



RBF-12C

REAR BOOM ARM MOWER

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Part No. 06060001

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.

ATENCIÓN!

LEA EL INSTRUCTIVO

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



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TO THE OWNER/OPERATOR/DEALER

All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

BEFORE YOU START!! Read the safety messages on the implement and shown in your manual.
Observe the rules of safety and common sense!

 <h1 style="font-size: 4em; margin: 0;">DANGER</h1>			
<p>FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE SERIOUS BODILY INJURY OR EVEN DEATH TO OPERATOR AND OTHERS IN THE AREA.</p>			
<p>1.</p> 	<p>2. NO RIDERS, NO CHILDREN OPERATORS</p> 	<p>3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEATBELTS, & ROPS</p> 	<p>4. BLOCK UP SECURELY BEFORE WORKING UNDER.</p> 
<p>1. Study and understand Operator's Manuals, Safety Signs, and Instructional Decals for tractor & flail mower to prevent misuse, abuse, & accidents. Practice before operating mower in a confined area or near passersby.</p> <ul style="list-style-type: none"> • Learn how to stop engine suddenly in an emergency. Be alert for passersby and especially children. <p>2. Allow no children on or near implement or tractor. Allow no riders on tractor or implement. Falling off can cause serious injury or death from being runover by tractor or mower or contact with Flail Mower Blades.</p> <p>3. Operate only with tractor having Roll-Over Protective Structure (ROPS) and with seatbelt fastened securely and snugly to prevent injury and possible death from falling off or tractor overturn. Personal Protective Equipment such as Hard Hat, Safety Glasses, Safety Shoes, and Ear Plugs are recommended.</p> <p>4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted component to prevent crushing injury or death from sudden dropping or inadvertent operation of controls. Make certain that area is clear before lowering or folding.</p> <p>5. Before transporting, put Lift Lever in detent or full-lift position. Install Transport Safety Devices securely on folding implements. Slow down when turning and on hillsides.</p> <ul style="list-style-type: none"> • Install **Restrictor in folding circuit to slow down lowering and unfolding if action is faster than is desirable. <p>6. Make certain that SMV sign, Warning Lights, and Reflectors are clearly visible. Follow local traffic codes.</p> <p>7. Never operate with Flail Mower or Folding Section raised if passersby, bystanders or traffic are in the area to reduce possibility of injury or death from objects thrown by Blades under Shields or implement structure.</p> <p>8. Before dismounting, secure flail mower in transport position or lower to ground.</p> <ul style="list-style-type: none"> • Put tractor in park or set brake, disengage PTO, stop engine, remove key, and wait until noise of rotation has ceased to prevent entanglement in rotating parts which may cause injury or death. • Never mount or dismount a moving vehicle. Crushing from runover may cause injury or death. 			
<p>5. TRANSPORT SAFELY, LOCK UP.</p> 	<p>6. USE SMV, LIGHTS, & REFLECTORS.</p> 	<p>7. DO NOT OPERATE WITH MOWER OR WING RAISED.</p> 	<p>8. DO NOT MOUNT OR DISMOUNT WHILE MOVING.</p> 

WARRANTY INFORMATION:

Read and understand the complete Warranty Statement found in this Manual. Fill out the Warranty Registration Form in full and return it within 30 Days. Make certain the Serial Number of the Machine is recorded on the Warranty Card and on the Warranty Form that you retain. The use of "will-fit" parts will void your warranty and can cause catastrophic failure with possible injury or death.

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SAFETY SECTION

SAFETY

General Safety Instructions and Practices

A safe and 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 safely and 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.

CAUTION!

The lowest level of Safety Message; warns of possible injury. Decals located on the Equipment with this Signal Word are Black and Yellow.



WARNING!

Serious injury or possible death! Decals are Black and Orange.

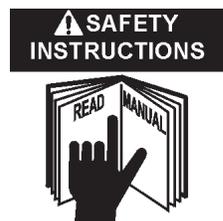


DANGER!

Imminent death/critical injury. Decals are Red and White. (SG-1)



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



(SG-2)

SAFETY

PELIGRO!



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



¡LEA EL INSTRUCTIVO!

WARNING!



Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. (SG-30)

WARNING!



Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. Wash Hands after handling. (SG-31)

Operator Safety Instructions and Practices

DANGER!



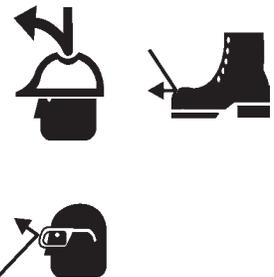
Never operate the Tractor or Implement until you have read and completely understand this Manual, the Tractor Operator's Manual, and each of the Safety Messages found in the Manual or on the Tractor and Implement. Learn how to stop the tractor engine suddenly in an emergency. Never allow inexperienced or untrained personnel to operate the Tractor and Implement without supervision. Make sure the operator has fully read and understood the manuals prior to operation. (SG-4)



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 thrown by the equipment. (SG-16)



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)



SAFETY

WARNING!



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



DANGER!



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



DANGER!



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

DANGER!



NEVER 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)



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)

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)

WARNING!



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

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)

SAFETY

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)

WARNING!



The rotating parts of this machine continue to rotate even after the PTO has been turned off. The operator should remain in his seat for 60 seconds after the brake has been set, the PTO disengaged, the tractor turned off, and all evidence of rotation has ceased. (S3PT-10)

“Wait a minute...Save a life!”

DANGER!



Never crawl under a raised Implement supported solely by the Tractor 3-Point hitch. Release of the control lever or mechanical failure will result in the Implement falling and possible injury or death. Always securely block up the Implement before crawling underneath to perform repairs and service. (S3PT-19)

WARNING!



The rotating parts of this machine continue to rotate even after the Tractor has been turned off. The operator should remain in his seat for 60 seconds after the brake has been set, the PTO disengaged, the tractor turned off, and all evidence of rotation has ceased. (SBM-5)

“Wait a minute...Save a life!”

DANGER!



Do not put hands or feet under mower decks. Blade Contact can result in serious injury or even death. Stay away until all motion has stopped and the decks are securely blocked up. (SFL-2)



WARNING!



Do not put hands or feet under mower decks. Blade Contact can result in serious injury or even death. Stay away until all motion has stopped and the decks are securely blocked up. (SGM-9)



WARNING!



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



DANGER!



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-3)

SAFETY

Connecting or Disconnecting Implement Safety Instructions and Practices

WARNING!



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 Mower resulting in excessive vibration, thrown objects, and blade and mower 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)

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)

WARNING!



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

WARNING!



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

DANGER!



Each Rear Wheel must have a minimum of 1500 pound contact with the surface to prevent lateral instability and possible tip-over which could result in serious bodily injury or even death. Widen the wheel tread and add weights if needed. Refer to the mounting instructions or call Customer Service if you need assistance with Counterweight Procedure. (SBM-11)



DANGER!



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

(SBM-23)

SAFETY

Equipment Operation Safety Instructions and Practices

WARNING!



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-1)

DANGER!



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

DANGER!



Rotary Mowers are capable under adverse conditions of throwing objects for great distances (100 yards or more) and causing serious injury or death. Follow safety messages carefully.
STOP MOWING IF PASSERSBY ARE WITHIN 100 YARDS UNLESS:

- Front and Rear Deflectors are installed and in good, working condition;
- Mower Head is 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 removed, and mowed again at desired final height. (SBM-1)

DANGER!



Use extreme caution when raising the Mower head. Stop the Blades from turning when the Mower Head is raised and passersby are within 100 yards. Raising the Mower head 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. (SBM-2)

WARNING!



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



SAFETY

DANGER!



The center of Gravity of Tractors equipped with a Rear-Mounted Boom Mower is shifted to the rear and removes weight from the front wheels. Add front ballast until at least 20% of the tractors weight is on the front wheels to prevent rearing up, loss of steering control, and possibly injury.

(SBM-10)



DANGER!



The Mower shaft speed must not - **UNDER ANY CIRCUMSTANCES** - exceed 1800 RPM. (SBM-15)

WARNING!



Use extreme care and Safety Awareness when using the boom mower head to mulch loose brush or wood that has fallen on the ground from overhead trimming. **DO NOT** mulch this debris if bystanders, vehicles, livestock or buildings are within 300 feet of the mower. This cut debris can be thrown at great velocities and could result in serious injury or even death. (SBM-17)

CAUTION!



Do not back up this implement when the boom or mower head is extended. Backing could damage the machine or its components. (SBM-19)

WARNING!



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

- Equip the Tractor with a fire extinguisher in an accessible location.
- Do Not operate the Mower on a Tractor with an underframe exhaust.
- Do Not smoke or have an open flame near the Mower and Tractor.
- Do Not drive into burning debris or freshly burnt areas.
- Do Not attempt to mow or place the mower head close to burning debris.
- Never allow clippings or debris to collect near drivelines, gearboxes or hydraulic components such as valves, tanks, pumps and motors. Periodically shut down the Tractor and Mower and clean clippings and collected debris from the mower deck. (SBM-20)



WARNING!



Do not operate Mower if excessive vibration exists. Shut down PTO and the Tractor engine. Inspect the Mower to determine the source of the vibration. If Mower blades are missing or damaged replace them immediately. Do not operate the mower until the blades have been replaced and the Mower operates smoothly. Operating the Mower with excessive vibration can result in component failure and 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 Mower to be operated with blades missing. (SFL-4)

SAFETY

DANGER!



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



STOP MOWING IF PASSERSBY ARE WITHIN 100 YARDS 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;
- Passerby are outside the existing thrown-object zone;
- All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass, and general debris has been removed.

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

(SFL-6)

WARNING!



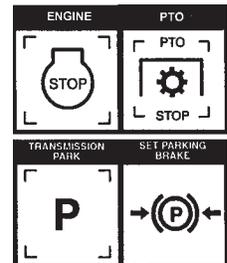
Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Serious injury or even death could result from falling off the tractor--particularly during a turnover when the operator could be pinned under the ROPS. (SG-7)



DANGER!



BEFORE leaving the tractor seat, always engage the 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)



DANGER!



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



DANGER!



Never allow children to operate or ride on the Tractor or Implement. (SGM-11)



WARNING!



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



SAFETY

DANGER!



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



DANGER!



Do not operate this Equipment with hydraulic oil leaking. Oil is expensive and its presence could present a hazard. Do not check for leaks with your hand! Use a piece of heavy paper or cardboard. High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)



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)

WARNING!



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

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 serious injury or death. (SG-29)

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 stop before dismounting. (SG-39)

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 in 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 the 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)

SAFETY

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 yards 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 this type of items discontinue mowing. (SGM-1)

DANGER!



There are obvious and hidden potential hazards in the operation of this Mower. REMEMBER! This machine is often operated in heavy brush and in heavy weeds. The Blades of this Mower can throw objects if shields are not properly installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not operate this machine with anyone in the immediate area. Stop mowing if anyone is within 100 yards of mower. (SGM-2)



DANGER!



The rotating parts of this machine have been designed and tested for rugged use. However, they could fail upon impact with heavy, solid objects such as steel guard rails and concrete abutments. 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)

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-5)



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-6)

WARNING!



Mow at the speed that you can safely operate and control the tractor and mower. Safe mowing speed depends on terrain condition and grass type, density, and height of cut. Normal ground speed range is from 0 to 5 mph. 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-7)

WARNING!



Avoid mowing in reverse direction when possible. Check to make sure there are no persons are behind the mower and use extreme care when mowing in reverse. Mow only at a slow ground speed where you can safely operate and control the tractor and mower. Never mow an area in the reverse direction that you have not inspected and removed debris or foreign material. (SGM-8)

WARNING!



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

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



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)

WARNING!



Never leave the Implement and Power Unit unattended while the Implement is in the raised position. Accidental operation of a lifting lever or a hydraulic failure may cause the mower to suddenly fall causing serious injury or possible death to anyone who might inadvertently be under the Implement. Lower the implement carefully to the ground. Do not put hands or feet under lifted components. (SPU-3)

DANGER!

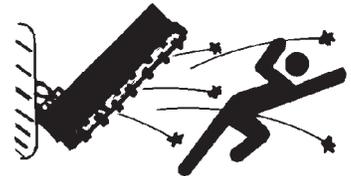


Do not turn so sharp or lift mower so high to produce a severe "knocking" of the Driveline which will cause accelerated wear and breakage of drive train components and could result in possible injury from the separated Driveline sections. (SRM-4)

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-7)



Maintenance and Service 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)



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)

WARNING!



Never interfere with factory-set hydraulic calibrations. Any change in calibration could cause a failure of the equipment and may result in injury. (SBH-13)

SAFETY

WARNING!

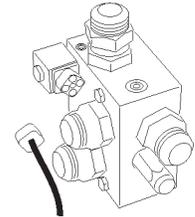


Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Mower Head on the ground or securely supported on blocks or stands, disengage the PTO, and turn off the engine. Push and pull the control Levers or Joystick several times to relieve pressure prior to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

DANGER!



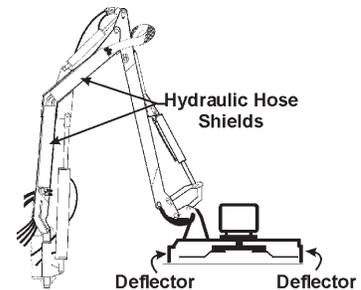
Always disconnect the wire leads from the mower valve solenoid before performing service on the Tractor or Mower. Use caution when working on the Tractor or Mower. Tractor engine must be stopped before working on Mower or Tractor. The Mower Blades could inadvertently be turned on without warning and cause immediate dismemberment, injury or death. (SBM-12)



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-18)



DANGER!

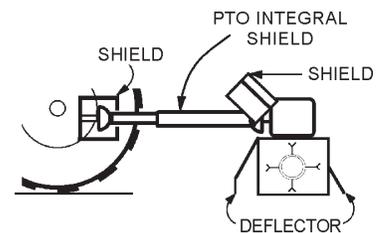


DO NOT allow any person under a raised boom or mower head unless it is securely locked up or supported. **DO NOT** approach the Implement unless the Tractor is turned off and all motion has ceased. Never work under the frame work, or any lifted component unless the implement is securely supported or blocked up. Inadvertent contact with the controls could allow a component to fall. A sudden or inadvertent fall by any of these components could cause serious injury or even death. (SBM-22)

DANGER!



All Safety Shields, Guards and Safety devices including (but not limited to) - the Deflectors, Steel Guards, Gearbox Shields, PTO integral shields, and Retractable Door Shields should be used and maintained in good working condition. All safety devices should be inspected carefully at least daily for missing or broken components. Missing, broken, or worn items must be replaced at once to reduce the possibility of injury or death from thrown objects, entanglement, or blade contact. (SFL-5)



WARNING!



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

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)

SAFETY

DANGER!



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



WARNING!



Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. Make sure the tractor engine is off before working on the Implement.

(SG-20)

DANGER!



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

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-35)

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)

DANGER!



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

WARNING!



DO NOT weld or repair rotating mower components. Welds and other repairs may cause severe vibration and/or component failure resulting in parts being thrown from the mower causing serious bodily injury. See your Authorized Dealer for proper repairs. (SGM-13)

PARTS INFORMATION

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

(SPTM-1)

SEE YOUR TIGER DEALER

SAFETY

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 injured or killed. (S3PT-2)

WARNING!



Allow sufficient clearance for the Implement to swing outward while turning. Implements carried behind the Tractor will swing outside the tire path when making turns. Contacting a solid object while turning will cause equipment damage and possible injury. (S3PT-20)

DANGER!



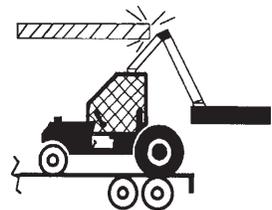
Be particularly careful in transport. The Mower has raised the center of gravity for the tractor and has increased the possibility of overturn. Turn curves or go up slopes only at low speed and using a gradual turning angle. Slow down on rough or uneven surfaces. (SBM-3)



DANGER!



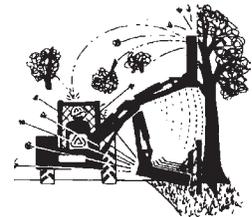
When transporting Boom Mower on a truck or trailer, the height or width may exceed legal limits when the boom is in the transport position. Contact with side or overhead structures or power lines can cause property damage or serious injury or death. If necessary lower boom to reduce height and/or remove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



DANGER!



Never operate the Tractor and Mower Unit without an OPS (Operators Protective Structure) or Cab to prevent injury from objects thrown from ground or from overhead trimming. Stop mowing if workers or passersby are within 100 yards. (SBM-9)



WARNING!



The Joystick Master Control Switch must be OFF to prevent accidental movement of the boom and cutting head whenever the mower is not being operated. (SBM-16)

WARNING!



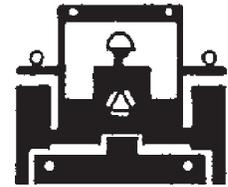
Secure the boom and mower head in the transport position before traveling on public roads. Never transport on public roads with the boom and mower head extended. Always disengage and lock out the hydraulic controls for the boom mower before transporting. Inadvertent boom movement on public roads may contact with other vehicles resulting in serious bodily injuries. (SBM-21)

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)



WARNING!



Transport only at safe speeds. Serious accidents and injuries can result from operating this equipment at unsafe 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 safe transport speeds for you and the equipment. Make sure you abide by the following rules:

1. 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 safe transport speed for you and this Equipment.
2. Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that it is safe to operate 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 safe turning speed for you and this equipment before operating on roads or uneven ground.
3. Only transport the Tractor and Implement at the speeds that you have determined are safe and which allow you to properly control the equipment.



