



BUSH HOG®

DISC MOWER

DHM8 DHM9 & DHM10

Published 08/22

Part No. 50078287

OPERATOR'S MANUAL



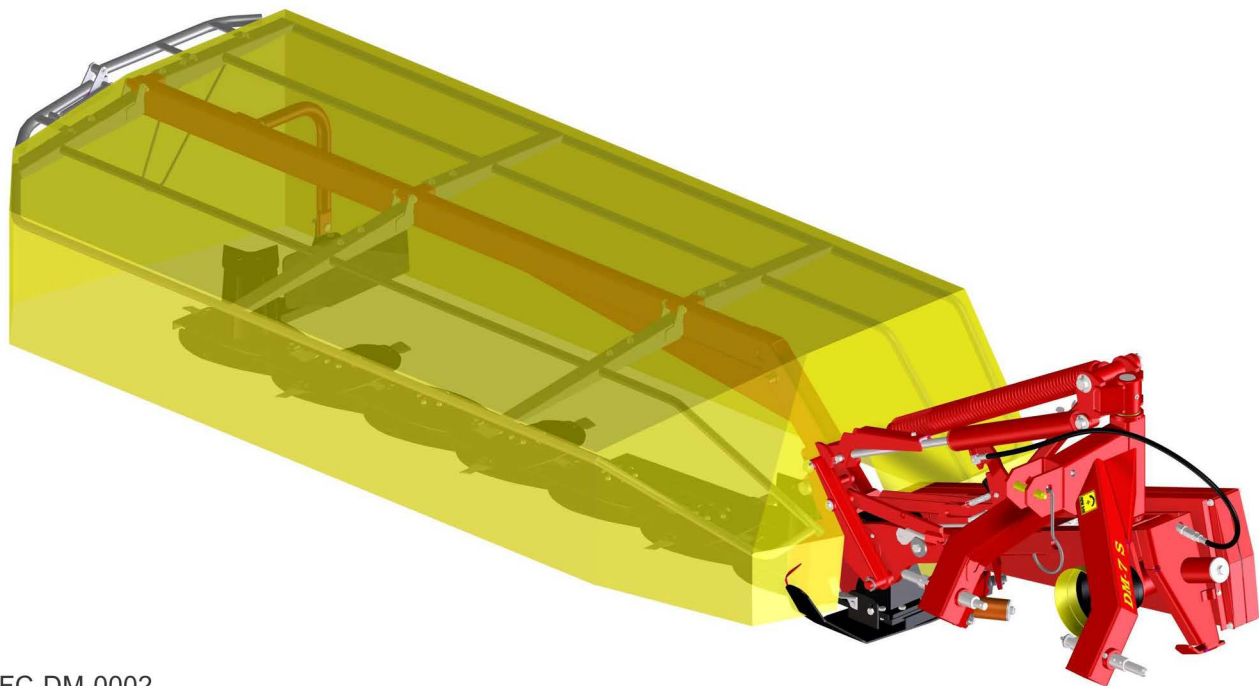
This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. **READ, UNDERSTAND, and FOLLOW** the Safety and Operation Instructions contained in this manual before operating the equipment. *C01-Cover_B str*

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

Safety Video



www.algqr.com/bve



FC-DM-0002

BUSH HOG®

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Bush Hog Web Page



www.algqr.com/bwe

¡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
ALAMO GROUP**
ALWAYS ON THE CUTTING EDGE®

! 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/bms www.algqr.com/bvs	Manuel de l'Opérateur   www.algqr.com/bmf

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Manual do Operador   www.algqr.com/bmp	Benutzerhandbuch   D813 www.algqr.com/bmg

Safety Video

Operator's & Parts Manuals

General Safety



www.algqr.com/bve



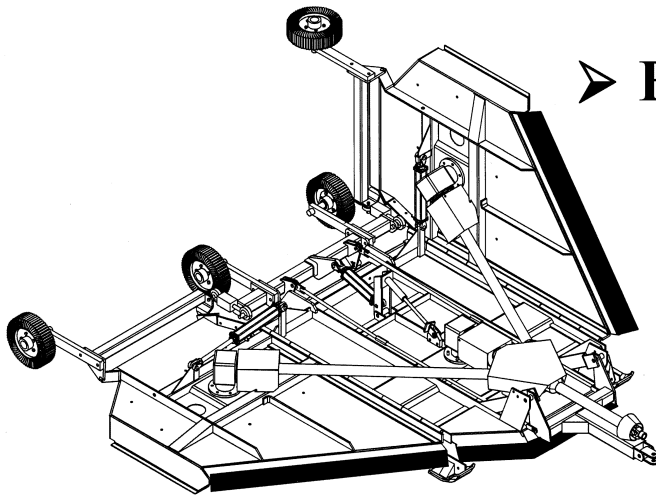
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➤ **BE SAFE!**

➤ **BE ALERT!**

➤ **BE ALIVE!**

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



Safety Training Makes the Difference

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

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

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

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

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

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

OSHA TRAINING REQUIREMENTS

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

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

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

Please Send Me:

- VHS Format – AEM/FEMA Mower Operator Safety Video
- DVD Format – AEM/FEMA Mower Operator Safety Video
- Mower Operator's Manual
- AEM Mower Operator's Safety Manual

Requester Name: _____ Phone: _____

Requester Address: _____

City: _____

State: _____

Zip Code: _____

Mower Model: _____ Serial Number: _____

Date Purchased: _____ Dealer Salesperson: _____

Dealership Name: _____ Dealership Location: _____

Mail to:

AEM Video Services
1502 E. Walnut Street
Seguin, TX 78155

Or Fax to:

(830) 372-9529

Or email to:

AEMVideo@alamo-group.com

To the Owner/Operator/Dealer

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

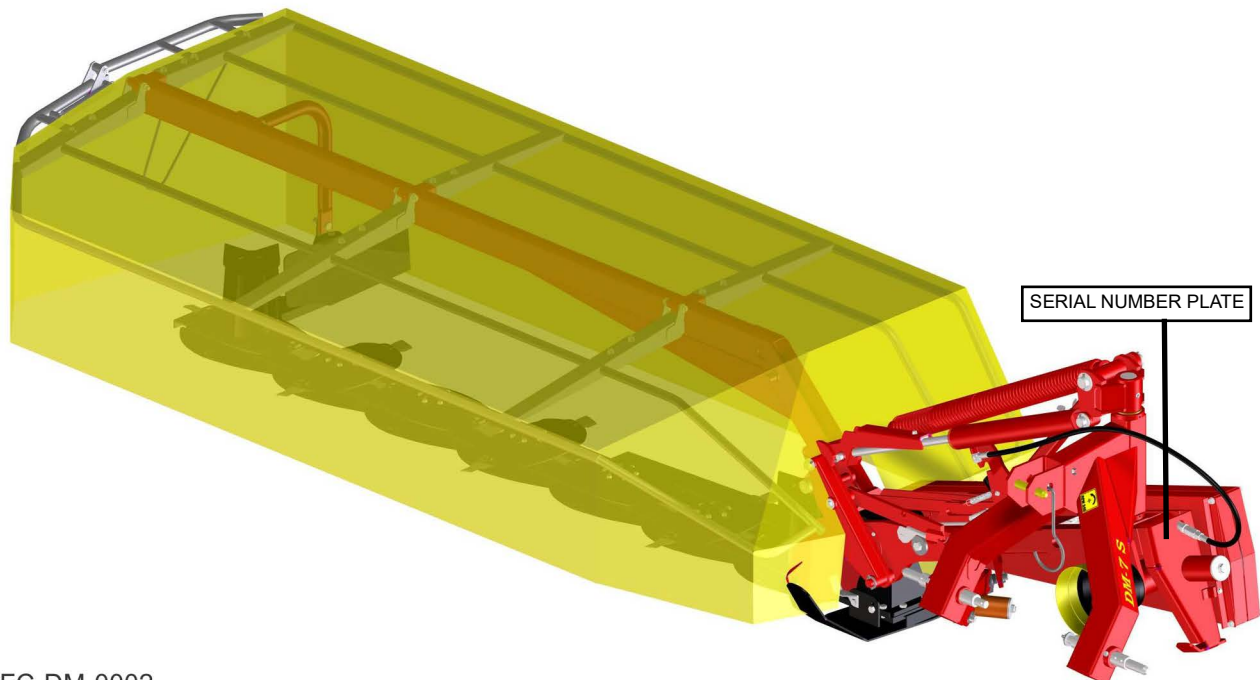
SAFETY FIRST. Completely read and understand the safety section of this manual before operating this equipment. Do not allow anyone to operate this equipment who has not fully read and understood this manual. Contact your Dealer to explain any instructions that you do not fully understand.

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

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

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

Dealer		Telephone		Model Number	
Owner		Purchase Date		Serial Number	



DEALER to CUSTOMER Pre-Delivery / Operation Instructions

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

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

PRE-DELIVERY SERVICE CHECK AND ADJUST OR LUBRICATE AS REQUIRED

See Operator's Manual for Details

Inspection Performed - Warranty and Safety Procedures Explained - Installation Complete

LUBRICATION & HYDRAULICS

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

MOWER

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

ATTACHMENTS & INSTALLATION

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

MOWER TO TRACTOR CONNECTIONS

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

- Pull Type Hitch (Height Adjustment)
- Mounting Hardware Properly Torqued

SAFETY ITEMS

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

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SAFETY SECTION

Safety Section 1-1

SAFETY

GENERAL SAFETY INSTRUCTIONS AND PRACTICES

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



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

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



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



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



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

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.* (SG-1) str

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-2) str



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

¡ LEA EL INSTRUCTIVO!



SAFETY

OPERATOR SAFETY INSTRUCTIONS AND PRACTICES

WARNING

The rotating parts of this machine continue to rotate even after the PTO has been turned off. The operator should remain in the operator's seat for 60 seconds after the brake has been set, the PTO disengaged, the tractor turned off, and all evidence of rotation has ceased. (SG-10) str
"Wait a minute. . . Save a life!"

DANGER

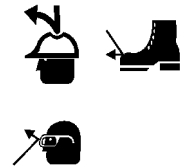
Never operate the Tractor or Implement until you have read and completely understand this Manual, the Tractor Operator's Manual, and each of the Safety Messages found in the Manual or on the Tractor and Implement. Learn how to stop the tractor engine suddenly in an emergency. Never allow inexperienced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

(SG-4)str



WARNING

The operator and all support personnel should wear hard hats, safety shoes, safety glasses, and proper hearing protection at all times for protection from injury including injury from items that may be thrown by the equipment. (SG-16)str



CAUTION

PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS! Tractors with or without an Implement attached can often be noisy enough to cause permanent hearing loss. We recommend that you always wear hearing protection if the noise in the Operator's position exceeds 80db. Noise over 85db over an extended period of time will cause severe hearing loss. Noise over 90db adjacent to the Operator over an extended period of time will cause permanent or total hearing loss.

NOTE: *Hearing loss from loud noise [from tractors, chain saws, radios, and other such sources close to the ear] is cumulative over a lifetime without hope of natural recovery.* (SG-17)str



WARNING

Always read carefully and comply fully with the manufacturer's instructions when handling oil, solvents, cleansers, and any other chemical agent. (SG-22)str



DANGER

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



DANGER

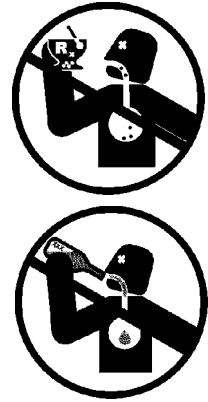
Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be killed or injured. Inadvertent contact with controls can cause the Implement to shift or fall crushing themselves or others. (SG-25) str

SAFETY

⚠ DANGER

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

(SG-27) str



⚠ WARNING

Prolonged operation may cause operator boredom and fatigue affecting safe operation. Take scheduled work breaks to help prevent these potentially impaired operating conditions. Never operate the Implement and Tractor in a fatigued or bored mental state which impairs proper and safe operation. (SG-32) str

⚠ WARNING

Use extreme caution when getting onto the Implement to perform repairs, maintenance and when removing accumulated material. Only stand on solid flat surfaces to ensure good footing. Use a ladder or raised stand to access high spots which cannot be reached from ground level. Slipping and falling can cause serious injury or death.

(SG-33) 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)

⚠ DANGER

DO NOT operate this Implement on a Tractor that is not properly maintained. Should a mechanical or Tractor control failure occur while operating, immediately shut down the Tractor and perform repairs before resuming operation. Serious injury and possible death could occur from not maintaining this Implement and Tractor in good operating condition.

(SG-36) str

⚠ WARNING

Avoid contact with hot surfaces of the engine or muffler. 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-38) str

⚠ WARNING

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



⚠ DANGER

Always keep a careful lookout and use extreme care when working around utility and municipal obstructions. Never allow the Mower to contact any utility, municipal, or other type structure. Clearly mark all mowing obstructions and consult local utility providers for a safe code of operation. (SPU-5) str

SAFETY



Do not operate the implement while wearing loose fitting clothing. Entanglement of the clothing with the rotating elements can result in serious injury or even death. Stay clear of all rotating elements at all times. (SSP-03)str

EQUIPMENT OPERATION SAFETY INSTRUCTIONS AND PRACTICES



Never leave the Tractor and Implement unattended while the Implement is in the lifted position. Accidental operation of lifting lever or a hydraulic failure may cause sudden drop of unit with injury or death by crushing. To properly park the implement when disconnecting it from the tractor, lower the stand and put the retaining pin securely in place, or put a secure support under the A-Frame. Lower the implement carefully to the ground. Do not put hands or feet under lifted components. (S3PT-01) str



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



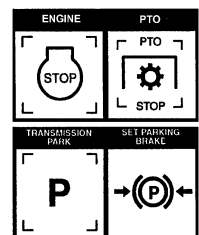
Be sure you have adequate knowledge of the property you will be working on. Take time to make yourself aware of any area underground lines or cables. Contact with buried lines or cable could result in **serious injury** or **death**. If in doubt about buried utility lines call 811 before digging or 1-800-258-0808. (SBH-6) str



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



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



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



SAFETY

SAFETY

▲ DANGER

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



▲ DANGER

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



▲ 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



▲ 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

▲ WARNING

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

▲ DANGER

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

▲ WARNING

In case of mechanical difficulty during operation, place the transmission in the park position, set the parking brake, shut down all power, including the PTO and the engine and remove the key. Wait until all rotating motion has stopped before dismounting. (SG-39) str

SAFETY

WARNING

Do Not operate this equipment in areas where insects such as bees, may attack you and/or cause you to lose control of the equipment. If you must enter into such areas, use a tractor with an enclosed Cab and close the windows to prevent insects from entering. If a tractor cab is not available, wear suitable clothing including head, face, and hand protection to shield you from insects. Attacking insects can cause you to lose control of the tractor, which can result in serious injury or death to you or bystanders. Never dismount a moving tractor.

(SG-40) str

WARNING

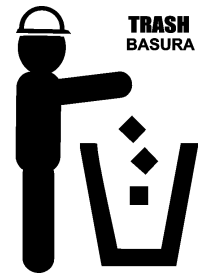
Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see at least 100 feet (30 m) in front and to the sides of the tractor and mower. Make sure that you can clearly see and identify 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

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

WARNING

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



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

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

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

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

SAFETY

WARNING

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



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

DANGER

The Mower is designed for certain mowing applications and is rated to cut up to a specific size vegetation (see Mower Standard Equipment and Specifications). DO NOT use this mower to cut vegetation above the Mower's rated capacity or to cut any type of non-vegetative material. Only operate this Mower on a properly sized and equipped Tractor. Operating this Mower in an application for which it is not designed and/or operating the Mower with the wrong size Tractor can cause Mower component damage and equipment failure resulting in possible serious injury or death. (SGM-14) str

WARNING

Do not operate or pull the mower into standing water. When uplift or fan type mower blades contact water they can be severely deflected downward causing possible failure of blade resulting in serious bodily injury to the operator or bystanders. (SGM-15)

DANGER

Use extreme caution when raising the Mower above ground level. Stop the Blades from turning when the Mower is raised and passersby are within 100 yards. Raising the Mower exposes the Cutting Blades which creates a potentially serious hazard and can cause serious injury by objects thrown from the Blades or by contact with the Blades. (SPU-01)str

DANGER

Disc Mowers are capable under adverse conditions of throwing rocks and other debris for a considerable distance (50 yards or more) and causing serious bodily injury. Follow safety messages carefully.

STOP MOWING IF PASSERSBY ARE WITHIN 50 YARDS UNLESS:

- Front Curtain Shield is installed and in good condition. Replace when needed with genuine Original Equipment Manufacturer's parts.
- Mower cutting head is running close to and parallel to the ground surface.
- Passersby are outside the thrown object zone.
- The area to be cut has been cleared of foreign material such as rocks, cans, glass, and debris. **NOTE: This Disc mower is not to be used for highway maintenance.** (SDM-1) str

SAFETY

WARNING

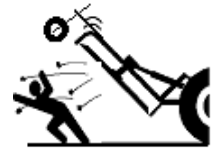
Disc Mowers rotate at a very high rate of speed (3000 RPM). Vibration due to missing, broken, or unbalanced components may cause serious imbalance and lead to rapid failure of components and possible bodily injury from components failure or thrown objects. KEEP BLADE BOLTS AND DISC ATTACHING BOLTS TIGHTENED AS SPECIFIED IN OPERATOR'S MANUAL TO ASSURE THE INTEGRITY OF THE ASSEMBLIES. (SDM-3) str

DANGER

There are obvious and hidden potential hazards in the operation of the Disc Mower. REMEMBER! This machine is often operated in hay, grass, and heavy weeds which could hide foreign objects. Remove all foreign debris before mowing an area. The Blades of this mower can throw objects if shields are not installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not operate this machine with anyone in the immediate area. Stop mowing if anyone is within 50 yards of mower. (SDM-4) str

WARNING

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



SAFETY

CONNECTING OR DISCONNECTING SAFETY INSTRUCTIONS AND PRACTICES

DANGER

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

TRANSPORTING SAFETY INSTRUCTIONS AND PRACTICES

WARNING

Be particularly careful when transporting the Implement with the Tractor. Turn curves or go up hills only at a low speed and using a gradual steering angle. Rear mounted implements move the center of gravity to the rear and remove weight from the front wheels. Make certain, by adding front ballast, that at least 20% of the tractor's weight is on the front wheels to prevent rearing up, loss of steering control or Tractor tip-over. Slow down on rough or uneven surfaces to prevent loss of steering control which could result in property damage or possible injury. Do not transport unless 3-Point lift lever is fully raised and in the latched transport position. Dropping implement in transport can cause serious damage to the tractor and/or Implement and possibly cause the operator or others to be killed or injured. (S3PT-02)str

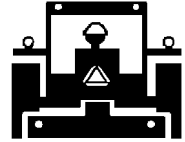
DANGER

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

SAFETY

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



WARNING

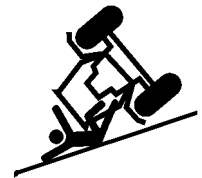
Transport only at speeds where you can maintain control of the equipment. Serious accidents and injuries can result from operating this equipment at high speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes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

DANGER

Be particularly careful when transporting the Implement using the tractor. Turn curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steering. Slow down on rough or uneven surfaces. (STI-01) str

WARNING

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



WARNING

Your driving vision may be reduced or impaired by the tractor, cab, or implement. Before driving on public roadways identify any limited vision areas, and make adjustments to your operating position, mirrors, and the implement transport position so that you can clearly see the area where you will be traveling, and any traffic that may approach you. Failure to maintain adequate vision of the public roadway and traffic can result in serious injury or even death.

(STI-10)

SAFETY



When the cutting head is folded for transport, the center of gravity of the Tractor is raised and the possibility of overturn or tip-over is increased. Serious injury or even death could result from a tractor turnover. Turn slowly and use extra care on hillsides. Never fold the cutting head while on a hillside as the tractor might overturn. *(SDM-2) str*

SAFETY

SAFETY

MAINTENANCE AND SAFETY INSTRUCTIONS AND PRACTICES

⚠ DANGER

Make sure the PTO shield, integral driveline shields, and input shields are installed when using PTO-driven equipment. Always replace any shield if it is damaged or missing. (S3PT-8) str



⚠ WARNING

Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Implement on the ground or securely blocked up, disengage the PTO, and turn off the tractor engine. Push and pull the Remote Cylinder lever in and out several times prior to starting any maintenance or repair work. (S3PT-09)str



⚠ DANGER

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

⚠ WARNING

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

⚠ WARNING

Do not modify or alter this Implement. Do not permit anyone to modify or alter this Implement, any of its components or any Implement function. (SG-8)str

⚠ DANGER

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

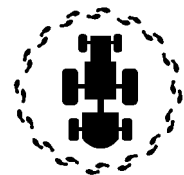


⚠ WARNING

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

⚠ 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



⚠ DANGER

Do Not fill fuel tank while engine is running. Refuel only after engine has cooled down. If fuel is spilled, move machine away from the area of the spill and avoid creating any source of ignition until the spill has been cleaned up. (SG-28) str

SAFETY

WARNING

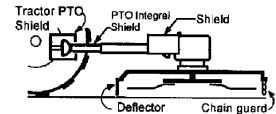
Perform service, repairs and lubrication according to the maintenance section. Ensure the unit is properly lubricated as specified in the lubrication schedule and all bolts and nuts are properly torqued. Failure to properly service, repair and maintain this Implement in good operating condition could cause component failure and possible serious injury or even death. (SG-35str)

WARNING

Use caution and wear protective gloves when handling sharp objects such as blades, knives, and other cutting edges. Be alert to worn component surfaces which have sharp edges. Sharp surfaces can inflict severe laceration injuries if proper hand protection is not worn. (SG-37) 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)



DANGER

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

PARTS INFORMATION

Bush Hog products are designed utilizing specifically matched system components to ensure optimum equipment performance. These parts are made and tested to Bush Hog specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce equipment performance, void warranties, and present a safety hazard. Use genuine Bush Hog parts for economy and safety. (SPBH-2)str

SEE YOUR BUSH HOG DEALER

WARNING

Be sure you have adequate knowledge of the property you will be working on. Take time to make yourself aware of any area underwater or underground lines or cables. Contact with buried lines or cable could result in serious injury or death. (STL-1) str

WARNING

In wet conditions where there is a likelihood of material collecting on the Implement, make certain that this material is removed before traveling on public roadways. (STL-7) str

WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov

SAFETY

SAFETY

STORAGE AND PARKING SAFETY INSTRUCTIONS AND PRACTICES



A rear Implement can fall if not properly supported. Always use the stand on the front hitch (if equipped) or block up securely to prevent falling and possible crushing injury and/or other injury from holding or lifting heavy components. Use the stand to stabilize the implement during storage. (S3PT-3) str

