómo operar sus equipos de corte y puedan reconocer 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 cortadora, serán muy útiles para complementar este aprendizaje tan importante.

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 algún operador de cortadora no vio el video: mire el video, lea este Manual del Operador, y complete la Guía del Video antes de operar su cortadora nueva. Si no comprende alguna de las instrucciones del video o del manual del operador, o si tiene alguna pregunta acerca de la operación segura, comuníquese con su supervisor, con el distribuidor o con Bush Hog. Si desea recibir una copia del video en VHS, envíe un mensaje de correo electrónico a AEMVideo@alamo-group.com o un fax al (830) 372-9529, o envíe por correo una copia rellena del formulario que se encuentra al dorso 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 cortadora y número de serie.

Cada uno de los operadores debe recibir capacitación para cada equipo (tractor y cortadora), comprender el uso previsto, y comprender los posibles peligros antes de operar el equipo. La información y material mencionado en la información anterior junto con el Manual de Operador puede asistir en cumplir con los requisitos de OSHA para el entrenamiento anual del Operador.

## REQUISITOS DE ENTRENAMIENTO DEL OSHA

Los siguientes requisitos de entrenamiento se an toma de Título 29, código de la pieza de regulaciones federales 1928.57 (a) (6). [www.osha.gov](http://www.osha.gov)

Instrucciones del operador. A la hora de la asignación inicial y por lo menos anualmente después de eso, el empleador mandará a cada empleado quien opera un tractor agrícola o implemento en las practicas de operación segura y el mantenimiento de el equipo con el cual el empleado esté, o estará implicado y de cualquier otras prácticas dictados por el ambiente laboral.



## Al propietario/operador/distribuidor

Este Manual del Operador es una parte esencial de la operación segura de esta máquina y se debe mantener con la unidad siempre. El implemento incluye un porta manual donde se puede guardar el manual de manera adecuada. Si el manual se extravía o se daña, puede solicitar otra copia sin cargo a un distribuidor autorizado de Bush Hog o descargarlo del sitio web de Bush Hog ([www.bushhog.com](http://www.bushhog.com)).

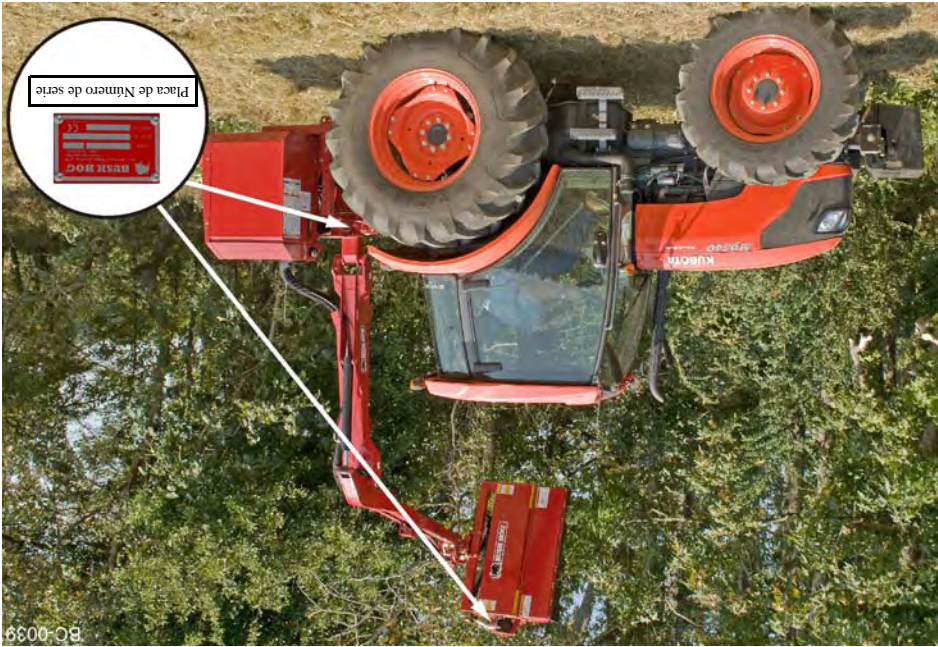
ANTES DE COMENZAR LEA, COMPRENDA Y SIGA la información incluida en este manual, el Manual de Seguridad de la Cortadora AEM y el manual del operador del tractor para conocer cómo operar la máquina y realizar tareas de servicio correctamente. De lo contrario, podría sufrir lesiones u ocasionar lesiones a terceros. Todos los implementos con partes móviles son potencialmente peligrosos. Cada esfuerzo ha sido hecho para asegurar que la máquina esté segura, pero los operadores deben evitar entrar en prácticas peligrosas y seguir las instrucciones escritas que son proporcionadas. El fabricante ha diseñado este implemento para ser usado con todos sus equipos de seguridad correctamente sujetos para minimizar la probabilidad de accidentes. 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.

Los cuidados que brinde a su 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. 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 sujeto al tractor.

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 siempre 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.

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

Distribuidor	Teléfono	Fecha de compra:	Número de serie	Dueño
			Fecha de compra:	





# RMB 1660

CORTADORA CON BRAZO HIDRÁULICO

# BUSH HOG®



Publicado en 12/13

## MANUAL DE OPERADOR

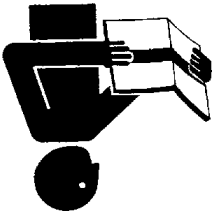
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Vídeo de Seguridad



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

Importantes instrucciones de operación y las instrucciones de seguridad se encuentran en el vídeo Cortacésped Sobre Seguridad que se puede acceder instantáneamente en el internet en: [www.algqr.com/bvs](http://www.algqr.com/bvs)



Este Manual del Operador es una parte esencial de la operación segura de esta máquina y se debe mantener con la unidad siempre. LEA, ENTIENDA, y SIGA las Instrucciones de Seguridad y Operación contenidas en este manual antes de operar el equipo. C01-Cover SP\_B



BC-0038

**BUSH HOG®**

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



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

Página Web de Bush Hog



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