



BOOM ARM MOWER

Published 05-26

Part No. 32125234C

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.

Important Operating and Safety Instructions are found in the Boom Mower Safety Video that can be instantly accessed on the internet at: www.algqr.com/abv C01-Cover_AB

Safety Video



www.algqr.com/abv



BC-0014

Alamo Industrial

1502 East Walnut
Seguin, Texas 78155
1-800-882-5762

e-mail: customerservice@alamo-industrial.com

Alamo Industrial
Web Page



www.algqr.com/awe

¡ATENCIÓN!
LEA EL INSTRUCTIVO



Si No Lee Ingles, Pida
Ayuda a Alguien
Que Se Lo Lea Para Que le
Traduzca Las
Medidas de Seguridad

A Member of the



! PELIGRO	! DANGER
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.	Si vous ne pouvez pas lire l'anglais : 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.
El Manual del Operador Seguridad vídeo   	Manuel de l'Opérateur  
www.algqr.com/abs www.algqr.com/avs	www.algqr.com/abf

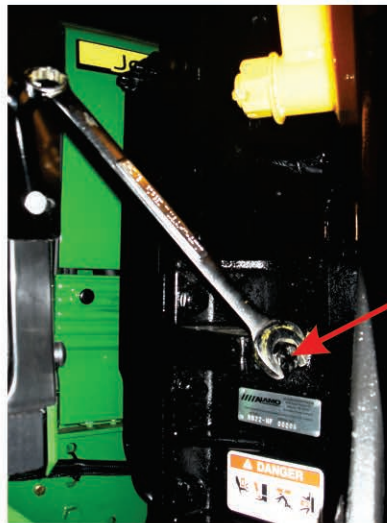
! PERIGO	! GEFAHR
Caso você não leia inglês: antes de operar o equipamento, peça para alguém traduzir as mensagens de segurança ou visite a web e obtenha tais mensagens ou os decalques traduzidos.	Falls Sie nicht Englisch sprechen: Bevor Sie die Geräte in Betrieb nehmen, bitten Sie eine Englisch sprechende Person darum, Ihnen die Sicherheitsmeldung zu übersetzen, oder besuchen Sie die Website; dort finden Sie übersetzte Aufkleber und Sicherheitsmeldungen. D835_3
Manual do Operador  	Benutzerhandbuch  
www.algqr.com/abp	www.algqr.com/abg

Safety Video  www.algqr.com/abv	Operator's & Parts Manuals  www.algqr.com/apm	General Safety Boom  www.algqr.com/abe
--	--	---

For Units Equipped with King Post Sub Assemblies

Prior to being released into service,
properly adjust the boom stop to ensure boom
will not contact the tractor cab.

⚠ WARNING Boom has been adjusted for Shipping Purpose

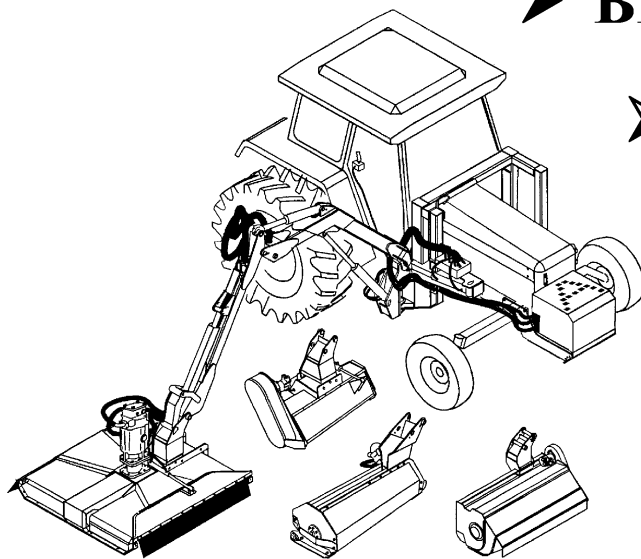


Adjusting Nut

Re-adjust Boom Stop Bolt for proper
Boom to Cab clearance and re-position
Boomrest Plate.



Boomrest Plate



➤ **BE SAFE!**

➤ **BE ALERT!**

➤ **BE ALIVE!**

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

Safety Video



www.algqr.com/ave



***Safety Training
Makes the Difference***

In order to reduce accidents and enhance the safe operation of mowers, Alamo Group Ag Division, in cooperation with other industry manufacturers has developed the AEM/FEMA Industrial and Agricultural Mower Safety Practices video. Please scan the above QR Code to view.

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.

Watch the Video and Read this Operator's Manual 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 Alamo Group Ag.

If you would like a DVD video, please email 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 P. O. Box 549, Seguin, TX 78156. and request the DVD 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

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.

Alamo Group Ag. Division will provide one (1) AEM Mower Safety Practices Video

Please Send Me:

- ☐ 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
P. O. Box 549
Seguin, TX 78156

Or Fax to:

(830) 372-9529

Or Email to:

AEMVideo@alamo-group.com

To the Owner/Operator/Dealer

This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the implement at all times. A Manual canister is provided on the implement where this manual can be properly stored. If you lose or damage this manual a free replacement manual can be obtained from an authorized Alamo Industrial dealer or by down loading the manual from the Alamo Industrial website www.alamo-industrial.com

BEFORE YOU START! READ, UNDERSTAND, and FOLLOW the information provided in this manual, the AEM Mower Safety manual and the power unit 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 the 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 Alamo Industrial 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.

Replacement Parts information is located in a separate Parts Manual. Alamo Industrial 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 Alamo Industrial 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 Alamo Industrial mower parts for economy and safety.

For future reference, record your Alamo Industrial 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

Table of Contents

To the Owner/Operator/Dealer	1 - 7
SAFETY SECTION	1 - 1
SAFETY MESSAGES	1 - 2
OPERATOR SAFETY	1 - 3
CRUSHING HAZARDS.....	1 - 4
CONNECTING OR DISCONNECTING IMPLEMENT SAFETY	1 - 5
THROWN OBJECT HAZARDS.....	1 - 6
RUN OVER HAZARDS	1 - 8
PTO ENTANGLEMENT HAZARDS	1 - 9
MOWER BLADE CONTACT HAZARDS.....	1 - 10
HIGH PRESSURE OIL LEAK HAZARDS	1 - 11
ELECTRICAL & FIRE HAZARDS	1 - 12
TRANSPORTING HAZARDS	1 - 13
HAZARDS WITH MAINTENANCE OF IMPLEMENT	1 - 14
PARTS INFORMATION	1 - 16
DECAL LOCATION.....	1 - 16
ROTARY HEAD	1 - 19
FLAIL AXE	1 - 20
GRASS FLAIL	1 - 21
TIMBERCAT	1 - 22
DITCHER.....	1 - 23
BUZZBAR	1 - 24
BATTLE AXE	1 - 25
BOOM ARM	1 - 26
DECAL DESCRIPTION	1 - 27
FEDERAL LAWS AND REGULATIONS	1 - 37
INTRODUCTION SECTION	2 - 1
ATTENTION OWNER/OPERATOR.....	2 - 4
ALAMO LIMITED WARRANTY	2 - 5
OPERATION SECTION	3 - 1
OPERATOR REQUIREMENTS	3 - 3
TRACTOR REQUIREMENTS.....	3 - 4
Cab, ROPS, and Seat Belt	3 - 4
Operator Thrown Object Protection	3 - 4
Tractor Lighting and SMV Emblem.....	3 - 5
Tractor Ballast	3 - 5
GETTING ON AND OFF THE TRACTOR	3 - 6
Boarding the Tractor	3 - 6
Dismounting the Tractor	3 - 6
STARTING THE TRACTOR	3 - 7
CONNECTING ATTACHING HEADS TO THE TRACTOR	3 - 8

Table of Contents

Connecting Mower Head Hydraulics	3 - 8
Hydraulic Quick Disconnects	3 - 9
PRE-OPERATION INSPECTION AND SERVICE	3 - 10
Tractor Pre-Operation Inspection and Service	3 - 11
Boom Unit Pre-Operation Inspection and Service	3 - 11
CUTTING COMPONENT INSPECTION	3 - 21
Blade Bolt Inspection	3 - 22
OPERATING THE BOOM JOYSTICK CONTROL	3 - 23
Mower Head Power	3 - 24
Swing	3 - 25
Lift	3 - 26
Dipper	3 - 27
Tilt	3 - 28
Door	3 - 29
DRIVING THE TRACTOR AND IMPLEMENT	3 - 32
Starting the Tractor	3 - 33
Brake and Differential Setting	3 - 34
Driving the Tractor and Boom	3 - 35
OPERATING THE BOOM UNIT AND ATTACHED HEAD	3 - 36
Foreign Debris Hazards/Overhead Obstructions	3 - 37
Operating Speed and Ground Speed	3 - 38
Operating the Attached Mower Heads	3 - 38
Operational Instruction	3 - 39
Flail Brush Cutter	3 - 40
BuzzBar Tree Limb Cutter	3 - 42
Shutting Down the Attached Head	3 - 44
TRACTOR, BOOM AND ATTACHED HEAD STORAGE	3 - 45
TRANSPORTING THE TRACTOR AND IMPLEMENT	3 - 46
Placing Boom Arm on Boom Arm Rest	3 - 46
Transporting on Public Roadways	3 - 47
Hauling the Tractor and Implement	3 - 49
TROUBLESHOOTING GUIDE	3 - 50
MAINTENANCE SECTION	4 - 1
HAZARDS WITH MAINTENANCE OF IMPLEMENT	4 - 2
PARTS INFORMATION	4 - 4
LUBRICATION INFORMATION	4 - 4
HYDRAULIC FLUID	4 - 6
Proper Oil Level	4 - 7
BLADES	4 - 7
HARDWARE	4 - 8
CYLINDER ROD MAINTENANCE	4 - 8
BOOM CYLINDER REMOVAL AND REPLACEMENT INSTRUCTIONS	4 - 9

Table of Contents

HYDRAULIC COMPONENT MAINTENANCE SCHEDULE	4 - 10
LEXAN SHEET CLEANING RECOMMENDATIONS.....	4 - 10
Cleaning Procedure for Small Areas - Manual	4 - 10
Cleaning Procedure for Large Areas - Automated	4 - 10
Additional Important Considerations for Multiwall, Corrugated and Sign Sheet:	4 - 11
Graffiti removal from Lexan* Margard* sheet	4 - 11
PROPER TORQUE FOR FASTENERS	4 - 11
PROPER TORQUE FOR HYDRAULIC HOSE FITTINGS AND PIPING.....	4 - 13
JIC 37° and 45° (Machined or Flared)	4 - 13
Flat-Face O-Ring Seal (Steel)	4 - 13
SAE O-Ring Boss (Steel)	4 - 14
BSP 30° Inverted Cone	4 - 14
SERVICE OF SPINDLE HOUSING	4 - 15
Removing Bearings	4 - 15
Inspection	4 - 15
Assembly	4 - 16
ROLLER BEARING REPLACEMENT.....	4 - 17
TIMBER CAT HEAD	4 - 18
Lubrication/Daily Checks	4 - 18
Stroke Adjustment	4 - 18
SAW BLADE HEAD	4 - 19
Blades.....	4 - 19
Lubrication	4 - 19
Belts.....	4 - 21
FLAIL MOWER	4 - 21
Belt Tension.....	4 - 21
Flail Blade Inspection	4 - 22
TENSIONING DRIVE BELTS	4 - 26
MOTOR & COUPLING INSTALLATION	4 - 26
TAPER BUSHING & SHEAVE INSTALLATION	4 - 27
GENERAL INFORMATION ON FLAIL MOWER VIBRATION	4 - 28
START-UP PROCEDURE	4 - 29
SPINDLE SERVICE PROCEDURE 02960553B and 02960553C	4 - 30
Inspection	4 - 31
Assembly	4 - 31

SAFETY SECTION

Safety Section 1-1

SAFETY

SAFETY MESSAGES

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 death or serious injury from unsafe practices.



Indicates a hazardous situation which, if not avoided, WILL result in DEATH OR SERIOUS INJURY.



Indicates a hazardous situation which, if not avoided, COULD result in DEATH OR SERIOUS INJURY.



Indicates a hazardous situation which, if not avoided, COULD result in MINOR OR MODERATE INJURY.

NOTICE

Is used to address practices not related to physical injury.

Important

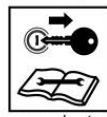
Safety instruction (or equivalent) signs indicate specific safety-related instructions or procedures.

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

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Death or serious injury 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.



Pictographs are used throughout this manual to help bring your visual attention to safety issues.

SAFETY HAZARD	SAFETY AVOIDANCE	SAFETY PREVENTION
Pictograph surrounded by a triangle indicates a Safety Hazard that must be avoided. Example:  Equipment contacting overhead electrical lines	Pictograph in a circle with blue or black background, by itself or inside a box, indicates an avoidance procedure or action that should be followed to prevent injuries. Example:  Wear safety footwear.  Always shut off engine and remove key before working on equipment.	A circle with a slash through it indicates an action that is prohibited. Example:  No Smoking

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. GS01str

SAFETY

OPERATOR SAFETY

				
Read and understand Operator's Manual	Always wear Safety Glasses with side shields marked to comply with ANSI Z87	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 DEATH OR SERIOUS INJURY DO THE FOLLOWING:

- **READ, UNDERSTAND and FOLLOW** Operator's Manual instructions, Warnings and Safety Messages.
- **WEAR SAFETY GLASSES WITH SIDE SHIELDS MARKED TO COMPLY WITH ANSI Z87**, 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:

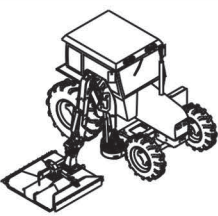
- **DO NOT EXCEED IMPLEMENT RATED PTO SPEED**
- **AVOID** exceeding rated PTO speeds that may result in broken drivelines or blade failures.

SAFETY SIGNS:

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

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 DEATH OR SERIOUS INJURY 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.

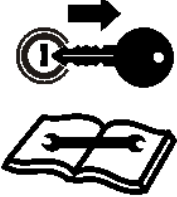
⚠ WARNING

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-01str*

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 DEATH OR SERIOUS INJURY 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 without 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.

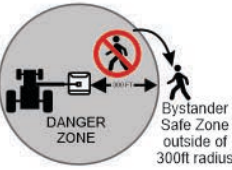
CONTACT DEALER if implement driveline does not match Tractor PTO shaft:

- 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-01str

SAFETY

THROWN OBJECT HAZARDS

				
Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Keep mower door closed when traffic comes within 300 feet of Danger Zone	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 DEATH OR SERIOUS INJURY 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.
- DO NOT allow the mower blades to contact decaying animal carcasses or other hazardous materials. The mower blades could throw hazardous and biologic material out from under mower exposing the operator and bystanders to health risks. Always wear required OSHA approved Personal Protective Equipment (PPE) when cleaning or removing potentially hazardous material from equipment.

MARK objects that cannot be removed.

AVOID these objects when mowing.

HIGH GRASS and WEED AREA INSPECTION:

- INSPECT for and REMOVE any hidden large debris that can be thrown by mower.
- MOW at Intermediate height.
- INSPECT and remove remaining debris.
- MOW at final height.

MOWER THROWN OBJECT SHIELDING:

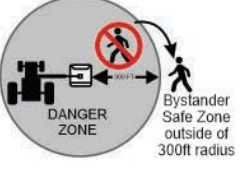
- KEEP all thrown object shielding including, Front and Rear Deflectors, Chains Guards, Steel Guards, Bands, Side Skirts and Skid Shoes in place and in good condition when mowing.
- DO NOT OPERATE with any thrown object shielding missing, damaged or removed.

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:
- MAINTAIN MOWER SHIELDING, side skirts, skid shoes, and blades in good operational condition,
- RAISE CUTTING HEIGHT to 6 INCHES minimum,
- INSPECT AREA thoroughly before mowing to REMOVE potential THROWN OBJECT HAZARDS.
- NEVER ALLOW BLADES to CONTACT SOLID OBJECTS like wire, rocks, post, curbs, guardrails, or ground while mowing. PN TOBM-01str

SAFETY

THROWN OBJECTS HAZARDS (CONTINUED)

				
Mower Thrown Objects Hazard	Raised Mower Thrown Objects	Keep mower door closed when traffic comes within 300 feet of Danger Zone	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 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 bystanders out of the Danger zone, which is 300 ft radius from mower. If using spotters make sure they are outside of the 300 ft radius Danger Zone.
- 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:
- BLADES CAN FAIL from impact and objects can be thrown with great velocity.
- INSPECT and REPLACE any damaged blades.

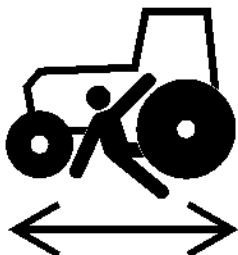
CHECK blade carrier and REPLACE if damaged.

- DO NOT mow in standing water TO AVOID possible BLADE FAILURE.
- AVOID MOWING in reverse.
- STOP PTO and back up mower.
- LOWER mower, engage PTO and mow forward while looking for bystanders who may be behind or to the side of the machine.
- 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:
- STOP PTO and tractor ENGINE.
- INSPECT mower for vibration source.

REPLACE any damaged parts and bent or damaged BLADES. PN TOBM-02 str

SAFETY

RUN OVER HAZARDS

		
Operator run over hazard	Rider fall off run over hazard	Bystander run over hazard



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

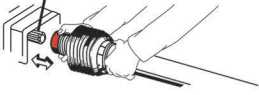
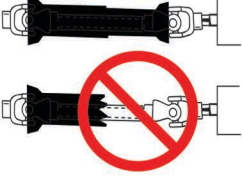
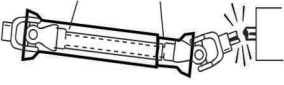
- USE ROPS and SEAT BELT equipped tractors for mowing operations.
- KEEP ROPS locked in UP position.
- ONLY start tractor while seated in tractor seat.
- ALWAYS BUCKLE UP seat belt when operating tractor and equipment.
- ONLY OPERATE tractor and equipment while seated in tractor seat.
- NEVER ALLOW RIDERS 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-01str*

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 DEATH OR SERIOUS INJURY:

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 PE01str*

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



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

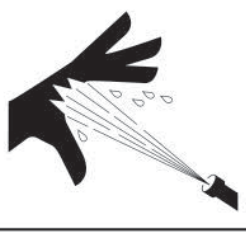
- STAY AWAY and KEEP HANDS, FEET and BODY AWAY from rotating blades, drivelines and parts until all moving elements have stopped.
- DO NOT put hands or feet under mower decks.
- STOP rotating BLADES disengage mower switch and PTO and wait for blade to stop rotating before raising mower head.
- DO NOT 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-01str

SAFETY

SAFETY

HIGH PRESSURE OIL LEAK HAZARDS

			
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 for at least 5 minutes before slowly removing cap



DANGER

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

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

HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE.

WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:

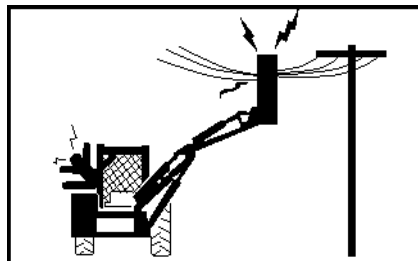
- ALWAYS WEAR safety glasses and impenetrable gloves.
- USE paper or cardboard to search for leaks.
- DO NOT USE hands or body parts to search for leak.
- KEEP hands and body AWAY from pin holes and nozzles ejecting hydraulic fluid.
- Hydraulic fluid may cause gangrene if not surgically removed immediately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

Use caution when removing Hydraulic Tank cap.

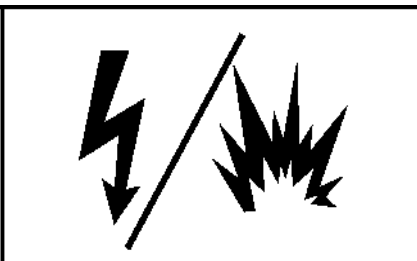
- Tank contents may be under pressure.
- Allow oil to cool before removing cap.
- Relieve oil pressure before removing cap slowly.
- Stay away from hot oil that may spray from tank. *P/N HPBM-01 str*

SAFETY

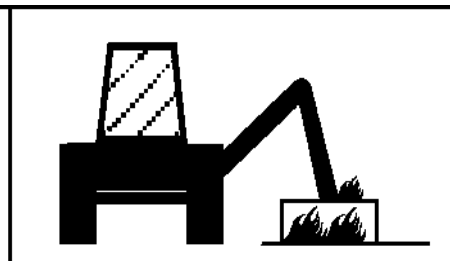
ELECTRICAL & FIRE HAZARDS



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

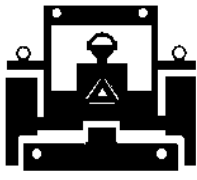
- INSPECT mowing area for overhead or underground electrical power lines, obstructions, gas lines, cables and Utility, Municipal, or other type structure.
- KEEP all raised wings at a 10 feet or greater distance from all power lines and overhead obstructions.
- DO NOT allow mower to contact with any 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-01str*

SAFETY

TRANSPORTING HAZARDS

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



WARNING

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

- KEEP transport speed BELOW 20 mph to maintain control of equipment.
- REDUCE SPEED on inclines, 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:

BRAKE 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 on wet or icy roads, stopping distances increase.

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

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

WHEN TOWING OR TRANSPORTING EQUIPMENT:

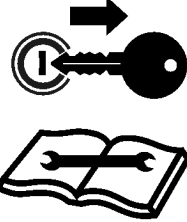
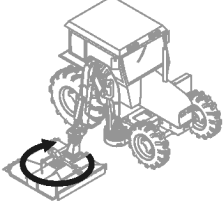
- Always WEAR SEAT BELT when operating or transporting mower.
- USE low speeds to avoid overturning with raised wings.
- USE low speeds and gradual steering on curves, hills, rough or uneven surfaces, and on wet roads.
- TURN ON tractor FLASHING WARNING LIGHTS.
- ALLOW clearance for implement swing while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

KEEP raised boom mower 10 feet or greater distance from all power lines and overhead obstructions.

PN THBM-01 str

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



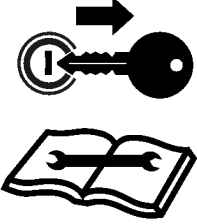
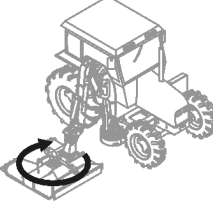
AVOID DEATH OR SERIOUS INJURY FROM COMPONENT FAILURE BY KEEPING IMPLEMENT IN GOOD OPERATING CONDITION BY PERFORMING PROPER SERVICE, REPAIRS AND MAINTENANCE.

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 (with side shields marked to comply with ANSI Z87), 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 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. *PN HMBM-01*

SAFETY

HAZARDS WITH MAINTENANCE OF IMPLEMENT - CONTINUED

				
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

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 pre-load. 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.



WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov. PN HMBM-01 (2) str

SAFETY

PARTS INFORMATION

Alamo Industrial 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 Alamo Industrial specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce mower performance, void mower warranties, and present a safety hazard. Use genuine Alamo Industrial mower parts for economy and safety. (SPAM-1str)

See Your Alamo Dealer

Operator's & Parts Manuals



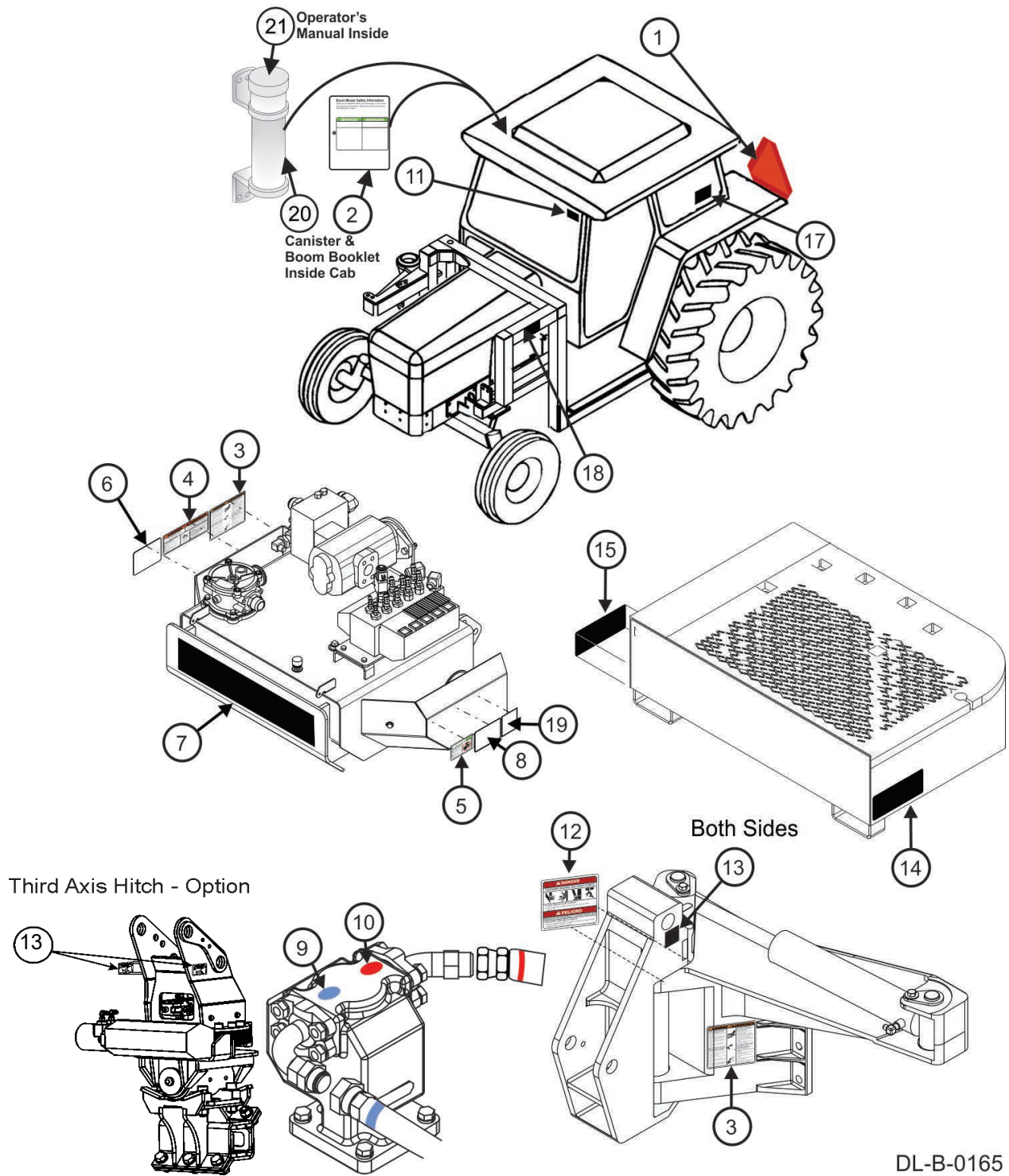
www.algqr.com/apm

DECAL LOCATION

NOTE: Alamo Industrial supplies safety decals on this product to promote safe operation. Damage to the decals may occur while in shipping, use, or reconditioning. Alamo Industrial 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. Contact your Alamo Industrial dealer to order replacement decals.

SAFETY

SAFETY



SAFETY

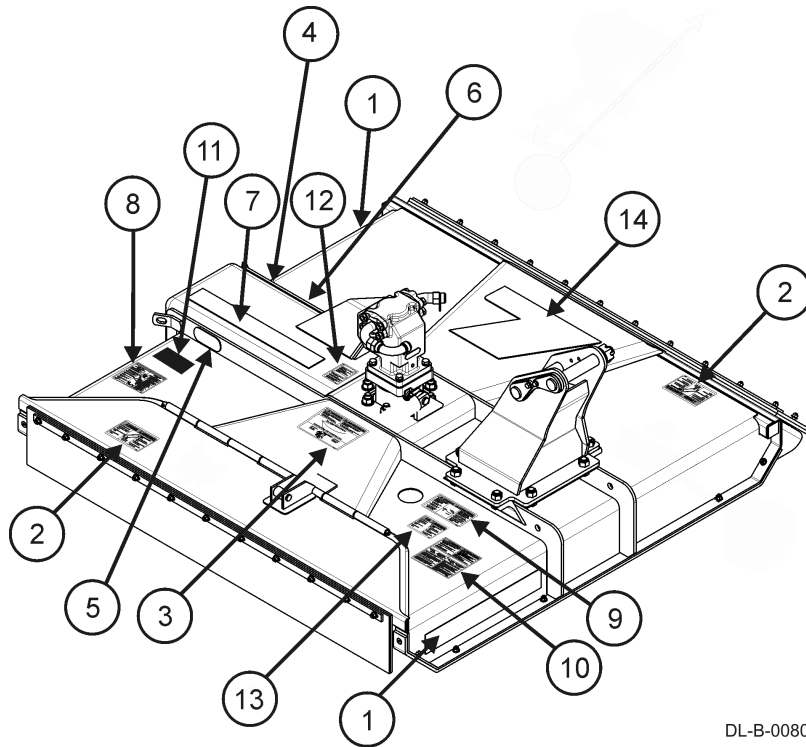
SAFETY

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	03200347	1	REFLECT	SMV
2.	D677	1	INSTRUCT	Boom Mower Safety Booklet
3.	D617	3	DANGER	Hydraulic Oil Hazard
4.	D625	1	WARNING	Pressurized Tank
5.	D627	1	IMPORTANT	Avoid Electrical Damage
6.	02982828	1	ATTENTION	Correct Hydraulic Fluid
7.	02971943	1	LOGO	Alamo Industrial
8.	02987402	1	INSTRUCT	Hose Connection
9.	D644	1	INSTRUCT	Blue Dot Decal
10.	D645	1	INSTRUCT	Red Dot Decal
11.	D624	1	IMPORTANT	Operate at 540 RPM
12.	D628	1	DANGER	Crushing Hazard
13.	D623	3	WARNING	Pinch Points
14.	1458392	1	REFLECT	Red Reflector
15.	1458393	1	REFLECT	Yellow Reflector
16.	002508	1	LOGO	Alamo Industrial
17.	D876	1	WARNING	Crushing Hazard-Tire Ballast
18.	D688	1	WARNING	Clearance Hazard
19.	02988245	2	INSTRUCT	Re-order OEM Parts
20.	00776031	1	---	Canister
21.	32122166C	1	---	Operator's Manual

SAFETY

SAFETY

ROTARY HEAD

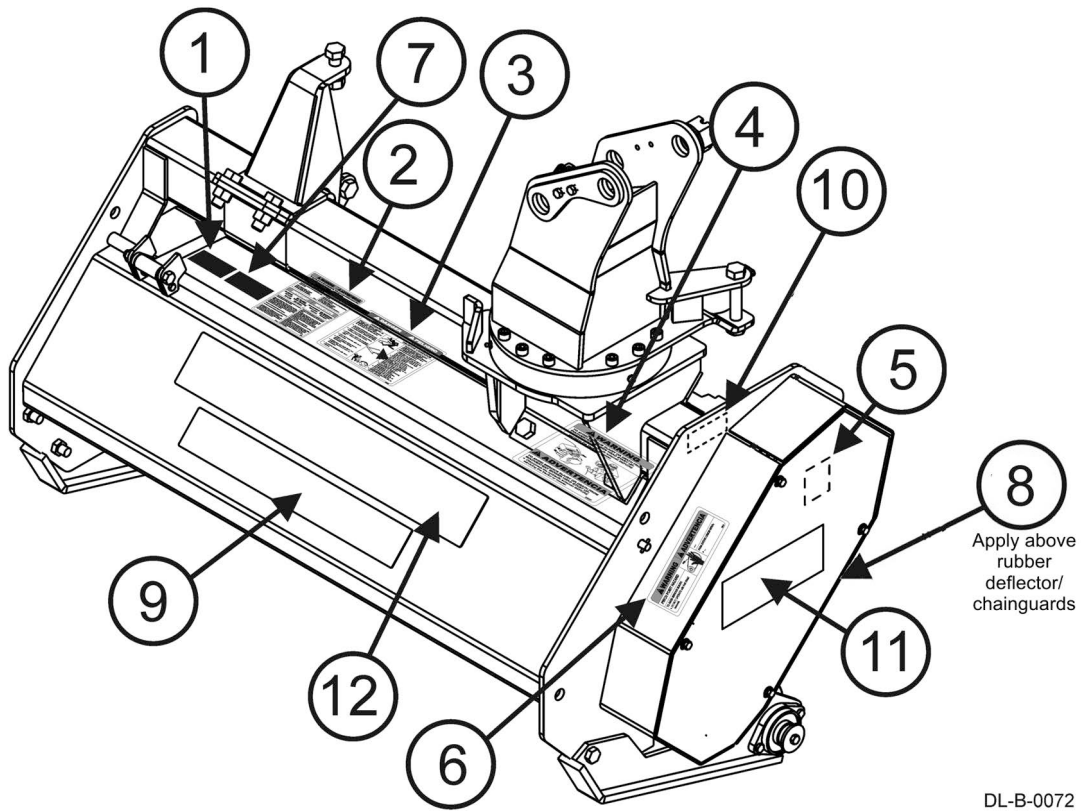


DL-B-0080

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	00757139	2	LOGO	Alamo Industrial Logo
2.	D626	2	WARNING	Thrown Object Hazard
3.	D619	1	WARNING	Blade Rotation
4.	2738332	1	REFLECT	Red Reflector
5.	2738333	1	REFLECT	Yellow Reflector
6.	02986112	1	SERIAL PLT	Serial Number Plate - 60° Rotary
	02986679	1	SERIAL PLT	Serial Number Plate - 60° Rotary
7.	02970889	1	LOGO	60° Rotary
	02982927	1	LOGO	50° Rotary
8.	D622	1	DANGER	Blades - Thrown Objects
9.	D620	1	WARNING	Replace Blades in Pairs
10.	D564	1	WARNING	Use Genuine Parts
11.	D718	1	INSTRUCT	Lube Chart
12.	D621	1	IMPORTANT	Lube Spindle Every 40 Hours
13.	D637	1	WARNING	Disconnect Hydraulic Solenoid
14.	00757140	1	LOGO	Alamo Industrial Logo

SAFETY

FLAIL AXE

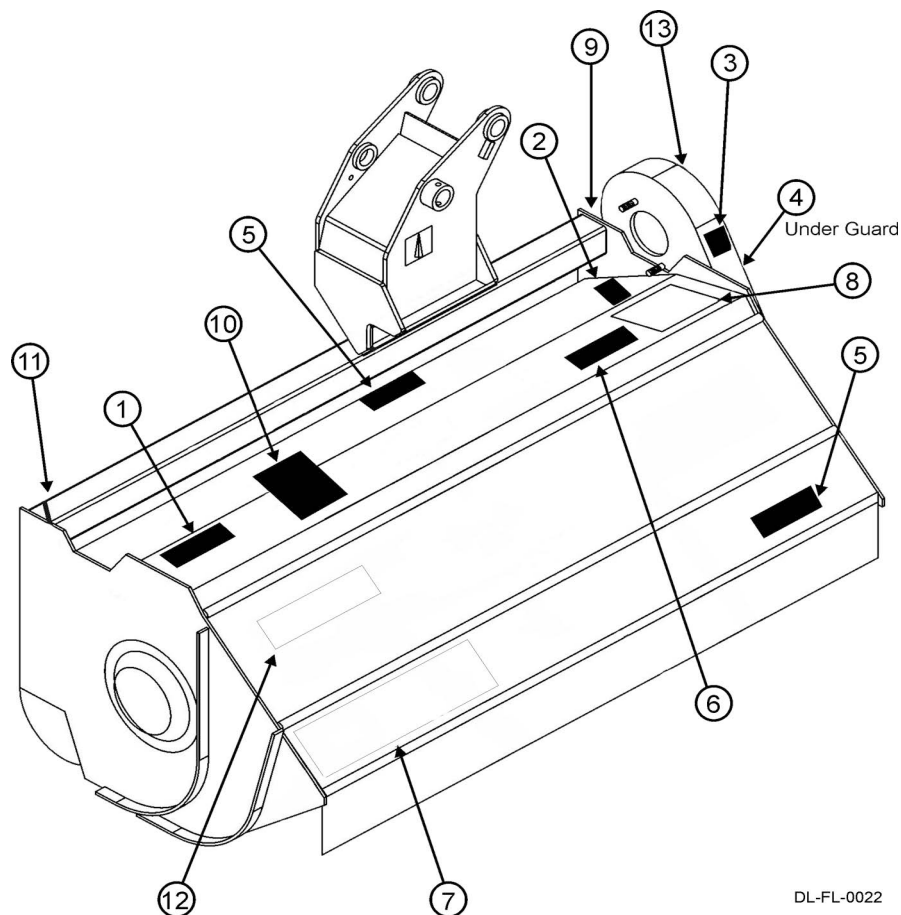


DL-B-0072

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D661	1	INSTRUCT	Lube Chart
2.	D564	1	DANGER	Use Genuine Parts
3.	D622	1	DANGER	Thrown Objects Safety Shields
4.	D637	1	WARNING	Disconnect Hydraulic Solenoid
5.	D646	1	WARNING	Shield and Guards (under guard)
6.	D641	1	WARNING	Belt Shield
7.	000108	1	INSTRUCT	Flail Operation
8.	D626	1	DANGER	Rubber Deflectors Missing
9.	02970887	1	LOGO	Flail Axe 48°
10.	NFS	1	SERIAL PLT	Flail Axe Serial Number
11.	02979551	1	LOGO	Alamo Industrial Logo
12.	00757139	2	LOGO	Alamo Industrial

SAFETY

GRASS FLAIL

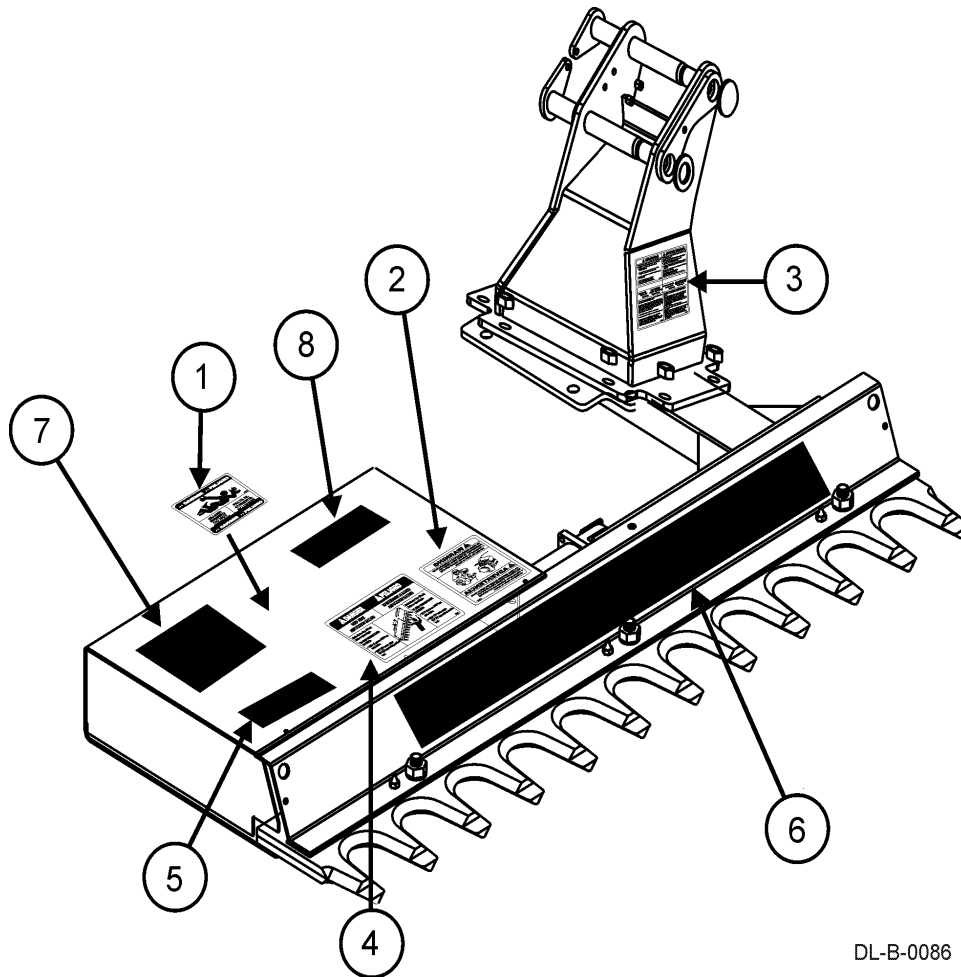


ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D564	1	WARNING	Use Genuine Parts
2.	D637	1	WARNING	Disconnect Hydraulic Solenoid
3.	D641	1	WARNING	Belt Shield
4.	D646	1	WARNING	Shield and Guards
5.	D626	2	DANGER	Rubber Deflectors Missing
6.	D661	1	INSTRUCT	Lubrication Chart
7.	00757139	1	LOGO	Alamo Industrial Logo
8.	000108	1	INSTRUCT	Flail Operation Instructions
9.	NFS	1	SERIAL PLT	Flail Head Serial Plate
10.	D622	1	DANGER	Thrown Objects
11.	1458392	1	REFLECT	Red Reflector
12.	1458393	1	REFLECT	Yellow Reflector
13.	02960766	1	LOGO	Alamo Industrial Logo

SAFETY

TIMBERCAT

SAFETY

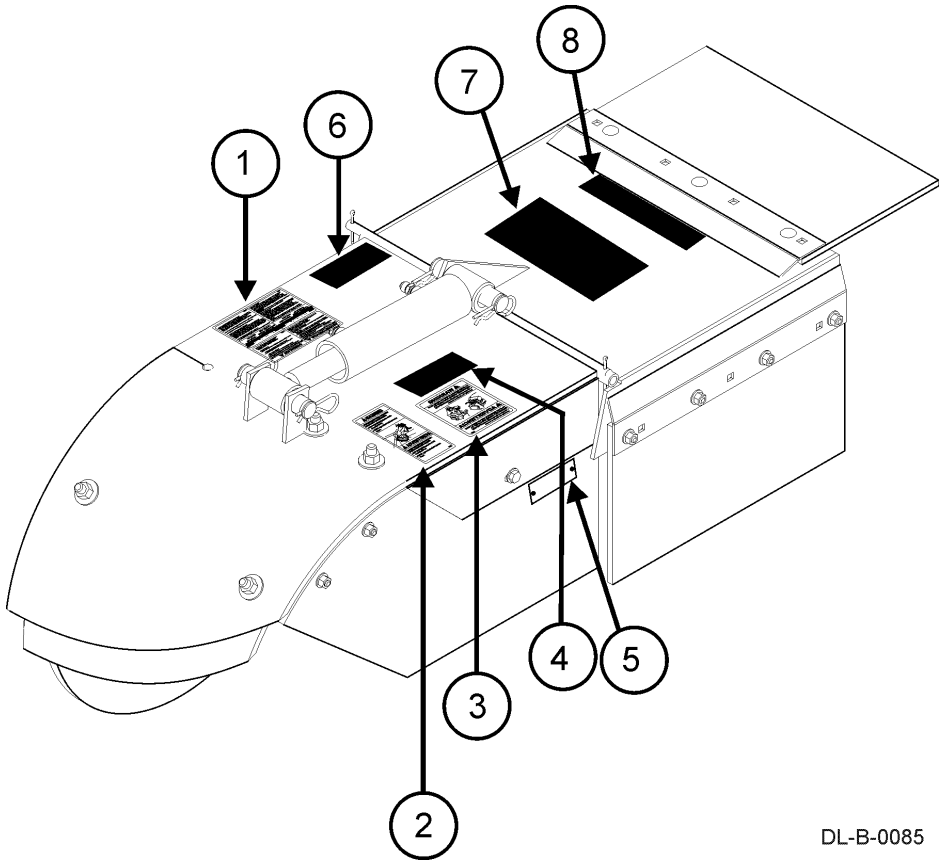


DL-B-0086

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D546	1	DANGER	Guard Missing
2.	D637	1	WARNING	Disconnect Hydraulic Solenoid
3.	D564	1	WARNING	Use Genuine Parts
4.	D639	1	DANGER	Amputation Hazard
5.	D662	1	INSTRUCT	Lubrication Decal
6.	00757139	1	LOGO	Alamo Industrial Logo
7.	00757140	1	LOGO	Alamo Industrial Logo
8.	02971931	1	LOGO	Timber Cat

SAFETY

DITCHER



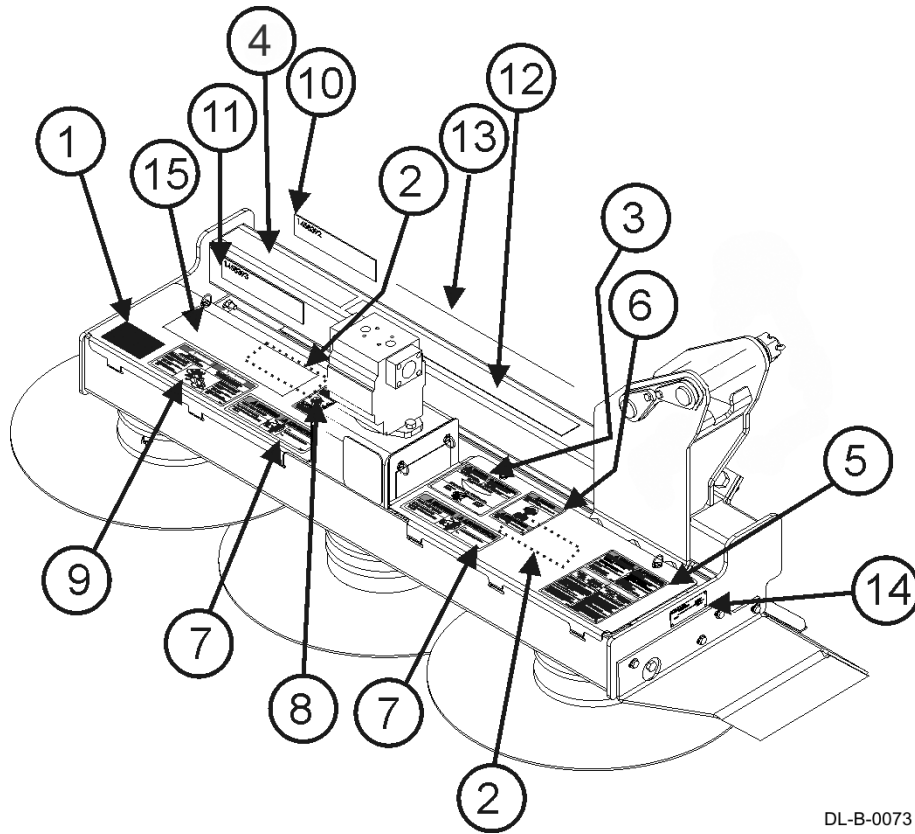
DL-B-0085

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D546	1	WARNING	Use Genuine Parts
2.	D642	1	WARNING	Thrown Objects
3.	D637	1	WARNING	Disconnect Hydraulic Solenoid
4.	D633	1	INSTRUCT	Lubrication Chart
5.	NFS	1	SERIAL PLT	Ditcher Serial Number Plate
6.	999204	1	LOGO	Ditcher Decal
7.	002508	1	LOGO	Alamo Industrial Logo
8.	02970888	1	LOGO	Boom Ditcher Name Logo

SAFETY

SAFETY

BUZZBAR



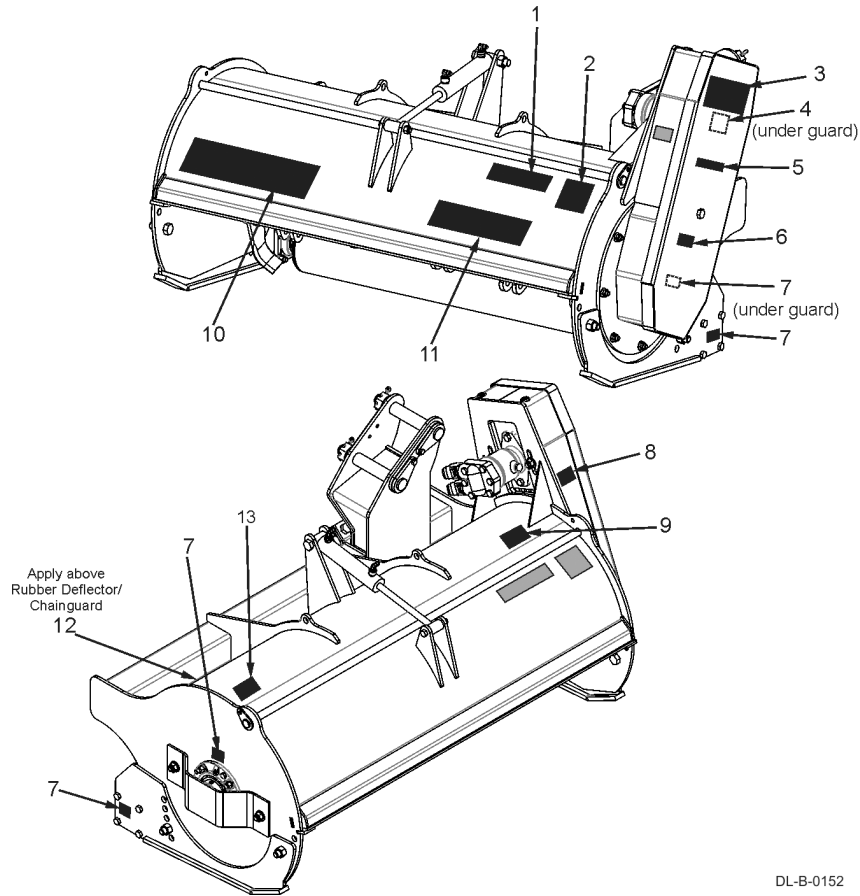
DL-B-0073

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D660	1	INSTRUCT	Lubrication Location
2.	D646	2	DANGER	Guard Missing
3.	D619	1	WARNING	Blade Rotation
4.	02979546	1	LOGO	Alamo Industrial
5.	D564	1	WARNING	Genuine Parts
6.	D638	1	WARNING	Hearing Loss
7.	D641	1	WARNING	Belt Shield
8.	D637	1	WARNING	Disconnect Hydraulic Solenoid
9.	D640	1	DANGER	Amputation Hazard
10.	1458392	1	REFLECT	Red Reflector
11.	1458393	1	REFLECT	Yellow Reflector
12.	02975516	1	INSTRUCT	No Hitch Post Here
13.	00757139	1	LOGO	Alamo Industrial
14.	NFS	1	SERIAL PLT	Serial Plate
15.	02974998	1	LOGO	Logo BuzzBar

SAFETY

SAFETY

BATTLE AXE



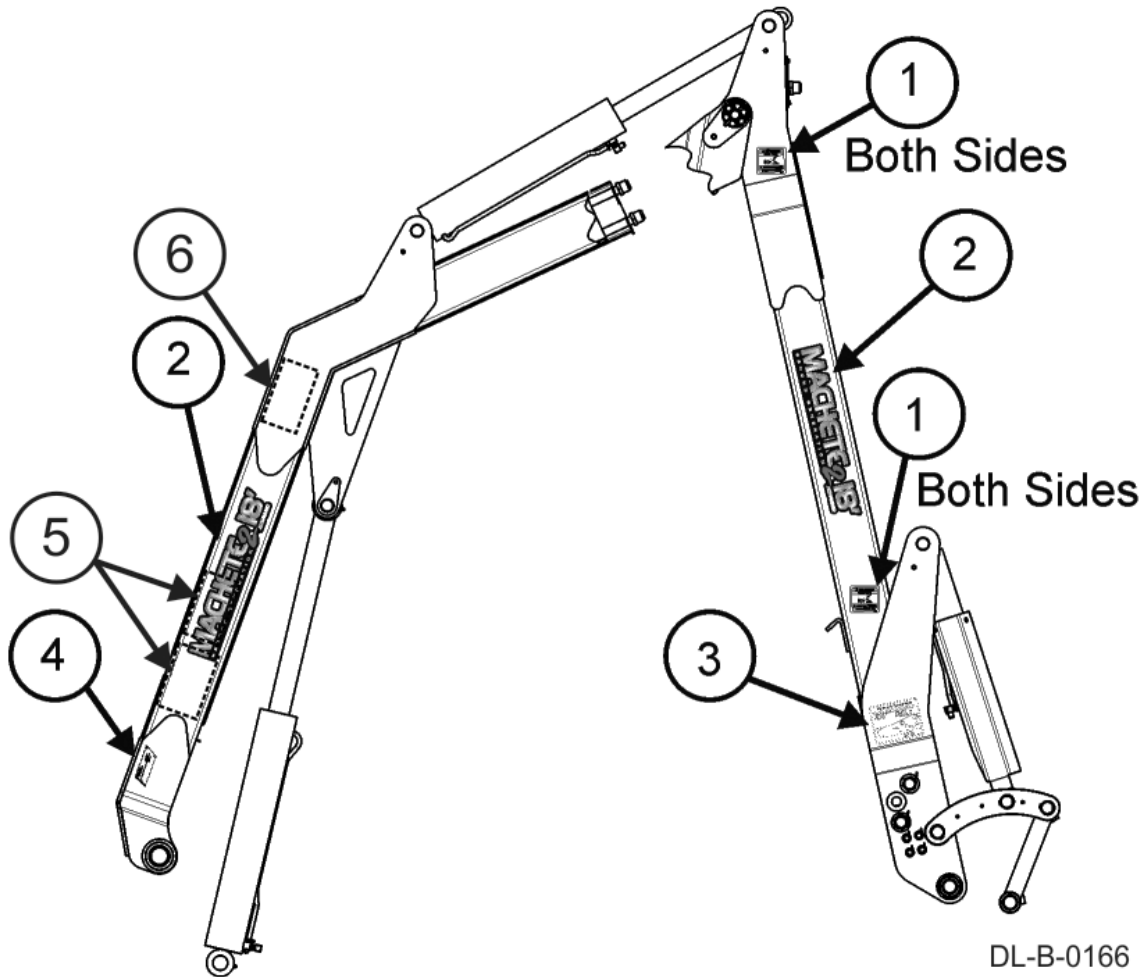
DL-B-0152

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D564	1	WARNING	Use Genuine Parts
2.	D622	1	DANGER	Thrown Objects Hazard
3.	02979551	1	LOGO	Alamo Industrial
4.	D646	2	DANGER	Guard Missing
5.	D641	1	WARNING	Belt Shield
6.	D726	1	INSTRUCT	Grease Fitting Inside
7.	226-181	4	INSTRUCT	Grease Every 8 Hours
8.	D637	1	WARNING	Disconnect Hydraulic Solenoid
9.	000108	1	INSTRUCT	Flail Operation Instructions
10.	02992908	1	LOGO	Battle Axe
11.	00757139	1	LOGO	Alamo Industrial
12.	D626	2	DANGER	Rubber Deflectors Missing
13.	D950	1	INSTRUCT	Lubrication Decal

SAFETY

SAFETY

BOOM ARM



ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	D623	4	WARNING	Pinch Points
2.	02985831	2	NAME LOGO	Machete 2 - 18"
	02984939	2	NAME LOGO	Machete 2 - 22"
	02984940	2	NAME LOGO	Machete 2 - 25"
3.	02981987	1	INSTRUCT	Hose Connection
4.	NFS	1	SERIAL PLT	Serial Number Plate
5.	D835	1	DANGER	Multi-Language Hazard
6.	D665	1	INSTRUCT	Lube Location - Boom

SAFETY

DECAL DESCRIPTION

⚠ WARNING



TO AVOID DEATH OR SERIOUS INJURY 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 with side shields (marked to comply with ANSI Z87) 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

⚠ WARNING



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

**TO AVOID DEATH AND SERIOUS
INJURY 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

SAFETY

SAFETY

IMPORTANT

TO AVOID ELECTRICAL EQUIPMENT DAMAGE:

- DISCONNECT computer modules BEFORE welding on any part of unit.
- DISCONNECT tractor battery BEFORE welding on any part of unit.

