



RC-12

FLAIL SHREDDER

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OPERATOR'S MANUAL

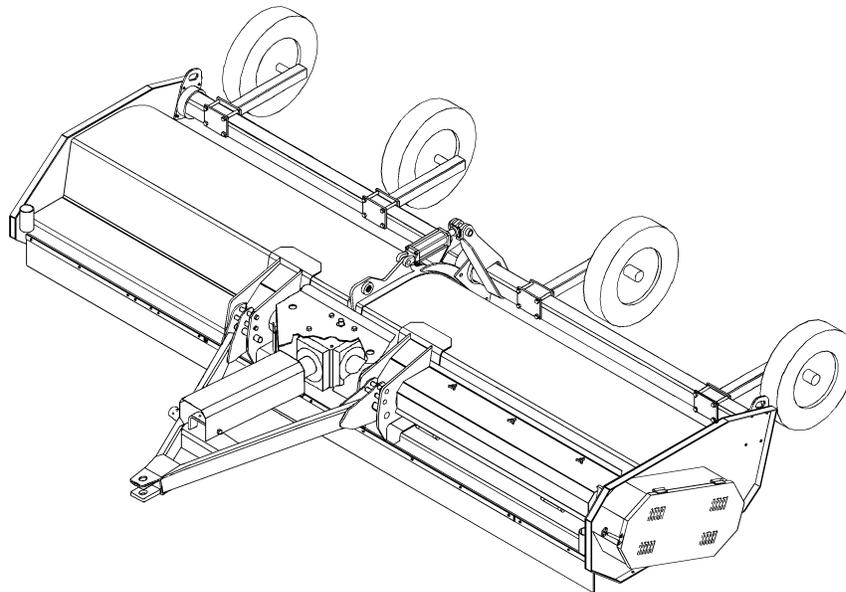


This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. READ, UNDERSTAND, and FOLLOW the Safety and Operation Instructions contained in this manual before operating the equipment. *C01-Cover*

ATENCIÓN!

LEA EL INSTRUCTIVO

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



RHINO[®]

1020 S. Sangamon Ave.

Gibson City, IL 60936

800-446-5158

Email: parts@servis-rhino.com



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="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, SEAT BELTS, & 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 to Rhino 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.

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SAFETY SECTION

Safety Section 1-1

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.



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



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



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)



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



Operator Safety Instructions and Practices

SAFETY

⚠️ 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)

⚠️ 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)



⚠️ 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

SAFETY



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



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



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)



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)



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)



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)



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)

SAFETY



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.

Equipment Operation Safety Instructions and Practices



Never leave the Tractor and Implement unattended while the Implement is in the lifted position. Accidental operation of lifting lever or a hydraulic failure may cause sudden drop of unit with injury or death by crushing. To properly park the implement when disconnecting it from the tractor, lower the stand and put the retaining pin securely in place, or put a secure support under the A-Frame. Lower the implement carefully to the ground. Do not put hands or feet under lifted components. (S3PT-1)



Use extreme care when lowering or unfolding the implement's wings. Make sure no bystanders are close by or underneath the wings. Allow ample clearance around the implement when folding or unfolding the wings. Use extreme caution around buildings or overhead power lines. (S3PT-5)



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)



There are obvious and hidden potential hazards in the operation of this Mower. REMEMBER! This machine is often operated in grass 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. (SFL-1)



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

SAFETY



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.

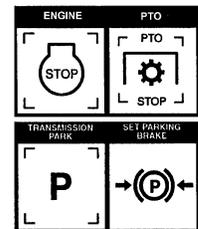
NOTE: Where there are grass and weeds high enough to hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height, inspected, closely with any remaining debris being removed, and mowed again at desired final height. (This will 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)



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)



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)



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



SAFETY



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



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)



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)



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



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



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)



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)

SAFETY

SAFETY

⚠ 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)

⚠ 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 these type of items discontinue mowing. (SGM-1)

⚠ 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)

⚠ 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)

SAFETY

⚠ WARNING

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 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)

⚠ 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)

⚠ 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)



SAFETY

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

(STI-3)



Connecting or Disconnecting Implement Safety Instructions and Practices

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

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

Transporting Safety Instructions and Practices

SAFETY

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)

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)



SAFETY

SAFETY

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:

- 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.
- 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.
- 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)

DANGER

When the Wings are folded for transport, the center of gravity is raised and the possibility of overturn is increased. Drive slowly and use extreme caution when turning on hillsides. Overturning the Implement could cause the Implement to overturn the Tractor and vice versa resulting in serious injury or even death. Never fold wings on a hillside...the Implement may overturn. (STI-2)

WARNING

Only tow the Implement behind a properly sized and equipped Tractor which exceeds the weight of the Implement by at least 20%. DO NOT tow the Implement behind a truck or other type of vehicle. Never tow the Implement and another Implement connected in tandem. Never tow the Implement at speeds over 20 MPH. (STI-6)



SAFETY

WARNING! Secure the Implement for transport before traveling on public roads. For pull-type Implements, secure the center axle using cylinder stops or transport pin and properly attach a safety chain between the Implement and Tractor. Secure wings in upright position on folding Implements using wing transport locks. (STI-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)



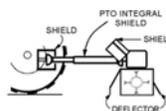
WARNING! Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Implement on the ground or securely blocked up, disengage the PTO, and turn off the tractor engine. Push and pull the Remote Cylinder lever in and out several times prior to starting any maintenance or repair work. (S3PT-9)



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



DANGER! 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)



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)



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)



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)



SAFETY

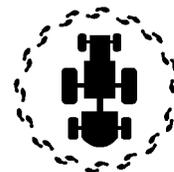
SAFETY

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)

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)



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 part being thrown from the mower causing serious bodily injury. See your Authorized Dealer for proper repairs. (SGM-13)

PARTS INFORMATION

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

SEE YOUR RHINO DEALER

SAFETY

DANGER! Always disconnect the main PTO Driveline from the Tractor before performing service on the Mower. Never work on the Mower with the tractor PTO driveline connected and running. Blades or Drivelines could turn without warning and cause immediate entanglement, injury or death. (SRM-3)



WARNING! Wear gloves and exercise care when handling blades. Blades are SHARP and can cause lacerations to hands and other parts of the body if not safely handled. (SSM-09)