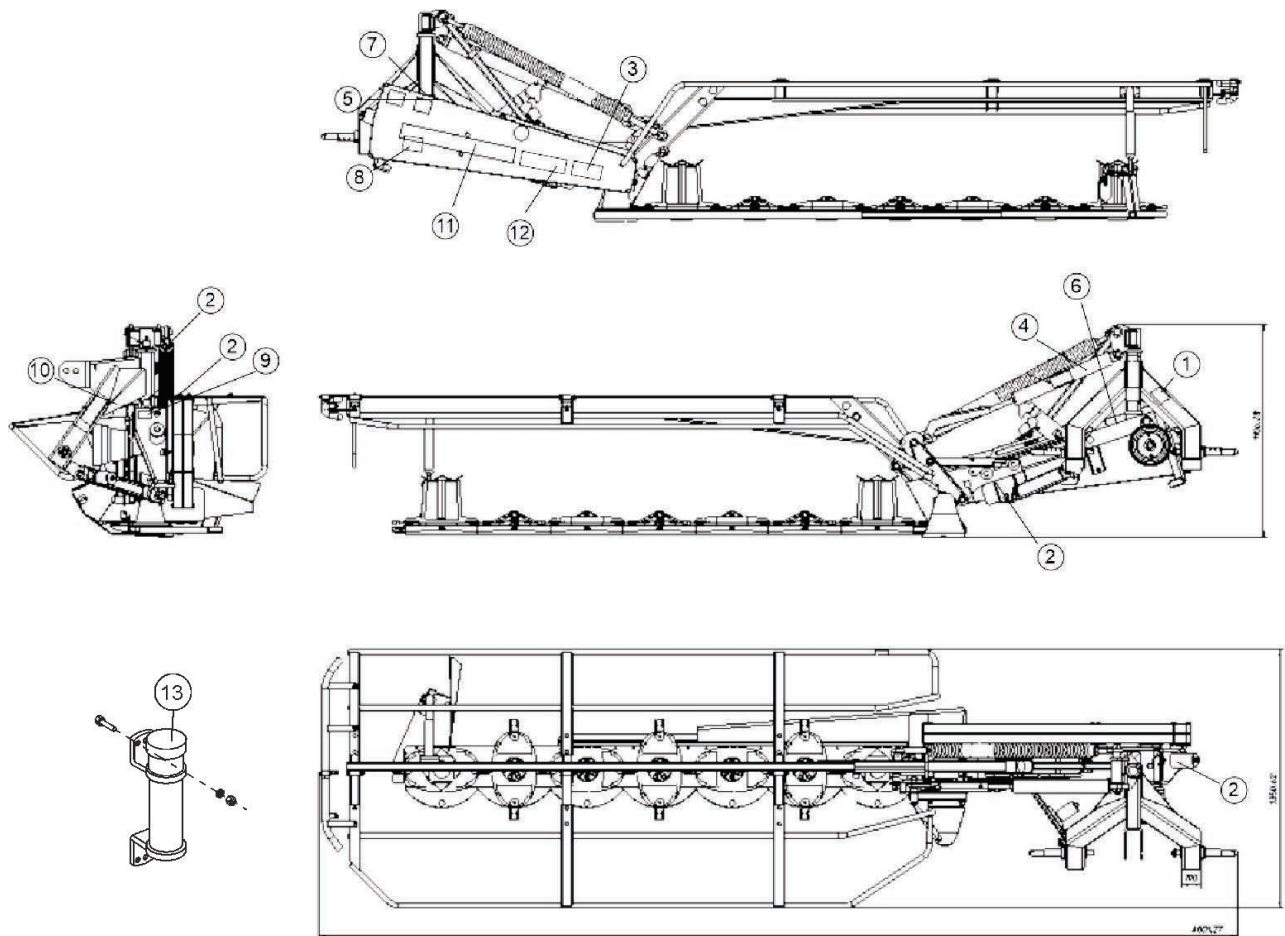
Concluding Safety Instructions and Practices

In addition to the design and configuration of this Implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the Tractor and Equipment Manuals. Pay close attention to the Safety Signs affixed to the Tractor and Equipment. (SG-18)str

SAFETY

DECAL LOCATION

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



SAFETY


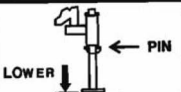


SAFETY

SAFETY

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1.	001.318	1	WARNING	540 RPM Shielding
2.	001.075	4	INSTRUCT	Grease Point
3.	001.319	1	WARNING	Jackstand
4.	52740	1	WARNING	Oil Leak
5.	001.317	1	WARNING	Thrown Objects Hazard
6.	001.695	1	CAUTION	Disconnect
7.	001.320	1	WARNING	Read Manual
8.	D559	1	WARNING	Use Genuine Bush Hog Parts
9.	NFS	1	SERIAL PLT	Serial Number Plate
10.	50058089	1	LOGO	Bush Hog Decal, 2.42" x 11"
11.	50061049	1	LOGO	Bush Hog Decal, 4.85" x 22"
12.	50078274	1	LOGO	DHM8 Model
	50078275	1	LOGO	DHM9 Model
	50078276	1	LOGO	DHM10 Model
13.	50035829	1	---	Canister, Operator's Manual
14.	50078287	1	---	Operator's Manual

SAFETY


DECAL DESCRIPTION

 WARNING	
	Before disconnecting unit from tractor: Lower and pin BOTH jackstands.
	After mounting unit to tractor: Raise and pin BOTH jackstands.
	Failure to comply could result in death or serious injury.

8705842 A

 WARNING	
	<ul style="list-style-type: none">● Set machine to clear obstructions and stones.● Machine can throw stones and debris toward operator or bystanders. Failure to comply could result in death or serious injury.

U 502 86824775 D

 WARNING	
Before operating machine, read operator's manual and ALL SAFETY instructions. If manual is missing, contact your dealer or service department.	
<ol style="list-style-type: none">1. Before starting engine or operation, clear area of bystanders.2. Disengage drives including PTO. Stop engine, wait for all movement to stop before leaving operator's position.3. Keep all shields in place, keep hands, feet, clothing and hair away from moving parts.4. Keep riders off machines.	<ol style="list-style-type: none">5. Use Slow-Moving Vehicle (SMV) identification emblem and flashing warning lights when operating on highways, except when prohibited by law.6. Never adjust, lubricate, clean or unplug machine with engine running. Failure to comply could result in death or serious injury.

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SAFETY

SAFETY

⚠ WARNING

DO NOT OPERATE WITH OIL LEAKS

Inspect hoses regularly. Failure to inspect and replace worn hoses may allow them to rupture suddenly and violently resulting in death or serious bodily injury from scalding, fire burn injury or oil penetration.

 Frayed, torn, or crimped hoses may **rupture** and spray **hot oil** on operator causing serious **scalding injury**.

Oil may spray on **hot tractor parts** and catch fire resulting in **death, severe injury or burns**.

 To check for hose leak, shut tractor off and remove hydraulic pressure. **Never use hands** to check for leaks.

Wear safety glasses with side shields (marked to comply with ANSI Z87), oil impenetrable gloves, 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.

KEEP SHIELDS IN PLACE OVER HYDRAULIC COMPONENTS

 Do not operate equipment if shields are missing or if oil leaks exist.

Repair or replace hoses as needed to prevent unexpected failure and possible serious injury to operator or bystander. If oil penetrates skin, serious injury or gangrene could occur. A doctor familiar with **this type of injury must surgically remove the injected fluid immediately.**

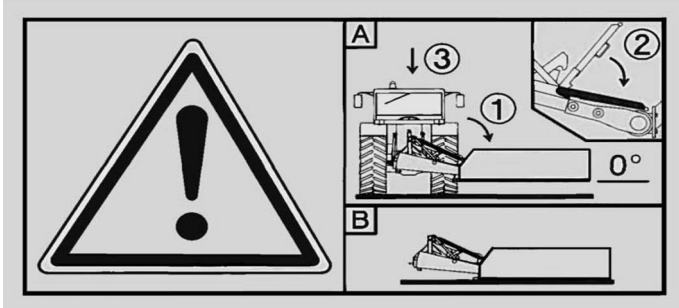
52740

⚠ WARNING

540

Tractor, PTO and component shielding **MUST be in place** when PTO is engaged. Failure to comply could result in death or serious injury.

U 404 67041061 C



SAFETY

SAFETY

WARNING

TO AVOID DEATH OR SERIOUS INJURY:

- ONLY use genuine Bush Hog replacement parts, which have been validated and tested to use on Bush Hog 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 Bush Hog about repair parts at:
2501 Griffin Ave., Selma, AL 36701
Customer Service: 800-363-6096.
Email: contactus@bushhog.com www.algqr.com/bpm



 **WARNING**
Cancer and Reproductive Harm
[www.P65 Warnings.ca.gov](http://www.P65Warnings.ca.gov)

IMPORTANT

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



To prevent serious injury to yourself and/or bystanders, be trained in Safe Mowing Practices. Alamo Group Companies as well as AEM and FEMA provide training material that is critical for your Safety and the Safety of others when operating this equipment. Make these Safety Procedures an important part of every workday. Read and understand the Operator's Manual.

Do not let untrained individuals operate this equipment. Contact your Dealer, AEM (www.aem.org), 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.

D559

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

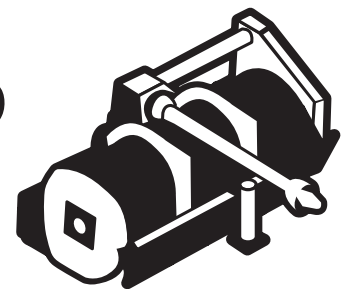
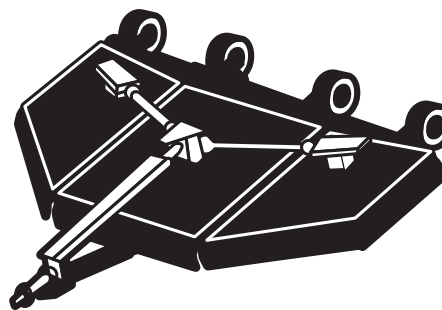
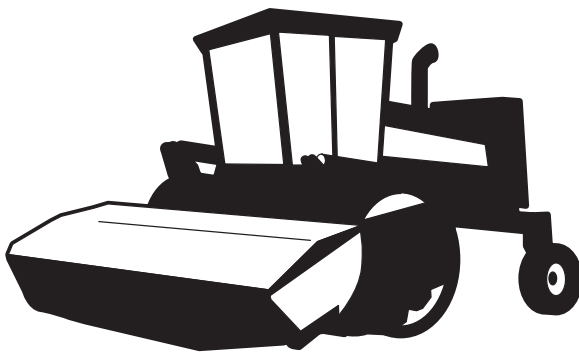
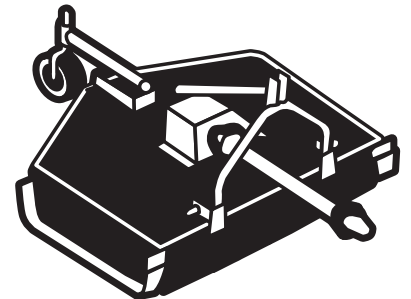
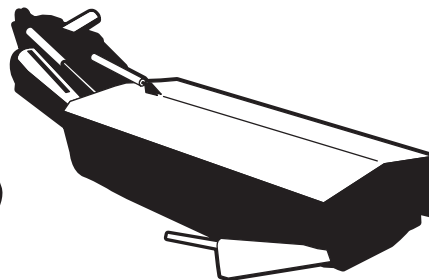
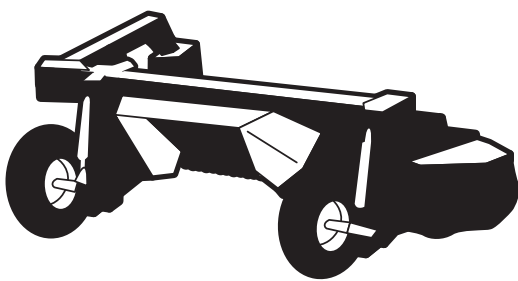
AEM 

Association of
Equipment Manufacturers



SAFETY MANUAL

FOR OPERATING AND MAINTENANCE PERSONNEL



ISBN 978-1-937029-54-8

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Acknowledgment

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

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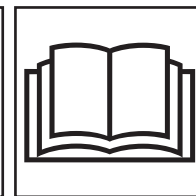
Foreword

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:

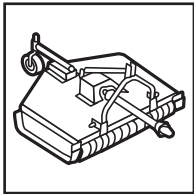
Safe operation is up to you!

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

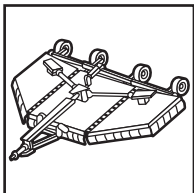
Types of Industrial/Agricultural Mowers

Industrial/Agricultural Mower Types

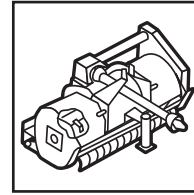
Mowers are used for clipping pastures, shredding crop residue, cutting heavy brush, and mowing waterways, right-of-ways, roadsides or highways. Also, these mowers are used for cutting grass and other growth in public areas such as parks and cemeteries.



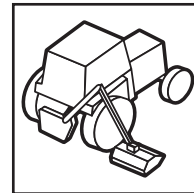
Rotary



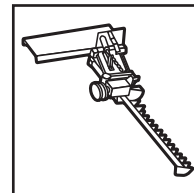
Folding wing rotary



Flail



Boom



Sickle bar

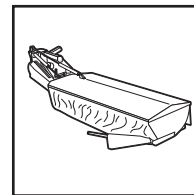
Types of Industrial/Agricultural Mowers

Agricultural Disc Mower Types

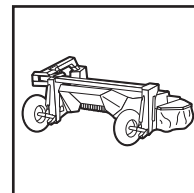
Disc mowers are designed and equipped to cut hay crops at higher field speed.

Disc mower conditioners mow and condition crops.

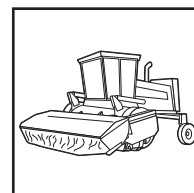
Self-propelled windrowers mow and form conditioned hay into windrows.



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.

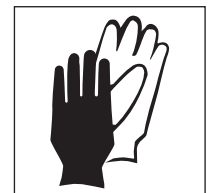
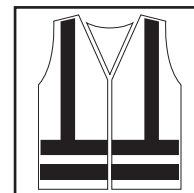
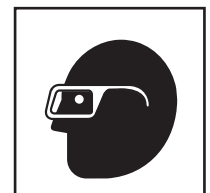
You may need:

- 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

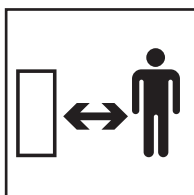


Fasten your seat belt

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.

- 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 you 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.**)



Keep bystanders away



Watch out for thrown objects

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.

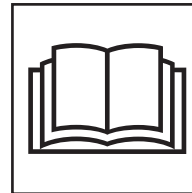
Know the following about your equipment:

- 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

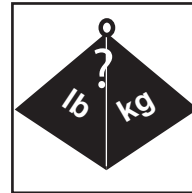
Keep in mind that rain, snow, ice, loose gravel, soft ground, slopes, and other site conditions can affect your machine's operating capabilities. Make sure you are thoroughly familiar with your machine's stability, braking, traction, and other handling characteristics under any conditions you are likely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

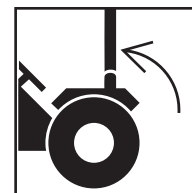
To protect you and others around you, your machine may be equipped with the safety equipment listed below. Additional equipment may be required or some items may not apply, depending on attachments used, job site conditions, or applicable job site rules. Check that each required item is securely in place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



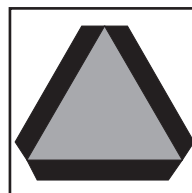
Check all safety devices

- 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.

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.



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.

- 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 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.

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.



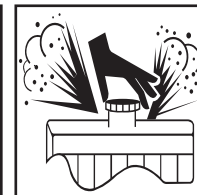
Wear proper hand and eye protection

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.

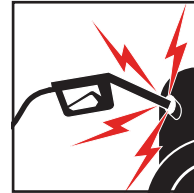
Be sure to use the correct type and grade of fuel.

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:

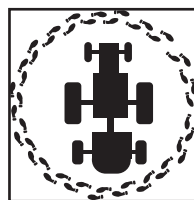
- Use handholds and step plates.
- Never use steering wheels, joysticks or controls as handholds.
- Never jump on or off the machine.
- Never mount or dismount from a moving machine.



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

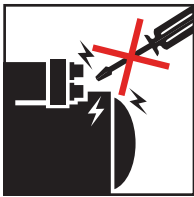
Start Safely

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

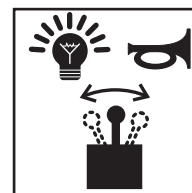
Industrial/agricultural mowers come equipped with various control configurations, patterns, and operating modes, each with their own handling characteristics. Some have selectable or configurable controls, to suit personal preferences or specific applications.

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.

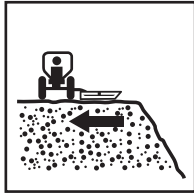
⚠ WARNING! Avoid death or serious injury! **Keep your entire body inside the operator's station while operating the machine.** Never work with your head, arms, feet, or legs beyond the operator's station.

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

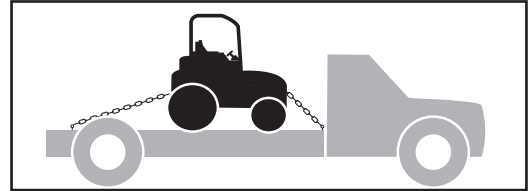
Always wear your seat belt when loading or unloading your machine from a transport device, such as a flatbed truck.

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**

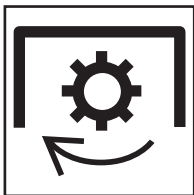
Operate Safely

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.

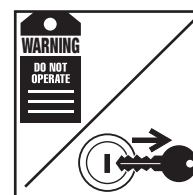
Do not approach a mower until all motion has stopped.

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.

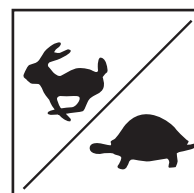
Mow traveling in the forward direction.

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.

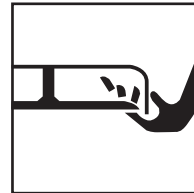
Second mowing pass:

- 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.

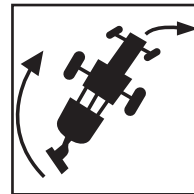
Watch Equipment Clearances

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



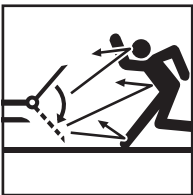
Provide adequate clearance for mower swing

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:

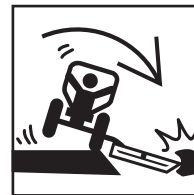
- Do not mow with bystanders within 300 ft (92 m) of a rotary mower or within 100 ft (31 m) of a disc mower.
- Be sure no one is near mower while raising or lowering wings.
- Shut off the PTO and wait for all rotating elements to stop before raising the mower deck or wing section.
- Only raise wing to 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.

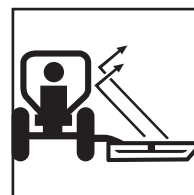
As in all conditions when mowing, use tractors equipped with ROPS and seat belt. **Make sure the ROPS are raised and locked in place and always wear your seat belt.**

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.

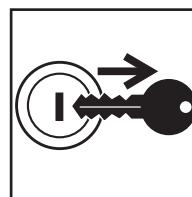
⚠ WARNING! Avoid death or serious injury from unintended movement of the machine. **Never leave a machine unattended with the engine running.**

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.

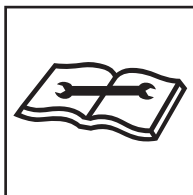
Protect Yourself

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

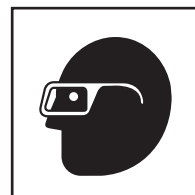
You may need:

- 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.



Maintain equipment



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.**

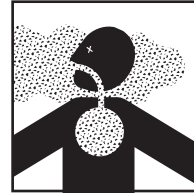


Use a “DO NOT OPERATE” tag

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

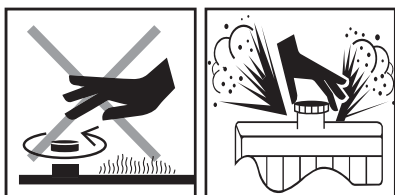
Ultra-Low Sulfur Diesel (ULSD) Hazard

⚠ 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

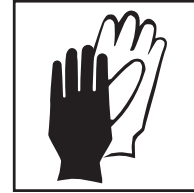
The liquid in batteries contains acid, which is a POISON and could cause SEVERE CHEMICAL BURNS.

Avoid injury:

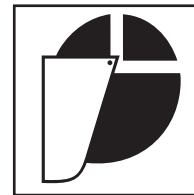
- Wear a face shield to prevent contact with your eyes.
- Wear chemical-resistant gloves and clothing to keep electrolyte off your skin and regular clothing.

⚠ 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.

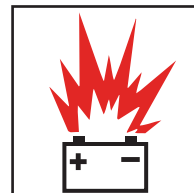
⚠ WARNING! Avoid serious injury from battery explosion. **Do not charge a battery or jump-start the engine if the battery is frozen.**

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

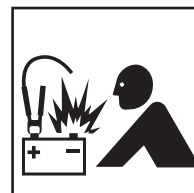
Safety rules during battery jump-starting:

- 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:

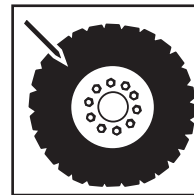
- Damage to the rims
- Missing or loose lug nuts or bolts
- Misalignment

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.

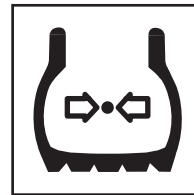
⚠ WARNING! The types of wheels and tires usually found on this equipment require special care when servicing to prevent death or serious injury. **Do not inflate the tires above the recommended pressure.**

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.

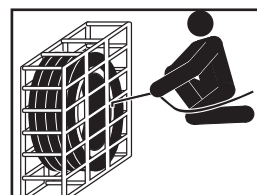
When replacing the tires, ensure the tires are of the appropriate rating specified by the manufacturer.

⚠ 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	
<input checked="" type="checkbox"/>	_____
<input checked="" type="checkbox"/>	_____
<input checked="" type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____

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.

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 presentarse 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.

Realizar el servicio de mantenimiento de manera segura

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.

Mantenimiento de la cuchilla de la segadora

No corra riesgos utilizando cuchillas dañadas o dobladas. Los fabricantes de la Asociación de fabricantes de equipos (AEM) y la Asociación de fabricantes de maquinaria agrícola (FEVA, por sus siglas en inglés) recomiendan que no se reutilicen, enderrecen, 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 reparar 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.

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.

Éjese 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.



El fluido presurizado puede penetrar en el cuerpo.

Lista de verificación	
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<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Una vez completado, verifique el servicio de mantenimiento.

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.

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

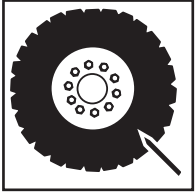
Todo el servicio de los neumáticos debe realizarse por un centro de servicio de neumáticos calificado o por personal de servicio autorizado debidamente capacitado sobre los procedimientos y el uso del equipo de seguridad diseñado para el servicio de mantenimiento de neumáticos.

Realizar el servicio de

mantenimiento de manera segura

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.

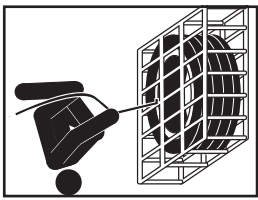
Nunca vuelva a inflar un neumático que se ha desinflado por completo o seriamente sin quitar el neumático del rin. Haga inspeccionar detenidamente el neumático y el rin en busca de daños antes de volver a montarlos. Al agregar aire a un neumático, hágalo a una cierta distancia. Siempre utilice una manguera 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.



Verifique que los neumáticos y las ruedas no estén dañados



Mantenga la presión de neumáticos adecuada



Use dispositivos de seguridad al inflar los neumáticos.