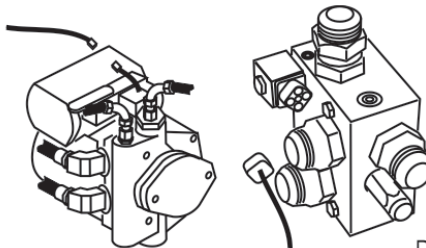
D627



⚠ WARNING

TO AVOID DEATH OR SERIOUS INJURY FROM INADVERTENT MOWER HEAD START UP:

- Disconnect the hydraulic solenoid BEFORE servicing the tractor or mower.



D637

IMPORTANT

Over speeding the engine will D624
overheat and rapidly decrease the life
of hydraulic components.

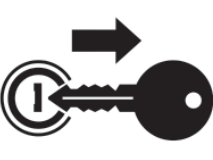
To prevent premature hydraulic component failure:

- DO NOT overspeed engine.
- Operate tractor at 540 PTO speed.

SAFETY

SAFETY

 **DANGER**



Run Over Hazard - Death or Injury

TO AVOID DEATH OR SERIOUS INJURY:

- 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.

D835_1

 **DANGER**



www.algqr.com/abe

TO AVOID DEATH OR SERIOUS INJURY:

- 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 with side shields (marked to comply with ANSI Z87).
- WEAR hard hat, safety shoes and gloves for protection when operating equipment.

D835_2

SAFETY

SAFETY

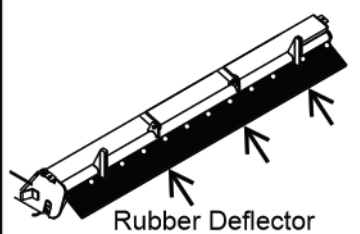
 PELIGRO	 DANGER
Si no puede leer inglés: antes de poner en funcionamiento este equipo, solicite que alguien le traduzca los mensajes de seguridad o vaya al sitio web para consultar los mensajes de seguridad y las etiquetas ya traducidos.	Si vous ne pouvez pas lire l'anglais : avant d'utiliser l'équipement, 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.
El Manual del Operador Seguridad vídeo    www.algqr.com/abs www.algqr.com/avs	Manuel de l'Opérateur   www.algqr.com/abf

 PERIGO	 GEFAHR
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.	Falls Sie nicht Englisch sprechen: Bevor Sie die Geräte in Betrieb nehmen, bitten Sie eine Englisch sprechende Person darum, Ihnen die Sicherheitsmeldung zu übersetzen, oder besuchen Sie die Website; dort finden Sie übersetzte Aufkleber und Sicherheitsmeldungen. D835_3
Manual do Operador   www.algqr.com/abp	Benutzerhandbuch   www.algqr.com/abg

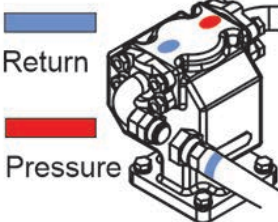
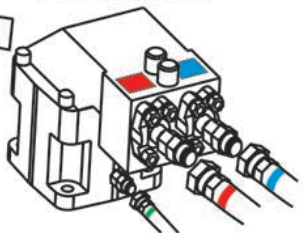
SAFETY

SAFETY


DANGER

THROWN OBJECT HAZARD TO AVOID DEATH OR SERIOUS INJURY: DO NOT OPERATE if Thrown Object Shielding is damaged or missing. - Maintain Rubber Deflectors in good condition. - Inspect Rubber Deflectors frequently. MAINTAIN Thrown Object Shielding ↙ HERE ↘	D626   Rubber Deflector
--	--


WARNING

TO AVOID DEATH OR SERIOUS INJURY FROM THROWN OBJECTS: MAKE CERTAIN blades rotate the correct direction.	
BLADE ROTATION 	
Gear Motor  Return Pressure	Piston Motor 

D619

SAFETY

SAFETY

! DANGER

THROWN OBJECTS HAZARD

Mower can throw objects up to 300 feet. TO AVOID DEATH OR SERIOUS INJURY 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. Close door immediately after.
- DO NOT operate with door removed.
- KEEP door in place and in good condition during operation.
- Deflectors are SUBJECT TO WEAR. Replace if worn or damaged.
- ALWAYS transport with door closed.

D622

ENTANGLEMENT HAZARD

- 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.
- STOP, LOOK and LISTEN for rotating motion before approaching implement.

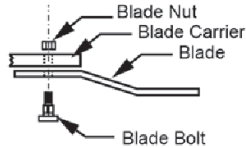
SAFETY

SAFETY

WARNING

TO AVOID DEATH OR SERIOUS INJURY FROM BLADE ATTACHMENT FAILURE:

- Torque blade bolt to 400 ft lbs.
- ALWAYS replace blades in pairs.
- ALWAYS replace blades with new bolts and nuts.



D620

WARNING

TO AVOID DEATH OR SERIOUS INJURY:

- ONLY use genuine Alamo Industrial replacement parts, which have been validated and tested to use on Alamo Industrial equipment by the manufacturer.
- The equipment manufacturer cannot verify the material or structural integrity of third-party supplied non-genuine replacement parts.
- Using non-genuine parts can result in the part failing, creating hazardous conditions for operator and bystanders.

Contact local dealer or ALAMO INDUSTRIAL about repair parts at:
1502 E. Walnut, Seguin, TX 78155
Customer Service: 800-882-5762
Email: support@alamo-industrial.com



www.algqr.com/apm

WARNING

Cancer and Reproductive Harm
www.P65Warnings.ca.gov

IMPORTANT

BE AWARE **BE TRAINED**
BE ALERT **Before Operating this Mower**
BE ALIVE

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. www.algqr.com/abv

Do not let untrained individuals operate this equipment. Contact your Dealer, AEM (www.aem.org), FEMA (314-878-2304, www.FarmEquip.org), or Alamo Group (www.Alamo-Group.com) for information on training material or courses that provide training in Safer Operating Practices for Mowers.

D564

SAFETY

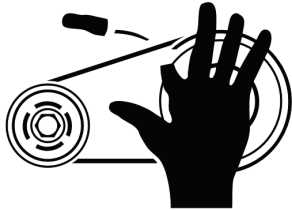
SAFETY

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

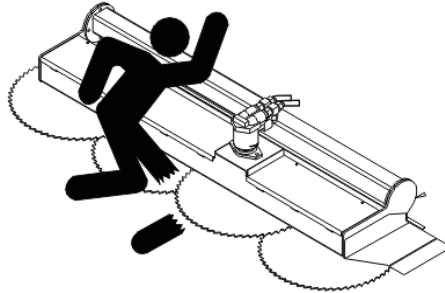
⚠ WARNING



D646

GUARD MISSING
To Avoid Serious Injury
Do Not Operate

⚠ DANGER



KEEP AWAY
AMPUTATION HAZARD

Rotating Blades can cut off body limbs or appendages.

TO AVOID DEATH OR SERIOUS INJURY:

- KEEP all persons AWAY from rotating blades.
- SHUT OFF tractor engine BEFORE approaching machine head.

D640

⚠ WARNING

PINCH POINT HAZARD

TO AVOID SERIOUS INJURY:

- DO NOT OPERATE with Belt Shield removed.

D641



⚠ WARNING

AVOID PINCH POINTS THAT CAN RESULT IN SERIOUS INJURY

D623



⚠ WARNING

TO AVOID HEARING LOSS:

- ALWAYS WEAR hearing protection within 100 yards of this machine.

D638



SAFETY



SAFETY

SAFETY

⚠ DANGER

CRUSHING HAZARD AND PINCH POINTS



TO AVOID DEATH OR SERIOUS INJURY:

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

D628

⚠ WARNING



CRUSHING HAZARD
could cause serious injury:

- Tire is extremely heavy.
- Use proper lifting & handling equipment when dismounting tire
- Refill tire with appropriate ballast for stability.
- Check torque on all wheel lugs.

D876

⚠ WARNING



CLEARANCE HAZARD

Do Not Exceed 13'-6" Maximum

To avoid serious injury or overhead structural damage:

- Place mower in transport position and measure from the ground to the highest point of the machine.

D688

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

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.)

INDUSTRIAL/AGRICULTURAL MOWER

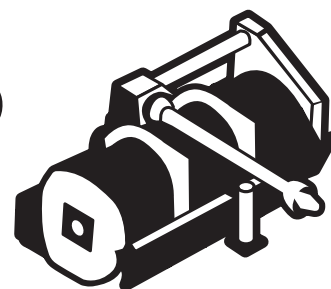
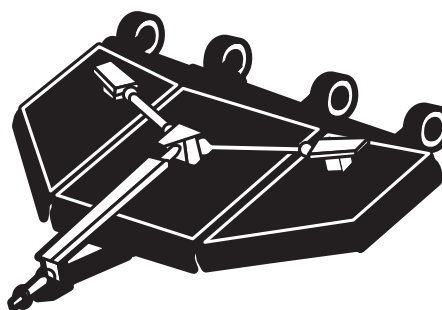
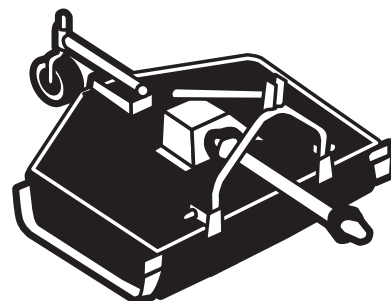
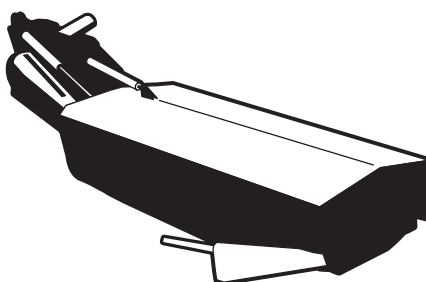
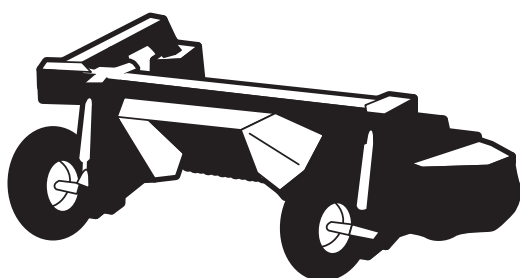
AEM 

Association of
Equipment Manufacturers



SAFETY MANUAL

FOR OPERATING AND MAINTENANCE PERSONNEL



ISBN 978-1-937029-54-8

90000>



9 781937 029548



Table of Contents

Acknowledgment.....	2
Foreword	3
Safety Alerts.....	4
A Word to the User/Operator	5
Types of Industrial/Agricultural Mowers	6
Follow a Safety Program.....	8
Prepare for Safe Operation.....	13
Start Safely.....	22
Operate Safely	24
Shut Down Safely	38
Perform Maintenance Safely.....	39
Final Word to the User	55

Acknowledgment

We wish to thank the members of the Association of Equipment Manufacturers for their invaluable contributions in preparing this Safety Manual.

NOTICE OF COPYRIGHT PROTECTION

Copyright, 2023, by the Association of Equipment Manufacturers. All rights reserved. This work may not be reproduced or disseminated in whole or in part by any means without the prior written permission of the Association of Equipment Manufacturers.

ISBN 978-1-937029-54-8

Copyright © 2003-2023 AEM (Association of Equipment Manufacturers) Revised 01/03, 09/10 and 01/24

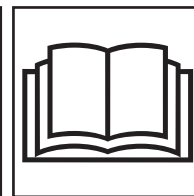
Foreword

This safety manual is intended to point out some of the basic safety situations that may be encountered during the normal operation and maintenance of your machine and to instruct you in safety practices for dealing with these conditions. This manual is **NOT** a substitute for the manufacturer's operator's manual(s).

Additional precautions may be necessary, or some instructions may not apply, depending on equipment, attachments and conditions at the job site or in the service area. The manufacturer has no direct control over equipment application, operation, inspection, or maintenance. Therefore, it is **YOUR** responsibility to use good safety practices in these areas.

The information provided in this manual supplements the specific information about your machine that is contained in the manufacturer's operator's manual(s). Other information that may affect the safe operation of your machine may be contained in the following:

- Safety signs
- Insurance requirements
- Employer safety and training programs
- Safety codes
- Local, state/provincial, and federal laws, rules, and regulations



**Read and understand
manuals before
operating**

IMPORTANT! Before you operate this machine, make sure you have the manufacturer's operator's manual(s) for this machine and all attachments. If the manufacturer's operator's manuals are missing, obtain replacements from your employer, equipment dealer, or directly from the manufacturer. Keep this safety manual and the manufacturer's operator's manuals with the machine at all times. Read and understand all applicable manuals.

Safety videos and other training resources are available from some manufacturers and dealers. The AEM Industrial/Agricultural Mower Safety video is available to train and reinforce good safety practices. This video is available at www.safetymaterials.org. Operators are encouraged to periodically review these resources.

Safety Alerts

Safety Alert Symbol

This Safety Alert Symbol means: **“Attention! Stay alert! Your safety is involved!”**



The Safety Alert Symbol is used to alert you to potential hazards and identifies important safety messages on equipment, safety signs, in manuals, or elsewhere. When you see this symbol, be alert to the possibility of death or personal injury. Carefully read the message that follows and inform other operators. Follow instructions in the safety message.

Signal Words

Signal words are distinctive words that are typically found on safety signs on the mower and other job site equipment. These words may also be found in this manual and the manufacturer's operator's manuals. These words are intended to alert the operator to a hazard and the degree of severity of the hazard.



DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.



CAUTION indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.



NOTICE is used to address practices not related to physical injury.

A Word to the User/Operator

It is **YOUR** responsibility to read and understand this safety manual and the manufacturer's operator's manual(s) before operating this equipment. This safety manual takes you step by step through the working day.

Graphics have been provided to help you understand the text.

Hazard recognition and accident prevention depend upon you being alert, careful, and properly trained in the inspection, operation, transport, maintenance, and storage of this equipment.

Remember that **YOU** are the key to safety. Good safety practices not only protect you but also protect the people around you. Study this manual and the manufacturer's operator's manual(s) for the specific machine. Make them a working part of your safety program. Keep in mind that this safety manual is written only for industrial/agricultural mowers.

After studying the manufacturer's operator's manual(s) and this safety manual, please contact the equipment manufacturer with any remaining questions.



Read and understand manuals before operating

Practice all customary safe working precautions and remember:

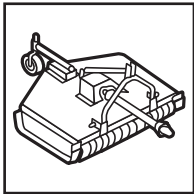
Safe operation is up to you!

You can prevent death or serious injury caused by unsafe work practices!

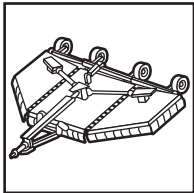
Types of Industrial/Agricultural Mowers

Industrial/Agricultural Mower Types

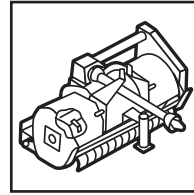
Mowers are used for clipping pastures, shredding crop residue, cutting heavy brush, and mowing waterways, right-of-ways, roadsides or highways. Also, these mowers are used for cutting grass and other growth in public areas such as parks and cemeteries.



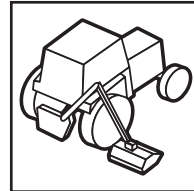
Rotary



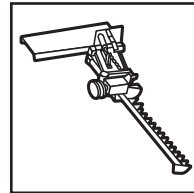
Folding wing rotary



Flail



Boom



Sickle bar

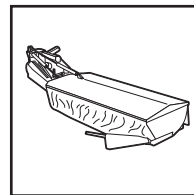
Types of Industrial/Agricultural Mowers

Agricultural Disc Mower Types

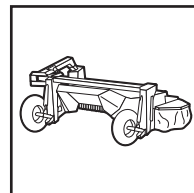
Disc mowers are designed and equipped to cut hay crops at higher field speed.

Disc mower conditioners mow and condition crops.

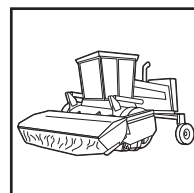
Self-propelled windrowers mow and form conditioned hay into windrows.



Disc Mower



Disc mower conditioner



Self-propelled windrower

Follow a Safety Program

For Safe Operation

You must be a qualified and authorized operator to safely operate this machine. You must clearly understand the written instructions supplied by the manufacturer, be trained—including actual operation—and know the safety rules and regulations for the job site. It is a good safety practice to point out and explain safety signs and practices to others, and to make sure they understand the importance of following these instructions.



Never operate while impaired by alcohol or drugs

⚠ WARNING! Death or serious injury could result from operating machinery while impaired by drugs or alcohol. Drugs and alcohol affect operator alertness, coordination, and the ability to safely operate the equipment. **Never operate the machine while impaired by use of alcohol or drugs. Never knowingly allow anyone to operate the machine when their alertness or coordination is impaired.**

An operator taking prescriptions or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to safely operate this equipment.

Be Alert!

Know where to get assistance. Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone. Know how to use a first aid kit and fire extinguisher/fire suppression system; know their location and practice getting to them. Ensure they have been properly tested and maintained.

Let others know where you will be working, and what time you will be returning. In case of an emergency, you want others to know where to find you.

Be Aware!

Take advantage of training programs offered.

Know the proper response to a fire or chemical spill on your machine.

Follow a Safety Program

Be Careful!

Human error is the result of many factors: carelessness, fatigue, sensory overload, preoccupation, unfamiliarity with the machine or attachments, or drugs and alcohol, to name a few. You can avoid death or serious injury caused by these and other unsafe work practices. Be careful; never assume accidents cannot happen to you.

For your safety and the safety of others, act safely and encourage your fellow workers to act safely as well.

Protect Yourself

Wear the proper personal clothing and all personal protective equipment (PPE) issued to you or called for by job conditions.

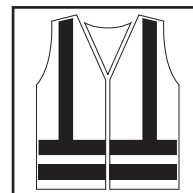
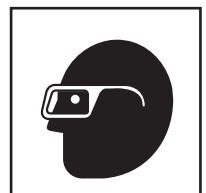
You may need:

- Hard hat
- Safety shoes
- Safety glasses, goggles, or face shield
- Heavy duty gloves
- Hearing protection
- Reflective clothing
- Wet weather gear
- Respirator or filter mask

Wear whatever is needed to protect yourself—do not take chances.

⚠ WARNING! Avoid death or serious injury from entanglement. **Do not wear loose or frayed clothing or accessories that could catch on moving parts.**

Examples of items to avoid include flopping cuffs, dangling neckties and scarves, wallets attached to chains, jewelry, wrist bands and wrist watches.



Follow a Safety Program

Know the Rules

Most job sites have rules governing equipment use and maintenance. Before you start work at a new location, check with the supervisor or safety coordinator. Ask about the rules you will be expected to obey.

OSHA enforces federal laws within the United States that apply to the safe operation, application, and maintenance of equipment on some job sites. It is the employer's responsibility to comply with these laws. A federal representative may periodically inspect a job site to see that these laws are being followed.

There may be other local, state/provincial, federal laws or international organizations that regulate the use of this equipment, along with specific job site or employer rules. It is important that you know and comply with all applicable laws and rules, **including those requiring operator training and certification.**

These are some of the rules you must work by:

- A Roll-over Protective Structure (ROPS) and seat belt-equipped tractor is a federal government (OSHA) requirement for operator protection during mowing operations. An enclosed cab provides additional operator protection from thrown objects. Check your mower operator's manual(s) to see if a tractor cab is also required.

- Only qualified and authorized individuals may operate this equipment.
- Inspect your machine and attachments before each use as specified by the manufacturer and your employer. Ensure an attachment is properly installed.
- Know the limitations and operating characteristics of your equipment. Do not overload or misuse it.
- Never modify or remove any part of the machine (except for qualified service personnel; then make sure the part is re-installed or replaced if defective or worn out).



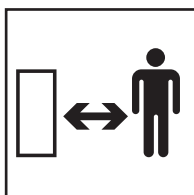
**Know and understand
rules of operation**



**Fasten
your
seat belt**

Follow a Safety Program

- Wear proper clothing and personal protective equipment (PPE).
- Never allow children to play near, ride on or operate the equipment. Children are not qualified to operate this equipment.
- Do not allow riders.
- Keep bystanders 300 ft (92 m) from the mowing operation for rotary mowers and 100 ft (31 m) for disc mowers.



**Keep bystanders
away**



**Watch out for
thrown objects**

- Know the work area before you use the equipment. Be aware of possible terrain hazards that you may encounter. Remove or mark obstacles and debris that could damage or be thrown by the mower.
- Properly install all shields and guards before operating the machine.
- Only use attachments and parts that are approved by the manufacturer.
- Whenever you leave your machine, lower the machine and/or all attachments, set the parking brake, shut off the engine and cycle the hydraulic control levers and remove the key before leaving the operator's station. (See page 38, **Safe Shutdown.**)
- Use three-point contact (handholds and steps) and face the equipment when mounting or dismounting. (See page 21, **Mount and Dismount Properly.**)

Follow a Safety Program

Know the Equipment

Read and understand the DANGER, WARNING, CAUTION, and NOTICE safety labels and other informational signs on the machine, the attachments, and in the manufacturer's operator's manuals. Ask your supervisor or dealer to explain any information you do not understand. Failure to obey safety instructions could result in death or serious injury.

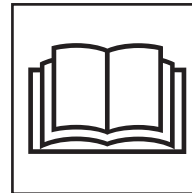
Know the following about your equipment:

- Function, purpose, and use of all controls
- Correct operating speeds
- Braking and steering characteristics
- Slope and uneven terrain capabilities and proper operation
- Turning radius and clearances
- How to quickly stop equipment in an emergency

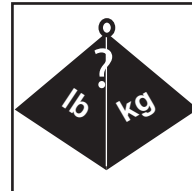
Keep in mind that rain, snow, ice, loose gravel, soft ground, slopes, and other site conditions can affect your machine's operating capabilities. Make sure you are thoroughly familiar with your machine's stability, braking, traction, and other handling characteristics under any conditions you are likely to encounter.

IMPORTANT: This manual covers safe practices for industrial/agricultural mower equipment. If your machine is equipped with other devices or special attachments, read the manufacturer's operator's manual(s) and safety manuals pertaining to that equipment before using it.

Make sure all the manufacturer's protective structures, guards, shields, screens and panels are in good repair, in place and securely fastened. Damaged, missing or weakened safety components can create a hazardous situation for you as the operator. Never remove or modify any safety components including thrown object shielding on a mower.



Read and understand manuals before operating



Know machine capacity and operating characteristics

Prepare for Safe Operation

Check and Use All Available Safety Devices

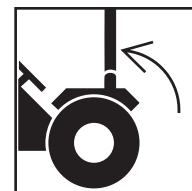
To protect you and others around you, your machine may be equipped with the safety equipment listed below. Additional equipment may be required or some items may not apply, depending on attachments used, job site conditions, or applicable job site rules. Check that each required item is securely in place and in operating condition:

- Seat belt
- Roll-over Protective Structure (ROPS)
- Operating and warning lights
- Safety signs
- Guards
- Mirrors
- First aid kit
- Fire extinguisher/fire suppression system
- Windshield wiper/defroster

Use them! Never remove or disconnect any safety device.

Know which devices are required for protection during your specific operation and use them.

⚠ WARNING! Never remove or modify a ROPS except when servicing the machine. Reinstall it correctly before releasing the machine back into service. Death or serious injury could result.



Never modify a ROPS



Fasten your seat belt

Prepare for Safe Operation

Inspect the Machines

Before beginning your workday, check for the following as applicable and repair or replace as needed. Additional details and descriptions are provided throughout this manual. Perform daily and periodic maintenance procedures as instructed by the manufacturer.



Check all
safety devices

Machine Condition

Ensure all components are in operating condition. Check for the following as applicable:

- ROPS is present and, if foldable, is in raised and secured position.
- Cab is in good condition and windows and doors function properly.
- PTO master shield is properly installed and functioning.

- Operator station platform is clear of tools, objects, and debris. Associated steps, handholds, or railings are clean and functional.
- Seat belt, anchors, and buckle are in proper working condition.
- Mower PTO driveline yokes, couplers, and shields are in good operating condition.
- Cutting elements and attachment hardware are not worn, damaged or missing. Never try to repair worn or damaged parts; always replace parts with genuine OEM parts.
- Thrown object guarding system is complete and installed.
- Lighting and marking devices such as warning flashers, turn signals, brake lights, work lights, Slow Moving Vehicle (SMV) emblems, Speed Identification Signs (SIS), if applicable, and reflective materials are visible and in operational condition.



Use lighting
and marking

Prepare for Safe Operation

- Keep the operator platform surface clean and free of grease, oil dirt, snow or ice. Steps and handholds must be clean and functional.
- All other guards and shields are correctly installed and in good condition.
- Hydraulic system components are properly secured and not damaged or leaking.
- Wheels and tires are not damaged or missing parts, tires are at the correct pressure, and lug nuts or bolts are at the correct torque.

Machine Attachment

Ensure all attachments are in operating condition. Check the following attachments as applicable:

- Mechanical attaching systems are correctly connected.
- Drawbar hitch pin with positive retention
- Safety tow chain
- 3 point hitch or other coupling/locking features
- Hydraulic hoses are connected and functioning properly.
- Hydraulic hoses are properly supported to avoid damage.

- Hydraulic functions operate as expected.
- Couplers are not leaking.
- Lighting devices such as warning flashers, turn signals, taillights, stop (brake) lights, and work lights are connected and functioning properly.

Machine Compatibility

Specifications of the tractor, skid steer, or windrower must be sufficient to operate the mower for all modes of operation and transport. Refer to the operator's manuals or contact the dealer for specifications. Check the following specifications as applicable:

- PTO shaft size and spline count
- PTO shaft rotational direction
- Mechanical attachment such as 3-point hitch, drawbar, or other coupling/locking features
- Hydraulic and/or electrical system performance and connection

Prepare for Safe Operation

Avoid Injury From Raised Equipment

Avoid possible crushing injury from falling mower or other raised equipment.

Before working near or under raised mower or equipment parts:

- Securely support or block up raised mower or equipment parts according to the operator's manual.
- Securely support, block up or lock up wings with approved locking devices or lower mower or equipment parts to the ground.
- Use transport locks when transporting mower on public roads.

⚠ WARNING! Prevent possible crushing injury from falling equipment. Hydraulic system or part failure could allow unsupported equipment to fall. **Do not go under raised equipment unless it is properly supported according to the operator's manual.**



Avoid crushing - block up or securely support mower

Pressurized Fluid Injection Hazard

⚠ WARNING! Accidental injection of pressurized fluid into the hands or body is dangerous and could result in death or serious injury. Pressurized fluids include oil, hydraulic fluid or water. **Use caution when checking fluid leaks as pressurized fluids can penetrate skin or eyes, causing serious personal injury.**



Pressurized fluid can inject into the body

If a leak is discovered:

- Ensure engine is turned off; relieve pressure in fluid system.
- Wear proper hand and eye protection.
- Visually examine the fluid lines in the vicinity of the leak for breaks or cracks. **Do not** use your hand to check for leaks.
- Repair or replace fluid lines per manufacturer's recommendation.

Prepare for Safe Operation

Fluid injection injuries are not always obvious. Victims have reported such injuries feel like a bee sting or splinter under the skin. If you suspect you have a fluid injection injury, do not take chances. Seek proper medical care immediately. Be sure attending medical professional understands that injury may be caused from a fluid injection. If any fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury.



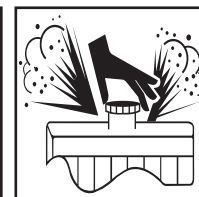
Wear proper hand and eye protection

Check the Cooling System

When checking the cooling system, follow the manufacturer's instructions to ensure the engine is turned off and cool to prevent the fan from unexpectedly starting. Ensure the coolers and engine compartment are clean and free from debris, which could ignite and cause a fire.

If the machine is air-cooled, be sure the cooling unit has an unobstructed air flow. If it is liquid-cooled, check coolant level (at overflow tank, if provided).

⚠ WARNING! Allow the radiator to cool before checking the level. Hot radiator fluids could escape as steam and burn you. (See page 44, **Engine Coolant Hazards.**)



Allow radiator to cool before removing cap slowly

Prepare for Safe Operation

Clean Up

Clean windows, lights, and safety signs.

Make sure the operator's area, steering levers, pedals, joysticks, steps, and grab handles are clean. Oil, grease, grass, leaves, needles, snow, ice, mud, or debris in these areas could cause you to slip and fall, or lose control of the machine. Clean your footwear of excess mud before entering the machine.

Remove all personal items or other objects from the operator's area. Secure these items in a toolbox or remove them from the machine.

Use Caution When Fueling

⚠ WARNING! Avoid injury from fire or explosion. **Never fill the fuel tank with the engine running, while smoking or when near an open flame.**

Never overfill the tank or spill fuel. If fuel is spilled, clean it up immediately.

Be sure to use the correct type and grade of fuel.

Ground the fuel funnel or nozzle against the filler neck to prevent sparks that could ignite fuel vapors. Be sure to replace the fuel fill cap, if equipped, when you are done.

Ultra-Low Sulfur Diesel (ULSD) Fuel Hazard

Avoid Static Electricity Risk When Fueling

⚠ WARNING! Ultra-Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations. Avoid death or serious injury from fire or explosion; **consult with your fuel or fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices.**



Static discharge during fueling can cause explosion



No smoking and no open flames

Prepare for Safe Operation

Exhaust Fumes in a Closed Space Can Kill

Vent exhaust and assure a flow of fresh air if an internal combustion engine is used in a closed space.

⚠ WARNING! Exhaust fumes from diesel, gasoline or LP gas engines can kill. **Do not breathe exhaust fumes from any kind of engine.**



Ventilate work area

Operating in Flammable/Explosive Atmospheres

⚠ WARNING! A standard machine equipped with a spark arrestor/spark arresting muffler cannot be operated in flammable or explosive atmospheres. Using them in flammable or explosive atmospheres can result in fires and/or explosions which could cause serious injury or death.

Use only an approved industrial/agricultural mower with a label designation of G, GS, D, DS, DY, LP, LPS, G/LP, or GS/LPS. See Code of Federal Regulations (OSHA) 29 CFR Part 1910.178 to determine permissible areas where these machines can be operated.



Do not operate in explosive/flammable atmosphere

Prepare for Safe Operation

Know the Working Area

Learn as much about your working area as possible.

Check at Ground or Floor Level

Before you operate, inspect the surface over which you will travel. Look for holes, slide areas, drop-offs, and obstacles such as rocks, stumps or utilities. Look for rough spots or hidden obstacles on surfaces which could cause a collision or loss of control. Look for oil spills, wet spots, and slippery surfaces. Check for location of creeks and gullies. Look for soft soil, deep mud, standing water or marshy areas. Watch for anything that might make you lose control or cause the machine to roll over.

Plan travel routes ahead of time, in order to make sure you can see and protect bystanders. Pick up debris that can puncture tires.

Plan Your Work

Correct unsafe conditions. Do not operate in problem areas where debris and obstacles cannot be removed or marked.

Analyze mowing area to determine:

- The most efficient mowing procedure.
- The height of the material to be mowed.
- Operating terrain conditions.
- How to best use forward mowing pattern.
- The potential for bystanders or passers-by to be exposed to thrown objects.

Check Overhead

Check the clearances of doorways, canopies, and overheads. Know exactly how much clearance you have under overhead power and telephone cables.

⚠ DANGER! Death or serious injury will result from touching or being near a machine that is in contact with or near an energized electrical source. **Never approach power lines with any part of the machine or load unless all local, state/provincial and federal (OSHA) required safety precautions have been taken.** Use caution because high voltage sources can arc without contact.

When working near power lines, you must assume all lines are energized.

Prepare for Safe Operation

Mount and Dismount Properly

Always use three-point contact when mounting or dismounting the machine. Three-point contact means one hand and two feet, or two hands and one foot, in contact with the machine at all times.

Never mount or dismount while carrying tools or objects that prevent three-point contact. Put parts or tools down. Maintaining proper contact, climb or dismount, and then pick up the object.

Face the machine when you enter or leave the machine.

Clean shoes and wipe hands. Clean steps and handholds of chemical residue, snow, ice, mud or oil.

During mounting and dismounting:

- Use handholds and step plates.
- Never use steering wheels, joysticks or controls as handholds.
- Never jump on or off the machine.
- Never mount or dismount from a moving machine.

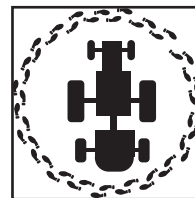


Use three points
of contact when
mounting or
dismounting

Warn Personnel Before Starting

Before starting, walk completely around the machine.

Make sure no one is under the machine, on it, or close to it. Let others know you are starting up and do not start until everyone is completely clear of the machine. As the equipment operator, you are responsible for the safe use of the machine, so always make sure you have communicated your work plans to others on the site.



Before starting,
walk completely
around mower

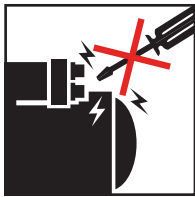
Start Safely

Starting the Engine

⚠ WARNING! Start the engine from the operator's seat only. **Never attempt to start the engine by shorting across starter terminals or reaching the key from outside the operator's station.** The machine may move unexpectedly, which could cause death or serious injury to anyone in its path.

Know the exact starting procedure for your machine. See the manufacturer's operator's manual(s) for starting.

- Sit in the operator's seat and adjust the seat so you can operate all the controls properly.
- Fasten the seat belt, if equipped.
- Always keep cab doors closed and Operator Protective Structure (OPS) windows and screens in place.
- Familiarize yourself with warning devices, gauges and operating controls.
- Make sure controls are in the neutral/locked position.
- Check PTO disengagement.



Never start engine
by shorting across
starter terminals

- Clear the area of all persons.
- Sound the horn.
- Start the engine following the instructions in the manufacturer's operator's manual(s).

If necessary to run the engine or operate the machine in an enclosed area, ensure there is adequate ventilation.

⚠ WARNING! Exhaust fumes can kill. **Do not breathe exhaust fumes!**

Starting Aids

If you have trouble starting the engine and need to use jumper cables, follow the instructions in manufacturer's operator's manual(s). **Jump-starting is a two-person operation.** The operator must be in the operator's seat when jump-starting so the machine will be under control when the engine starts.

⚠ WARNING! Improper jump-starting procedures may cause death or serious injury from a battery explosion or a run-away machine. **Always use proper jump-starting procedure.** (See page 46,



Start Safely

Battery Hazards.)

Ether/cold-start fluid is **HIGHLY FLAMMABLE**. Before using it, always read the instructions on the ether/cold-start fluid container and the instructions in the manufacturer's operator's manual(s).

⚠ WARNING! Avoid injury from explosion or fire. If the engine is equipped with a glow plug pre-heater or other intake manifold type pre-heater, follow manufacturer's instructions before using ether/cold-start fluid.

After Starting Engine

Observe gauges, instruments, and indicator lights to assure that they are functioning and their readings are within the operating range.

Run an Operating Check

Do not use a machine that is not in proper operating condition. It is your responsibility to check the condition of all systems and to run the check in a safe area.

Test Controls

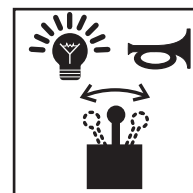
Industrial/agricultural mowers come equipped with various control configurations, patterns, and operating modes, each with their own handling characteristics. Some have selectable or configurable controls, to suit personal preferences or specific applications.

Make sure that you know which control pattern you have selected and that you understand how the machine will handle when using that control pattern.

Make sure the machine is operating properly by doing the following:

- With the control levers or joysticks in neutral, test engine speed control.
- Operate each pedal, lever or joystick to make sure all functions are correct.
- Operate the travel control lever(s) or joysticks to ensure correct operation in forward and reverse. Test steering to the right and to the left, while moving slowly in a clear, safe area.
- Check the parking brake and service brakes according to the manufacturer's operator's manual(s).

⚠ WARNING! Before operating the machine under working conditions, **be certain you can control both speed and direction of the machine.** Any loss of control could result in death or serious injury.



Operate
instruments
and controls
smoothly

Operate Safely

Masked Visibility Areas

Machines have areas where the operator's visibility of the job site can be affected by the machine itself. ROPS posts, attachments, even items in the cab, could limit your view of the surrounding area and possibly mask hazards or people around you. These masked visibility areas vary from machine to machine, and it is very important that you are aware of these areas before operating your machine.

Follow these safety precautions to reduce the hazards posed by masked visibility areas:

- Pay particular attention when raising or lowering the mower or the attachment, because masked visibility areas can change.
- Look around the machine before operating. Objects near the machine and close to the ground can be difficult to see from the operator's station.
- Always look in the direction of travel, including reverse. A back-up alarm is no substitute for looking behind you when operating the machine in reverse.
- Keep bystanders away, even if your machine is equipped with a back-up alarm.

Remember These Rules

Stay in the operator's seat with the seat belt fastened when operating.

Make sure you have adequate visibility and sufficient lighting during operation.

Be in control of the machine at all times.

Remember the Other Person

Never allow an untrained or unqualified person to operate the machine. If operated improperly, this machine can cause death or serious injury.

⚠ WARNING! The industrial/agricultural mower is a one-person machine. Avoid death or serious injury—**never permit riders!**

⚠ WARNING! Keep clear of all rotating components. Wrapping or entanglement may result in serious injury or death.



Operate Safely

Be sure that everyone is in the clear, **at least 300 feet (92 m) away for rotary mowers, or 100 feet (31 m) for disc mowers**, and operate in accordance with federal, local, state/provincial laws or manufacturer recommendations that apply to this equipment and its use. It is important that you know and comply with all specific work site or employer rules. Awareness on your part can prevent accidents.

Back up Safely

Check that the back-up alarm, if equipped, is working properly. Remember, **a back-up alarm is not a substitute for looking to the rear when operating the machine in reverse**. Always look around before you back up the machine. Be sure that everyone is in the clear. Drive forward whenever possible. **ALWAYS LOOK IN THE DIRECTION OF TRAVEL.**

Follow Safe Operating Practices

Make these safe practices part of your daily routine:

- Keep your seat belt, if equipped, fastened.
- Operate the controls smoothly—don't jerk the steering levers or joysticks.
- Avoid sudden stops, starts or turns.
- Use care and good judgment.
- Never attempt to operate the controls unless properly seated in the operator's station.

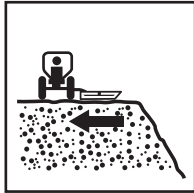
⚠ WARNING! Avoid death or serious injury! **Keep your entire body inside the operator's station while operating the machine.** Never work with your head, arms, feet, or legs beyond the operator's station.

Operate Safely

Watch Out for Hazardous Working Conditions

Be alert for hazards. Know where you are at all times. Watch for branches, cables, or doorways.

Caution should be used when working along the tops of banks or slopes. Always operate the machine perpendicular to the bank. Keep away from the edge.



Operate perpendicular to banks – stay back from the edge

⚠ WARNING! Never operate the machine close to the edge of an overhang or gully. The edges could collapse or a slide could occur causing death or serious injury.

Use caution when working along runways, banks and slopes. Keep away from the edges of drop-offs.

When working near hazardous conditions, have a spotter work with you to look for hazards. Make certain they stay a safe distance from your machine.

Traveling on Job Site

Take it slow and easy when traveling through congested areas. Traffic courtesy pays off.

Give the right-of-way to loaded machines. Maintain a safe distance from other machines. Pass cautiously.

Don't obstruct your vision when traveling or working. (See page 24, **Masked Visibility Areas.**)

Travel Safely

When traveling over rough terrain, **SLOW DOWN** to prevent losing control.

Avoid steep slopes or unstable surfaces. Do not drive across an excessively steep slope under any circumstances. Before operating on slopes, check the surface conditions for adequate traction. Loss of traction can cause the machine to slide and tip.

⚠ WARNING! Avoid death or serious injury. Travel up and down slopes with the heavy end of the machine pointed uphill.

⚠ WARNING! Avoid death or serious injury. Make sure you can see where you are going.

Operate Safely

Rules of the Road

If the machine is to be driven or transported over the road, refer to the manufacturer's operator's manual for instruction.

Check local regulations for required equipment markings, lights, flashers, etc., while traveling on public roads. Lights are required on mowers that obscure tractor taillights and/or other warning lights.

When traveling on public roads or streets, obey all traffic regulations applicable to your machine.

Make sure lights and warning signs are in place and visible. Make sure a Slow Moving Vehicle (SMV) emblem and Speed Identification Sign (SIS), if applicable, is installed and visible to any vehicle approaching from the rear.

Find out if you must use an escort vehicle. Approach intersections with caution; observe speed and traffic control signs. Avoid panic stops and sharp turns.

Like any responsible operator, be considerate of other drivers. If traffic backs up behind you, it is a good idea to pull over periodically and allow traffic to pass when it is safe to do so.

Stop at all railroad crossings and look both ways before proceeding. Never park in traffic areas. If it is necessary to stop at night, pull off the road and set up flares or reflectors. When driving at night, use appropriate lights.

Watch Out for Obstacles

Adjust your speed to conditions. Avoid traveling over obstacles such as logs, tree stumps or rough terrain whenever possible.

Keep your machine under control.

Before entering underpasses, tunnels or bunkers, check for oncoming traffic or obstructions.



Obey traffic regulations

Operate Safely

Transporting Safety Tips

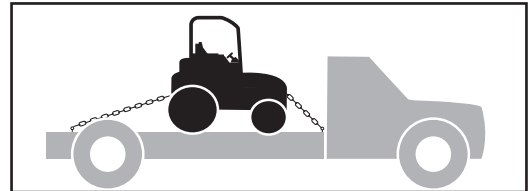
Always wear your seat belt when loading or unloading your machine from a transport device, such as a flatbed truck.

When transporting a machine, follow the manufacturer's recommended loading, tying down and unloading procedures.

Several precautions are applicable to all machines:

- Keep bystanders away.
- Load and unload on a level surface.
- Maintain proper visibility by loading or unloading in well-lit areas, and away from other vehicles, equipment or buildings.
- Block transport vehicle so it cannot move.
- Ensure trailer bed and ramps are in good condition.
- Use ramps of adequate size and strength, with a low angle and proper height.
- Rear of trailer must be blocked or supported.
- Keep trailer bed and ramps free of clay, oil, ice, snow, and other materials which can become slippery.
- Back the machine up the ramp onto the transport vehicle. If the machine is equipped with a heavy attachment it may be necessary to drive forward onto the transport vehicle.

- Cover or remove rear-facing SMV sign on the machine, if equipped, to avoid confusing drivers following the transport vehicle.
- Chain and block the machine securely for transport. Use tie-down points as marked on the machine by the manufacturer. Follow the manufacturer's instructions in the operator's manual for tying down.
- Unload the machine by driving off in the opposite direction; do not turn the machine around.



**Chain and block
mower securely
for transport**

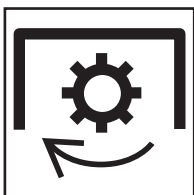
Operate Safely

Power Takeoff (PTO) System

Be sure to operate the tractor at the mower's rated PTO rpm speed.

When operating a tractor with a transmission-driven PTO system, a rotary mower will have a significant flywheel effect and may continue to propel the tractor. This type of tractor should be equipped and operated as follows:

- Install a driveline equipped with an over-running clutch.
- Give yourself sufficient maneuvering room and time by anticipating turns, stops and speed reductions.



**Use proper
PTO speed**

Hitching Mower to Tractor

Three-point hitch-mounted mowers:

- Refer to mower and tractor manufacturer's operator's manuals.
- Place tractor's hydraulic power lift (rockshaft) selector lever in down position to avoid unexpected movement.
- Front-end weights may be needed to maintain steering control and front-end stability. Refer to the manufacturers' operator's manual(s).
- When backing the tractor up to the mower, NEVER allow anyone between the tractor and the mower.
- Attach the mower to the tractor three-point links and securely pin in position.
- Securely attach the driveline to the tractor PTO.
- Push and pull on the driveline to ensure it is locked onto the PTO shaft.
- Lower the master shield into place if it is movable.