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

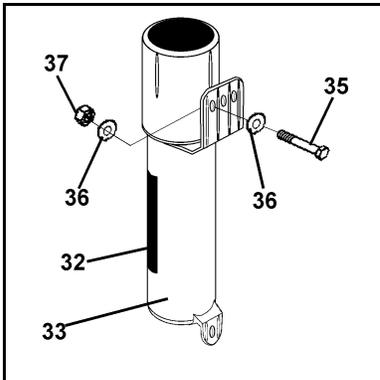
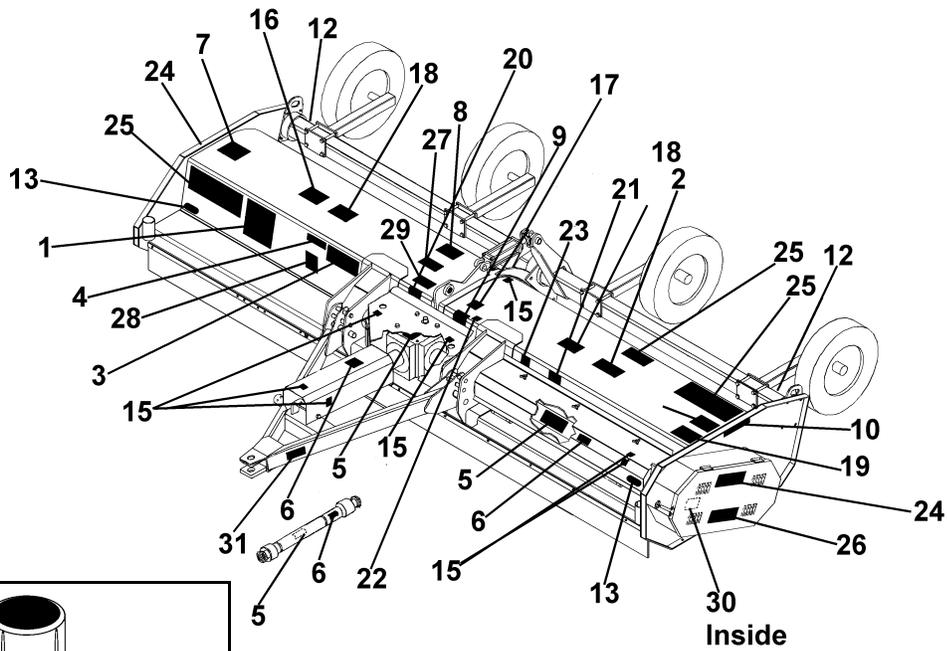
In addition to the design and configuration of this Implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the 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)

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

SAFETY

SAFETY



ITEM	PART NO.	QTY	LEVEL	DESCRIPTION
1	002369	1	DANGER	Flail Multi-Hazard
2	00725739	1	WARNING	Use/Repair Shields & Guards
3	999001	1	WARNING	Maintain Weight for Steerage
4	00725746	1	PELIGRO	Spanish - Get Translation
5	00756004	3((1))	DANGER	Driveline Shield Missing
6	00756005	3((1))	DANGER	Rotating Driveline
7	02967668	1	DANGER	Cutting Blades / Thrown Objects
8	00756059	1	WARNING	Leak Detection, Oil Penetration
9	00756494	1	DANGER	Driveline Safety
10	00758194	1	WARNING	Pitch Point (V-Belt/Pulley)
11	03200347	*1	REFLECT	SMV Reflector
12	1458392	{2}	REFLECT	Red Reflector
13	1458393	{2}	REFLECT	Yellow Reflector
14	00725747	1	INSTRUCT	RC Flail Operating Instructions
15	000678	2(4)	INSTRUCT	Grease Fitting Inside

SAFETY

SAFETY

16	00725713	1	INSTRUCT	Lubrication Chart, RC Flails
17	00725738	1	INSTRUCT	Notice to Owner
18	00725715	2	INSTRUCT	Pick Up From Lift Points Only
19	00725720	1	INSTRUCT	Belt Adjustment
20	00725745	1	INSTRUCT	Quick Coupler Hitch Only
21	02964510	1	IMPORTANT	Genuine Parts, Flail
22	00773723	1	PELIGRO	Rotating Driveline Translation
23	NFS	4	SER PLT	Serial Plate
24	D302	2	LOGO	RHINO LOGO (4-7/8 x 6-1/2)
25	D303	2	L. NAME	RHINO (4-3/8 x 16-1/2)
26	00725626	1	MODEL	RC12
27	D114	1	WARNING	1000 RPM PTO
28	00763977	1	INSTRUCT	Notice to Owner
29	00771283	1	INSTRUCT	5 Year Warranty
30	00775933	1	WARNING	Guard Missing
31	D102	1	INSTRUCT	PTO-to-Drawbar Adj. Safety Chain
32	00776481	1	INSTRUCT	Operators Manual Inside (Decal)
33	00776031	1	_____	Canister, Operators Manual
34	00726339C	1	_____	Operators Manual
35	10058000	3	_____	Bolt
36	00024100	6	_____	Flatwasher
37	02959924	3	_____	Locknut

* Provided by Tractor Manufacturer

(()) Installed by Driveline Manufacturer

SAFETY

Decal Description

Peligro Translation, If you do not know how to read English, please find someone who knows how to read English.



P/N 00725746

PELIGRO! Spanish Translation for Driveline Safety



P/N 00773723

DANGER! Mult-Hazard Warning. Failing to follow these Safety Messages and Operating Instructions can cause serious bodily injury or even death to operator and others in the area.



(See Inside Front Cover)

P/N 002369

DANGER! Guard Missing Do Not Operate.



P/N 00756004

SAFETY

DANGER! Rotating Driveline Keep Away, Contact can cause death.

P/N 00756005



DANGER! Make certain that drivelines are correct length and are securely attached.

P/N 00756494



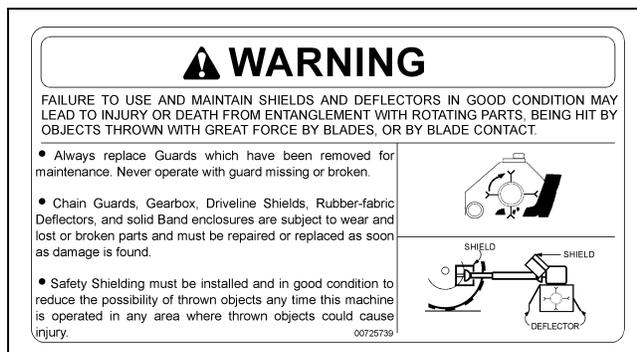
DANGER! - Keep Away - Thrown Objects. Inspect area before mowing. Do not let rotating blades contact solid objects. Operate only if all Guards - Deflectors are in place. Do not operate with Mower or Wing raised off the ground. Stop mowing if Passerby enter the area. Stay away from rotating blades. Keep hands and feet away from rotating blades. Do not approach mower until all movement has stopped.

P/N 02967668



WARNING! Failure to use and maintain shields and deflectors in good condition may lead to injury or death from entanglement with rotating parts, being hit by objects thrown with great force by blades, or by blade contact.