Evite que exploten los neumáticos

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.



Utilice protección para las manos.



Utilice protección para el rostro.

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 límpiese 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.

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.

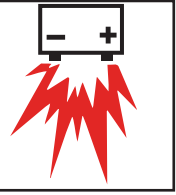
Nunca revise la batería colocando un objeto de metal a lo largo de los postes de la batería. La chispa que se genere podría provocar una explosión.

¡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.



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.

- 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 causar combustión de 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).

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.

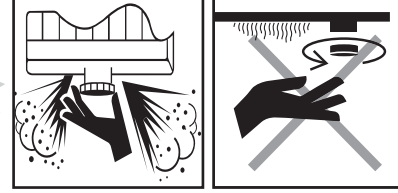
• Detenga el motor y espere a que se enfríe el sistema.

• 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

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.

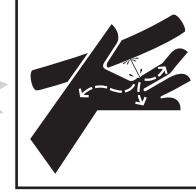
• Examine visualmente las líneas de fluido en las

imediciones 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.

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, atíjelo 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.

Peligros del sistema eléctrico

Lámparas e iluminación

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. Si le penetra algún fluido en la piel, un médico familiarizado con este tipo de lesiones deberá extraerlo quirúrgicamente al cabo de algunas horas.

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

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.

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.

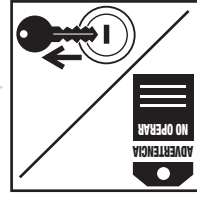
Instale dispositivos de soporte aprobados al trabajar cerca o debajo de equipos elevados.

¡ADVERTENCIA! Las máquinas u otros equipos sin apoyo o elevados pueden caerse sorpresivamente. **Nunca se coloquen 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.**



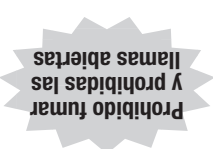
Utilice una etiqueta que diga "NO OPERAR".

Realizar el servicio de mantenimiento de manera segura

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



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



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, torcidos o dobladas. Nunca use cables pelados, torcidos o doblados. Nunca use ganchos doblados o deformados.

Utilice gatos y grúas con cuidado.

Realizar el servicio de mantenimiento de manera segura

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, carcassas 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, carcassas u otras piezas esenciales.
- No utilice pernos de mayor resistencia para reemplazar los pernos de seguridad originales del fabricante.



Evite las piezas que roten.

⚠️ 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 funcionando.** 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 calzados 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.

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.

Realizar el servicio de mantenimiento de manera segura

- Siga las recomendaciones del fabricante para liberar la presión del sistema hidráulico.
- Tabee 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.

Apagar de manera segura

Seleccione un lugar adecuado para estacionar

Al apagar la máquina, estacione 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/barras(s) de sujeción del operador, si hubiera.

Realizar el servicio de mantenimiento de manera segura

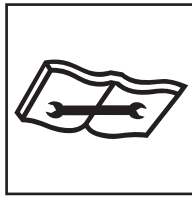
Sepa lo que está haciendo.

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.



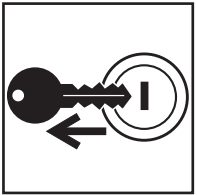
Es posible que necesite lo siguiente:

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

Protéjase

- 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.



Apague el motor, retire la llave.

- Sáquese el cinturón de seguridad/la sujeción.
- Trabaje 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 pedales y las manijas. Mire hacia la máquina al bajar. Nunca salte de la máquina.
- Bloquee las ruedas si está en una pendiente o inclinación.

Operar de manera segura

Prácticas de seguridad para el corte en orillas de zanjás

- Tenga cuidado al cortar en orillas de zanjás. Esté atento a derrumbes, áreas erosionadas y obstrucciones de corte a lo largo de las orillas de las zanjás. 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 zanjás con alas arrojadors o cuchillas al levantar y bajar las alas 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.



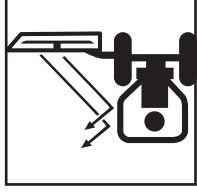
Evite golpear obstrucciones.

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 arrojadors y contacto con las cuchillas.
- Evite posibles lesiones graves o la muerte por objetos arrojadors o contacto con las cuchillas al levantar y bajar las alas durante las operaciones de corte:
- No corte con transmisiones 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 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.



Utilice cabinas ROPS cerradas o recintos de protección

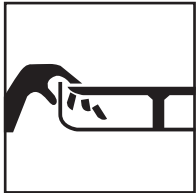
- No levante las segadoras montadas en la parte trasera o lateral, ni las alas desde el suelo durante estas operaciones.
 - Manténgase alerta ante hoyos, protuberancias, surcos, rocas, tocónes u otras obstrucciones que podrían volcar la máquina.
 - Evite las condiciones con suelo resbaladizo que podrían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

Operar de manera segura

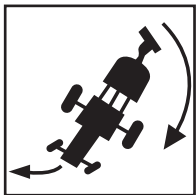
Observar los espacios libres del equipo

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.



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:

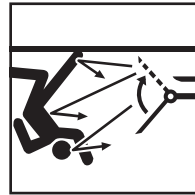
- Apague la segadora y el tractor utilizando la práctica adecuada de apagado del equipo antes de bajarse el tractor. (Consulte la página 38, **Apagado seguro**).
- Inspecciones el área y retire o señale escombros u obstáculos.
- Corte la hierba más alta (10 a 15 pulgadas/ 250 a 400 mm) para evitar objetos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

Segunda pasada de corte:

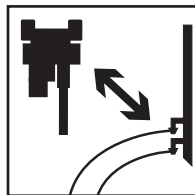
- Apague la segadora y el tractor utilizando la práctica adecuada de apagado del equipo antes de bajarse el tractor.
- Inspecciones el área y retire o señale escombros u obstáculos.
- Corte la hierba a la altura deseada y, cuando sea posible, en un ángulo de 90 grados con respecto a la primera pasada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

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 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.

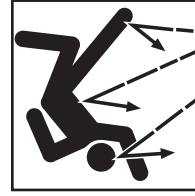
¡PELIGRO! Evite electrocución o lesiones graves por contacto o falta de espacio libre adecuado con líneas eléctricas o aparatos energizados. No permita que la máquina o el accesorio se acerque o entre en contacto con ninguna línea eléctrica. No se acerque ni toque ninguna máquina en contacto con una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

Operar de manera segura

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.

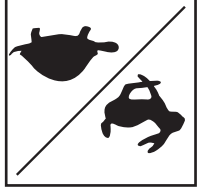
Operar de manera segura

Velocidad de corte de la segadora

La velocidad de corte adecuada depende de las condiciones del terreno y de 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

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.

Cortar marcha atrás

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. Este 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.

Operar de manera segura

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.

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 retroceda 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.

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.



No opere una segadora dañada.

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.

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 recomienda el fabricante.

Varias precauciones se aplican a todas las máquinas:

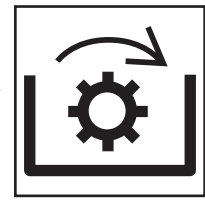
- Mantenga alejados a los transeúntes.
- Suba y baje en una superficie nivelada.
- Mantenga una visibilidad adecuada; para ello, suba o baje en áreas bien iluminadas y lejos de otros vehículos, equipos o construcciones.
- Bloquee el vehículo de traslado para que no pueda moverse.
- Asegúrese de que la 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.

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 retroceda 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

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.

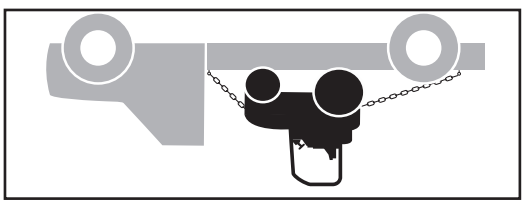
Al trasladar una máquina, siga los procedimientos para subir, amarrar y bajar que recomienda el fabricante.

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.

Operar de manera segura

Encadene y bloquee la segadora de manera segura para el 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.

Operar de manera segura

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

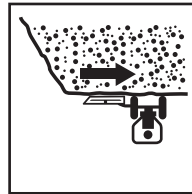
pendientes, verifique las condiciones de la superficie para asegurar una tracción adecuada. La pérdida de tracción podría hacer que la máquina se resbale y vuelque.

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.**

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 terrapienes o pendientes. Siempre opere la máquina en forma perpendicular al terraplen. Manténgase alejado del borde.



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

Actúe con precaución al trabajar en pistas, terrapienes 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.

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. requiridas 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.

Avigüe 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.

Obedezca las normas de tránsito



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.

Tener cuidado con los obstáculos

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.

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

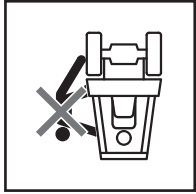
Operar de manera segura

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.

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 operar. 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.

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.

Retroceder 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.

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.**

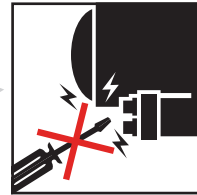
Arrancar de manera segura

Arranque del motor

!ADVERTENCIA! Arranque el motor solo desde el asiento del operador. **Nunca intente arrancar el motor puenteadando 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.
- Ajustese 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 puenteadando las terminales

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 una con sus características propias o configurables para ajustarse a las preferencias personales o a las aplicaciones específicas.

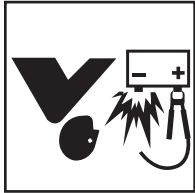


Opere los instrumentos y controles de manera correcta.

!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.

- 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.

Asegúrese de que la máquina esté funcionando correctamente; para ello, realice lo siguiente:
Asegúrese de saber el patrón de control que seleccionó y de comprender cómo funcionará la máquina con ese patrón de control.



procedimientos adecuados de puenteadado. (Consulte la página 46, Peligros de la batería).

!ADVERTENCIA! Un puenteadado 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 puenteadado.**

Auxiliares de arranque

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

- 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.

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 hacerle perder el control o hacer que la máquina se dé vuelta.

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

Plantifique su trabajo.

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

Verifique los espacios aéreos.

- 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 despididos.

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

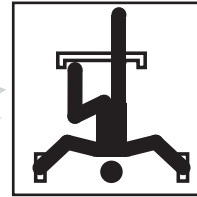
Siempre utilice un contacto de tres puntos al subir o bajar de la máquina. Un contacto de tres puntos significa una mano y dos pies o dos manos y un pie en contacto con la máquina en todo momento.

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. Limpíese 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:

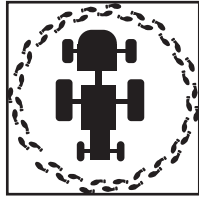
- Utilice los pasamanos y las placas de los peldaños.
- Nunca utilice volantes, mandos de control ni controles como pasamanos.
- Nunca salte para subir o bajar de la máquina.
- Nunca suba ni baje de una máquina en movimiento.



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.** Aviseles 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.



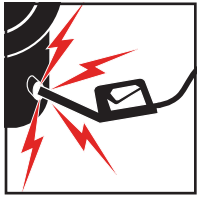
Antes de comenzar, camine alrededor de toda el área de la segadora.

Prepararse para una operación segura

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 cumple 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

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 pedales 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 retirarlos 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.

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 de 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 ambientes inflamables o explosivos. 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

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 trabde 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.**



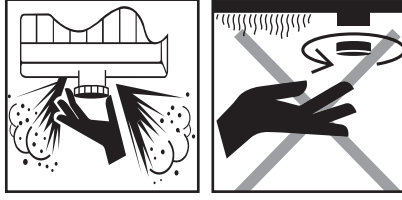
Evite el aplastamiento: bloquee o apoye de manera segura la segadora.

Prepararse para una operación segura

Verifique el sistema de enfriamiento

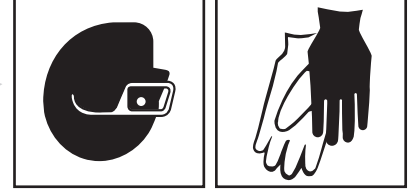
Cuando verifique el sistema de enfriamiento, siga las instrucciones del fabricante para asegurarse de que el motor esté apagado y frío para evitar que el ventilador arranque inesperadamente. Asegúrese de que los enfriadores y el compartimiento del motor estén limpios y libres de escombros, ya que podrían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

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

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.

- 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

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.

Prepararse para una operación segura

Accesorios de la máquina

- 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.

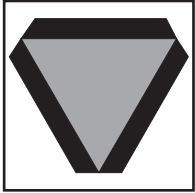
Asegúrese de que todos los accesorios estén en condiciones de operación. Verifique los siguientes accesorios según corresponda:

- Los sistemas de fijación mecánica están conectados correctamente.
- Pasador de enganche de la barra de tracción con retención positiva.
- Cadena de remoique 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.

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:

- Los accopladores 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.



Utilice iluminación y señalización

- El cinturón de seguridad, los anclajes y la hebilla están en condiciones de funcionamiento adecuadas.
- Los yugos, accopladores 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 despedido 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.

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. Fídale 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

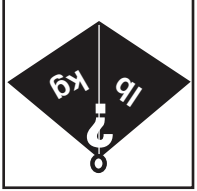
Tenga en cuenta que la lluvia, la nieve, el hielo, las piedras sueltas, el suelo blando, las pendientes y otras condiciones del lugar pueden afectar las capacidades de operación de la máquina. Asegúrese de estar absolutamente familiarizado con la estabilidad, los frenos, la tracción y demás características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

Prepararse para una operación segura

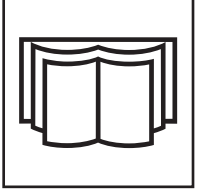
Verifique y use todos los dispositivos de seguridad que estén disponibles.

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
 - Limpiaaparabrisas/desempañador
- ¡Uselos! Nunca retire ni desconecte ningún dispositivo de seguridad.



Conozca la capacidad y las características de la máquina



Lea y comprenda los manuales antes de operar una máquina



Ajustese el cinturón de seguridad.



Nunca modifique una ROPS

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 despididos de una segadora.

Sepa que 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.

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 responsable 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 requieren la capacitación y certificación del operador.**

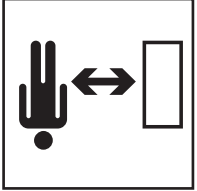
Estas son algunas de las normas que rigen su trabajo:

- 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 despididos. 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.

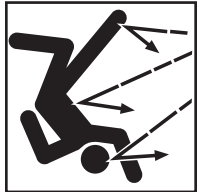
Seguir un programa de seguridad

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 despididos.



Conozca y comprenda las normas de operación



Ajustese el cinturón de seguridad.

- 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 despididos 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 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

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 regulaciones 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

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. Informe 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.

¡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.**

Seguir un programa de seguridad

¡Tenga cuidado!

Los errores humanos son el resultado de muchos factores: descuido, cansancio, sobrecarga sensorial, precapación, 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.

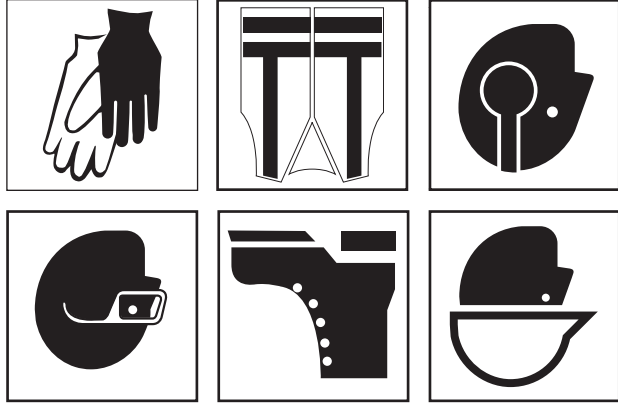
Por su seguridad y la de terceros, actúe de manera segura y aliéntele a sus compañeros de trabajo a que también lo hagan.

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



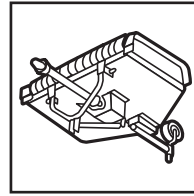
Use todo lo que necesite para protegerse, no corra riesgos.

¡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.

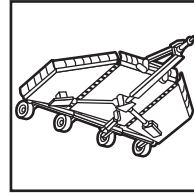
Tipos de segadoras agrícolas/industriales

Tipos de segadora agrícola/industrial

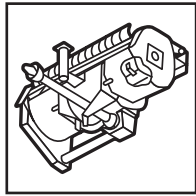
Las segadoras se utilizan para recortar pastizales, triturar residuos de cultivos, cortar vegetación densa y cortar cursos de agua, derechos de paso, bordes de caminos o carreteras. También, estas segadoras se utilizan para cortar hierba y otra vegetación en áreas públicas como parques y cementerios.



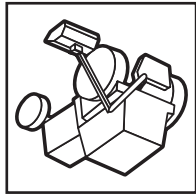
Rotativa



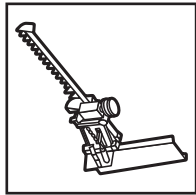
Rotativa de ala plegable



Desbrozadora



De brazo

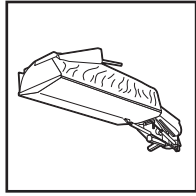


Con barra en forma de hoz

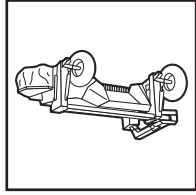
Tipos de segadoras agrícolas/industriales

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.

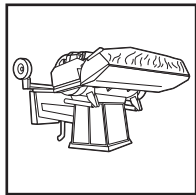


Segadora de disco



Segadora acondicionadora de disco

Las segadoras acondicionadoras de disco cortan y acondicionan los cultivos.



Segadora hileradora autopropulsada

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

Alertas de seguridad

Indicaciones de advertencia

Las indicaciones de advertencia son palabras distintas 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 indica una situación peligrosa que, si no se evita, derivará en la muerte de una persona o la aparición de lesiones graves.



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



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



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



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.

Información para el usuario/operador

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.

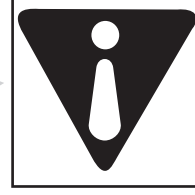
Si, después de analizar los manuales de operación del fabricante y este Manual de Seguridad tiene alguna pregunta, comuníquese con el fabricante del equipo.

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!

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



Índice

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

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

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Introducción



Lea y comprenda los manuales antes de operar una máquina

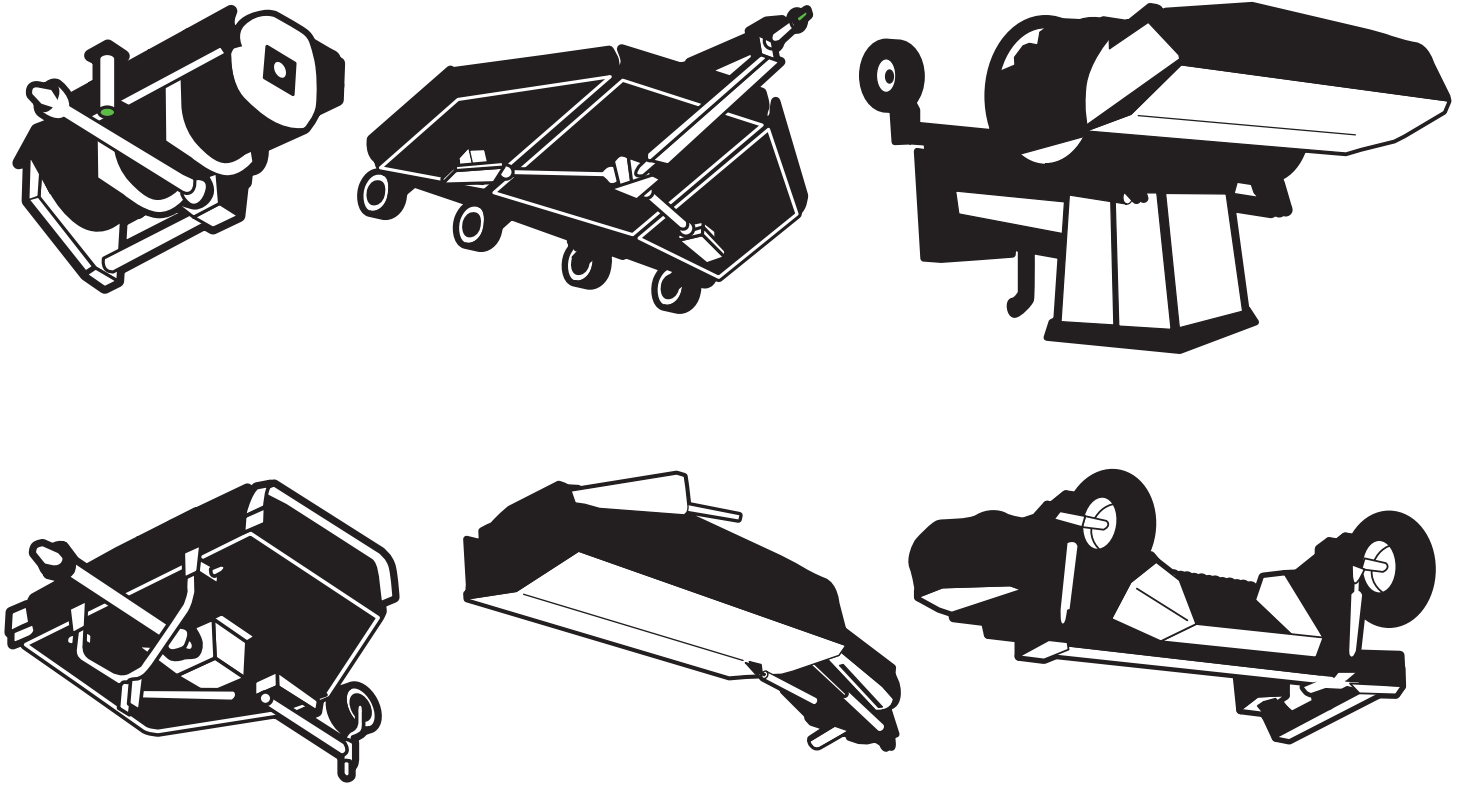
¡IMPORTANTE! Antes de operar esta máquina, asegúrese de tener los manuales de operación del fabricante de esta máquina y de todos los accesorios. Si no tiene el manual de operación del fabricante, pídale una copia a su empleador, al distribuidor o, directamente, al fabricante. En todo momento, conserve 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 de la segadora agrícola/industrial de la AEM esta 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.

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 de su máquina e indicar 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 regulaciones locales, estatales/provinciales y federales



MANUAL DE SEGURIDAD



PARA EL PERSONAL DE OPERACIÓN Y MANTENIMIENTO

SEGADORA AGRÍCOLA/INDUSTRIAL

AEM
Asociación de
Fabricantes de Equipos

INTRODUCTION SECTION

Introduction Section 2-1

INTRODUCTION

INTRODUCTION

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

The purpose of this manual is to familiarize, instruct, and train. The Safety Section is a **MUST READ** section prior to any use of the mower. The Assembly Section instructs the owner/operator in the correct assembly of the Mower using standard and optional equipment. Careful use and timely service saves extensive repairs and costly downtime losses. The Operation Section informs the owner/operator how to work the mower and explains proper procedures and safe practices prior to and during the operation of the mower. The Trouble-Shooting Guide helps diagnose difficulties with the mower and offers solutions to the problems. The Maintenance Section instructs the owner/operator of all the necessary inspection, lubrication, general maintenance needed to insure long life and trouble free operation of your mower. The Parts Listing section is designed to familiarize the owner/operator with replaceable parts on the Mower.