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. 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)

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

Storage and Parking Safety Instructions and Practices

DANGER!



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)

CAUTION!

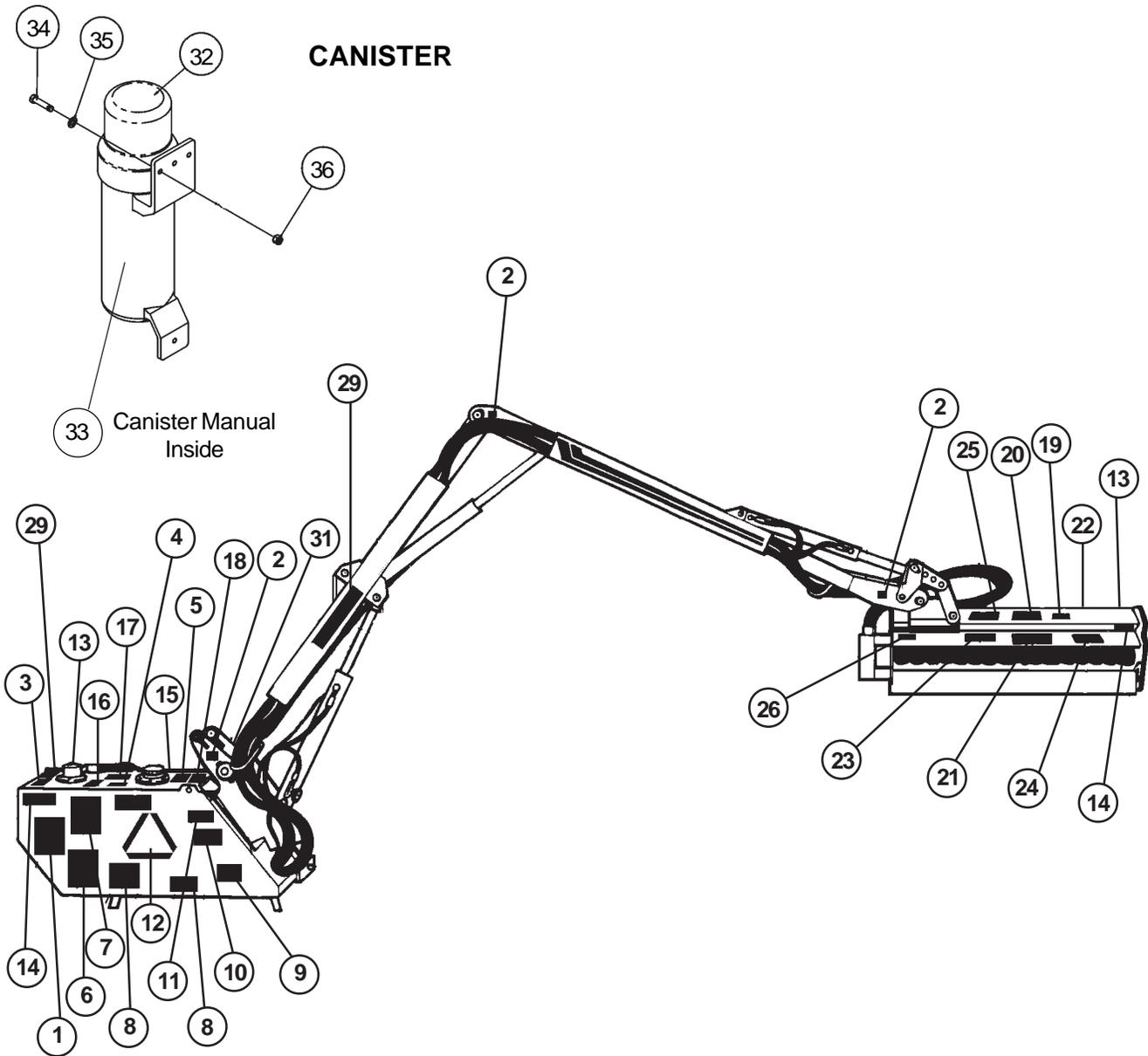


To prevent tipping of implement when stored in folded position, use carrying wheels or adequate stands on center frame. (S3PT-6)

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)

SAFETY



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

SAFETY

ITEM	PART NO.	QTY	LEVEL	DESCRIPTION
1	02962765	1	DANGER	Flail Multi-Hazard
2	02962764	3	DANGER	Use/Maintain Guards
3	25387	1	DANGER	Maintain Frt Wt for Steerage
4	03200437	1	PELIGRO	Spanish Notice
5	32708	1	DANGER	Shield Missing - Do Not Operate
6	32707	1	DANGER	Rotating D/L -- Entanglement
7	00725746	1	PELIGRO	English Translation
8	D352	1	WARNING	Be Trained Before Operating
9	22840	1	DANGER	D/L Multi-Hazard
10	02965262	1	DANGER	Boom Mower Multi-Hazard
11	00763977	1	DANGER	Pinch Point. Scissors
12	03200347	1	REFLECT	SMV Sign
13	42400	1	REFLECT	Yellow Reflector
14	42399	1	REFLECT	Red Reflector
15	999001	1	CAUTION	Rear Implement
16	00756494	1	INSTURCT	Notice to Owner
17	00773723	1	INSTURCT	Do Not Overspeed Engine
18	D103	1	INSTURCT	Hydraulic Oil
29	02965093	1	INSTRUCT	Proper Engine Operating
30	D354	1	DANGER	Automatic Breakaway
31	D355	1	WARNING	Sway Bars Chains Tight

ON FLAIL MOWER HEADS

19	02965141	1	DANGER	Multiple Hazard
20	02967827	1	DANGER	Cutting Blades/Thrown Obj (Flail)
21	6T3225	1	WARNING	Use/Repair Shields/Guards
22	002425	1	IMPORTANT	Use Genuine Rhino Parts
23	02967668	1	L/NAME	RHINO (3-1/2 x 11-3/4)
24	6T3217	1	SER PLT	SV37 HD Flail Serial Plate
25	32709	1	NAME	SV37
26	24028	1	DANGER	Front Shield Removal
13	42400	1	DANGER	Boom Flail
14	42399	1	WARNING	540 RPM
*27	00756005	REF	DANGER	Rotating Driveline
*28	00756004	REF	DANGER	Shield Missing

CANISTER

32	00776031	1	-----	Canister, Operators Manual
33	02967963C	1	-----	Operators Manual
34	10058000	3	-----	Bolt
35	00024100	6	-----	Flatwasher
36	02959924	3	-----	Locknut

*- Supplied by Manufacturer

SAFETY

Item 1: DANGER! Multi Hazard Crushing and Pinch Points.



P/N 02962765

Item 2: WARNING! Pinch Points



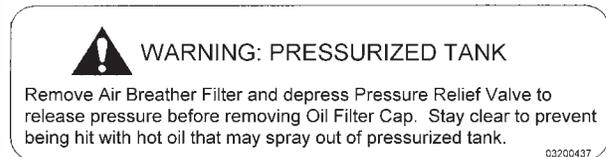
P/N 02962764

Item 3: WARNING! Relief all pressure in Hydraulic Lines before disconnecting hoses.



P/N 25387

Item 4: WARNING! Remove Air Breather and depress Pressure Relief Valve to release pressure before removing Oil Filter Cap.



P/N 03200437

SAFETY

Item 5: ATTENTION! Service Hydraulic System

ATTENTION

**SERVICE HYDRAULIC SYSTEM
WITH 15W40 CD SERVICE
OIL. ALAMO GROUP
PART NUMBER 02960575**

32708

P/N 32708

Item 6: DANGER! Follow Tractor Safety Operation.

DANGER

1. EACH REAR WHEEL MUST HAVE A MINIMUM OF 1000 POUNDS CONTACT WITH THE SURFACE TO PREVENT LATERAL INSTABILITY AND POSSIBLE TIPPING WITH BODY WEIGHT. WHEN WHEELS, TREADS AND ADD WEIGHTS IF NEEDED. SEE MANUAL OR CALL CUSTOMER SERVICE FOR CONFIRMED WEIGHT PROCEDURE.
2. **TRAVEL CAREFULLY:** SLOW DOWN (EVEN MORE ON SLOPES AND WHEN TURNING). NEVER TURN ON A SLOPE EXCEPT AT HIGH SPEED, AND USE EXTRA CARE IN PULLING OR SHUFFLING AREAS TO PREVENT EXCESSIVE AND POSSIBLE CONSEQUENCE OF DEATH IF YOUR VIEW TO THE REAR IS BLOCKED. IT IS YOUR RESPONSIBILITY TO INSTALL MIRRORS THAT PROVIDE A REAR VIEW TO PREVENT SUGGESTED HAZARDOUS SPOTS.
3. **REAR MOUNTED BOOM MOWERS:** HAVE CENTER OF GRAVITY TO THE REAR AND REAR WHEELS FROM FRONT WHEELS. ADD FRONT BALLAST (UP TO AT LEAST 5% OF TRACTOR'S WEIGHT) IS ON FRONT WHEELS TO PREVENT HEAVING UP LOSS OF STEERING CONTROL AND POSSIBLE DEATH.
4. **NEVER OPERATE UNIT WITHOUT AN OPS OPERATOR PROTECTIVE STRUCTURE (OR CAB TO PREVENT INJURY FROM OBJECTS THROWN FROM DRUMS AND CUTTING) TRAINING STOP CUTTING IF A PERSON IS WITHIN 150 YARDS.**
5. **KEEP THE BOOM AND CUTTERHEAD AT LEAST 6 FEET FROM ELECTRICAL WIRES AND PIPES LINES TO PREVENT ACCIDENTAL CONTACT AND POSSIBLE SERIOUS INJURY OR DEATH.**
6. **WHEN TRANSPORTING BOOM MOWERS ON A TRUCK OR TRAILER, THE HEIGHT OR WIDTH MAY EXCEED LEGAL LIMITS. CONTACT WITH SIDE OR OVERHANG STRUCTURES OR POWER LINES CAN CAUSE SERIOUS INJURY OR DEATH. LOWER BOOM TO REDUCE HEIGHT AND/OR TILT CUTTING HEAD TO REDUCE WIDTH TO THE LEGAL LIMITS, IF NEEDED.**

P/N 32707

Item 7: PELIGRO! Si no le ingles Pida ayuda a alguien que se lo lea. Para Que le traduzca las medidas de seguridad.

PELIGRO LEA EL INSTRUCTIVO

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

00725746

P/N 00725746

Item 8: WARNING! Operator needs to be trained before operating this equipment.

WARNING

<p>BE AWARE</p> <p>BE ALERT</p> <p>BE ALIVE</p>	<p>BE TRAINED</p> <p>BEFORE OPERATING</p> <p>THIS CUTTER</p>
--	---

To prevent serious injury to yourself and/or bystanders, be trained in Safe Mowing Practices.

Tiger Corporation, 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 (414-272-0943, www.aem.org), FEMA (314-878-2304, www.FarmEquip.org), or TIGER (605-338-7900, www.tiger-mowers.com) for information on training material or courses that provide training in Safe Operating Practices for Cutters.

D352

P/N D352

SAFETY

Item 9: WARNING! Contact with foreign Object.



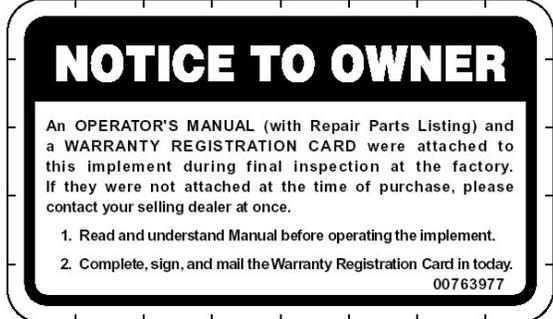
P/N 22840

Item 10: WARNING! Hose burst



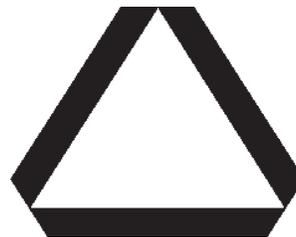
P/N 02965262

Item 11: INSTRUCT; Notice to Owner, Read and understand Operator's Manual, and Complete and Sign Warranty Card.



P/N 00763977

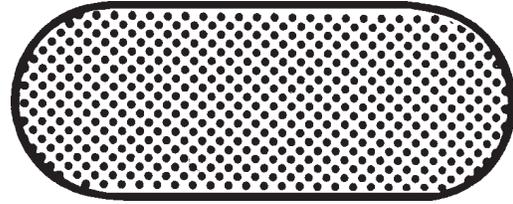
Item 12: REFLECT! SMV Sign, keep clean and visible at all times.



P/N 03200347

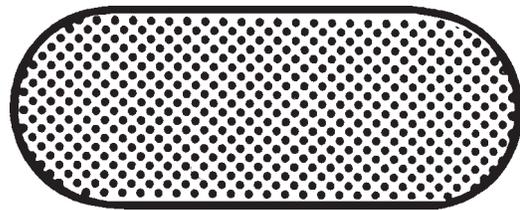
SAFETY

Item 13: REFLECT; Yellow Reflector, keep all reflectors clean and visible at all times



P/N 42400

Item 14: REFLECT; Red Reflector, Keep reflectors clean and visible at all times.



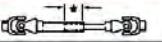
P/N 42399

Item 15: CAUTION! Tractor may rear up and cause serious injury or death.

WARNING	
<ul style="list-style-type: none">Tractor's rearing up may cause machine damage, injury, or death.Never use tractor without ROPS.Keep seatbelt fastened snugly to prevent falling off and injury. NO RIDERS.	
<ul style="list-style-type: none">Add tractor front weight as needed to maintain safe steering traction.Slow down in curved and rough places.Stay away from soft banks and holes.	<ul style="list-style-type: none">Never start or accelerate suddenly to maintain safe steering traction.Do not lift heavy implement while going up steep slopes.

P/N 999001

Item 16: DANGER; Make sure driveline is correct length and connected correctly.

DANGER	
1. MAKE CERTAIN DRIVELINES ARE OF THE CORRECT LENGTH AND SECURELY ATTACHED. DRIVELINE SEPARATION AND/OR PTO SHAFT FAILURE CAN CAUSE INJURY OR DEATH. (See Operator's Manual for procedure.)	
	
2. MAKE CERTAIN THAT DRIVELINE SHIELDS ARE INSTALLED CORRECTLY AND TURN FREELY TO PREVENT INJURY OR DEATH FROM ENTANGLEMENT.	
	
3. MAKE CERTAIN THAT DRIVELINE IS INSTALLED CORRECTLY ON TRACTOR PTO SHAFT. MOVE YOKE BACK AND FORTH UNTIL LOCKING COLLAR CLICKS FORWARD AND LOCKS YOKE IN PLACE.	
4. 540 PTO RPM UNLESS SPECIFICALLY MARKED OTHERWISE.	

P/N 00756494

SAFETY

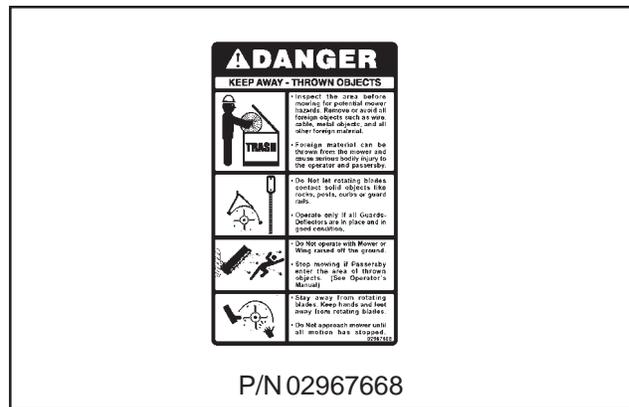
Item 21: DANGER! Be Aware of electrical lines while operating the boom.



Item 22: DANGER! Keep away if front deflector is removed from flail housing.



Item 23: DANGER! Keep Away - Thrown Objects. Inspect area before mowing.



Item 24: DANGER! Keep Hands Clear of rotating parts.



SAFETY

Item 25: CAUTION! Use Genuine Tiger parts.

IMPORTANT

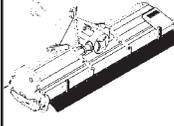
For your safety and to guarantee optimum product reliability, always use Genuine TIGER replacement parts. The use of inferior "will fit" parts will void Warranty of your TIGER implement and may cause premature or catastrophic failure which can result in serious injury or death. If you have any questions concerning the repair parts you are using, contact TIGER, 3301 N. Louise Ave., Sioux Falls, SD 57107.

 32709

P/N 32709

Item 26: WARNING! Maintain Rubber deflectors, if worn or damaged replace with new ones.

! WARNING!



Inspect mower deck Rubber Deflector frequently.

Maintain Rubber Deflector in good condition, replace if damaged or noticeably worn.

Do not operate mower if Rubber Deflector is missing or damaged.

24028

P/N 24028

Item 27: Rotating Driveline contact can cause death!

! DANGER



**ROTATING DRIVELINE-
CONTACT CAN CAUSE DEATH
KEEP AWAY!**

DO NOT OPERATE WITHOUT-

- All driveline guards, tractor and equipment shields in place.
- Drivelines securely attached at both ends.
- Driveline guards that turn freely on driveline.