Operate Safely

Pull-type hitch-mounted mowers:

- Refer to mower and tractor manufacturer's operator's manuals.
- Remove three-point hitch quick coupler, if equipped.
- Adjust tractor drawbar length for 540 or 1000 rpm PTO operation.
- When backing the tractor up to the mower, NEVER allow anyone between the tractor and the mower.
- Attach only to drawbar hitch.
- Properly attach the mower safety tow chain to the tractor.
- Securely attach the driveline to the tractor PTO. Push and pull on the driveline to ensure it is locked onto the PTO. Lower the master shield into place.
- Hook up the mower hydraulic hoses to the tractor.
- Make sure the wings, or raised mower decks, are supported by the cylinders before removing the transport locks. Never use force to release the transport or wing locks. The wings or decks could fall and crush you.



Confirm wings are supported before releasing locks

Skid steer-mounted mowers

- Refer to mower and skid steer loader manufacturer's operator's manuals.
- Lower the lift arms and title the loader's coupler forward.
- Drive the loader slowly forward until the top edge of the coupler is completely under the top flange of the mower attachment mounting frame.
- Tilt the coupler backward until the attachment is slightly off the ground. This will cause the mower attachment mounting frame to fit up against the front of the coupler.
- Engage the coupler pins or wedges. Check to be sure the coupler pins or wedges are fully engaged and locked to the mower.
- Hook up the mower hydraulic hoses to the loader.

Operate Safely

Make the Right Start

Mow only in daylight or good artificial light conditions.

Avoid serious injury or death from mower-thrown objects or blade contact:

- Keep chain shields, flexible or solid deflector shields or discharge chutes in place and in good repair.
- Keep bystanders at least 300 ft (92 m) from a rotary mower or 100 ft (31 m) from a disc mower during mowing operation.
- Never direct mower discharge toward anyone.
- Keep hands, feet and other body parts away from rotating parts, blades and discharge openings.
- Do not operate mower in transport position.

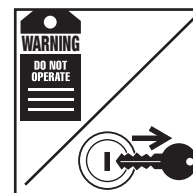
Do not approach a mower until all motion has stopped.

Mower PTO drive engagement:

- Raise mower to maximum cutting height.
- Engage PTO at low engine rpm.
- Increase engine rpm to mower's rated rpm PTO speed.
- Lower mower to desired cutting height.
- Stop and shut down immediately if the mower strikes an obstruction.
- Inspect and repair any mower damage before resuming mowing.
- Do not operate mower with severe vibrations or with unusual noise.

Avoid bending blades — Help prevent mower blades from bending or cracking by avoiding contact with solid objects. Mower blades are intended to cut grass, shrubs, woody vegetation and small trees and limbs. They are not intended to contact solid objects such as rocks, concrete or steel posts. Inspect the area prior to mowing. Remove or clearly mark any solid objects and mow around them.

Replace damaged blades! — Inspect the mower blade(s) daily or after hitting any solid object. IF a mower blade becomes damaged (bent, gouged or cracked) or worn more than 25 percent of the original size, it should be removed and replaced with a new blade. Always use the original manufacturer's blades. Aftermarket brand blades may not meet the mower manufacturer's strength, hardness and ductility requirements.



Do not operate a damaged mower

Operate Safely

Mower-Thrown Objects

Depending on the designed purpose, mowers are designed to cut grass, weeds, brush and crops. The mower blades have been designed and tested for rugged use. The mower blades, however, are not intended to contact solid objects like rocks, concrete or metal. Such impact can cause objects to be thrown. Bystanders should never be within 300 ft (92 m) of an operating rotary mower or within 100 ft (31 m) of an operating disc mower. Stop operation if anyone comes within the safety distance for the mower type.

Mower shielding is designed to reduce the risk of thrown objects and must be properly maintained and in place during mowing operations.



Watch out for
thrown objects

The risk of serious injury or death from thrown objects can be significantly reduced by following three rules. **If all of these safety rules are not followed, the mowing operation must be stopped.**

First — Inspect the area prior to mowing and remove stones, branches, wire, cable, metal, glass and other solid objects before operating. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator.

In non-crop areas with grass and weeds high enough to hide objects that could be struck by the blades, inspect the area and remove or mark large debris or obstacles.

Mow the area at an intermediate height. Inspect the area closely and remove or mark any remaining debris or obstacles. Mow again at desired final height.

Second — Mower-thrown object shielding must be used when operating near roads, parks, populated areas or other areas where thrown objects could injure bystanders or damage property. Follow the manufacturer's operator's manual.

Third — Cross diagonally when mowing through ditches, sharp dips, and drops. Raise the mower to prevent the mower blades from hitting the ground.

Operate Safely

Disc Mowers — When using a disc mower it is important to know the area to be mowed. If the operator has mowed the field before and is familiar with all obstacles that may be present, it is sufficient to watch ahead of the mower path for any additional objects that may have entered the field. Be ready to stop or avoid any objects that could be hazardous if thrown by the mower. If you plan to mow an unfamiliar field and it is next to a traveled road or people may be within 100ft (31 m) of the mower you must inspect, and clean or mark the field.

Mowing In Reverse

Do not mow while traveling in reverse. Objects are more likely to be thrown and can travel further.

Shut off the PTO, wait for the blades to stop turning, raise the mower, and then back up.

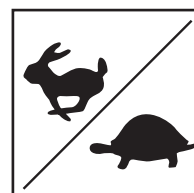
Mow traveling in the forward direction.

Mowing Ground Speed

Proper ground speed depends on terrain conditions and grass type, density and height to be cut:

- Follow manufacturer's recommended operating speeds.
- Use slower ground speed for mowing tall, dense grass.
- Use faster ground speed for mowing medium height, thin grass and under smooth terrain conditions.
- Use slower ground speed for mowing in rough, sloping or unfamiliar terrain.

Disc mowers are designed to use faster ground speeds for operating in fields clear of debris and surface hazards.



Use proper
ground speed

Operate Safely

Extremely Tall Grass Mowing

You may need to mow extremely tall, non-crop grass twice. (See page 32, **Mower-Thrown Objects**.)

First mowing pass:

- Shut the mower and tractor down using proper equipment shut down practice before dismounting tractor. (See page 38, **Safe Shut Down**.)
- Inspect the area and remove or mark debris and obstacles.
- Cut grass higher (10-15 inches/ 250–400 mm) to avoid hidden objects.

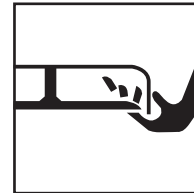
Second mowing pass:

- Shut the mower and tractor down using proper equipment shut down practice before dismounting tractor.
- Inspect the area and remove or mark debris and obstacles.
- Cut grass at desired height and, when possible, 90 degrees to the first mowing pass.

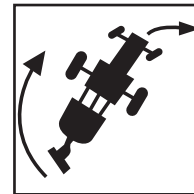
Watch Equipment Clearances

Three-point hitch and side-mounted mowers have a larger turning arc than pull-type mowers. Allow sufficient clearance for mower swing while turning.

Do not allow bystanders near the tractor and mower when moving or transporting the tractor and mower.



Stop blade before unclogging



Provide adequate clearance for mower swing

Operate Safely

Under Mount Mower Safety Practices

When mowing with an under mount mower:

- Keep removable discharge chute in place and over discharge opening.
- Never stand on a mower housing when the tractor engine is operating.
- Distribute grass clippings with discharge chute facing mowed area.
- Before clearing a clogged mower or discharge chute, shut down your machine using proper equipment shut down practice. (See page 38, **Safe Down**.)



Keep chute in place



Do not approach energized power lines

Wing or Boom Mower Overhead Obstruction Hazards and Risks

Check for overhead obstructions with raised wing or boom mowers to avoid serious injury or death by contact with:

- Electrical power lines and apparatus.
- Low tree limbs.
- Other overhead obstructions.
- Maintain specified distance from power lines and apparatus. Never approach energized power lines or apparatus with any part of your machine unless all local, state/provincial and federal (OSHA) required safety precautions have been taken. Use caution.

⚠ DANGER! Avoid electrocution or serious injury from contact with or inadequate clearance to energized power lines or apparatus. Do not allow the machine or attachment to approach or contact any power line. Do not approach or touch any machine in contact with a power line.

Operate Safely

Wing and Side Mount Mowers Safety Practices

Raised wing positions reduce shielding protection and increases the thrown object and blade contact hazard risks.

Avoid possible serious injury or death by thrown objects or blade contact from raising and lowering wings during mowing operations:

- Do not mow with bystanders within 300 ft (92 m) of a rotary mower or within 100 ft (31 m) of a disc mower.
- Be sure no one is near mower while raising or lowering wings.
- Shut off the PTO and wait for all rotating elements to stop before raising the mower deck or wing section.
- Only raise wing to clear objects in the mowing path or to match ground slope.
- Lower raised wing to ground after clearing object or ground slope conditions.
- Stop mowing if anyone approaches closer than the safety distance for the mower type.

Ditch Bank Mowing Safety Practices

Use care when mowing ditch banks. Watch for washouts, eroded areas and mowing obstructions along the ditch banks. Hitting obstructions with side-mount or boom mowers may swerve the tractor's front end toward the ditch.

Raised wing and boom mower ditch bank operations may reduce the mower's thrown object shielding effectiveness for the mower operator's protection.

- Use enclosed ROPS cabs, special protective enclosures and other operator shielding available from the manufacturer when performing these operations.
- Inspect mowing area and remove or mark all foreign objects and debris to be avoided by mower.



Avoid hitting obstructions

Operate Safely

Uneven Terrain Mowing Safety Practices

Tractor and mower stability is reduced on slopes and uneven terrain.

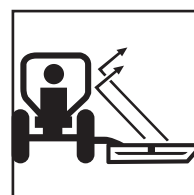
As in all conditions when mowing, use tractors equipped with ROPS and seat belt. **Make sure the ROPS are raised and locked in place and always wear your seat belt.**

Prevent tractor and mower overturns and maintain equipment stability control:

- Review tractor and mower operator's manuals for operating safety practices on slopes and uneven terrain conditions. Explain the practices to those users and operators who cannot read.
- Avoid extremely steep slope operations.
- Use care to maintain control over the equipment when operating in these conditions.
- Increase tractor stability by adding wheel weights, ballast and increasing wheel spacing to maximum. Refer to operator's manual for recommendations.
- Maintain minimum ground speed.
- Make wide and gradual turns.
- Avoid sudden starts, stops, and turns when operating up, down, or across slopes.

- Do not raise rear-mount or side-mount mowers or mower wings from the ground during these operations.
- Keep alert for holes, bumps, ruts, rocks, stumps or other obstructions that could overturn the machine.
- Avoid slippery ground conditions that could cause loss of control and overturn of tractor and mower.
- Avoid bottoming and striking the ground by diagonal crossing of sharp dips and drops.

Use care in maintaining equipment stability during all uneven terrain and slope mowing operations. You are the final judge as to any slope that can be safely negotiated.



Use enclosed ROPS cabs or protective enclosures

Shut Down Safely

Select a Proper Parking Site

When shutting down, park the machine in a designated area out of traffic, select level ground whenever possible. Lower raised equipment to the ground. If you must park on a slope or incline, position the machine at right angles to the slope, engage the parking brake, and block the wheels.

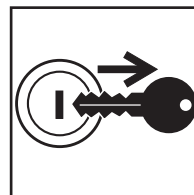
⚠ WARNING! Avoid death or serious injury from unintended movement of the machine. **Never leave a machine unattended with the engine running.**

Safe Shutdown

The detailed shutdown procedure is given in your manufacturer's manual(s). In general, this includes:

- Stop machine.
- Ensure all wheels are on the ground.
- Position controls in neutral or locked position.
- Engage parking brake.
- Idle engine for short cool-down period.
- Disengage PTO clutch and transmission drive.
- Lower mower to ground.
- Lower wings of wing mowers to ground.
- Stop engine and remove ignition key, if equipped.
- Cycle hydraulic controls to eliminate pressure.

- Raise operator seat/restraint bar(s), if equipped.
- Unbuckle seat belt/restraint.
- Lock covers and enclosures, if equipped.
- Shut off master electric switch, if equipped.
- When you leave the machine, wait for all moving parts to stop before dismounting. Always maintain three-point contact with the steps and grab handles. Face the machine as you dismount. Never jump off machine.
- Block wheels if on a slope or incline.



Shut engine off,
remove key

Perform Maintenance Safely

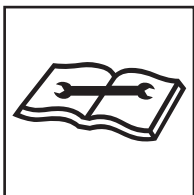
Know What You're Doing

Maintenance on this type of machine is not for inexperienced or untrained personnel. It can be hazardous unless performed properly. Be sure you have the necessary skill, information, correct tools, and proper equipment to do the job safely.

Be sure to maintain the equipment according to the manufacturer's instructions. Regularly check the operation of the protective and safety devices.

Do not perform any work on a machine unless you are authorized and qualified to do so.

If you have been authorized to perform maintenance, **read the manufacturer's operator's, maintenance, and service manuals.** Study the instructions: check the lubrication charts, examine all the instruction messages on the machine.



Maintain equipment

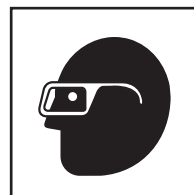
Protect Yourself

Wear all the proper personal clothing and all the PPE issued to you or called for by job conditions.

You may need:

- Hard hat
- Safety shoes
- Safety glasses, goggles or face shield
- Heavy duty gloves
- Hearing protection
- Reflective clothing
- Wet weather gear
- Respirator or filter mask

Wear whatever is needed to protect yourself. Do not take chances.



Perform Maintenance Safely

⚠ WARNING! Avoid death or serious injury from entanglement. **Do not wear loose clothing or accessories. Stay away from all rotating components when the engine is running.** Contact, wrapping or entanglement with rotating or moving parts could result in death or serious injury.

Wear a proper chemical resistant apron and chemical resistant gloves when working with corrosives. Wear cut resistant gloves and safety shoes when handling wooden blocks or sharp-edged metal.

Always use safety glasses, goggles or a face shield. They provide eye protection from fluids under pressure, during grinding and while servicing batteries. Protection is also needed from flying debris, liquids and loose material produced by equipment, tools and pressurized air/water.

Wear a face shield and follow manufacturer's instructions when you disassemble spring-loaded components or work with battery acids. Keep pockets free of all objects that could fall out and drop into machinery.

Handle tools and heavy parts sensibly, with regard for the safety of yourself and others. Lower items; don't drop them.

Mower Parts and Your Safety

Mower manufacturers use specific fasteners and specially designed parts to meet mowing operations requirements. Critical parts such as self-locking blade bolts, blades, pins, shields and other special items have specific strength, design and fit requirements for the make and model mower you are using.

Avoid possible death and serious injury from unapproved parts or modifications:

- Do not substitute common hardware for original manufacturer's blade bolts or other special part items.
- Do not substitute blades, pins shields or other critical parts.
- Do not use higher strength bolts to replace original manufacturer's shear bolts.



Avoid rotating parts

Perform Maintenance Safely

Prepare the Work Area

- Position the machine in a level area out of the way of other working equipment.
- Make sure there is adequate light, ventilation and clearance.
- Remove oil, grease or water to eliminate any slippery surfaces.
- Clean around the area to be serviced to minimize contamination.

Prepare the Machine

Stored energy sources (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, etc.) must be controlled or reduced to a practical minimum before performing any maintenance, repair, or service procedures.

Safety practices to prevent potential injuries from energy-releasing sources include:

- Disengage PTO before shutting off engine
- Place controls in NEUTRAL or LOCKED position before shutting off engine
- Set parking brake or block wheels.
- Allow all moving parts to stop.
- Lower mower to the ground.
- Lower wings to the ground on wing mowers.

- Shut off engine.
- Follow your manufacturer's recommendation for relieving hydraulic system pressure.
- Lock ignition, remove key, if equipped, and take it with you.
- Look and listen for evidence of moving parts before dismounting.
- Shut off master electrical switch, if equipped.
- Securely support or block up machine before working underneath machine or other lifted components.
- Securely support, block up, or lock up other components with approved locking devices before working near or underneath them.
- Relieve pressure before disconnecting or disassembling any pressurized system.
- Block or relieve spring pressure before disassembling any spring-loaded mechanism.
- Avoid flames, sparks, or smoking near any fuel, hydraulic fluid or other flammable material such as mowing debris.



Avoid falls, clean slippery surfaces

Perform Maintenance Safely

Attach a “DO NOT OPERATE” warning tag to the control levers. Lockout/tagout the unit according to the manufacturer’s operating manual. If there is a key, remove it and take it with you.

Install approved support device(s) when working under or near raised equipment.

⚠ WARNING! Unsupported raised machines or other equipment may drop unexpectedly. **Never go under equipment when raised unless supported by an approved support device(s).** Death or serious crushing injury could result from falling equipment.

Remove only guards or covers that provide access to the area being serviced. Replace all guards and covers when work is complete.

⚠ WARNING! Avoid injury or death. **Never work on machinery with the engine running unless instructed by the manufacturer’s manuals for specific service.**



Use a “DO NOT OPERATE” tag

Common Maintenance Safety Practices

Use Proper Ventilation

If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.



Ventilate work area

⚠ WARNING! Exhaust fumes contain carbon monoxide which could be deadly if inhaled. **Never operate any type of engine without proper ventilation. EXHAUST FUMES CAN KILL.**

Perform Maintenance Safely

Use Jacks and Hoists Carefully

Safety stands or blocks must be located on a rigid part of the machine. Do not position stands under axles or wheel supports that may rotate.

⚠ WARNING! Prevent crushing injury. **Never use concrete blocks for supports. They could collapse under even light loads which may cause serious injury or death.**

If you must work beneath raised equipment, always use hoists, jack-stands or other rigid and stable supports designed and approved for the intended load. When using jacks or hoists always be sure they are adequately supported.

Make sure the hoists or jacks you use are in good repair. Never use jacks with cracked, bent, or twisted parts. Never use frayed, twisted or pinched cables. Never use bent or distorted hooks.



Avoid crushing, use proper support for raised equipment

Fuel Hazards

⚠ WARNING! Avoid serious injury or death. **Always use approved fuel containers and/or fuel dispensing equipment to reduce the risk of explosion or fire.**

Always observe these practices to reduce the possibility of a serious accident:

- Shut off engine and ignition during refueling.
- Turn off all electrical switches.
- Ground the fuel nozzle against the filler neck
- Keep sparks and open flames away from fuel. Do not smoke while refueling or when handling fuel containers.
- Do not cut or weld on or near fuel lines, tanks or containers.
- Do not overfill the tank or spill fuel. Clean up spilled fuel immediately.



No smoking and no open flames

Perform Maintenance Safely

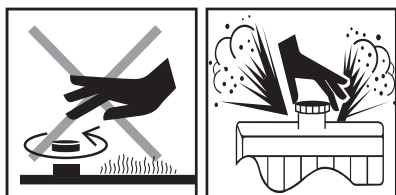
Ultra-Low Sulfur Diesel (ULSD) Hazard

⚠ WARNING! Ultra-Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations with higher sulfur content. Avoid death or serious injury from fire or explosion; **consult with your fuel or fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices.**

Engine Coolant Hazards

⚠ WARNING! Avoid serious injury or death. Liquid cooling systems build up pressure as the engine gets hot, so **use caution before removing the radiator cap.**

- Stop the engine and wait for the system to cool.
- Wear protective clothing and safety glasses.
- Turn the radiator cap slowly to the first stop to allow the pressure to escape before removing completely.



Allow radiator to cool before removing cap slowly

Hydraulic System Hazards

Be sure to follow manufacturer's instructions for relieving fluid pressure before performing any maintenance. The hydraulic system is pressurized whenever the engine is on and may hold pressure even after the engine is shut off. Cycle hydraulic controls, including auxiliary hydraulic control (if equipped), after the engine is shut off.



Check for leaks and inspect hoses

During inspection of the hydraulic system:

- Wait for fluid to cool before disconnecting the lines. Hot hydraulic fluid can cause **severe burns**.
- Wear appropriate eye protection. Hydraulic fluid can cause permanent eye injury.
- When venting or filling the hydraulic system, loosen the filler cap slowly and remove it gradually.
- **Never** reset any relief valve in the hydraulic system to a pressure higher than recommended by the manufacturer.

Perform Maintenance Safely

Pressurized Fluid Injection Hazard

⚠ WARNING! Accidental injection of pressurized fluid into the hands or body is dangerous and could result in death or serious injury. Pressurized fluids include oil, hydraulic fluid, water or fuel. **Use caution when checking fluid leaks as pressurized fluid can penetrate skin or eyes, causing serious personal injury.**

If a leak is discovered:

- Ensure engine is turned off; relieve pressure in fluid system.
- Wear proper hand and eye protection.
- Visually examine the fluid lines in the vicinity of the leak for breaks or cracks. **Do not** use your hand to check for leaks.
- Repair or replace fluid lines according to the manufacturer's recommendations.



Pressurized fluid can inject into the body

Fluid injection injuries are not always obvious. Victims have reported such injuries feel like a bee sting or splinter under the skin. If you suspect you have a fluid injection injury, do not take chances. Seek proper medical care immediately. If any fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury.

Electrical System Hazards

Light Bulbs and Illumination

Some machines are equipped with High-Intensity Discharge (HID) Xenon light bulbs which operate at very high voltage. Do not begin installation of HID-Xenon lamps unless the lamps are turned off, the engine is turned off, the key is removed (if equipped), and you are wearing appropriate eye protection.

⚠ WARNING! Do not look directly into HID-Xenon lamps. Eye damage could occur.

Wear gloves and safety glasses when handling bulbs. Dangerous voltage sparks may occur and cause injury or damage to the connector. See manufacturer's warnings packaged with replacement bulbs.

Perform Maintenance Safely

Before working on the electrical system, disconnect the battery cable(s).

- Remove the battery negative (–) cable(s) first.
- When reconnecting the battery, connect the battery negative (–) cable(s) last.

Battery Hazards

The liquid in batteries contains acid, which is a POISON and could cause SEVERE CHEMICAL BURNS.

Avoid injury:

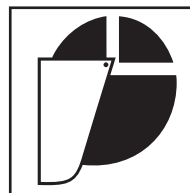
- Wear a face shield to prevent contact with your eyes.
- Wear chemical-resistant gloves and clothing to keep electrolyte off your skin and regular clothing.

⚠ WARNING! Liquid from the battery will damage eyes or skin on contact. **Always wear a face shield to avoid liquid in eyes.**

If liquid from the battery contacts your eyes, flush immediately with clean water and get medical attention. Wear chemical-resistant gloves and protective clothing to keep liquid off your skin. If liquid contacts exposed skin or clothing, wash off immediately with clean water. If liquid is ingested, drink large quantities of water or milk. DO NOT induce vomiting. Seek medical attention immediately.



Wear hand protection



Wear face protection

Perform Maintenance Safely

Avoid Explosion

⚠ WARNING! Avoid serious injury from explosion. Lead-acid batteries produce extremely explosive gases especially when being charged. **Keep arcs, sparks, flames and lighted tobacco away.**

- **Do not** smoke near batteries.
- Keep batteries away from arcs, sparks and open flames.
- Provide adequate ventilation.

Never check the battery by placing a metal object across the battery posts. The resulting spark could cause an explosion.

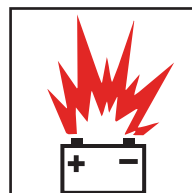
⚠ WARNING! Avoid serious injury from battery explosion. **Do not charge a battery or jump-start the engine if the battery is frozen.**

Warm to 60°F (15.5°C) or the battery may explode and could cause serious injury.

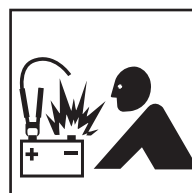
Safety rules during battery jump-starting:

- Follow the instructions for proper battery jump-starting, as specified in the manufacturer's manual.
- Be sure the machines are not touching.

- Observe the polarity of the batteries and connections.
- Make the final cable connection to the engine or the farthest ground point away from the battery. Never make the final connection at the starter or dead battery. Sparks may ignite the explosive gases present at the battery.
- When disconnecting cables, remove the cables in reverse order of connection (e.g., final connection first).



Avoid sparks and open flames near batteries



When jump-starting, observe polarity and make final connection at ground point

Perform Maintenance Safely

Tire and Wheel Maintenance

Check your tires and wheels daily because the stability of the machine can be dramatically affected by tire pressure or damage to tires or wheels.

Check tires for:

- Correct pressure
- Cuts and bulges
- Nails or other punctures
- Uneven or excessive wear
- Condition of valve stems and caps

Check wheels for:

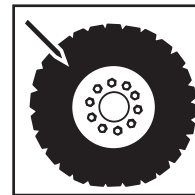
- Damage to the rims
- Missing or loose lug nuts or bolts
- Misalignment

All tire service should be performed by a qualified tire service center or by an authorized service person who has been properly trained in the procedures and use of safety equipment designed for tire servicing.

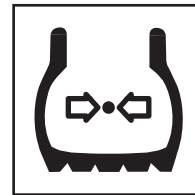
⚠ WARNING! The types of wheels and tires usually found on this equipment require special care when servicing to prevent death or serious injury. **Do not inflate the tires above the recommended pressure.**

Keep wheel lug nuts tightened to manufacturer's recommendations.

An increase in tire pressure during operation is normal, and should NOT be reduced.



Check tires and wheels for damage



Maintain proper tire pressure

Perform Maintenance Safely

Never reinflate a tire that has been run flat or seriously under-inflated without removing the tire from the rim. Have the tire and rim closely inspected for damage before remounting.

When adding air to a tire, do so from a distance. Always use a long hose with a self-attaching chuck; stand away from the tire sidewall and to one side as far as possible.

Do not inflate tires with flammable gases or from systems using an alcohol injector.

Never cut or weld on a rim with an inflated tire mounted on it. This could cause explosive decompression.

Check that the tire size and rim are correctly matched.

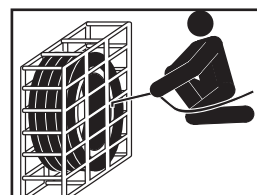
When replacing the tires, ensure the tires are of the appropriate rating specified by the manufacturer.

⚠ WARNING! Avoid death or serious injury. **Always use a safety cage or cable restraints when inflating a repaired tire.**

Tires should not be operated at speeds higher than their rated speed.



Avoid tire explosion



Use safety devices when inflating tires

Perform Maintenance Safely

Mower Blade Maintenance

Do not take chances using damaged or bent blades. The mower manufacturers from the Association of Equipment Manufacturers (AEM) and the Farm Equipment Manufacturers Association (FEMA) advocate that you do not reuse, straighten, hard face or weld mower blades. Death or serious injury could result if a broken blade is thrown from a mower.

It takes a great amount of impact force to bend the blade. This impact force often results in the blades being gouged or chipped. After a blade is damaged by a gouge or chip a blade failure is much more likely to occur. When a blade is severely bent, a microscopic crack may be created in the blade. Straightening the blade does not remove or repair this crack, but may cause additional cracks. Additional stresses during mowing operations can result in an unexpected blade failure.

⚠ WARNING! Using a damaged or straightened mower blade can result in the blade breaking and being thrown into the operator or a bystander causing death or serious injury. The price of a new blade is small compared to the potential for the serious injury that could result from a bent or broken blade being thrown from the mower.

Roll-Over Protective Structure (ROPS) and Falling Object Protective Structure (FOPS) Safety Precautions

Do not remove the ROPS/FOPS except for service. Reinstall all parts correctly before allowing the machine back into service.

Do not modify ROPS/FOPS in any manner. Unauthorized modifications such as welding, drilling, cutting or adding attachments could weaken the structure and reduce your protection. Replace ROPS/FOPS if subjected to rollover or damage. Do NOT attempt to repair them. See the manufacturer's manual(s) for complete instructions and inspection requirements.

Perform Maintenance Safely

Complete Service and Repairs Before Machine is Released

Tighten all bolts, fittings, and connections to torques specified by the manufacturer.

Inspect for leftover components such as cotter pins, washers, lock nuts, etc., after completing service. Replace any missing parts.

Start the engine and check for leaks. (See page 44, **Hydraulic System Hazards**.) Operate all controls to make sure the machine is functioning properly. Test the machine if necessary. After testing, shut down and check the work you performed.

Recheck all fluid levels before releasing the equipment for operation.

All parts should be inspected during repair and replaced if worn, cracked or damaged. Excessively worn or damaged parts could fail and cause injury or death.

Install all guards, covers, and shields after servicing. Refill and recharge pressure systems only with manufacturer-approved or recommended fluids.



Pressurized fluid can inject into the body

Checklist	
☒	_____
☒	_____
☒	_____
☐	_____
☐	_____

Verify service work when completed

Notes

A Final Word to the User

You have just finished reading the AEM Industrial/Agricultural Mower Safety Manual. It is impossible for this manual to cover every safety situation that you may encounter on a daily basis. Your knowledge of these safety precautions and your application to the basic rules of safety will help to build good judgment in all situations. Our objective is to help you develop, establish, and maintain good safety habits to make operating an industrial or agricultural mower easier and safer for you.

Many pictorials in this safety manual can be downloaded at <http://pictorials.aem.org>.

For additional publications, visit our website at www.safetymaterials.org.

SEGADORA AGRÍCOLA/INDUSTRIAL

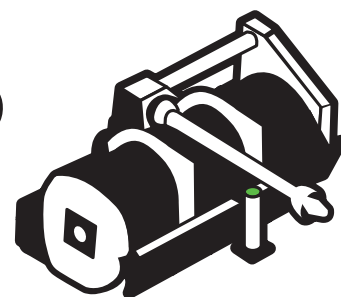
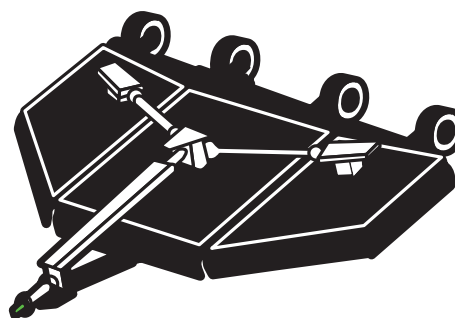
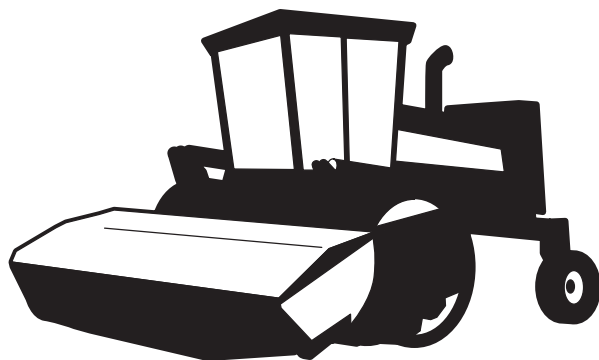
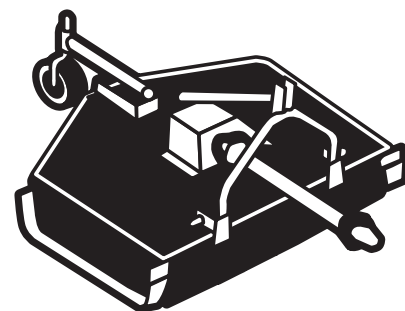
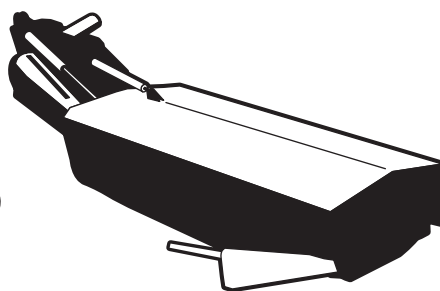
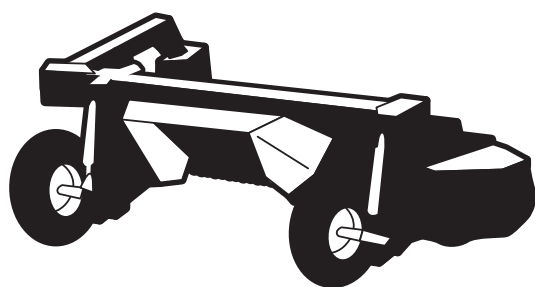
AEM 

Asociación de
Fabricantes de Equipos



MANUAL DE SEGURIDAD

PARA EL PERSONAL DE OPERACIÓN Y MANTENIMIENTO



ISBN 978-1-937029-54-8

90000>



9 781937 029548



Índice

Agradecimientos	2
Introducción.....	3
Alertas de seguridad	4
Información para el usuario/operador	5
Tipos de segadoras agrícolas/industriales	6
Seguir un programa de seguridad	8
Prepararse para una operación segura.....	13
Arrancar de manera segura.....	22
Operar de manera segura.....	24
Apagar de manera segura	38
Realizar el servicio de mantenimiento de manera segura	39
Palabras finales para el usuario.....	55

Agradecimientos

Queremos agradecerles a los miembros de la Asociación de Fabricantes de Equipos por su valiosa contribución para la elaboración de este Manual de seguridad.

AVISO DE LA PROTECCIÓN DE LOS DERECHOS DE AUTOR

Copyright, 2023, Asociación de Fabricantes de Equipos. Todos los derechos reservados. No se podrá reproducir ni difundir esta obra, ya sea en forma total o parcial, por ningún medio sin el permiso previo por escrito de la Asociación de Fabricantes de Equipos.

ISBN 978-1-937029-54-8

Copyright © 2003-2023 AEM (Asociación de Fabricantes de Equipos)
Revisado 01/03, 09/10 y 01/24

Introducción

El objetivo de este Manual de Seguridad es señalar algunas de las situaciones de seguridad básicas que pueden presentarse durante la operación y el mantenimiento habituales de su máquina e indicarle las prácticas seguras para tratar estas situaciones. Este manual **NO** reemplaza los manuales de operación del fabricante.

Es posible que deban tenerse otras precauciones o que algunas indicaciones no se apliquen, según el equipo, los accesorios y las condiciones en el área de trabajo o de servicio. El fabricante no ejerce ningún tipo de control directo sobre la aplicación, la operación, la inspección o el mantenimiento del equipo. Por lo tanto, es **SU** responsabilidad aplicar buenas prácticas de seguridad en estas áreas.

La información que se proporciona en este Manual complementa la información específica sobre su máquina, que se incluye en los manuales de operación del fabricante. Entre los documentos que podrían contener información que podría incidir en la operación segura de su máquina, se encuentran los siguientes:

- Letreros de seguridad
- Requisitos del seguro
- Programas de seguridad y capacitación del empleador
- Códigos de seguridad
- Leyes, normas y reglamentaciones locales, estatales/provinciales y federales



Lea y comprenda los manuales antes de operar una máquina

¡IMPORTANTE! Antes de operar esta máquina, asegúrese de tener los manuales de operación del fabricante de esta máquina y de todos los accesorios. Si no tiene el manual de operación del fabricante, pídale una copia a su empleador, al distribuidor o, directamente, al fabricante. En todo momento, conserve en la máquina este manual de seguridad y los manuales de operación del fabricante. Lea y comprenda todos los manuales pertinentes.

Algunos fabricantes y distribuidores ofrecen videos de seguridad y otros recursos de capacitación. El video de seguridad de la segadora agrícola/industrial de la AEM está disponible para capacitarse y reforzar las buenas prácticas de seguridad. Este video está disponible en www.safetymaterials.org. Se alienta a los operadores a que revisen periódicamente estos recursos.

Alertas de seguridad

Símbolo de Alerta de seguridad

Este símbolo de alerta de seguridad significa lo siguiente: “¡Atención! ¡Permanezca en alerta! ¡Su seguridad está en riesgo!”



El símbolo de alerta de seguridad se utiliza para alertarlo sobre peligros potenciales e identifica mensajes de seguridad importantes en el equipo, en letreros de seguridad, en manuales o en cualquier otro lugar. Cuando vea este símbolo, manténgase alerta ante la posibilidad de muerte de una persona o aparición de lesiones personales. Lea atentamente el mensaje que sigue e infórmeles a otros operadores. Siga las indicaciones del mensaje de seguridad.

Indicaciones de advertencia

Las indicaciones de advertencia son palabras distintivas que suelen encontrarse en letreros de seguridad de la segadora y en otros equipos del área de trabajo. Estas indicaciones también pueden encontrarse en este manual y en los manuales del operador. El objetivo de estas indicaciones es alertar al operador sobre un peligro y su gravedad.

PELIGRO

PELIGRO indica una situación peligrosa que, si no se evita, derivará en la muerte de una persona o la aparición de lesiones graves.

ADVERTENCIA

ADVERTENCIA indica una situación peligrosa que, si no se evita, podría derivar en la muerte de una persona o la aparición de lesiones graves.

ATENCIÓN

ATENCIÓN indica una situación peligrosa que, si no se evita, podría derivar en una lesión menor o moderada.

AVISO

AVISO Se utiliza para abordar prácticas que no están relacionadas con una lesión física.

Información para el usuario/operador

Es **SU** responsabilidad leer y comprender este Manual de Seguridad y los manuales de operación del fabricante antes de operar este equipo. En este Manual de Seguridad, se indica paso a paso cómo es una jornada laboral.

Se proporcionan gráficos para ayudarle a comprender el texto.

El reconocimiento de los peligros y la prevención de los accidentes dependen de su estado de alerta, atención y de la capacitación adecuada que reciba en las áreas de inspección, operación, transporte, mantenimiento y almacenamiento de este equipo.



Lea y comprenda los manuales antes de operar una máquina

Recuerde que **USTED** es la clave de la seguridad. Las buenas prácticas de seguridad no solo lo protegen a usted, sino que también protegen a las personas que le rodean. Analice este Manual y los manuales de operación del fabricante de la máquina específica. Inclúyalos en su programa de seguridad. Tenga en cuenta que este manual de seguridad está escrito únicamente para segadoras agrícolas/industriales.

Si, después de analizar los manuales de operación del fabricante y este Manual de Seguridad tiene alguna pregunta, comuníquese con el fabricante del equipo.

Ponga en práctica todas las precauciones laborales seguras habituales y recuerde lo siguiente:

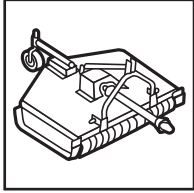
¡La operación segura depende de usted!

¡Puede evitar la muerte o las lesiones graves provocadas por las prácticas laborales inseguras!

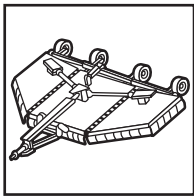
Tipos de segadoras agrícolas/industriales

Tipos de segadora agrícola/industrial

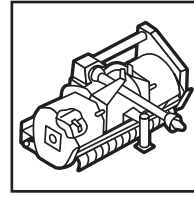
Las segadoras se utilizan para recortar pastizales, triturar residuos de cultivos, cortar vegetación densa y cortar cursos de agua, derechos de paso, bordes de caminos o carreteras. También, estas segadoras se utilizan para cortar hierba y otra vegetación en áreas públicas como parques y cementerios.



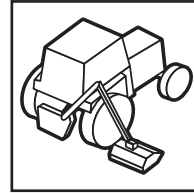
Rotativa



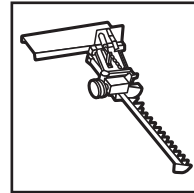
Rotativa de ala plegable



Desbrozadora



De brazo



Con barra en forma de hoz

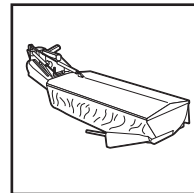
Tipos de segadoras agrícolas/industriales

Tipos de segadoras agrícolas de discos

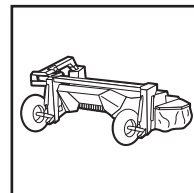
Las segadoras de discos están diseñadas y equipadas para cortar cultivos de heno a mayor velocidad en el campo.

Las segadoras acondicionadoras de disco cortan y acondicionan los cultivos.

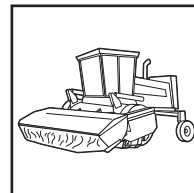
Las segadoras hileradoras autopropulsadas cortan y forman hileras de heno acondicionado.



Segadora de disco



Segadora acondicionadora de disco



Segadora hileradora autopropulsada

Seguir un programa de seguridad

Para una operación segura

Para operar esta máquina de manera segura, debe estar autorizado y calificado. Debe comprender con claridad las instrucciones por escrito que brinda el fabricante, haber recibido capacitación —que incluye operar la máquina— y conocer las normas y reglamentaciones de seguridad del área de trabajo. Es una buena práctica de seguridad señalar y explicar los letreros y las prácticas de seguridad a terceros, y asegurarse de que estos comprendan la importancia de seguir estas indicaciones.



Nunca opere si está bajo los efectos del alcohol o las drogas

⚠ ¡ADVERTENCIA! Operar maquinaria mientras se está bajo los efectos del alcohol o las drogas puede derivar en la muerte de una persona o la aparición de lesiones graves. Las drogas y el alcohol afectan el estado de alerta, la coordinación y la capacidad del operador de operar el equipo de manera segura. **Nunca opere la máquina si está bajo los efectos del alcohol o las drogas. Nunca permita que otra persona opere la máquina si sabe que su estado de alerta o coordinación están afectados.**

Los operadores que tomen medicamentos recetados o de venta libre deben consultar a un profesional médico respecto de cualquier efecto secundario del medicamento que pueda afectar su capacidad de operar este equipo de manera segura.

¡Esté alerta!

Sepa dónde acudir para solicitar ayuda. Mantenga los números de emergencia de médicos, ambulancias, hospitales y cuarteles de bomberos cerca de su teléfono. Sepa cómo usar un kit de primeros auxilios y un extintor/ sistema de extinción de incendios. Sepa su ubicación y practique llegar a ellos. Asegúrese de que se les hayan hecho las pruebas y el mantenimiento correspondientes.

Infórmeles a otras personas dónde va a trabajar y a qué hora estará regresando. Si llega a ocurrir una emergencia, es conveniente que otras personas sepan dónde encontrarlo.

¡Esté atento!

Aproveche los programas de capacitación que se ofrecen.

Conozca la respuesta adecuada ante un incendio o derrame químico en su máquina.

Seguir un programa de seguridad

¡Tenga cuidado!

Los errores humanos son el resultado de muchos factores: descuido, cansancio, sobrecarga sensorial, preocupación, desconocimiento de la máquina o de los accesorios, consumo de drogas y alcohol, por nombrar algunos. Puede evitar la muerte de una persona o la aparición de lesiones graves provocadas por estas y otras prácticas laborales inseguras. Tenga cuidado; nunca dé por sentado que los accidentes no le sucederán a usted.

Por su seguridad y la de terceros, actúe de manera segura y aliente a sus compañeros de trabajo a que también lo hagan.

Protéjase

Use toda la vestimenta personal apropiada y el equipo de protección personal (EPP) que se le entregue o que se requiera dadas las condiciones laborales.

Es posible que necesite lo siguiente:

- Casco
- Calzado de seguridad
- Anteojos de seguridad, gafas de seguridad o máscara de protección facial
- Guantes para tareas pesadas
- Protección auditiva
- Vestimenta reflectante
- Indumentaria para clima húmedo
- Respirador o máscara con filtro

Use todo lo que necesite para protegerse, no corra riesgos.

⚠ ¡ADVERTENCIA! Evite la muerte de una persona o la aparición de lesiones graves provocadas por los atoramientos. **No use vestimenta ni accesorios holgados o deshilachados que puedan quedar atrapados en las piezas que se mueven.** Entre los artículos que debe evitar se incluyen, a modo de ejemplo, puños que se caigan, corbatas y bufandas que cuelguen, carteras con cadena, joyas, pulseras y relojes de pulsera.



Seguir un programa de seguridad

Conozca las normas

La mayoría de las áreas de trabajo tienen normas que rigen el uso y el mantenimiento de los equipos. Antes de empezar a trabajar en un lugar nuevo, consulte al supervisor o coordinador de seguridad. Pregunte sobre las normas que deberá obedecer.

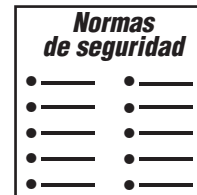
La OSHA hace cumplir las leyes federales dentro del territorio de los Estados Unidos que regulan la operación, la aplicación y el mantenimiento seguros de los equipos en algunas áreas de trabajo. Es responsabilidad del empleador cumplir con estas leyes. Es posible que un representante federal inspeccione periódicamente un área de trabajo para asegurarse de que se estén siguiendo estas leyes.

Es posible que haya otras leyes locales, estatales/provinciales, federales u organizaciones internacionales que regulen el uso de este equipo, además de las normas específicas del área de trabajo o del empleador. Es importante que conozca y cumpla con todas las leyes y normas pertinentes, **incluidas aquellas que requieran la capacitación y certificación del operador.**

Estas son algunas de las normas que rigen su trabajo:

- Un tractor equipado con cinturón de seguridad y una estructura de protección contra vuelcos (ROPS) es un requisito del gobierno federal (OSHA) para la protección del operador durante las operaciones de siega. Una cabina cerrada le proporciona al operador protección adicional contra objetos despedidos. Consulte los manuales del operador de su segadora para conocer si también se requiere una cabina de tractor.
- Solo las personas calificadas y autorizadas podrán operar este equipo.

- Inspeccione su máquina y los accesorios antes de usarlos, de acuerdo con las indicaciones del fabricante y de su empleador. Asegúrese de que un accesorio esté correctamente instalado.
- Conozca las limitaciones y las características operativas de su equipo. No lo sobrecargue ni lo use indebidamente.
- Nunca modifique ni retire ninguna pieza de la máquina (salvo que usted sea personal de servicio calificado; luego, asegúrese de que se vuelva a instalar la pieza o que se reemplace si tiene fallas o se gastó).



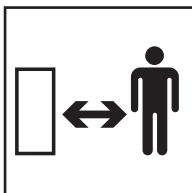
Conozca y comprenda las normas de operación



Ajústese el cinturón de seguridad.

Seguir un programa de seguridad

- Utilice la vestimenta y el equipo de protección personal (EPP) adecuados.
- Nunca deje que los niños jueguen cerca del equipo, se suban en él o lo operen. Los niños no están calificados para operar este equipo.
- No lleve pasajeros.
- Mantenga a los transeúntes a 300 pies (92 m) de la operación de las segadoras rotativas y a 100 pies (31 m) de las segadoras de disco.



Mantenga alejados a los transeúntes.



Tenga cuidado con los objetos despedidos.

- Conozca el área de trabajo antes de usar el equipo. Sea consciente de los posibles peligros del terreno que pueda encontrar. Retire o señale los obstáculos y escombros que podrían dañar o ser despedidos por la segadora.
- Instale correctamente todas las carcasas y protecciones antes de operar la máquina.
- Solo use accesorios y piezas aprobados por el fabricante.
- Siempre que abandone la máquina, baje la máquina o todos los accesorios, aplique el freno de estacionamiento, apague el motor y gire las palancas de control hidráulico, y retire la llave antes de dejar la estación del operador. (Consulte la página 38, **Apagado seguro.**)
- Utilice un contacto de tres puntos (pasamanos y peldaños) y mire el equipo al subir o bajar. (Consulte la página 21, **Subir y bajar correctamente.**)

Seguir un programa de seguridad

Conocer el equipo

Lea y comprenda las etiquetas de seguridad de PELIGRO, ADVERTENCIA, PRECAUCIÓN y AVISO, y demás letreros informativos que aparezcan en la máquina, los accesorios y los manuales de operación del fabricante. Pídale a su supervisor o al distribuidor que le expliquen la información que no comprenda. El incumplimiento de las indicaciones de seguridad podrá derivar en la muerte de una persona o la aparición de lesiones graves.

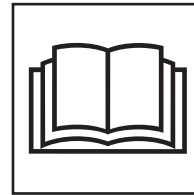
Conozca lo siguiente sobre el equipo:

- Función, propósito y uso de todos los controles
- Velocidades correctas de operación
- Características de frenado y dirección
- Capacidades para andar sobre terrenos con pendientes
- Radio y espacio para girar
- Cómo detener rápidamente el equipo ante una emergencia

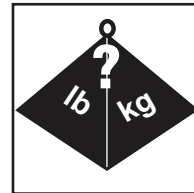
Tenga en cuenta que la lluvia, la nieve, el hielo, las piedras sueltas, el suelo blando, las pendientes y otras condiciones del lugar pueden afectar las capacidades de operación de la máquina. Asegúrese de estar absolutamente familiarizado con la estabilidad, los frenos, la tracción y demás características de manejo de la máquina en todas las condiciones que es probable que se le presenten.

IMPORTANTE: En este manual se cubren las prácticas seguras del equipo de segadoras agrícolas/industriales. Si su máquina está equipada con otros dispositivos o accesorios especiales, lea los manuales de operación y de seguridad del fabricante correspondientes a ese equipo en cuestión antes de usarlo.

Asegúrese de que todas las estructuras de protección, protecciones, carcasas, pantallas y paneles del fabricante estén en buenas condiciones, en su lugar y bien sujetos. Los componentes de seguridad dañados, faltantes o flojos pueden provocar una situación peligrosa para usted como operador. Nunca retire ni modifique ningún componente de seguridad, incluida la carcasa contra objetos despedidos de una segadora.



Lea y comprenda los manuales antes de operar una máquina



Conozca la capacidad y las características operativas de la máquina

Prepararse para una operación segura

Verifique y use todos los dispositivos de seguridad que estén disponibles.

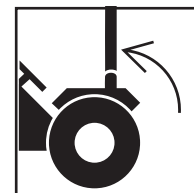
Con el fin de protegerlos a usted y a otras personas, es posible que su máquina incluya los equipos de seguridad que se indican a continuación. Es posible que se requiera un equipo adicional o que algunos artículos no se necesiten, según los accesorios que se utilicen, las condiciones del área de trabajo o las normas pertinentes del área de trabajo. Verifique que cada artículo que se requiera esté debidamente colocado y en condiciones de operación:

- Cinturón de seguridad.
- Estructura de protección contra vuelcos (ROPS, por sus siglas en inglés).
- Luces de operación y advertencia.
- Letreros de seguridad
- Protecciones
- Espejos
- Kit de primeros auxilios
- Extintor/sistema de extinción de incendios
- Limpiaparabrisas/desempañador

¡Úselos! Nunca retire ni desconecte ningún dispositivo de seguridad.

Sepa qué dispositivos se requieren por motivos de protección durante una operación en particular y úselos.