Safety is of primary importance to the owner/operator and to the manufacturer. The first section of this manual includes a list of Safety Messages, that, if followed, will help protect the operator and bystanders from injury or death. Many of the Safety Messages will be repeated throughout the manual. The owner/operator/dealer should know these Safety Messages before assembly and be aware of the hazards of operating this mower during assembly, use, and maintenance. The Safety Alert Symbol combined with a Signal Word, as seen below, is intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this machine.



DANGER

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



WARNING

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



CAUTION

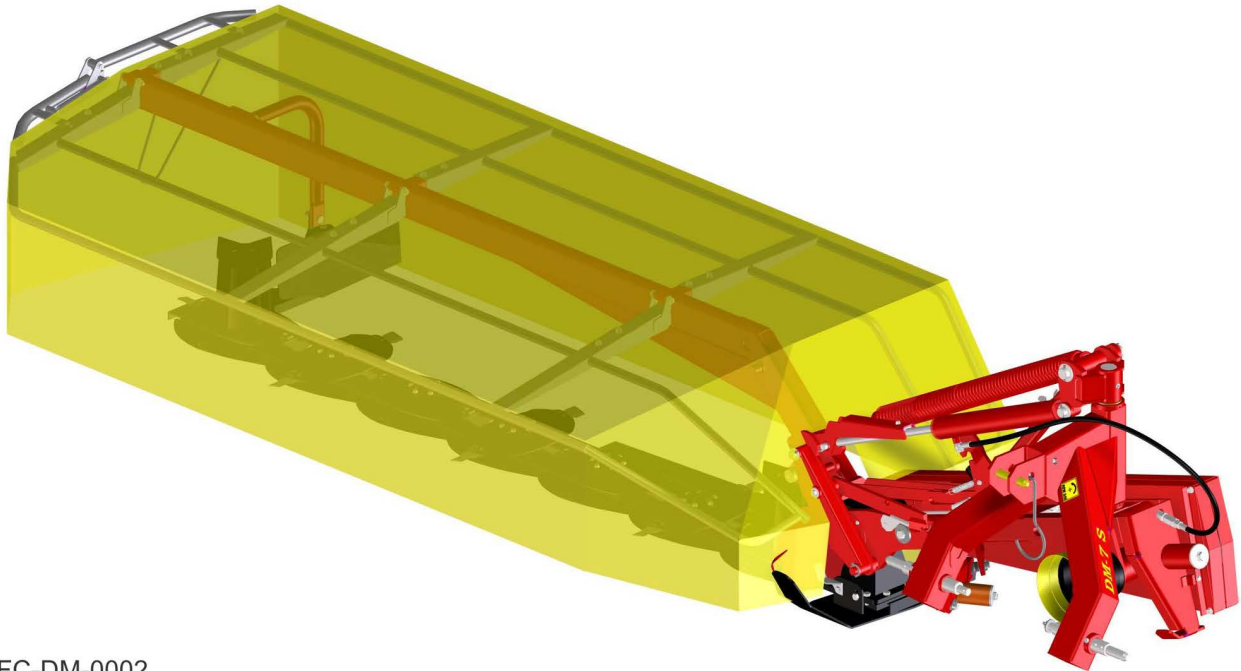
Indicates a hazardous situation that, if not avoided, **MAY** result in **MINOR OR MODERATE INJURY**.

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



FC-DM-0002

INTRODUCTION

The DHM mowers have been performance tested and proven to reduce plugging and wrapping in both light and heavy hay crops. Each cutter bar has been designed with added stiffness to provide exceptional strength in all working conditions. Oval discs allow for superior flow of material over the cutter bar and a better distribution of your hay crop. Robust, double-sided steel knives are perfectly timed to overlap at just the right distance to provide a smooth, clean, clog-free cut.

The gear-driven cutter bar houses oiled and sealed bearings to reduce contamination and provide ease of maintenance. A hydraulic mower bar cylinder effortlessly lifts the unit for end of field turns and transport. Ground pressure of the cutter bar can be easily adjusted for a variety of ground conditions. Crop dividers come standard to provide clear distinction between cut and standing hay.

Mowers feature a mechanical breakaway to protect units from damage when striking an unexpected obstacle.

⚠ DANGER

For Non-Agricultural use, OSHA, ASABE, SAE, and ANSI standards require the use of Chain Guards, Deflectors, or Solid Skirts at all times. The Mower manufacturer strongly recommends the use of Chain Guards or Rubber Deflectors for Agricultural purposes as well, to reduce the risk of property damage, serious bodily injury, or even death from objects thrown out by or from contact with the Cutting Blades.

⚠ WARNING

At least 20% of the tractor's weight must be on the front tires with the Mower lifted to provide adequate traction for safe steering under good conditions. Slow down on hills, rough terrain, and curves.

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

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 Bush Hog 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.

⚠ WARNING

TO AVOID DEATH OR SERIOUS INJURY:

- ONLY use genuine Bush Hog replacement parts, which have been validated and tested to use on Bush Hog 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 Bush Hog about repair parts at:
2501 Griffin Ave., Selma, Al 36701
Customer Service: 800-363-6096
Email: contactus@bushhog.com www.algqr.com/bpm



⚠ WARNING
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

IMPORTANT

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



To prevent serious injury to yourself and/or bystanders, be trained in Safe Mowing Practices. Alamo Group Companies as well as AEM and FEMA provide training material that is critical for your Safety and the Safety of others when operating this equipment. Make these Safety Procedures an important part of every workday. Read and understand the Operator's Manual.

Do not let untrained individuals operate this equipment. Contact your Dealer, AEM (www.aem.org), 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.

D559

INTRODUCTION

BUSH HOG LIMITED WARRANTY



INTRODUCTION

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

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

DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

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

THIS LIMITED WARRANTY SHALL NOT APPLY:

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

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



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

MODEL NUMBER _____

SERIAL NUMBER _____

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

DATE OF RETAIL SALE _____



BUSH HOG®

Introduction Section 2-5

DHM8/9/10 08/22

ASSEMBLY SECTION

Assembly Section 3-1

ASSEMBLY

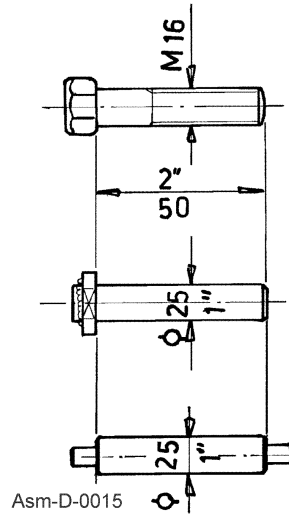
ASSEMBLY

TECHNICAL NOTES TO AID IN ASSEMBLY

The examples will make it easier to choose which of the various accessories to use for each step of assembly. An approximate equivalent of the metric measurements is given in inches.

Pins and Screws

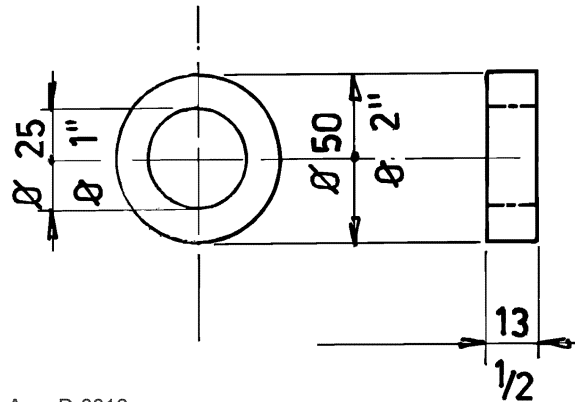
Example: A pin with a 25mm (1") diameter and a screw with a M16 (5/8") diameter, both 50mm (2") long, will be listed as: D 25x50 (D 1"x2") and M16x50 (D 5/8" x 2")



Asm-D-0015

Shims, Spacers, Bushings and Washers

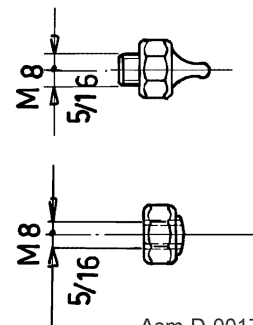
Example: A shim, spacer, bushing or washer with an inside diameter of 25mm (1"), outside diameter of 50mm (2") and thickness or length of 13mm (1/2") will be listed as: D 25-50x13 (D 1" - 2" x 1/2")



Asm-D-0016

Nuts, Grease Nipples

Example: A nut or grease nipple having a thread of M 8 (5/16") will be listed as: M 8 (5/16")



Asm-D-0017

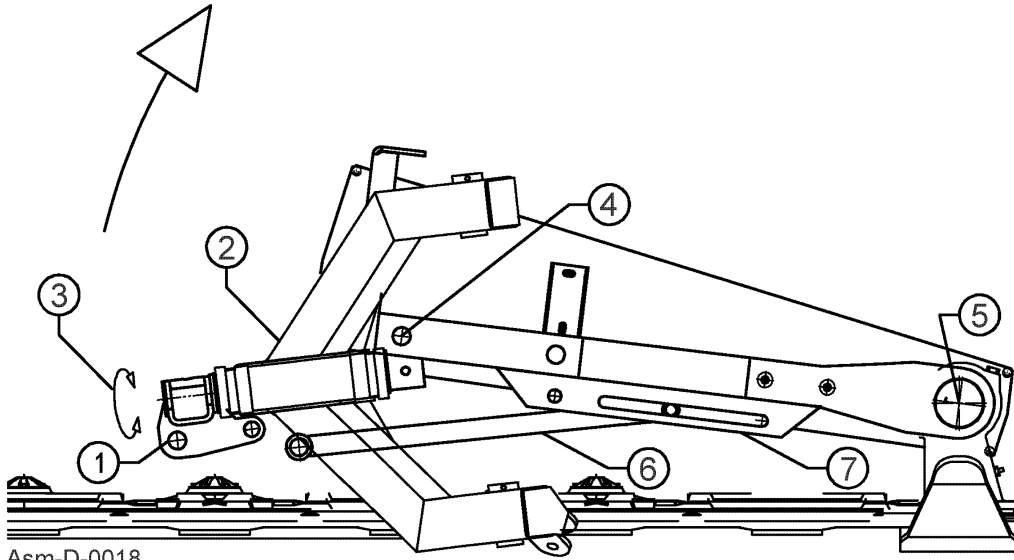
ASSEMBLY

ASSEMBLY

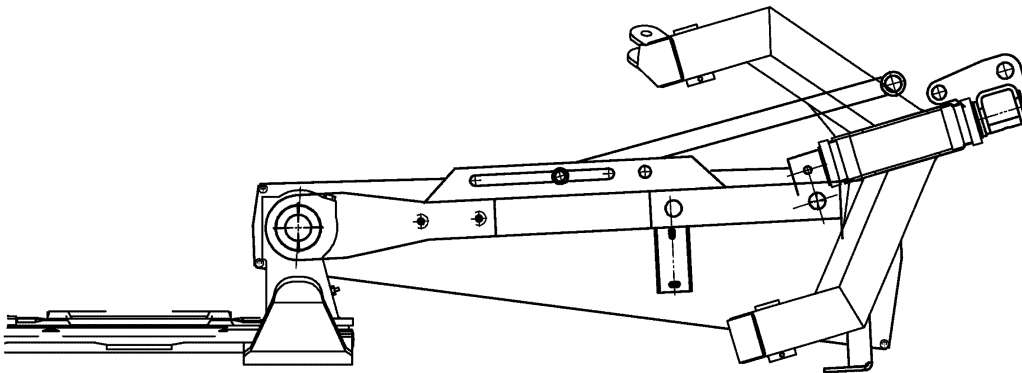
ASSEMBLY

Refer to Figures Asm-D-0018 & 0019 and carry out the following steps in the order indicated:

The disc mower is shown packaged in crate in Figure Asm-D-0018. Use a forklift truck, crane or other suitable equipment of sufficient capacity to attach the machine in holes 1 and lift the machine pivoting in pin 5 until position in Figure Asm-D-0019 is reached.



Asm-D-0018



Asm-D-0019

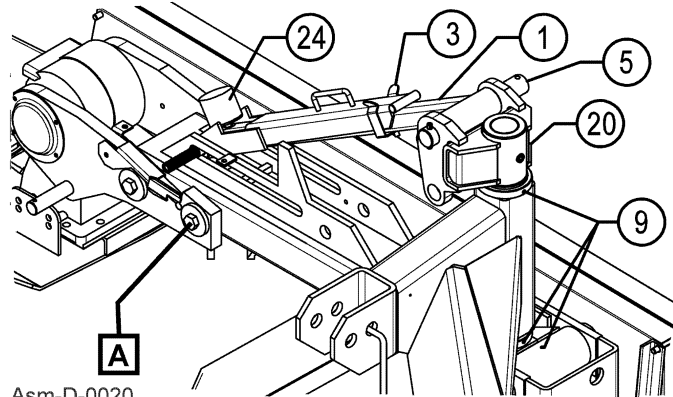


Be Careful: The frame is very unstable. The frame is pivoting in axle 3 and in pin 4. Pay close attention to tie rod 6 sling on long hole 7.

ASSEMBLY

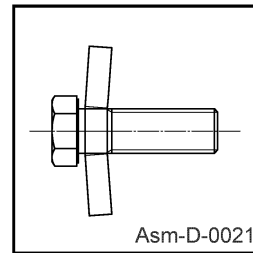
Refer to Figure Asm-D-0020 and carry out the following steps in the order indicated::

1. Use pin 5 ($\varnothing 35 \times 244$ - $\varnothing 1\text{-}3/8 \times 9\text{-}9/32$ ") to mount tie rod 1 into the support 20 and fasten with two spring pins ($\varnothing 8 \times 50$ - $\varnothing 5/16 \times 2$ ").
2. Mount rubber 24 to tie rod 1.
3. Mount lock spring 3 on tie rod 1 with screw M8x55 ($5/16 \times 2\text{-}5/32$ "), washer $\varnothing 9$ ($\varnothing 11/32$) and nut M8.
4. Mount four grease nipple 9 M6.



Asm-D-0020

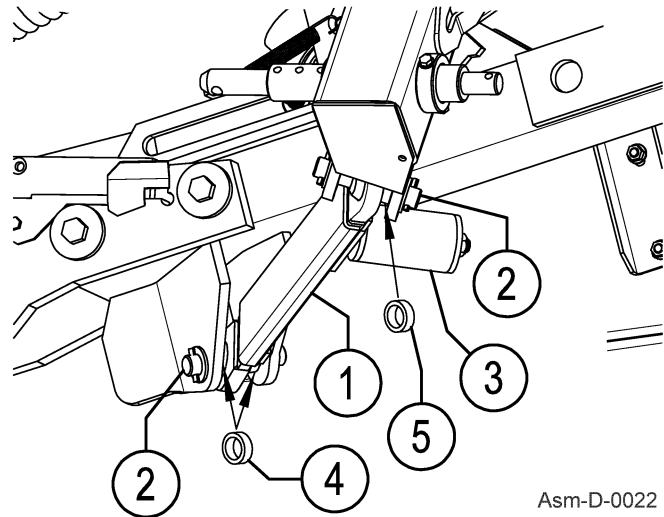
NOTE: The four screws A (M16x50 10.9) at both sides of the machine, are mounted with 300Nm torque and Loctite® or similar. The cup washers are mounted as in figure Asm-D-0021.



Asm-D-0021

Refer to Figure Asm-D-0022 and carry out the following steps in the order indicated:

1. Mount safety bar 1 with rubber spring 3 on side as in figure, with two pins 2 ($\varnothing 22 \times 117$ - $\varnothing 55/64 \times 4\text{-}19/32$ ") and three spacers 4 and 5 ($\varnothing 23 \times \varnothing 30 \times 10$ - $\varnothing 1\text{-}11/64 \times \varnothing 57/64 \times 22/64$) into the supports as in figure. Fasten with spring pin ($\varnothing 6 \times 35$ - $\varnothing 15/64 \times 1\text{-}3/8$ ") and washers ($\varnothing 23$ - $\varnothing 57/64$). The spacer 5 has to be mounted on one side as shown in figure.

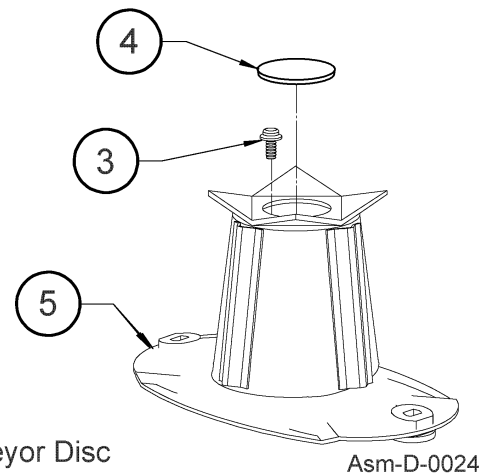
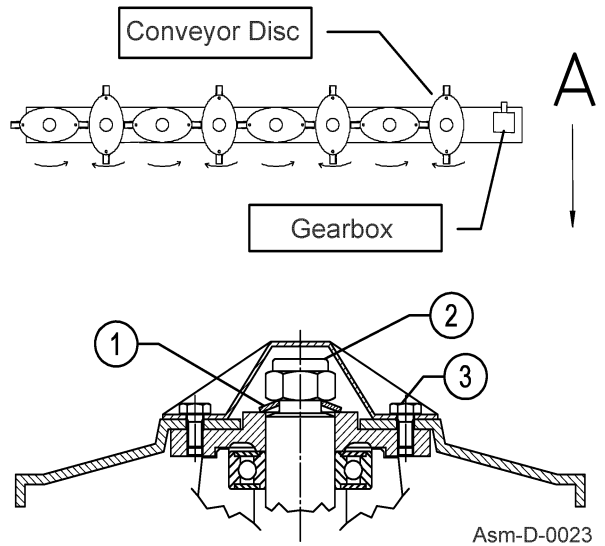


Asm-D-0022

ASSEMBLY

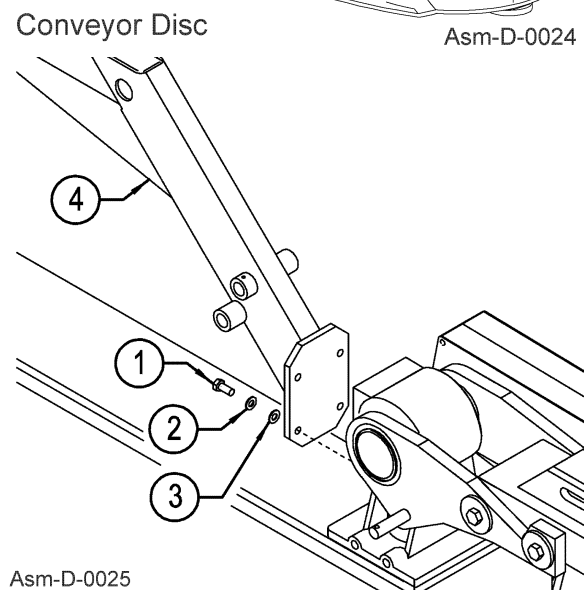
Refer to Figures Asm-D-0023 and Asm-D-0024 to carry out the following steps in the order indicated:

1. The conveyor disc 5 (Asm-D-0024) is splined to a shaft and has to be positioned so that the main axle is at right angles with those next to it. See Figure Asm-D-0023
2. Cupped washer 1 must be mounted with its concavity facing downwards. The self-locking nut 2 must be tightened with a dynamometric spanner set at 320Nm torque.
3. The screw 3 (n°6 M10x20 flanged) must be tightened with a dynamometric spanner set at 70-80 Nm torque. Mount plug 4.



Refer to Figure Asm-D-0025 to carry out the following steps in the order indicated:

Mount protection canvas support 4 to the gearbox (align it vertically) with four screws 1, lockwasher 2 and washer 3. The 6 discs models use M12x40 (15/32x1-9/16") screws (100Nm torque) and 7 discs models use M14x40 (35/64x1-9/16") screws (110 Nm torque). Use loctite® or similar.

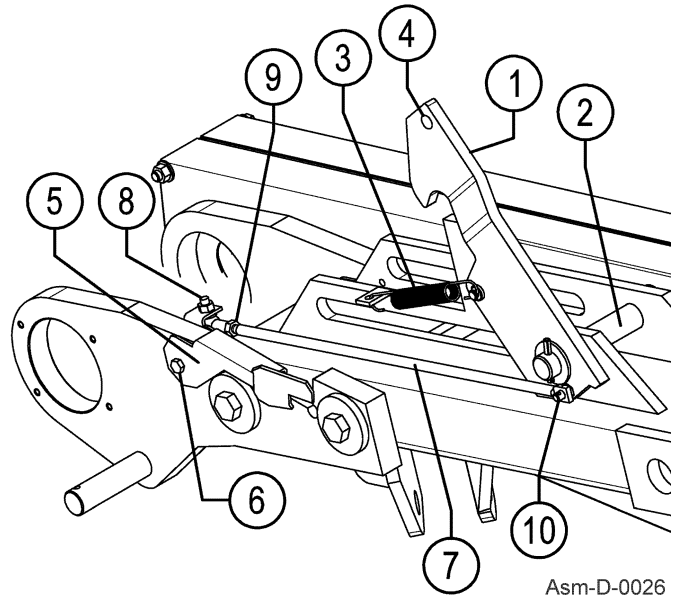


ASSEMBLY

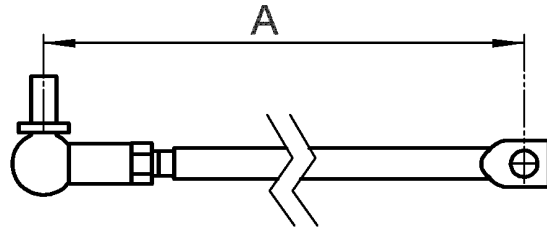
ASSEMBLY

Refer to Figure AsmP-D-0017 and carry out the following steps in the order indicated:

1. Mount hook 1 as in Fig. Asm-D-0026 with pin 2 and fasten with two spring pins ($\varnothing 6 \times 40$ - $\varnothing 15/64 \times 1-36/64$) and two washers ($\varnothing 26$ - $\varnothing 1'$).
2. Mount spring 3 as in Fig. Asm-D-0026.
3. Mount the lever 5 as in Fig. Asm-D-0026 with screw 6 (M8x45 - 5/16"x1-49/64"), and locknut without tightening fully.
4. Mount the threaded rod 7 and ball joint on point 9 with nut M8. The distance A should be 504MM (19-53/64").
5. Mount the ball joint on point 8 of lever 5 with self-locking nut M8 as in figure.
6. Fasten rod 7 on point 10 with special hexagon pin and one split pin ($\varnothing 3 \times 30$ - $\varnothing 7/64 \times 1-11/64$).
7. Mount rope in hole 4 with a node.