85756045

P/N 00776005

Item 28: Guard Missing Do Not Operate!

! DANGER



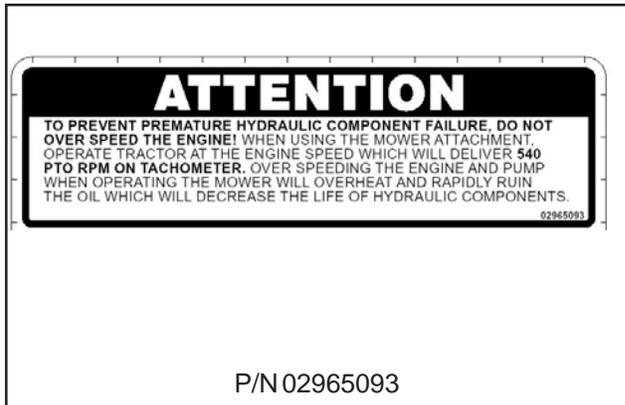
**SHIELD MISSING
DO NOT OPERATE**

! DANGER

P/N 00776004

SAFETY

Item 29: ATTENTION! DO Not Over Speed Engine.



Item 30: DANGER! Beware Automatic Breakaway Return. Keep clear of front arm and head.



Item 31: WARNING! Keep sway bar chains tight to keep implement from swaying back and forth.



SAFETY

FEDERAL LAWS AND REGULATIONS

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

Employer-Employee Operator Regulations

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

This Act Seeks:

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

DUTIES

Sec. 5 (a) Each employer-

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA Regulations

OSHA regulations state in part: “At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved.”

Employer Responsibilities:

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

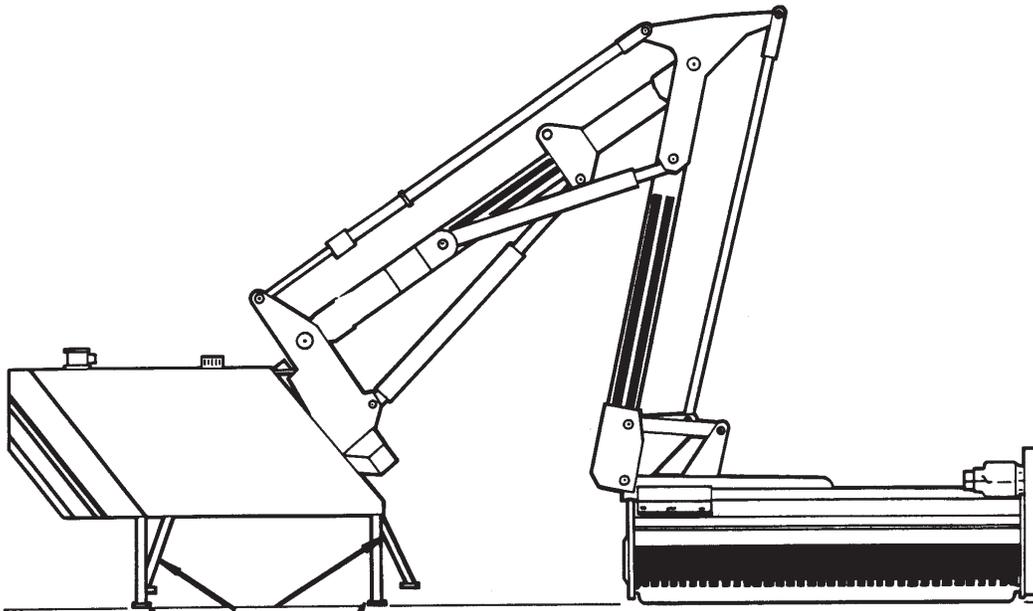
1. Train the employee in the proper and safe operation of the Tractor and Implement.
2. Require that the employee read and fully understand the Tractor and Implement Operator’s manual.
3. Permit only qualified and properly trained employees to operate the Tractor and Implement.
4. Maintain the Tractor 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 mowing if bystanders or passerbys come within 100 yards.

Child Labor Under 16 Years of Age

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

INTRODUCTION SECTION

INTRODUCTION



The Tiger Boom Mower is primarily designed for grass cutting and trimming hedges. This mower is assembled for operation with 540 RPM tractor input only. With proper use and maintenance the mower should provide years of dependable service.

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

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

Careful use and timely service saves extensive repairs and costly down time losses. The Operation and Maintenance sections of the manual trains the owner/operator how to work the mower correctly and attend to appropriate maintenance.

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 mower.
2. Fill out the Warranty Card in full. Be sure to answer all questions, including the Serial Number of the mower. Mail promptly using the return envelope included with the Operator's Manual.

NOTE: Warranties are honored only if completed "Owner Registration and Warranty" cards are received by Servis-Rhino within thirty days of delivery of the mower.

3. Record the mower model and Serial Number on the Warranty card at the front of the Operator's Manual. Keep this as part of the permanent maintenance file for the mower.

ASSEMBLY SECTION

ASSEMBLY

GENERAL

The Rhino 1348, 1548, and 1948 differ slightly in some areas. Notes have been provided for these differences, be sure to refer to the proper note for your machine.

TRACTOR REQUIREMENTS

Before preparing the tractor for the machine make sure that specifications of the tractor meet the requirements listed below.

- A. 6 spline P.T.O. of 1-3/8" dia.
- B. A P.T.O. output of 540 rev/min.
- C. A top link is available.
- D. As a guide for suitable tractor size the ballasted weight of tractor should exceed 2750 kg (6050 lbs)
- E. Adequate ballast should be added to the rear wheel opposite to the arms and front of the tractor to ensure stability. The amount will vary depending on type of tractor used and prevailing conditions.

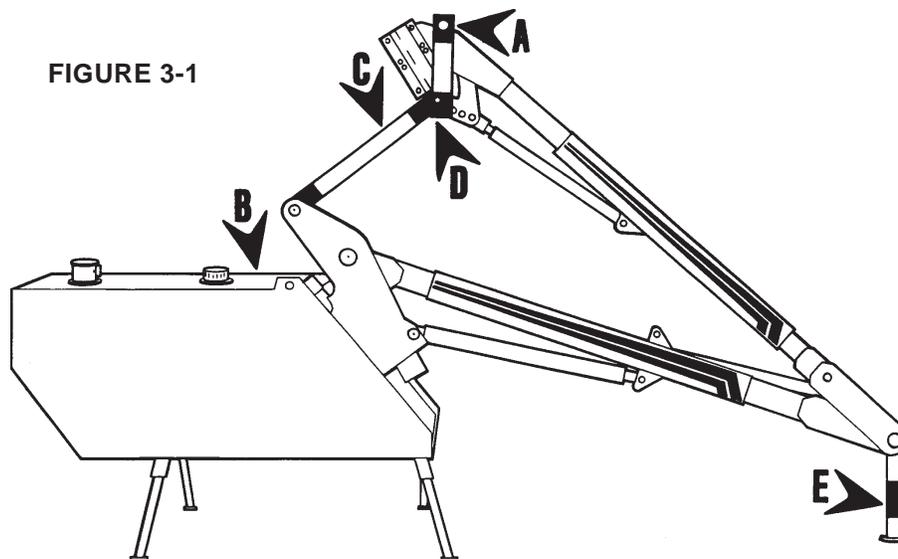
MACHINE PREPARATION

The machine will normally be delivered with the arms fully assembled to the mainframe, but with the mower head detached.

The lifting points **FIGURE 3-1 (A)**, **3-1 (B)** and **FIGURE 3-2 (A)** are for machines without the mower head attached or hydraulic oil. When lifting machine in anything other than this conditions extreme care should be exercised as the center of gravity may change. Only personnel experienced in lift and hoist operation should attempt it. Note the Lifting Point and transport straps / retaining chain differ between the 1348/1548 and the 1948 (see **FIGURE 3-1**).

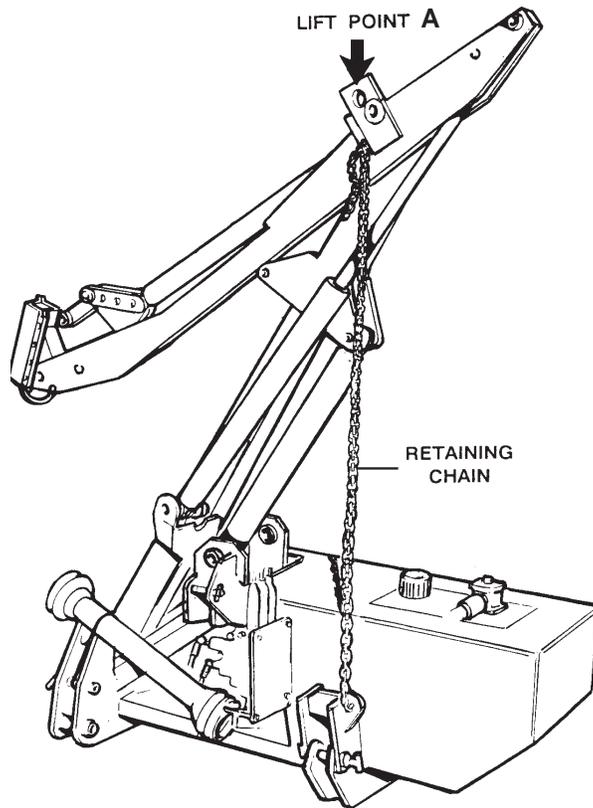
- A. Position the machine on a flat hard surface.
- B. If not already fitted, lift the machine and fit the parking stands which will be found stored under the mainframe.
- C. Remove the transport straps **3-1 (C)**, **3-1 (D)**, identified by the red panel.
Remove the retaining chain and greasing setscrew from transport plate and fit into tapped hole of first/second arm pin and tighten up.

NOTE: The second arm on the RBF-12 is required to be moved from on top the first arm to below the first arm and the second ram re-fitted to it.



ASSEMBLY

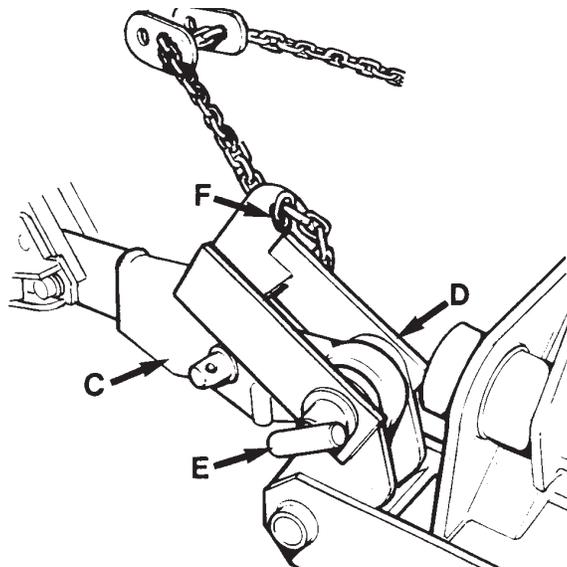
FIGURE 3-2



FITTING MACHINE TO TRACTOR

To fit the machine to the tractor follow the instructions carefully, referring to the illustrations for guidance.

FIGURE 3-3



ASSEMBLY

The RBF-12C is supported on the three point linkage of the tractor and its height set by chain tensioners. Refer to **FIGURE 3-3**

- A. Carefully reverse the tractor so that the ball joint on the lower arm C lines up with the clevis D in the stabilizer bracket/breakout link.
- B. Adjust the height hydraulically until the left hand link arm can be positioned in the clevis (D) and secured with hand pin (E).
- C. Adjust the right hand lift arm leveling screw until this arm can be secured to the clevis of the stabilizer bracket with the hand pin provided.
- D. Attach top link bracket. Two types of chain bracket are supplied: a single bracket that locates in a lower alternative top link position, or a pair of plates to fit either side of the top link on the same pin.
- E. Fit whichever type is most suitable and thread the chain through the keyhole-shaped hole(s), so that the two equal length of chain are suspended from the bracket(s).
- F. Lift the machine until the tractor and machine PTO are in line. Adjust the right arm and top link until the machine is square with the tractor.
- G. Thread each end of the chain through the keyhole in the lower link stabilizer bracket.
- H. Lock the chain in the slot of the stabilizer bracket, taking up the slack in the chain between the top link and the bracket, and ensuring the lengths of the chain on each side are the same.
- I. Lower the machine carefully, ensure that tension on each chain is taken up evenly. The chain attachment brackets are designed to flex and to take up minor irregularities.
- J. Clip the 'loose' ends of the chain G to the taut chain as far as possible to lock it positively in the bracket keyholes.
- K. Fit the tractor external check chains to the lift arms and adjust until there is no sideways movement.

A. The machine is supported on the three-point linkage of the tractor, together with a rigid frame between the mainframe and top link attachment of the tractor . See **FIGURE 3-4**.

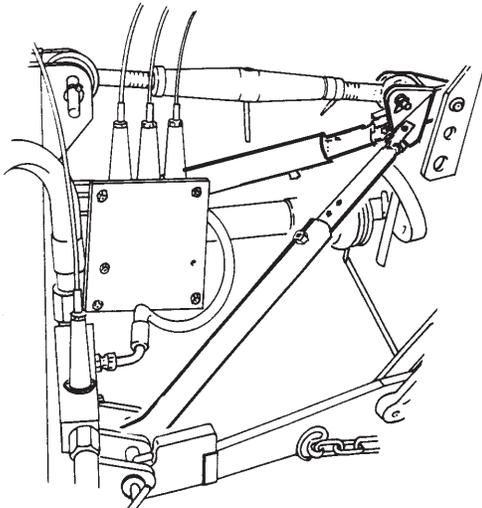


FIGURE 3-4

Three point for 1948

ASSEMBLY

B. Prepare the mower by using the top link to join the mower's upper hitch point to the A frame upper clevis.

C. Using the lower hitch pins, fix the A frame tube ends in the inner clevis of each lower hitch point. At this stage the lower hitch pins should not protrude into the outer lower hitch clevis.

D. Carefully reverse the tractor so that the ball joint on the tractor linkage line up with the clevis on the mainframe. Connect the mower with hitch pins that are retaining the A frame. By this time the hitch pin should pass through both A frame tubes and lift arm ball ends.

E. Connect the upper hitch point of the A frame to the tractor upper hitch point, adjusting the top link as necessary.

F. Lift machine to its working height, ensuring that the machine is level by adjusting the tractor linkage to suit.

G. Fit the top strut and the top link bracket, connecting the struts together with the two bolts provided. It may be necessary on certain tractors to twist the struts to fit.

H. The A frame is now a rigid unit and the tractor lift arms can be lowered by removing the weight from the tractor hydraulics.

NOTE: It is important that at this stage the tractor lower link check chains are fully tightened to remove all horizontal motion from the tractor lower links.

I. Remove front and rear stands from the mainframe and store underneath the mainframe. (See **General Arrangement**.)

J. Adjust the top link until the machine is square with the tractor.

FITTING PTO

NOTE: The tank must be filled with the correct grade of oil before the PTO is fitted. See **Maintenance Section**.

Due to many different makes and sizes of tractor to which Servis mowers can be fitted, a nominal length of PTO shaft is supplied with the machine. In some cases it may be found that this PTO shaft is too long and will have to be shortened.

NOTE: Minimum engagement of PTO square drive is 100mm (4 in) and 150mm (6 in) for the Lemon Tube Type in the working position. This measurement must be taken into account when shortening the PTO shaft.

Before fitting PTO shaft to tractor grease the sliding drive shafts and bearing units.

Fit PTO to tractor ensuring locking pin on the splined coupling is fully engaged.

ASSEMBLY

FITTING CONTROLS

The position of the lever unit inside the tractor cab depends largely upon the route of the cables between unit and control valve.

The control valve is mounted on the front face of the oil tank.

The cable normally can be routed through the rear cab window and should be as free of bends as possible. **DO NOT PINCH CABLE IN CLOSED WINDOW.**

NOTE: Avoid sharp bends. The rotor control cable must not have a bend of less than 150mm (6 in) radius.

If the tractor cab has special apertures for cables the lever unit should be through them before they are attached to the tractor cab.

Follow instructions below for fitting lever unit.

A. Pass lever unit and cable through suitable aperture in rear of tractor cab.

NOTE: It is essential not to drill mounting holes through any structural member of the safety cab.

B. Mount the unit securely on to the mounting bracket with bolts provided.

C. Finally, check levers for smooth operation in both directions. If any stiffness is felt or if levers do not return to center, check cable route for sharp bends.

NOTE: Whenever the machine is removed and the tractor is operated without the control valve unit in place, fit rubber beading (contained in the cab fitting kit) to the edge of the console mounting bracket to prevent risk of injury.

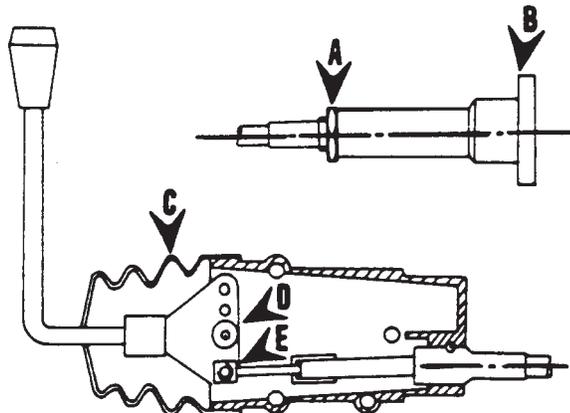
LEVER UNIT

A. Adjustment is provided at the cable attachment to the control valve.

B. Loosen locknut on the cable/valve connection flange **FIGURE 3-5 (A)**.

C. Loosen the two capscrews holding the valve connection flange **FIGURE 3-5 (B)**.

FIGURE 3-5



ASSEMBLY

D. Rotate the valve connection by the hexagonal nut provided, while holding the cable to stop it from rotating until the lever is in the required position.