P/N 00725739



SAFETY

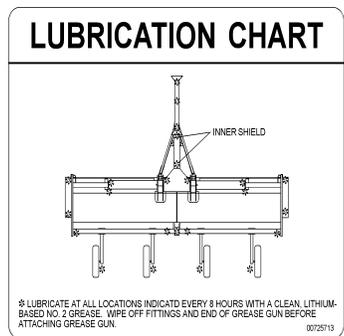
SAFETY

Information that Grease Fitting is present and must apply grease.



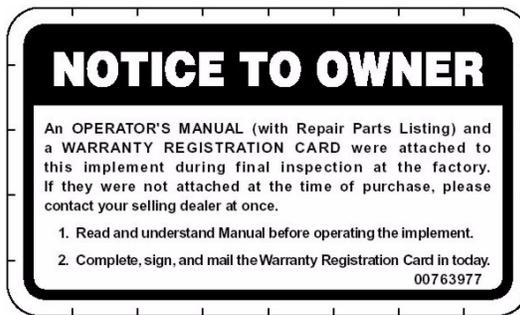
P/N 000678

8 Hour Lubrication Chart



P/N 00725713

Operator's Manual (with repair parts) and warranty was attached to this implement during final inspection.



P/N 00763977

Logo Product Name: Rhino



P/N D302

SAFETY

Logo Product Name: Rhino



P/N D303

WARNING! - Guard Missing, Do Not Operate



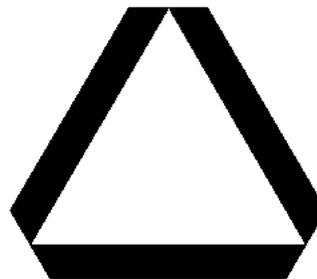
P/N 00775933

WARNING! Tractor rearing



P/N 999001

Slow Moving Vehicle Decal. Keep SMV reflector clean and visible. DO NOT transport or operate without the SMV.



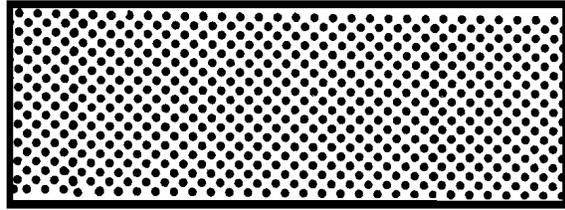
P/N 03200347

SAFETY

SAFETY

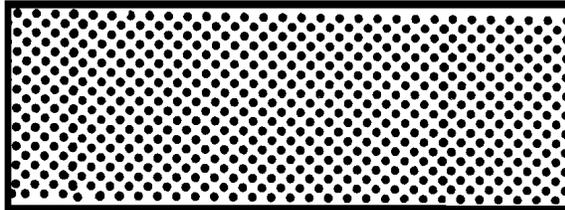
SAFETY

Red Reflector. Keep reflectors clean and visible.



P/N 1458392

Amber Reflector. Keep reflectors clean and visible.



P/N 1458393

INFORMATION - Use Genuine Rhino Flail Parts



P/N 02964510

WARNING! Never use your hand to check for oil leaks. Always use paper or cardboard.

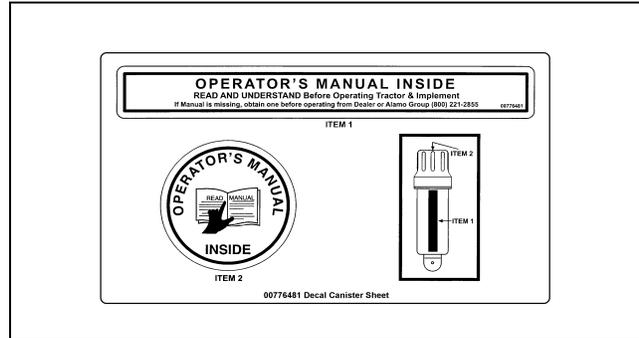


P/N 00756059

SAFETY

INFORMATION - Operator's Manual Inside

P/N 00776481



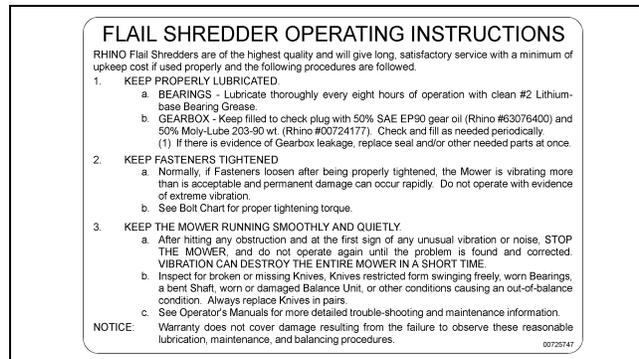
WARNING! Do not operate with Belt Shield removed. Finger(s) may be pinched off if caught between V-Belt and Pulley.

P/N 00758194



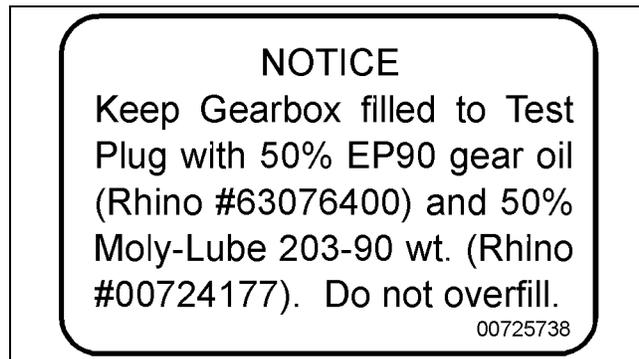
Instructions for operation and maintenance of Flail Shredders.

P/N 00725747



Instructions for filling Gearbox with oil.

P/N 00725738



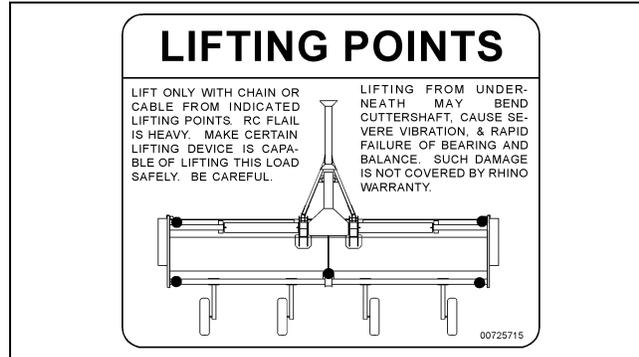
SAFETY

SAFETY

SAFETY

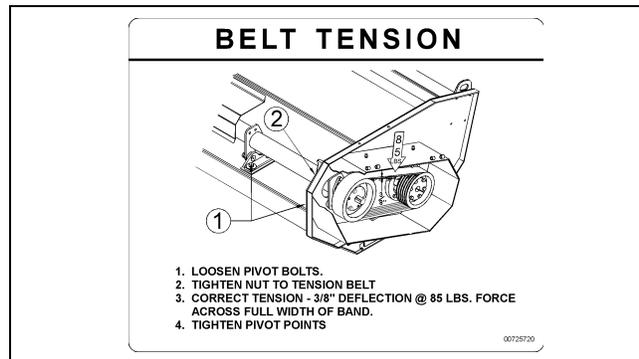
Instructions for Lifting Unit with chain or cable.