⚠ ¡ADVERTENCIA! Nunca retire ni modifique una ROPS, salvo cuando se realice el mantenimiento de la máquina. Vuelva a instalarla correctamente antes de la puesta en marcha de la máquina. Esto puede derivar en la muerte de una persona o la aparición de lesiones graves.



Nunca modifique una ROPS



Ajustese el cinturón de seguridad.

Prepararse para una operación segura

Inspeccione las máquinas

Antes de comenzar su jornada laboral, controle lo siguiente según corresponda y repare o reemplace lo necesario. A lo largo de este manual se proporcionan detalles y descripciones adicionales. Realice los procedimientos de mantenimiento diarios y periódicos, de acuerdo con las indicaciones del fabricante.

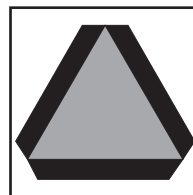


Verifique todos los dispositivos de seguridad

Condición de la máquina

Asegúrese de que todos los componentes estén en condiciones de operación. Verifique lo siguiente según corresponda:

- La ROPS está presente y, si es plegable, está elevada y en posición segura.
- La cabina está en buenas condiciones, y las ventanas y puertas funcionan correctamente.
- La carcasa principal de la toma de fuerza (PTO, por sus siglas en inglés) está instalada y funciona correctamente.
- La plataforma de la estación del operador está despejada de herramientas, objetos y escombros. Los escalones, asideros o barandillas asociados están limpios y funcionales.



Utilice iluminación y señalización

- El cinturón de seguridad, los anclajes y la hebilla están en condiciones de funcionamiento adecuadas.
- Los yugos, acopladores y carcasas de la línea de transmisión de la PTO de la segadora están en buenas condiciones de funcionamiento.
- Elementos de corte y accesorios de sujeción no están desgastados, dañados ni en falta. Nunca intente reparar piezas desgastadas o dañadas; siempre reemplácelas con piezas originales OEM.
- El sistema de protección contra objetos despedidos está completa e instalada.
- Los dispositivos de iluminación y señalización, como luces intermitentes de advertencia, señales de giro, luces de freno, luces de trabajo, emblemas de vehículo de movimiento lento (VML), señales de identificación de velocidad (SIS, por sus siglas en inglés), si corresponde, y materiales reflectantes son visibles y están en condiciones de funcionamiento.

Prepararse para una operación segura

- Mantenga la superficie de la plataforma del operador limpia y libre de grasa, aceite, suciedad, nieve o hielo. Los escalones y asideros deben estar limpios y ser funcionales.
- Todas las demás protecciones y carcasas están correctamente instaladas y en buenas condiciones.
- Los componentes del sistema hidráulico están asegurados de manera correcta y no están dañados ni tienen fugas.
- Las ruedas y los neumáticos no están dañados ni le faltan piezas, los neumáticos tienen la presión correcta y las tuercas o pernos tienen la torsión adecuada.

Accesorios de la máquina

Asegúrese de que todos los accesorios estén en condiciones de operación. Verifique los siguientes accesorios según corresponda:

- Los sistemas de fijación mecánica están conectados correctamente.
- Pasador de enganche de la barra de tracción con retención positiva.
- Cadena de remolque de seguridad.
- Enganche de 3 puntos u otras características de acoplamiento/bloqueo.
- Las mangueras hidráulicas están conectadas y funcionando correctamente.
- Las mangueras hidráulicas están correctamente apoyadas para evitar daños.
- Las funciones hidráulicas funcionan según lo esperado.

- Los acopladores no tienen fugas.
- Los dispositivos de iluminación, como luces intermitentes de advertencia, señales de giro, luces traseras, luces de freno y luces de trabajo están conectadas y funcionando correctamente.

Compatibilidad de la máquina

Las especificaciones del tractor, minicargador o hileradora deben ser suficientes para operar la segadora en todos los modos de operación y transporte. Consulte los manuales del operador o comuníquese con el distribuidor para conocer las especificaciones. Verifique las siguientes especificaciones según corresponda:

- Tamaño del eje de la PTO y número de estrías
- Dirección de rotación del eje de la PTO
- Accesorios mecánicos, como el enganche de 3 puntos, barra de tracción u otras características de acoplamiento/bloqueo
- Rendimiento y conexión del sistema eléctrico o hidráulico

Prepararse para una operación segura

Evitar lesiones provocadas por equipos elevados

Evite cualquier posible lesión por aplastamiento por caída de la segadora u otro equipo elevado.

Antes de trabajar cerca o debajo de la segadora o piezas del equipo elevadas:

- Apoye o bloquee de manera segura la segadora o las piezas del equipo elevadas de acuerdo con el manual del operador.
- Apoye, bloquee o trabee de manera segura las alas con dispositivos de bloqueo aprobados o baje la segadora o las piezas del equipo al suelo.
- Utilice las trabas de transporte cuando traslade la segadora en caminos públicos.

⚠ ¡ADVERTENCIA! Prevenga posibles lesiones por aplastamiento por caídas de equipos. La falla del sistema hidráulico o de una pieza podría generar que los equipos sin apoyo se caigan. **No pase debajo de equipos elevados a menos que estén apoyados correctamente de acuerdo con el manual del operador.**



Evite el aplastamiento: bloquee o apoye de manera segura la segadora.

Peligro de penetración de fluidos presurizados

⚠ ¡ADVERTENCIA! La penetración accidental de fluido presurizado en las manos o el cuerpo es peligrosa y podrá derivar en la muerte de una persona o la aparición de lesiones graves. Entre los fluidos presurizados se encuentran el aceite, el fluido hidráulico o el agua. **Actúe con precaución al revisar las fugas de fluido ya que los fluidos presurizados pueden penetrar en la piel o los ojos y provocar lesiones personales graves.**



El fluido presurizado puede penetrar en el cuerpo.

Si se detecta una fuga:

- Asegúrese de que el motor esté apagado; libere la presión en el sistema de fluidos.
- Utilice una protección adecuada para las manos y los ojos.
- Examine visualmente las líneas de fluido en las inmediaciones de la fuga para detectar roturas o rajaduras. **No** utilice las manos para verificar la presencia de fugas.
- Repare o reemplace las líneas de fluido, de acuerdo con la recomendación del fabricante.

Prepararse para una operación segura

Las lesiones por penetración de fluidos no siempre son evidentes. Las víctimas informaron que estas lesiones son como la picadura de una abeja o una espina debajo de la piel. Si sospecha que ha sufrido una lesión por penetración de fluidos, no corra riesgos. Busque de inmediato la atención médica correspondiente. Asegúrese de que el profesional médico comprenda que la lesión puede haber sido causada por una inyección de fluidos. Si le penetra algún fluido en la piel, un médico familiarizado con este tipo de lesiones deberá extraerlo quirúrgicamente al cabo de algunas horas.



Utilice una protección adecuada para las manos y los ojos

Verifique el sistema de enfriamiento

Cuando verifique el sistema de enfriamiento, siga las instrucciones del fabricante para asegurarse de que el motor esté apagado y frío para evitar que el ventilador arranque inesperadamente. Asegúrese de que los enfriadores y el compartimento del motor estén limpios y libres de escombros, ya que podrían encenderse y provocar un incendio.

Si la máquina se enfría con aire, asegúrese de que no esté obstruido el flujo de aire de la unidad de enfriamiento. Si se enfría con líquidos, revise el nivel del refrigerante (en el tanque de desbordamiento, si se proporciona).

⚠ ¡ADVERTENCIA! Deje que el radiador se enfríe antes de controlar el nivel. Los fluidos calientes del radiador pueden escaparse como vapor y quemarle. (Consulte la página 44, **Peligros del refrigerante del motor.**)



Deje que el radiador se enfríe antes de retirar lentamente la tapa

Prepararse para una operación segura

Limpieza

Limpie ventanas, luces y letreros de seguridad.

Asegúrese de que el área del operador, las palancas de dirección, los pedales, los mandos de control, los peldaños y las manijas estén limpios. La presencia de aceite, grasa, hierba, hojas, agujas, nieve, hielo, barro o escombros en estas áreas podría hacer que se resbale y caiga, o bien que pierda el control de la máquina. Limpie el exceso de barro de las botas antes de ingresar en la máquina.

Retire todos los objetos personales u otros artículos del área del operador. Coloque estos objetos en una caja de herramientas o retírelos de la máquina.

Actúe con precaución al cargar combustible.

⚠ ¡ADVERTENCIA! Evite las lesiones provocadas por incendios o explosiones. **Nunca llene el tanque de combustible con el motor encendido, mientras fuma o cerca de una llama abierta.**

Nunca desborde el tanque ni derrame combustible. Si se derrama combustible, límpielo de inmediato.

Asegúrese de usar el tipo y el grado correctos de combustible.

Realice la puesta a tierra del embudo o de la boquilla de combustible con el cuello de llenado para evitar las chispas que puedan generar vapores de combustible. Asegúrese de volver a colocar la tapa del depósito de combustible, si hubiera, cuando termine.

Peligro de combustible diesel ultra bajo en azufre (ULSD)

Evite el riesgo de electricidad estática al cargar combustible.

⚠ ¡ADVERTENCIA! El diesel ultra bajo en azufre (ULSD, por sus siglas en inglés) posee un mayor peligro de ignición estática que las formulaciones anteriores de diesel. Evite la muerte o las lesiones graves provocadas por incendios o explosiones. **Consulte a su proveedor de combustible o del sistema de combustible para asegurarse de que el sistema de suministro cumpla con las normas de carga de combustible para las prácticas adecuadas de puesta a tierra y enlace.**



La descarga estática durante la carga de combustible puede provocar una explosión.



Prohibido fumar y prohibidas las llamas abiertas

Prepararse para una operación segura

Los humos del escape en un espacio cerrado pueden causar la muerte

Ventile el escape y asegure un flujo de aire fresco si se utiliza un motor de combustión interna en un espacio cerrado.

⚠ ¡ADVERTENCIA! Los humos del escape de motores diesel, con gasolina o gas licuado del petróleo pueden causar la muerte. **No respire los humos del escape de ningún tipo de motor.**



Ventile el área de trabajo.

Operar en ambientes inflamables/explosivos

⚠ ¡ADVERTENCIA! Una máquina estándar equipada con un supresor de chispas/silenciador de detención de chispas no se puede operar en atmósferas inflamables o explosivas. El uso en ambientes inflamables o explosivos puede provocar incendios o explosiones que podrían derivar en lesiones graves o la muerte.

Use solo una segadora agrícola/industrial aprobada con una designación de G, GS, D, DS, DY, LP, LPS, G/LP o GS/LPS en la etiqueta. Consulte el Código de Reglamentaciones Federales (OSHA) 29 CFR Parte 1910.178 para determinar las áreas en las que se pueden operar estas máquinas.



No opere en ambientes inflamables/explosivos

Prepararse para una operación segura

Conozca el área de trabajo

Obtenga la mayor cantidad de información posible sobre su área de trabajo.

Controle el nivel del suelo o piso

Antes de operar, inspeccione la superficie por la que se desplazará. Busque hoyos, áreas resbaladizas, desniveles y obstáculos como rocas, troncos u otros elementos. Fíjese que no haya lugares irregulares ni obstáculos escondidos en las superficies que puedan provocar un accidente o la pérdida de control. Fíjese que no haya derrames de aceite, lugares mojados y superficies resbaladizas. Verifique la ubicación de arroyos y barrancas. Fíjese que no haya suelo blando, barro profundo, agua estancada ni zonas pantanosas. Fíjese que no haya nada que pueda hacerlo perder el control o hacer que la máquina se dé vuelta.

Planifique anticipadamente el recorrido, así puede ver y proteger a los transeúntes. Recoja los escombros que puedan perforar los neumáticos.

Planifique su trabajo.

Corrija las condiciones inseguras. No opere en área problemáticas donde no se pueden retirar o señalizar escombros y obstáculos.

Analice el área de corte para determinar:

- El procedimiento de corte más eficiente.
- La altura del material a cortar.
- Condiciones del terreno de operación.
- Cómo utilizar de la mejor manera el patrón de corte hacia adelante.
- La posibilidad de transeúntes o personas cercanas de quedar expuestos a objetos despedidos.

Verifique los espacios aéreos.

Verifique el espacio de las puertas, los toldos y aéreo. Sepa exactamente el espacio que tiene debajo de los cables aéreos de electricidad y teléfono.

⚠ ¡PELIGRO! Tocar o estar próximo a una máquina que está en contacto con una fuente eléctrica con corriente o cerca de esta podrá derivar en la muerte de una persona o en la aparición de lesiones graves. **Nunca se acerque a las líneas eléctricas con ninguna parte de la máquina ni con la carga, salvo que se hayan tomado todas las precauciones de seguridad que se requieran a nivel local, estatal/provincial y federal (OSHA).** Se requiere precaución porque las fuentes con alto voltaje pueden generar un arco sin contacto.

Al trabajar cerca de las líneas de energía, deberá suponer que todas las líneas están con corriente.

Prepararse para una operación segura

Subir y bajar correctamente

Siempre utilice un contacto de tres puntos al subir o bajar de la máquina. Un contacto de tres puntos significa una mano y dos pies o dos manos y un pie en contacto con la máquina en todo momento.

Nunca suba ni baje mientras lleve herramientas u objetos que le impidan tener un contacto de tres puntos. Apoye las piezas o las herramientas. Manteniendo un contacto adecuado, suba o baje y, luego, recoja el objeto.

Mire hacia la máquina cuando se suba o baje de ella.

Límpiese el calzado y las manos. Retire los residuos químicos, la nieve, el hielo, el barro o el aceite de los peldaños y los pasamanos.

Al subir y bajar:

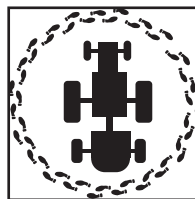
- Utilice los pasamanos y las placas de los peldaños.
- Nunca utilice volantes, mandos de control ni controles como pasamanos.
- Nunca salte para subir o bajar de la máquina.
- Nunca suba ni baje de una máquina en movimiento.



Utilice un contacto de tres puntos al subir o bajar.

Avisar al personal antes de comenzar

Antes de comenzar, camine alrededor de toda el área de la máquina. **Asegúrese de que no haya ninguna persona debajo de la máquina, en ella o próxima a ella.** Avíseles a las personas que va a usar la máquina y no la use hasta que todos se alejen de ella. Como operador del equipo, usted es responsable del uso seguro de la máquina; por lo tanto, asegúrese siempre de haber comunicado sus planes de trabajo al resto de las personas que estén en el lugar.



Antes de comenzar, camine alrededor de toda el área de la segadora.

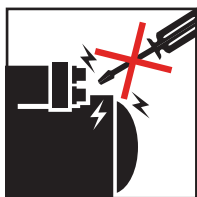
Arrancar de manera segura

Arranque del motor

⚠ ¡ADVERTENCIA! Arranque el motor solo desde el asiento del operador. **Nunca intente arrancar el motor puentando las terminales o llegando a la llave desde el exterior de la estación del operador.** La máquina podría moverse inesperadamente, lo que podría provocar lesiones graves o la muerte de las personas que se encuentren en su camino.

Conozca el procedimiento de arranque exacto de su máquina. Consulte los manuales de operación del fabricante para obtener información sobre el arranque.

- Ubíquese en el asiento del operador y ajústelo para que pueda operar adecuadamente todos los controles.
- Ajústese el cinturón de seguridad, si cuenta con él.
- Siempre mantenga las puertas de la cabina cerradas y las ventanas y pantallas de la estructura de protección del operador (OPS) en su lugar.
- Familiarícese con los dispositivos de advertencia, los medidores y los controles operativos.
- Asegúrese de que los controles estén en la posición neutral o de bloqueo.
- Verifique el desenganche de la PTO.



Nunca arranque el motor puentando las terminales

- Procure que no quede ninguna persona en el área.
- Haga sonar la bocina.
- Arranque el motor siguiendo las indicaciones en los manuales de operación del fabricante.

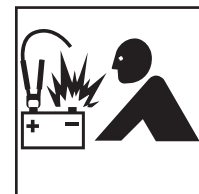
Si se tuviera que encender el motor u operar la máquina en un área cerrada, asegúrese de que haya una ventilación adecuada.

⚠ ¡ADVERTENCIA! Los humos del escape pueden causar la muerte. **¡No respire los humos del escape!**

Auxiliares de arranque

Si tiene problemas para arrancar el motor y debe utilizar los cables para puentear, siga las indicaciones de los manuales de operación del fabricante. **Se necesitan dos personas para un puenteado.** En un puenteado, el operador deberá colocarse en el asiento del operador para que la máquina esté bajo control cuando arranque el motor.

⚠ ¡ADVERTENCIA! Un puenteado inadecuado puede provocar lesiones graves o la muerte de una persona si se produce una explosión de la batería o si la máquina comienza a andar. **Siempre siga los procedimientos adecuados de puenteado.** (Consulte la página 46, Peligros de la batería).



Arrancar de manera segura

Los fluidos de éter/arranque en frío son **ALTAMENTE INFLAMABLES**. Antes de usarlos, siempre lea las indicaciones del recipiente del fluido de éter/arranque en frío y los manuales de operación del fabricante.

⚠ ¡ADVERTENCIA! Evite las lesiones provocadas por las explosiones o los incendios. Si el motor tiene una bujía de precalentamiento u otro tipo de colector de admisión de precalentamiento, siga las indicaciones del fabricante antes de usar el fluido de éter/arranque en frío.

Después de arrancar el motor

Mire los medidores, los instrumentos y las luces de advertencia para asegurarse de que estén funcionando y de que sus lecturas se encuentren dentro de los valores operativos.

Realizar una revisión de operación

No utilice una máquina que no esté en buenas condiciones de operación. Es su responsabilidad verificar el estado de todos los sistemas y de realizar la revisión en un área segura.

Probar los controles

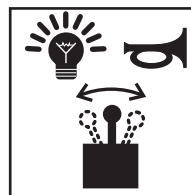
Las segadoras agrícolas/industriales vienen equipadas con diversas configuraciones de control, patrones y modos de operación; cada uno con sus características propias de manejo. Algunas tienen controles seleccionables o configurables para ajustarse a las preferencias personales o a las aplicaciones específicas.

Asegúrese de saber el patrón de control que seleccionó y de comprender cómo funcionará la máquina con ese patrón de control.

Asegúrese de que la máquina esté funcionando correctamente; para ello, realice lo siguiente:

- Con las palancas o los mandos de control en posición neutral, pruebe el control de velocidad del motor.
- Opere cada pedal, palanca o mando de control para cerciorarse de que todas las funciones sean correctas.
- Opere las palancas o los mandos de control de desplazamiento para asegurar la operación correcta hacia adelante y en reversa. Desplazándose lentamente en un área despejada y segura, pruebe la dirección hacia la derecha e izquierda.
- Revise los frenos de estacionamiento y de servicio de acuerdo con los manuales de operación del fabricante.

⚠ ¡ADVERTENCIA! Antes de operar la máquina por motivos laborales, **asegúrese de poder controlar la velocidad y la dirección de la máquina.** La pérdida de control podrá derivar en la muerte de una persona o la aparición de lesiones graves.



Opere los instrumentos y controles de manera correcta.

Operar de manera segura

Áreas con visibilidad obstruida

Las máquinas tienen áreas donde la visibilidad del área de trabajo del operador puede verse afectada por la máquina en sí. Los postes del sistema ROPS, los accesorios e, incluso, los artículos de la cabina podrían limitar la visión del área circundante y, posiblemente, impedir la visualización de peligros o de las personas que estén alrededor. Estas áreas con visibilidad obstruida varían de una máquina a otra. Es muy importante que esté al tanto de estas áreas antes de operar la máquina.

Siga estas precauciones de seguridad para reducir los peligros que plantean las áreas con visibilidad obstruida:

- Preste particular atención al elevar o bajar la segadora o el accesorio porque pueden cambiar las áreas con visibilidad obstruida.
- Mire alrededor de la máquina antes de operarla. Los objetos que están cerca de la máquina y del piso pueden ser difíciles de observar desde la estación del operador.
- Siempre mire en la dirección que se desplazará, incluida la marcha atrás. La alarma de retroceso no reemplaza la obligación de mirar hacia atrás cuando opera la máquina en reversa.
- Mantenga alejados a los transeúntes, incluso cuando la máquina posea una alarma de retroceso.

Recordar estas normas

Permanezca en el asiento del operador con el cinturón de seguridad ajustado cuando opere.

Asegúrese de que tiene visibilidad adecuada y suficiente iluminación durante la operación.

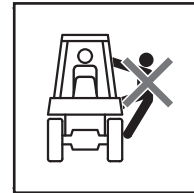
Tenga el control de la máquina en todo momento.

Recordar a las otras personas

Nunca permita que una persona sin capacitación o no calificada opere la máquina. Si se opera inadecuadamente, esta máquina podría provocar la muerte o lesiones graves.

⚠ ¡ADVERTENCIA! En la segadora agrícola/industrial solo entra una persona. Evite la muerte de una persona o la aparición de lesiones graves; **¡no permita nunca que haya acompañantes!**

⚠ ¡ADVERTENCIA! Manténgase alejado de todos los componentes en rotación. El enrollamiento o el atascamiento podría provocar lesiones graves o la muerte.



No permita el traslado de pasajeros.

Operar de manera segura

Asegúrese de que todas las personas estén a salvo, **al menos a 300 pies (92 m) de la segadora rotativa o a 100 pies (31 m) de la segadora de disco**, y opere de acuerdo con las leyes provinciales/estatales, locales, federales o las recomendaciones del fabricante que aplican a este equipo y su uso. Es importante que conozca y cumpla con todas las reglas específicas del lugar de trabajo o del empleador. El conocimiento de su parte puede evitar accidentes.

Retroceder de manera segura

Verifique que la alarma de retroceso (si hubiera) esté funcionando correctamente. Recuerde: **la alarma de retroceso no reemplaza la obligación de mirar hacia atrás cuando opera en reversa.** Siempre mire alrededor antes de retroceder la máquina. Asegúrese de que todas las personas estén a salvo. Conduzca hacia adelante siempre que sea posible. **SIEMPRE MIRE EN LA DIRECCIÓN QUE SE DESPLAZARÁ.**

Seguir las prácticas de operación segura

Incluya estas prácticas seguras en su rutina:

- Mantenga ajustado el cinturón de seguridad (si hubiera).
- Opere suavemente los controles; no sacuda las palancas de dirección ni los mandos de control.
- Evite las detenciones, los arranques o los giros repentinos.
- Actúe con cuidado y aplique un criterio sensato.
- Nunca intente operar los controles salvo que esté correctamente sentado en la estación del operador.

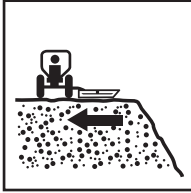
⚠ ¡ADVERTENCIA! Evite las lesiones graves o la muerte de una persona. **Cuando utilice la máquina, mantenga todo el cuerpo dentro de la cabina del operador.** Nunca trabaje con la cabeza, los brazos, los pies o las piernas fuera de la estación del operador.

Operar de manera segura

Tenga cuidado con las condiciones laborales peligrosas

Esté atento a los peligros. Sepa dónde está en todo momento. Tenga cuidado con las ramas, los cables o las puertas.

Se requiere precaución al trabajar en las partes superiores de terraplenes o pendientes. Siempre opere la máquina en forma perpendicular al terraplén. Manténgase alejado del borde.



Opere de manera perpendicular a los terraplenes; manténgase alejado de los bordes.

⚠ ¡ADVERTENCIA! Nunca opere la máquina cerca del borde de una saliente o un barranco. Los bordes podrían derrumbarse o podría producirse un desprendimiento y derivar en la muerte de una persona o la aparición de lesiones graves.

Actúe con precaución al trabajar en pistas, terraplenes y pendientes. Manténgase alejado de los bordes de las cuestas.

Al trabajar cerca de condiciones peligrosas, procure que haya un observador para detectar la presencia de peligros. Asegúrese de que permanezcan a una distancia segura de su máquina.

Desplazamiento en el área de trabajo

Desplácese despacio y con calma en áreas congestionadas. Vale la pena ser gentil en estos casos.

Deje pasar primero a las máquinas con carga. Mantenga una distancia segura con otras máquinas. Circule con precaución.

No obstruya su visión al desplazarse o trabajar. (Consulte la página 24, **Áreas con visibilidad obstruida**).

Desplazar la máquina de manera segura

Al desplazarse sobre terreno desnivelado, **REDUZCA LA MARCHA** para evitar perder el control.

Evite las pendientes empinadas o las superficies inestables. En ningún caso se desplace de un lado a otro sobre pendientes excesivamente empinadas. Antes de operar en pendientes, verifique las condiciones de la superficie para asegurar una tracción adecuada. La pérdida de tracción podría hacer que la máquina se resbale y vuelque.

⚠ ¡ADVERTENCIA! Evite las lesiones graves o la muerte de una persona. Desplácese hacia arriba y abajo de las pendientes con el extremo pesado de la máquina apuntando cuesta arriba.

⚠ ¡ADVERTENCIA! Evite las lesiones graves o la muerte de una persona. Asegúrese de poder ver hacia dónde está yendo.

Operar de manera segura

Reglas en caminos

Si la máquina se debe conducir o transportar sobre la carretera, consulte el manual del fabricante para obtener instrucciones.

Consulte las regulaciones locales para conocer las señalizaciones, luces, luces intermitentes, etc. requeridas al desplazarse por caminos públicos. Se requiere iluminación en las segadoras que obstruyen las luces traseras del tractor u otras luces de advertencia.

Al desplazarse en calles o caminos públicos, obedezca todas las reglamentaciones de tránsito que se aplican a su máquina.

Asegúrese de que las luces y los letreros de advertencia estén en su lugar y visibles. Asegúrese de que haya un emblema de vehículo de movimiento lento (VML) y la Señal de Identificación de Velocidad (SIS, por sus siglas en inglés), si corresponde, colocados y de que sean visible para cualquier vehículo que se acerque desde atrás.

Averigüe si tiene que usar un vehículo escolta. Acérquese a las intersecciones con precaución; observe los letreros de control de velocidad y tránsito. Evite las frenadas de pánico y los giros abruptos.

Como cualquier operador responsable, sea considerado con los demás conductores. Si se acumula tránsito detrás de usted, es una buena idea hacerse a un lado periódicamente y permitir que el tránsito pase cuando es seguro hacerlo.

Deténgase en todos los cruces de ferrocarril y mire a ambos lados antes de proceder. Nunca estacione en áreas con tránsito. Si es necesario detenerse de noche, salga del camino y coloque las balizas o los reflectores. Al conducir de noche, utilice las luces adecuadas.

Tener cuidado con los obstáculos

Ajuste su velocidad a las condiciones. Evite viajar sobre obstáculos, como troncos, tocones de árboles o terreno accidentado siempre que sea posible.

Mantenga su máquina bajo control.

Antes de ingresar a pasos a desnivel, túneles o pasos subterráneos, verifique el tránsito que se aproxima o si hay obstrucciones.



Obedezca las normas de tránsito

Operar de manera segura

Consejos de seguridad para el transporte

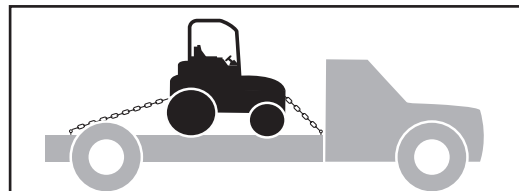
Siempre use el cinturón de seguridad al subir o bajar la máquina de un dispositivo de traslado, por ejemplo, un camión de plataforma.

Al trasladar una máquina, siga los procedimientos para subir, amarrar y bajar que recomiende el fabricante.

Varias precauciones se aplican a todas las máquinas:

- Mantenga alejados a los transeúntes.
- Suba y baje en una superficie nivelada.
- Mantenga una visibilidad adecuada; para ello, suba o baje en áreas bien iluminadas y lejos de otros vehículos, equipos o construcciones.
- Bloquee el vehículo de traslado para que no pueda moverse.
- Asegúrese de que la plataforma y las rampas del remolque estén en buenas condiciones.
- Utilice rampas con el tamaño y la resistencia correspondientes, con un ángulo bajo y una altura adecuada.
- La parte posterior del remolque debe estar bloqueada o sostenida.
- Mantenga la plataforma y las rampas del remolque libres de arcilla, aceite, hielo, nieve y otros materiales que puedan resbalar.
- Retroceda la máquina hacia arriba de la rampa sobre el vehículo de traslado. Si la máquina cuenta con un accesorio pesado, podría ser necesario conducir hacia adelante sobre el vehículo de traslado.

- Cubra o retire el cartel de VML que está en la parte posterior de la máquina, si hubiera, para evitar confundir a los conductores que siguen el vehículo de traslado.
- Encadene y bloquee la máquina de manera segura para el traslado. Utilice puntos de amarre, según indica el fabricante en la máquina. Siga las indicaciones de amarre del fabricante que figuran en el manual del operador.
- Baje la máquina desplazándola en la dirección opuesta, no gire la máquina.



Encadene y bloquee la segadora de manera segura para el traslado

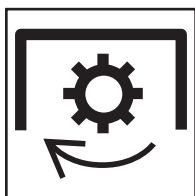
Operar de manera segura

Sistema de toma de fuerza (PTO)

Asegúrese de operar el tractor a la velocidad de rpm de la PTO especificada para la segadora.

Cuando se opera un tractor con un sistema de PTO impulsado por transmisión, una segadora rotativa tendrá un efecto volante significativo y puede continuar impulsando el tractor. Este tipo de tractor debería estar equipado y operado como se indica a continuación:

- Instale una línea de transmisión equipada con un embrague de rueda libre.
- Proporciónese suficiente espacio y tiempo para maniobrar anticipando los giros, las paradas y las reducciones de velocidad.



Utilice la velocidad de la PTO adecuada

Enganchar la segadora al tractor

Segadoras con enganches de tres puntos:

- Consulte los manuales del operador de la segadora y el tractor del fabricante.
- Coloque la palanca selectora del elevador hidráulico (eje oscilante) del tractor en posición descendente para evitar movimientos inesperados.
- Es posible que se necesiten contrapesos delanteros para mantener el control de la dirección y la estabilidad delantera. Consulte los manuales del operador del fabricante.
- Cuando retrocede el tractor hacia la segadora, NUNCA deje que nadie se coloque entre el tractor y la segadora.
- Conecte la segadora a los enganches de tres puntos del tractor y asegure el pasador en su posición.
- Conecte de manera segura la línea de transmisión a la PTO del tractor.
- Tire y empuje de la línea de transmisión para asegurarse de que esté bloqueada en el eje de la PTO.
- Baje la carcasa principal en su lugar si es móvil.

Operar de manera segura

Segadoras montadas con enganches de tracción:

- Consulte los manuales del operador de la segadora y el tractor del fabricante.
- Retire el acoplador rápido del enganche de tres puntos, si lo hubiere.
- Ajuste la longitud de la barra de tracción del tractor para operación de la PTO a 540 o 1000 rpm.
- Cuando retrocede el tractor hacia la segadora, NUNCA deje que nadie se coloque entre el tractor y la segadora.
- Conecte solo al enganche de la barra de tracción.
- Asegure correctamente la cadena de remolque de seguridad de la segadora al tractor.
- Conecte de manera segura la línea de transmisión a la PTO del tractor. Tire y empuje de la línea de transmisión para asegurarse de que esté bloqueada en la PTO. Baje la carcasa principal en su lugar.
- Conecte las mangueras hidráulicas de la segadora al tractor.
- Asegúrese de que las alas o plataformas elevadas de la segadora estén soportadas por los cilindros antes de retirar las trabas de transporte. Nunca utilice la fuerza para liberar las trabas de transporte o de las alas. Las alas o plataformas podrían caer y aplastarlo.



Compruebe que las alas estén apoyadas antes de liberar las trabas.

Segadoras montadas en minicargadores

- Consulte los manuales del operador de la segadora y el minicargador del fabricante.
- Baje los brazos de elevación e incline hacia adelante el acoplador de la cargadora.
- Conduzca la cargadora lentamente hacia adelante hasta que el borde superior del acoplador esté completamente debajo del reborde superior del marco de montaje del accesorio de la segadora.
- Incline el acoplador hacia atrás hasta que el accesorio esté levemente levantado del suelo. Esto provocará que el marco de montaje del accesorio de la segadora se ajuste contra la parte frontal del acoplador.
- Conecte los pasadores o cuñas del acoplador. Asegúrese de que los pasadores o cuñas del acoplador estén completamente conectados y trabados en la segadora.
- Conecte las mangueras hidráulicas de la segadora a la cargadora.

Operar de manera segura

Realizar el arranque adecuado

Corte solo durante el día o en buenas condiciones de iluminación artificial.

Evite las lesiones graves o la muerte debido a objetos arrojados por la segadora o el contacto con cuchillas:

- Mantenga en su lugar y en buen estado las carcasas de cadena, las carcasas deflectoras flexibles o sólidas, o las tolvas de descarga.
- Mantenga alejados a los transeúntes como mínimo a 300 pies (92 m) de la segadora rotativa o a 100 pies (31 m) de la segadora de disco durante la siega.
- Nunca dirija la descarga de la segadora hacia una persona.
- Mantenga alejadas manos, pies y otras partes del cuerpo de las piezas rotativas, cuchillas y aberturas de descarga.
- No opere la segadora en posición de transporte.

No se acerque a una segadora hasta que todos los movimientos se hayan detenido.

Acoplamiento de la transmisión de la PTO de la segadora:

- Eleve la segadora a la altura de corte máxima.
- Conecte la PTO a bajas rpm del motor.
- Aumente las rpm del motor a la velocidad de rpm de la PTO especificada para la segadora.
- Baje la segadora a la altura de corte deseada.
- Deténgase y apáguela inmediatamente si la segadora golpea un obstáculo.
- Inspeccione y repare cualquier daño en la segadora antes de continuar con el corte.
- No opere la segadora si presenta vibraciones fuertes o ruidos inusuales.

Evite doblar las cuchillas: Ayude a prevenir que las cuchillas de la segadora se doblen o rompan evitando el contacto con objetos sólidos. Las cuchillas de la segadora están diseñadas para cortar hierba, arbustos, vegetación boscosa y árboles pequeños y ramas. No están destinadas a estar en contacto con objetos sólidos como rocas, cemento o postes de acero. Inspeccione el área antes de cortar. Retire o señale claramente cualquier objeto sólido y corte alrededor.

Reemplace las cuchillas dañadas: Inspeccione las cuchillas de la segadora diariamente o después de golpear un objeto sólido. Si una cuchilla de la segadora se daña (se dobla, raja o rompe) o se desgasta más del 25 por ciento del tamaño original, se debe retirar y reemplazar por una nueva. Siempre utilice las cuchillas originales del fabricante. Las cuchillas de marcas no originales pueden no cumplir con los requisitos del fabricante de resistencia, dureza y ductilidad.



No opere una segadora dañada.

Operar de manera segura

Objetos arrojados por la segadora

Dependiendo del propósito diseñado, las segadoras están diseñadas para cortar hierba, maleza, arbustos y cultivos. Las cuchillas de la segadora han sido diseñadas y probadas para un uso resistente. Sin embargo, estas no están destinadas a entrar en contacto con objetos sólidos como rocas, cemento o metal. Dicho impacto puede provocar que se despidan objetos. Los transeúntes nunca deberían estar dentro de 300 pies (92 m) de una segadora rotativa en funcionamiento o de 100 pies (31 m) de una segadora de disco en funcionamiento. Detenga la operación si alguien se encuentra dentro de la distancia de seguridad para el tipo de segadora.

La carcasa de la segadora está diseñada para reducir el riesgo de arrojar objetos y se debe mantener correctamente y en su lugar durante las operaciones de corte.



Tenga cuidado con los objetos despididos.

El riesgo de lesiones graves o muerte a raíz de objetos arrojados puede reducirse significativamente siguiendo tres reglas. **Si no se siguen todas estas reglas de seguridad, la operación de corte debe detenerse.**

Primero: Inspeccione el área antes de cortar y retire piedras, ramas, alambre, cables, metal, vidrio y otros objetos sólidos antes de operar. Cuando no sea posible quitar algún objeto, el operador debe marcarlo de manera clara y evitarlo cuidadosamente.

En áreas no cultivadas con hierba y maleza lo suficientemente altos como para ocultar objetos que podrían ser golpeados por las cuchillas, inspeccione el área y retire o marque grandes escombros u obstáculos.

Corte el área a una altura intermedia. Inspeccione el área detenidamente y retire o señale cualquier escombros u obstáculo restante. Corte nuevamente a la altura final deseada.

Segundo: La carcasa de protección contra objetos arrojados por la segadora debe utilizarse cuando se opera en caminos, parques, áreas pobladas u otras áreas donde los objetos arrojados podrían lastimar a transeúntes o dañar la propiedad. Siga el manual del operador del fabricante.

Tercero: Cruce diagonalmente cuando corte en zanjas, depresiones pronunciadas y desniveles. Eleve la segadora para evitar que las cuchillas golpeen el suelo.

Operar de manera segura

Segadoras de disco: Cuando utilice una segadora de disco es importante que conozca el área que se cortará. Si el operador ha cortado el campo antes y conoce todos los obstáculos que se pueden presentar, es suficiente observar hacia adelante el camino de la segadora para ver si hay objetos adicionales que puedan haber ingresado al campo. Esté listo para detenerse o evitar cualquier objeto que podría ser peligroso si es arrojado por la segadora. Si planea cortar un campo desconocido y está cerca de un camino transitado o podría haber personas dentro de los 100 pies (31 m) de la segadora, debe inspeccionar y limpiar o señalar el campo.

Cortar marcha atrás

No corte mientras se desplaza hacia atrás. Es más probable que se arrojen objetos y pueden llegar más lejos.

Apague la PTO, espere que las cuchillas dejen de girar, eleve la segadora y luego retroceda.

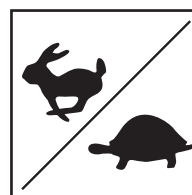
Corte desplazándose hacia adelante.

Velocidad de corte de la segadora

La velocidad de corte adecuada depende de las condiciones del terreno y del tipo, la densidad y la altura de la hierba que se cortará:

- Siga las velocidades de funcionamiento recomendadas por el fabricante.
- Utilice una velocidad de corte más lenta para cortar hierba alta y densa.
- Utilice una velocidad de corte más rápida para cortar hierba de altura media, menos densa y en condiciones de terreno llano.
- Utilice una velocidad de corte más lenta para cortar en terrenos irregulares, inclinados o desconocidos.

Las segadoras de disco están diseñadas para utilizar velocidades de corte más rápidas al operar en campos libres de escombros y peligros en la superficie.



Utilice la velocidad de corte adecuada

Operar de manera segura

Corte de hierba extremadamente alta

Es posible que necesite cortar dos veces la hierba extremadamente alta y no cultivada. (Consulte la página 32, **Objetos arrojados por la segadora**).

Primera pasada de corte:

- Apague la segadora y el tractor utilizando la práctica adecuada de apagado del equipo antes de bajarse el tractor. (Consulte la página 38, **Apagado seguro**).
- Inspecciones el área y retire o señale escombros u obstáculos.
- Corte la hierba más alta (10 a 15 pulgadas/ 250 a 400 mm) para evitar objetos ocultos.

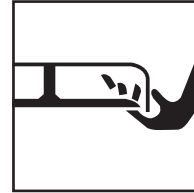
Segunda pasada de corte:

- Apague la segadora y el tractor utilizando la práctica adecuada de apagado del equipo antes de bajarse el tractor.
- Inspecciones el área y retire o señale escombros u obstáculos.
- Corte la hierba a la altura deseada y, cuando sea posible, en un ángulo de 90 grados con respecto a la primera pasada de corte.

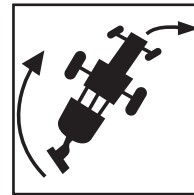
Observar los espacios libres del equipo

El enganche de tres puntos y las segadoras montadas en el lateral tienen un arco de giro más grande que las segadoras de enganche de tracción. Permita que haya suficiente espacio libre para que la segadora se mueva al girar.

No permita que haya transeúntes cerca del tractor y la segadora cuando se mueven o transportan.



Detenga la cuchilla antes de desatascarla.



Proporcione un espacio adecuado para que la segadora gire.

Operar de manera segura

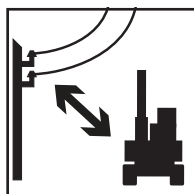
Prácticas de seguridad para segadoras montadas en la parte inferior

Cuando corte con una segadora montada en la parte inferior:

- Mantenga las tolvas de descarga extraíbles en su lugar y sobre la abertura de descarga.
- Nunca se sitúe sobre la carcasa de una segadora cuando el motor del tractor esté en funcionamiento.
- Distribuya los recortes de hierba con la tolva de descarga orientada hacia el área cortada.
- Antes de desatascar la segadora o la tolva de descarga, apague la máquina siguiendo la práctica adecuada de apagado del equipo. (Consulte la página 38, **Apagado seguro**).



Mantenga la tolva en su lugar.



No se acerque a las líneas eléctricas con energía.

Riesgos y peligros de obstrucciones en la parte superior de segadoras de alas o brazos

Revise la presencia de obstrucciones en la parte superior con las segadoras de ala o brazo elevados para evitar lesiones graves o la muerte por entrar en contacto con lo siguiente:

- Líneas eléctricas y aparatos eléctricos.
- Ramas bajas de árboles.
- Otras obstrucciones en la parte superior.
- Mantenga la distancia especificada de las líneas eléctricas y los aparatos. Nunca se acerque a las líneas eléctricas o aparatos energizados con ninguna parte de la máquina, salvo que se hayan tomado todas las precauciones de seguridad que se requieran a nivel local, estatal/provincial y federal (OSHA). Actúe con precaución.

⚠ ¡PELIGRO! Evite electrocución o lesiones graves por contacto o falta de espacio libre adecuado con líneas eléctricas o aparatos energizados. No permita que la máquina o el accesorio se acerque o entre en contacto con ninguna línea eléctrica. No se acerque ni toque ninguna máquina en contacto con una línea eléctrica.

Operar de manera segura

Prácticas de seguridad para segadoras de alas y montadas en el lateral

Las posiciones elevadas de las alas reducen la protección de la carcasa y aumentan los riesgos de peligro por objetos arrojados y contacto con las cuchillas.

Evite posibles lesiones graves o la muerte por objetos arrojados o contacto con las cuchillas al levantar y bajar las alas durante las operaciones de corte:

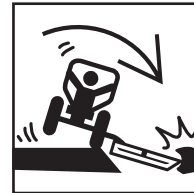
- No corte con transeúntes dentro de 300 pies (92 m) de una segadora rotativa o dentro de 100 pies (31 m) de una segadora de disco.
- Asegúrese de que nadie está cerca de la segadora mientras levanta o baja las alas.
- Apague la PTO y espere que todos los elementos en rotación se detengan antes de levantar la plataforma de la segadora o la sección del ala.
- Solo levante el ala para despejar objetos en la trayectoria de corte o para adaptarse a la pendiente del terreno.
- Baje el ala elevada al suelo después de despejar el objeto o las condiciones del terreno.
- Detenga el corte si alguien se acerca más de la distancia de seguridad para el tipo de segadora.

Prácticas de seguridad para el corte en orillas de zanjas

Tenga cuidado al cortar en orillas de zanjas. Esté atento a derrumbes, áreas erosionadas y obstrucciones de corte a lo largo de las orillas de las zanjas. Golpear obstáculos con segadoras laterales o de brazo puede hacer que el extremo delantero del tractor se desvíe hacia la zanja.

Las operaciones de corte en orillas de zanjas con alas y brazos elevados pueden reducir la efectividad de la carcasa contra objetos arrojados para la protección del operador de la segadora.

- Utilice cabinas ROPS cerradas, recintos de protección especiales y otras carcasas para el operador disponibles del fabricante al realizar estas operaciones.
- Inspeccione el área de corte y retire o señale todos los objetos extraños y escombros que deben evitarse con la segadora.



Evite golpear obstrucciones.

Operar de manera segura

Prácticas de seguridad para el corte en terrenos irregulares

La estabilidad del tractor y la segadora se reduce en pendientes y terrenos irregulares.

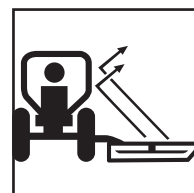
Como en todas las condiciones de corte, utilice tractores equipados con ROPS y cinturón de seguridad. **Asegúrese de que el sistema TOPS/ROPS esté elevado y asegurado en su lugar y siempre utilice el cinturón de seguridad.**

Evite los vuelcos del tractor y la segadora, y mantenga el control de la estabilidad del equipo:

- Revise los manuales del operador del tractor y la segadora para conocer las prácticas de operación seguras en pendientes y condiciones de terreno irregulares. Explique las prácticas a aquellos usuarios y operadores que no pueden leer.
- Evite operar en pendientes sumamente empinadas.
- Tome precauciones para mantener el control sobre el equipo cuando opera en estas condiciones.
- Aumente la estabilidad del tractor agregando contrapesos en las ruedas, lastre y aumentando el espacio entre las ruedas al máximo. Consulte el manual del operador para obtener recomendaciones.
- Mantenga una velocidad de corte mínima.
- Realice giros graduales y amplios.
- Evite arranques, paradas y giros bruscos cuando opere hacia arriba, abajo o a través de pendientes.

- No levante las segadoras montadas en la parte trasera o lateral, ni las alas desde el suelo durante estas operaciones.
- Manténgase alerta ante hoyos, protuberancias, surcos, rocas, tocones u otras obstrucciones que podrían volcar la máquina.
- Evite las condiciones con suelo resbaladizo que podrían provocar la pérdida del control y volcar el tractor y la segadora.
- Evite golpear y tocar el suelo cruzando en diagonal zanjas y desniveles pronunciados.

Tome precauciones para mantener la estabilidad del equipo durante operaciones de corte en terrenos irregulares y pendientes. Usted es el juez final en cuanto a cualquier pendiente que pueda ser negociada de manera segura.



Utilice cabinas ROPS cerradas o recintos de protección

Apagar de manera segura

Seleccione un lugar adecuado para estacionar

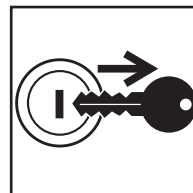
Al apagar la máquina, estacionela en un área designada fuera del tránsito, preferentemente, a nivel del suelo cuando sea posible. Baje el equipo elevado al suelo. Si debe estacionar en una pendiente o inclinación, coloque la máquina en ángulos rectos con respecto a la pendiente, accione el freno de estacionamiento y bloquee las ruedas.

⚠ ¡ADVERTENCIA! Evite la muerte de una persona o la aparición de lesiones graves provocadas por los movimientos accidentales de la máquina. **Nunca deje una máquina sin supervisión con el motor encendido.**

Apagado seguro

El procedimiento de apagado detallado se encuentra en los manuales del fabricante. En general, esto incluye lo siguiente:

- Detenga la máquina.
- Asegúrese de que todas las ruedas estén sobre el suelo.
- Coloque los controles en posición neutral o de bloqueo.
- Accionar el freno de mano.
- Desactivar el motor durante un breve periodo para que se enfríe.
- Desconecte el embrague de la PTO y la transmisión.
- Baje la segadora al suelo.
- Baje las alas de las segadoras de ala al suelo.
- Detenga el motor y retire la llave de encendido, si hubiera.
- Complete el ciclo de todos los controles hidráulicos para eliminar la presión.
- Eleve el asiento/barra(s) de sujeción del operador, si hubiera.



**Apague el motor,
retire la llave.**

- Sáquese el cinturón de seguridad/la sujeción.
- Trabe las cubiertas y los cerramientos, si hubiera.
- Apague el interruptor eléctrico principal, si hubiera.
- Cuando deje la máquina, espere que todas las piezas móviles se detengan antes de bajarse. Siempre mantenga un contacto de tres puntos con los peldaños y las manijas. Mire hacia la máquina al bajar. Nunca salte de la máquina.
- Bloquee las ruedas si está en una pendiente o inclinación.

Realizar el servicio de mantenimiento de manera segura

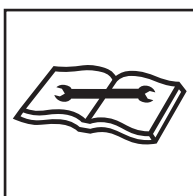
Sepa lo que está haciendo.

El mantenimiento de este tipo de máquina no debe realizarse por personal sin experiencia o capacitación. Es peligroso, salvo que se realice correctamente. Asegúrese de contar con las habilidades, la información, las herramientas correctas y el equipo adecuado para realizar el trabajo de manera segura.

Asegúrese de realizar el mantenimiento del equipo de acuerdo con las indicaciones del fabricante. Revise con regularidad el funcionamiento de los dispositivos de protección y seguridad.

No realice ningún tipo de trabajo en una máquina salvo que esté autorizado y calificado para hacerlo.

Si está autorizado para realizar el mantenimiento, **lea los manuales de operación, de mantenimiento y de servicio del fabricante.** Analice las indicaciones: revise las tablas de lubricación, examine todos los mensajes con indicaciones que haya en la máquina.



**Realice el
mantenimiento
del equipo.**

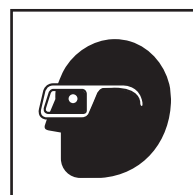
Protéjase

Use toda la vestimenta de personal adecuada y el EPP que se le entregue o que se requiera dadas las condiciones laborales.

Es posible que necesite lo siguiente:

- Casco
- Calzado de seguridad
- Anteojos de seguridad, gafas de seguridad o máscara de protección facial
- Guantes para tareas pesadas
- Protección auditiva
- Vestimenta reflectante
- Indumentaria para clima húmedo
- Respirador o máscara con filtro

Use todo lo que necesite para protegerse. No corra riesgos.



Realizar el servicio de mantenimiento de manera segura

⚠ ¡ADVERTENCIA! Evite la muerte de una persona o la aparición de lesiones graves provocadas por los atoramientos. **No use vestimenta ni accesorios holgados. Manténgase alejado de los componentes que rotan cuando el motor esté funcionado.** El contacto, el enrollamiento o el atascamiento con las piezas que rotan o se mueven podrán derivar en la muerte de una persona o la aparición de lesiones graves.