E. Re-tighten the two capscrews.

F. Re-tighten the locknut.

ADJUST LEVER PIVOT POSITION

The ration of lever movement to cable movement can be adjusted on the Lever units. The lever/cable ratio is supplied at the highest ratio, but two lower rations can be selected, i.e. with less lever travel but higher force required, as follows.

A. With the lever units off the tractor remove the 3 throughbolts and nuts.

B. Remove the gaiter from the body of a control unit **FIGURE 3-5 (C)**.

C. Drive out the tension pin from the lever unit pivot **FIGURE 3-5 (D)**.

D. Remove the circlip and pivot pin from the end of the cable and then remove the lever **FIGURE 3-5 (E)**.

E. Remove the sleeve from the lever pivot and take out the nylon bushes from the original pivot position and replace in the required position.

F. Replace the sleeve in the bushes and replace lever in the control unit in the reverse sequence to the above.

H. Replace all the rubber boots and reassemble with the 3 throughbolts and nuts.

HYDRAULIC SYSTEMS

It is to not necessary to connect to the tractor hydraulics. The second pump, mounted on the PTO - driven gearbox, provides the hydraulic supply to the control valve for operation of the rams. A diverter valve in the main rotor drive circuit, operated by remote cable control, allows the rotor unit to be stopped while the PTO drive is in operation. See **FIGURE 3-6**.

FILL TANK WITH OIL

NOTE: Before filling tank with oil connect the Drive Hose together, using one of the adaptors from the motor fitted to the cowl.

The correct procedure for filling the oil tank is as follows:

A. Remove breather cap and strainer assembly and place at side of tank.

B. Check unions on suction hose from tank to pumps for tightness and freedom from kinks and restrictions

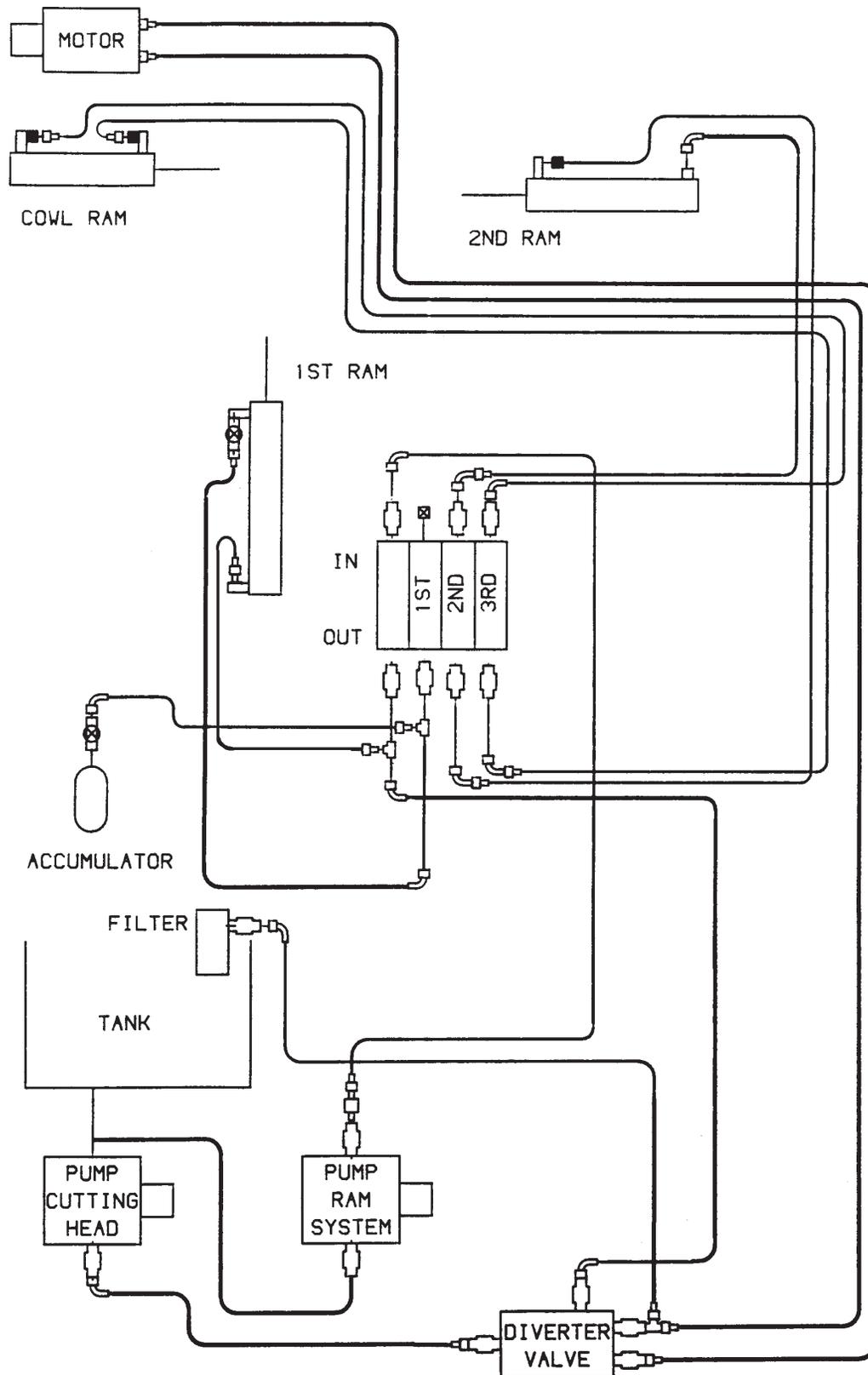
C. Fill tank with 150 liters (40 gal) of oil.

D. Replace breather cap and strainer assembly.

E. Avoid contamination at all time, particularly when the breather cap and strainer assembly are removed.

ASSEMBLY

FIGURE 3-6



ASSEMBLY

FITTING ROTOR UNIT

The rotor unit can now be fitted to the end of the arms. Illustration shows the Rhino 1948 cowl bracket.

- A. Start tractor engine.
- B. Raise second arm so that the mower head clamp is approximately 300mm (18 in) clear of the ground.
- C. Place mower head directly in front of the second arm.
- D. Level up mower head with wood packing.
- E. Remove clamp bracket **FIGURE 3-7 (A)** from the end of arms.
- F. Adjust position of the arms until the mower head clamp is lined up with the clamping bar on top of the rotor unit in the desired position along the bar. (See **FIGURE 3-7**).
- G. Replace clamp bracket **FIGURE 3-7 (A)** and nut and washers **FIGURE 3-7 (B)**. Tighten fully.

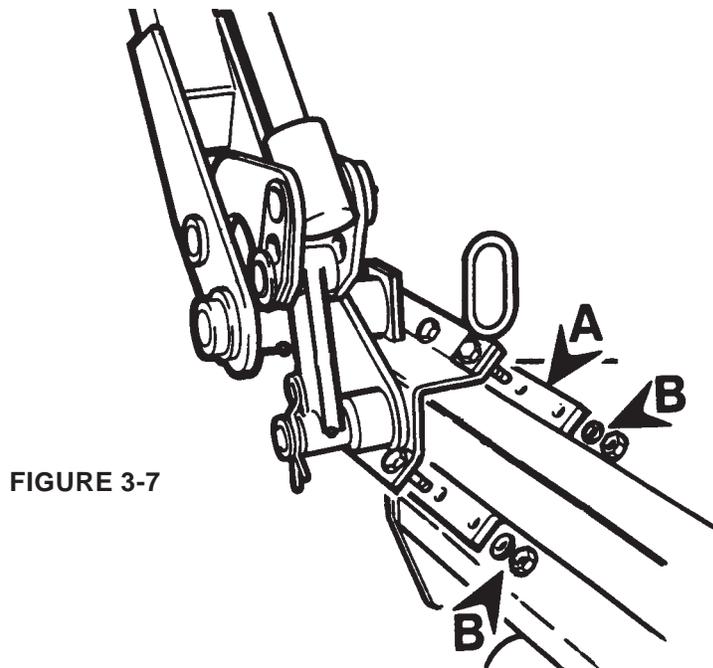


FIGURE 3-7

ASSEMBLY

CONNECTING THE MOTOR

The connection of the hoses to the motor will determine the direction of rotation of the rotor shaft. As reverse rotation is standard on the machine, then the following instructions will apply to reverse rotation. For forward rotation the pipe connections on the motor are interchanged.

- A. Locate the relief valve at the pump outlet.
- B. Connect hose attached to port marked 'P' for pressure, to the bottom rear fitting on motor and tighten.
- C. Connect hose attached to port marked 'T' for tank, to the top fitting on motor and tighten.
- D. For forward rotation interchange these hoses. (Same as tractor tires)

NOTE: When fitting Cowl Bracket in different positions on the cowl rear beam it is important that the motor hose cannot be caught up between the Arm and rear of the Cowl. It may be necessary to reposition the hose in hose clamps on the second arm.

MECHANICAL BREAKOUT

The RBF-12C is equipped with a mechanical breakout, which is fitted at the bottom of the kingpost attachment point in the mainframe. This will reduce the risk of damage if an obstruction is encountered during work. This breakout mechanism is pre-set at the factory and should not need any adjustment. If it is ever dismantled it is important that the disc springs are replaced in the correct sequence.

HOSE LAYOUT

It is important that hoses are fitted correctly. To ensure that there are no kinks, sharp bends and that the hoses do not chafe against sharp edges, the following layout should be used as a guide.

Twists

Hoses should never be twisted or kinked. On most hoses there is a line which runs the full length of the hose acting as a useful guide (see **FIGURE 3-8**). If there is no guideline running along the hose follow the fitting instructions below.

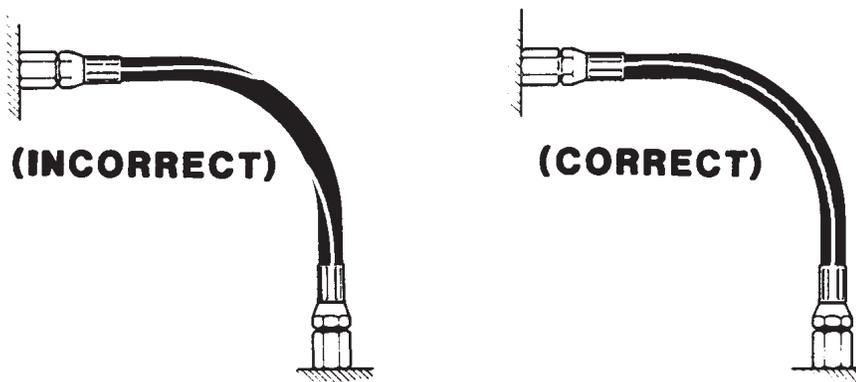


FIGURE 3-8

ASSEMBLY

Sharp Bends

Avoid sharp bends, always allow enough hose for free moment as seen in **FIGURE 3-9**.

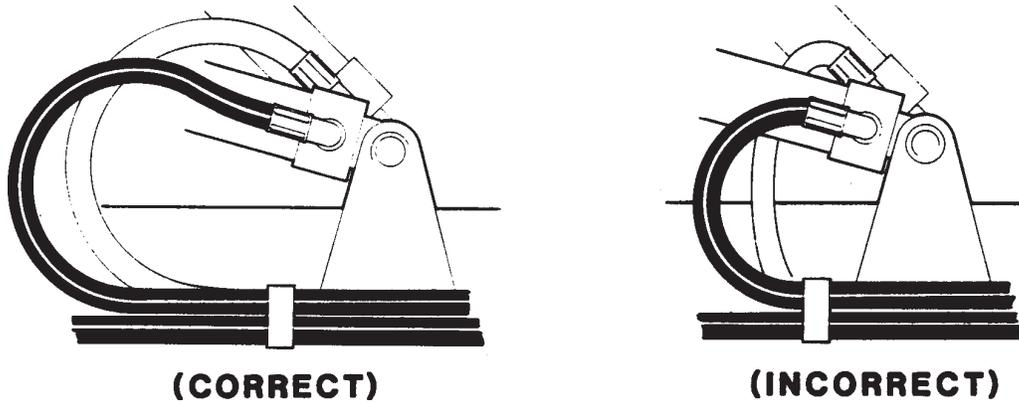


FIGURE 3-9

Chafing Hoses

Avoid Chafing Hoses. Always give plenty of clearance around sharp edges (see **FIGURE 3-10**). Finally, operate the arms in all positions, except that noted below, to ensure that the hoses are clear of any obstructions.

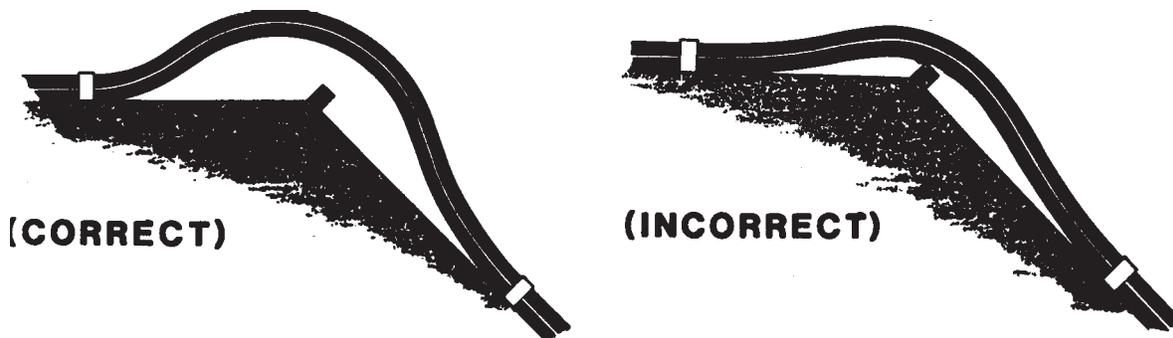


FIGURE 3-10

ASSEMBLY

FLEXIBLE FRONT GUARD KIT

A Flexible Front Guard can be fitted for grass cutting, either to the front of the cowl, or to the rear of the forward rotation. See **FIGURE 3-11**.

This flap is fitted to the front of the cowl after removal of the wire trap and steel guard.

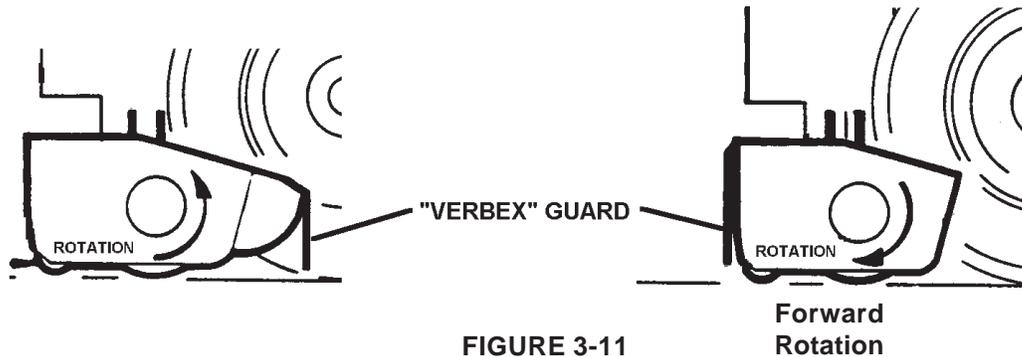


FIGURE 3-11

ACCUMULATOR KIT

The accumulator is positioned at the front of the mainframe, and is clamped to a plate welded to the 100 x 50 rectangular tubing.

It is first necessary to assemble the following parts to the accumulator unit itself before attempting to fit it to the machine.

Assembling the Kit (refer to **FIGURE 3-12**)

A. Remove the kit from its packing and check that all parts are present. Refer to the Parts Section on the Accumulator Kit, for a complete listing of parts.

B. Assemble items 3 thru 8 into accumulator and fully tighten connections.

Fitting the Kit

A. Fit packing piece item 2 onto the accumulator.

B. Fit clamping bracket 1 loosely to plate on front of mainframe with setscrews, spring washer and nuts provided.

C. Slide accumulator with packer fitted into the clamping bracket. Position isolator valve knob facing outwards so that it can be operated easily when machine is fitted to the tractor.