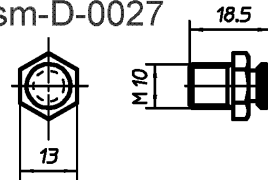


Asm-D-0028

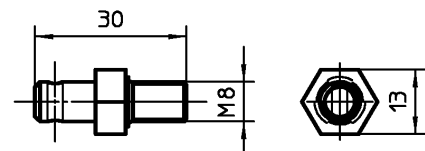


Asm-D-0027

Pin for spring



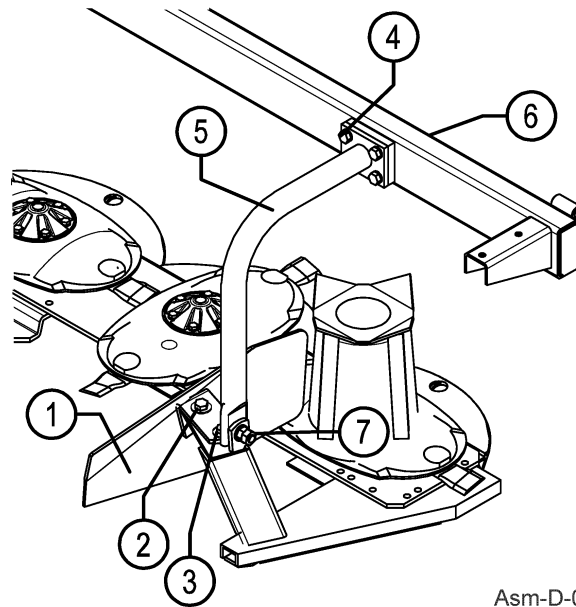
Pin for tie-rod



ASSEMBLY

Refer to Figure Asm-D-0029 and carry out the following steps in the order indicated:

1. Mount hay plate 1 to the cutter bar with screws item 2 (M12x35-1/2"x1-3/8") and 3 (M10x35-3/8"x1-3/8") and washers (ø10-25/64")..
2. Mount support 5 to the canvas support 6 with four screws item 4 (M12x25-15/32"x1") and growers (ø13-1/2") with 80Nm torque.
3. Mount support 5 in point 7 with screw M14x50 (35/64"x2") and two nuts M14 counterlocked (180 Nm torque).



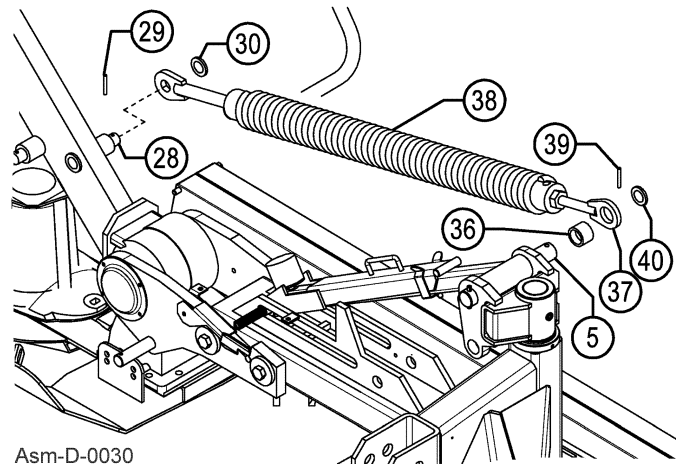
Asm-D-0029

Refer to Figure Asm-D-0030 and carry out the following steps in the order indicated:

1. Mount spring 38 on pin 28 and fasten with one spring pin 39 (ø8x50-ø5/16"x2") and washer 30 (ø25-ø1"). If necessary, unscrew tie rod 37 to fit into pin 5.

NOTE: Remember to re-adjust spring tension. See Operation Section (Adjusting Spring Tension)

2. Mount the threaded rod 37 of the spring 38 on pin 5 with spacer 36 (ø35-ø42x20-ø1-3/8"-ø1-41/64"x25/32) and washer 40 (ø35-ø1-3/8") and fasten with one spring pin 39 (ø8x50-ø2-5/16").



Asm-D-0030

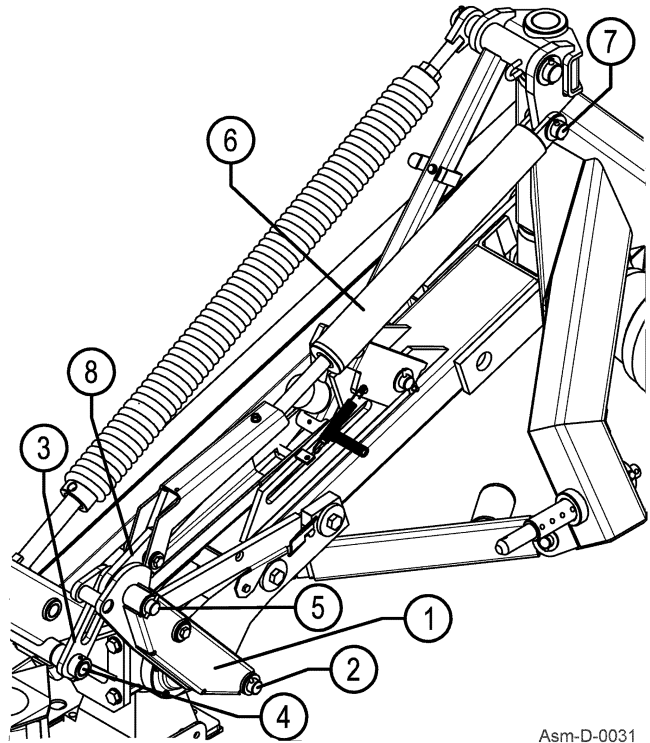
ASSEMBLY

ASSEMBLY

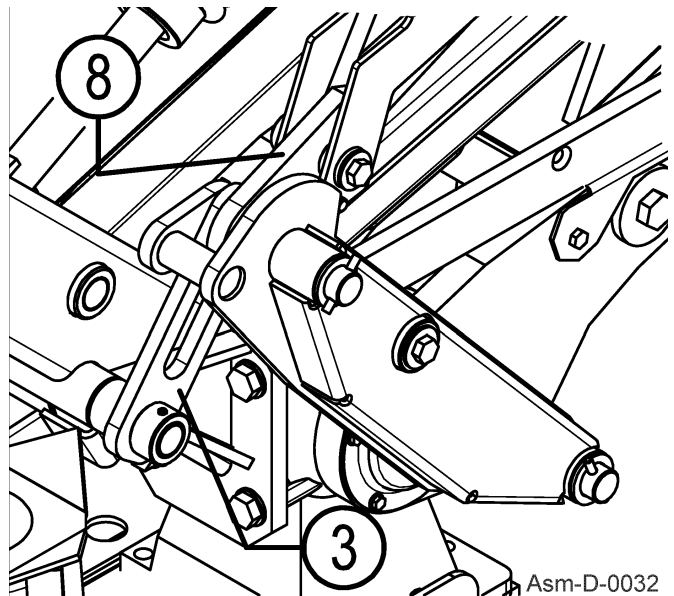
Refer to Figure Asm-D-0031 and carry out the following steps in the order indicated:

1. Mount lift lever 1 as in figure on pin 2 and fasten with one spring pin ($\varnothing 6 \times 45 - \varnothing 15/64 \times 1 - 49/64$) and washer ($\varnothing 26 - \varnothing 1$)
2. Mount lift lever 3 as in figure on pin 4 and fasten with one spring pin ($\varnothing 6 \times 45 - \varnothing 15/64 \times 1 - 49/64$) and bushing with hole ($\varnothing 25 - \varnothing 40 \times 21 - \varnothing 1 - \varnothing 1 - 9/16 \times 13/16$).
3. Mount lift cylinder 6 as in figure with pin 5 ($\varnothing 30 \times 85 - \varnothing 1 - 11/64 \times 3 - 9/64$) with two spring pins ($\varnothing 8 \times 50 - \varnothing 5/16 \times 2$) and two washer ($\varnothing 31 - \varnothing 1 - 11/64$), pin 7 ($\varnothing 25 \times 148 - \varnothing 1 \times 5 - 13/16$) with two spring pins ($\varnothing 6 \times 45 - \varnothing 15/64 \times 1 - 49/64$) and two washers ($\varnothing 26 - \varnothing 1$), position cylinder 8 and lever 3 as in figure Asm-D-0032

NOTE: The hose attachment must be on the down side of the cylinder.



Asm-D-0031



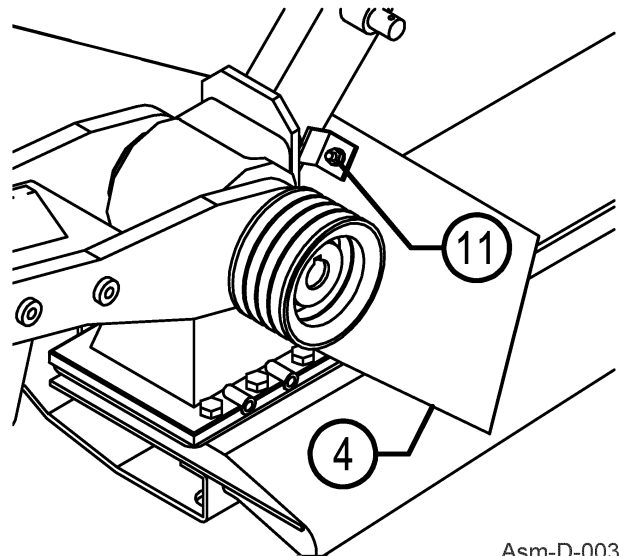
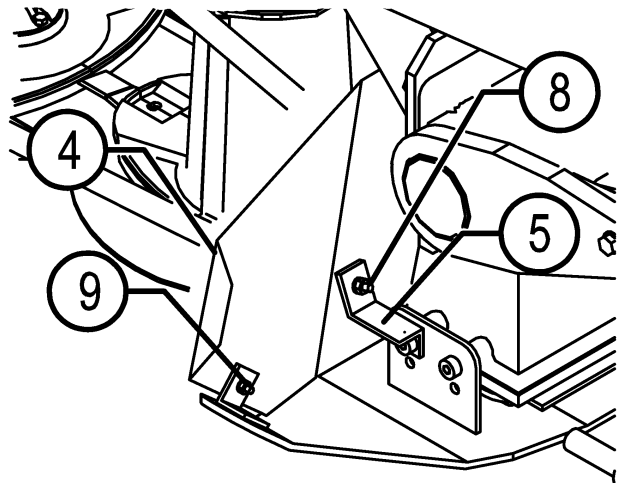
Asm-D-0032

ASSEMBLY

Refer to Figure Asm-D-0033 and carry out the following steps in the order indicated:

Mount conveyor sheet 4 with:

1. Point 9: Screw (M8x25-5/16"x1"), two large washers and nut.
2. Point 8: Screw (M10x25-ø25/64"x1"), washer and nut.
3. Point 11: On the rear view of the machine with screw (M10x25-ø25/64"x1"), washer and nut.



Asm-D-0033

ASSEMBLY

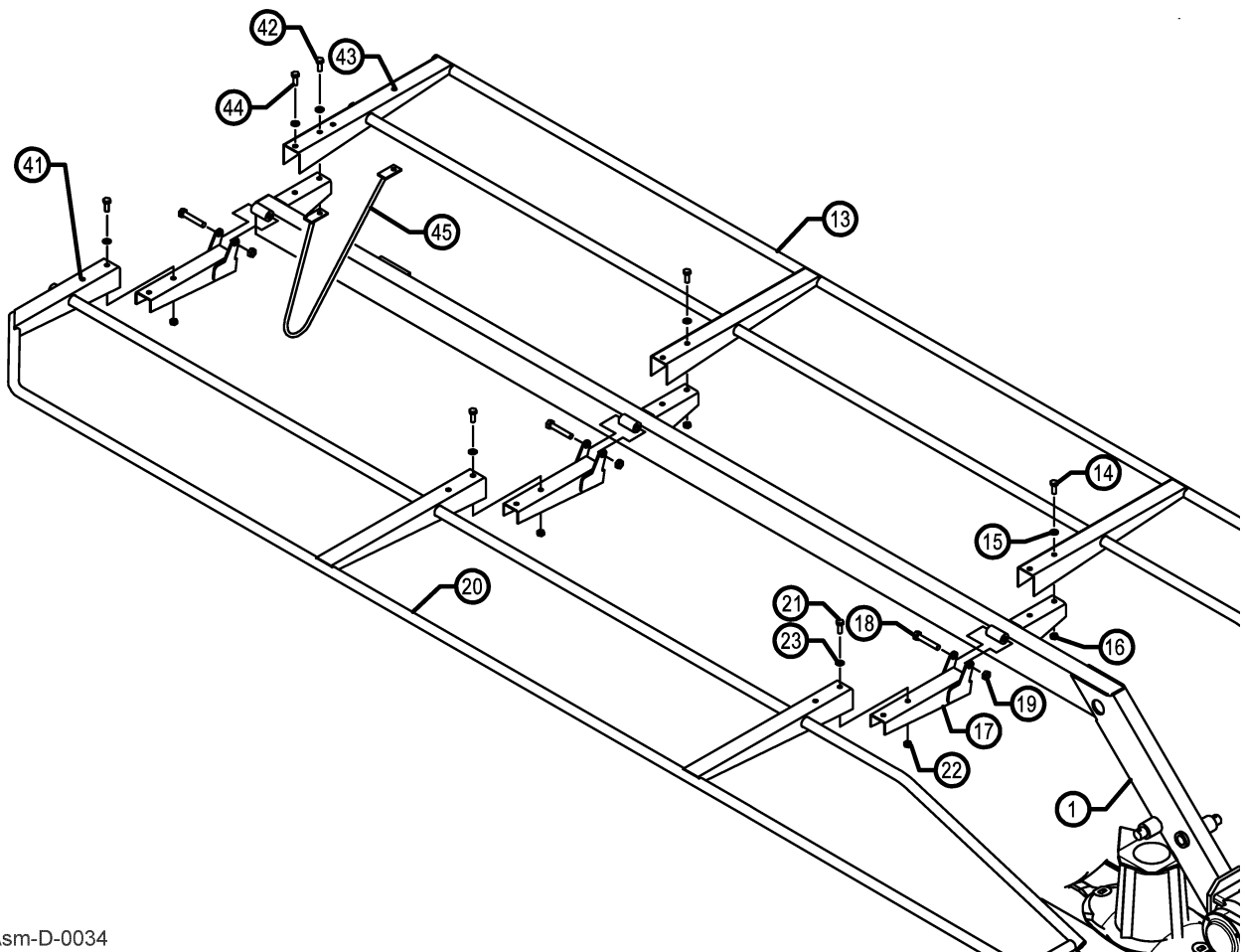
ASSEMBLY

Refer to Figure Asm-D-0034 and carry out the following steps in the order indicated:

1. Mount rear protection 13 on support canvas 1 as shown with five screw 14 (M10x20-25/64"x25/32") and nut 16 (M10-25/64) and washer 15. Use screw 42 (M10x25-25/64"x1") to mount vertical protection 45. **DO NOT USE HOLE 43 AT THIS TIME.**
2. Mount the three pivoting supports 17 on support canvas 1 shown with three screws 18 (M12x75-15/32x2-15/16") and self-locking nuts 19 (M12-15/32").

NOTE: Do not fully tighten the screws 18 to let pivoting the front protection.

3. Mount front protection 20 on pivoting supports 17 as shown with five screw 21 (M10x20-25/64"x25/32") and nut 22 (M10-25/64") and washer 23. **DO NOT USE HOLE 41 AT THIS TIME.**
4. Mount plugs for pipe 9 ($\varnothing 27-2.5-\varnothing 1-1/16"$ x3/32").



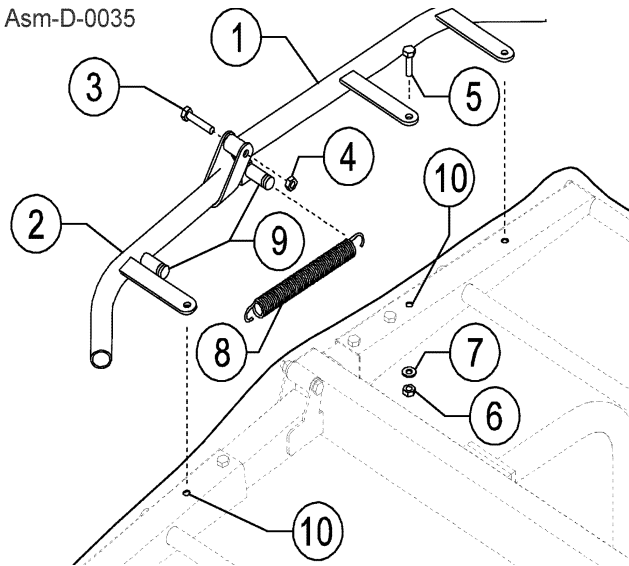
Asm-D-0034

ASSEMBLY

Refer to Figure Asm-D-0035 and carry out the following steps in the order indicated:

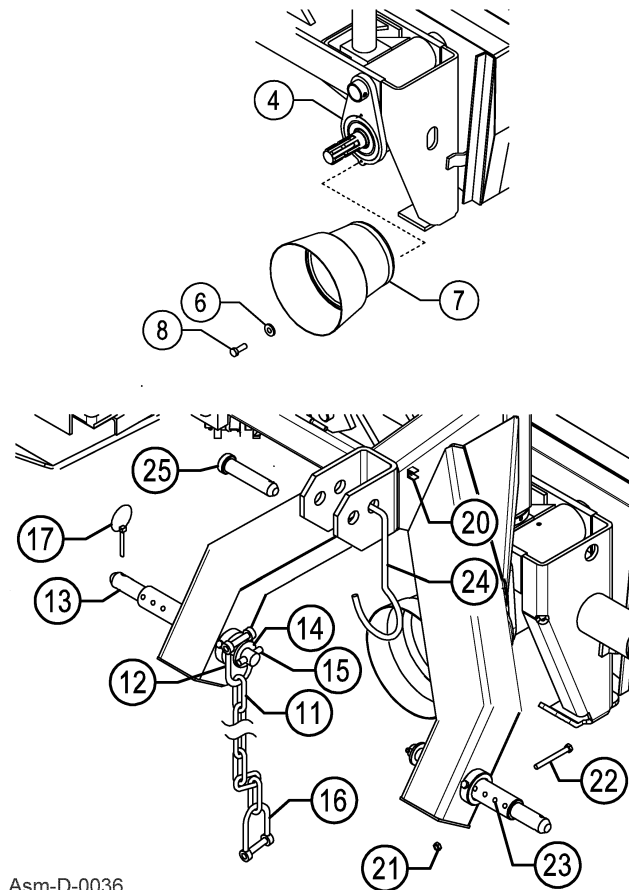
1. Mount protection canvas with the opening for cylinder and spring bar in right position. Fasten all the belt of the canvas.
2. Mount plugs (ø33.7x3-1-5/16"x7/64") for pipe 1 and 2.
3. Make three holes 10, on protection canvas as shown for screws 5 (M10x25-25/64"x1") to assembly support 1 and 2, and fasten with washer 7 and nut 6.
4. Use screws 3 (M10x75-25/64"x2-15/16") and self-locking nuts 4 to mount support 1 and 2, but not fully tighten to make them pivoting.
5. Mount pivoting spring 8 on pins 9.

Asm-D-0035



Refer to Figure Asm-D-0036 and carry out the following steps in the order indicated:

1. Use two screws 8 M6x16(D15/64"x5/8") and large washers 6 to assemble casing 7.
2. Insert the two hoist pins 13 into their respective slots and use screws 22 M8x80 (5/16x3-9/64"), nuts 21 to fasten into the position which best suits the dimensions of the tractor.
3. Insert clamp 12 of hoist chain 11 on one of the hoist pins 13 and fasten with washer 14 (ø8x50-ø25-ø1") and spring pin 15 (ø8x50-ø5/16"x1-61/64").
4. Insert cardan shaft hook 24 in one hole of 3rd point and use clip 20 to lock it when machine is operating.
5. Pin 25 is used for the 3rd point tractor attach.

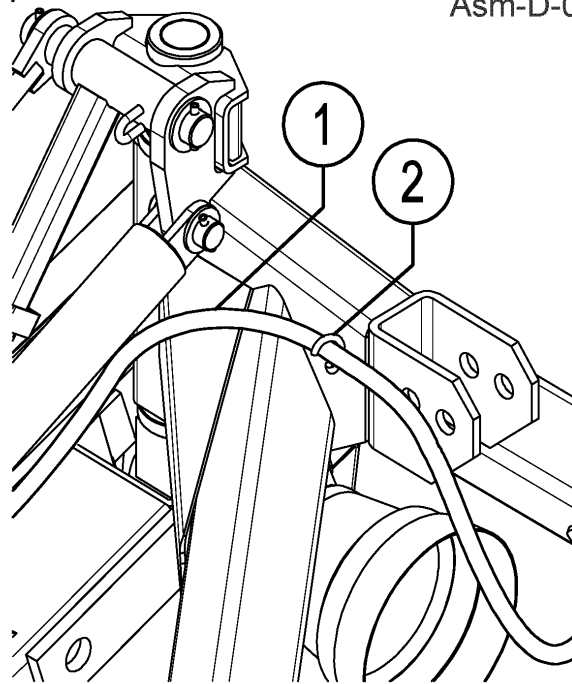


Asm-D-0036

ASSEMBLY

6. Insert hydraulic hose 1 in the open ring 2

Asm-D-0037



ASSEMBLY

OPERATION SECTION

Operation Section 4-1

OPERATION

DHM 8, 9, & 10 DISC MOWER OPERATING INSTRUCTIONS

Bush Hog's latest edition of Hay Mower includes 4 models with mowing widths ranging from 7' to 10' to meet the hay production requirement of today's farmers and ranchers. The mower is equipped with protective deflectors and/or chain guards to prevent objects being thrown from the mower by the blades, however, no shielding is 100% effective. All shields, guards, deflectors, and chains equipped on the unit must be maintained on the mower in good operational condition.

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

This section is designed to familiarize, instruct, and educate safe and proper mower use to the operator. Pictures in this section are for the purpose of explaining the operation of a rotary mower and are not necessarily of an Disc 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 mower and tractor operation and all associated safety practices before operating the mower and tractor. Proper operation of the Disc Mower, as detailed in this manual, will help ensure years of safe and satisfactory use of the mower.

IMPORTANT: To avoid mower damage, retorque all bolts after the first 10 hours of operation. Retighten blade carrier retaining nut on gearbox lower shaft to 300 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)



PELIGRO

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

¡ LEA EL INSTRUCTIVO!



OPERATION

1. STANDARD EQUIPMENT AND SPECIFICATIONS

Description	DHM8	DHM9	DHM10
Mowing Width	8'	9' - 3"	10' - 6"
Number of Oval Discs	6	7	8
Blades per Disc	2	2	2
Driveline Size	CAT 4	CAT 4	CAT 4
Minimum PTO HP	46	52	56
Hitch	CAT 2	CAT 2	CAT 2
PTO Speed	540 RPM	540 RPM	540 RPM
Safety Chain	Standard	Standard	Standard
Machine Weight	1235 lbs	1300 lbs	1400 lbs



The Mower is designed for certain mowing applications and is rated to cut up to a specific size vegetation (see Mower Standard Equipment and Specifications). DO NOT use this mower to cut vegetation above the Mower's rated capacity or to cut any type of non-vegetative material. Only operate this Mower on a properly sized and equipped Tractor. Operating this Mower in an application for which it is not designed and/or operating the Mower with the wrong size Tractor can cause Mower component damage and equipment failure resulting in possible serious injury or death. (SGM-14) str

OPERATION

2. OPERATOR REQUIREMENTS

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

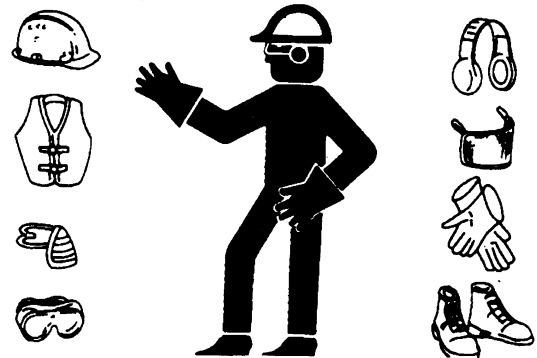
If the operator cannot read the manuals for themselves or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, safety practices, and operating instructions to the operator.