Utilice un delantal adecuado resistente a sustancias químicas y guantes resistentes a sustancias químicas para trabajar con corrosivos. Utilice guantes resistentes a los cortes y calzado de seguridad cuando manipule bloques de madera o metales con punta cortante.

Siempre use anteojos de seguridad, gafas de seguridad o una máscara de protección facial. Protegen los ojos de los fluidos bajo presión, al triturar y cuando se realiza el mantenimiento a las baterías. También se debe proteger contra los escombros, los líquidos y el material suelto que desprendan la máquina, las herramientas y el aire/agua presurizados.

Use una máscara de protección facial y siga las indicaciones del fabricante cuando desarme componentes con resorte o cuando trabaje con ácidos de la batería. Mantenga los bolsillos libres de todo tipo de objeto que pueda caerse y entrar en la máquina.

Manipule con cuidado las herramientas y las piezas pesadas para protegerse a usted y a terceros. Baje los artículos, no los arroje.

Piezas de la segadora y su seguridad

Los fabricantes de segadoras utilizan sujetadores específicos y piezas diseñadas especialmente para cumplir con los requisitos de las operaciones de corte. Las piezas críticas como pernos de cuchilla autobloqueantes, cuchillas, pasadores, carcasas y otros elementos especiales tienen requisitos específicos de resistencia, diseño y ajuste para la segadora de la marca y el modelo que está utilizando.

Evite posibles lesiones graves o muerte por piezas no aprobadas o modificaciones:

- No sustituya piezas de ferretería comunes por pernos de cuchilla u otras piezas especiales originales del fabricante.
- No sustituya cuchillas, pasadores, carcasas u otras piezas esenciales.
- No utilice pernos de mayor resistencia para reemplazar los pernos de seguridad originales del fabricante.



Evite las piezas que roten.

Realizar el servicio de mantenimiento de manera segura

Prepare el área de trabajo.

- Coloque la máquina en un área nivelada, que no entorpezca el paso de otros equipos de trabajo.
- Asegúrese de que la luz, la ventilación y el espacio sean adecuados.
- Retire el aceite, la grasa o el agua para eliminar las superficies resbaladizas.
- Limpie alrededor del área donde se realizará el mantenimiento para reducir la contaminación.

Preparar la máquina

Se deben controlar o reducir al mínimo las fuentes de energía almacenadas (eléctrica, mecánica, hidráulica, neumática, química, térmica, etc.) antes de realizar algún servicio de mantenimiento o reparación.

Entre las prácticas de seguridad para evitar posibles lesiones provocadas por fuentes que liberan energía se incluyen las siguientes:

- Desconecte la PTO antes de apagar el motor.
- Coloque los controles en posición NEUTRAL o DE BLOQUEO antes de apagar el motor.
- Accione el freno de estacionamiento o bloquee las ruedas.
- Detenga todas las piezas que se muevan.
- Baje la segadora al suelo.
- Baje las alas al suelo en segadoras de ala.
- Apague el motor.

- Siga las recomendaciones del fabricante para liberar la presión del sistema hidráulico.
- Trabe el encendido, retire la llave (si hubiera) y llévela con usted.
- Observe y escuche si hay indicios de piezas que se muevan antes de bajar.
- Apague el interruptor eléctrico principal (si hubiera).
- Apoye bien o bloquee la máquina antes de trabajar debajo de ella u otros componentes elevados.
- Apoye bien o bloquee otros componentes con dispositivos de bloqueo aprobados antes de trabajar cerca o debajo de ellos.
- Libere la presión antes de desconectar o desarmar un sistema presurizado.
- Bloquee o libere la presión de los resortes antes de desarmar algún mecanismo con resorte.
- Evite la presencia de llamas, chispas o humo cerca de cualquier tipo de combustible, fluido hidráulico u otro material inflamable, por ejemplo, residuos de corte.



Evite las caídas, limpie las superficies resbaladizas.

Realizar el servicio de mantenimiento de manera segura

Coloque una etiqueta de advertencia que diga "NO OPERAR" a las palancas de control. Bloquee/coloque una etiqueta de no operar de acuerdo con el manual de operación del fabricante. Si hubiera una llave, retírela y llévela con usted.

Instale dispositivos de soporte aprobados al trabajar cerca o debajo de equipos elevados.

⚠ ¡ADVERTENCIA! Las máquinas u otros equipos sin apoyo o elevados pueden caerse sorpresivamente. **Nunca se coloque debajo de un equipo elevado a menos que esté apoyado sobre dispositivos de soporte aprobados.** La caída de equipos puede producir la muerte de una persona o la aparición de lesiones graves por aplastamiento.

Retire solo las protecciones o las cubiertas que brinden acceso al área donde se realizará el mantenimiento. Vuelva a colocar todas las protecciones y las cubiertas cuando haya finalizado el trabajo.

⚠ ¡ADVERTENCIA! Evite las lesiones o la muerte. **Nunca trabaje en una máquina con el motor en funcionamiento, salvo que así se indique en los manuales del fabricante para servicios de mantenimiento específicos.**

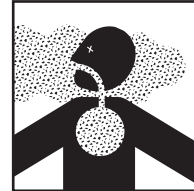


Utilice una etiqueta que diga "NO OPERAR".

Prácticas comunes para un mantenimiento seguro

Tenga una ventilación adecuada.

Si debe encender un motor en un área cerrada, saque los humos del escape del área con una extensión del tubo de escape.



Ventile el área de trabajo.

⚠ ¡ADVERTENCIA! Los humos del escape contienen monóxido de carbono, que puede ser mortal si se inhala. **Nunca opere ningún tipo de motor sin una ventilación adecuada. LOS HUMOS DEL ESCAPE PUEDEN CAUSAR LA MUERTE.**

Realizar el servicio de mantenimiento de manera segura

Utilice gatos y grúas con cuidado.

Las plataformas o los bloques de seguridad deben colocarse en una parte rígida de la máquina. No coloque las plataformas debajo de ejes o ruedas que puedan rotar.

⚠ ¡ADVERTENCIA! Evite las lesiones por aplastamiento. **Nunca use bloques de concreto como soporte. Podrían derrumbarse, incluso sosteniendo cargas livianas, y provocar lesiones graves o la muerte de una persona.**

Si debe trabajar debajo de un equipo elevado, siempre use grúas, gatos u otros apoyos rígidos y estables diseñados y aprobados para la carga en cuestión. Al usar gatos o grúas asegúrese de que estén bien apoyadas.

Asegúrese de que las grúas o los gatos estén en buenas condiciones. Nunca use gatos con piezas rajadas, torcidas o dobladas. Nunca use cables pelados, torcidos o pellizcados. Nunca use ganchos doblados o deformados.



Evite el aplastamiento, utilice un apoyo adecuado para los equipos elevados

Peligros del combustible

⚠ ¡ADVERTENCIA! Evite las lesiones graves o la muerte. **Siempre use recipientes para combustible o equipos dispensadores de combustible aprobados para reducir el riesgo de explosión o incendio.**

Siempre respete estas prácticas para reducir la posibilidad de que ocurra un accidente grave:

- Apague el motor y el encendido durante una recarga de combustible.
- Apague todos los interruptores eléctricos.
- Realice la puesta a tierra la boquilla de combustible con el cuello de llenado.
- Mantenga las chispas y las llamas abiertas alejadas del combustible. No fume mientras recarga combustible o cuando manipula los recipientes de combustible.
- No corte ni suelde en las líneas, los tanques o los recipientes de combustible ni cerca de ellos.
- No desborde el tanque ni derrame combustible. Limpie de inmediato el combustible derramado.



Prohibido fumar y prohibidas las llamas abiertas

Realizar el servicio de mantenimiento de manera segura

Peligro del diesel ultra bajo en azufre (ULSD)

⚠ ¡ADVERTENCIA! El diesel ultra bajo en azufre (ULSD) posee un mayor peligro de ignición estática que las formulaciones anteriores de diesel con un mayor contenido de azufre. Evite la muerte o las lesiones graves provocadas por incendios o explosiones. **Consulte a su proveedor de combustible o del sistema de combustible para asegurarse de que el sistema de suministro cumpla con las normas de carga de combustible para las prácticas adecuadas de puesta a tierra y enlace.**

Peligros del refrigerante del motor

⚠ ¡ADVERTENCIA! Evite las lesiones graves o la muerte. Los sistemas de enfriamiento líquidos acumulan presión a medida que el motor se calienta; por lo tanto, **actúe con precaución antes de retirar la tapa del radiador.**

- Detenga el motor y espere a que se enfríe el sistema.
- Use ropa de protección y anteojos de seguridad.
- Gire lentamente la tapa del radiador hasta el primer tope para dejar liberar presión antes de retirar la tapa por completo.



Deje que el radiador se enfríe antes de retirar lentamente la tapa

Peligros del sistema hidráulico

Asegúrese de seguir las indicaciones del fabricante para liberar la presión de fluidos antes de realizar algún servicio de mantenimiento. El sistema hidráulico está presurizado siempre que el motor está encendido y puede retener presión incluso después de que se apague el motor. Complete el ciclo de los controles hidráulicos, incluido el control hidráulico auxiliar, si hubiera, después de apagar el motor.



Verifique que no haya fugas e inspeccione las mangueras

Durante la inspección del sistema hidráulico:

- Espere a que el fluido se enfríe antes de desconectar las líneas. El fluido hidráulico caliente puede provocar **quemaduras graves.**
- Utilice una protección adecuada para los ojos. El fluido hidráulico puede provocar lesiones permanentes en los ojos.
- Al ventilar o llenar el sistema hidráulico, afloje lentamente la tapa del recipiente de llenado y quítela gradualmente.
- **Nunca** configure una válvula de alivio del sistema hidráulico a una presión superior a la que recomienda el fabricante.

Realizar el servicio de mantenimiento de manera segura

Peligro de penetración de fluidos presurizados

⚠ ¡ADVERTENCIA! La penetración accidental de fluido presurizado en las manos o el cuerpo es peligrosa y podrá derivar en la muerte de una persona o la aparición de lesiones graves. Entre los fluidos presurizados se encuentran el aceite, el fluido hidráulico, el agua o el combustible. **Actúe con precaución al revisar las fugas de fluido ya que los fluidos presurizados pueden penetrar en la piel o los ojos y provocar lesiones personales graves.**

Si se detecta una fuga:

- Asegúrese de que el motor esté apagado; libere la presión en el sistema de fluidos.
- Utilice una protección adecuada para las manos y los ojos.
- Examine visualmente las líneas de fluido en las inmediaciones de la fuga para detectar roturas o rajaduras. **No** utilice las manos para verificar la presencia de fugas.
- Repare o reemplace las líneas de fluidos de acuerdo con las recomendaciones del fabricante.



El fluido presurizado puede penetrar en el cuerpo.

Las lesiones por penetración de fluidos no siempre son evidentes. Las víctimas informaron que estas lesiones son como la picadura de una abeja o una espina debajo de la piel. Si sospecha que ha sufrido una lesión por penetración de fluidos, no corra riegos. Busque de inmediato la atención médica correspondiente. Si le penetra algún fluido en la piel, un médico familiarizado con este tipo de lesiones deberá extraerlo quirúrgicamente al cabo de algunas horas.

Peligros del sistema eléctrico

Lámparas e iluminación

Algunas máquinas vienen equipadas con lámparas xenón de alta intensidad de descarga (HID, por sus siglas en inglés) que operan a voltajes muy altos. No comience la instalación de las lámparas xenón de HID, salvo que las lámparas y el motor estén apagados, se haya retirado la llave, si hubiera, y lleve una protección adecuada para los ojos.

⚠ ¡ADVERTENCIA! No mire directamente una lámpara xenón de HID. Se podría producir un daño a los ojos.

Use guantes y anteojos de seguridad cuando manipule las lámparas. Es posible que ocurran chispas eléctricas peligrosas, las que pueden producir lesiones o dañar el conector. Consulte las advertencias del fabricante que vienen con las lámparas de reemplazo.

Realizar el servicio de mantenimiento de manera segura

Antes de trabajar en el sistema eléctrico, desconecte los cables de la batería.

- Retire primero los cables negativos (–) de la batería.
- Al volver a conectar la batería, conecte en última instancia los cables negativos (–) de la batería.

Peligros de la batería

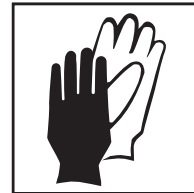
El líquido de las baterías contiene ácido, que es un **VENENO** y podría provocar **QUEMADURAS QUÍMICAS GRAVES**.

Evite las lesiones:

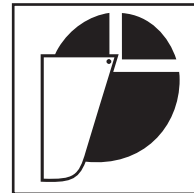
- Use una máscara de protección facial para evitar el contacto con los ojos.
- Use vestimenta y guantes resistentes a las sustancias químicas para mantener los electrolitos alejados del cuerpo y de la vestimenta de uso diario.

⚠ ¡ADVERTENCIA! Si el líquido de la batería entra en contacto con los ojos o la piel, les ocasionará un daño. **Siempre use una máscara de protección facial para evitar que el líquido entre en contacto con los ojos.**

Si el líquido de la batería entrara en contacto con los ojos, láveselos de inmediato con agua limpia y busque atención médica. Use vestimenta de protección y guantes resistentes a las sustancias químicas para mantener el líquido alejado de la piel. Si el líquido entra en contacto con la vestimenta o la piel expuestas, lávese de inmediato la piel y límpiense de inmediato la vestimenta con agua limpia. Si se ingiere líquido, beba una cantidad abundante de agua o leche. **NO** induzca el vómito. Busque atención médica de inmediato.



Utilice protección para las manos.



Utilice protección para el rostro.

Realizar el servicio de mantenimiento de manera segura

Evite las explosiones

⚠ ¡ADVERTENCIA! Evite las lesiones graves a causa de las explosiones. Las baterías de plomo y ácido generan gases sumamente explosivos, en especial, cuando se cargan. **Mantenga lejos los arcos, las chispas, las llamas y los cigarrillos encendidos.**

- **No** fume cerca de las baterías.
- Manténgalas alejadas de los arcos, las chispas y las llamas abiertas.
- Proporcione una ventilación adecuada.

Nunca revise la batería colocando un objeto de metal a lo largo de los postes de la batería. La chispa que se genere podría provocar una explosión.

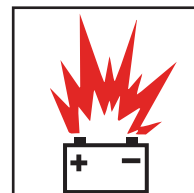
⚠ ¡ADVERTENCIA! Evite las lesiones graves a causa de las explosiones de la batería. **No cargue una batería ni arranque el motor si la batería está congelada.**

Llévela a una temperatura de 60 °F (15.5 °C) o la batería podría explotar y provocar lesiones graves.

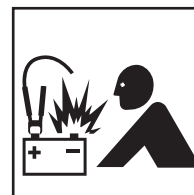
Normas de seguridad durante el arranque de la batería:

- Siga las indicaciones para arrancar adecuadamente la batería, según se indica en el manual del fabricante.
- Asegúrese de que las máquinas no se toquen.
- Observe la polaridad de las baterías y las conexiones.

- Realice la conexión final de los cables al motor o al punto de la puesta a tierra más alejado de la batería. Nunca realice la conexión final en el motor de arranque o la batería muerta. Las chispas podrían combustionar los gases explosivos que se encuentran en la batería.
- Al desconectar los cables, retírelos en el orden inverso de la conexión (es decir, por último, la primera conexión).



Evite las chispas y las llamas abiertas cerca de las baterías



Al arrancar la batería, observe la polaridad y realice la conexión final en el punto de la puesta a tierra.

Realizar el servicio de mantenimiento de manera segura

Mantenimiento de neumáticos y ruedas

Verifique sus neumáticos y ruedas diariamente ya que la estabilidad de la máquina puede verse sumamente afectada por la presión de los neumáticos o daños en los neumáticos o las ruedas.

Verifique en los neumáticos lo siguiente:

- Presión correcta
- Cortes y protuberancias
- Clavos u otras perforaciones
- Desgaste desparejo o excesivo
- Estado de los vástagos y tapas de válvulas

Verifique en las ruedas lo siguiente:

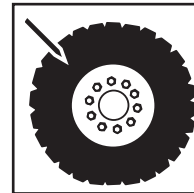
- Daños en los rines
- Tuercas o pernos de rines flojos o faltantes
- Desalineación

Todo el servicio de los neumáticos debe realizarse por un centro de servicio de neumáticos calificado o por personal de servicio autorizado debidamente capacitado sobre los procedimientos y el uso del equipo de seguridad diseñado para el servicio de mantenimiento de neumáticos.

⚠ ¡ADVERTENCIA! Los tipos de ruedas y neumáticos que se suelen encontrar en este equipo requieren un cuidado especial al realizar el servicio de mantenimiento para evitar lesiones graves o la muerte. **No infle los neumáticos por encima de la presión recomendada.**

Mantenga las tuercas de rines apretadas según las recomendaciones del fabricante.

Un aumento en la presión de los neumáticos durante la operación es normal, y NO se debe reducir.



Verifique que los neumáticos y las ruedas no estén dañados



Mantenga la presión de neumáticos adecuada

Realizar el servicio de mantenimiento de manera segura

Nunca vuelva a inflar un neumático que se ha desinflado por completo o seriamente sin quitar el neumático del rin. Haga inspeccionar detenidamente el neumático y el rin en busca de daños antes de volver a montarlos.

Al agregar aire a un neumático, hágalo a una cierta distancia. Siempre utilice una manguera larga con una boquilla autoajustable; manténgase alejado del flanco del neumático y hacia un lado lo más lejos posible.

No infle los neumáticos con gases inflamables o con sistemas que utilizan un inyector de alcohol.

Nunca corte ni suelde en un rin con un neumático inflado montado en él. Esto podría causar una descompresión explosiva.

Verifique que el tamaño del neumático y el rin coincidan.

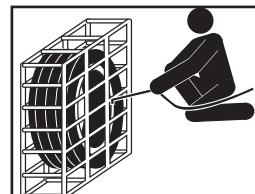
Al reemplazar los neumáticos, asegúrese de que sean del valor nominal especificado por el fabricante.

⚠ ¡ADVERTENCIA! Evite las lesiones graves o la muerte de una persona. **Siempre utilice una jaula de seguridad o sujeciones de cables al inflar un neumático reparado.**

Los neumáticos no deben operarse a velocidades superiores a su velocidad nominal.



Evite que exploten los neumáticos



Use dispositivos de seguridad al inflar los neumáticos.

Realizar el servicio de mantenimiento de manera segura

Mantenimiento de la cuchilla de la segadora

No corra riesgos utilizando cuchillas dañadas o dobladas. Los fabricantes de segadoras de la Asociación de fabricantes de equipos (AEM) y la Asociación de fabricantes de maquinaria agrícola (FEMA, por sus siglas en inglés) recomiendan que no se reutilicen, enderecen, endurezcan o suelden las cuchillas de las segadoras. Si una cuchilla rota sale expulsada de una segadora, puede producirse la muerte o la aparición de lesiones graves.

Se necesita una gran cantidad de fuerza de impacto para doblar la cuchilla. Esta fuerza de impacto a menudo hace que las cuchillas se rajen o astillen. Después de que una cuchilla se daña por una rajadura o astillado, es mucho más probable que ocurra una falla de esta. Cuando una cuchilla está severamente doblada, puede crearse una grieta microscópica en ella. Enderezar la cuchilla no elimina ni repara esta grieta, pero puede generar grietas adicionales. Esfuerzos adicionales durante las operaciones de corte pueden provocar una falla inesperada de la cuchilla.

⚠ ¡ADVERTENCIA! Utilizar una cuchilla de segadora dañada o enderezada puede provocar que esta se rompa o sea expulsada en dirección del operador o un transeúnte, y cause la muerte o lesiones graves. El precio de una cuchilla nueva es bajo en comparación con el riesgo de lesiones graves que podrían resultar de una cuchilla doblada o rota que sea expulsada desde la segadora.

Precauciones de seguridad de la estructura de protección contra volcaduras (ROPS) y de la estructura protectora contra objetos que caen (FOPS)

No elimine los sistemas ROPS/FOPS, salvo que deba realizarse un mantenimiento de servicio. Vuelva a instalar todas las piezas correctamente antes de la puesta en marcha de la máquina.

No modifique de ninguna manera los sistemas ROPS/FOPS. Las modificaciones no autorizadas, por ejemplo, soldaduras, perforaciones, cortes o agregado de accesorios podrían debilitar la estructura y reducir su protección. Reemplace los sistemas ROPS/FOPS si sufrieron volcaduras o se dañaron. NO intente repararlos. Consulte los manuales del fabricante para obtener información sobre las indicaciones completas y los requisitos de inspección.

Realizar el servicio de mantenimiento de manera segura

Reparaciones y servicio completo antes de autorizar el uso de la máquina

Ajuste todos los pernos, los accesorios y las conexiones a las torsiones que indique el fabricante.

Fíjese que no hayan quedado componentes olvidados, por ejemplo, pasadores de chaveta, arandelas, contratueras, etc., después de realizar el servicio. Reemplace las piezas que falten.

Arranque el motor y fíjese que no haya fugas. (Consulte la página 44, **Peligros del sistema hidráulico**). Opere todos los controles para asegurarse de que la máquina esté funcionando correctamente. Pruebe la máquina si fuese necesario. Después de probarla, apáguela y revise el trabajo que realizó.

Vuelva a controlar todos los niveles de fluidos antes de autorizar el uso del equipo.

Se deben inspeccionar todas las piezas durante la reparación y reemplazarse si están gastadas, dañadas o con rajaduras. Las piezas muy gastadas o dañadas podrían fallar y provocar lesiones o la muerte de una persona.

Instale todas las protecciones, las cubiertas y las carcasas después de realizar el servicio de mantenimiento. Vuelva a llenar y recargar los sistemas de presión solo con los fluidos que aprueba o recomienda el fabricante.

Lista de verificación	
☒	_____
☒	_____
☒	_____
☐	_____
☐	_____

Una vez completado, verifique el servicio de mantenimiento.



El fluido presurizado puede penetrar en el cuerpo.

Notas

Palabras finales para el usuario

Acaba de terminar de leer el Manual de Seguridad de la segadora agrícola/industrial de AEM. Resulta imposible abarcar en este manual todas las situaciones de seguridad que podrían presentársele a diario. Su conocimiento de estas precauciones de seguridad y el cumplimiento con las normas de seguridad básicas le ayudarán a desarrollar un criterio sensato en todas las situaciones. Nuestro objetivo es ayudarlo a desarrollar, establecer y mantener buenos hábitos de seguridad para hacer que el uso de la segadora agrícola o industrial resulte más sencillo y sea más seguro para usted.

Muchas de las ilustraciones que figuran en este manual de seguridad pueden descargarse desde <http://pictorials.aem.org>.

Si desea conocer otras publicaciones, visite nuestro sitio web: www.safetymaterials.org.

INTRODUCTION SECTION

Introduction Section 2-1

INTRODUCTION

INTRODUCTION

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

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.

Safety is of primary importance to the owner/operator and to the manufacturer. The first section of this manual includes a listings of safety messages that will help protect the operator and bystanders from injury or death. Some safety messages are repeated throughout the manual. The owner/operator/dealer should understand these safety messages and be aware of the hazards of operating and maintaining. 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 or property damage faced when operating or maintaining this machine.



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



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



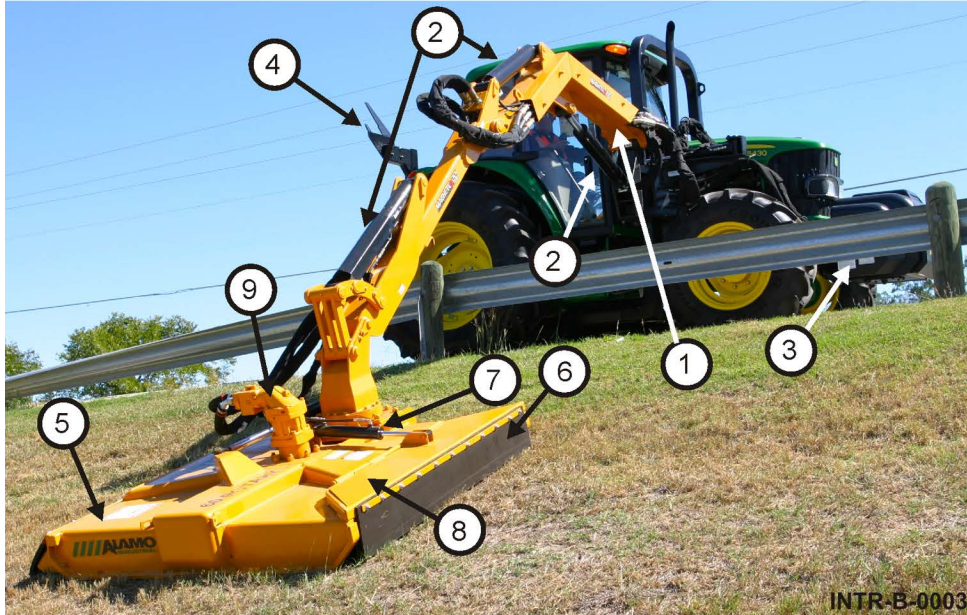
Indicates a hazardous situation that, if not avoided, **MAY** result in **MINOR OR MODERATE INJURY**.

Important

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

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

INTRODUCTION



- 1 Boom Arm
- 2 Boom Arm Cylinders
- 3 Hydraulic Tanks
- 4 Transport Rest
- 5 Rotary Head
- 6 Rubber Deflector
- 7 Door Cylinder
- 8 Rotary Head Door
- 9 Motor

INTRODUCTION

Your Machete 3 Boom is designed for heavy-duty cutting in limited access areas such as highway, park, and rural roadsides, overhead growth, ditches, levees, and other such grass and limb control uses in generally hard-to-reach areas. Your Machete 3 Boom can be equipped with a variety of cutting heads designed for specific cutting needs.

Literature Page



www.algqr.com/ale

Features

- Available Boom Lengths – 18', 22', and 25'
- Versatility You Need - 4-bar design allows for 215° head rotation to maneuver into tight spaces.
- Designed for Longevity - Heavy duty cast turning arm features a king pin which swings up to 120° with all pivot points featuring greasable, hardened steel bushings to insure maximum bearing life.
- Ease of Transport - Two-piece boom rest cradles the boom securely in place while in transport and storage.
- Optimal Visibility - High frame design is featured for improved operator visibility.
- Minimum Tractor Requirement - 80 Engine HP, 85" Wheelbase, 6000 lb. shipping weight.
- Warranty - One year parts and labor. Non-governmental users subject to a modified policy. Only genuine Alamo Industrial OEM parts may be used for warranty replacement

Cutting Head Options	Optional Equipment
Severe Duty Rotary Flail-Axe® Brush Cutter Heavy Duty Grass Flail BuzzBar®	Quick Hitch® Attachment System Special Paint

DIRECTION

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

Machete 3 05-26

Introduction Section 2-3

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 tractor and implement.
2. Fill out the Warranty Card in full. Be sure to answer all questions, including the Serial Number of the implement. Mail within 30 days of delivery date of this implement.

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

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

INTRODUCTION

ALAMO LIMITED WARRANTY

1. LIMITED WARRANTIES

- 1.01. Alamo Industrial warrants for one year from the purchase date to the original non-commercial, governmental, or municipal purchaser ("Purchaser") and warrants for six months to the original commercial or industrial purchaser ("Purchaser") that the goods purchased are free from defects in material or workmanship.
- 1.02. Manufacturer will replace for the Purchaser any part or parts found, upon examination at one of its factories, to be defective under normal use and service due to defects in material or workmanship.
- 1.03. This limited warranty does not apply to any part of the goods which has been subjected to improper or abnormal use, negligence, alteration, modification, or accident, damaged due to lack of maintenance or use of wrong fuel, oil, or lubricants, or which has served its normal life. This limited warranty does not apply to any part of any internal combustion engine, or expendable items such as blades, shields, guards, or pneumatic tires except as specifically found in your Operator's Manual.
- 1.04. Except as provided herein, no employee, agent, Dealer, or other person is authorized to give any warranties of any nature on behalf of Manufacturer.

2. REMEDIES AND PROCEDURES

- 2.01. This limited warranty is not effective unless the Purchaser returns the Registration and Warranty Form to Manufacturer within 30 days of purchase.
- 2.02. Purchaser claims must be made in writing to the Authorized Dealer ("Dealer") from whom Purchaser purchased the goods or an approved Authorized Dealer ("Dealer") within 30 days after Purchaser learns of the facts on which the claim is based.
- 2.03. Purchaser is responsible for returning the goods in question to the Dealer.
- 2.04. If after examining the goods and/or parts in question, Manufacturer finds them to be defective under normal use and service due to defects in material or workmanship, Manufacturer will:
 - (a) Repair or replace the defective goods or part(s) or
 - (b) Reimburse Purchaser for the cost of the part(s) and reasonable labor charges (as determined by Manufacturer) if Purchaser paid for the repair and/or replacement prior to the final determination of applicability of the warranty by Manufacturer.

The choice of remedy shall belong to Manufacturer.

- 2.05. Purchaser is responsible for any labor charges exceeding a reasonable amount as determined by Manufacturer and for returning the goods to the Dealer, whether or not the claim is approved. Purchaser is responsible for the transportation cost for the goods or part(s) from the Purchaser to the Dealer.

3. LIMITATION OF LIABILITY

- 3.01. Manufacturer disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.
- 3.02. Manufacturer makes no warranty as to the design, capability, capacity, or suitability for use of the goods.
- 3.03. Except as provided herein, manufacturer shall have no liability or responsibility to purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, manufacturer's liability hereunder for damages incurred by purchaser or others shall not exceed the price of the goods.
- 3.04. No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than two (2) years after the cause of action has occurred.

4. MISCELLANEOUS

- 4.01. Proper Venue for any lawsuits arising from or related to this limited warranty shall be only in Guadalupe County, Texas.
- 4.02. Manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.
- 4.03. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.
- 4.04. Applicable law may provide rights and benefits to purchaser in addition to those provided herein.

KEEP FOR YOUR RECORDS

ATTENTION: Purchaser should fill in the blanks below for his reference when buying repair parts and/or for proper machine identification when applying for warranty.

Alamo Industrial Implement

Model _____ Serial Number _____

Date Purchased _____ Dealer _____

ATTENTION: READ YOUR OPERATOR'S MANUAL

ALAMO INDUSTRIAL

An Alamo Group Company

Post Office Drawer 549

Seguin, Texas 78156

830-379-1480



OPERATION SECTION

Operation Section 3-1

OPERATION

OPERATION

ALAMO INDUSTRIAL BOOM MOWERS OPERATING INSTRUCTIONS

Alamo Industrial Booms are manufactured with quality material by skilled workers. The Boom is designed to attach to a tractor and operate various heads for a wide range of vegetative maintenance applications. The boom and heads are equipped with safety warning decals, protective deflectors, shields, and other safety features to provide operator and passerby protection, however, no shielding is 100% accurate. ALL safety equipment and safety warning decals must be maintained on the unit in good operational condition at all times.

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 boom unit, tractor or a thrown object. Do not operate the boom and attached head if bystanders, passersby, pets or livestock are within 300 feet of the unit.

- **ALL THROWN OBJECT SHIELDING** including, Front, 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 rotary mower. Some pictures may show shields removed for purposes of clarity. NEVER OPERATE this implement without all shields in place and in good operational condition. The operator must be familiar with the mower and tractor operation and all associated safety practices before operating the mower and tractor. Proper operation of the mower, as detailed in this manual, will help ensure years of safe

IMPORTANT: To avoid mower damage, retorque all bolts after the first 10 hours of operation. Retighten blade carrier retaining nut on gearbox lower shafts to 600 ft. lbs.

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

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Death or serious injury 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-2str)



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



OPERATION

1. OPERATOR REQUIREMENTS

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

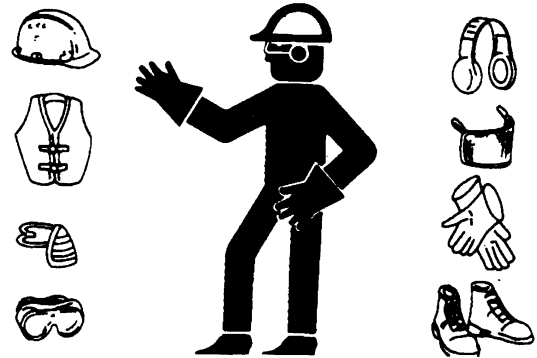
If the operator cannot read the manuals for themselves or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, safety practices, and operating instructions to the operator.

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

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Always Wear Safety Glasses (with side shields marked to comply with ANSI Z87)
- Hard Hat
- Steel Toe Safety Footwear
- Gloves
- Hearing Protection
- Close Fitting Clothing
- Respirator or Filter Mask (depends on operating conditions)

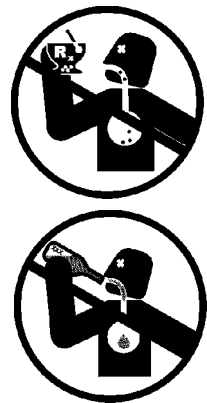
OPS-U- 0002str



⚠ 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. Death or serious injury to the operator or others could result if the operator is under the influence of drugs or alcohol.

(SG-27) str



OPERATION

2. TRACTOR REQUIREMENTS

In addition to tractor horsepower and size required to operate the boom 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

- SAE/ISO approved Roll-Over Protective Structure (ROPS) with 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

2.1 Cab, ROPS, and Seat Belt

The tractor must be equipped with a Factory Cab and seat belt to protect the operator from death or serious injury. Only operate the tractor while seated in the operator's seat with the seatbelt securely fastened around the operator. *OPS-U- 0051 str*



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



2.2 Operator Thrown Object Protection

The tractor must be equipped with protective equipment to shield the operator from falling and thrown objects. The tractor must be fitted with a shatter resistant safety window installed on the right side window of the cab. *OPS-B- 0001str*



DANGER 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-9str)



OPERATION

2.3 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 tractors 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- 0017str



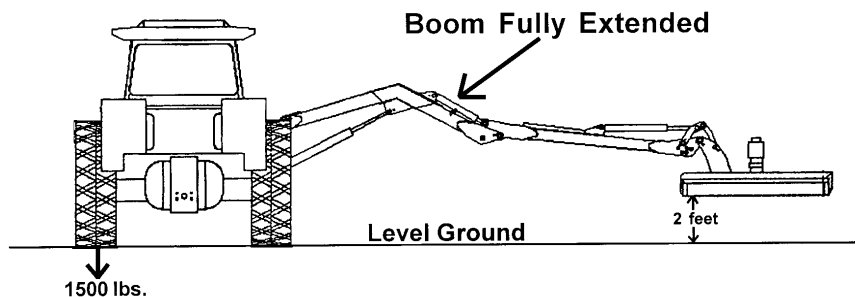
Op-86

2.4 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. For units which have the ability to operate on either side of the tractor, these requirements must also be met for the right side tire when the boom is extended to the left side as described above. 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.

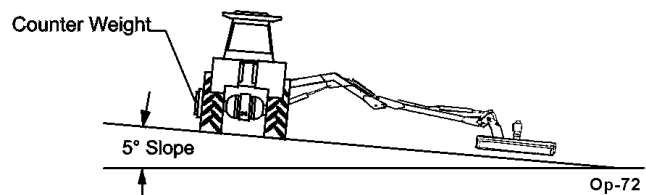
NOTE: All factory mounted units are tested and meet the ballast requirement before shipment; further testing is not required unless the unit is operated in a manner other than what is considered standard operating conditions.

For additional information on properly ballasting the tractor, refer to Alamo Industrial Tractor and Mower Stability Pamphlet P/N #02959010



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- 0018str



Op-72

OPERATION

3.GETTING ON AND OFF THE TRACTOR

Before getting onto the mower, the operator must read and completely understand the mower operator's manual. If any part of the manual is not completely understood, consult an authorized dealer for a complete explanation. OPS-U- 0007_B str



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. Dismounting a moving power unit can result in a crushing hazard that can cause death or serious injury. (SG-12) str



3.1 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- 0008str



DANGER

Never allow children to operate, ride on, or come close to the Tractor or Implement. Persons that do not have a motor vehicle license should not operate this equipment. (SG-44str)



DANGER

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



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. Dismounting a moving power unit can result in a crushing hazard that can cause death or serious injury. (SG-12) str



3.2 Dismounting the Tractor

Before dismounting the tractor, idle the tractor engine down, disengage the head and retract the boom arm to the transport position. Park the tractor on a level surface, place the transmission in neutral and set the parking brake. Shut down the tractor engine, remove the key, and wait for all motion to come to a complete stop before exiting the operator's seat. NEVER leave the seat until the tractor, its engine, and mower head movement have come to a complete stop.

Use hand rails and extra steps when exiting the tractor. Be careful of your step and use extra caution when mud, ice, snow, and other matter has accumulated on the steps and handrails. Never rush or jump off the tractor. OPS-B- 0002str

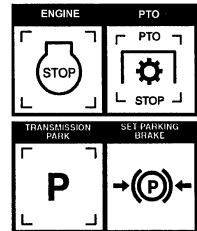
OPERATION



DANGER

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

(SG-9)str



4.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_Astr



DANGER

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



OPERATION

OPERATION



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



OPERATION

5.CONNECTING ATTACHING HEADS TO THE TRACTOR

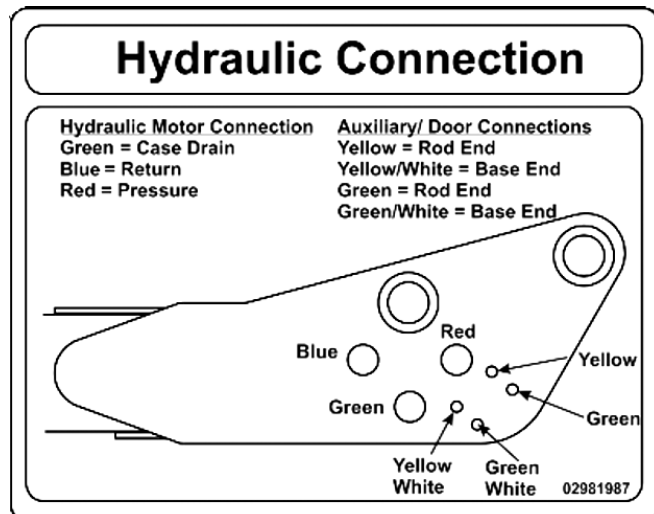
1. Start by using a hoist to lower the boom down to the head. Align the Boom with the Head Hitch Post, insert the upper hitch pin through the Dipper end of the boom and the Head Upper Hitch Post. Attach with washer, nut, and cotter pin.
2. Then align the lower linkage of the Boom and insert the lower hitch pin through hitch post. Attach with nut and bolt.
3. Finally make sure all bolts, nuts, and pins are tightened to recommended torque. OPS-B-0004_Hstr



5.1 Connecting Mower Head Hydraulics

4. Follow hydraulic connections according to the Hydraulic Connection Decal on boom. Attach the Mower Hydraulics to the Boom and the Motor according to the colors specified on decal. Then attach the door cylinder hoses from the boom to the Head Door Cylinder according to the colors specified on decal
5. When connecting the mower head hydraulic lines to the boom, keep the hose, quick couplers, and swivels free of dirt and other contaminants. Wipe all dirt and other contaminants from the hydraulic remote ports and mower hydraulic hose coupler with a clean cloth before connecting.

NOTE: The BuzzBar and the Flail Axe are attached in the same fashion as the Boom Head, however the Flail-Axe does not have Auxillary/Door Connections (Yellow/Yellow and White Hoses) keep these sealed off. OPS-B- 0019_D str



OPERATION



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-34str)

5.2 Hydraulic Quick Disconnects



Fig. 1

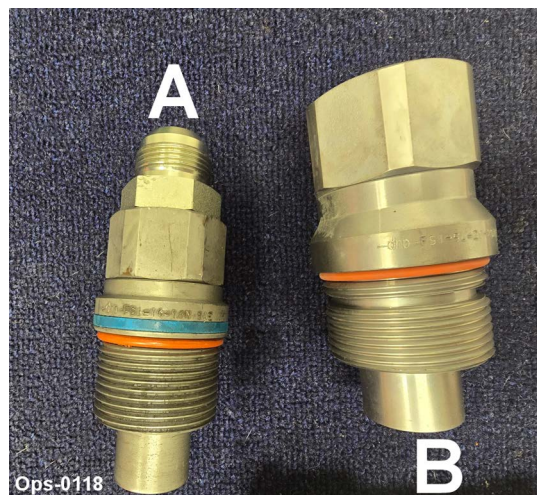


Fig. 2

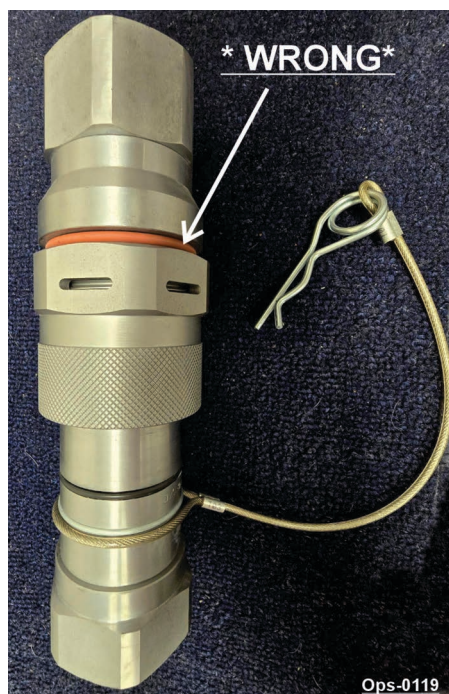


Fig. 3



Fig. 4

The following instructions are to inform the operator of the proper functionality, installation, and operation of the quick disconnect couplers. Figure one (1) shows the style of couplers used currently. Figure two (2) shows the difference between the older style used, "A", and the style of coupler that is currently used, "B". Upon connection, as shown in figure three (3), you can see that when the two ends are connected, if any of the red o-ring is visible, a complete connection has not been made. **THIS WILL CAUSE DAMAGE TO THE UNIT!!**

OPERATION

Be sure that the connection being made allows for the pin attached to the female end is able to be inserted as shown in figure four (4). When the two ends are connected and the pin has been inserted the o-ring will not be visible, again see figure (4).

DAILY CHECKS MUST BE PREFORMED BEFORE OPERATION. Failure to not check hose connections will lead to unit failure.



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) str



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_Ops-0008-MISC_str

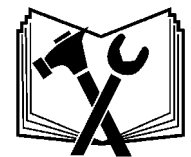
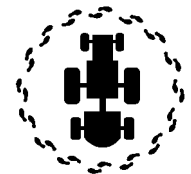


6.PRE-OPERATION INSPECTION AND SERVICE

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-0029str



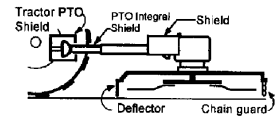
Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working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



OPERATION



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



6.1 Tractor Pre-Operation Inspection and Service

Refer to the tractor operator's manual to ensure a complete pre-operation inspection and scheduled service is performed according to the manufacturer's 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 str*



OPERATION

6.2 Boom Unit Pre-Operation Inspection and Service

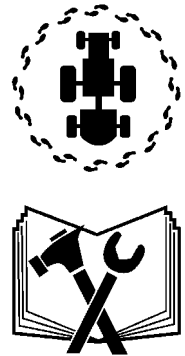
Inspect and service the boom arm and head prior to operation. Damaged and/or broken parts should be repaired and/or replaced immediately. To ensure the unit is ready for operation, conduct the following:
OPS-B- 0020str

OPERATION

OPERATION

WARNING

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



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 str



Op-14

FRAME ASSEMBLY

- Inspect condition of mounting frame weldment.
- Inspect condition of King Post frame.
- 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_Jstr



Ops-1501

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-6str)

OPERATION

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-4str)



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. OPS-B- 0022_Dstr



WARNING

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

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_Kstr



OPERATION

OPERATION

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) str



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. OPS-B 0024_Lstr

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 str)

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-34str)

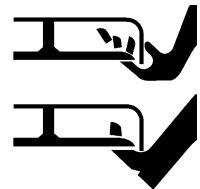
OPERATION

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 skid shoes and hardware. *OPS-B- 0025str*



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



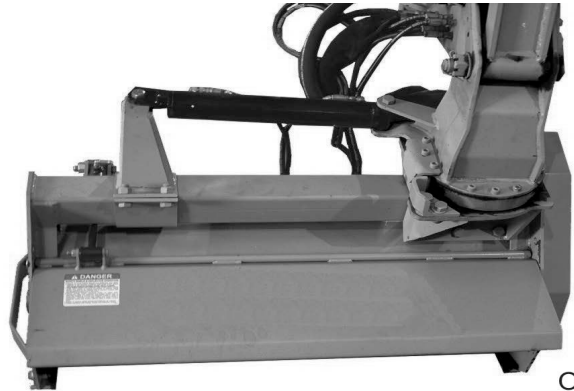
Mow at the speed that you can safely operate and control the tractor and mower. The correct mowing speed depends on terrain condition and grass type, density, and height of cut. Normal ground speed range is from 2 to 5 mph (3-8 kph). Use slow mowing speeds when operating on or near steep slopes, ditches,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

OPERATION

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.
- Inspect the condition of the drive belts.
- Ensure the drive belt shields are in place and in good repair.
- 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_Astr



Op-80



Op-82



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. (SFL-2) str



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)str

OPERATION

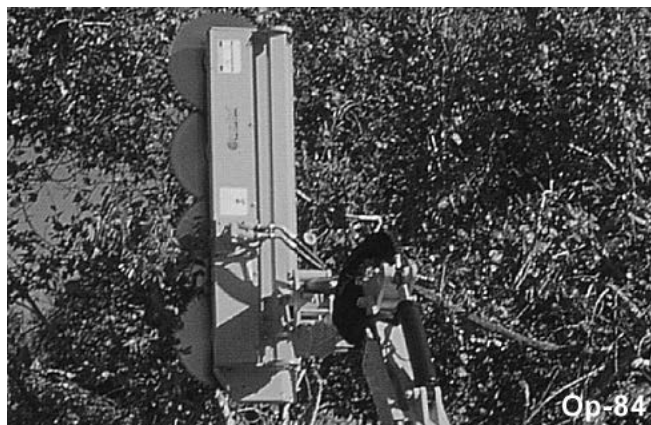
TIMBER CAT HEAD INSPECTION

- Inspect blade and bolts for looseness and excessive wear. Make sure the unit is securely blocked up when crawling underneath or set on ground before doing maintenance. Replace damaged and worn blade to keep unit operating properly.
- 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.
- Ensure hydraulic lines are properly connected to the hydraulic valve and cylinder. 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. *OPS-B- 0027str*

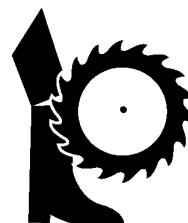


SAW BLADE HEAD INSPECTION

- Inspect the saw blades and spindle bolts for looseness and excessive wear. Make sure the unit is securely blocked up before doing maintenance. Replace damaged and worn saw blades as complete sets to maintain unit balance.
- 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 the Micro V-belts.
- Ensure the drive belt shields are in place and in good repair. *OPS-B- 0028str*



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. (SBM-24)



OPERATION

OPERATION

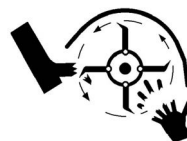
DITCHER HEAD INSPECTION

- Inspect blades and bolts on ditcher head assembly for looseness and excessive wear. Make sure the unit is securely blocked up before doing maintenance. Replace damaged and worn blades as complete sets to maintain unit balance.
- 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.
- Ensure rubber deflectors are in position and not damaged. Replace worn, broken, and missing sections immediately.
- 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. *OPS-B- 0029str*



⚠ DANGER

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. *(SFL-2) str*



⚠ 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-07str)*

OPERATION

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

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. Failure to follow these instructions can result in accidental movement of power unit, a crushing hazard, and result in death or serious injury.

Item	Condition at Start of Shift	Specific Comments if not OK
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 the boom		
The hydraulic cylinder 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 and tight		
There are no cracks or holes in the mower deck		
The hydraulic motor mounting bolts are tight		
The mower head spindle housing is tight		

Operator's Signature: _____

DO NOT OPERATE an UNSAFE TRACTOR or MOWER

OPERATION

OPERATION

TRACTOR PRE-OPERATION INSPECTION



Tractor ID# _____ Make: _____

Date: _____ Shaft: _____



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

Item	Condition at Start of Shift	Specific Comments if not OK
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 MOWER

This Inspection Form may be freely duplicated for extra copies.