D. Locate the hose connecting the control valve to the first ram. Refer to the Parts Section.

E. Disconnect the hose at the adaptor in the control valve.

G. Re-connect the hose from the first ram to the tee adaptor.

H. Connect straight end of hose 9 to the adaptor on the accumulator.

I. Fit 90 deg. end to tee adaptor on control valve.

J. Fully tighten all connections.

ASSEMBLY

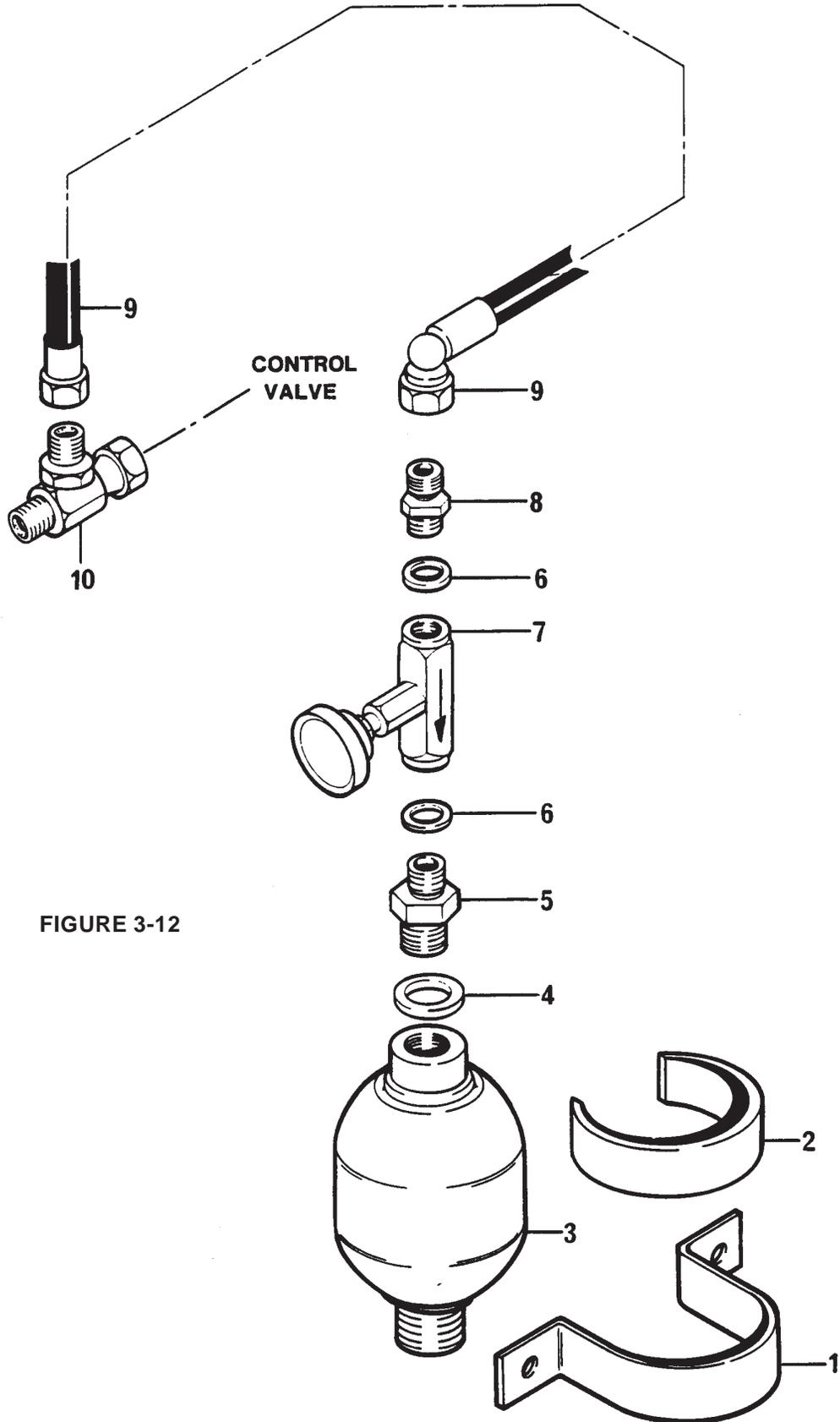


FIGURE 3-12

ASSEMBLY

INITIAL RUN

- A. Check that the motor hoses are connected together.
- B. Run tractor engine at idle speed and engage PTO drive.
- C. Increase PTO speed gradually up to 360 rev/min.
- D. The pump will start operating during run-up. Flexing of the motor hoses and turbulence of the oil tank can be observed.
- E. When pump is operating run system at 360 rev/min PTO speed for 10 minutes.
- F. Check oil level. The oil level is correct when visible in the bottom of the filler assembly strainer.

BLEEDING RAMS

The ram cylinders at first will be full of air, therefore it may take some time for the cylinders to move after the control levers have been operated. Ensure sufficient space is available to allow for any unexpected movement of the arms.

Bleeding the First Ram

Due to the fact that the first arm can move past the vertical (overcenter) when fully raised, a restrictor may be fitted in the first ram hydraulic system to give a slow, controlled movement of the arm past center. It is essential that the first ram is fully bled to prevent fall back to the arm when the arms are stretched out and taken past vertical.

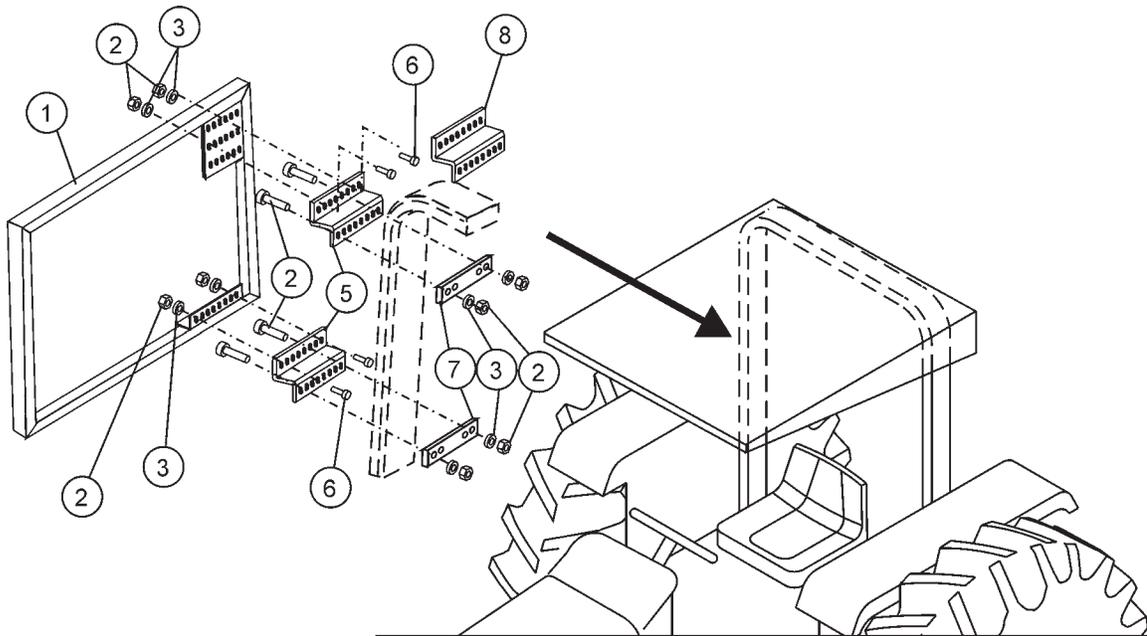
NOTE: The following instructions must be carried out before any attempt is made to raise more than one arm at a time.

- A. Engage PTO drive with tractor engine at idle speed.
- B. Increase PTO speed to 360-400 rev/min.
- C. Fully retract second cylinder.
- D. Fully retract the first cylinder.
- E. Slacken hose connection at the bottom of the first cylinder.
- G. Continue the bleeding until only clean, bubble-free oil is escaping from the fitting. Tighten fitting.
- H. Open and close all cylinders to expel the air.
- I. Check the oil level in the tank/tractor hydraulic oil reservoir and top up if necessary.
- J. Check all hydraulic connections in the cylinder circuit for tightness.

WARNING! Do not raise more than one arm at a time until cylinders are completely free of air. Unexpected movement of the arms can be dangerous.



ASSEMBLY



Ref No.	Part Description	No Req.	Part No.
1	Window Assembly	1	31890
	Frame	-	31726
	Window Pane	-	31850
	Pop Rivet	-	6T3954
2	Hex Nut 1/2" NC	8	21990
3	Lockwasher	8	21725
4	Capscrew 1/2" X 3" NC	4	21737
5	Bracket	2	31725
6	Capscrew 1/2"X 1-1/2"	4	21730
7	Bracket	2	31724
8	Bracket**	1	31944

WARNING !



All Tiger Boom Mowers mounted on Non-Cab Tractors require without exception a suitable Operator Protective Safety Screen be installed before operating to prevent Operator injury by objects thrown by the blades. The Operator Protective Safety Screen may be ordered with the machine or from the Extra Equipment Section (For your particular tractor, some modification to this Safety Screen may be necessary.)

A protective safety screen may be constructed and attached to the tractor and the tractor ROPS (Roll Over Protection System) only if it conforms to the following:

1. The Right side and top of the operators compartment must be completely protected as shown. In the case of a tractor with a ROPS mounted hard canopy, only the right side will need to be protected.
2. Only use clamp type attachment on the ROPS. Do not drill, tap, or weld to the ROPS. You may (provided that it is strong enough) attach L-brackets to the fender and to the floor board, to secure the rest of the cage.

NOTE:

Tiger, cannot be held responsible for any injury resulting from the failure of any Owner/Operator constructed Protective Safety Screens. The information provided here is only a guideline for the construction of a simple but effective operator protective structure which must be used with a ROPS for overturn protection.

OPERATION SECTION

OPERATION

TIGER REAR MOUNT BOOM OPERATION INSTRUCTIONS

TIGER Booms are manufactured with quality material by skilled workers. The Boom is designed to attach to a tractor and operate the flail head to cut grass and trim hedges. The boom and head are equipped with safety warning decals, protective deflectors, shields, and other safety features to provide operator and passerby protection, however, no shielding is 100% accurate. ALL safety equipment and safety warning decals must be maintained on the unit in good operational condition at all times.

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

This section of the Operator's Manual is designed to familiarize, instruct, and educate operators to the safe and proper use of the boom and attached head. Pictures contained in this section are intended to be used as a visual aid to assist in explaining the operation of a Boom and are not specific to Boom. Some pictures may show shields removed to enhance visual clarity. NEVER operate the boom unit without all safety equipment in place and in good operational condition. The operator must be familiar with the boom unit and tractor operation and all safety practices before beginning operation. Proper operation, as detailed in this manual, will help ensure years of safe and satisfactory use of the Boom.

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READ AND UNDERSTAND THE ENTIRE OPERATING INSTRUCTIONS AND SAFETY SECTION OF THIS MANUAL AND THE TRACTOR MANUAL BEFORE ATTEMPTING TO USE THE TRACTOR, BOOM UNIT, AND ATTACHMENT HEAD. 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 boom unit and tractor.

DANGER!



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



PELIGRO!



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



Standard Equipment and Specifications

HEAVY DUTY GRASS FLAIL

Width of Cut: 37" or 48"
Cutting Height (Min): 3/4"
Cutting Capacity (Max): 48" (Cuts Material and Grass up to 1-1/2") 37" (Cuts up to 4")
Blades: H.D. Flail
Hyd. Motor Rating: 32 HP (1348); 40 HP (1548); 55 HP (1948) @ 3000 PSI @ 3000 RPM
Oil Reservoir Cap: 35 Gallons
Debris Deflector: Rubber Belting and Metal Shielding

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)

OPERATION

1. OPERATOR REQUIREMENTS

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

Safe operation of this equipment requires that the operator wear approved Personal Protective Equipment (PPE) for the job conditions while connecting, operating, servicing and repairing the boom, head, and tractor. PPE is designed to provide operator protection from bodily injury and includes the following:

Personal Protective Equipment (PPE)

- Protective eye glasses, goggles, or face shield
- Hard hat
- Steel toed safety footwear
- Gloves
- Hearing protection
- Close fitting clothing
- Respirator or filter mask



DANGER!



NEVER 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)



2. TRACTOR REQUIREMENTS

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

Tractor Requirements and Capabilities

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

OPERATION

2.1 ROPS and Seat Belt

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

WARNING!



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



2.2 Operator Thrown Object Protection

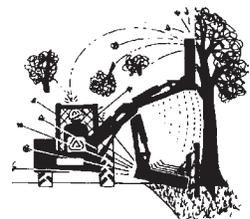
The tractor must be equipped with protective equipment to shield the operator from falling and thrown objects. For cab tractors, the tractor must be equipped with a shatter proof safety window. For non-cab tractors, the tractor must be equipped with a ROPS and operator protective safety cage that provides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



DANGER!



Never operate the Tractor and Mower Unit without an OPS (Operators Protective Structure) or Cab to prevent injury from objects thrown from ground or from overhead trimming. Stop mowing if workers or passersby are with in 100 yards. (SBM-9)



2.3 Tractor Lighting and SMV Emblem

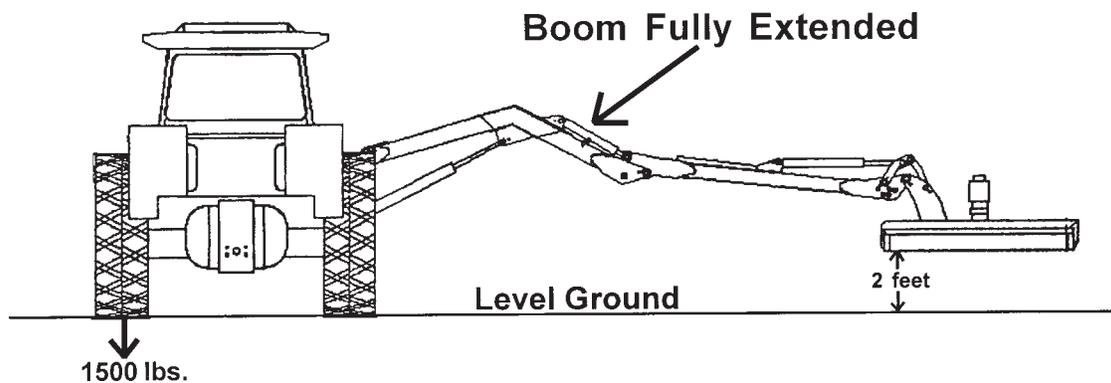
If the tractor will be operated near or traveled on a public roadway it must be equipped with proper warning lighting and a Slow Moving Vehicle (SMV) emblem which are clearly visible from the rear of the unit. Most tractor's have different settings for operating and transporting lighting. Refer to the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

OPERATION

2.4 Tractor Ballast

To ensure tractor stability when operating on flat surfaces the left rear tractor tire **MUST** exert a minimum down force (weight) of 1500 lbs. on the ground when the tractor is on level ground, its boom is fully extended and the mower head is horizontal and two feet above the ground. For units which have the ability to operate on either side of the tractor, these requirements must also be met for the right side tire when the boom is extended to the left side as described above. A tractor that does not meet this criteria is **DANGEROUS** and should not be operated as upset of the unit can occur resulting in possible serious injury and property damage. **NOTE:** All factory mounted units are tested and meet the ballast requirement before shipment; further testing is not required unless the unit is operated in a manner other than what is considered standard operating conditions.

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



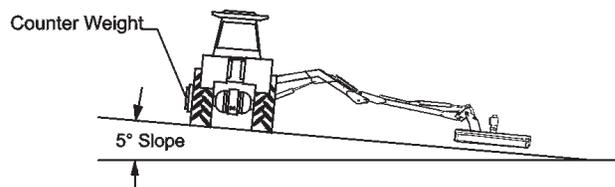
DANGER!



Each Rear Wheel must have a minimum of 1500 pound contact with the surface to prevent lateral instability and possible tip-over which could result in serious bodily injury or even death. Widen the wheel tread and add weights if needed. Refer to the mounting instructions or call Customer Service if you need assistance with Counterweight Procedure. (SBM-11)



If the unit is operated on slopes greater than 5°, additional counterweight will be required. Operation of the unit on slopes greater than 11° is not recommended under any circumstances. On a tractor with a 96" outside to outside tire spread, a 11° slope occurs when one rear tractor tire is about 8" lower than the other rear tire.



WARNING! Do not operate the unit under any circumstance if the slope is 10° or greater.



3. GETTING ON AND OFF THE TRACTOR

The operator must read and completely understand this manual and the tractor operator's manual before starting any boom mower operation. If any part of either manual is not completely understood, consult an authorized dealer for a complete explanation. If the operator of the equipment can not read the manuals for themselves, it is the supervisors responsibility to read and explain the manuals and operating instructions to them.

OPERATION

WARNING!



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



3.1 Boarding the Tractor

Use both hands and equipped handrails and steps for support when boarding the tractor. Always face toward the tractor when getting off or on the tractor. Never use tractor control levers for support when mounting the tractor. Seat yourself in the operator's seat and secure the seatbelt 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 run over. It is the operator's responsibility to forbid all extra riders at all times.

DANGER!



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



DANGER!



Never allow children to operate or ride on the Tractor or Implement. (SG-11)



WARNING!



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



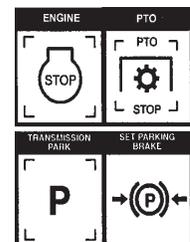
3.2 Dismounting the Tractor

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

DANGER!



BEFORE leaving the Tractor seat, always engage the 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 while it is moving or while the engine is running. Operate the Tractor controls from the Tractor seat only. (SG-9)



Use hand rails and steps when exiting the tractor. Always face the toward the tractor when dismounting. 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.

OPERATION

4. STARTING THE TRACTOR

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

Essential Tractor Controls:

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

Before starting the tractor ensure the following:

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

Refer to the tractor owner's manual for tractor starting procedures. Only start the tractor while seated and belted in the tractor operator's seat. Never bypass the ignition switch by short circuiting the starter solenoid. After the tractor engine is running, avoid accidental contact with the tractor transmission to prevent sudden and unexpected tractor movement.