P/N 00725715



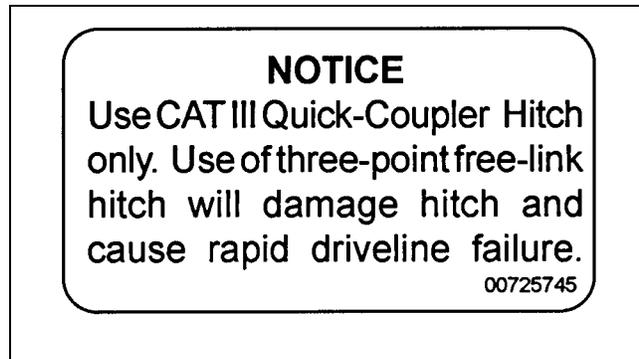
Instructions for proper Belt Tension.

P/N 00725720

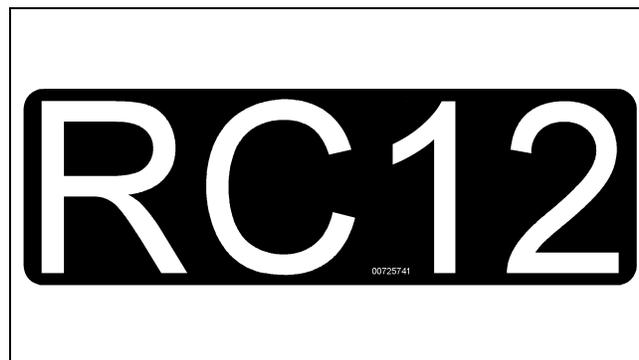


Instructions to use CAT III Quick Coupler Hitch.

P/N 00725745



Model Name- RC12



00725626

RC12 12-05

Safety Section 1-24

SAFETY

WARNING! Avoid Bodily Injury, Use 1000 RPM PTO Speed Only.

P/N D114



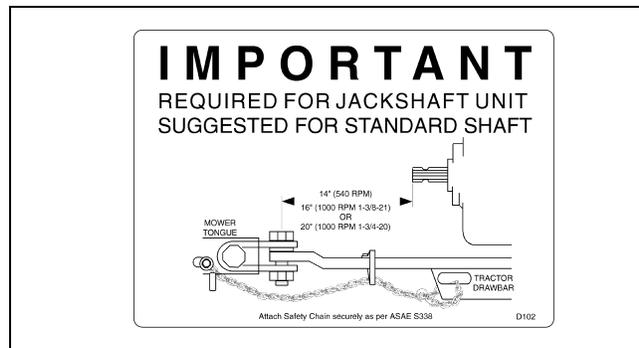
INFORMATION - 5 Year Gearbox Warranty

P/N 00771283



IMPORTANT! Required For Jackshaft Unit. Suggested for standard shaft.

P/N D102



SAFETY

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 Section 2-1

INTRODUCTION

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

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

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

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

CAUTION!

The lowest level of Safety Message; warns of possible minor injury. Decals located on the Shredder 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.



INTRODUCTION

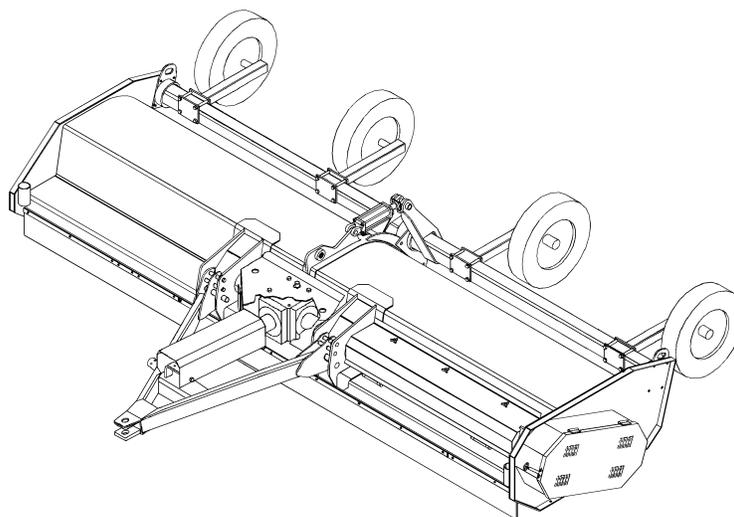
ATTENTION OWNER/OPERATOR

BEFORE OPERATING THIS MACHINE:

- Carefully read the Operator's Manual, completely understand the Safety Messages and instructions, and know how to operate correctly both the tractor and Shredder.
- Fill out the Warranty Card in full. Be sure to answer all questions, including the Serial Number of the Shredder. Mail within 30 days of delivery date of this implement.

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

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



This Flail Shredder is designed for medium-duty work. It will mow grass and weeds and shred row crop stalks very effectively.

DANGER!



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

Front and rear, and left and right are determined by the normal direction of travel (the same as on your automobile).