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

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Always Wear Safety Glasses (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)

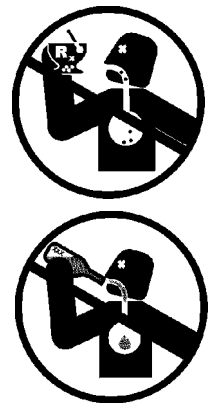
OPS-U- 0002str



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. Serious injury or death to the operator or others could result if the operator is under the influence of drugs or alcohol.

(SG-27) str



OPERATION

3. TRACTOR REQUIREMENTS

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

3.1 Tractor Requirements and Capabilities

- ASABE approved Roll-Over Protective Structure (ROPS) or ROPS cab and seat belt.
- Tractor Safety Devices Slow Moving Vehicle (SMV) emblem, lighting, PTO master shield
- Tractor Horsepower - Minimum
 - DHM8 46 HP
 - DHM9 52 HP
 - DHM10 56 HP
- Hitch CAT II
- Hitch Lifting Capacity 1235 - 1400 lbs.
- Front End Weight As needed to maintain 20% weight on front axle
- Power Take Off 540 RPM

3.2 ROPS and Seat Belt

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



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



3.3 Tractor Safety Devices

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

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

3.4 Tractor Horsepower

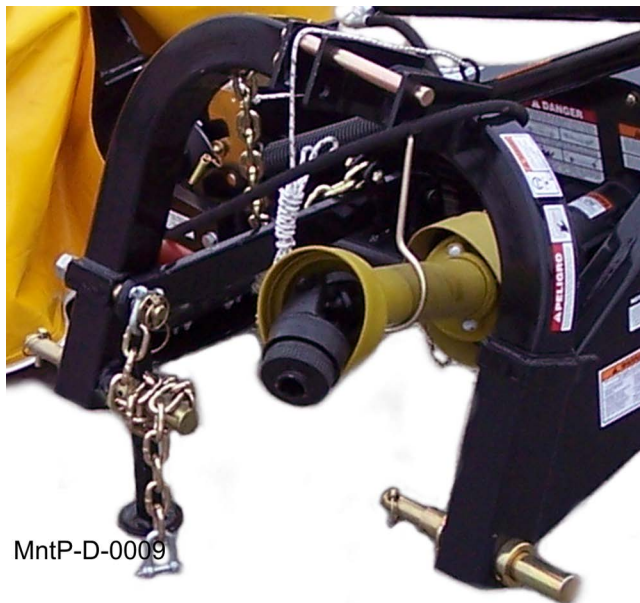
The power required to operate a mower is determined by the tractor PTO horsepower. For most mowing conditions, the DHM8 mower requires a tractor with at least 46 HP, 52 HP for DHM9 and 56 HP for DHM10. Operating the mower with a tractor that does not have adequate power may damage the tractor engine. Exceeding 90 HP may cause mower damage by overpowering the unit in heavy cutting conditions.

OPERATION

3.5 3-Point Hitch

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

Use the correct hitch pins. The CAT II hitch requires 1-1/8" lower and 1" upper diameter hitch pins.



CAT II Implement / Hitch Specification	
Width from outside to outside A-frame	32-3/8"
Quick hitch width inside lug to lug	33-5/8"
Height from bottom hitch pin to top pin	19"
Lower pin diameter	1-1/8"
Upper pin diameter	1"
Lynch pin diameter	15/32"

3.6 Front End Weight

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

3.7 Power Take Off (PTO)

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

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



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



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

OPERATION

4.GETTING ON AND OFF THE TRACTOR

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



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



4.1 Boarding the Tractor

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

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



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



4.2 Dismounting the Tractor

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

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

OPERATION

5. STARTING THE TRACTOR

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

Essential Tractor Controls:

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

Before starting the tractor ensure the following:

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

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

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



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



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

6. CONNECTING THE MOWER TO THE TRACTOR

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



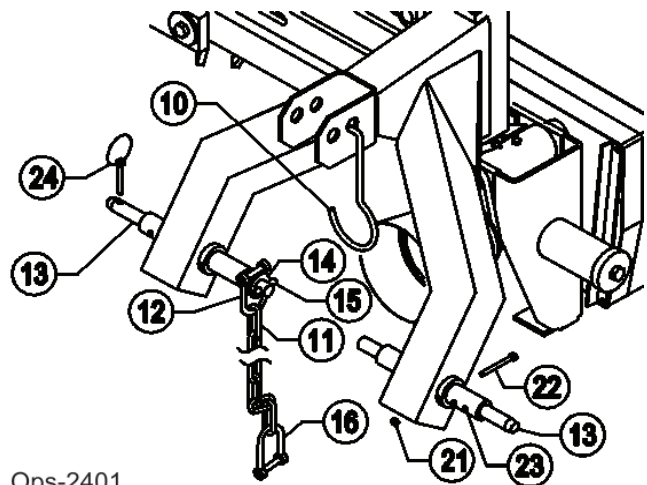
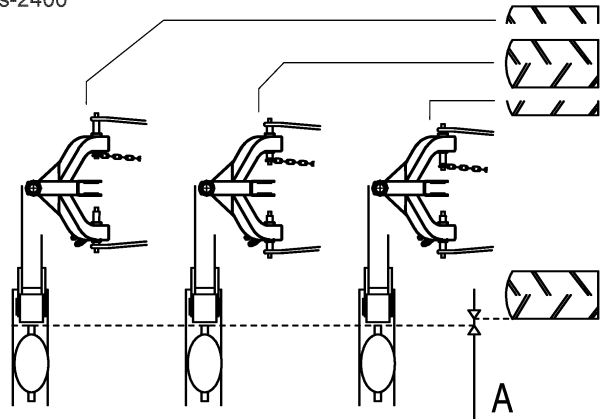
Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15) str

6.1 Connecting the Mower

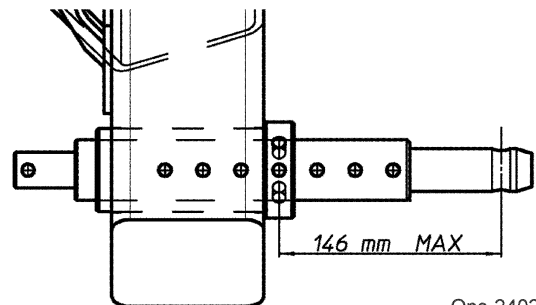
The disc mower can be adapted to tractors with various gauges by placing the two hoist arms as shown, so that distance A is about 5 cm (2 inches) when the machine is in the work position. In order to obtain the various positions in Ops-2400, slide the pins 13, shown in Ops 2401 tin the respective slots and fasten into position with screws 22 and nut 21 in one of the adjustment holes 23 on the pins.

1. If necessary, move the vertical movement adjuster tie rod on the hoist arms until both ball-and-socket joints are at the same height above ground.
2. Fasten the two tractor hoist arms into pins 13 and lock with pegs 24.
3. Fasten the third point tractor 1 in Figure Ops-2403 and adjust it so the axle E is vertical.
4. Raise the machine with the tractor's hydraulic lift. Pull up stand A (Ops-2404) until it hooks onto the lock spring B.

Ops-2400



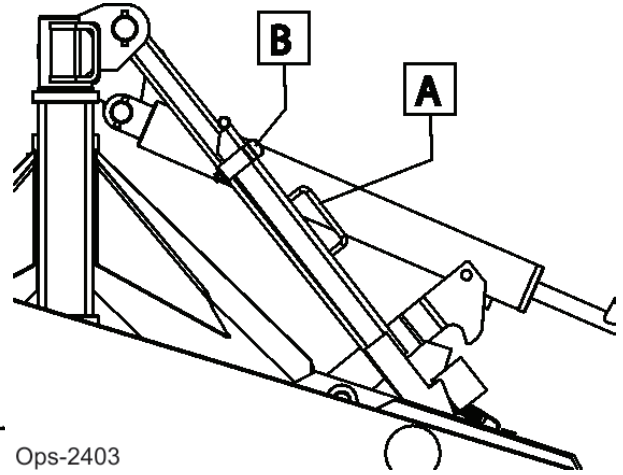
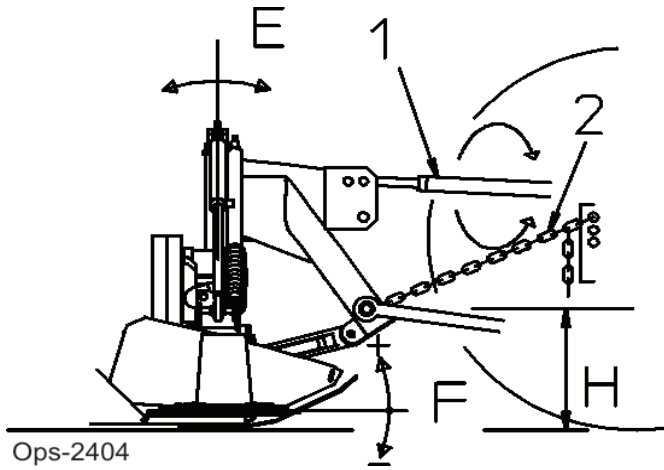
Ops-2401



Ops-2402

OPERATION

OPERATION



WARNING

When working and during transport, the Stand A must be locked into the Lock Spring B.

OPERATION

7. SETTING THE MOWER

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



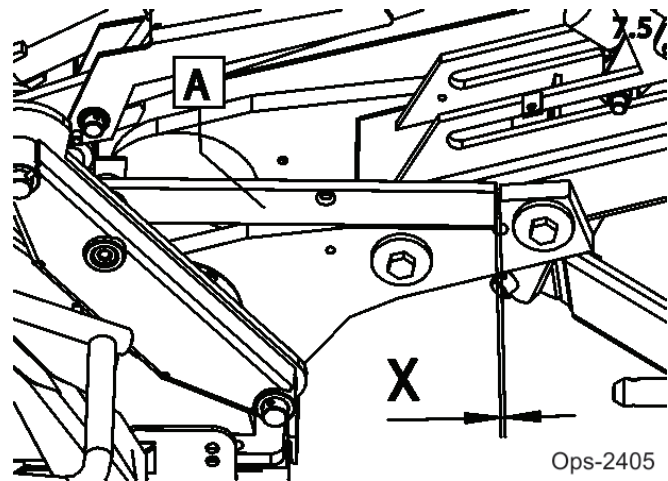
Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause death or serious injury. (SG-14)str



7.1 Adjusting the Height of the Frame Above the Ground

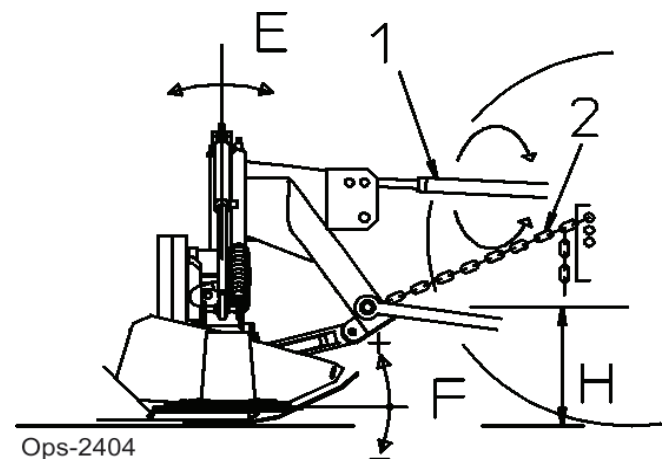
For tractors equipped with a hydraulic lift limiter with controlled position:

1. On flat ground, lower the tractor's hydraulic lift until bar A hooks into place. Bar A must have a functional play "X" of about 3 mm (0.15 inches) as shown in Ops-2405.
2. After adjusting the height of the frame, set the position of the lift control from the driver's seat of the tractor. In this case it is not necessary to use the limiting chain 2 (Ops-2404) supplied with the machine.



For tractors NOT equipped with a hydraulic lift limiter with controlled position:

1. Fasten the limiting chain 2 in Ops-2404 supplied with the machine with the hook (16) in Ops-2401 to one of the free holes in the bracket of the tractor third point.
2. Lower the machine into the work position until the bar A (Ops-2405) is in place and the limiting chain 2 (Ops-2404) is tight. Bar A (Ops-2405) must have a functional play "X" of about 3 mm (0.15 inches). The height H from the ground is correct when there is:
 - Mower bar on the ground.
 - Distance "X" of about 3 mm (0.15 inches).
 - Limiting chain 2 in Ops-2404 so there is no slack.

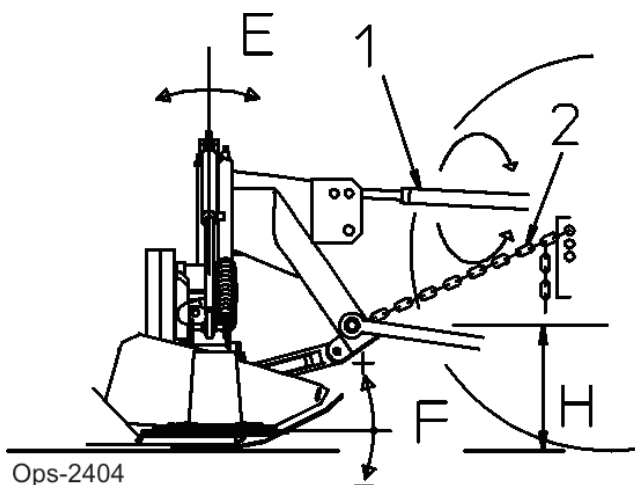


OPERATION

7.2 Adjusting Cutting Height

The cutting height can be adjusted by using turnbuckle 1 on the third tractor point to vary the tilt of the knives compared to the ground (Distance F).

Cutting height may vary within the range of 16/60 mm (0.63/2.36 inches) even though uneven land may influence these values.



Important

Do not allow the disc blade to contact the ground.

Important

If the break away trips, STOP THE TRACTOR AND SHUT OFF THE PTO DRIVE AND ENGINE. SECURE PARKING BRAKE. WAIT FOR ALL ROTATION TO STOP. Then inspect the cutter bar for damage and remove the obstacle. Reverse tractor direction until the break away resets. Engage the PTO drive and continue forward.

WARNING

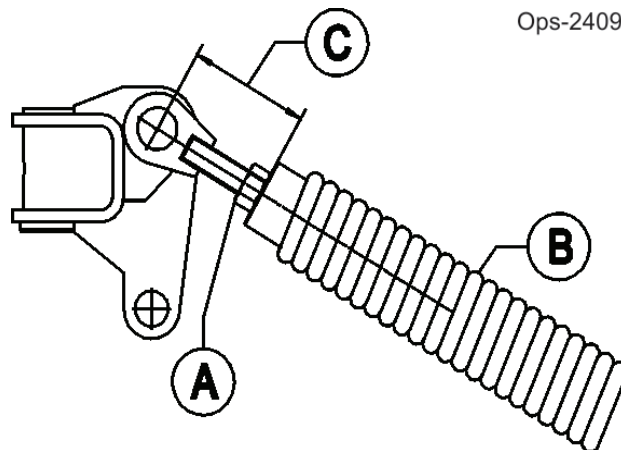
NEVER REMOVE OBSTRUCTIONS WHILE THE DISC IS ROTATING EVEN AT SLOW SPEEDS. DISENGAGE THE PTO, STOP THE TRACTOR ENGINE, WAIT FOR ALL ROTATING PARTS TO STOP AND ENGAGE THE PARKING BRAKE BEFORE LEAVING THE TRACTOR SEAT. NEVER ALLOW ANYONE ON THE TRACTOR WHILE YOU REMOVE OBSTRUCTIONS!

WARNING

NEVER ALLOW ANYONE TO APPROACH THE MOWER WHILE DISCS ARE ROTATING. SERIOUS INJURY CAN BE CAUSED BY ROTATING PARTS.

7.3 Adjusting Spring Tension

1. Lift the disk carrier bar until spring is not tensioned.
2. Loosen nut A and turn spring B.
3. When adjusting is complete, tighten nut A. The dimension C is standard adjustment.
100 mm (4") for 7 and 8 disc model
130 mm (4") for 6 disc model



DANGER

The dimension C must always be lower than the following for Transport:
130 mm (5-7/32") for 7 and 8 disc model
150 mm (5-57/64") for 6 disc model

OPERATION

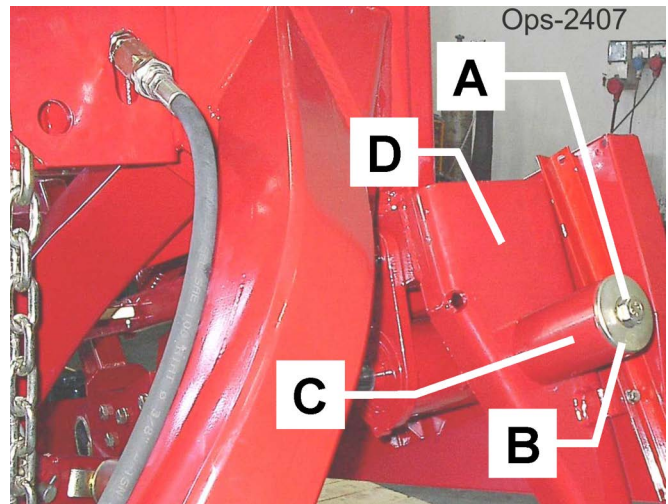
7.4 Belt Tension Adjustment

NOTE: Belt tension must be checked regularly particularly during the first few hours of use.

In order to adjust tension proceed as follows:

1. In order to have the right belt tension, you have to tighten screw A till the spacing pipe C is in contact with upright D and washer B, they tighten screw A for other 2 complete turns.
2. Finally check that tension is correct. Distance, visible through opening on rear side of belt cover is about 20 mm (0.8 inches) when pressure is applied to the belt.

NOTE: Tighten screw A for the 2 final turns, when assembled for the first time and following replacements of belts. If a belt has to be replaced, all belts should be replaced at the same time. The belts must be loosened at the end of the season.



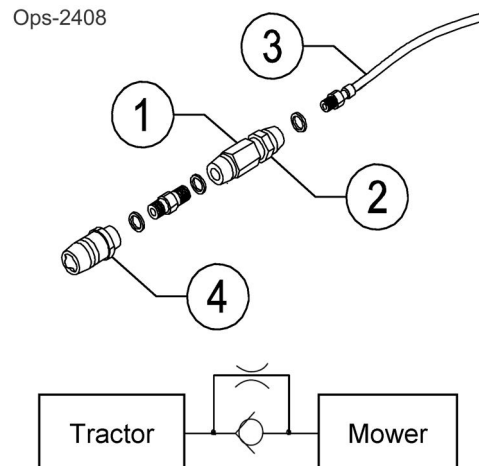
7.5 Hydraulic Flow Adjuster



Pay attention to the hydraulic flow adjustment. Try to move up and down the cutting bar during setting operation to check the right adjustment. The hydraulic flow adjuster works in only one direction, so always check to make sure assembly is correct.

The hydraulic flow adjuster 1 is used to move the cutter bar slowly down to the ground to prevent it from damage. Item 4 is a rapid-coupler and item 3 is a hydraulic hose.

To set hydraulic flow, turn nut 1. The standard adjustments is two complete turns from maximum slow position. When setting operation is complete, lock nut 1 with counter-nut 2.



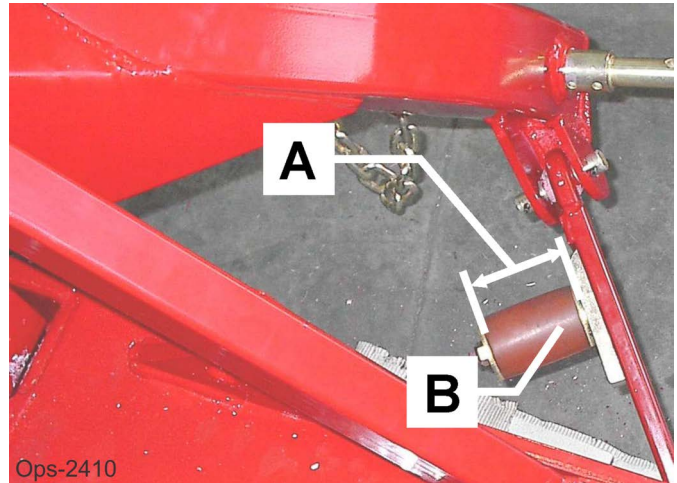
OPERATION

7.6 Safety Device



The dimension A must always be higher than 85 mm (3-11/32") or there could be the danger of NOT unhooking when it receives blows that are too strong

Safety device B unhooks when it receives blows that are too strong for the machine structure. The dimension A is the length of the rubber spring of safety device when tensioned between the two washers. It is 95 mm (3-47/64") for the standard adjustment. When adjust the length of the spring, tighten the relevant screw very carefully until unhooking occurs at reasonable intervals only.

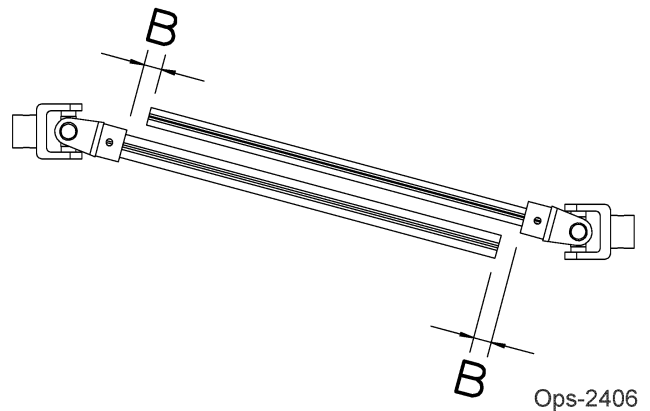


8. DRIVELINE ATTACHMENT

8.1 Adjusting Shaft Length

In order to make sure that the driveline is the right length compared with the tractor power takeoff (with the mower already attached to the tractor), proceed as follows:

1. Remove the two joint axle shafts and insert them separately on the two power take-offs (tractor and mower) with the clutch on the side of the mower.
2. Place the two axle shafts one alongside the other.
3. Check that when the driveshaft is stretched to its minimum length (repeatedly raise and lower the machine to find this position), the tubes do not touch the bottom, so that there is always a minimum clearance "B" of 20 mm (0.79 inches).
4. If necessary, reduce the two axle shafts as well as the two axle shaft shields by the same amount (keeping the above mentioned conditions), and take care to clean and lubricate them before starting work.
5. Use the relevant chains to fasten the outer driveshaft shields.



NOTE: When the driveshaft is stretched to its maximum length (with the safety device released), the tubes must remain inserted at least 10 cm (4 inches).



Failure to make these adjustments prior to operating the cutter could result in premature IID shaft failure.



NEVER OPERATE THE MOWER WITH THE SHIELDS OR GUARDS REMOVED. DO NOT APPROACH ROTATING SHAFTS WHEN IN OPERATION.