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



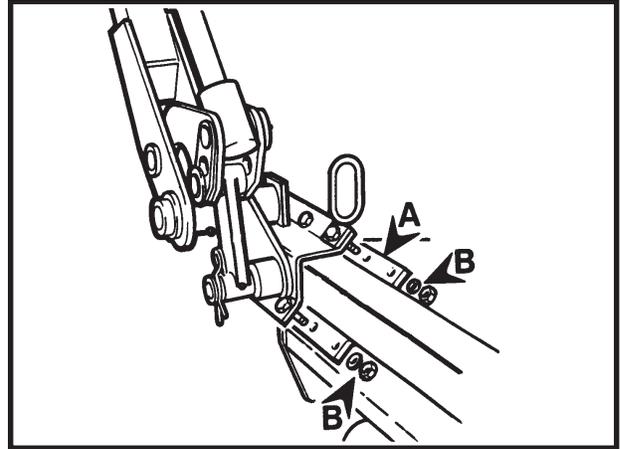
DANGER! Start the Tractor only when properly seated in the Tractor seat. Starting a Tractor in gear can result in injury or death. Read the Tractor operator's manual for proper starting instructions. (SG-13)



OPERATION

5. CONNECTING ATTACHING HEAD TO THE BOOM

The rotor unit can now be fitted to the end of the arms. The illustration shows the Rhino 1948 cowl bracket. Start the tractor engine and raise the second arm so that the mower head clamp is approximately 300mm (18 in.) clear of the ground. Place the mower head directly in front of the second arm. Level up mower head with wood packing. Remove clamp bracket (A) from the end of arms. Adjust position of the arms until the mower head clamp is lined up with the clamping bar on top of the rotor unit in the desired position along the bar. Replace clamp bracket (A) and nut and washers (B). Tighten fully. **Note:** Additional support may be needed at the end of the Boom to aid in installation.

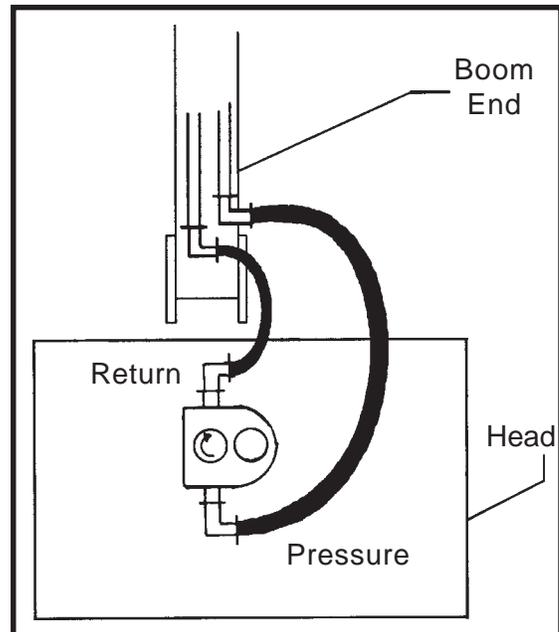


5.2 Connecting Mower Head Hydraulics

Attach the 1" hoses, from the articulating arm to the hydraulic motor on the head. Use recommended hose end torque values in chart below.

DASH SIZE	NOMINAL SIZE (IN.)	TORQUE (IN.LBS.)	VALUE* (FT.LBS.)
-4	1/4	140	12
-6	3/8	230	19
-8	1/2	450	38
-10	5/8	650	54
-12	3/4	900	75
-16	1	1200	100
-20	1-1/4	1600	133
-24	1-1/2	2000	167
-32	2	2800	233

* Straight threads do not always seal better when higher torques are used. Too much torque causes distortion and may lead to leakage.



DANGER!



Do not operate this Equipment with hydraulic oil leaking. Oil is expensive and leaking oil could present a hazard. Do not check for leaks with your hand! Use a piece of heavy paper or cardboard. High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. If oil does penetrate the skin, have the injury treated immediately by a physician. (SG-15)



OPERATION

6. PRE-OPERATION INSPECTION AND SERVICE

Before each use, a pre-operation inspection and service of the boom, attached head, and tractor must be performed. This includes routine maintenance and scheduled lubrication, inspecting that all safety devices are equipped, present and functional. 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.

WARNING!



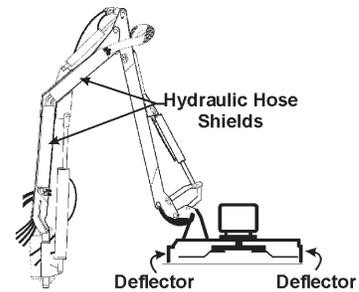
Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working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



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-3)



6.1 Tractor Pre-Operation Inspection/Service

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

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



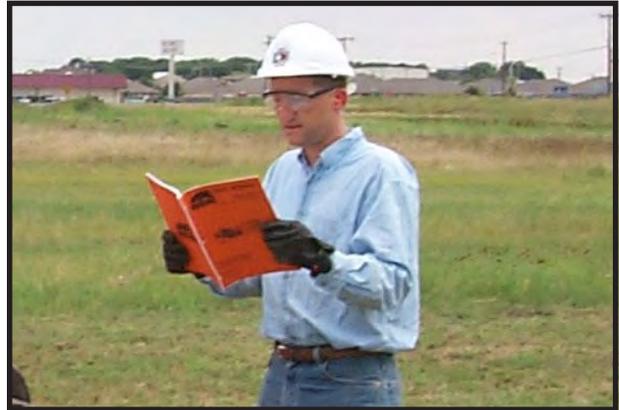
OPERATION

6.2 Boom Unit Pre-Operation Inspection and Service

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

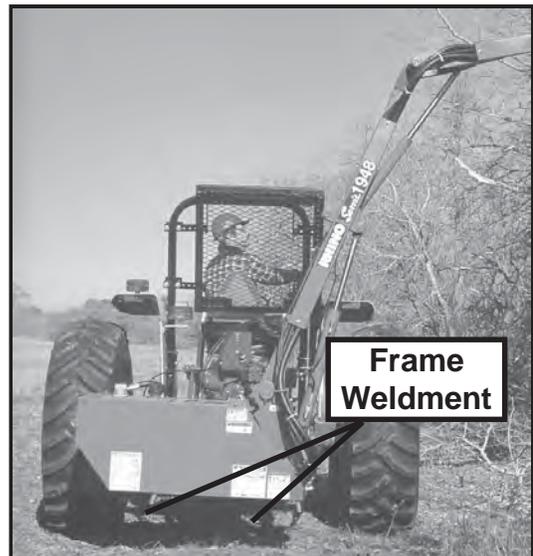
- Ensure that the Manual Canister is secured to the Boom unit with the Operator's Manual inside.
- Ensure all decals are in place and legible. Replace missing, worn, and non-legible decals.

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



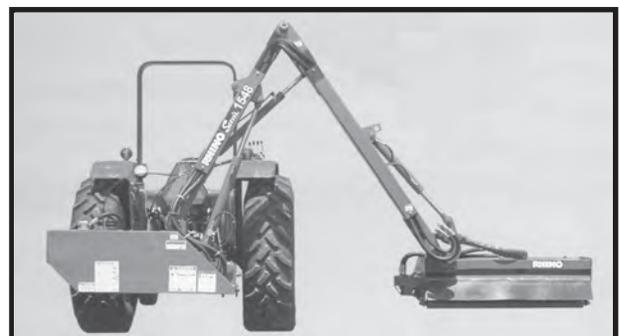
FRAME ASSEMBLY

- Inspect condition of mounting frame weldment.
- Inspect condition of King Post frame.
- Ensure all bolts and screws are in position and are properly torqued.
- Ensure all pins are in place and fastened with screws.
- Ensure frame is properly mounted to tractor and hardware is properly installed and tightened.



BOOM ARM ASSEMBLY

- Inspect condition of each arm section weldment
- Ensure all pins are in place.
- Ensure all bolts and screws are properly installed.
- Check condition of teflon bushings at boom pivot points.
- Ensure each hydraulic cylinder is installed and retained correctly. Ensure the proper size pins are used to retain the cylinders in place and are secured properly.
- Ensure that all joints are lubricated. See Maintenance Section for Lubrication Chart.



WARNING!

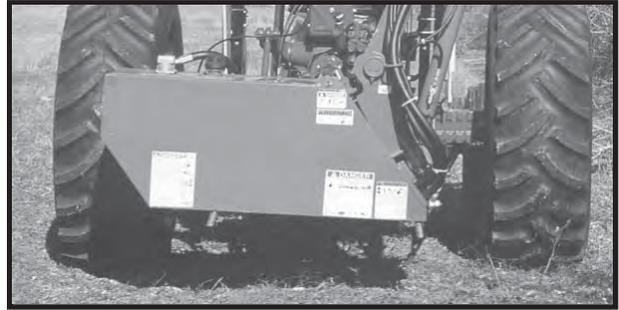


Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. Make sure the tractor engine is off before working on the Implement. (SG-20)

OPERATION

HYDRAULIC LINE INSPECTION

- Check for hydraulic leaks along hoses, cylinders and fittings. **IMPORTANT:** DO NOT use your hands to check for oil leaks. Use a piece of heavy paper or cardboard to check for hydraulic oil leaks.
- Inspect the condition of the valve weldment.
- Ensure fittings are properly connected
- Inspect condition of nylon bushings.



DANGER!



Do not operate this Equipment with hydraulic oil leaking. Oil is expensive and its presence could present a hazard. Do not check for leaks with your hand! Use a piece of heavy paper or cardboard. High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15)



HYDRAULIC PUMP/OIL RESERVOIR

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



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

WARNING!



Attention: Oil Filter Cap is also the Pressure Relief Cap. Remove cap slowly to relieve pressure before removing cap completely. Stay clear to prevent being scalded with hot oil that may spray out of the tank that is still pressurized and may cause serious injury to eyes, face, and exposed skin.

WARNING!



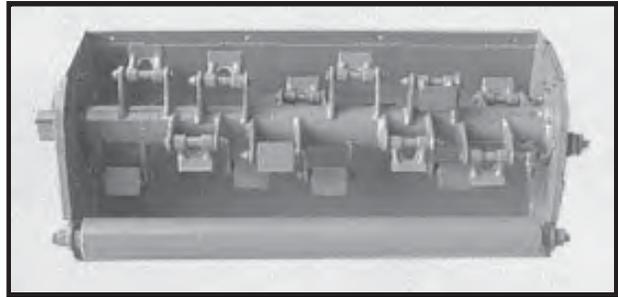
Avoid contact with hot surfaces including hydraulic oil tanks, pumps, motors, valves and hose connections. Relieve hydraulic pressure before performing maintenance or repairs. Use gloves and eye protection when servicing hot components. Contact with a hot surface or fluid can cause serious injury from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

(SG-34)

OPERATION

FLAIL HEAD INSPECTION

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



WARNING!



Do not put hands or feet under mower decks. Blade Contact can result in serious injury or even death. Stay away until all motion has stopped and the decks are securely blocked up. (SGM-9)



OPERATION

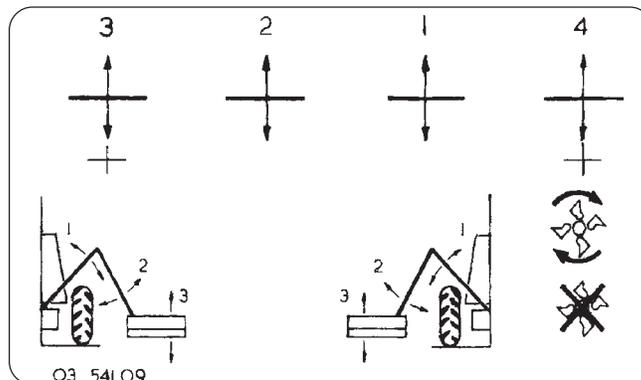
For safe and efficient boom mower operation, it is critical that the operator be experienced and feel confident in using the control valve sticks to position the boom. New operator's should allow ample time to practice using the control valve sticks in an open area before entering the worksite. Before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

This valve is located on the Main Frame of the unit. These are fastened together in a bank of five valves. Their use will be explained in the following pages of this manual. Read each explanation carefully then practice in a safe, level area, CLEAR of all people, animals, and any obstructions. As always, use extreme caution when using this machine. This valve is controlled by operating the Remote Control Valve Box mounted to the right of the operator at a convenient height.

NOTE: The stamped metal plate located above the control valve indicates each valve function.

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

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



VALVE OPERATION PLATE P/N 03.541.09

OPERATION

8 DRIVING THE TRACTOR AND MOWER

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

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

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

WARNING!



Transport only at safe speeds. Serious accidents and injuries can result from operating this equipment at unsafe 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 safe transport speeds for you and the equipment. Make sure you abide by the following rules:

1. 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 safe transport speed for you and this Equipment.
2. Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that it is safe to operate 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 safe turning speed for you and this equipment before operating on roads or uneven ground.
3. Only transport the Tractor and Implement at the speeds that you have determined are safe and which allow you to properly control the equipment.

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. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)



OPERATION

8.1 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 for additional assistance on starting and operating the tractor.

To start the tractor the Joystick Master Switch must be in the OFF position.



DANGER!



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



8.2 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 MOWING CONDITIONS, THE BRAKE PEDALS SHOULD BE LOCKED TOGETHER TO PROVIDE THE MOST EFFECTIVE BRAKING ACTION.



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.

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.

OPERATION

8.3 Driving the Tractor and Mower

Inspect the area to be mowed before beginning operation. Identify any drop-offs, slopes, holes, hidden obstructions or similar obstacle that could cause the tractor to lose stability and potential roll-over. Mark and avoid the item or the entire area.

Start off driving at a slow speed and gradually increase your speed while maintaining complete control of the tractor. Never operate the tractor at speeds that cannot be safely handled or which will prevent the operator from stopping quickly during an emergency. If the power steering or engine ceases operating, stop the tractor immediately as the tractor will be difficult to control.

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



WARNING!



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

(SBM-4)



To avoid overturns, drive the tractor with care and at safe speeds, especially when operating over rough ground, crossing ditches or slopes, and turning corners. Use extreme caution when operating on steep slopes. Keep the tractor in a low gear when going downhill. DO NOT coast or free-wheel downhill.



OPERATION

9. OPERATING THE BOOM UNIT AND ATTACHED HEAD

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

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

Only operate the mower head from the tractor operator's seat with the seatbelt securely fastened. Only operate a boom and equipped head on cab-ed tractor that is equipped with a Lexan® protected right side window or a non-cab-ed tractor equipped with a ROPS and operator safety screen.

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

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



DANGER! 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 yards 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 this type of item discontinue mowing. (SGM-1)



DANGER! Avoid mowing in reverse direction when possible. Check to make sure there are no persons behind the Mower and use extreme care when mowing in reverse. Mow only at a slow ground speed where you can safely operate and control the Tractor and Mower. Never mow an area in the reverse direction that you have not inspected and removed debris or foreign material. (SGM-8)



WARNING! Never operate the mower head tilted down where the operator can see the blades of the mower. The blade could throw an object toward the operator causing serious injury or death. Never operate the mower without an Operator Protective Structure. Always wear safety glasses and a hard hat.



OPERATION

9.1 Foreign Debris Hazards / Overhead Obstructions

An area to be cut must first be inspected for objects that could be thrown or that could damage the machine. Walk through the area looking for fences, boulder, rocks, culverts, stumps or metal objects. Mark the inspected area with flags. If the area is dense and cannot be walked thoroughly it may be necessary to inspect a smaller area as well as possible, then trim away the part that has been inspected and can safely be removed. Walk each new area again and repeat the inspection before cutting more away. Repeat as often as necessary until the area is cleared. It can be damaging and/or dangerous to work the cutter in an area that had not been visually inspected.

Place DANGER signs at least 300 feet beyond the perimeter of the area to be worked, not just 300 feet from where the machine started operating! It is convenient in many cases to work in 300 foot sections. Move the first Danger sign to the beginning of the freshly cleared area, place it, then take the first cutting area flag up to the end of the freshly cleared area 300 feet away. Walk and inspect the next 300 feet and place the second cutting area flag. Pick up the second DANGER sign, and take it a further 300 feet along the road or trail. Note that in many cases the DANGER area will extend in front of and behind the machine as well as along each side. Post signs accordingly.

WARNING!



Use extreme care and Safety Awareness when using the boom mower head to mulch loose brush or wood that has fallen on the ground from overhead trimming. **DO NOT** mulch this debris if bystanders, vehicles, livestock or buildings are within 300 feet of the mower. This cut debris can be thrown at great velocities and could result in serious injury or even death. (SBM-17)

DANGER!



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 the blade carrier is balanced before resuming mowing. (SGM-5)



DANGER!

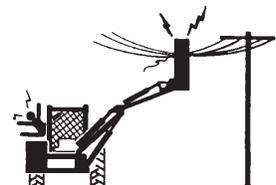


Many varied objects, such as wire, cable, rope, or chains, can become entangled in the operating parts of the Mower head. These items could then swing outside the housing at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect 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-6)

DANGER!



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



OPERATION

DANGER!



STOP MOWING IF PASSERSBY ARE WITHIN 100 YARDS UNLESS:

- Front and Rear Deflectors are installed and in good, working condition;
- Mower Head is 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. (SBM-1)

9.2 Operating Speed and Ground Speed

Ground speed for mowing will depend upon the height, type, and density of vegetation to be cut. Do Not exceed 2 MPH while operating. Operate the mower at its full rated speed to maintain blade speed for a clean cut. The engine should be operated at 1800-1950 RPM for front mounted pumps. Refer to the tractor operator's manual or the tractor instrument panel for the engine speed and gear to provide the required operating and desired ground speed. Make sure that the mower is operating at its full rated speed before entering the vegetation to be cut. Always start and stop cutting blades with engine near idle.