INTRODUCTION

OWNER'S RESPONSIBILITIES

- Read the TRACTOR Owner's Manual as well as this manual before attempting to install or operate the mower.
- Know all the controls and how to stop quickly. Know how to operate the RC12 before attempting to mow with it.
- Keep both the tractor and the mower in good operating condition. Keep all fasteners secure to help maintain equipment in safe working condition. Check knives and knife fasteners daily for damage or missing pins.
- Keep all safety devices in place. Read, understand, and comply with safety decals located on tractor and mowers.
- Do not allow children to operate the tractor or mower. Do not allow adults to operate the equipment without proper instruction.
- Do not carry passengers. Keep children and pets a safe distance away.
- When leaving the operator's position always follow good safety practices:
 1. Turn off power to the mower.
 2. Lower the mower to the ground.
 3. Set the parking brake.
 4. Stop the engine and remove the key.
- Clear the work area of objects which might be picked up and thrown.
- Stay alert for holes in the terrain and other hidden hazards.
- To reduce fire hazard, keep tractor engine free of grass, leaves, or excessive grease.
- Thoroughly check the condition of the mower before mowing.
- The cutter shaft must be free to turn before starting the mower. Do not start the mower while in the cut. Allow the cutter shaft to develop full speed before mowing.
- Disengage power to the mower when transporting or not in use. NEVER engage the power to the mower when the cutter unit is in the TRANSPORT position.
- In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern and prudence of the operator and requires suitable training of personnel involved in the operation, transport, maintenance and storage of equipment." - SAE J1001
- Disengage power to the mower and stop engine before leaving operator's position.
- Do not change engine governor settings or overspeed engine.
- Never store the tractor or mower with fuel in the tank inside a structure where fumes may reach an open flame or spark. Allow engine to cool before storing in any enclosure.
- HANDLE FUEL WITH CARE- it is highly flammable.
 1. Use approved fuel container.
 2. Never smoke while refueling engine.
 3. Never fill fuel tank indoors. Never remove cap or add fuel to a running or hot engine. Wipe up spilled fuel
 4. Exhaust fumes are dangerous- open doors if engine is run in garage. Do not run engine indoors.

INTRODUCTION

SAFETY INSTRUCTIONS

- Remove all foreign objects from, and stay clear of, the front of the cutter unit. Do not get near the rotating knives.
- Disengage power to the mower before starting the engine.

- Never allow anyone near the equipment while in operation, and watch out for traffic when crossing or working near a roadway. Make certain flashers are operating when mowing next to traffic lanes.
- The tractor and the mower should be stopped and inspected for damage after striking an object. Repair all damage before restarting and operating the equipment.
- Do not attempt to clear discharge, remove obstacles, adjust belts, or repair equipment before stopping the tractor engine. Never place hands or feet near knives or belts when the tractor engine is running.
- Do not operate any RHINO mower which is vibrating excessively. Vibration is caused by a rotating part which is out of balance. The vibration will cause additional damage to the equipment. Cutting rotor vibration could be caused by the following:
 1. Wire, rope, rags, etc., wound around the shaft.
 2. Knives missing or broken.
 3. Knife hanger lugs which have broken off the shaft.
 4. Cutting rotor bearings worn.
 5. Cutting rotor bent from striking an object.
 6. Cutting rotor not rotating at recommended speed.

- Decrease travel speed for slopes and sharp turns to reduce the possibility of tipping or loss of control. It is suggested, depending on the amount of slope, to mow up and down rather than across the slope.
- Do not release the clutch suddenly, especially when going up a hill.
- Never engage power to the mower when the shredder unit is in the TRANSPORT position.
- Always repair small problems before they become large ones.
- Never work on the shredder or the tractor while the engine is running.
- Never leave the shredder unit in the raised position without proper support. Do not rely on the mower hydraulics to hold the unit up while working on it. If a hydraulic connection is loosened or a control lever is shifted, the cutter unit will come down. Always block up securely.

ASSEMBLY SECTION

Assembly Section 3-1

ASSEMBLY

The RC Flail Shredders are supplied with a Cat III 3-Point Hitch on lift-type models or a tongue hitch assembly on pull-type models.

SHIPPING STAND REMOVAL

- Use overhead hoist to lower machine from shipping position.

WARNING! Use a 5000 pound capacity hoist.



- Support mower with hoist at lifting points. Remove outer shipping stands at both ends of machine.
- Lower machine and rest on endplate extension skids.
- Remove center shipping bracket. Use hoist to lift. Pins are required to attach tongue or 3-point hitch.

BREATHER PLUG INSTALLATION

- Remove pipe plug from top of gear box and install breather plug. Breather plug is attached to jack mount tube on topside of mower deck.
- Remove level plug at rear of gearbox and check lubricant level is at base of plug. NOTE: Use only Moly-Lube 203 90wt. (Rhino p/n 00724177) or equivalent.

TONGUE ASSEMBLY INSTALLATION

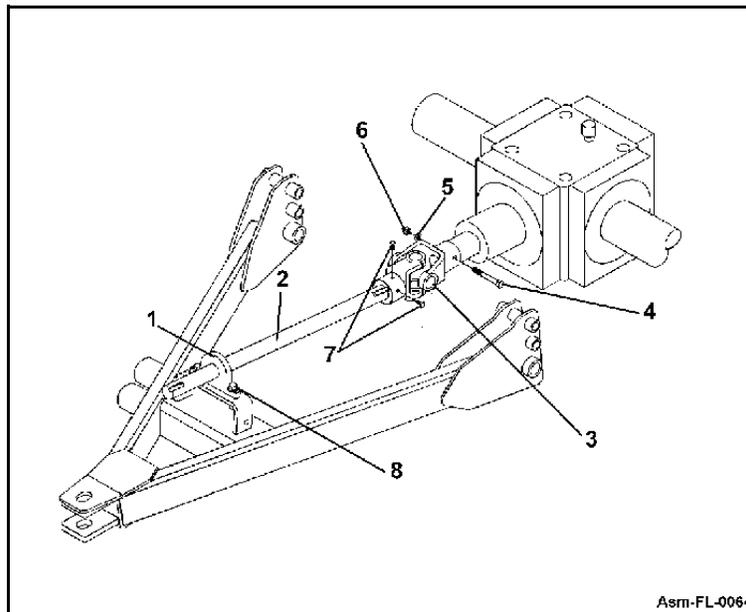
(Pull Type Models Only)

- Tongue attaches with four pins between hitch ears on front of mower. Use pins which attach center shipping bracket.
- Use hoist to raise hitch into position. Attach lower pivot point first with 1-7/16" pins. Raise front of hitch with hoist to attach 1" top pins. Fasten in place with snapper pins. The tongue assembly has two height positions, for normal operation pin tongue in top hole, for additional crop clearance pin tongue in second hole set. Clean and apply anti-seize compound to gearbox input shaft.
- Remove eccentric lock collar on jack shaft bearing (item 1) by loosening set screw, inserting a drift pin in blind hole on lock collar and tapping clockwise to loosen. Slide jackshaft (item 2) and yoke assembly (item 3) forward through bearing to attach spline yoke assembly to gearbox. Slide 1-3/4" 27-spline yoke and shaft assembly on gearbox input shaft. Yoke will only fit on shaft in one position. Align bolt hole on yoke shaft. Insert bolt (item 4), lockwasher (item 5), and tighten nut (item 6). **Asm-FL-0064 (see on following page)**
- Place lock collar on shaft, move in position on extended race of jack shaft bearing and rotate by hand in direction of shaft rotation until eccentrics are positively engaged. Insert drift pin in blind hole and lock tightly in direction of shaft rotation with the aid of a hammer. Tighten 3/8" set screws (item 7) on lock collar to 19 ft. lbs. **Asm-FL-0064.**

Note: Loosen lock collar before adjusting tongue position.