OPERATION

9. PRE-OPERATION INSPECTION AND SERVICE

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



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



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



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

9.1 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
- 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*



9.2 Mower Pre-Operation Inspection and Service

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

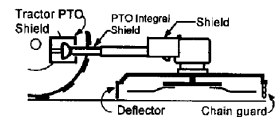


OPERATION

- Perform scheduled lubrication as detailed in the maintenance section.
- Ensure all decals are in place and legible.
- Ensure the driveline is securely attached to tractor. Make sure the driveline yoke locking collar is securely seated in the grooves of the PTO shaft by pushing and pulling the yoke several times.
- Lift Type-Inspect that the 3-point hitch pins are the proper size, correctly installed, and secured to the tractor lift arms with retaining pins inserted.
- Pull Type-Inspect that the hitch pin is the correct size. *OPS-R-0008_E 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)



- Inspect the gearbox oil level. A low oil level is a warning sign that the gearbox may be cracked or its seal is damaged and needs replacement.
- Ensure the gearbox vent is in place and free from clogs. *OPS-R-0040 str*



OPERATION

- Inspect blades and blade bolts for looseness and excessive wear. Make sure the mower is securely blocked up before crawling beneath. Replace damaged, worn and missing blades as complete sets to maintain rotary balance during operation.
- Ensure carrier hub nut is tightened with the cotter pin inserted and spread. *OPS-R-0041_A str*



9.3 Cutting Component Inspection

Inspect blades 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.

Excessive Blade Wear:

Cause: Mower height set too low.

Remedy: Replace blades more often.

Adjust mower height for mowing conditions to eliminate blade-to-ground contact.



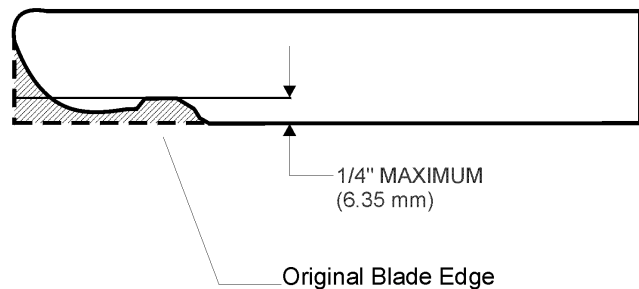
Operating the mower with loose blade hardware will damage the blades and can result in blade breakage or blade fastener failure. Broken blades or bolts can be thrown out from under the mower for distances up to 300 feet. When the blades are replaced, the fastening hardware must be replaced. Check and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



Inspect the Blades daily for abnormal wear. REPLACE BLADES IMMEDIATELY if blade has

- Become bent or deformed from its 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 1/4" (6.35 mm), or
- The material on the leading edge has been worn away by more than 1/4" (6.35 mm)"

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.



NOTE:

Replace Blades in pairs after no more than 1/4" (6.35 mm) wear

Op-2411

OPERATION

BUSH HOG DISC MOWER PRE-OPERATION INSPECTION



Mower ID# _____

Date: _____

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



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 Operator's Manual is in the canister on the mower		
All safety decals are in place and legible		
The hitch connection bolts & pins are tight		
There are no cracks in the hitch		
The tow chain is secured to the tractor & mower		
The hydraulic cylinders pins are tight		
There are no leaking or damaged hoses		
The mower frame is clear of cut grass and debris		
Canvas cover is in place & in good condition		
Driveline shields are in good condition		
Driveline clutches are in good condition, not frozen		
Driveline telescoping members & u-joints are lubricated		
Driveline yokes are securely attached to the PTO and		
Blades are not chipped, cracked or bent		
Blade bolts are tight		
Transport lock is in good condition		

Operator's Signature: _____

DO NOT OPERATE an UNSAFE TRACTOR or MOWER

OPERATION

OPERATION

TRACTOR PRE-OPERATION INSPECTION



Tractor ID# _____ Make: _____

Date: _____ Shaft: _____



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

OPERATION

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 IMPLEMENT

OPERATION

10.DRIVING THE TRACTOR AND IMPLEMENT

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



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



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

10.1 Starting the Tractor

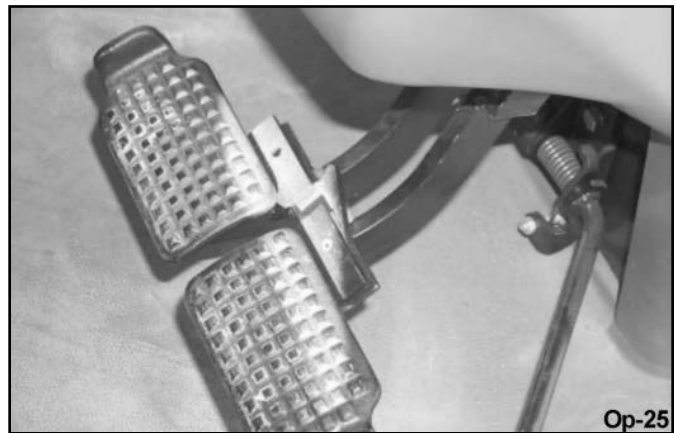
The procedure to start the tractor is model specific. Refer to the tractor operator's manual for starting procedures for your particular tractor. Consult an authorized dealer if the starting procedure is unclear. Ensure the 3-point control lever is in the lowered position and the PTO is disengaged before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



10.2 Brake and Differential Lock Setting

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

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



⚠️ 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

OPERATION

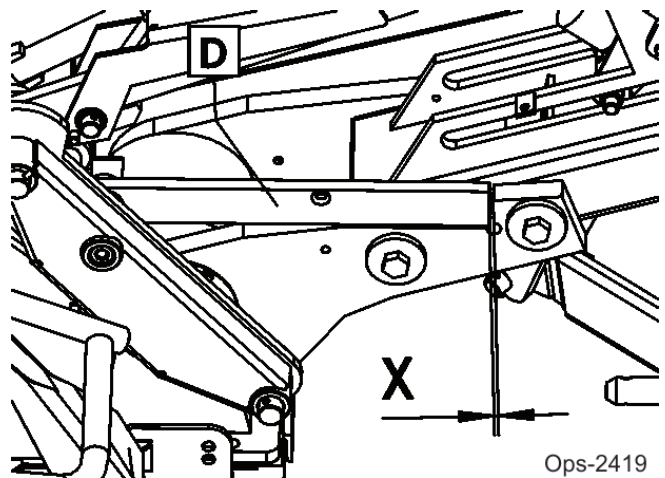
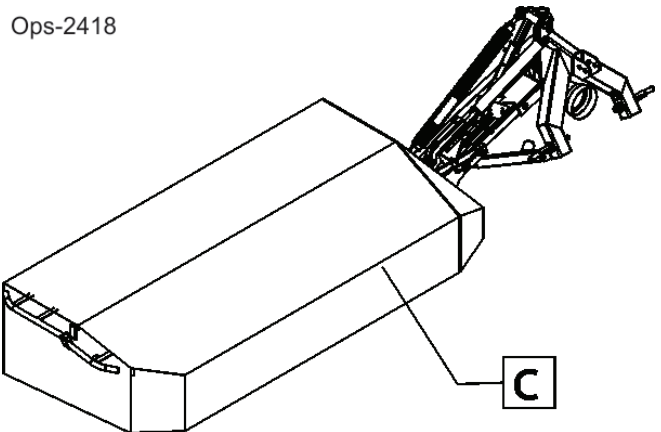
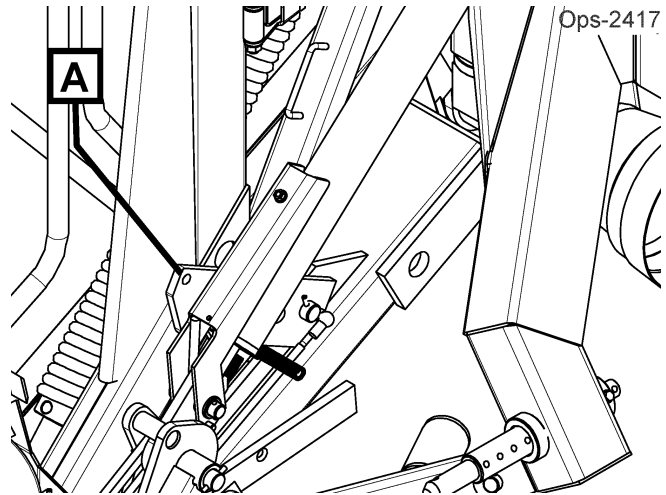
10.3 Working Position

To move from the transport position to the work position proceed as follows:



BEFORE STARTING OPERATION, MAKE SURE THERE ARE NO PEOPLE OR ANIMALS IN THE VICINITY OF THE MOWER.

1. Put the hydraulic cylinder under pressure to lighten the locking hook A.
2. Pull the cord of hook A to release the lock.
3. Lower the mower bar into the work position using the machine's hydraulic cylinder.
4. Flip the front deflector C forward into the work position as shown in figure.
5. Check the height of the frame from the ground. The lifting brace D must be in its place and have a functional play "X" of about 3 mm (0.15 inches).



OPERATION

OPERATION

10.4 Driving the Tractor and Mower

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

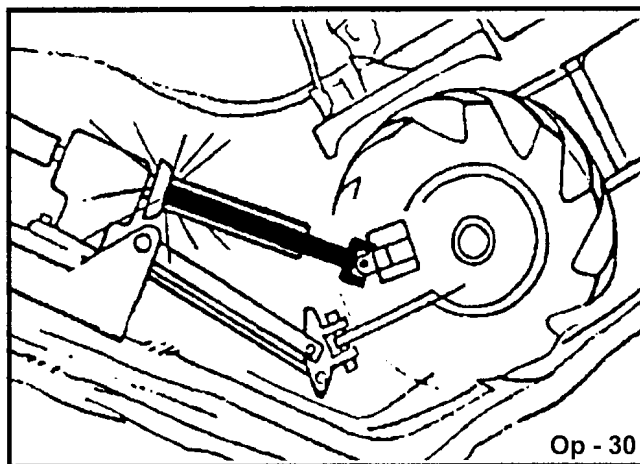
Perform turns with the tractor and mower at slow speeds to determine how the tractor with an attached mower handles a turn. Determine the safe speed to maintain proper control of the tractor when making turns. When turning with a towed implement, the overall working length of the unit is increased. Allow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

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

Use extreme caution when operating on steep slopes. Keep the tractor in a low gear when going downhill. DO NOT coast or free-wheel downhill. *OPS-R-0019_B str*

10.5 Crossing Ditches and Steep Inclines

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



WARNING

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

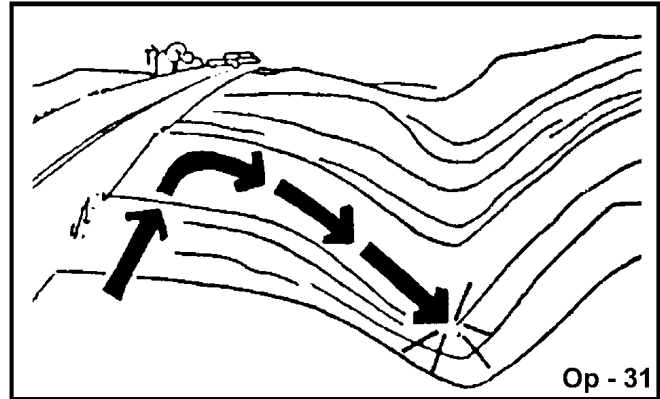
OPERATION

When confronted with an incline or ditch, do not approach from an angle which is perpendicular or straight on as damage to or over-collapse of the driveline may occur. *OPS-R-0021_A str*

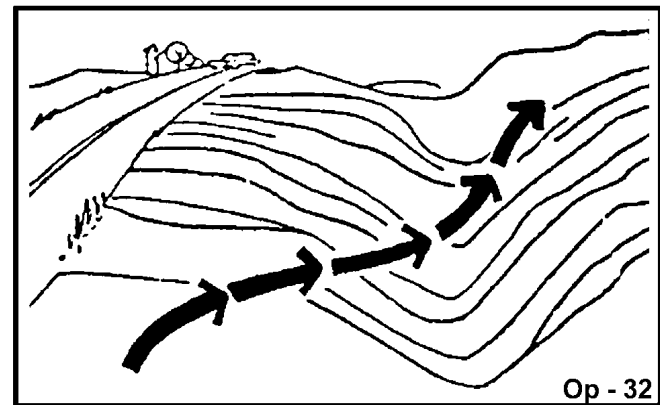
When crossing such terrain the implement should be fully lowered for a lower center of gravity and added stability.

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

When operating the tractor and mower across slopes and inclines, through ditches, and other uneven terrain conditions, it is important to maintain sufficient deck to ground clearance. Blade contact with the ground may cause soil, rocks and other debris to be thrown out from under the mower resulting in possible injury and/or property damage. Ground contact also produces a severe shock load on the mower drive and to the mower blades resulting in possible damage and premature wear. *OPS-R-0022 str*



INCORRECT: DO NOT approach ditch straight on



CORRECT: Approach ditch at an angle

OPERATION

11. OPERATING THE TRACTOR AND IMPLEMENT

THE OPERATOR MUST COMPLETELY UNDERSTAND HOW TO OPERATE THE TRACTOR AND IMPLEMENT AND ALL CONTROLS BEFORE ATTEMPTING TO OPERATE.

The operator must read and understand the Safety and Operation Sections of the implement and tractor operator's manuals. These manuals must be read and explained to any operator who cannot read. Never allow someone to operate the implement and tractor without complete operating instructions.

Before starting any operation, the operator must become familiar with the area to be worked in and any obstacles and hazards contained within to ensure safety to the operator, bystanders, and equipment. Special attention should be paid to foreign debris, rough terrain, steep slopes, and passersby and animals in the area. *OPS-U- 0015 str*

WARNING

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



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

11.1 Foreign Debris Hazards

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

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

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



Remove Foreign Material



Raise Mower over solid objects

OPERATION

11.2 Bystanders/Passersby Precautions

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



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



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

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

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

11.3 Engaging the Power Take Off (PTO)

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

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



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



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*



OPERATION

11.4 PTO RPM and Ground Speed

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

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



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

Operating the Mower

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

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

Under certain conditions, tractor tires may roll some grasses down preventing them from being cut at the same height as the surrounding area. When this occurs, reduce the tractor ground speed while maintaining the operating speed of the mower. A slower ground speed will permit grasses to at least partially rebound and be cut.

Before operating the mower place the mower on the ground so that the disc carrier bar is horizontal. Also make sure that the knives are well sharpened, especially if the grass is thin, dry or sparse. Switch on the power take off rotation and gradually accelerate.

Mower input rotation speed must be about 540revs/minute. If the bar is working for long periods on sloping ground, it is recommended to hold the mower in the horizontal position for a few minutes every half hour of work.



Make sure the protective cover is securely in place all around the mower bar hazard.

OPERATION

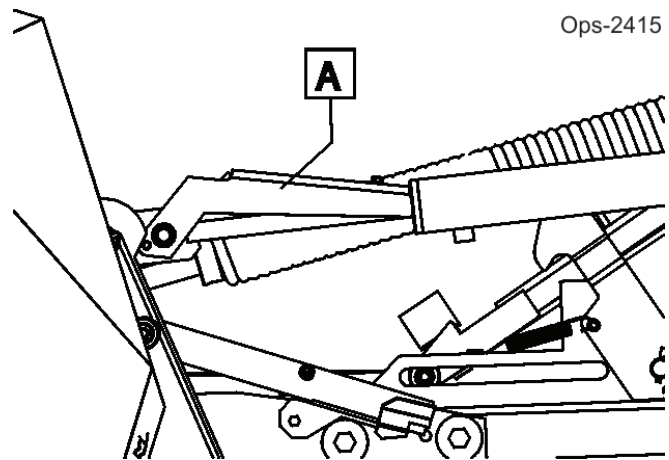
OPERATION

The protective cover avoids throwing out of plant residues and foreign objects.

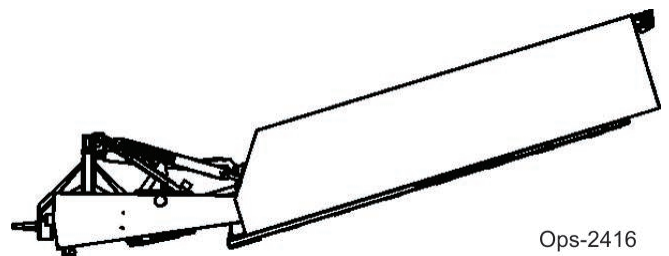
Before putting the mower bar into the forage, connect the tractor power takeoff and accelerate gradually up to 540 RPM. The forward speed must be adapted to the working conditions.

When working, the hydraulic cylinder must always be in the floating position to allow good adaptability to the unevenness of the ground. For lifting operations at the head of the field (Ops-2416), the mower bar maneuver is done with the machine's hydraulic cylinder.

The lift hydraulic cylinder is designed to maneuver the mower from the ground while the mower bar is raised. To perform this, actuate the hydraulic cylinder until the locking hook "A" of the cylinder reaches the end of the stroke.



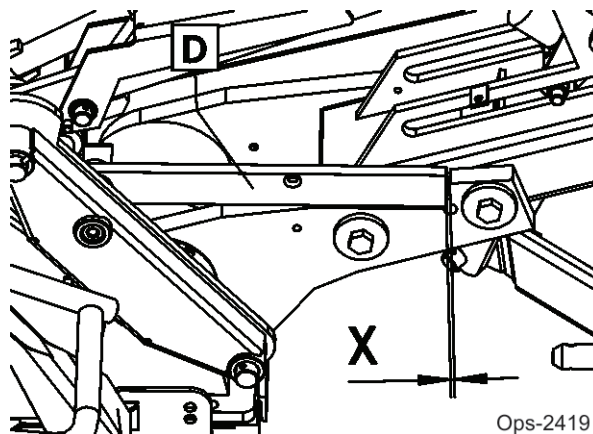
Ops-2415



Ops-2416

WARNING

When the machine's hydraulic cylinder is actuated during working position, the lifting brace "D" (Ops-2419) must be in its socket, otherwise damaging may occur.



Ops-2419

DANGER

Never mow on stony or rocky soils.

WARNING

While working the protective cover must always be in place with the front part of the protection lowered. Never lean on climb on the protective cover.

OPERATION

11.5 Shutting Down the Implement

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



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



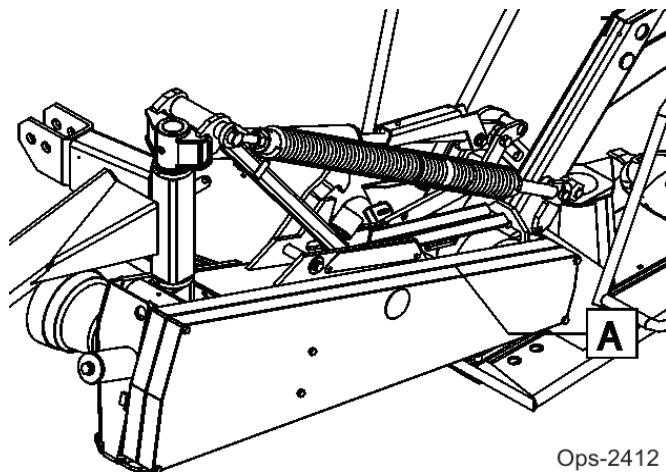
OPERATION

12. DISCONNECTING THE MOWER FROM THE TRACTOR

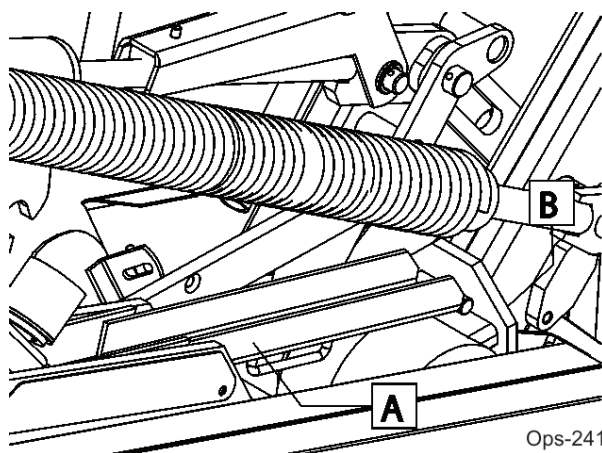


During operations when disconnecting the machine, be careful not to lower the mower bar below the horizontal line.

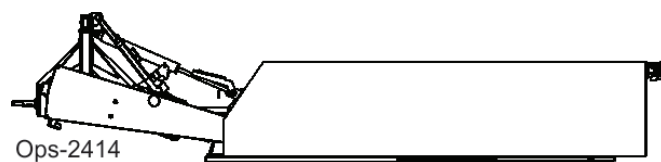
1. Using the hydraulic cylinder, lower the disc mower bar into the horizontal position. Ops-2414.
2. Unlock component A (Ops-2412) and turn it over, downward against plate B on the drop box (Ops-2413). Make sure the upper part of the drop box is free of foreign objects.
3. Actuate the tractor hydraulic cylinder to lower the machine to the ground.
4. Disconnect the third point and disconnect the hydraulic hose.
5. Disconnect the drawbars and the driveshaft.



Ops-2412



Ops-2413



Ops-2414



Always disconnect the machine with the mower bar in the horizontal position.



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



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

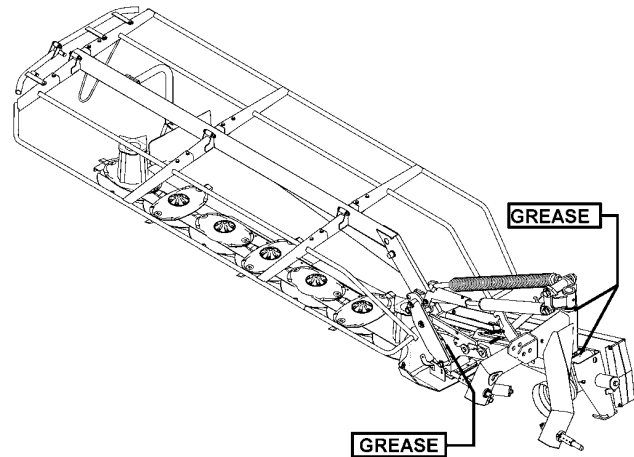
OPERATION

13.MOWER STORAGE

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

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

Use spray touch-up enamel where necessary to prevent rust and maintain the appearance of the mower.



Mnt-DM-0007

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



14.TRANSPORTING THE TRACTOR AND IMPLEMENT

Inherent hazards of operating the tractor and implement and the possibility of accidents are not left behind when you finish working in an area. Therefore, the operator must employ good 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

14.1 Transporting the Mower

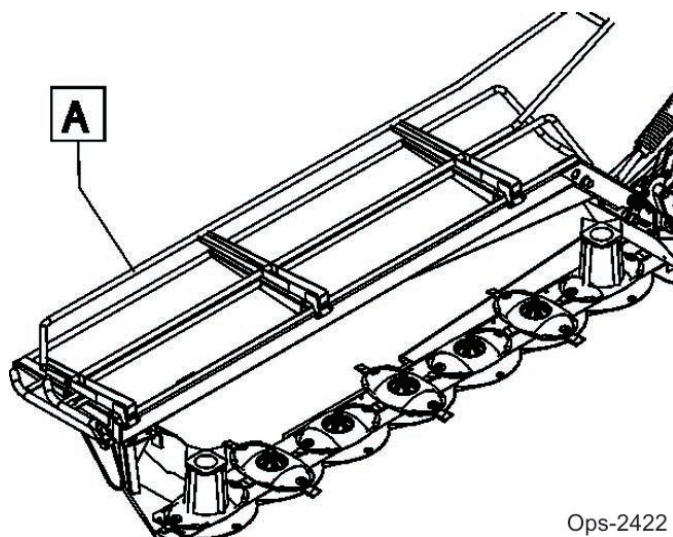
DANGER Make sure that no person or object is standing within the turnover range of the disc carrier bar.