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

WARNING!



Mow at the speed that you can safely operate and control the tractor and mower. Safe mowing speed depends on terrain condition and grass type, density, and height of cut. Normal ground speed range is from 1/4 to 2 mph. Use slow mowing speeds when operating near steep slopes, ditches, drop-offs, overhead obstructions, power lines, or when debris and foreign objects are to be avoided. (SGM-7)

9.3 Operating the Attached Mower Heads

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

DANGER!



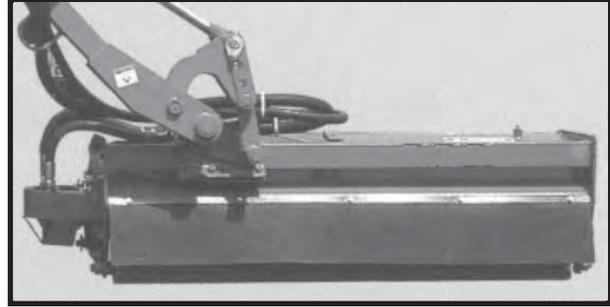
There are obvious and hidden potential hazards in the operation of this Mower. REMEMBER! This machine is often operated in heavy brush and in heavy weeds. The Blades of this Mower can throw objects if shields are not properly installed and maintained. Serious injury or even death may occur unless care is taken to insure the safety of the operator, bystanders, or passersby in the area. Do not operate this machine with anyone in the immediate area. Stop mowing if anyone is within 100 yards of mower. (SGM-2)



OPERATION

Grass Flail

- ⇒ The Grass Flail head is rated for cutting grass only.
- ⇒ The Grass Flail operates attached to the boom arm, and is ideal for cutting hard to reach areas where a smooth cut is required.
- ⇒ Cutting height ranges from 3/4" to 4" in vegetation. Cutting height is set by adjusting the height of the roller assembly.
- ⇒ When operating near the ground or when mulching be particularly careful that there are no bystanders or animals within a 100 yards. Debris tends to fly out at great speed and can injure or even cause death.



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)

DANGER!



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

Roller Height

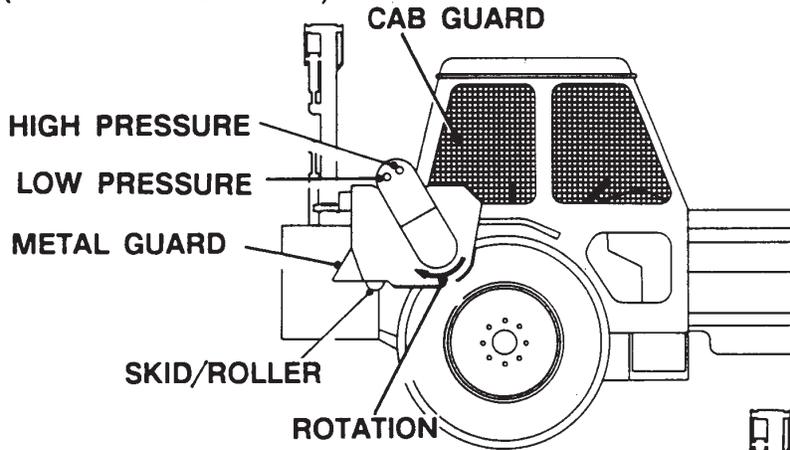
The roller on the mower head is pre-set in its raised position before the machine leaves the factory. To minimize flail wear the roller should be set as follows:

- A. **Grass Cutting** - lower roller to its maximum to give highest cut possible.
- B. **Hedge Trimming** - raise roller to its minimum to give lowest cut possible.
- C. **Ground Level and Scrub Cutting** - lower roller to its maximum.

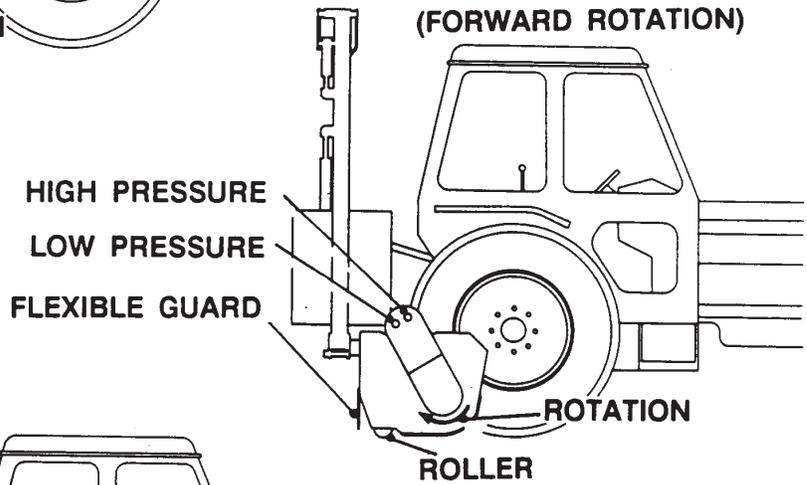
NOTE: The Roller must be kept in position at all times as it is an essential part of the rotor unit guarding.

OPERATION

HEDGE CUTTING (FORWARD ROTATION)

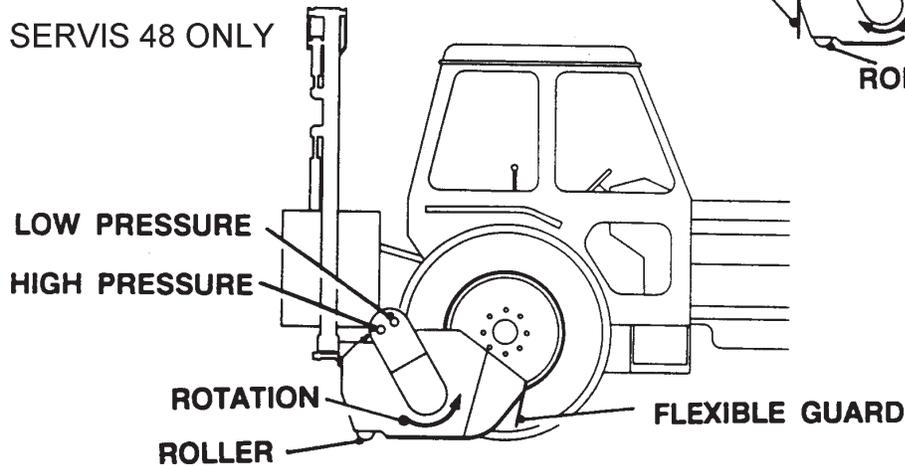


GROUND LEVEL CUTTING (FORWARD ROTATION)



GROUND LEVEL CUTTING (REVERSE ROTATION)

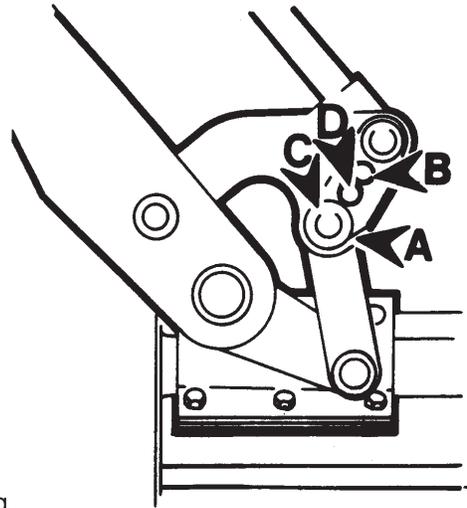
SERVIS 48 ONLY



OPERATION

ALTERNATIVE ROTOR LINK POSITIONS

To enable extra angling (on the 1948) of the rotor unit three positions for the attachment of rotor link to cylinder link are provided. To achieve more downward angle of the rotor unit (for trimming far sides of hedges, down steep banks, etc.) the pivot pin should be fitted through the hole **FIGURE 4-2 (A)** and for close in work (with rotor unit angled vertically upwards) through the hole **FIGURE 4-2 (B)** in the ram link. The hole **FIGURE 4-2 (D)** is an intermediate hole.



- A. Rest rotor unit on ground.
- B. Remove linch pin and link pin.
- C. Retract or extend third ram depending on which hole is being used.
- D. Replace Pin.

Grass Cutting

- A. Run the rotor at normal speed (I.E. 540 rev/min. PTO speed)
- B. Avoid taking in too much grass by regulating tractor speed.
- C. If rotor shaft slows down or chokes up in grass, raise the rotor unit and allow grass to fall clear.
- D. Before proceeding with the cutting let rotor speed pick up again.
- E. Advantage may be gained in exceptional conditions by taking a narrow cut with part of the rotor shaft running idle.
- F. When working alongside or clearing ditches, take a cut along the edge of the ditch so that the ditch limits can be seen.
- G. Keep the highest point of the mower arms directly over the obstacle when working over a hedge or into a ditch.

OPERATION

Hedge Trimming

Consider how the job should be tackled before commencing work, as no two hedges have the same height, width, thickness or density of growth. Hedges which have previously been cut by machine tend to have denser growth, and although they can be cut to any desired shape, it is advisable to trim the same shape and height as previous years.

The flails cause the growth to 'tiller' and thicken up the hedge. Therefore it is advisable to cut the hedge side at a slight angle rather than straight, otherwise the hedge may eventually die at the bottom due to lack of light.

Below are a few hints on how to tackle a hedge.

A. First trim the top down to previous years's trim in one cut, but do not cut into it, as the old growth will be very thick and strong and cause premature wear to the flail cutting edges.

B. Next trim the sides to the previous trim but not into it.

NOTE: Do not angle the rotor unit so that any debris is thrown through the hedge when trimming the far side of the hedge. Always ensure cut material is directed away from you or on to the ground.

C. Finally, lower the roller and trim along the bottom of the hedge to clear debris and undergrowth.

Stalling the Rotor

If the rotor does become choked the tractor will stall or the relief valve will operate. If this occurs follow the instructions below.

A. Stop forward movement and disengage rotor drive immediately and place PTO drive lever in neutral.

B. Ensure that the rotor has stopped and lift the rotor unit using the hydraulics.

C. Stop tractor engine engage parking brake and wait for all rotation to come to a complete stop.

D. Remove any obstruction that may be present on the rotor. If working under the raised machine ensure that it is safely supported.

E. NEVER UNDER ANY CIRCUMSTANCES run the rotor to "clear itself".

OPERATION

Motor Position

All rotor units are supplied with the motor positioned on the left hand side of the cowl. It can be placed on the other side of the cowl if desired, to suit particular operating conditions. To change the motor to the opposite side follow the instructions below.

- A. Position the cowl horizontally securely supported on stands or blocks, so that either end may be worked on.
- B. Remove the hoses from the motor, plugging the ends and ports to prevent entry of dirt.
- C. Remove the motor guard and stay complete.
- D. Remove the four nuts from the rotor shaft drive flange.
- E. Remove the motor, drive plate, mounting plate, and rubber bushings as one unit by removing the three attachment bolts, through the rubber bushings separating the rotor shaft from the drive flange, taking care not to damage the joint faces.
- F. Remove the non-drive end bearing guard, loosen the bearing locking set screws and remove the clamping setscrew in the end of the shaft.
- G. Remove the rotor shaft from the cowl. While it is out of the cowl remove all the flails and shackles and replace with flails facing the opposite direction, but at the same location.
- I. Remove the bearing adaptor plate from the left hand side of the cowl and replace in the right hand side of the cowl.
- J. Reassembly is the opposite of the above procedure but with the positions of the items reversed: left hand side for right hand side and vice versa.

NOTE: Extreme care must be taken to ensure that the mating faces of the drive flange are clean, flat and undamaged when it is reassembled. If any burrs are found on either face they should be carefully removed with a fine file. Tighten the 4 flange nuts eventually to a torque of 60Nm (44 ft lbs). Failure to observe this procedure could result in rotor shaft vibration and/or premature motor failure.

OPERATION

9.4 Shutting Down the Attached Head

To shut down attached boom head, first bring the tractor to a complete stop. Keep the engine speed at normal operating speed of 540 RPM, and push the Motor Switch IN to the Stop position. The mower head will come to a complete stop with in 15 seconds.

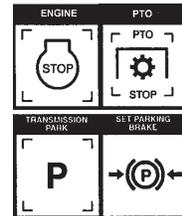


Park the tractor on a level surface, place the transmission in park or neutral and apply the parking brake, shut down the engine, remove the key, and wait for all motion to come to a complete stop before exiting the tractor.

DANGER!



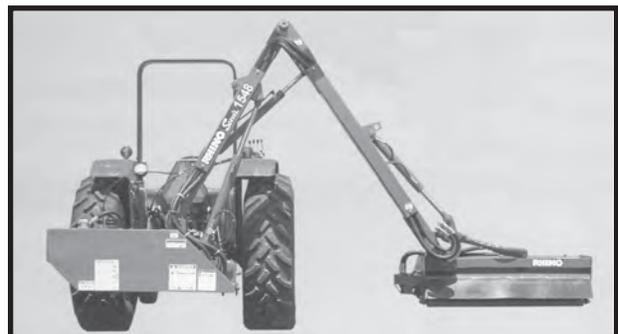
BEFORE leaving the tractor seat, always engage the brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling.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



10. TRACTOR, BOOM, AND ATTACHED HEAD STORAGE

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

1. Thoroughly clean all debris from boom and head to prevent damage from rotting grass and standing water.
2. Lubricate all grease points and fill oil levels according to the maintenance lubrication schedule.
3. Tighten all bolts to the proper torque. Ensure all pins and other hardware are in place.
4. Check the boom arm and head for worn and damaged parts. Perform repairs and make replacements so that the mower will be ready for use at the start of the next season.
5. Install leg supports to reduce tension on boom and tank during storage.
6. Store the unit in a clean and dry location.
7. Use spray touch-up enamel where necessary on bare metal surfaces to prevent rust and to maintain the appearance of the mower.



OPERATION

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



11. TRANSPORTING THE TRACTOR AND MOWER

Inherent dangers of operating the tractor and mower and the possibility of accidents are not left behind when you finish mowing an area. Therefore, the operator must employ good judgement and safe operation practices when transporting the tractor between locations. By using good judgement and following safe transport procedures, the possibility of accidents while moving between locations can be substantially minimized.

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



WARNING! 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)



Before transporting tractor between locations, idle the tractor engine, disengage the attached head, by pushing the ON-OFF switch (Mower Valve) and wait for all head motion to come to a complete stop. Place the boom in its storage cradle rest support.



Placing Boom Articulating Arm on Boom Arm Rest

1. Extend the dipper section approximately half way out by pulling the third handle back.
2. Then pull the second (Lift) back toward the operator lifting the arm about 3/4 (three-fourths) of the way up.
3. After this position is accomplished, pull the first handle (Swing) Back toward the operator until the arm has swung over the rest located on the ROPS near the top.
4. Now by operating the second handle (Lift) and/or the third handle (Dipper) lower the arm onto the rest.
5. There is a formed "V" plate on the dipper section of the arm that fits onto the rest.

To remove from the transport position, pull the second handle (Lift) back and raise the unit about 6" (inches). Then swing the boom around to the side and you are ready to mow. Transport slowly and carefully on slopes & rough terrain.

OPERATION

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 application of the tractor brakes. Maximum transport speed should not exceed 20 MPH.

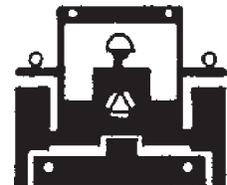


11.1 Transporting on Public Roadways

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



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



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

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 mower on a public roadway. Replace the SMV emblem if faded, damaged, or no longer reflective.



OPERATION

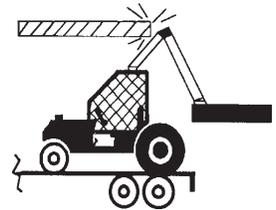
Make sure that all tractor flashing warning lights, headlights, and brake/taillights are functioning properly before proceeding onto public roads. While newer model tractors have lighting to provide warning signals and operating lighting, most older models were only equipped with operating lights. Consult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

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 mower on public roads. Especially in busy cities, the boom extends to the right farther than the tractor's width, so be careful there are no bystanders, poles, large obstructions or any vehicles that may be in path of the mower head on boom. Use caution and reduce speed if other vehicles or pedestrians are in the area.

DANGER!



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



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



11.2 Hauling the Tractor and Mower

Before transporting a loaded tractor and mower, 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.



OPERATION

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



Arrange the chains so that when tightened, the chains are pulling downward and against themselves. Carefully tighten the securing chains or other fasteners used as much as possible 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 mower, make occasional stops to check that the tractor and mower 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.



12. TROUBLE SHOOTING GUIDE

- A. HYDRAULIC CYLINDER NOT WORKING - Check level of hydraulic fluid (see sight gauge on tank). Check to see if pump is functioning properly by attempting to use another cylinder or pressure gauge. If pump is working properly, check the pressure on the line. The relief valve may be by-passing fluid at too low pressures. If cylinder is still not functioning properly, check the line for stoppage. The pistons in hydraulic cylinders are virtually trouble-free, but occasionally one will have a scored wall and allow oil to flow around the piston. In this case, replace the cylinder.
NOTE: Refer to repair parts section on valve bank settings on individual relief cartridges.
- B. HYDRAULIC MOTOR NOT WORKING - Check lines for kinks or pinched place. If the motor is "bogging down" under load, recheck the relief valve setting on the cutter valve - 2500 P.S.I.
- C. HYDRAULIC VALVE - Failures in the hydraulic system are almost always caused by other elements in the system other than the valve; so the entire system should be checked before the valve is changed. A malfunction in any hydraulic valve section will require replacement of that section (but not the replacement of the valve bank) since the insides are honed to fit individually. Attachments such as the relief valves and detent may be serviced individually.
- D. STRUCTURAL MEMBERS - Failure in structural members generally results from rough treatment. While they are constructed to withstand abuse, they cannot be made strong enough to withstand abnormal abuse. The factory does not warrant these parts to any extent other than in normal use in grass, weeds, brush, small bushes, and small trees which the unit is designed to cut.