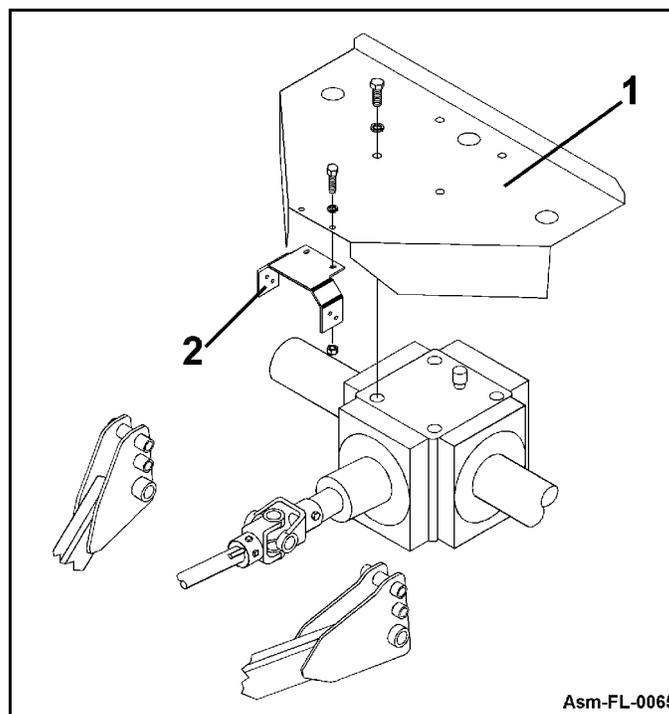
- Check that the torque on bearing mount bolts (item 8) is 85 ft. lbs. **Asm-FL-0064.**

ASSEMBLY



ASSEMBLY

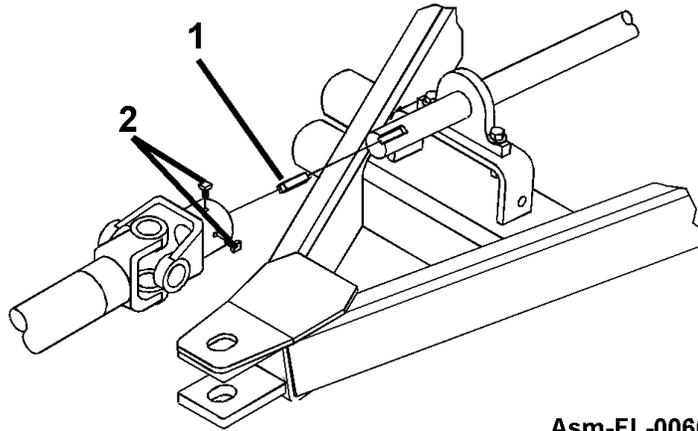
- Attach gearbox shield (item 1) to gearbox with four 5/8" bolts, flatwashers and lockwashers. **Asm-FL-0065.**
- Bolt shield mount plate (item 2) to topside of front edge of gearbox shield with two 3/8" bolts, flatwashers and lockwashers. **Asm-FL-0065.**



ASSEMBLY

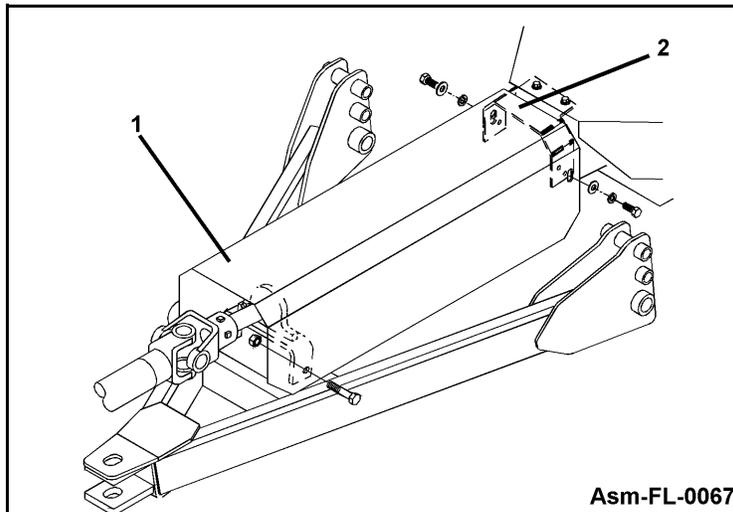
ASSEMBLY

- Place key (item 1) in end of jackshaft and slide round end of PTO shaft over jackshaft. Attach with two 3/8" set screws (item 2). Align set screws with dimples in jack shaft. Apply thread locking compound to threads to prevent loosening. Ensure driveline and jackshaft U-joint are in phase. **Asm-FL-0066.**



Asm-FL-0066

- Place jack shaft shield (item 1) in place over shield mount (item 2) and bearing stand. Fasten in place with two 3/8" bolts, lockwashers and washers at shield mount and on either side of bearing mount. **Asm-FL-0067.**



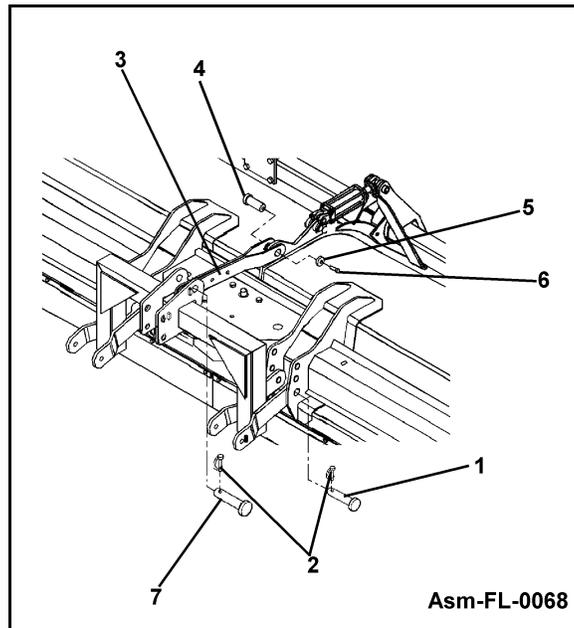
Asm-FL-0067

ASSEMBLY

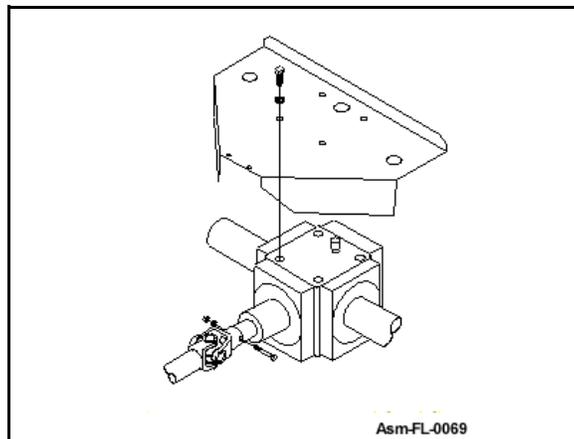
3-POINT HITCH ASSEMBLY INSTALLATION

(Lift Models Only)