OPERATION

7.CUTTING COMPONENT INSPECTION

Inspect blade pan and blade assembly for the following:

Notches and Gouges

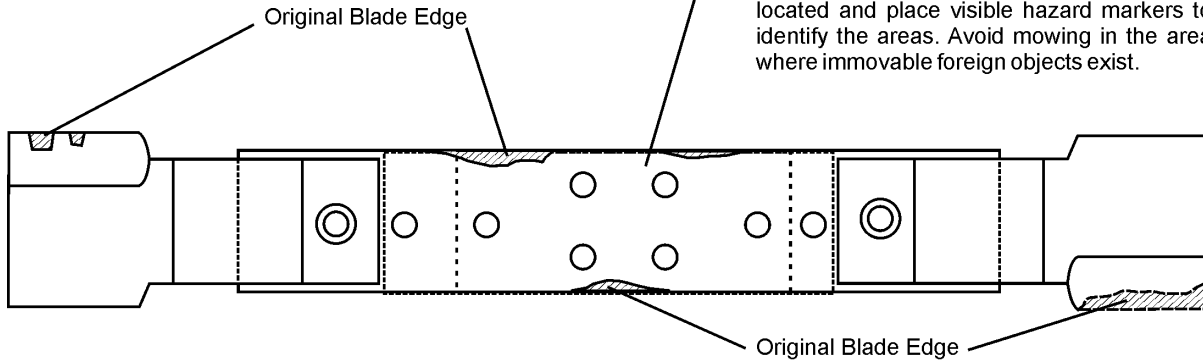
Cause: Blade contacting foreign objects

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

Damaged Blade Bar

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

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



Excessive Blade Wear

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

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

Ops-1243

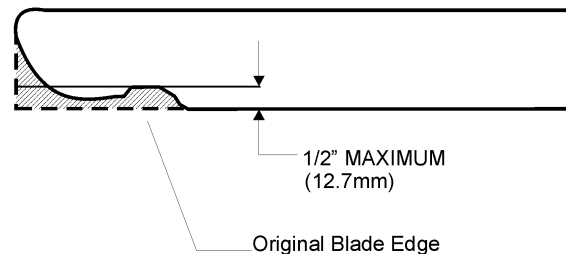
OPS-B-0062 str



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

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

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



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

Op-23

OPERATION

OPERATION

7.1 Blade Bolt Inspection

Inspect Blade Bolt Head daily for wear as followed:

Excessive Blade Bolt Wear

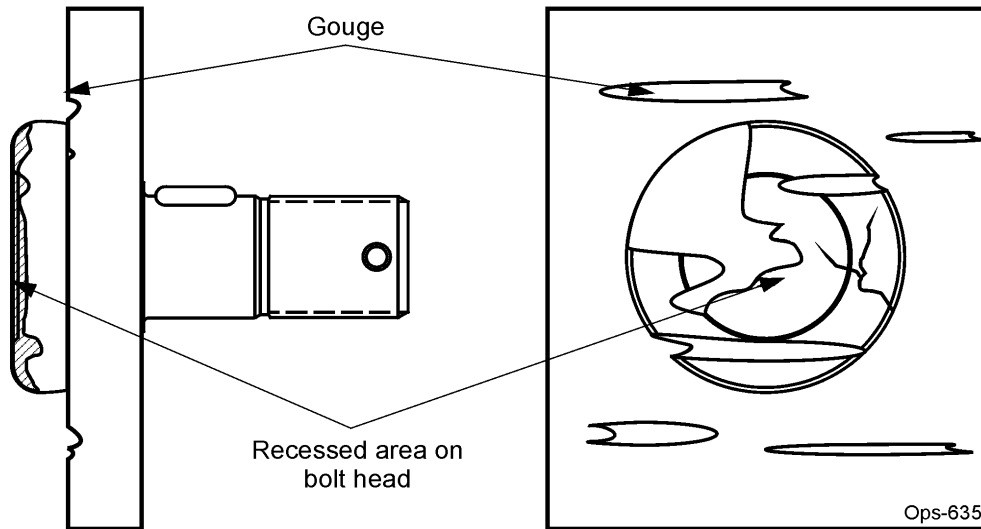
Cause: Blade Bolt contacts a foreign or solid object while Blade is in motion.

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

Notches and Gouges

Cause: Blade Bolt contacting foreign objects.

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



DANGER

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

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

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

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

OPERATION

8. OPERATING THE BOOM JOYSTICK CONTROL

Positioning the boom is performed with electronic valves controlled by the operator using a single joystick. The joystick controls six standard operations: Swing, Lift, Dipper, Head, Tilt, Door and Head Swivel. Of these six operations, the Swing, Lift, and Dipper functions are *proportional*; that is, when the joystick is moved a small amount, the cylinder moves slowly and as the joystick continues to be moved, the cylinder continually becomes faster. This allows very precise positioning of the boom. Using a single joystick, many of the functions can be operated simultaneously such as the Lift and Dipper for even greater speed at positioning of the boom.

For safe and efficient boom mower operation, it is critical that the operator be experienced and feel confident in using the joystick control to position the boom. New operators should allowed ample time to practice using the joystick in an open area before entering the worksite. Before attempting to operate this equipment, read these instructions completely. If you have any questions concerning safety of operation, contact your dealer or ALAMO INDUSTRIAL.

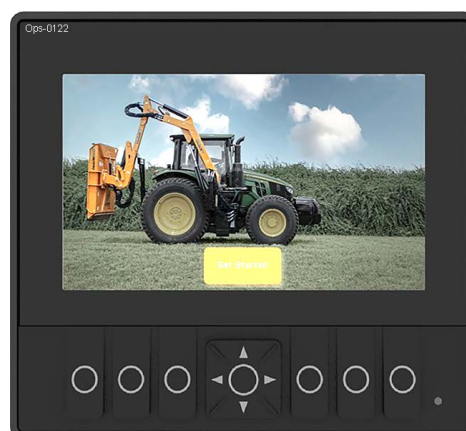
Each joystick control and responding boom action is covered in detail on the following pages. Read each explanation carefully then practice in a safe, level area, CLEAR of all people, animals, and any obstructions. As always, use extreme caution when using this machine.

Practice performing multiple functions simultaneously. With some practice, the joystick will become very easy to operate and will feel almost as it were an extension of your arm.

With the exception of the relief valves, which are preset at the factory, these are all the controls for operating the machine other than the controls on the tractor itself.

Master Switch

Operating any joystick function requires that the joystick Master Switch be ON from the display. When ON the display screen will change to the operation screen and a joystick symbol with an "X" will appear. Turning OFF the joystick will change display back to the home screen as well as deactivating all joystick controls. When the tractor is started, the joystick defaults to the OFF state. OPS-B- 0030_Gstr



Operate the Tractor and/or Implement controls only while properly seated in the Tractor seat with the seat belt securely fastened around you. Inadvertent movement of the Tractor or Implement may cause death or serious injury. (SG-29)str

OPERATION

8.1 Mower Head Power

HEAD ENABLE button can be found on the display. After enabling the head, an ON - OFF button will appear. For safety purposed when starting the tractor, the cutting head will be DISABLED.

Starting

To Start the Motor on the Attached Head, Start the Tractor and enable the joystick.

Position the head in an area which is clear of any brush, grass, or any other obstruction. Press the HEAD ENABLE button on the display. Press and hold the MOTOR START button to start the mower.

Once the motor starts, release the button. The head symbol on the display will change and the MOWER ON indicator will illuminate. Bring the Tractor's engine speed up to the normal operating speed of 540 PTO.

Pressing the HEAD ENABLE button again or pressing the STOP button located on the joystick will stop the attached head motor

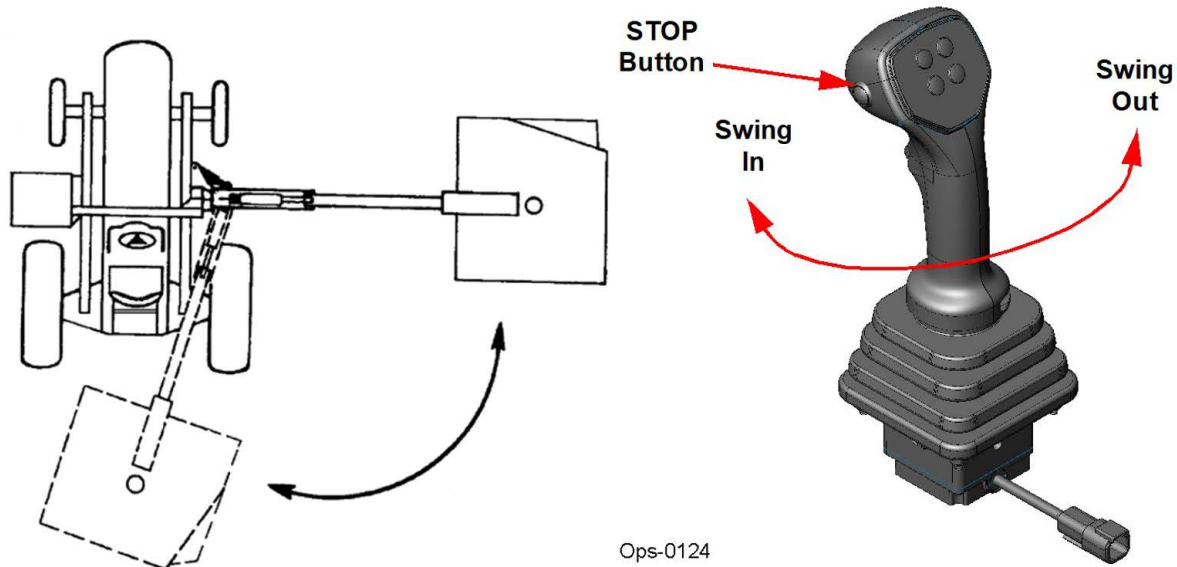
Stopping

To stop the motor on the mower head, lower the Tractor engine speed to idle and press the head ON - OFF button. The mower will come to a complete stop in approximately 7 seconds.



OPERATION

8.2 Swing



The twisting motion of the Joystick, actuates the SWING cylinders.

Twisting the Joystick Counterclockwise admits hydraulic fluid to the Butt End of the rear SWING cylinder, and the rod end of the front cylinder, causing the boom to swing out to the right side of the tractor (See Diagrams above).

When the Joystick is Released, the valve will automatically return to center, and the boom will be LOCKED in the current position.

Twisting the Joystick Clockwise admits hydraulic fluid to the swing cylinders in an opposite method causing the boom to swing back toward the rear of the tractor. If the Joystick is continually held in this position pull in , the boom will continue to the left side of the tractor.

Again, if the Joystick is released, the valve will automatically return to center and the boom will be LOCKED in the current position.

BOOM SAFETY VALVE - If a rigid object (guard rail post, tree, etc.) is struck by the extended boom while the tractor is moving forward, the boom safety valve will allow the boom to swing rearward, and minimize the possibility of damage.

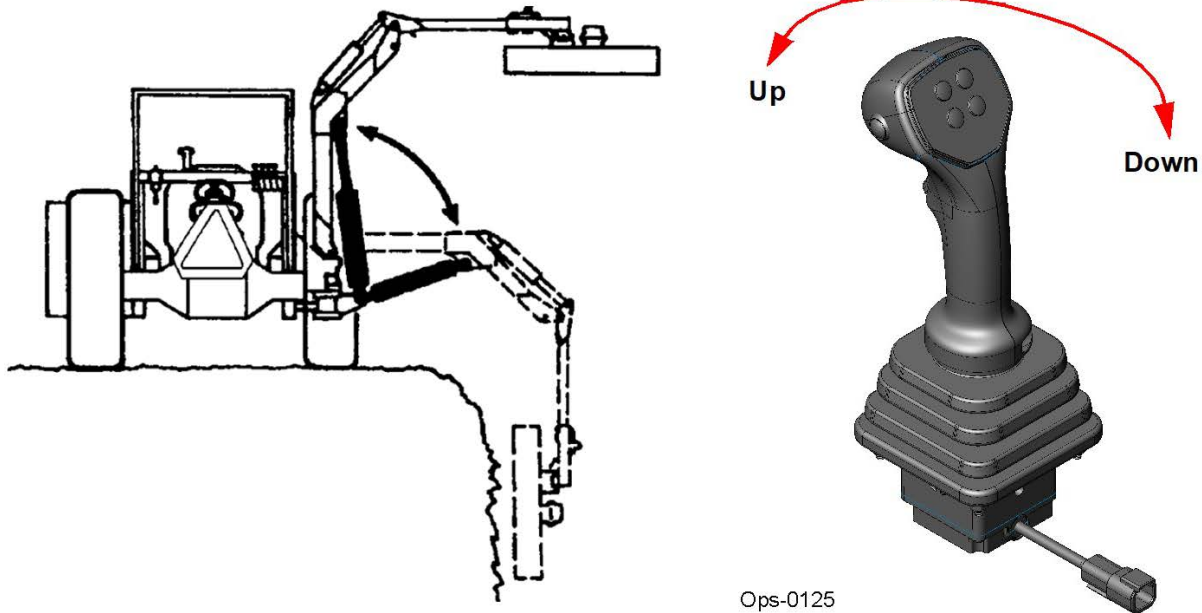
NOTICE: Mower heads are not designed to cut in reverse. OPS-B- 0032_A str



DANGER Make certain that the Boom swing path is clear of bystanders, powerlines, and obstructions to prevent injury, electrocution, and possible machine damage. Swing Boom SLOWLY AND CAREFULLY. Avoid sudden starting and stopping. (Ops-0002-MISC)str

OPERATION

8.3 Lift



The forward and back movement of the Joystick actuates the LIFT cylinder. Pulling the Joystick toward the operator causes the boom LIFT cylinder to lift the boom arm up. Pushing the Joystick forward causes the LIFT cylinder to lower the Boom. If the Joystick is released, the Boom will LOCK in the position and the Joystick will return to the center position. OPS-B- 0033_Astr

DANGER

Make certain that you do not lift the head in such a fashion that you lift the left rear wheel off the ground. Install weight as needed to keep at least 1500 lbs. on the ground under left rear wheel. (Ops-0003-MISC)str



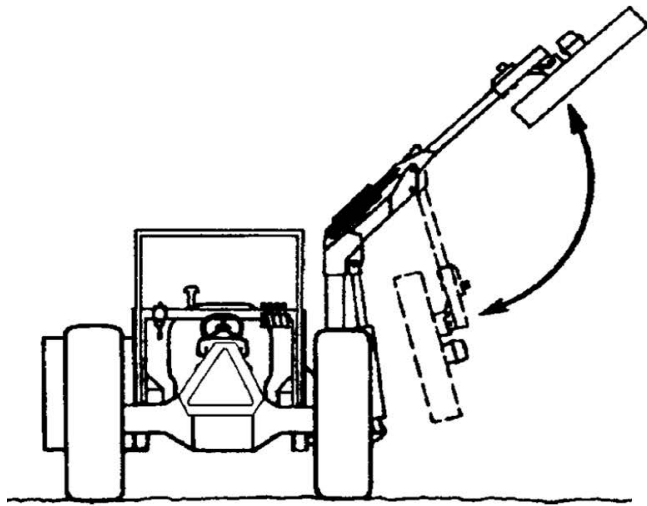
WARNING

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-4str)



OPERATION

8.4 Dipper



The Left and Right movement of the Joystick actuates the DIPPER cylinder.

Pushing the Joystick lever to the RIGHT causes the boom DIPPER cylinder to LIFT the small boom UP.

If the Joystick is released, the valve will automatically return to center, and the boom will be LOCKED in position.

Pushing the Joystick to the LEFT will lower the boom.

Again, if the Joystick is released, the valve will automatically return to center and the boom will be LOCKED in the current place. OPS-B- 0034_Astr



Make certain that you do not lift the head in such a fashion that you lift the left rear wheel off the ground. Install weight as needed to keep at least 1500 lbs. on the ground under left rear wheel. (Ops-0003-MISC)str

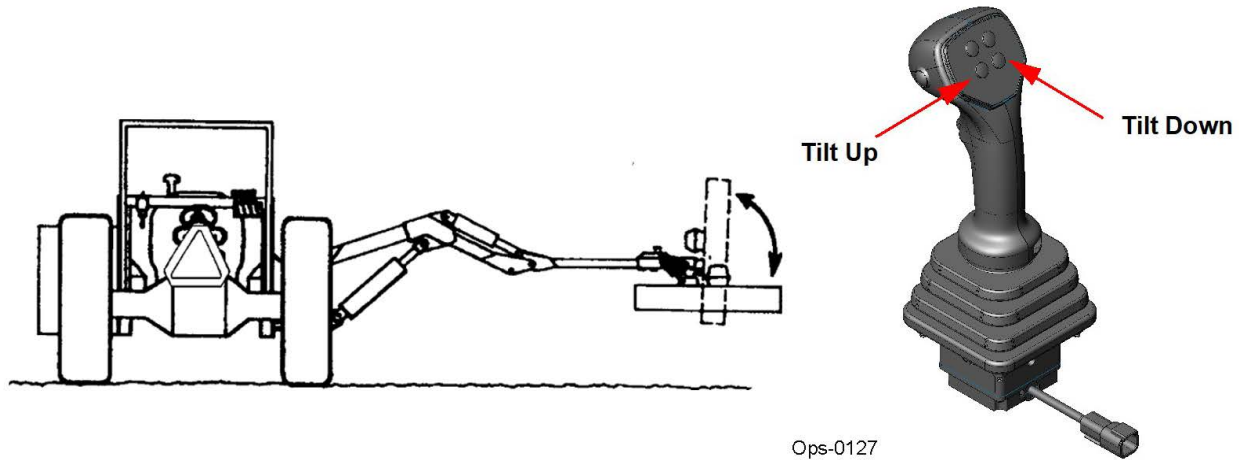


Make certain that the Boom swing path is clear of bystanders, powerlines, and obstructions to prevent injury, electrocution, and possible machine damage. Swing Boom SLOWLY AND CAREFULLY. Avoid sudden starting and stopping. (Ops-0002-MISC)str

OPERATION

OPERATION

8.5 Tilt



The two lower thumb buttons (Red Buttons) on the panel at the top of the joystick activates the TILT cylinder.

Pressing the left button will cause the head to tilt up.

Pressing the right button will cause the head to tilt down.

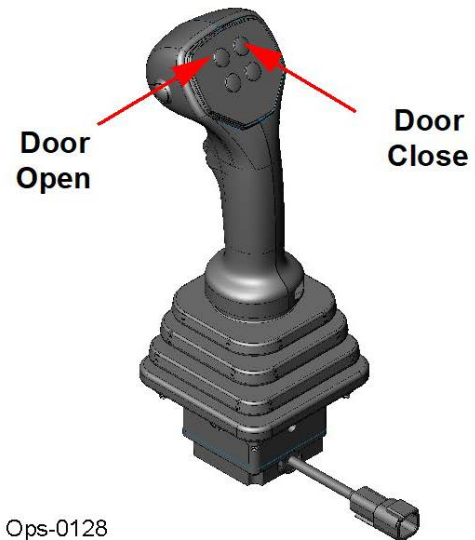
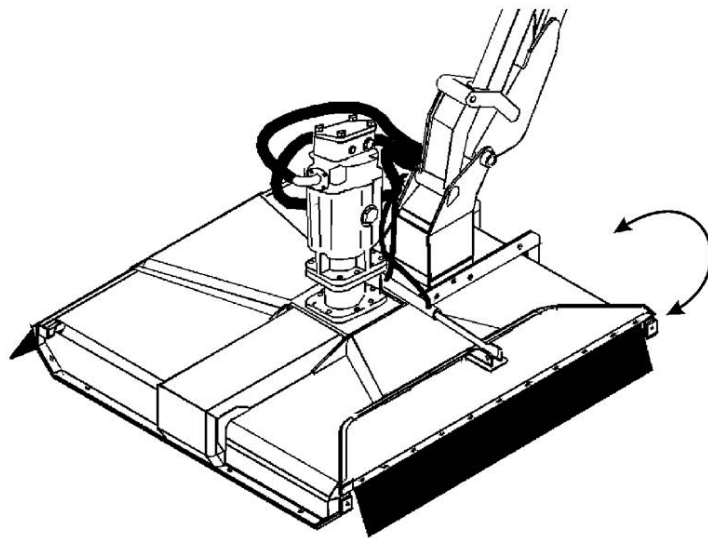
When the Joystick's Thumb lever is released, the thumb lever will return to the center position and lock the head in the current position. *OPS-B- 0035_Dstr*

DANGER

Make certain that you do not lift the head in such a fashion that you lift the left rear wheel off the ground. Install weight as needed to keep at least 1500 lbs. on the ground under left rear wheel. *(Ops-0003-MISC)str*

OPERATION

8.6 Door



Ops-0128

The two upper thumb buttons on the panel at the top of the joystick actuates the door cylinders
Pushing the left button opens the door.

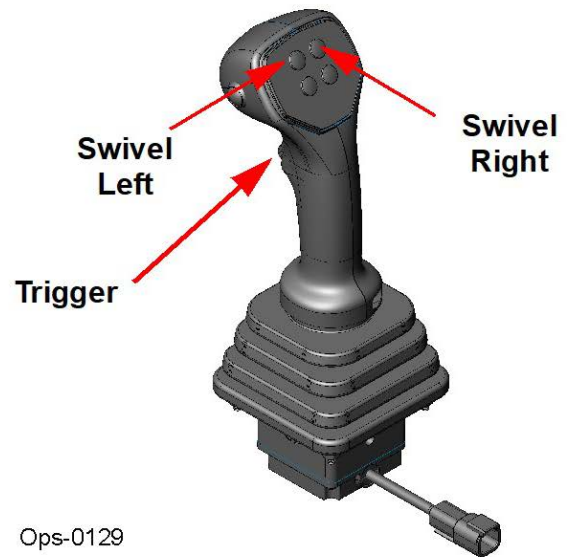
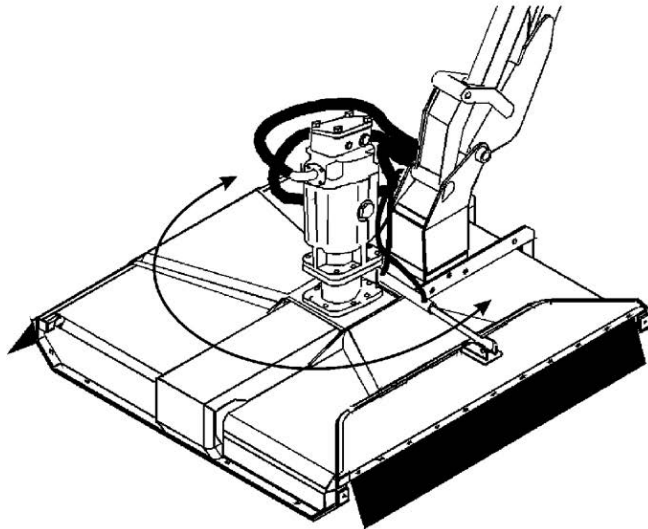
Pushing the right button closes the door.

When the buttons are released, the door will lock in current position.

OPS-B-0038_Cstr

OPERATION

8.7 Optional Head Swivel



Ops-0129

The Diverter Valve uses Door Buttons and a Trigger on the joystick to swivel head.

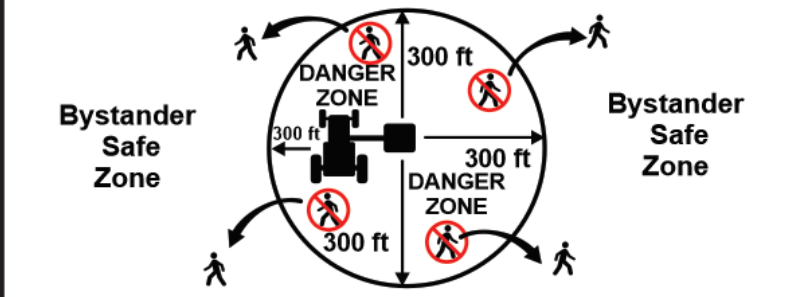
Pushing Left Button and Trigger swivels head clockwise.

Pushing Right Button and Trigger swivels head counter-clockwise.

OPERATION

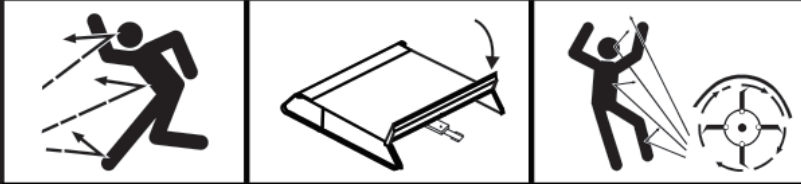
OPERATION

! DANGER



Bystander Safe Zone

Bystander Safe Zone



THROWN OBJECTS HAZARD

Mower can throw objects up to 300 feet. TO AVOID DEATH OR SERIOUS INJURY 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. Close door immediately after.
- DO NOT operate with door removed.
- KEEP door in place and in good condition during operation.
- Deflectors are SUBJECT TO WEAR. Replace if worn or damaged.
- ALWAYS transport with door closed.

D622

ENTANGLEMENT HAZARD



- 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.
- STOP, LOOK and LISTEN for rotating motion before approaching implement.

OPERATION

9.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. OPS-B- 0005_TKstr



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)str

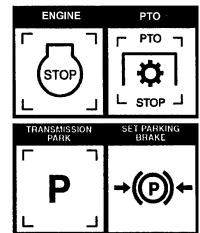


Always maintain the safety signs in good readable condition. If the safety signs are missing, damaged, or unreadable, obtain and install replacement safety signs immediately. (SG-5)str



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)str



OPERATION

⚠ WARNING

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

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

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

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

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

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



OPERATION

9.1 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-0033str

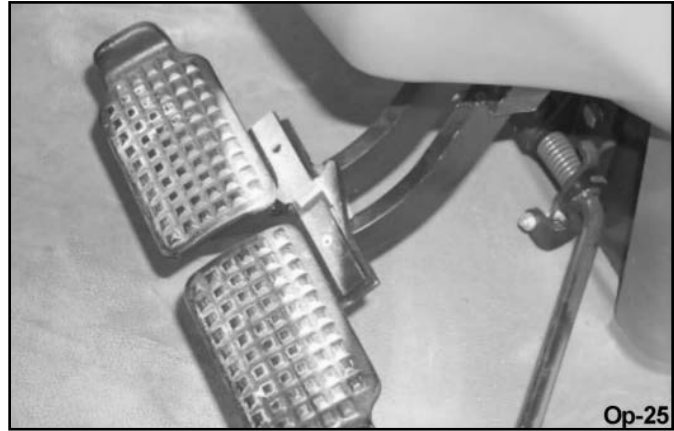


OPERATION

9.2 Brake and Differential 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 operating conditions, locking the differential provides no benefit and should not be used.



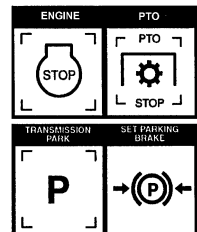
WARNING

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. *OPS-U- 0013 str*

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)str



OPERATION

9.3 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_Hstr



Ops-1505



Ops-1506

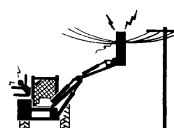
WARNING

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-4str)



DANGER

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-7W)str



OPERATION

OPERATION

10. OPERATING THE BOOM UNIT AND ATTACHED HEAD

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

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

Only operate the mower head from the tractor operator's seat with the seatbelt securely fastened. Only operate a boom and equipped head on cabbed tractor that is equipped with a polycarbonate safety-protected right side window or a non-cabbed tractor equipped with a ROPS and operator safety screen.

Avoid operating in the reverse direction when possible. In situations where the boom and mower must be backed to access areas to be cut, make sure there are no persons or other foreign debris behind the tractor. When backing, operate the tractor at a much reduced ground speed to ensure complete control of the unit is maintained. *OPS-B- 0007str*



WARNING

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



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 100 feet (30 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 types of items discontinue mowing. *(SGM-1) str*



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) str*



WARNING

Never operate the mower head tilted down where the operator can see the blades of the mower. The blade could throw an object toward the operator causing serious injury or death. Never operate the mower without an Operator Protective Structure. Always wear safety glasses and a hard hat. *(Ops-0005-MISC str)*

OPERATION

10.1 Foreign Debris Hazards/Overhead Obstructions

An area to be cut must first be inspected for objects that could be thrown or that could damage the machine. Walk through the area looking for fences, boulders, rocks, culverts, stumps or metal objects. Mark the inspected area with flags. If the area is dense and cannot be walked thoroughly it may be necessary to inspect a smaller area as well as possible, then trim away the part that has been inspected and can safely be removed. Walk each new area again and repeat the inspection before cutting more away. Repeat as often as necessary until the area is cleared. It can be damaging and/or dangerous to work the cutter in an area that has not been visually inspected.

Place DANGER signs at least 300 feet beyond the perimeter of the area to be worked, not just 300 feet from where the machine started operating! It is convenient in many cases to work in 300 foot sections. Move the first Danger sign to the beginning of the freshly cleared area, place it, then take the first cutting area flag up to the end of the freshly cleared area 300 feet away. Walk and inspect the next 300 feet and place the second cutting area flag. Pick up the second DANGER sign, and take it a further 300 feet along the road or trail. Note that in many cases the DANGER area will extend in front of and behind the machine as well as along each side. Post signs accordingly. *OPS-B- 0008str*



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



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



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)str*

OPERATION

10.2 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- 0009str

⚠ WARNING

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

10.3 Operating the Attached Mower Heads

The boom can attach to and operate multiple heads one at a time for a wide range of vegetation control applications. The attached heads are designed for different applications. The head should be selected based on the mowing application and the location that the unit is being operated.

Refer to the Assembly manual to ensure the head is properly attached to the boom hitch and hydraulic lines are properly connected. OPS-B- 0010str

⚠ 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 ensure 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)str



OPERATION

Rotary Cutter

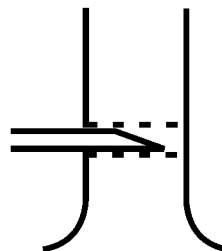
- The Rotary Cutting Head is rated to cut vegetation up to 5" in diameter.
- Objects tend to be thrown out from under the head in the direction of blade rotation and toward the raised edge of the shroud. Avoid cutting with the head tilted at an angle that objects would be thrown towards the unit operator position.
- 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 a 100 yards. Debris tends to fly out at great speed and can injure or even cause death. OPS-B-0039_Astr



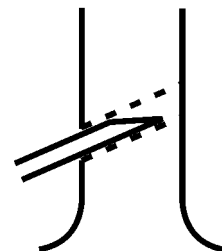
10.4 Operational Instruction

When cutting trees and brush approach material to be cut with the head perpendicular to material. The cutting edge of the blades should be the only elements in contact with material. The blade bar should not contact with material. The mower head and blades should be moved perpendicularly into the material rather lowering the mower head on top of material. If the blade bar edges are gouged or rounded from wear, the mower head is being used incorrectly in an abusive manner. The blade bar is not intended to cut material or to be a wear item like the blades. Do Not allow the blades or blade bar to contact the ground, rocks or solid objects. Contact with the ground can result in rocks and solid objects being thrown out from under the mower head which can cause serious injuries to the operator and bystanders. This type of operation can lead to bent or broken blade bars, broken blade bolts and broken blade bar assembly bolts which can be dangerous to the operator and bystanders

CORRECT



INCORRECT



The cutter deck should be level with the ground to reduce the work required by the cutter and tractor to minimize equipment wear and damage.

Ops-1480

OPERATION

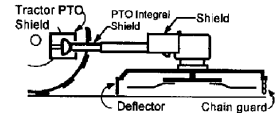
OPERATION

DANGER

The rotating parts of this machine have been designed and tested for rugged use. However, the blades could fail upon impact with heavy, solid objects such as metal guard rails and concrete structures. Such impact could cause the broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the cutting blades to contact such obstacles. (SGM-4)str

DANGER

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



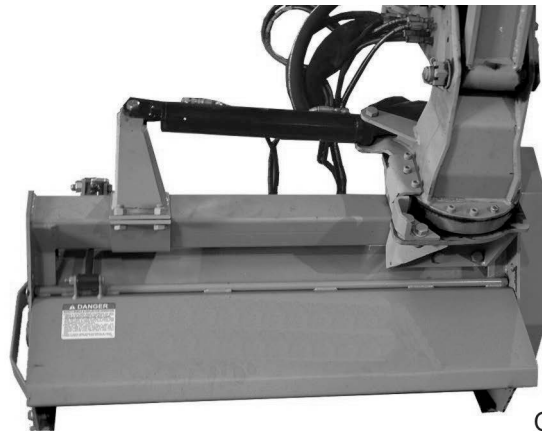
WARNING

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

(SGM-06) str

10.5 Flail Brush Cutter

- The Flail Brush Cutter is rated to cut material up to 4" in diameter.
 - Setting cutting height ranges from 3/4" to 6". Cutting height is set by adjusting the height of the roller assembly.
 - Remove roller assembly when cutting limbs and other large diameter vegetation (greater than 2") to prevent damaging 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- 0042



Op-80

WARNING

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

(SGM-06) str

OPERATION

⚠ DANGER

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. (SFL-2) str



⚠ DANGER

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.



OPERATION

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;
- Passersby are outside the existing thrown object zone;
- All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass, and general debris has been removed.

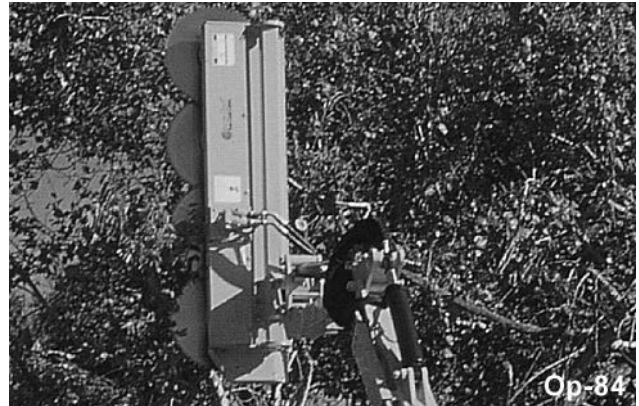
NOTE: Where there are grass and weeds high enough to hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height, inspected closely with any remaining debris being removed, and mowed again at desired final height. (This will also reduce power required to mow, reduce wear and tear on the Mower drivetrain, spread cut material better, eliminate streaking, and make the final cut more uniform). (SFL-6) str

OPERATION

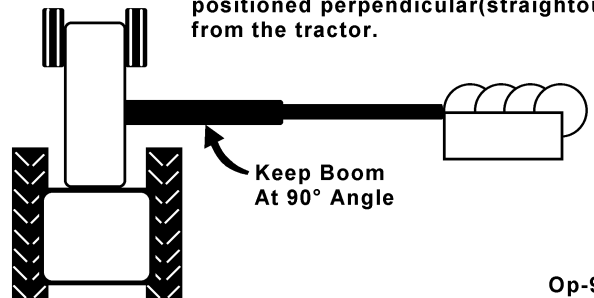
OPERATION

10.6 BuzzBar Tree Limb Cutter

- The BuzzBar Tree Limb Cutter is rated for material up to 6" in diameter.
 - Suggested cutting speed for the BuzzBar is 1st gear. Slow down for thick, dense, or hard material
 - Always cut with the boom positioned perpendicular to the limbs being cut (see diagram). Cutting with the boom swing backward or forward will cause the blades to warp from "raking" through the cut material.
 - For maximum blade life, do not allow the blades to contact hard items such as the ground or metal objects.
 - Check belt tension daily. If belts start to slip adjust tension soon. The more belt slippage, the more they will wear and looser they become.
 - Grease bearings of saw blade spindles daily.
 - Two pumps from hand grease gun.
 - When operating the unit be sure there are no bystanders or animals within 100 yards of the unit.
- OPS-B- 0043str

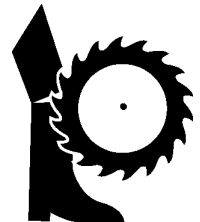


IMPORTANT! Always cut with boom positioned perpendicular(straightout) from the tractor.



DANGER

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. (SBM-24)



DANGER

The rotating parts of this machine have been designed and tested for rugged use. However, the blades could fail upon impact with heavy, solid objects such as metal guard rails and concrete structures. Such impact could cause the broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the cutting blades to contact such obstacles. (SGM-4)str

OPERATION

Timber Cat Sickle Bar Limb Cutter

- The Timber Cat Sickle Bar Limb Cutter is rated for material up to 4" in diameter.
- The Timber Cat is operated attached to the boom arm and is ideal for trimming populated areas where a smooth cut is required.
- When operating the Timber Cat correctly the limbs fall straight down for easy disposal and clean-up.
- When operating the unit be sure there are no bystanders or animals within 100 yards of the unit. OPS-B- 0044str



Ditcher

- The Ditcher is designed to remove both debris and dirt from ditches.
- When operating, the Ditcher can reach from up to 12', and has a cutting width of 22".
- When operated in reverse rotation the spoil is deposited between the tractor and ditcher. When operated in forward rotation the spoil is deposited away from the tractor.

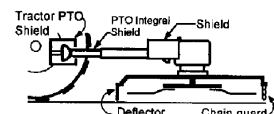
NOTE: Creeper Gear Is Recommended! Operating with out Creeper Gear on tractor (1/4 mph) will not allow ditcher time to cut. OPS-B- 0045str



The rotating parts of this machine have been designed and tested for rugged use. However, the blades could fail upon impact with heavy, solid objects such as metal guard rails and concrete structures. Such impact could cause the broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the cutting blades to contact such obstacles. (SGM-4)str



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



OPERATION

⚠ WARNING

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

(SGM-06) str

10.7 Shutting Down the Attached Head

The cutterhead can be disengaged from the joystick or from the display screen.

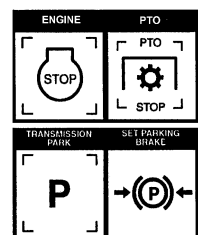
To shut down attached mower head, first bring the tractor to a complete stop. Decrease engine RPM to idle then disengage cutterhead. The mower head will come to a complete stop within a suitable amount of time. Do not engage or disengage the cutterheads at a high RPM unless there is an emergency situation.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



⚠ 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)str



OPERATION

11. 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.
- Remove the mower head from the travel position and store the head flat on the ground next to the tractor.
- 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_1str

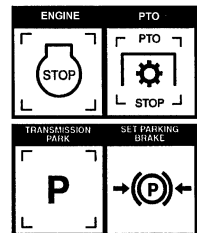


Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be killed or injured. Inadvertent contact with controls can cause the Implement to shift or fall crushing themselves or others. (SG-25) str



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)str



Perform service, repairs and lubrication according to the maintenance section. Ensure the unit is properly lubricated as specified in the lubrication schedule and all bolts and nuts are properly torqued. Failure to properly service, repair and maintain this Implement in good operating condition could cause component failure and possible serious injury or even death.

(SG-35str)

OPERATION

OPERATION

12.TRANSPORTING THE TRACTOR AND IMPLEMENT

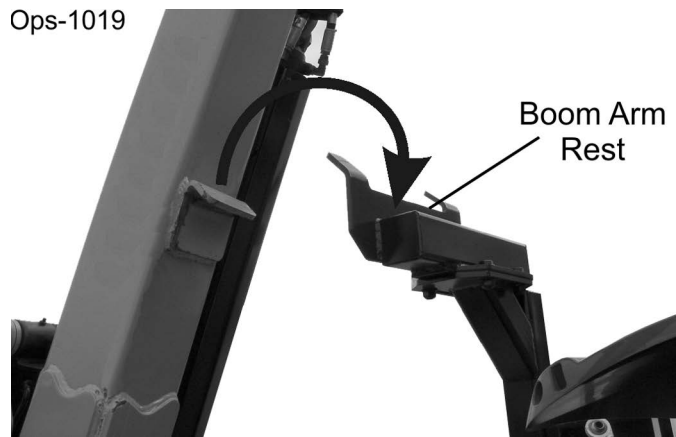
Inherent hazards of operating the tractor and implement and the possibility of accidents are not left behind when you finish working in an area. Therefore, the operator must employ good judgment and safe operation practices when transporting the tractor and implement between locations. By using good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

12.1 Placing Boom Arm on Boom Arm Rest

Before transporting tractor between locations, idle the tractor engine, disengage the attached head, and wait for all head motion to come to a complete stop. Place the boom in its storage cradle rest support and then turn the joystick master switch to the OFF position.

- Placing Boom Articulating Arm on Boom Arm Rest
- Extend the dipper section approximately half way out.
- Bring the Lift to its full height and carefully swing the boom back until it is just positioned over the Boom Rest. NOTE: There is a formed "V" plate on the boom arm that fits onto the boom arm rest.
- Lower the boom arm until this "V" rests on the Boom Rest.
- Place the Master Switch in to the OFF position.

Ops-1019



The boom is now in the transport position. To remove the boom from the Boom Rest, pull the Lift back and raise the boom about 6 inches. Then Swing the boom around to the desired position.

OPS-B- 0013_Bstr



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



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 str*



Op-25

OPERATION

12.2 Transporting on Public Roadways

Extreme caution should be used when transporting the tractor and mower on public roadways. The tractor must be equipped with all required safety warning features including a SMV emblem and flashing warning lights to alert drivers of the tractor's presence. Remember that roadways are primarily designed for automotive drivers and most drivers will not be looking out for you, therefore, you must look out for them. Check your side view mirrors frequently and remember that vehicles will approach quickly because of the tractor's slower speed. Be extremely cautious when the piece of equipment that you are driving, is wider than the tractor tire width and/or extends beyond your lane of the road. *OPS-B- 0014str*

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- 0020str*



Before proceeding on to public roads make sure your boom arm is resting properly on boom rest and the implements head is properly positioned so that the operator, tractor flashing warning lights and SMV are not being obscured from other motorists on the road. Also make sure there is enough clearance between cutting head and rear tractor tire. Refer to images Ops-1210 and Ops-1217.



OPERATION

OPERATION

Make sure that all of the tractor's 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 have only been 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-0015str*

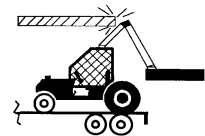


When operating on public roads, have consideration for other road users. Pull to the side of the road occasionally to allow all following traffic to pass. Do not exceed the legal speed limit set in your state or municipality for agricultural tractors. Always stay alert when transporting the tractor and mower on public roads. Especially in busy cities, the boom extends to right farther than the tractor's 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-0016str*



⚠ 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)str



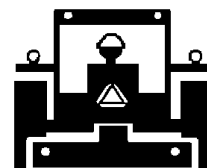
⚠ DANGER

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



⚠ WARNING

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



OPERATION

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



12.3 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_TKstr*



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 str*



OPERATION

13. TROUBLESHOOTING GUIDE

Problem	Possible Cause	Remedy
Boom Breaks Back Too Easily	Work port relief malfunction or failure.	Test to confirm, adjust or replace as needed.
	Swing cylinder failure.	Test to confirm, rebuild or replace as needed.
	Cutting head "plowing" in ground.	Operator error, operator training.
	Operator traveling too fast.	Operator error, operator training.
Boom Drops When Two Functions Actuated	Low oil level on boom function system.	Fill oil and bleed system of air.
	Failed one-way flow restrictor in valve.	(Gravity aided functions only). Confirm and replace.
	Defective or damaged controller.	Repair or replace as needed.
	Incorrect hose size to cylinder(s).	Replace with proper OEM part.
	Defective or damaged joystick controller.	Repair or replace as required.
Boom Moves on its Own (Under power w/ no function actuated) Electronic Joystick Models	Solenoid valves stuck due to contamination.	Repair or replace as required. Flush and fill hydraulic system.
	Failed o-ring on solenoid valves.	Replace o-ring with proper replacement part.
	Improper wiring.	Confirm and repair.
	Defective or damaged control module(s).	Replace the modules.
	Defective or damaged joystick.	Repair or replace as required.
Boom Moves on Its Own (Under power w/ no function actuated) Mechanical Joysticks w/ Cables	Connection at valve damaged or failed.	Repair or replace as required
	Solenoid valves stuck due to contamination.	Repair or replace as required. Flush and fill hydraulic system.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
Cylinder Excessive Drift	May be normal operation.	Check allowable drift rates in service manual.
	Cylinder piston seals bypass.	Test to confirm and repair or replace.
	Damaged or defective work port relief valves.	Check relief pressures. Repair or replace as required.
	Oil contamination.	May be root cause of any internal leakage. Test oil and replace as required.
	Related to issues described in previous section: Boom moves under its own power.	Review the previous section.
Cylinder Leaks at Fittings	Loose fittings.	Check for cracks and retighten.
	Wrong fittings installed.	Replace with correct fittings.
	Damaged or defective fitting (cracked).	Due to over tightening, replace hose or fitting.
	Fitting port cracked.	Repair or replace cylinder or port.
Cylinder Leaks at Rod	Faulty seals on cylinder gland.	Disassemble and replace.
	Damaged cylinder rods.	Clean or replace the rod as required.
	Cylinder rods bent.	Determine cause of overload. Replace the rod.
Cylinder Moves Wrong Way (Not the function that was actuated)	Incorrect hose routing.	Check hose diagram in the service manual and route the hoses correctly.
	Wire harness improperly installed.	Confirm incorrect placement and re-attach the harness connectors as needed.
	Operator perception of correct operation is incorrect.	Consult the operator's manual for correct operation and communicate with the operator.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
Cylinder Moves Intermittent (all functions)	Cylinder control pump failure (all functions affected).	Test pump to confirm. Rebuild or replace as required.
	Load sense signal not reaching the pump.	Check valve pilot pressure and load sense check valves.
	Low or improper oil in hydraulic system.	Replace or fill as required.
	Contamination of oil causing restricted flow in the valve.	Replace oil, and clean components.
	No voltage to joystick controller.	Check fuses, wires, etc. and repair as required.
	Faulty joystick controller.	Test then replace or repair as required.
Cylinder Movement Spongy or Jerky	Air in oil.	Identify the source of the air. Replace oil if required, or cycle the cylinder 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 40° 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.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
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.
	Bad control module.	Replace the module.
	Incorrect work port relief installed.	Check for proper hose routing in the service manual and correctly install.
	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. Air in oil.	Test to confirm, repair or replace as required. Locate the source of the air and repair. Flush and fill oil as required.
	Engine RPM too slow.	2000 RPM is the rated 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 training, Excessive loading of boom components.
	Work port relief improper interference with another component.	Check for proper setting. Replace as needed. Operator training or components interfering with boom movement.
Cylinder Rod Came Out of Cylinder	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.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
Deck Cracks	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.
	Mowing over sand or rocks.	Operator training.
Deck Worn On Underside (Cutting Head Only)	Abusive operation, mowing heavy debris.	Operator training.
	Normal operational wear.	Normal wear over time can result in cracks or damage. Check deflectors and guards. Replace as required.
Hydraulic System Noise (Squeal)	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.
	Excessive engine RPM.	Engine RPM should not exceed 2000 speed as indicated on the tractor tachometer.
Hydraulic System Overheating	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 training.
Boom Breaks Back Too Easily	Cutting head "plowing" in ground.	Operator error, operator training.
	Operator traveling too fast.	Operator error, operator training.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
Motor Inoperative (Won't Run)	Low oil level or no oil.	Fill or replace as required.
	Improper oil used.	flush and replace the oil.
	Solenoid valve failure or o-ring failure at the solenoid valve.	Remove the solenoid valve and inspect. Replace as required
	No voltage to solenoid valve.	Check harness connections, fuses and wires.
	Solenoid valve.	Timbercat harness plug used in place of other mower plug. Reconnect with proper plug.
	Spindle locked up.	Check by spinning blades. See section on spindle failures
Motor Overheating	Oil level too low.	Fill or replace as required
	Incorrect oil used.	Flush and fill as required
	Air in oil.	Locate the source and repair. Flush and fill the oil as required.
	Engine RPM too high.	Tractor must be operated at the 540 PTO speed as indicated on the tachometer.
	Excessive ground speed for mowing conditions.	Operator abuse.
	Excessive ground contact with blades.	Operator abuse.
	Internal leakage in pump or motor.	Test to confirm. Repair or replace as required.
	Relief valve malfunction.	Test relief valve setting. Adjust or replace as required.
	Restrictions in the system.	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.	Due to bent fittings or crimped hoses. Inspect the system and repair as required.
	Incorrect oil used.	Replace with correct oil. Flush and fill.
	Shaft seal worn.	Due to heat from the spindle or failure of spindle components. Check spindle section.
	Failed seal retainer.	Manufacturing defect. Consult customer service for proper repair or replacement.
	Defective motor flange casting.	Manufacturing defect. Consult customer service for proper repair or replacement.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
Motor Runs Too Slow (or Slows Down Under Load)	Engine RPM too slow.	Tractor must be operated at the 540 PTO speed as indicated on the tachometer.
Motor Stops (Stops under Load)	Pump drive damaged.	Check drive shaft attachment to the tractor.
	Logic valve o-ring failure (gear systems).	Remove logic valves and inspect seals. Replace as required.
	Damaged o-ring on solenoid valve.	Remove solenoid valve. Replace seals as required.
	Pump worn or defective.	Test to confirm, Repair or replace as required.
	Motor damaged or defective.	Confirm pump is working correctly, Check that spindle is not locking up. Replace or repair the motor as required.
	Incorrect oil in system.	Flush and fill with proper oil per the specifications.
	Air in the oil.	Locate the source of the air intake and fix. Flush and fill the oil as required.
	Excessive ground speed for mowing conditions.	Operator abuse.
	Excessive internal leakage in pump/motor.	Confirm with pressure/flow test and replace or repair as required.
	Low relief valve setting.	Check the setting using a pressure/flow meter with a restrictor valve. Adjust or replace as needed.
	Restrictions in the system.	Identified by a concentration of heat due to crimped hydraulic line, relief valve failure or contamination.
Pump Seizure (Pump Locks Up)	Lack of oil.	Repair or replace the pump or motor. Fill the oil to the correct level and check for leaks.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
Pump Wear (Rapid Excessive Wear)	Inadequate or lack of pump prime during initial start up.	Pumps must be properly primed prior to initial startup. Consult the technical service manual or contact customer service for proper procedures.
	Improper assembly.	Pump may have been reassembled incorrectly by the dealer following a prior failure. Rebuild or replace.
	Contamination.	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.
	Defective pump.	Confirm defect with customer service and replace.
Spindle Leaking At Motor	Due to motor seal failure (hydraulic oil leak).	See section on motor seal failure and repair as needed.
	Motor Loose or bolts missing.	Bolts should be checked every 8 hrs. Loss of torque will result in seal failure and leakage.
	Gasket torn due to movement of motor on spindle flange.	See above.
	Excessive back pressure in spindle.	Remove the spindle vent plug and check for clogs or contamination.
Spindle Leaking Around Bottom Seal	Seal damaged due to debris.	Replace as required. Check for damaged or missing seal guard.
	Bearings loose.	Disassemble the spindle and inspect the bearings for damage. Re-assemble and properly pre-load the bearings based on the technical service manual.
	Seal blown out due to excessive back pressure.	Remove the spindle vent plug and check for clogs or contamination.
Spindle Leaking at Relief Vent	Low grease level in the spindle.	Fill lubricant until it can be seen in the top most (vent plug) hole.
	Excessive bearing preload.	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 are 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.

OPERATION

OPERATION

Problem	Possible Cause	Remedy
Spindle Shaft Loose or Falls Out	Bearing pre-load adjusting nut and/or lock nut failure.	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.
	Bearing cups or cones not installed properly.	Disassemble and check for wear. Follow reassembly procedures indicated in the technical service manual.
	Severe upper bearing failure.	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.
Spindle Locks Up (Seizes and Won't Turn)	Loss of lubrication in spindle.	Indicated by catastrophic failure of the upper bearing. See the previous section.
	Excessive bearing pre-load.	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 manufacturer's recommendation.
	Tractor issues.	Follow tractor manufacturer recommendations for troubleshooting electrical problems with the tractor.