MAINTENANCE SECTION

MAINTENANCE

LUBRICATION

Gearbox

The gearbox on the machine is filled with 10W/30 oil before it leaves the factory and should not need topping-off, although it is recommended that the oil level is checked before the machine is used. Change the oil after the first 200 hours of operation and thereafter every 1600 hours of operation.

Grease Points

All grease points shown in **FIGURE 5-1** below should be greased before operating the machine. To make greasing easier by relieving the weight from the pivot pins, rest the rotor unit on the ground, stop tractor engine and operate control levers in both directions. Grease daily or every 8 hours of operation. Use a high quality lithium base #2 grease.

PTO Drive Tubes

Grease PTO square tubes before operating machine. Grease the PTO bearings every 8 hours of operation

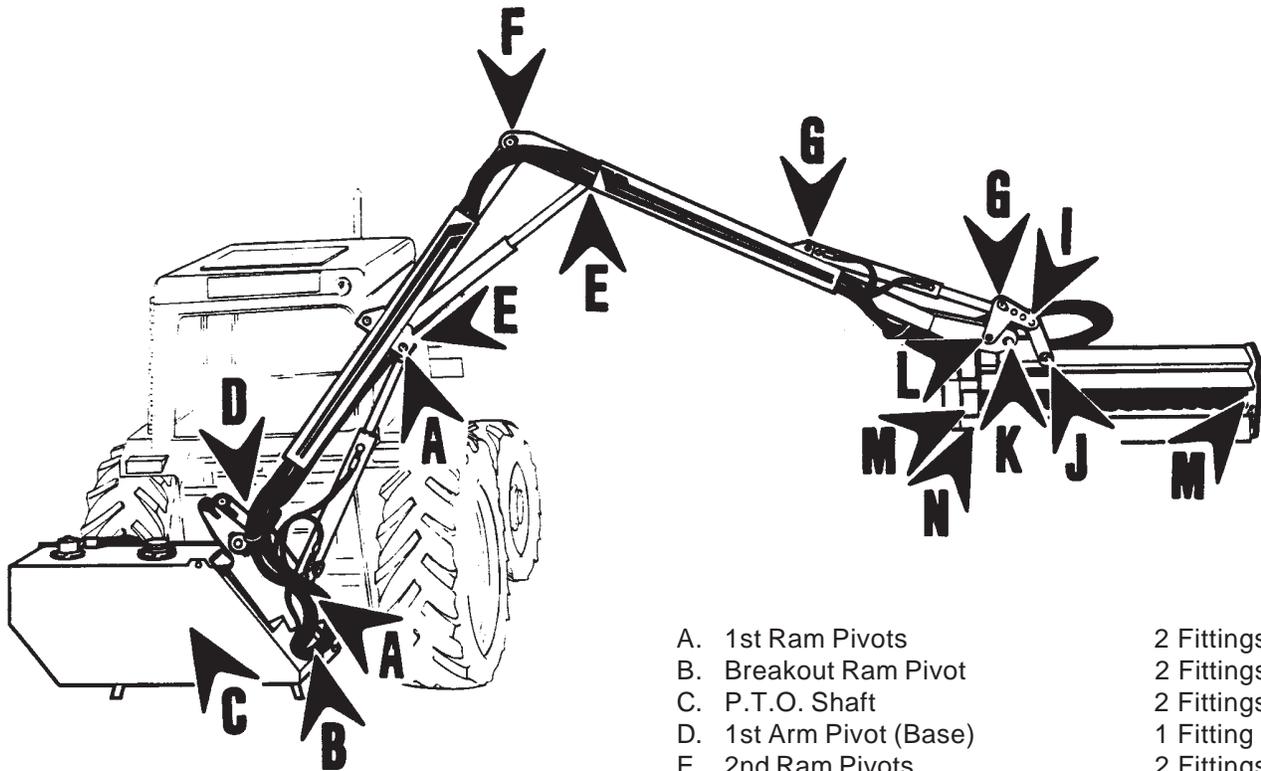


FIGURE 5-1

A.	1st Ram Pivots	2 Fittings
B.	Breakout Ram Pivot	2 Fittings
C.	P.T.O. Shaft	2 Fittings
D.	1st Arm Pivot (Base)	1 Fitting
E.	2nd Ram Pivots	2 Fittings
F.	1st and 2nd Arm Pivot	2 Fittings
G.	3rd Ram Pivots	2 Fittings
H.	Rotor Link / Ram Pivot	2 Fittings
I.	Rotor Link Pivot	1 Fitting
L.	Rotor Unit Pivot	1 Fitting
M.	Rotor Shaft Bearing	1 Fittings

Total	20 Fittings
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***NOTE:**

Lubricate flail roller bearing until lubricant can be seen coming out between roller and bearing housing.

MAINTENANCE

FILTER REPLACEMENT

The Filter Element, Situated in the filter unit in the top of the tank, must be replaced initially after 50 Hours work, and thereafter every 500 hours of work, or after two season's work, whichever is sooner.

POWER TAKE-OFF SHAFT

The PTO requires some routine maintenance to ensure a trouble free life of the PTO shaft. For best results:

- A. Grease both ends of PTO shaft daily.
- B. Grease the PTO shaft tubes regularly.
- C. Ensure check chains are securely attached and in good condition.
- D. Check that PTO guard is in good condition and replace if not.
- E. Check universal joint bearing journals for roughness or slackness. Replace if necessary.

HOSES AND ROTOR DRIVE CIRCUIT

It is false economy to try and make a damaged hose last a bit longer, because a failure can spill several gallons of oil on the road endangering traffic and costing money. To reduce the risk of this happening and ensure a long life from the hoses follow instructions given below:

- A. Check weekly that all hoses and their connections (with particular attention to the rotor drive circuit) are in good condition and that there are no leaks or damage.
- B. Replace any hose that is leaking or damaged.
- C. Ensure that hoses have not chafed against sharp edges. If they have, inspect damage and replace if necessary.
- D. Re-route any hose that has been chafing.
- E. Ensure that when fitting hoses that they are fitted without kinks or sharp bends.
- F. Pay particular attention to the suction hose from tank to pump.
- G. If in doubt about the condition of a hose REPLACE IT.

HYDRAULIC OILS

Only use Universal Hydraulic Oil part number 02960575.

PUMP

A 'noisy' pump (whistling or screaming) means that there is air in the rotor drive circuit.

- A. STOP THE MACHINE AT ONCE.
- B. Locate air entry.
- C. Fix and test carefully.

MAINTENANCE

ROTOR UNIT

Vibration of the rotor shaft can cause premature failure of the rotor shaft bearing, as well as hydraulic and structural failures. It is important not to operate the machine with the head vibrating. As soon as any vibration is felt stop operating the machine and make the checks listed below:

A. Stop the tractor and disengage the PTO drive.

B. Check for missing flails and always replace missing flails in pairs, on opposite sides of the rotor in order to maintain the balance of the rotor shaft.. Replace one flail, hanger, bolts and other fittings - rotate shaft 180° and replace the same for each flail.

NOTE: The flails and the rotor shaft are dynamically balanced, the flails must be replaced in pairs. If this is not done the rotor shaft may become out of balance and cause excessive vibration.

C. Check that flail attachments are tight.

If any flails were missing or loose and have been replaced or tightened and the vibration continues check the following.

D. Stop tractor engine and disengage PTO drive.

E. Check the Rotor Shaft bearings to see if they are damaged or loose.

F. Replace bearings if necessary.

If vibration persists, it is an indication that the rotorshaft is probably bent and must be replaced.

Hydraulic Cylinders

It is advisable to check all cylinder caps for tightness occasionally and if found to be loose, tighten them immediately.

STORAGE

Before removing the machine from the tractor, a thorough check of the machine should be made as follows:

A. Thoroughly clean all moving parts, particularly the rotor unit.

B. Check that all flails are in place, and that they are in good condition.

C. Check all hoses for damage, such as cracks, evidence of chafing and leaks.

D. Smear all unpainted metal parts with grease and lubricate all grease fittings.

E. Make a note of item that needs replacing so that parts can be ordered.

PARKING AND REMOVAL

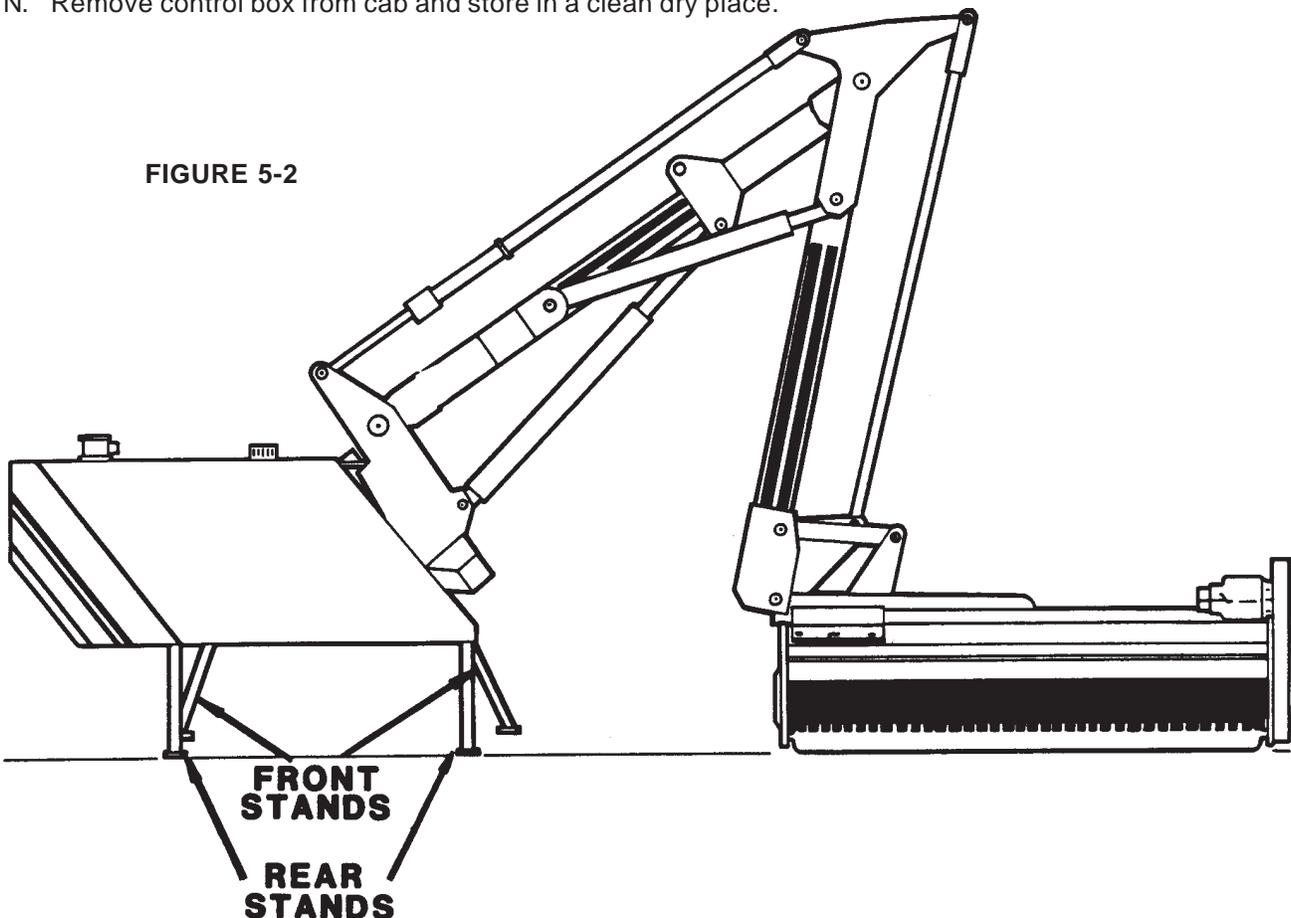
In the parked position the machine is supported by four stands on the mainframe (see **FIGURE 5-2**) and also the rotor unit. To put the machine into this position the following procedure is necessary:

A. Place the rotor unit on the ground about 1 meter (3ft 3in) from the tractor rear wheel.

MAINTENANCE

- B. Remove stands from underneath the tank and fit to the mainframe.
- C. Lengthen to link so that the weight of the machine is on the rear stand.
- D. Remove pin connecting the right frame to the tractor, and lower the three point linkage so that the weight of the machine is on the front stands.
- E. Stop Tractor engine.
- F. Open accumulator valve and operate control levers in both directions to release pressure.
- G. CLOSE ISOLATOR VALVES ON FIRST ARM AND ACCUMULATOR (IF FITTED).
- H. Remove control lever unit from inside tractor and feed through rear of cab without bending cable too tightly. Tie unit onto mainframe and protect from weather.
- I. Disconnect cable from control box to control valve and feed through rear of cab.
- J. Release tractor end of PTO shaft and pull back along splined (on some tractors it may not be possible to remove the PTO completely at this stage).
- K. Remove lower link pins.
- L. Start tractor engine and drive carefully forward, releasing machine and PTO shaft from tractor.
- M. Replace lower link pins and place cap over tractor PTO.
- N. Remove control box from cab and store in a clean dry place.

FIGURE 5-2



MAINTENANCE

PROPER TORQUE FOR FASTENERS (FIGURE 5-3)

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.

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.

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

Proper Torque values for bolts that are measured in Inches

Proper Torque values for Metric bolts

Bolt Diameter				Bolt Diameter				
	Head Marking No Marks Grade Two	Head Marking Three Lines Grade Five	Head Marking Six Lines Grade Eight		Head Marking 4.8	Head Marking 8.8 or 9.8	Head Marking 10.9	Head Marking 12.9
	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry		Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry	Pound - Foot Value Dry
1/4"	5.5	9	12.5	6mm	4.5	8.6	12	14.5
5/16"	11	18	26	8mm	11	20	30	35
3/8"	20	33	46	10mm	21	40	60	70
7/16"	32	52	75	12mm	37	70	105	120
1/2"	50	80	115	14mm	60	110	165	190
9/16"	70	115	160	16mm	92	175	255	300
5/8"	100	160	225	18mm	125	250	350	410
3/4"	175	280	400	20mm	180	350	500	580
7/8"	175	450	650	22mm	250	475	675	800
1"	270	675	975	24mm	310	600	850	1000
1-1/8"	375	850	1350	27mm	450	875	1250	1500
1-1/4"	530	1200	1950	30mm	625	1200	1700	2000
1-3/8"	700	1550	2550					
1-1/2"	930	2100	3350					

FIGURE 5-3

*To get Newton-Meters multiply pound-foot of torque by 1.356

WARRANTY INFORMATION

TIGER

Tiger Corporation, 3301 N. Louise, Sioux Falls, South Dakota, warrants to the original Retail Customer, the new Tiger equipment is free of defects in material and workmanship. Any part of said equipment that in Tiger's adjustment, show evidence of such defects will be repaired or replaced without charge, provided that the failure of part(s) shall have occurred within twelve (12) months from the date of delivery of said equipment to the Retail Customer. Expendable components such as knives, oil, chain sprockets, skid shoes, knife mounting disks and the like are excluded but not limited to this warranty.

The Retail Customer must pay the transportation cost to and from the Tiger Dealer's service shop for warranty service. Warranty service will be performed by the Tiger Dealer from whom the equipment was purchased, in his service shop and during his regularly scheduled days and hours of operation.

All Tiger obligation under this warranty shall be terminated if the equipment is modified or altered in ways not approved in writing by Tiger, if repair parts other than genuine Tiger repair parts have been used, or if the equipment has been subject to misuse, neglect, accident, improper maintenance or improper operation.

Tiger Corporation reserves the right to make improvements in design or changes in specification at any time without incurring any obligation to owners of equipment previously sold.

No agent or person has authority to alter, add to or waive the above warranties which are agreed to be in the only warranties, representations or promises, expressed or implied, as to the quality or performance of the products covered and which do not include any implied warranty of merchantability or fitness. In no event will Tiger be liable for incidental or consequential damages or injuries, including, but not limited to, loss of profits, rental or substitute equipment or other commercial loss.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THOSE EXPRESSED HEREIN.

It is the Purchasers obligation to sign the warranty registration form **AFTER** he / she has Read and Understands the Operation and Safety Instructions stated within this manual.

ONE LAST WORD

This manual cannot possibly cover all of the potentially hazardous situations you will encounter. By being familiar, though, with the safety rules, operating and maintenance instructions in this manual you can help prevent accidents. The objective of this manual is to help make you a better operator. Remember, **SAFETY IS YOU!**



Your safety and the safety of those around you depends on **YOU**. Common sense should play a large role in the operation of this machine.

Since we at Tiger Corporation are constantly striving to improve our products, we reserve the right to change specifications or design at any time.