- Raise hitch into position with hoist. Place narrow section of lower hitch between mounting plates on front of mower. Fasten with 1-7/16" pins (item 1) to lower holes and lock with snapper pin (item 2). **Asm-FL-0068.**
- Attach clevis portion of link bar assembly (item 3) to mounting point on top front of center plate. Attach spacer (item 5) to end of pin (item 4) and fasten with 1/2" bolt (item 6) and lockwasher. **Asm-FL-0068.**
- Raise hitch with hoist and insert pin (item 7) through slotted end of link bar and top rear hole on hitch assembly. Fasten with snapper pin (item 2). **Asm-FL-0068.**



- Slide PTO shaft on to gearbox input shaft and align hole in yoke with hole on shaft. Shaft will only attach at one position. It may be necessary to rotate yoke 180°. Fasten with 5/16" bolt and nut. **Asm-FL-0069.**
- Bolt gearbox shield in place with four 5/8" cap screws, flatwashers, and lockwashers. **Asm-FL-0069.**

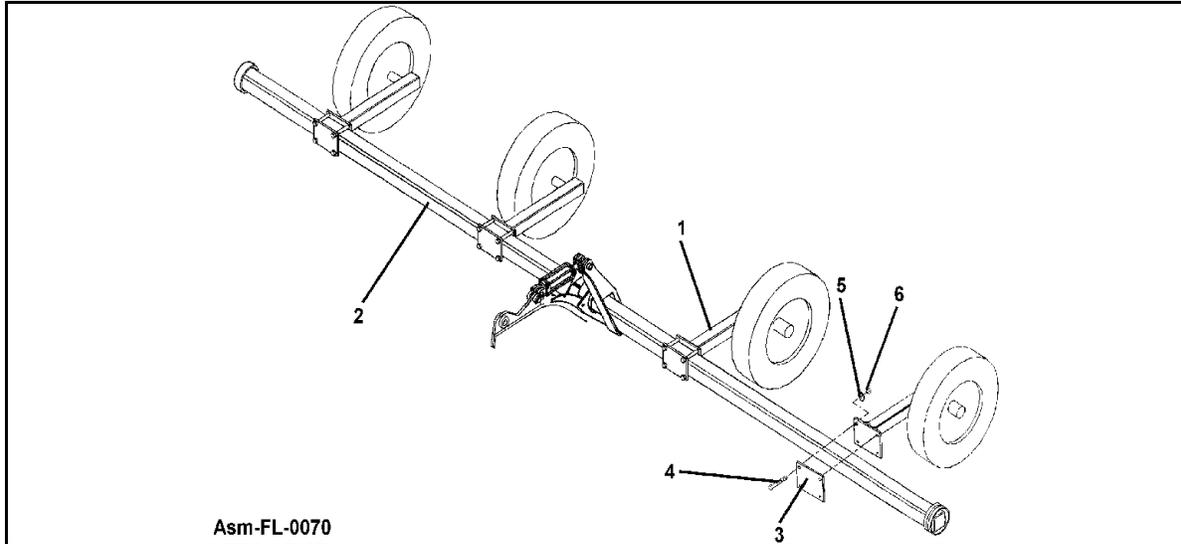


ASSEMBLY

ASSEMBLY

ATTACHING AXLE ASSEMBLIES TO MAIN WHEEL BAR TUBE

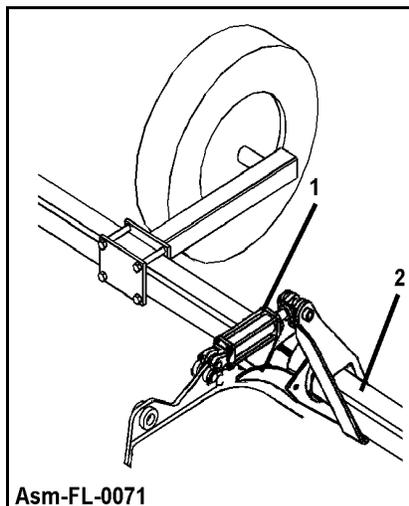
- Mark desired row spacing with chalk on wheel bar. Keep outer axle assemblies as close to each end of the shredder to balance load and prevent scalping. Fasten axle assemblies (item 1) to wheel bar (item 2) with clamp plate (item 3) and four 3/4" bolts (item 4), lockwashers and nuts (items 5,6). Tighten bolts evenly and progressively torque to 200 ft. lbs. RC12 is shipped standard with two Axle Assemblies.
- Attach ratchet screw jack, (Rhino p/n 00554600) between cylinder bracket mount and ear on rear of center plate.



ATTACHING OPTIONAL HYDRAULIC CYLINDER

(P/N 00725933)

- Attach clevis end of hydraulic cylinder (item 1) to mount bracket (item 2) and attach barrel end to rear mount on center plate.



OPERATION SECTION

Operation Section 4-1

OPERATION

RHINO RC12 FLAIL SHREDDER OPERATION INSTRUCTIONS

READ AND UNDERSTAND THE ENTIRE OPERATING INSTRUCTIONS AND SAFETY SECTION OF THIS MANUAL AND THE TRACTOR MANUAL BEFORE ATTEMPTING TO USE THE TRACTOR AND MOWER. 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 cutter and tractor. *OPS-U-0001*

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



The RC Flail is primarily designed to shred crop residue such as cotton stalks, corn, rice straw, milo, rye grass and similar crops. Shredder should be operated at 1000 PTO RPM only, at a ground speed of 2 to 5 mph. Only trained personnel who are familiar with the safety and operating procedures should operate this equipment.

Refer to tractor operating instructions for correct engine RPM and gear selection. Always wear a seatbelt on tractors equipped with roll over protection. Exercise extra caution when operating on uneven ground. Never leave tractor seat while mower or tractor are operating. Always slow tractor to an idle, disengage PTO and wait for all rotation to cease. Apply parking break and shut off engine before dismounting.