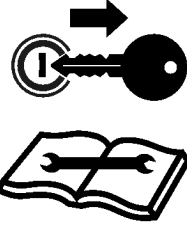
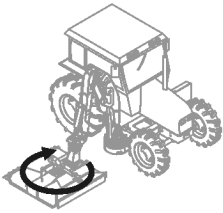
MAINTENANCE SECTION

Maintenance Section 4-1

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

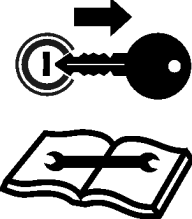
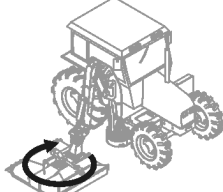
WARNING AVOID DEATH OR SERIOUS INJURY FROM COMPONENT FAILURE BY KEEPING IMPLEMENT IN GOOD OPERATING CONDITION BY PERFORMING PROPER SERVICE, REPAIRS AND MAINTENANCE.

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 (with side shields marked to comply with ANSI Z87), 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 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. *PN HMBM-01*

MAINTENANCE

HAZARDS WITH MAINTENANCE OF IMPLEMENT (continued)

				
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

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 pre-load. 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.

⚠ WARNING Cancer and Reproductive Harm www.P65Warnings.ca.gov. PN HMBM-01 (2) str

MAINTENANCE

PARTS INFORMATION

Alamo Industrial 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 Alamo Industrial specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce mower performance, void mower warranties, and present a safety hazard. Use genuine Alamo Industrial mower parts for economy and safety. (SPAM-1str)

See Your Alamo Dealer

LUBRICATION INFORMATION

Before operating your Implement, take the time to inspect and repair any damage to the machine or tractor. Only a minimum of time and effort is required to regularly maintain this machine to provide long life and trouble free operation.

BOOM ARM

Your Boom uses greased bushings that need lubrication, and with proper lubrication should last the lifetime of the machine.

MOWER HEAD

The Spindle Housing on the Mower head should be serviced daily (every eight hours of operation) to achieve the best operation and the longest life. Fill with NLGI EP#2 Grease.

DRIVELINE

The driveline powering the hydraulic system may have a universal joint at each end. Check you tractor and locate the grease points on the driveline that is connected from the front engine pulley to the front mounted pump. Grease weekly

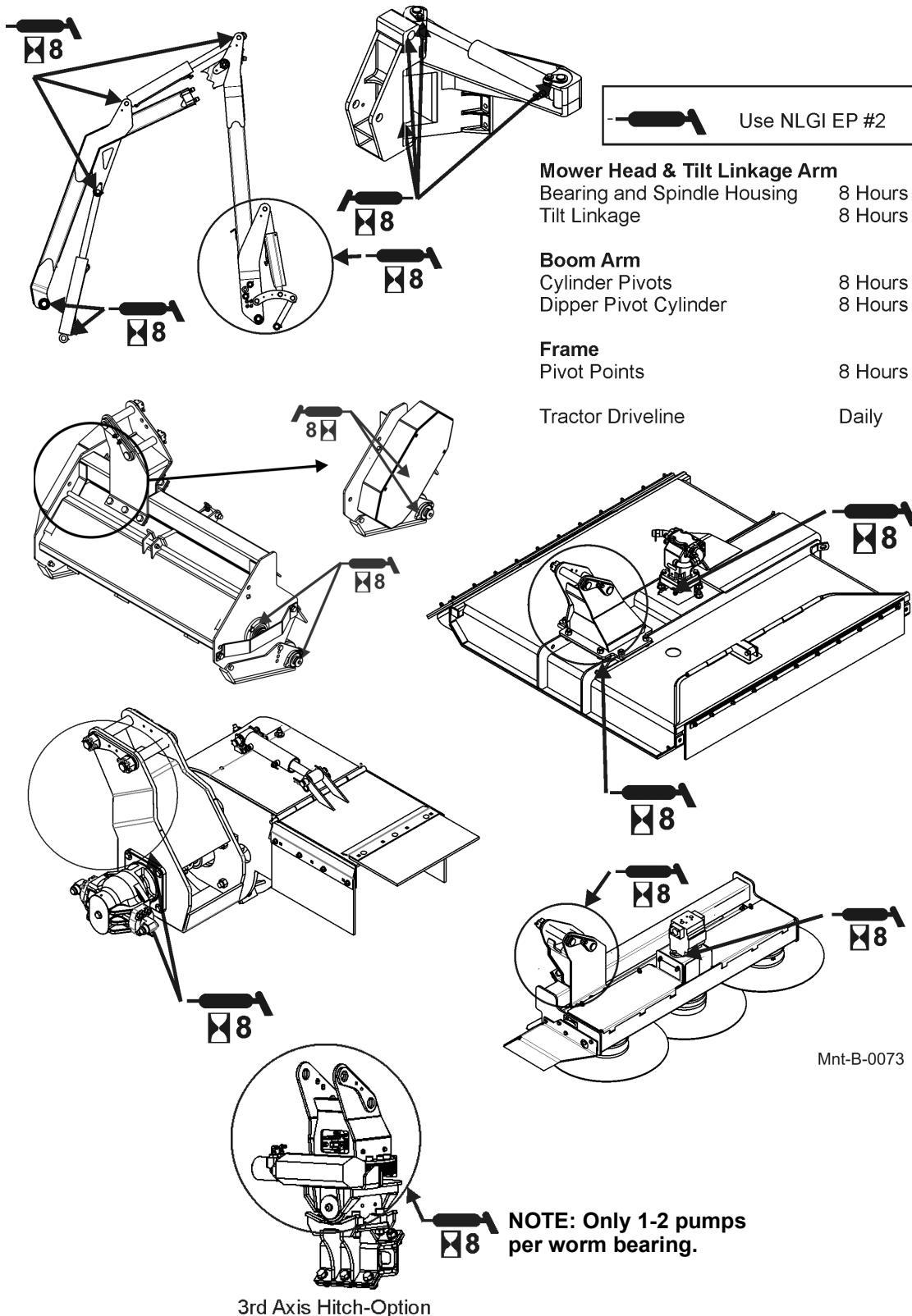
⚠ WARNING

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) str



MAINTENANCE

MAINTENANCE



MAINTENANCE

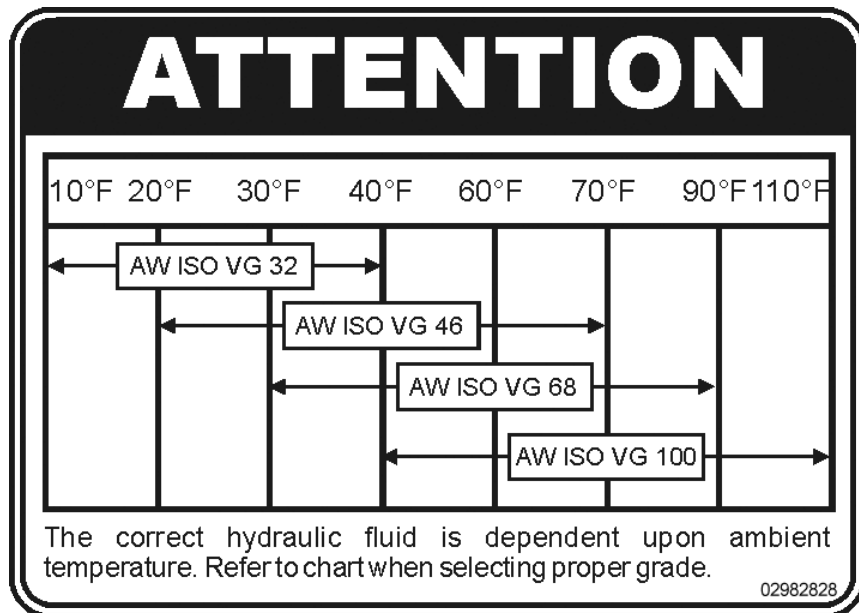
HYDRAULIC FLUID

Maintaining the proper hydraulic oil level and oil cleanliness is very important for continued trouble-free operation of the mower. The fluid level should be checked daily before the mower is put into service. A visual inspection of the hydraulic connections, hose guards and shielding should occur daily as well. The hydraulic fluid can lose its ability to lubricate in a number of different ways, most commonly contamination and overheating. Both scenarios can lead to catastrophic failure of the hydraulic components and costly repairs. Alamo Industrial offers fluids, filters, and oil analysis capabilities to help you maintain your hydraulic powered machine. Please be sure to follow the oil & filter change procedure that is outlined for your mower.

There are two types of hydraulic oil used by the factory, reference the chart below, Mobil DTE 16m and Chevron 1000 THF. Also, note the ISO cleanliness requirement for your mower.

Product	Oil Type	Oil Specification	ISO Cleanliness	Filter Change Recommendation	Oil Change Recommendation
Machete	ISO AW68	Mobil DTE 16m	18/16/14	First 100 / every 500 or 12 months	First 500 / every 1000 or 12 months

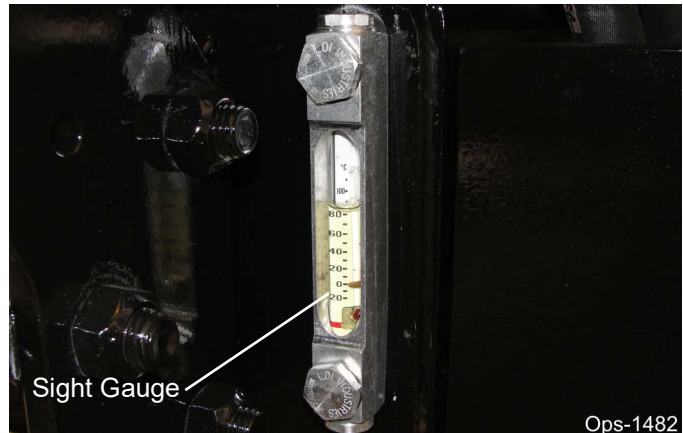
There are many comparable oils that are equivalent to what is used by the factory. An ISO class oil with a viscosity that matches your operating conditions is recommended. For further information please consult the oil manufacturer for proper specifications.



MAINTENANCE

Proper Oil Level

Maintain the oil level within the sight gauge located on the reservoir. When oil is cold, the level should be three-quarters up the sight gauge. Never fill the tank above that sight gauge level. A space is maintained above the sight gauge to allow for the expansion of the oil. Oil is added through the filler tube, if your tank does not have a filler tube then fill through the return filter located on the tank. Thoroughly clean the cap area around the filter to prevent oil from contamination. Remove the cap and add the proper viscosity grade of FILTERED oil to achieve the proper level. Never assume any oil is clean, including new.



Oil Level Low

Low oil level in the reservoir is caused by leakage or improper filling. If leaking, locate the area of the leak and repair the leak at once. Loss of fluid can cause severe & catastrophic damage to the hydraulic components.

NOTE: After initial start up, the mower may require more oil to bring the oil level back to the proper level. This is normal. Air trapped in the hydraulic components was displaced by the oil, causing the oil level to go down in the tank. Oil must be added to reach the proper level or cavitation could result.

BLADES

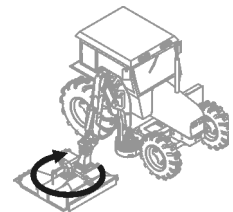
Check the Blades for cracks and wear and Blade Bolts for tightness, daily. Blades should be replaced when they are worn excessively, bent, deformed, or out of balance.

CAUTION

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

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

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:

Spindle Housing Bolts: Tighten to 400 Ft./Lbs. Torque

Blade Bolts: Tighten to 400 Ft./Lbs. Torque

Blade Bar To Spindle Bolts: Tighten to 400 Ft./Lbs. Torque.



Be certain to clamp or securely support the Spindle Housing and subassemblies to prevent injuries to hands and feet due to inadvertent dropping or falling over.



Always wear safety glasses and gloves to prevent eye and hand injury when chiseling or hammering on metal components. Hardened metal will chip unexpectedly.



An assembled spindle housing is quite heavy. Use a hoist or get help to handle them safely. Lift carefully and properly using your legs to lift - NOT YOUR BACK.

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. Alamo Industrial 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 Alamo Industrial.

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

Component	Hours of Operation											
	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

LEXAN SHEET CLEANING RECOMMENDATIONS

These cleaning recommendations apply to all Lexan polycarbonate sheet products, including, but not limited to, Lexan solid sheet and signs, Lexan coated Margard* sheet and Lexan multiwall sheet.

Periodic cleaning using correct procedures can help to prolong service life. For cleaning, it is recommended that the following instructions be adhered to:

Cleaning Procedure for Small Areas - Manual

1. Gently wash sheet with a solution of mild soap and lukewarm water, using a soft, grid-free cloth or sponge to loosen any dirt or grime.
2. Fresh paint splashes, grease and smeared glazing compounds can be removed easily before drying by rubbing lightly with a soft cloth using petroleum ether (BP65), hexane or heptane. Afterwards, wash the sheet using mild soap and lukewarm water.
3. Scratches and minor abrasions can be minimized by using a mild automobile polish. We suggest that a test be made on a small area of Lexan sheet with the polish selected and that the polish manufacturer's instructions be followed, prior to using the polish on the entire sheet.
4. Finally, thoroughly rinse with clean water to remove any cleaner residue and dry the surface with a soft cloth to prevent water spotting.

Cleaning Procedure for Large Areas - Automated

1. Clean the surface using a high-pressure water cleaner (max. 100bar or 1,450psi) and/or a steam cleaner. We suggest that a test be made on a small area, prior to cleaning the entire sheet
2. Use of additives to the water and/or steam should be avoided.

MAINTENANCE

Other Important Instructions for All Lexan Sheets:

- Never use abrasive or highly alkaline cleaner on Lexan polycarbonate materials.
- Never use aromatic or halogenated solvents like toluene, benzene, gasoline, acetone or carbon tetrachloride on Lexan polycarbonate materials.
- Use of incompatible cleaning materials with Lexan sheet can cause structural and/or surface damage.
- Contact with harsh solvents such as methyl ethyl ketone (MEK) or hydrochloric acid can result in surface degradation and possible crazing of Lexan sheet.
- Never scrub with brushes, steel wool or other abrasive materials.
- Never use squeegees, razorblades or other sharp instruments to remove deposits or spots.
- Do not clean Lexan polycarbonate in direct sunlight or at high temperatures as this can lead to staining.
- For all mentioned chemicals consult the manufacturer's material safety data sheet (MSDS) for proper safety precautions.

Additional Important Considerations for Multiwall, Corrugated and Sign Sheet:

- Cleaners and solvents generally recommended for use on polycarbonate are not necessarily compatible with the UV-protected surfaces of Lexan multiwall, corrugated and sign polycarbonate materials.
- Do not use alcohol on the UV-protected surfaces of Lexan sheet.
- Never clean the DripGuard surface of Lexan multiwall and corrugated sheets

Graffiti removal from Lexan* Margard* sheet

- Use butyl cellosolve with a clean, soft cloth to remove paints, marking pen inks and lipstick. Afterwards, wash the sheet using mild soap and lukewarm water, then rinse with clean water to remove residue and dry with a soft cloth.
- Masking tape and adhesive tape work well for lifting off old, weathered paints.
- To remove labels stickers, the use of kerosene or petroleum ether (BP65) is generally effective. If the solvent does not penetrate the sticker material, apply heat using a hair dryer to soften the adhesive and promote removal. Afterwards the cleaning procedure for small areas as outlined above

PROPER TORQUE FOR FASTENERS

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

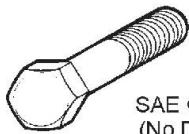
RECOMMENDED TORQUE IN FOOT POUNDS UNLESS OTHERWISE STATED IN THE MANUAL *

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

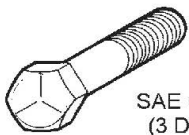
MAINTENANCE

TORQUE SPECIFICATIONS - DRY TORQUE

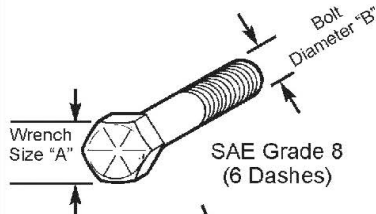
AMERICAN Bolt Head Markings



SAE Grade 2
(No Dashes)



SAE Grade 5
(3 Dashes)



SAE Grade 8
(6 Dashes)

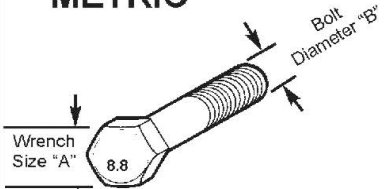


All Capscrews
SAE Grade 8

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)	116 (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

PROPER TORQUE FOR HYDRAULIC HOSE FITTINGS AND PIPING

JIC 37° and 45° (Machined or Flared)

Size		Steel			
		Ft.-Lbs.		Newton-Meters	
Dash	Inches	Minimum	Maximum	Minimum	Maximum
-4	1/4	10	11	13	15
-5	5/16	13	15	18	20
-6	3/8	17	19	23	26
-8	1/2	34	38	47	52
-10	5/8	50	56	69	76
-12	3/4	70	78	96	106
-16	1	94	104	127	141
-20	1-1/4	124	138	169	188
-24	1-1/2	156	173	212	235
-32	2	219	243	296	329

Flat-Face O-Ring Seal (Steel)

Size		Newton-Meters	
Dash	Inches	Minimum	Maximum
-4	1/4	14	16
-6	3/8	24	27
-8	1/2	43	54
-10	5/8	60	75
-12	3/4	90	110
-14	7/8	90	110
-16	1	125	240
-20	1-1/4	170	190
-24	1-1/2	200	245

MAINTENANCE

SAE O-Ring Boss (Steel)

Size		Ft.-Lbs. Working Pressures 4,000 Psi (27.5 Mpa) & Below		Newton-Meters Working Pressures 4,000 Psi (27.5 Mpa) & Below		Ft.-Lbs. Working Pressures Above 4,000 Psi (27.5 Mpa)		Newton-Meters Working Pressures Above 4,000 Psi (27.5 Mpa)	
Dash	Inches	Mini	Max	Mini	Max	Mini	Max	Mini	Max
-3	3/16	-	-	-	-	8	10	11	13
-4	1/4	14	16	20	22	14	16	20	22
-5	5/16	-	-	-	-	18	20	24	27
-6	3/8	24	26	33	35	24	26	33	35
-8	1/2	37	44	50	60	50	60	68	78
-10	5/8	50	60	68	81	72	80	98	110
-12	3/4	75	83	101-1/2	113	125	135	170	183
-14	7/8	-	-	-	-	160	180	215	245
-16	1	111	125	150	170	200	220	270	300
-20	1-1/4	133	152	180	206	210	280	285	380
-24	1-1/2	156	184	212	250	270	360	370	490

BSP 30° Inverted Cone

Size		Ft.-Lbs.		Newton Meters	
Dash	Inches	Minimum	Maximum	Minimum	Maximum
-2	1/8	7	9	9	12
-4	1/4	11	18	15	24
-6	3/8	19	28	26	38
-8	1/2	30	36	41	49
-10	5/8	37	44	50	60
-12	3/4	50	60	68	81
-16	1	79	95	107	129
-20	1-1/4	127	152	172	206
-24	1-1/2	167	190	226	258
-32	2	262	314	355	426

MAINTENANCE

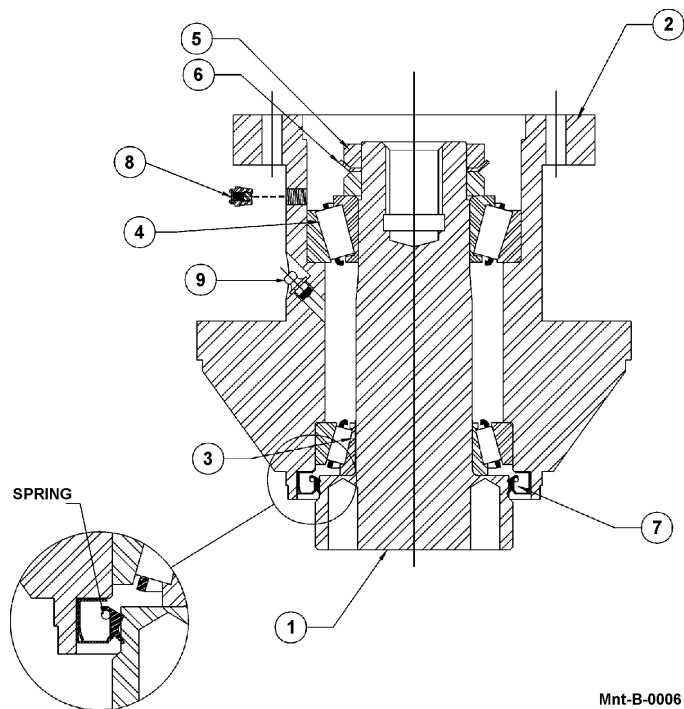
MAINTENANCE

SERVICE OF SPINDLE HOUSING

1. Remove blade bar or pan.
2. Remove hydraulic motor.
3. Remove spindle housing from unit.
4. Drain remaining oil from housing.
5. Using a chisel, bend the tang on the lockwasher (6) until it is free from the slot in the nut (5).
6. Unscrew locknut and remove locknut and lockwasher, and second locknut

The Spindle should now slide from the Spindle housing, so the Spindle can be removed from the Housing.

7. Remove the Seal (7) from the Housing



Mnt-B-0006

Removing Bearings

If replacing bearings:

1. Remove the old bearings from the Spindle and Housing. Be careful not to damage either the Spindle or Housing in this process.
2. Turn the spindle housing over and from the bottom side of the spindle housing, using a punch, drive the remaining bearing cup out.
3. Clean spindle housing, spindle and bearings thoroughly.
4. When rebuilding the spindle housing assembly, always replace the locknuts, lockwasher, and seal.

Inspection

Bearing and cups:

Inspect bearings and bearing cups for nicks, pitting, discoloration and wear. If any exist, replace bearing and bearing cup.

MAINTENANCE

MAINTENANCE

Assembly

Make sure all parts are clean and free of any contamination

Install Bearing Cups (3 & 4) into Spindle Housing (2) using a suitable bearing driver to seat the cups. Caution must be taken not to damage the cup or spindle housing, cups must be fully seated. If Cups are damaged during installation or not fully seated, bearing and spindle assembly life are greatly reduced!

Never drive against bearing surface! Never used the mating bearing cone to seat the cup!

Once the Lower Cup is installed, the seal may be installed. The seal should be installed with the spring towards the inside Press seal (7) into spindle housing, make sure seal is fully seated. Be careful not to damage seal!

Press the Lower Cone (3) on the spindle shaft (1) use the proper tool when pressing the bearing onto the shaft, driving against the inner race and not the rollers or cage. Any damage to the bearing will cause premature failures of the bearing and spindle assembly.

Before installing the spindle (with the bearing pressed on it), lubricate the rubber portion of the seal. This will reduce the chance of the Seal being torn by the installation of the spindle and is a necessary step when setting the rolling Torque.

Turn the Spindle Housing Upside Down and insert the spindle (with the bearing pressed onto it) into the spindle housing until the bearing cone contacts the cup in the Housing. During this step take care not to damage the seal.

While supporting the Spindle and Housing turn the assembly over so that the assembly is setting on the spindle.

Install the upper bearing (4) on the spindle shaft (1).

After the Upper Bearing is installed, install the nut (5) with the chamfer facing up. Run the nut down against the bearing, but do not torque the nut at this time. Clamp the spindle Housing in a vise so that the spindle shaft can rotate. Tighten the nut until the spindle shaft has a rolling torque of 25 in-lbs (that is it takes 25 in-lbs to rotate the spindle shaft).

Install the tanged lockwasher (6) with the outside prongs facing upward.

Install the top nut (5) with the chamfer facing down. Block the spindle to keep it from rotating and torque the top nut to a minimum of 100 ft-lbs. Bend the tang of the lockwasher to fit into one of the grooves of the top nut.

Install vent plug (8) and Grease Fitting (9).

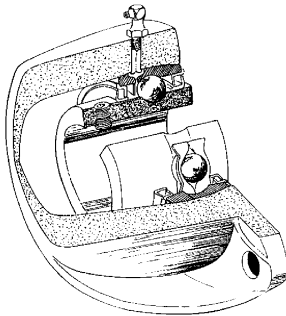
Fill spindle assembly with NLGI EP#2 Grease (Approx 22 oz.)

MAINTENANCE

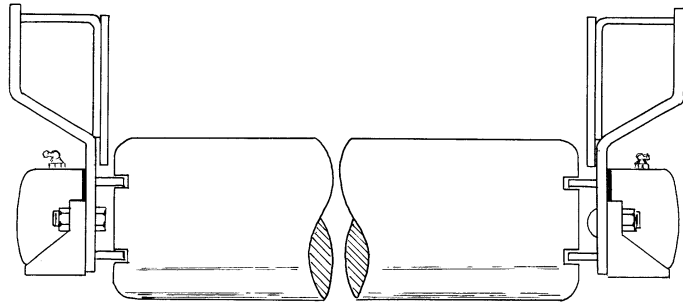
ROLLER BEARING REPLACEMENT



Securely support mower while removing and installing roller assembly.



DETAIL OF ROLLER BEARING



Mnt-B-0029

If installing a roller with pre-assembled bearing and bracket assemblies, remove the old roller, proceed to step 11.

1. Remove roller and both bearing and bracket assemblies from mower. Lift the mower only high enough to remove the roller assembly.
2. Slide bearing and bracket assemblies off each end of roller. If replacing with new bearing and bracket assemblies, proceed to step 9.
3. Remove roller bearing and housing assembly attaching hardware. Remove assembly from bracket. Inspect seal between assembly and bracket for brittleness, cracks, wear and tear. Replace if necessary. If replacing with new roller bearing and housing assemblies, proceed to step 8.
4. Remove grease fitting from the top of bearing housing.
5. Remove bearing from housing. By Rotating Bearing 90° sideways and line up with notches in Bearing Housing; then pull out.
6. Install new bearing into housing. Bearing must be installed with grease hole in bearing aligned with grease fitting hole in housing.
7. Reinstall grease fitting to housing. Grease fitting must be tight and seated in grease hole in bearing to prevent bearing from rotating in housing.
8. Attach roller bearing and housing assembly to bracket with seal between housing and bracket.
9. Slide bearing and bracket assemblies on each end of roller.
10. Check bearing for proper installation in housing by gently rocking bearing and bracket assembly in end of roller. Play should be slight to none at all.
11. Install roller and bearing and bracket assemblies on mower.
12. Lubricate roller bearing until lubricant can be seen coming out between roller and bearing housing.

MAINTENANCE

MAINTENANCE

TIMBER CAT HEAD

Lubrication/Daily Checks

Lubricate the grease fittings on top of the blade bar every 4 hours. See **Figure Mnt-0007**.

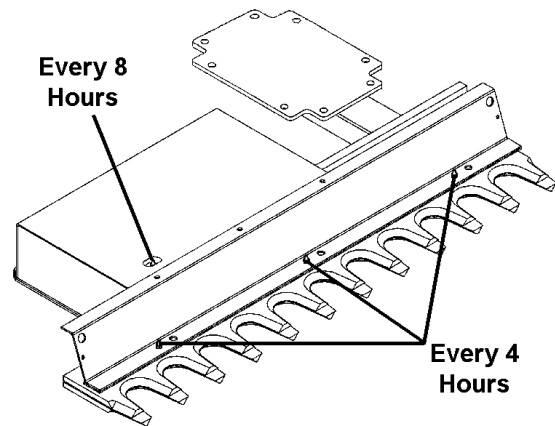
Every 8 hours, lubricate the cylinder grease fitting through the top slot in the cover. See **Figure Mnt-B-0007**. Every 8 hours, check all bolts and nuts for proper tightness. Tighten any bolt or nut found to be loose. Periodically check the hydraulic connections for oil leaks. Visually inspect the hoses for damage and replace as necessary. Periodically inspect blade stroke adjustment by running the head at normal operating speed (540 PTO) and checking that the upper and lower blades line-up perfectly the instant of reversal (when they change direction).

Improper adjustment is also indicated by an abnormally high shock load on the hydraulic system during blade reversal. This is due to the hydraulic cylinder reaching its stroke limit, causing the pressure relief reversing components to engage. Continuous operation in this mode will result in oil overheating and premature failure of components. If the unit is improperly adjusted, follow the stroke adjustment procedures below.

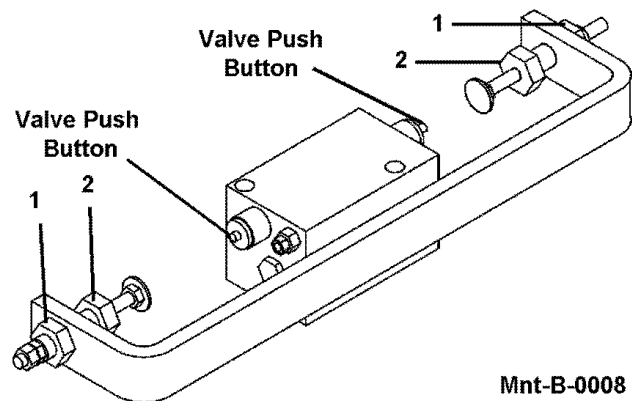
Stroke Adjustment

Position the head in a safe area for operation. If necessary, barricade the head to prevent contact while it is being operated.

Remove the cover and loosen the two jam nuts (Item 1). See **Figure Mnt-B-0008**. Screw the two spring bolt assemblies (Item 2) in toward the valve push buttons. Start the unit and bring the speed up to normal operating speed (540 PTO). Check the blade overlap. Adjust the spring bolt assemblies (Item 2), one by one until the upper and lower blades perfectly align in the instant of reversal. Never adjust the bolt assemblies to a point where the hydraulic cylinder reaches its stroke limit! This is indicated by an abnormally high shock load on the hydraulic system due to the pressure relief reversing components being engaged. Continuous operation in this mode will cause premature component failure and hydraulic oil overheat. Once proper adjustment has been achieved, tighten the jam nuts (Item 1) and replace cover.



Mnt-B-0007



Mnt-B-0008

MAINTENANCE

SAW BLADE HEAD

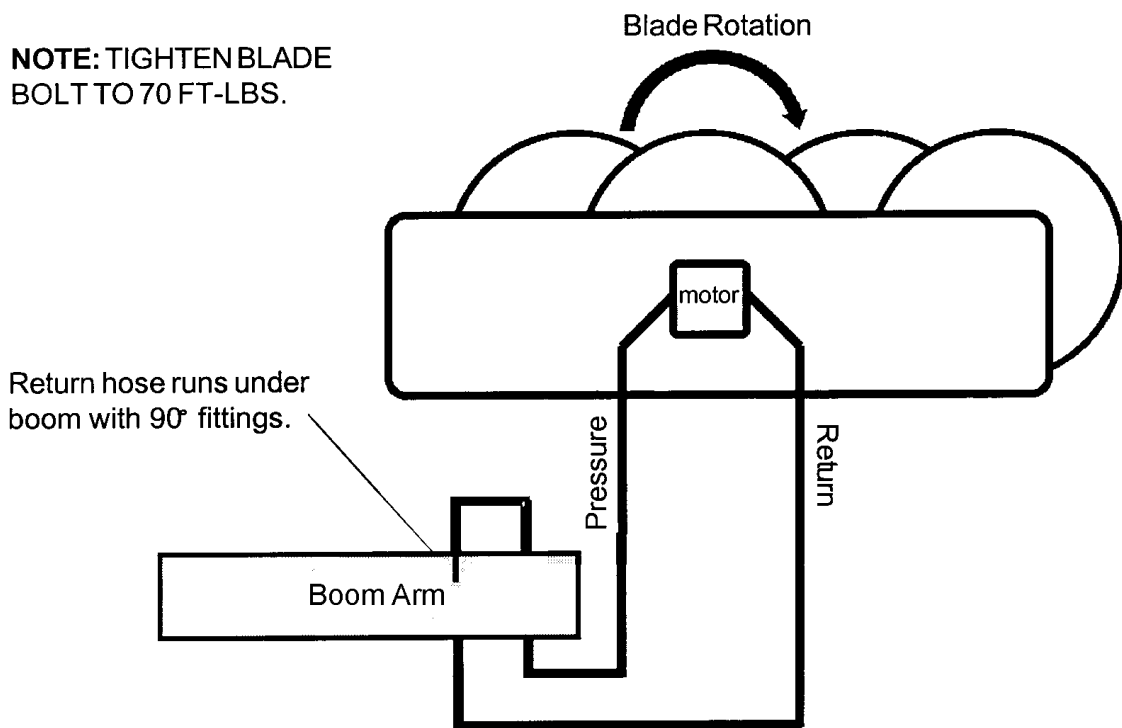
Blades

For best performance, have blades set and sharpened when they begin to dull. Blades can be touched up with a grinder or file between sharpenings.

To extend the life of the blade, remove resin accumulations. When the resin builds up, the blades will “burn” in the cut, causing the blades to overheat and warp. When cutting some types of trees, blades will need to be cleaned every few hours. To remove the resin, use oven cleaner or lacquer thinner with a Scotch-Brite pad or steel wool. Apply these products carefully since many of them will remove paint from your Saw Blade Unit. Always follow manufacturer's instructions for safe use.

Blades should turn clockwise when viewed from the top.

See illustration below for hose routing.



Mnt-B-0009

Lubrication

Grease each spindle with one pump of high quality lithium grease weekly. More than one pump is unnecessary and will cause extra grease to spill from the relief.

Grease fittings are located in front of the machine, just above the blades.

MAINTENANCE

Belt Tension Adjustment

Loosen nuts on the 4 studs and the jam nut.

Use a hand wrench or socket to tension the belts.



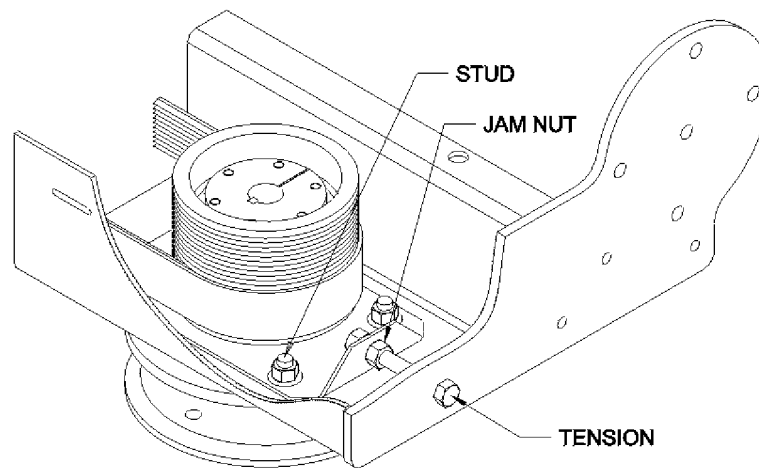
CAUTION Never use power or air equipment to tighten belt! This could cause damage to belt, sheave, shaft and bearings

Once the belts begin to tighten, small adjustments will produce large changes in tension.

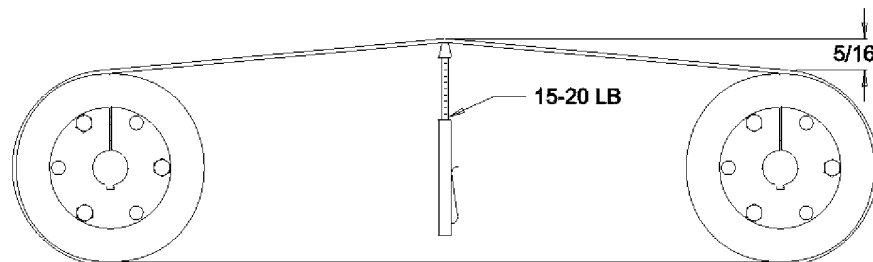
Belts should be tensioned 15-20 lbs of force for 5/16 inches deflection.

Tighten nuts on studs and jam nut to hold tension.

BELT TENSION ADJUSTMENT



**MEASURE FORCE AND DEFLECTION
WITH BELT TENSION METER**



Mnt-B-0010

MAINTENANCE

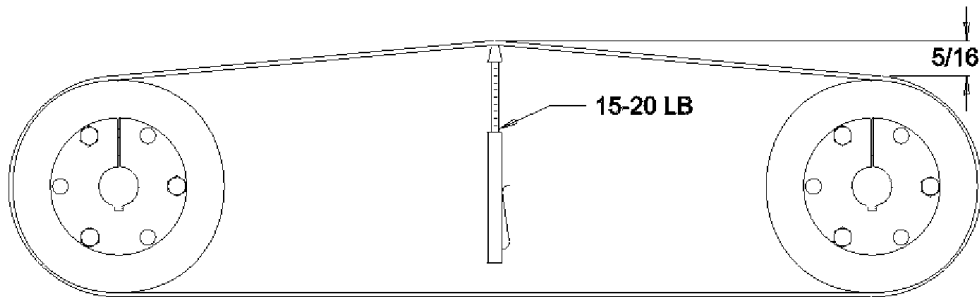
Lubrication

Grease each spindle with one pump of high quality lithium grease weekly. More than one pump is unnecessary and will cause a mess when extra grease squirts out of the relief.

Grease fittings are on front of machine, just above the blades.

Belts

Check the belt tension daily. Your BuzzBar is equipped with high performance Micro-V belts that run much tighter than regular V-belts. The belts should be tensioned to 15 to 20 lbs. of force for 5/16 of an inch of deflection.



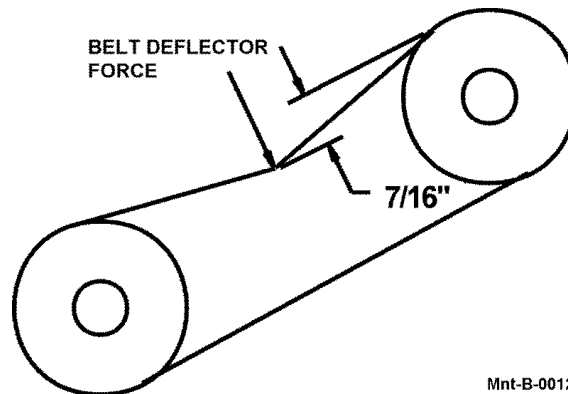
Mnt-B-0011

If belts begin to slip, check tension.

To tighten the belts, loosen the four nuts that hold the spindle to the body of the machine. Then use a hand wrench or socket to turn the bolt that tensions the belt. Never use power tools to tighten belt. Once the belts begin to tighten, small adjustments will produce large changes in belt tension.

Too much tension can cause premature bearing, sheave, and belt damage.

FLAIL MOWER



Mnt-B-0012

Belt Tension

When installing new belts, tighten belts to obtain a 16 lb. Belt Deflector Force at 7/16" deflection. After a few hours of operation to allow the belts to seat into the sheave grooves recheck and adjust as needed to obtain an 8 to 12 lb. Belt Deflection Force at 7/16" deflection. Inspect belts and recheck belt tension periodically to maintain an 8 to 12 lb. Belt Deflection Force at 7/16" deflection.

MAINTENANCE

MAINTENANCE

Flail Blade Inspection



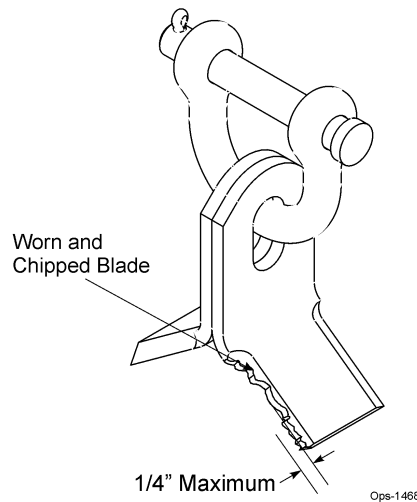
DANGER

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 Alamo Industrial replacement blades and fasteners. Other blades and fasteners may not meet the Alamo Industrial requirements and could fail during operation resulting in part being thrown out from under the mower.



CAUTION

Never attempt to sharpen blades. OPS-U-0044 str

MAINTENANCE

Blade Pins and D-Ring Inspection

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

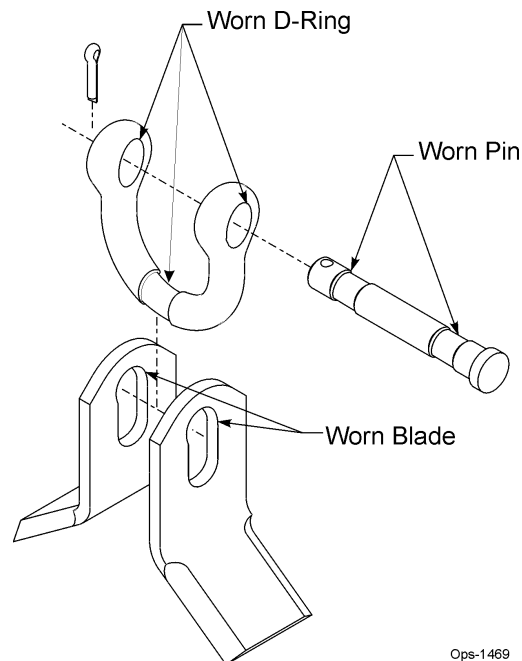


DANGER Inspect the Blade pins and D-Rings daily for abnormal wear. Make sure the cotter pins are in place and properly spread. REPLACE BLADE Pins and D-Rings IMMEDIATELY if they have:

- 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 str

MAINTENANCE

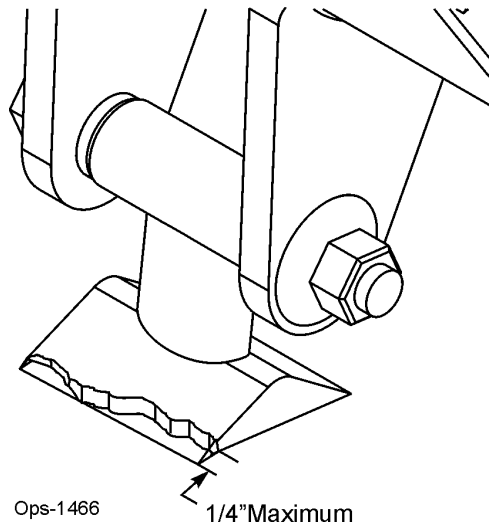
MAINTENANCE

Flail Axe Blade Inspection



CAUTION 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 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 Alamo Industrial replacement blades and fasteners. Other blades and fasteners may not meet the Alamo Industrial requirements and could fail during operation resulting in part being thrown out from under the mower.



CAUTION Never attempt to sharpen blades. OPS-U-0042 str

MAINTENANCE

Flail Axe Blade Bolt Inspection

Inspect Blade Bolts daily for wear or damage as follows:



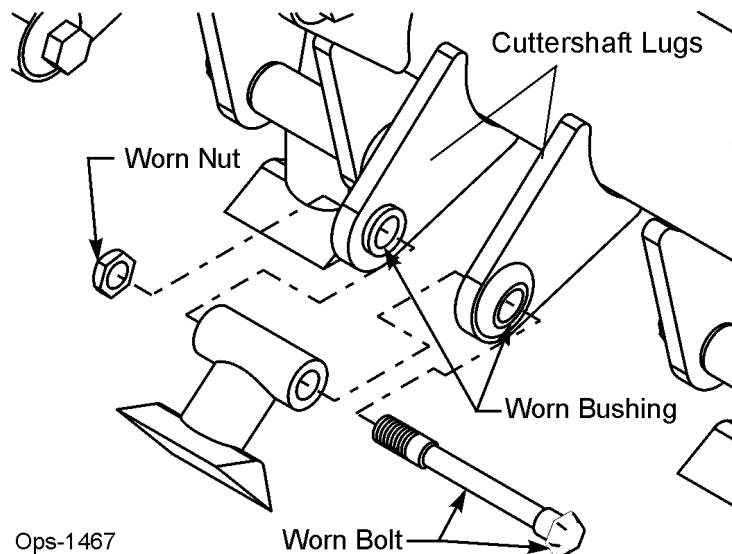
CAUTION Inspect the Blade Bolt daily for abnormal wear. REPLACE ALL BLADE BOLTS on the carrier IMMEDIATELY if any bolts have:

- 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.

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 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 str



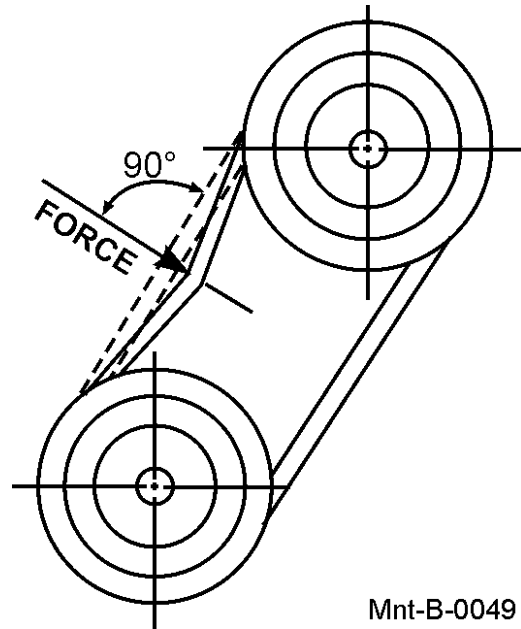
MAINTENANCE

MAINTENANCE

TENSIONING DRIVE BELTS

The rotor shaft is driven from the gear motor via “V” belts which are adjustable for tension. After stopping the tractor engine, remove the drive guards to tighten the belts. Check the tension by applying a force of 6.17 -7.72 lbs at right angles to the belt in the center of the two pulleys. If the deflection is great than 1/4” then release the motor mounting plate screws and adjuster locknut and screw the adjuster to tighten the belts until the deflection is 1/4”. Then, tighten the locknut, recheck the belt tension, and replace the belt cover.

IMPORTANT: Do not over-tighten belt as this may cause premature failure of the rotor shaft and motor bearings.



Mnt-B-0049

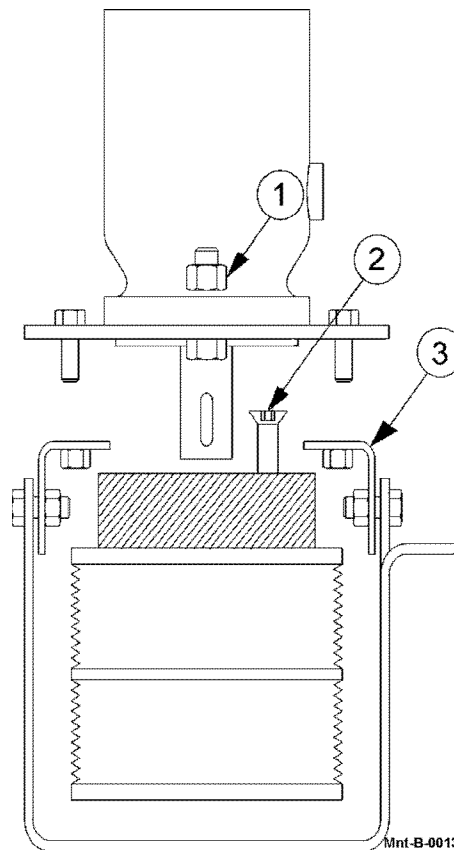
MOTOR & COUPLER INSTALLATION

Bolt motor to mount plate. Fully tighten bolt (Item 1)

Install flex coupler to the quick disconnect pulley hub using the countersunk socket head bolts (Item 2). Apply thread locking compound to the bolts. Tighten bolts to 45 FT-LB. Attach motor mount angle brackets, (Item 3) to the channel frame, leave bolts loose.

Insert motor shaft into flex coupling and allow motor to “find its center.”

Adjust motor up as needed to provide ample clearance between the top of flex coupling and the motor. Bring angle brackets up to motor mount plate and tighten the bolts.

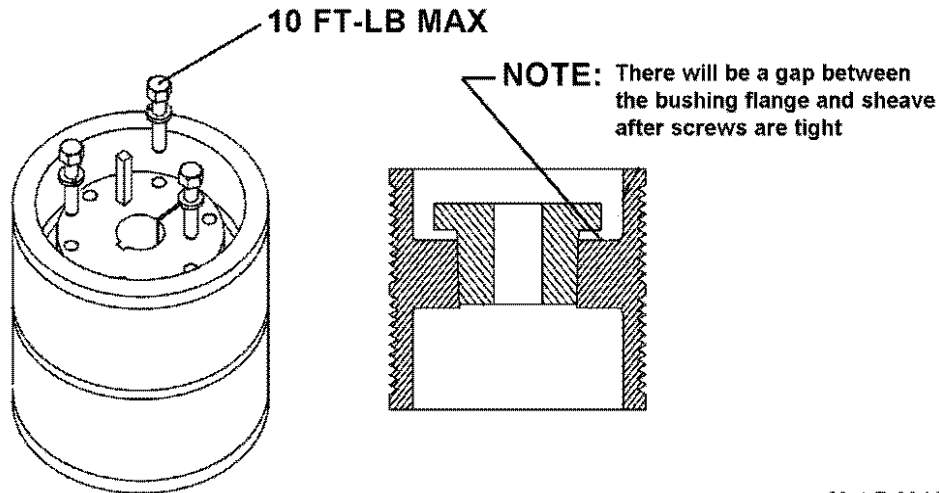


Mnt-B-0013

MAINTENANCE

TAPER BUSHING & SHEAVE INSTALLATION

Do not use lubricants during installation as this may cause sheave breakage.



Mnt-B-0014

Make sure the bushing and bore of the sheave are free of dirt, paint, metal chips, etc.

Insert cap screws and lockwashers engaging only 2 or 3 threads.

With key in the keyway, slide the loosely assembled unit onto the shaft and position for good belt alignment. Temporary shimming under the pulley may make it easier to position.

Carefully tighten cap screws alternately and progressively until tapers are seated (about 5 FT-LB).

Check sheave alignment and runout (wobble).