Important Before transporting the machine on public roads, the user must always make sure that it complies with highway regulations

OPERATION

OPERATION

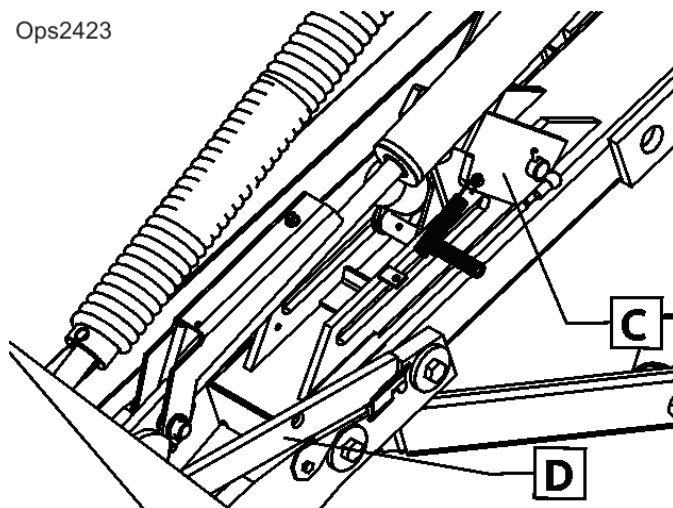
1. With the machine in the work position, detach the tractor power takeoff and wait until all moving components have come to a full stop.
2. Flip back the front deflector A.



Ops-2422

3. Pull the cord of hook C to free the lifting brace D. If the lifting brace D is not free in the socket, lower the tractor's hydraulic lift until the lifting brace D is free and then pull the cord of hook C.
4. Raise the machine completely with the tractor hydraulic lift.
5. Slowly raise the mower bar vertically actuating the machine's hydraulic cylinder. Release the tension of the cord of hook C while raising the mower bar vertically. This will hook automatically with the locking hook C.

Ops2423



WARNING

Pull the cord of hook C (Ops-2423) every time you want to raise the mower bar into the vertical position. While raising it vertically, release the tension on the cord.

WARNING

Secure transport lock before transporting mower, otherwise mower head lift cylinder may leak down resulting in possible injury or death to bystanders.

WARNING

The total transport height of the machine measured from the ground, must not exceed the maximum height authorized by highway regulations.

OPERATION

Before transporting the tractor and mower, idle the tractor engine, disengage the PTO and wait for all mower moving parts to come to a complete stop. Once all mower parts are completely stopped, raise the mower to transport height.

NOTE: When raising the mower, maintain 1" clearance between the driveline and mower deck. If additional mower deck height is needed for safe transport, disconnect the driveline from the tractor and secure its end to the mower deck. The mower can then be raised to the maximum lift height. OPS-R-0033_A str



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



OPERATION

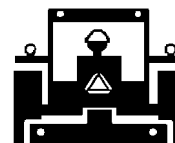
14.2 Transporting on Public Roadways

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

Make sure that a proper size safety tow chain is secured between the tractor and implement before entering a public road. *OPS-U- 0019 str*



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



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*



Op-43

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



Op-595

OPERATION

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



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*



14.3 Hauling the Tractor and Implement

Before transporting a loaded tractor and implement, measure the height and width dimensions and gross weight of the complete loaded unit. Ensure that the load will be in compliance with the legal limits set for the areas that will be traveled through. *OPS-U-0024 str*



OPERATION

OPERATION

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



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



While hauling the tractor and implement, make occasional stops to check that the tractor and implement have not moved or shifted and that the securing chains have maintained tension. If during transport a hard braking, sharp turning, or swerving action was performed, stop at the next safe location to inspect the security of the load. OPS-U- 0026str

OPERATION

15. TROUBLESHOOTING GUIDE

Problem	Possible Cause	Remedy
The Disc Carrier Bar Vibrates Too Much During Work	The nylon bushings of the joints in question are over worn or completely worn out.	Replace the bushings.
	The pins and/or respective bushings of the joints in question are over worn.	Replace worn out parts and lubricate regularly.
	The outer conveyor is too slack.	Check if it is fastened correctly and check nylon bushings.
The Disc Carrier Bar Does Not Adapt Correctly to Uneven Ground	The height of the tractor coupling plate is not adjusted correctly.	Readjust as specified in operations section (in particular, check that both ball and socket joints are the same height above the ground).
	The machine joints resist free rotation.	Clean and lubricate the parts in question.
The Disc Carrier Bar is Not Raised Parallel to the Ground	The entire machine is leaning to one side.	Check that both hoist ball and socket joints are at the same height above the ground; the transverse slant of the chain is not adjusted correctly; adjust the chain to the correct length and fasten one of the circlips into the slot.
Earth Accumulates Between Two Sliding Blocks in the front part of the Disc Carrier Bar	The ground is exceptionally wet; the bar presses too hard on the ground.	Use the tractor hoist to raise the machine higher above the ground and then readjust the chain giving minimum height above the ground.
	The disc carrier bar tilts too far forward.	Adjust the tilt of the axle by moving turnbuckle on the third point.
The Safety Device Often Unhooks Under Impact	The rubber buffer is worn out or is not adjusted correctly.	Check the condition of the rubber buffer and if necessary, tighten the relevant screw very carefully (danger of unhooking when it receives blows that are too strong for the machine structure) until hooking occurs at reasonable intervals only.
The Stubble is Too High or Too Sparse	The disc carrier bar does not tilt correctly.	Use turnbuckle 1 on the third point to adjust the tilt.
The Stubble is Not the Same	The disc carrier bar tilts too much.	Reduce the tilt of the disc carrier bar.
	The knives are over worn.	Replace the knives.
	Power take off speed is insufficient.	Increase power take off rotation speed up to, but not over 540 RPM.
	Forward movement speed is too fast.	Reduce tractor speed.
The Forge is Pushed Forward Before Being Cut	The ventilating effect of the knives is too strong.	Reduce power take off rotation speed and increase tractor forward movement speed.

MAINTENANCE SECTION

Maintenance Section 5-1

MAINTENANCE

CAUTION

BEFORE PERFORMING INSPECTIONS, MAINTENANCE OR ADJUSTMENTS OF THE MOWER, STOP THE TRACTOR ENGINE, REMOVE THE KEY, AND SECURE PARKING BRAKE. WAIT FOR ALL ROTATING MOTION OF THE MOWER TO STOP AND DISCONNECT THE DRIVELINE SHAFT. BLOCK THE MOWER AND TRACTOR TO PREVENT MOVEMENT BEFORE PERFORMING ADJUSTMENTS OR MAINTENANCE.

WARNING

AFTER MAINTENANCE OR ADJUSTMENTS ARE COMPLETED, REMOVE ALL BLOCKS AND TOOLS USED IN MAINTENANCE OR ADJUSTMENTS. FAILURE TO CLEAR THE AREA AROUND THE MOWER BEFORE OPERATION COULD RESULT IN OBJECTS BEING THROWN TOWARD THE OPERATOR OR BYSTANDERS.

DISC AND BLADE MAINTENANCE

For longer service life, carefully check discs, blades and bolts daily. More frequent checks will have to be made if mowing has been on stoned ground and after impact with an obstacle. When replacements are necessary, use only Bush Hog recommended parts. Use of parts not approved by Bush Hog could void the warranty.

Important

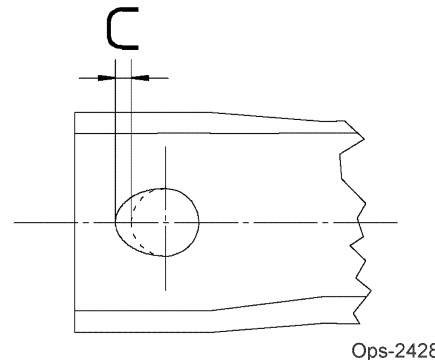
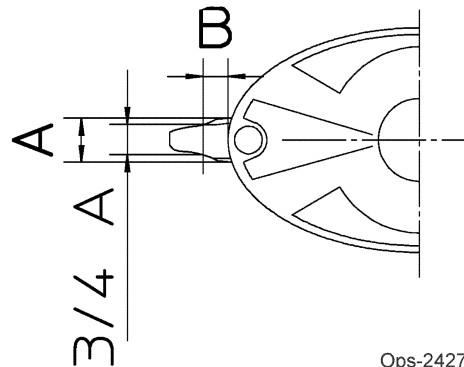
Worn, bent or blunt blades will require more power. To cut efficiently, replace worn or damaged blades as soon as possible. During operation, the blades will reach a speed of 3000 RPM. It is very important that the nut and bolt be in good condition and torqued to 236 ft./lbs.

CAUTION

A BENT BLADE CAN SERIOUSLY AFFECT THE OPERATION OF THE MACHINE AND THROW MORE OBJECTS. REPLACE BENT BLADES AT ONCE! ALWAYS REPLACE BLADES AND HARDWARE IN PAIRS TO MAINTAIN BALANCE.

How to Check the Mower Devices

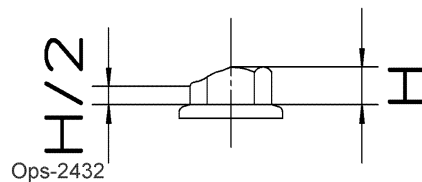
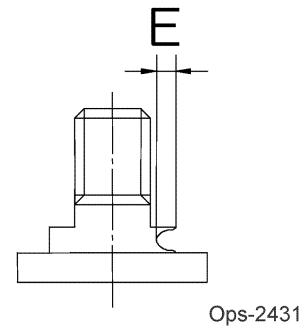
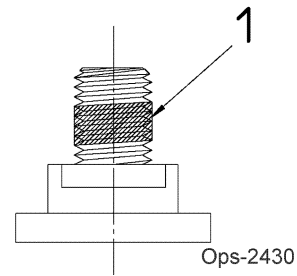
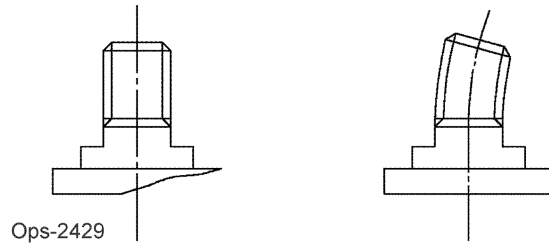
1. The knives should be replaced when:
 - The width of the knife at point B=1 cm (0.4 inches) from the edge of the disc is $\frac{3}{4}$ of the original width A.
 - The oval shape of the hole is more than a distance of C=2 mm (0.08 inches) of the size of the original hole.



MAINTENANCE

2. The clamp parts should be replaced when:

- The screw to fasten the knives is bent or too worn out below the head.
- The self-tapping layer 1 of the screw to fasten the knives is missing or too worn out. We advise changing the screw after it has been tightened 5 times.
- The clamp screw worn down where it olds the knife to a distance of E, higher than or equal to 3 mm (0.12 inches)
- The height of the lock nut at any point whatsoever is less than or equal to 1/2 of the total nut height.



MAINTENANCE

MAINTENANCE

DISC REPLACEMENT

Reinstalling Disc Assemblies:



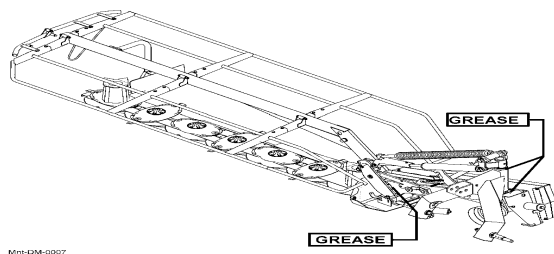
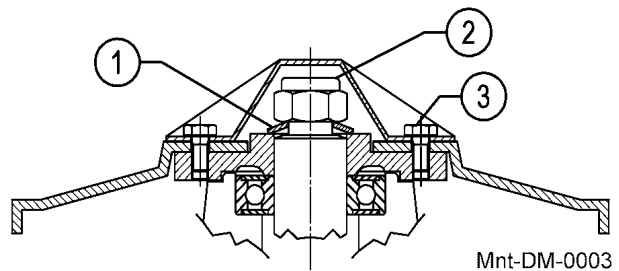
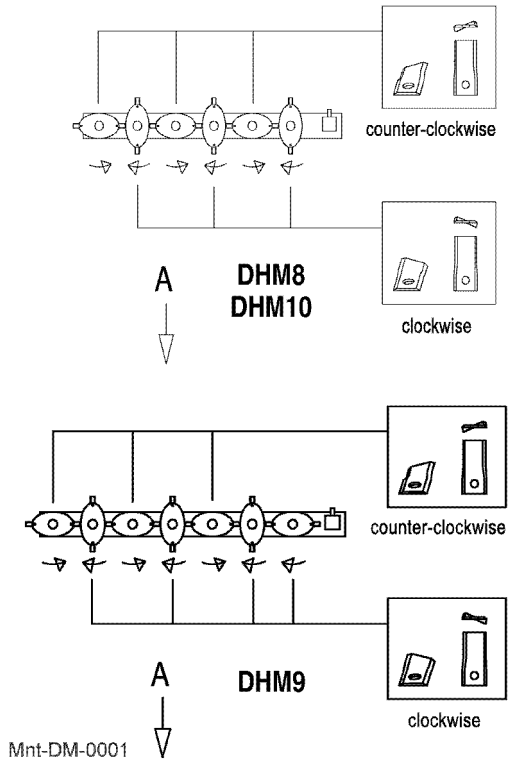
ALWAYS REPLACE BLADES AND BLADE FASTENERS IN PAIRS TO MAINTAIN BALANCE. VIBRATION MAY LEAD TO COMPONENT FAILURE.

The oval discs are splined to a shaft and have to be positioned so that the main axle is at right angles with next to it. (Mnt-DM-0001)

The knives are fastened by means of a special self-tapping screw and an M12 nut (Mnt-DM-0002). The nut must be tightened with a 16kgm (116 ft/lbs.) torque.

Cupped washer 1 (Mnt-DM-0003) must be mounted with its concavity facing downwards. The self-locking nut 2 must be tightened with a torque wrench set at 32 kgm (236 ft/lbs.) The six screws must be tightened with a torque wrench set at 70-80 Nm (52 ft/lbs.) torque.

Pay attention to the direction of disc rotation. Worn knives can be replaced by carefully looking at (Mnt-DM-0001). (A is the work moving direction). The second blade (if in good condition) can be used by putting it back turned up-side-down at the same side of the disc.



MAINTENANCE

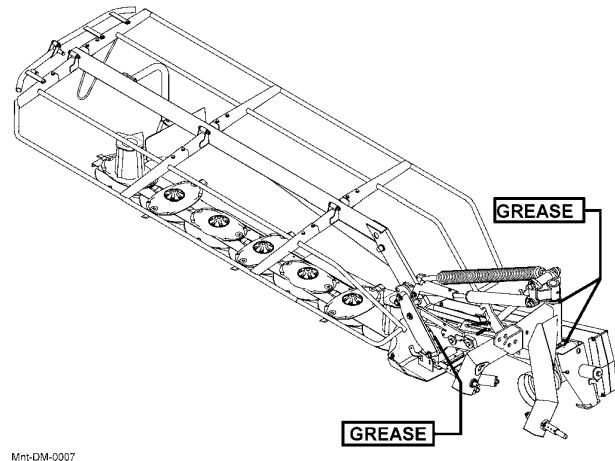
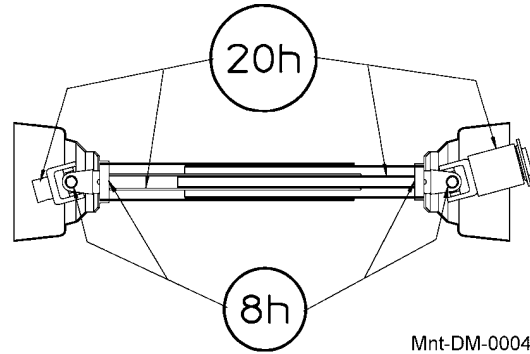
LUBRICATION

Driveshaft and Mower

Change the oil in the disc carrier bar and gearbox after the first 50 hours of use. After this first change, we advise changing the oil every 100 working hours or at least once a year.

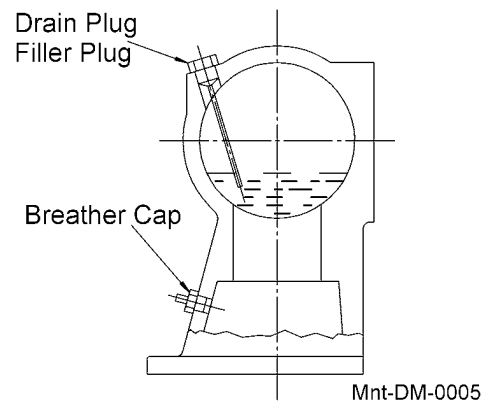
- The driveshaft should be greased regularly as shown in Mnt-DM-0004.
- The U-joints, supports, hinges, and points equipped with grease fittings should be lubricated or greased frequently, at least every 20 working hours.

NOTE: When in use, check the oil levels every day and top off if necessary.



Gearbox

Use SAE EP 80 W 90 oil. Check the level with the special rod on the drain/Filler plug when the bar is lying horizontally. Oil can be drained through the hole in cap when the bar is vertical.



MAINTENANCE

MAINTENANCE

Disc Carrier Bar

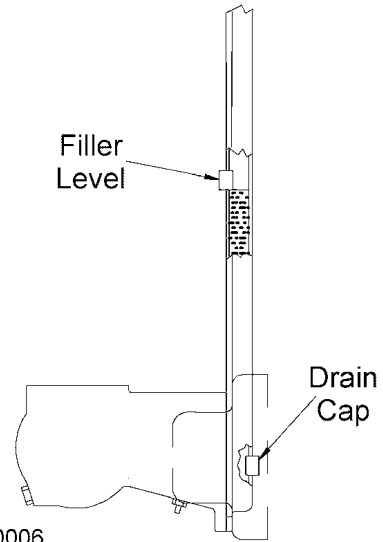
Use SAE EP 80 W 90 oil in quantities listed:

Model DHM8 0.77 Gallons

Model DHM9 0.95 Gallons

Model DHM10 1 Gallon

Oil is added and the oil level is checked when the disc carrier bar is vertical (it **MUST** be in the vertical position for at least 5 minutes). In order to fill with oil, unscrew both caps, filler and level, and pour in the amount shown or the amount needed to top to the level through the hole in cap (tilt bar slightly if necessary so it is easier to pour in oil) until the level of filler cap is reached.

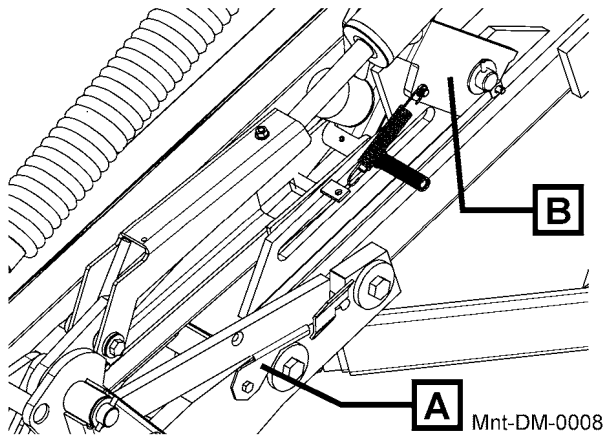


Mnt-DM-0006

Important

Check every 8 hours and keep clean the area between A and frame. Dust and dirt can accumulate. Check that lever A does not remain in the upright position.

NOTE: *Dispose of used oil properly.*



Mnt-DM-0008

MAINTENANCE

STORAGE

To prepare your Disc Mower for storage:

1. Clean the mower of all dirt and debris.
2. Drain the oil from the cutter bar and replace with fresh SAE EP 80 W 90 lube oil. (See Lubrication Instructions)
3. Store the mower on a clean, dry surface in the down (working) position.
4. Loosen the drive belts or remove the belts and store in a dry place.
5. Lubricate all points and slides before storage; this prevents corrosion.

NOTE: Now would be a good time to replace all damaged parts in preparation for the next cutting season.



NEVER DISCONNECT MOWER FROM TRACTOR WITHOUT CUTTER BAR IN LOWERED TO (OPERATING) POSITION.

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*

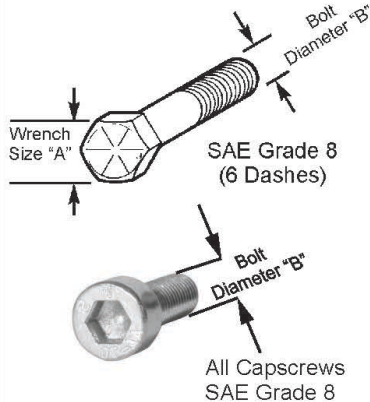
NOTE: *These values apply to fasteners as received from supplier, dry or when lubricated with normal engine oil. They do not apply if special graphited or molydisulphide greases or other extreme pressure lubricants are used. This applies to both UNF fine and UNC coarse threads.*

MAINTENANCE

MAINTENANCE

TORQUE SPECIFICATIONS - DRY TORQUE

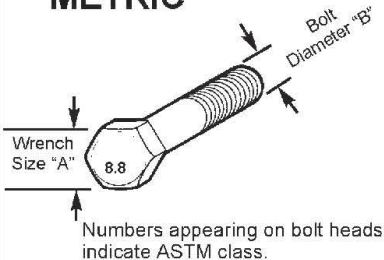
AMERICAN Bolt Head Markings



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



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

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

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

Mnt-B-0005



TO THE OWNER/OPERATOR/DEALER

To keep your implement running efficiently and safely, read your manual thoroughly and follow these directions and the Safety Messages in this Manual. The Table of Contents clearly identifies each section where you can easily find the information you need.

The OCCUPATIONAL SAFETY AND HEALTH ACT (1928.51 Subpart C) makes these minimum safety requirements of tractor operators:

REQUIRED OF THE OWNER:

1. Provide a Roll-Over-Protective Structure that meets the requirements of this Standard; and
2. Provide Seat belts that meet the requirements of this paragraph of this Standard and SAE J4C; and
3. Ensure that each employee uses such Seat belt while the tractor is moving; and
4. Ensure that each employee tightens the Seat belt sufficiently to confine the employee to the protected area provided by the ROPS.

REQUIRED OF THE OPERATOR:

1. Securely fasten seat belt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going - especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly - no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by the tractor manufacturer.
9. When the tractor is stopped, set brakes securely and use park lock, if available.

X Keep children away from danger all day, every day...

X Equip tractors with rollover protection (ROPS) and keep all machinery guards in place...

X Please work, drive, play and live each day with care and concern for your safety and that of your family and fellow citizens.



BUSH HOG[®]

**DISC MOWER
DHM8/DHM9/DHM10**