Continue careful alternate and progressive tightening of cap screws to 10 FT-LB.

Maximum torque should be achieved on each individual bolt only two times.

MAINTENANCE

GENERAL INFORMATION ON FLAIL MOWER VIBRATION

FLAIL MOWERS INFORMATION BULLETIN NO. 5

EXCESSIVE VIBRATION

Vibration is a MONSTER and if allowed to continue unchecked, can cause the complete break-up of a machine in a very short time.

A properly operated Flail Mower will produce very little vibration. If vibration does occur, the mower should be stopped and the trouble corrected, as warranty does not cover failures resulting from continued operation after something happens to cause the mower to vibrate excessively.

Vibration is caused by a rotating part which is out of balance. This could be the cutter shaft or, on those models having a universal slip joint assembly drive shaft, from the drive shaft.

If the two extreme ends of the drive shaft, (the yoke splines which fit on the tractor power take off shaft and on the mower gear box driven shaft), are not parallel, vibration will be evident.

This is because of the mechanics of a universal drive wherein the rotational speed thru a universal joint is not uniform. If the ends of a universal drive shaft are parallel, the uneven rotation effect is cancelled out and the machine being driven will be driven at a uniform rate of speed. However, if the ends are not parallel, the uneven rotation effect may be multiplied, resulting in a speeding up and slowing down of the entire mower system (gear box, extension shaft, pulleys, belt, and cutter shaft) each revolution. This effect can be readily noticed if the mower, while running, is raised to an extreme height on the tractor lift.

For smoothest operation, the tilt of the mower should be adjusted (on a 3-point hitch, by adjusting the length of the top link between the tractor and the mower) so that the ends of the drive shaft are parallel when the mower is down in operating position. Raising the mower, while running, to extreme heights on the lift should be avoided.

To check where the vibration is originating, first be sure the ends of the universal drive shaft are parallel. Then, if vibration is still present, remove the drive belt and run the mower. If vibration is still present, it most likely is coming from and caused by a bent drive shaft. If so, the shaft should be replaced or straightened. If the vibration is gone - the drive portion of the mower is running smoothly - then the vibration is probably coming from the cutter shaft (it could be a pulley out of balance or a faulty belt with a varying cross section, but this is not likely)

The cutter shaft will run out of balance if:

1. **Wire, rope, string, rags, etc., around the cutter shaft,** are holding the knives in a folded back position. Remove such foreign objects and be sure all knives are free to swing to the extended position.
2. **Knives are missing or broken.** Replace missing or broken knives.
3. **Knife hanger lugs are broken off shaft.** This condition usually results from continued operation in contact with large hard objects where the knife hanger lugs themselves are hitting the hard objects. Lugs should be replaced using arc welding equipment so as not to direct too much heat in one area of the shaft.
4. **Cutter shaft ball bearings are worn** enough to have radial "play" in them. Replace ball bearing and other worn parts to eliminate "play".
5. **Shaft is bent.** The shafts are straight within a couple of thousandths of an inch when they are made. It is possible that they will become bent in use, such as if the shaft is hooked on a stump while the tractor is moving forward at a good speed.
6. Shafts are operated at improper speed. Rotating shafts have what is known as a natural period of vibration. The same is true of the cutter shafts on the Flail Mowers.

MAINTENANCE

The actual speed at which the harmonic will occur will vary with each mower and each installation. To avoid this harmonic vibration when operating the mower, it may be necessary to adjust the engine speed of the tractor up or down.

Some units have a harmonic vibration which occurs below the nominal operating speed. On these units, it will be noticed that there is always a little vibration at a particular RPM as the mower is being sped up to operating speed. This occurs as the shaft passes through its normal harmonic vibration point. As long as the mower is operated at the proper speed, then harmonic vibration will not be an issue.

START-UP PROCEDURE

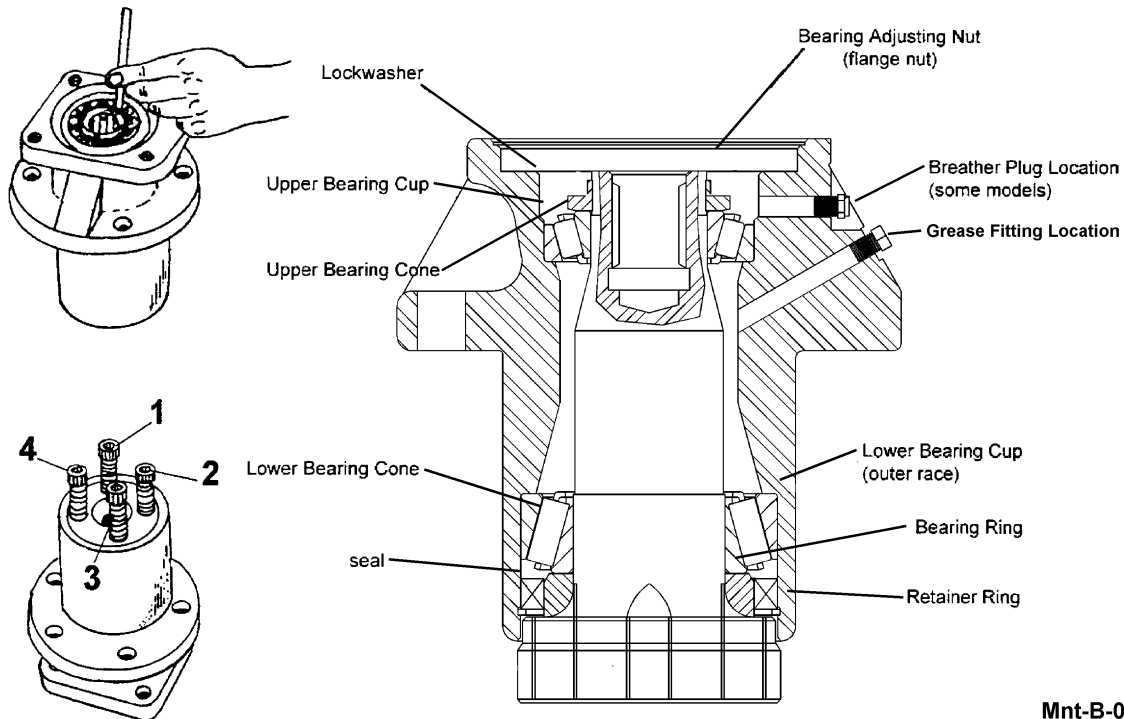
1. Read all safety instructions. Decals on the Boom warn you of particular and multiple hazards. Many decals are attached close to part of the Boom where there is a possible hazard. Read and make sure you understand the safety messages before you operate the Boom. Keep all decals clean and readable. Replace lost or damaged decals.
2. Before operating, read all the safety and operating instructions in the Operators Manual for both the tractor and mower.
3. When the hydraulic tank has been filled and the mower unit properly assembled, the unit should be started up. **NOTE:** Make sure that no materials, tools, or jacks, have been left under the mower head. Make sure the front and rear of the mower are properly guarded to prevent any foreign objects from being thrown by the mower. All other workers should be kept a safe distance from the unit before the mower is started.
4. Start the tractor and idle at a slow engine speed until oil is being pumped.
5. Engage the Cutter Control Valve at low engine PTO speed and run the mower slowly for a short period until all air is removed from the hoses. Keep all persons WELL CLEAR of mower since Blades can THROW OBJECTS with great velocity for a considerable distance! KEEP CLEAR!
6. With the area clear of any ground and overhead obstructions, work each cylinder on the boom one at a time, several times, to expel any air in the Hoses and Cylinders.
7. Run the Mower Head for 5 minutes. While the tractor is idling, blocked, wearing protective clothing and eye protection, CAREFULLY check for leaking hydraulic fittings, hoses and ports at this point with a piece of cardboard, **DO NOT USE YOUR HAND!** If any are found stop the tractor immediately and correct any leaky connections.
8. 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 oil level.

MAINTENANCE

MAINTENANCE

SPINDLE SERVICE PROCEDURE 02960553B and 02960553C

1. Remove blade bar or pan.
2. Remove hydraulic motor.
3. Remove spindle assembly from mower deck.
4. Drain remaining lubricant from housing.



Mnt-B-0015

5. Using a 3/16" cape chisel, bend out the staking indentations on each side of the bearing adjusting nut. To do this, place the chisel in the groove and parallel to the shaft. Drive the chisel downward until the indentation is free of the shaft and threads (see Figure 1).
6. Using the same chisel, straighten the tang on the lockwasher (if equipped with a lockwasher).

NOTE: The lockwasher will not be installed during assembly if the spindle uses the staked adjusting nut.

7. Remove bearing adjusting nut and lockwasher (if equipped). Discard these parts. They are not re-usable. Install a new adjusting nut when assembling.
8. Screw the original blade bar bolts into the flange of the spindle shaft until they contact the bearing ring (see Figure 2).
9. In a clockwise pattern, rotate each bolt 1/4 turn (see Figure 3). Continue turning the bolts 1/4 turn at a time (maximum of 3 turns), until the special shanked bolts (P/N 02964353) will thread into the spindle.
10. Remove the original bolts and replace them with the shanked bolts. Screw the shanked bolts in until they contact the bearing ring.
11. In a clockwise pattern, rotate the bolts 1/4 turn at a time until the spindle is free from the housing.
12. Remove the seal retaining ring from the housing using a flat screwdriver or similar tool.
13. Remove the seal and bearing.
14. A punch or similar tool can be used to remove the bearing cups from the housing if the cups are not to be re-used.

MAINTENANCE

Cleaning

1. Clean housing and all related parts thoroughly and dry.
2. Protect parts from contamination.

Inspection

Bearings and cups: Inspect rollers, races, and cages for nicks, pitting, discoloration, and signs of excessive or unusual wear. Replace any worn or damaged parts.

Spindle shafts: Inspect the threads, internal splines, and bearing journals for damage or wear. Replace if damaged or worn.

Bearing ring: Inspect the ring for wear in the area of seal contact. Replace if a wear groove exists.

Housing: Inspect the bearing cup bores, ring grooves, etc. for wear or damage. Repair or replace if any damage is found.

Assembly

Tools needed: Hand tools Hydraulic press, Inch pound torque wrench, Seal Installers, Bearing drivers (do not use punches to install bearings) Adjusting nut socket 2-3/4" ID x 8" long, 16 Ga. tubing

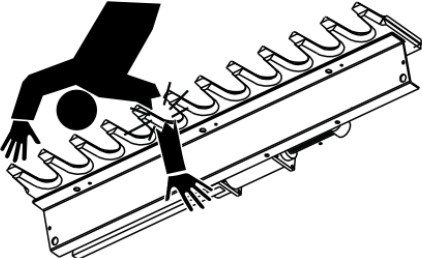
NOTE: *This procedure should not be attempted in the field due to the need for tools normally only found in the shop.*

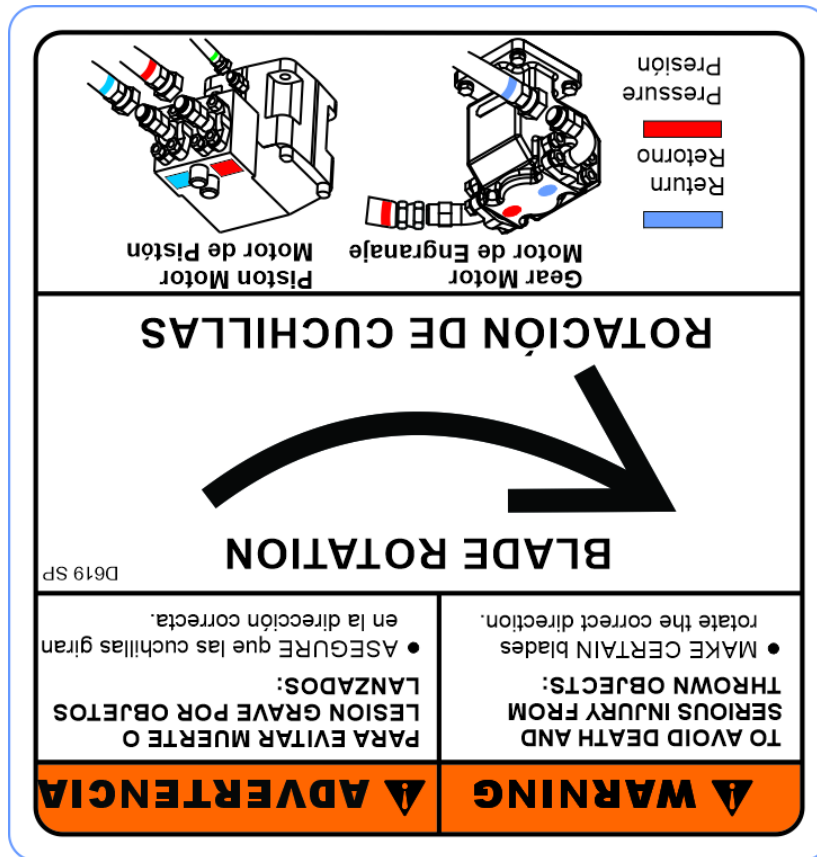
1. Place upper bearing cones in bearing oven.
2. Seat bearing cups (outer races) in housing using a press and proper installation tools in good condition. CUPS MUST BE FULLY SEATED. If bearing cup cocks in bore and seizes, do not continue to assemble spindle.
3. Lubricate lower bearing cone with LPS.
4. Coat the outside of the seal with silicone and install the lower bearing, seal, and retaining ring into the housing, using the correct seal installer.
5. Place a light film of silicon or permatex on the inside diameter of the bearing ring and seat the ring on the spindle shaft, using the proper tool and press.
6. Lightly lubricate the lip of the seal.
7. Using the 2-3/4" tubing to prevent the cup and cone from contacting each other, press the spindle shaft through the lower bearing and seal. Make sure the bearing is seated against the bearing ring.
8. Place Lockite on threads of the bearing adjusting nut (flange nut).
9. Using gloves, install the heated upper bearing cone on the shaft immediately and push it all the way against the cup. Lubricate the bearing with LPS.
10. Install the bearing adjusting nut. Tighten the nut until the spindle shaft can not be turned. Loosen the nut 1/4 turn. Place a soft, clean cloth over the top of the spindle assembly. Place an aluminum block over the end of the spindle shaft and strike the block with a hammer to loosen the bearing.
11. Remove the cloth, being careful not to allow any contamination into the spindle. Tighten the nut until a rolling torque of 16-21 inch-pounds is reached. (If the seal was not lubricated, add 10 inch-pounds).
12. Stake the nut with a blunt, round nosed punch. Do not tear the nut.
13. Install the grease fitting into the hole in the center of the housing (between the bearings) and fill the housing with EP#2 grease, stopping when the lubricant covers the upper bearing (approximately 11 oz.).
14. Install the breather plug in the top hole.
15. Install spindle in mower deck and assemble in reverse order. Torque the blade bar or pan bolts to 400 ft-lbs. Torque motor to spindle bolts to 85 ft-lbs. Torque spindle to deck bolts at 175 ft-lbs.

SEGURIDAD

[illegible]

WARNING CRUSHING HAZARD could cause serious injury:		ADVERTENCIA		RIESGO DE APLASTAMIENTO puede cuasar lesion seria:	
				• Neumático es extremadamente pesado. • Utilice equipo de elevación y manipulación adecuado al desmontar el neumático • Rellene el neumático con el balastro adecuado para la estabilidad. • Verifique la torsion de todas las tuercas de los neumáticos.	

 DANGER KEEP AWAY AMPUTATION HAZARD		 PELIGRO MANTENGASE ALEJADO RIESGO DE AMPUTACION:	
 Sickle Blades Can cut off body limbs or appendages. TO AVOID DEATH OR SERIOUS INJURY: ● KEEP all persons AWAY from sickle blades. ● SHUT OFF tractor engine BEFORE approaching machine head.		Las cuchillas de la Hocera pueden cortar miembros de cuerpo o extremidades. PARA EVITAR MUERTE O LESION GRAVE: ● MANTENGA todas las personas LEJOS de la Hocera. ● APAGE el motor del tractor ANTES de acercarse a la cabeza cortadora D639 SP	



WARNING		ADVERTENCIA	
TO AVOID DEATH OR SERIOUS INJURY: ● ONLY use genuine Alamo Industrial replacement parts, which have been validated and tested to use on Alamo Industrial equipment by the manufacturer. ● The equipment manufacturer cannot verify the material structural integrity of third-party supplied non-genuine parts. ● Using non-genuine parts can result in the part failing, creating hazardous conditions for operator and bystanders. Contact local dealer or ALAMO INDUSTRIAL about repair parts at: 1502 E. Walnut, Seguin, TX 78155. Customer Service: 800-882-5762. Email: support@alamo-industrial.com www.aligt.com/apm		PARA EVITAR MUERTE O LESION GRAVE: ● El uso de piezas no originales puede provocar el fallo de la pieza, creando condiciones peligrosas para el operador y personas presentes. ● SOLO use piezas de repuesto genúinas de Alamo Industrial, que han sido validadas y probadas para usar en equipo Alamo Industrial por el fabricante. ● El fabricante del equipo no puede verificar el material o integridad estructural de piezas de repuesto no genúino suministrados. Contacte a su distribuidor local o ALAMO INDUSTRIAL sobre partes de reparo a: 1502 E. Walnut, Seguin, TX 78155. Servicio al Cliente: 800-882-5762. Correo Electronico: support@alamo-industrial.com www.aligt.com/aps	
BE AWARE BE TRAINED BE ALERT Before Operating this Mower BE ALIVE		ESTE CONSCIENTE SEA ENTRENADO ESTE ALERTO Antes de Funcionar ESTE VIVO Contacteéped	
IMPORTANT		IMPORTANTE	
TO PREVENT SERIOUS INJURY TO YOURSELF AND/OR BYSTANDERS, be trained in Safe Mowing Practices. Alamo Group Companies, Alamo Industrial, Bush Hog, M&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. 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), or Alamo Group (www.alamo-group.com) for information on training material or courses that provide training in Safer Operating Practices for Mowers. www.aligt.com/abv		Para prevenir lesiones graves a usted y/o personas presentes, sea entrenado en la Practica de Segar Seguro. Compañías de Alamo Group, Alamo Industrial, Bush Hog, M&W, Rhino, Schulte y Tiger así como AEM y FEMA proporcionan material para su entrenamiento 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 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. www.aligt.com/avs	
WARNING		ADVERTENCIA	
Cancer and Reproductive Harm www.P65Warnings.ca.gov		Cáncer y Daño Reproductivo www.P65Warnings.ca.gov	
WARNING		ADVERTENCIA	
PINCH POINT HAZARD TO AVOID SERIOUS INJURY: ● DO NOT OPERATE with Belt Shield removed. 		RIESGO DE PUNTOS DE PELIZCO PARA EVITAR LESION SERIA: ● NO OPERE con la cubierta de correa ausente. D641 SP	

▲ PELIGRO		▲ DANGER	
RIESGOS DE OBJETOS LANZADOS		THROWN OBJECTS HAZARD	
RIESGO DE ENREDAMIENTO		ENTANGLEMENT HAZARD	
● MANTENGASE ALEJADO y MANTENGA manos, pies y cuerpo LEJOS de las cuchillas girando, líneas de conducción, y partes que siguen moviéndose después de que el poder es apagado. ESPERE hasta que todos los elementos móviles se han parado. ● DETENGASE, OBSERVE y ESCUCHE por el movimiento de rotación antes de acercarse al implemento.		● 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. ● STOP, LOOK and LISTEN for rotating motion before approaching implement.	
● CORTACÉSPED puede lanzar objetos hasta 300 pies. PARA EVITAR MUERTE O LESIÓN GRAVE a operadores y personas presentes: ● CIERRE LA PUERTA DE LA UNIDAD y PAUSE de operar si las personas presentes o el tráfico se acercan entre 300 pies de la unidad. ● MANTENGA la puerta completamente cerrada al cortar zacate o hierbas. ● ABRA SOLO la puerta para cortar ramas grandes. Cierre la puerta inmediatamente después. ● NO opere con la puerta quitada. ● MANTENGA la puerta en su lugar y en buen estado durante la operación. ● Los Deflectores son SUJETOS AL DESGASTE. Reemplace si están desgastados o dañados. ● SIEMPRE transporte con la puerta cerrada.		● 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. Close door immediately after. ● DO NOT operate with door removed. ● KEEP door in place and in good condition during operation. ● Deflectors are SUBJECT TO WEAR. Replace if worn or damaged. ● ALWAYS transport with door closed.	
● MOWER can throw objects up to 300 feet. TO AVOID DEATH OR SERIOUS INJURY to operator or bystanders:		● MOWER can throw objects up to 300 feet. TO AVOID DEATH OR SERIOUS INJURY to operator or bystanders:	

SEGURIDAD

SEGURIDAD

▲ PELIGRO		▲ DANGER	
RIESGO DE OBJETOS LANZADOS		THROWN OBJECT HAZARD	
PARA EVITAR MUERTE O LESION GRAVE: NO OPERE si la Cubierta de Objetos Lanzados esta dañada o falta. • Mantenga Los Deflectores de Hule en buenas condiciones. • Inspeccione Los Deflectores de Hule con frecuencia. Mantenga Cubierta de Objetos Lanzados ↑ AQUÍ ↑ D626 SP		TO AVOID DEATH OR SERIOUS INJURY: DO NOT OPERATE if Thrown Object Shielding is damaged or missing. • Maintain Rubber Deflectors in good condition. • Inspect Rubber Deflectors frequently. MAINTAIN Thrown Object Shielding ↑ HERE ↑ Rubber Deflector Deflector de Hule	

▲ PELIGRO		▲ DANGER	
MANTENGASE ALEJADO		KEEP AWAY	
PARA EVITAR MUERTE O LESION GRAVE: Las Cuchillas Giratorias pueden cortar miembros de cuerpo o extremidades. • MANTENGA todas las personas LEJOS de las cuchillas giratorias. • APAGE el motor del tractor ANTES de acercarse a la cabeza cortadora. D640 SP		TO AVOID DEATH OR SERIOUS INJURY: body limbs or appendages. Rotating Blades can cut off • KEEP all persons AWAY from rotating blades. • SHUT OFF tractor engine BEFORE approaching machine head.	

▲ PELIGRO		▲ DANGER	
RIESGO DE AMPUTACIÓN:		PINCH POINTS	
PARA EVITAR MUERTE O LESION GRAVE POR EL FALLO DEL ACOPLAMIENTO DE LAS CUCHILLAS: • Siempre reemplace las cuchillas en pares. • Apriete los tornillos a torsión de 400 p/lbs. • SIEMPRE reemplace las cuchillas con tornillos y tuercas nuevas. D620 SP		TO AVOID DEATH OR SERIOUS INJURY FROM BLADE ATTACHMENT FAILURE: • Torque blade bolt to 400 ft lbs. • ALWAYS replace blades in pairs. • ALWAYS replace blades with new bolts and nuts.	

SEGURIDAD

 PELIGRO	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 seguridad y las etiquetas ya traducidos.
  El Manual del Operador Seguridad vídeo www.algqr.com/abs	  Manuel de l'Opérateur www.algqr.com/abt

PERIGO

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.

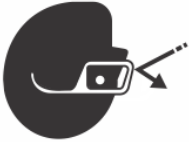
Falls Sie nicht Englisch sprechen: Bevor Sie die Geräte in Betrieb nehmen, bitten Sie eine Englisch sprechende Person darum, Ihnen die Sicherheitsmeldung zu übersetzen, oder besuchen Sie die Website; dort finden Sie übersetzte Aufkleber und Sicherheitsmeldungen.

  Manual do Operador www.algqr.com/abp	  Benutzerhandbuch www.algqr.com/abg
--	---

IMPORTANT	 PARA EVITAR DAÑO AL EQUIPO ELECTRICO: - DESCONECTE los módulos de la computadora ANTES de soldar en cualquier parte de la unidad. - DESCONECTE la batería del tractor ANTES de soldar en cualquier parte de la unidad. D627 SP	TO AVOID ELECTRICAL EQUIPMENT DAMAGE: - DISCONNECT computer modules BEFORE welding on any part of unit. - DISCONNECT tractor battery BEFORE welding on any part of unit.
------------------	---	--

SEGURIDAD

SEGURIDAD



PELIGRO

● LEA Y ENTIENDA el Manual de Operador proporcionado, signos de seguridad y calcomanías informativas para el tractor y implemento antes de operar el equipo.

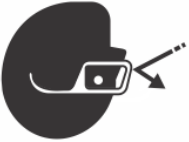
● CONTACTE AL DISTRIBUIDOR inmediatamente si no tiene los manuales.

● 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 DEATH OR SERIOUS INJURY:

● 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 with side shields (marked to comply with ANSI Z87).

● WEAR hard hat, safety shoes and gloves for protection when operating equipment.

Machete 3 05-26

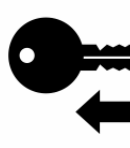
Sección de Seguridad 1-19

© 2026 Alamo Group Inc.

SEGURIDAD

Machete 3 05-26

Sección de Seguridad 1-18



PELIGRO

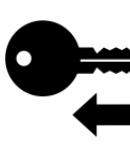
Riesgo de Atropello - Muerte o Lesion

PARA EVITAR MUERTE O LESION GRAVE:

- SIEMPRE ABROCHE el cinturón de seguridad.
- SOLO ENCIENDA el tractor mientras que esta sentado en el asiento del operador.
- PARE EL MOTOR Y PTO, aplique el freno de mano, baje el implemento, y deje que todas las partes movili paren completamente, y quite la llave antes de desmontar el tractor.
- ENTIENDA COMO parar el tractor y equipo rapidamente en caso de 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.

D835 SP1

! DANGER



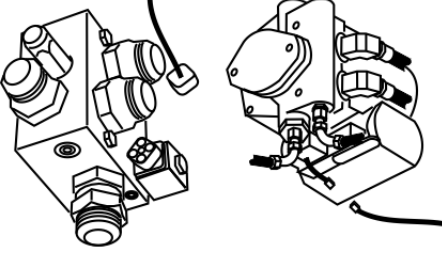
Run Over Hazard - Death or Injury

TO AVOID DEATH OR SERIOUS INJURY:

- 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.

© 2026 Alamo Group Inc.

ADVERTENCIA



WARNING

TO AVOID DEATH OR SERIOUS INJURY FROM INADVERTENT MOWER HEAD START UP:

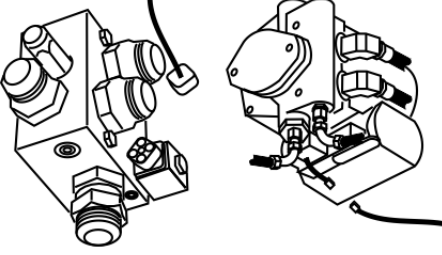
- Disconnect the hydraulic solenoid BEFORE servicing the tractor or mower.

PARA EVITAR MUERTE O LESION GRAVE AL COMIENZO INVOLUNTARIO DE LA CABEZA CORTADORA:

- Desconecte el solenoide hidráulico ANTES DEL servicio al tractor o el cortacésped.

D637 SP

ADVERTENCIA



WARNING

TO AVOID DEATH OR SERIOUS INJURY FROM INADVERTENT MOWER HEAD START UP:

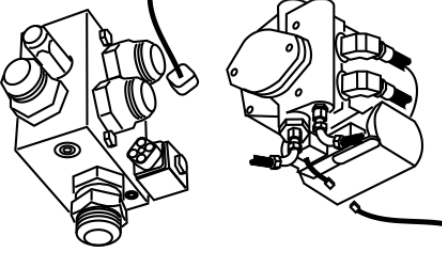
- Disconnect the hydraulic solenoid BEFORE servicing the tractor or mower.

PARA EVITAR MUERTE O LESION GRAVE AL COMIENZO INVOLUNTARIO DE LA CABEZA CORTADORA:

- Desconecte el solenoide hidráulico ANTES DEL servicio al tractor o el cortacésped.

D637 SP

ADVERTENCIA



WARNING

TO AVOID DEATH OR SERIOUS INJURY FROM INADVERTENT MOWER HEAD START UP:

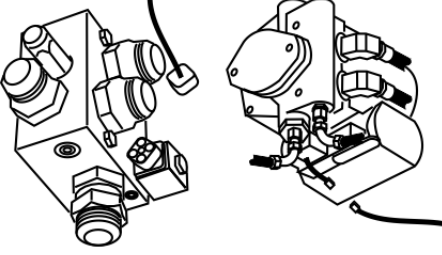
- Disconnect the hydraulic solenoid BEFORE servicing the tractor or mower.

PARA EVITAR MUERTE O LESION GRAVE AL COMIENZO INVOLUNTARIO DE LA CABEZA CORTADORA:

- Desconecte el solenoide hidráulico ANTES DEL servicio al tractor o el cortacésped.

D637 SP

ADVERTENCIA



WARNING

TO AVOID DEATH OR SERIOUS INJURY FROM INADVERTENT MOWER HEAD START UP:

- Disconnect the hydraulic solenoid BEFORE servicing the tractor or mower.

PARA EVITAR MUERTE O LESION GRAVE AL COMIENZO INVOLUNTARIO DE LA CABEZA CORTADORA:

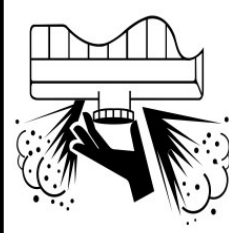
- Desconecte el solenoide hidráulico ANTES DEL servicio al tractor o el cortacésped.

D637 SP

DESCRIPCIÓN DE CALCOMANÍA

SEGURIDAD

⚠️ ADVERTENCIA		
TO AVOID DEATH OR SERIOUS INJURY 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 with side shields (marked with ANSI Z87) and impervious 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 SP 	
PARA EVITAR MUERTE O LESION GRAVE POR LA PENETRACION A LA PIEL POR ALTA PRESION DE ACEITE HIDRAULICO: • NO OPERE el equipo con fugas de aceite o combustible. • MANTENGA todas las mangueras hidráulicas, líneas y conexiones en buenas condiciones y apretadas antes de aplicar presión al sistema. • Relieve la presión hidráulica antes de desconectar las líneas o trabajar en le sistema. • QUITE y reemplace la manguera si sospecha que hay fuga. • FUGAS DE ALTA PRESION PUEDEN SER INVISIBLE. AL VERIFICAR POR FUGAS HIDRAULICAS Y TRABAJANDO ALREDEDOR DE SISTEMAS HIDRAULICOS: • NO use las manos para verificar si hay agujeros. • SIEMPRE USE lentes de seguridad y guantes impeneetrables. • USE papel o un cartón para buscar agujeros. • NO USE las manos o partes del cuerpo para buscar agujeros. • MANTENGA manos y cuerpo LEJOS de agujeros de alfiler y boquillas que expulsan el líquido hidráulicos.		

⚠️ ADVERTENCIA		
PARA EVITAR MUERTE O LESION GRAVE POR ESCALDADURA DE PETROLEO CALIENTE: • MATENGASE ALEJADO del aceite caliente que puede salir a presión del tanque. • Remueva LENTAMENTE la tapa para relevar la presión ANTES de remover la tapa completamente. • PERMITA que el petróleo se enfríe ANTES de remover la tapa.	D625 SP 	
TANQUE PRESURIZADO LA TAPA DE DEPOSITO DE PETRÓLEO ES LA TAPA DE ALIVIO DE PRESIÓN.	PRESSURIZED TANK OIL FILLER CAP IS PRESSURE RELIEF CAP	
TO AVOID DEATH OR SERIOUS INJURY 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.		

SEGURIDAD

INFORMACIÓN DE PARTES

Las cortadoras Alamo Industrial usan balancadas y componentes de sistema seleccionado para los portadores de cuchillas, cuchillas, eje de cortar, navaja, suspensiones de navajas, los rodillos, los componentes de línea motriz, y cojinetes. Estas partes son echas y probadas a la especificaciones de Alamo Industrial. 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 Alamo Industrial por economía y seguridad. (SPAM-1 SP) str

CONTACTE A SU DISTRIBUIDOR ALAMO INDUSTRIAL

Manuales de Partes y Operador



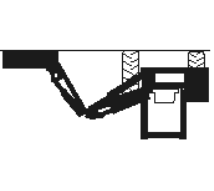
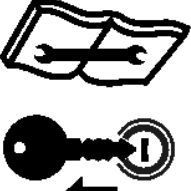
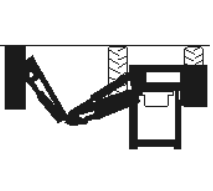
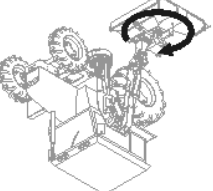
www.alqtr.com/aps

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*

Machete 3 05-26

Sección de Seguridad 1-15

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.
- **EMPUJE 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 o de estar sobre superficies sólidas planas al subirse al implemento para realizar tareas.
- **SIGA** las instrucciones del fabricante sobre cómo manipular los lubricantes, solventes, limpiadores 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.

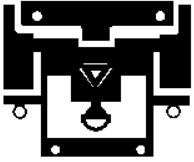
REALICE LAS TAREAS DE SERVICIO, REPARACIÓN, LUBRICACIÓN Y MANTENIMIENTO QUE SE DESCRIBEN EN LA SECCIÓN DE MANTENIMIENTO DEL IMPLEMENTO:

- **INSPECCION** 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.
- **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:

ADVERTENCIA Cáncer y daño reproductivo www.P65Warnings.ca.gov. PN HMBM-01 SPstr

SEGURIDAD

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

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

- **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.
- **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:**

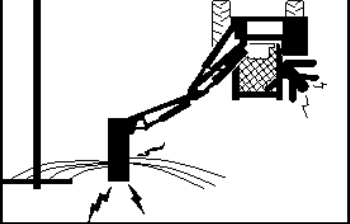
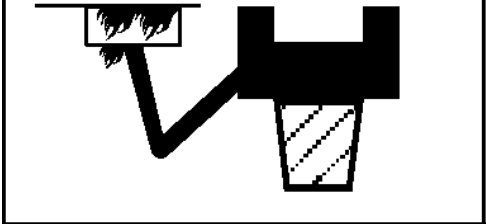
- **INSPECCIÓN DEL TRACTOR:**
- **VERIFIQUE** la dirección y los frenos para asegurarse el correcto funcionamiento y las condiciones adecuadas.
- **VERIFIQUE LLEVAR EL AVISO DE SMV**, los reflectores y las luces de advertencia para la adecuada operación y visibilidad detrás de la unidad.
- **VERIFIQUE** 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 **DETECCIÓN** 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 le 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 str*

Machete 3 05-26

Sección de Seguridad 1-13

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 lejos 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:

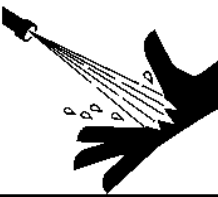
- **INSPECCIONE** el área de corte para que no interfiera con cables de alimentación eléctricos subterráneos, obstrucciones, líneas de gas, cables y servicios, estructuras municipales o de otro tipo.
- **MANTENGA** todas las alas elevadas a 3 metros (10 pies) o una mayor distancia de todos los cables 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 SPstr*

SEGURIDAD

RIESGO DE FILTRACION DE ACEITE HIDRAULICO DE ALTA PRESION

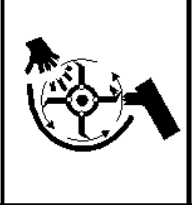
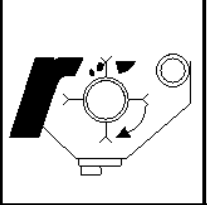
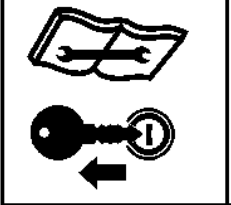
			
Penetración de aceite de alta presión en la piel	Erosión de la piel por el aceite de alta presión	Usar cartón para detectar filtraciones de aceite	Los contenidos del tanque están bajo presión. Permita que el aceite se enfríe antes de quitar la tapa.

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

- **NO OPERE** el equipo con filtraciones de aceite o combustible.
- **MANTENGA** todas las mangueras hidráulicas, líneas y conexiones en **BUEN ESTADO** y **AJUSTADAS** antes de aplicar presión al sistema.
- **LIBERE LA PRESION HIDRAULICA** antes de desconectar las líneas o trabajar en el sistema.
- **QUITTE** y reemplace la manguera si sospecha que tiene filtraciones. Solicite al distribuidor que verifique si hay filtraciones.
- **LAS FILTRACIONES DE LIQUIDO DE ALTA PRESION PUEDEN NO SER VISIBLES.**
- **AL VERIFICAR FUGAS HIDRAULICAS Y TRABAJAR CERCA DE LOS SISTEMAS HIDRAULICOS:**
 - **SIEMPRE USE** gafas de seguridad y guantes impenetrables.
 - **USE** papel o cartón para verificar si hay fugas.
 - **NO USE** las manos o partes del cuerpo para detectar fugas.
 - **MANTENGA** 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 SPstr*

SEGURIDAD

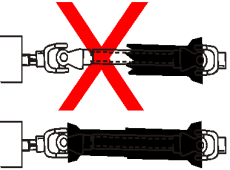
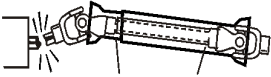
RIESGO DEL CONTACTO A LAS CUCHILLAS DE CORTADORA

	No ponga los dedos debajo de la cortadora
	No ponga las manos debajo de la cortadora trituradora
	No ponga el pie debajo de la cortadora
	No ponga el pie debajo de la cortadora trituradora
	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 SPstr

RIESGO DE ENREDO POR EL PTO

	Peligro de enredo No se acerque o toque ningún eje de transmisión de PTO giratorio
	PTO (Barra Gítoria) 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.

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 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 **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.

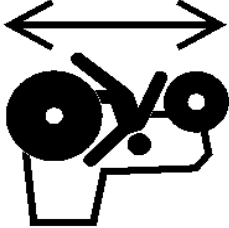
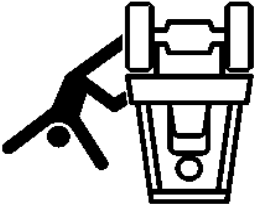
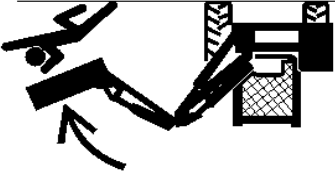
COMUNIQUESE CON EL DISTRIBUIDOR si la línea de conducción del implemento no coincide con el eje de **PTO** del tractor:

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 SPstr*

SEGURIDAD

RIESGO DE ATROPELLO

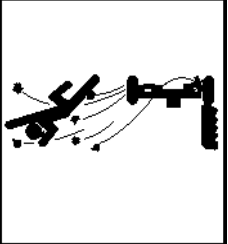
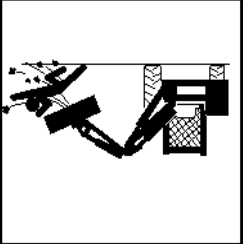
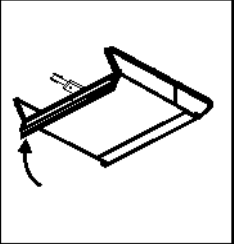
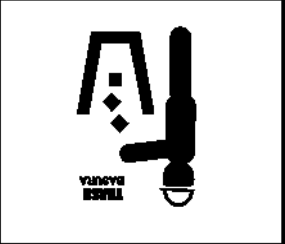
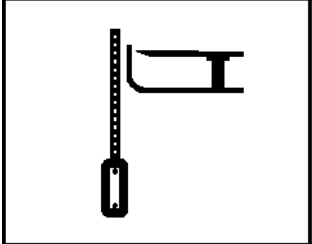
		
Riesgo de atropello del operador	Riesgo de atropello por caída del operador	Riesgo de atropello de personas presentes

▲ 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 ROBAM-01 SPstr*

SEGURIDAD

RIESGO DE OBJETOS LANZADOS CONTINUADO

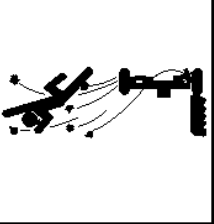
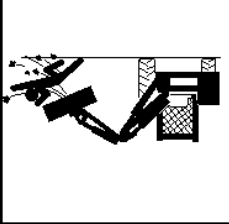
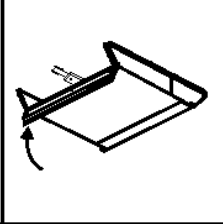
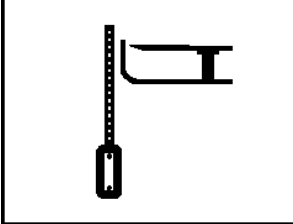
	Peligro de objetos lanzados por la cortadora
	Objetos lanzados desde cortadora elevada
	Mantenga la puerta de la cortadora cerrada si el tráfico se encuentra al menos de 300 pies
	Inspeccione el área. Quite los objetos extraños
	No permita que las cuchillas entren en contacto con objetos sólidos

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.
- **LAS CUCHILLAS PUEDEN FALAR** con el impacto y los objetos pueden ser arrojados a gran velocidad.
- **INSPECCIONE y REEMPLACE** las cuchillas dañadas.
- **VERIFIQUE** el equilibrio del porta cuchillas y **REEMPLACELO** si está dañado.
- **NO** opere la cortadora en agua **PARA EVITAR** una posible **FALLA DE LAS CUCHILLAS**.
- **EVITE OPERAR LA CORTADORA** en reversa:
- **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.
- **DETENGA** la cortadora cuando se produzca **VIBRACIÓN EXCESIVA**:
- **INSPECCIONE** la cortadora para detectar la fuente de la vibración
- **REEMPLACE** toda parte dañada o las **CUCHILLAS** dobladas o dañadas. *PN TOTRBM-02 SPstr*

SEGURIDAD

RIESGO DE OBJETOS LANZADOS

	Peligro de objetos lanzados por la cortadora
	Objetos lanzados desde cortadora elevada
	Mantenga la puerta cerrada si el tráfico de la cortadora 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 fal-

done 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 suelo o cortado previamente si hay **TRANSEÚNTES** dentro de 100 metros a la redonda.

Los **TRANSEÚNTES** estén en el interior de un vehículo cerrado.

ANTES DE OPERAR LA CORTADORA, INSPECCIONE EL ÁREA PARA DETECTAR LA POSIBILIDAD DE OBJETOSQUE PUEDAN SER LANZADOS:

- **QUITE** residuos, piedras, alambres, cables, sogas, cadenas y objetos metálicos y cualquier otro objetos extraños del área.
- Los alambres, cables, cadenas y objetos metálicos pueden ser arrojados o salir desprendidos de la plataforma a gran velocidad:

No permita que las cuchillas de la cortadora entren en contacto con cadáveres de animales en descomposición o otros materiales peligrosos. Las cuchillas de la cortadora podrían arrojar materiales peligrosos y biológicos de la cortadora, exponiendo al operador y personas presentes a riesgos de salud. Siempre use el equipo de protección personal (PPE) aprobado por OSHA cuando limpie o retire material potencialmente peligroso de equipo.

1. **MARQUE** los objetos que no se puedan quitar.

2. **EVITE** estos objetos cuando use la cortadora.

INSPECCIÓN 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, las bandas, los faldone laterales
- **NO OPERE LA CORTADORA** si falta algún protector contra objetos arrojados, o si éstos 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:
- Detenga el corte si algún transeúnte se acerca a 100 metros (300 pies) a la redonda de la cortadora.

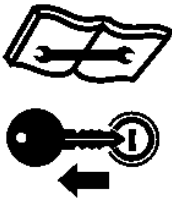
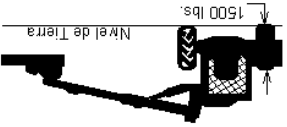
1. **MANTENGA LOS PROTECTORES DE LA CORTADORA**, los faldone laterales, las zapatas antideslizantes y las cuchillas en buen estado de funcionamiento.

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 Spstr*

RIESGO DE APLASTAMIENTO

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

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

CUANDO conecte el cabezal de la cortadora al brazo:

- MANTENGALA LOS TRANSEUNTES 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:

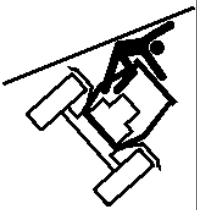
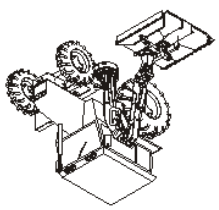
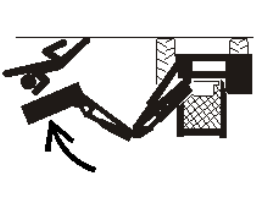
NO UTILICE UN ADAPTADOR DE TDF(PTO).

- 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 SP str*

SEGURIDAD

SEGURIDAD DE CONECTAR O DESCONECTAR IMPLEMENTO

	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

▲ 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.
- SOLO OPERE el tractor y el equipo sentado en el asiento del tractor.
- AL ELEVAR EL BRAZO DE LA CORTADORA:
 - Eleve o descienda SOLO 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.

ELEVADO El equipo puede caerse por una falla mecánica o hidráulica o por un movimiento involuntario de la palanca de control.

▲ 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.

▲ ADVERTENCIA 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-01SP str*

SEGURIDAD

SEGURIDAD DEL OPERADOR

	Lea con atención el Manual del Operador
	Siempre use gafas de seguridad
	Use casco y 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 polvorientas 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 SPst

SEGURIDAD

SEGURIDAD

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 LESIÓN MENOR.

Se utiliza para referirse a prácticas no relacionadas con lesiones físicas.

Los carteles de instrucciones de seguridad (o equivalentes) indican instrucciones o procedimientos específicos relacionados con la seguridad.

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. Los pictogramas se utilizan a lo largo de este manual para ayudar a que su atención visual se centre en los problemas de seguridad.



PELIGRO DE SEGURIDAD El pictograma rodeado por un triángulo indica un peligro de seguridad que debe evitarse. EJEMPLO: Equipo en contacto con líneas eléctricas aéreas	PROCEDIMIENTO DE EVITACIÓN El pictograma por sí mismo o dentro de una caja indica un procedimiento de evitación que se debe seguir para evitar lesiones. EJEMPLO: Apague siempre el motor y retire la llave antes de trabajar en el equipo.	PREVENCIÓN DE SEGURIDAD Un círculo con una barra indica una acción que está prohibida. EJEMPLO: No FUMAR
--	---	--

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 SPstr

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 faldales 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 entredo 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 demasiado 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
- ☐ Aléa de cortadora (ajustar nivel con el centro)
- ☐ Aléa 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 remolque de seguridad (instalada)
- ☐ Manual de Seguridad de Línea de Conducción ADMA (entregado)
- ☐ 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
- ☐ Cójinetes del eje de corte lubricados
- ☐ Todas las piezas metálicas bien ajustadas
- ☐ Presión de aire y neumáticos/tuercas de rueda (bien ajustadas)
- ☐ Cójinetes 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)

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.

Alamo Group Ag. Division 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 DVD
- ☐ Manual del Operador de la Cortador
- ☐ 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

P. O. Box 549

Seguin, TX 78156

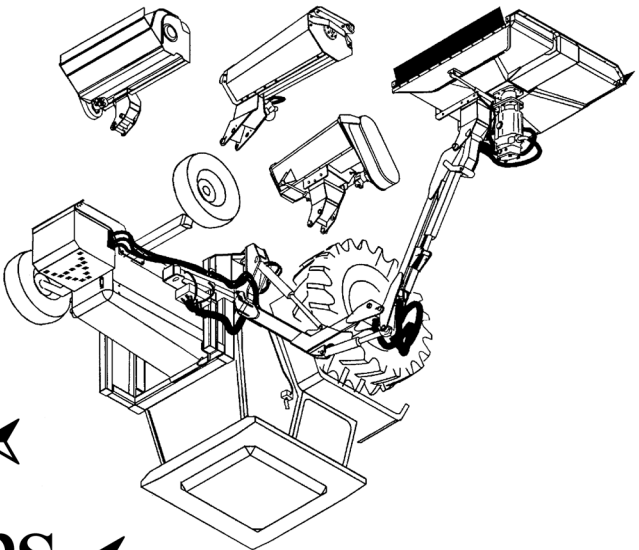
O enviar por fax a:

(830) 372-9529

O enviar por correo electrónico a:

AEMVideo@alamo-group.com

ALAMO INDUSTRIAL *Entrenamiento de Seguridad* *Hace la Diferencia*



➤ **Sea Seguro**

➤ **Sea Alerto**

➤ **Sea Vivo**

➤ **Sea Entrenado**

**antes de funcionar
el cortacésped**



www.alqtr.com/avs

Vídeo de Seguridad

A fin de reducir la tasa de accidentes y mejorar la operación segura de las cortadoras, Alamo Group Ag Division se ha asociado con otros fabricantes de la industria para desarrollar el video para Cortadoras Industriales y Agrícolas AEM/FEMA. Escanee el código QR de arriba para verlo.

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. Si 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 Alamo Group Ag. Si desea recibir una copia del video en DVD, 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 P. O. Box 549, Seguin, TX 78156, y solicite la versión en DVD. 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 mecanado 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 del Título 29, código de la pieza de regulaciones federales 1928.57 (a) (6), 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

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 Alamo Industrial o descargarlo del sitio web de Alamo Industrial (www.alamo-industrial.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 brinda a su implemento Alamo Industrial 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 sujetado al tractor.

La información sobre repuestos se encuentra por separado en el Manual de Partes. Las cortadoras Alamo Industrial 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 Alamo Industrial. 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 Alamo Industrial para ahorrar dinero y maximizar la seguridad.

Para referencia futura, registre el número de modelo y el número de serie de Alamo Industrial que ha adquirido

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



MANUAL DE OPERADOR



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.

Importantes instrucciones de operación y las instrucciones de seguridad se encuentran en el video Cortacésped Sobre Seguridad que se puede acceder instantáneamente en el internet en:

www.algqr.com/avs



Video de Seguridad

[www.algqr.com/avs/C01-Cover SP_AB](http://www.algqr.com/avs/C01-Cover_SP_AB)



ALAMO INDUSTRIAL®

1502 E. Walnut
Seguin, Texas 78155
1-800-882-5762

email: customerservice@alamo-industrial.com



Página Web de
Alamo Industrial
www.algqr.com/avs