OPERATION

OPERATION

1. Standard Equipment and Specifications

RC 12

Cutting Width	144"
Overall Width	156"
Cutting Height Range	1-18"
Cuttershaft Diameter	10-3/4"
Lift Type Hitch	CAT II-III Q.H.
Semi Mount Hitch	CAT II-III Q.H.
Pull Type Hitch	Clevis
Min. HP Required (Lift type*)	90 HP
Min. HP Required (Semi-Mount)	90 HP
Min. HP Required (Pull type)	90 HP
Gearbox Rating**	207 HP
Blade Tip Speed	12,620 FPM
Rotor Speed	2000 RPM
Number of Knives	128
Driveline Size	CAT 5 or 6
Hood Thickness	3/16"
End Plate Thickness	1/4 "
Drive Belt	5 x 5V, Banded
Front Safety Deflectors	Std.
Weight (Approx.)	4025 lbs.

*with adequate front weights

**1000 RPM



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

2. OPERATOR REQUIREMENTS

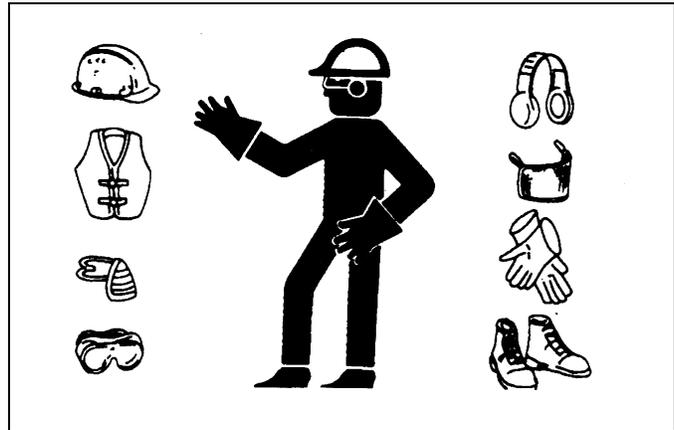
Safe operation of the unit is the responsibility of a qualified operator. A qualified operator has read and understands the implement and tractor Operator's Manuals and is experienced in implement and tractor operation and all associated safety practices. In addition to the safety messages contained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

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

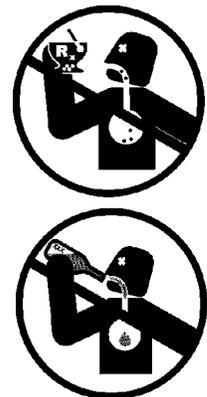
Safe operation of equipment requires that the operator wear approved Personal Protective Equipment (PPE) for the job conditions when attaching, operating, servicing, and repairing the equipment. PPE is designed to provide operator protection and includes the following safety wear:

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Protective Eye Glasses, Goggles, or Face Shield
- Hard Hat
- Steel Toe Safety Footwear
- Gloves
- Hearing Protections
- Close Fitting Clothing
- Respirator or Filter Mask (depends on mowing conditions) OPS-U- 0002



⚠ 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)



Tractor Requirements

OPERATION

The tractor used to operate the mower must have the power, capacity and required equipment to safely operate the mower at a ground speed between 2 and 5 MPH. Operating the mower with a tractor that does not meet the following requirements may cause tractor or mower damage and could be a potential danger to the operator and passersby.

Tractor Requirements and Capabilities

- ASAE approved Roll-Over Protective Structure (ROPS) or ROPS cab and seat belt.
- Tractor Safety Devices Slow Moving Vehicle (SMV) emblem, lighting, PTO master shield
- Tractor Horsepower:
 - Minimum 90 HP
- Hitch -Lift Type Mower:
 - Lifting Capacity 4025 lbs
 - 3-Point Hitch CAT II-III Q.H.
- Pull Type Mower
 - Drawbar Extended 14" from PTO shaft end with safety chain attachment point
- Front End Weight As needed to maintain 20% weight on front axle
- Power Take Off 540 RPM 6-spline, 1-3/6" diameter output shaft

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 model not equipped with a ROPS and seat belt should have these life saving features installed by an authorized dealer. *OPS-U- 0003*



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



2.2 Tractor Safety Devices

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

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

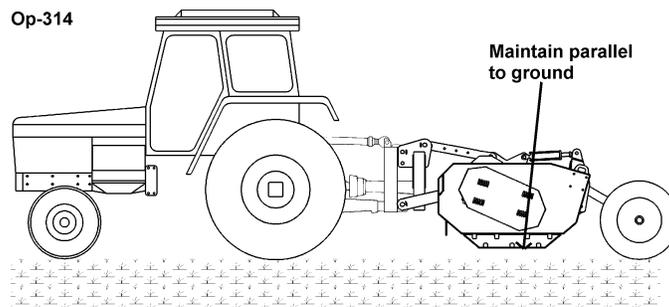
OPERATION

2.3 Tractor Horsepower

The horsepower required to operate the mower depends on many factors including the vegetation to be cut, terrain condition, operator experience, and condition of the mower and tractor. For most mowing condition, the RC12 requires a tractor with at least 90 HP. Operating the mower with a tractor that does not have adequate power may damage the tractor engine.

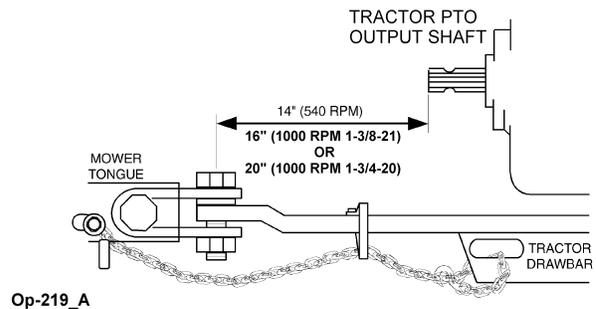
2.4 3-Point Hitch

Lift Type RC Flails should be coupled with a quick hitch only. Direct coupling to tractor 3 point will result in driveline failure. Sufficient weights should be added to front of tractor to maintain steering weight on front tires when flail is raised (20% of tractor weight should be on front tires). Never stand between flail and tractor when coupling with quick hitch. Remove or adjust drawbar to provide clearance for driveline on lift type units. Adjust top link so machine does not tilt back when raised, increasing angles of u-joints which may cause premature failure.



2.5 Drawbar-Pull Type Mower

For equipment operating at 540 RPM, the tractor drawbar must be positioned at a 14" distance from the hitch point to the PTO shaft end for proper operation and minimal wear to the driveline. OPS-R- 0061_D



2.6 Front End Weight

Maintain a minimum of 20% total tractor weight on the tractor front end at all times. Front end weight is critical to maintain steering ability and to prevent the front end from rearing up. Consult your authorized tractor dealer for front weights and carriers.

2.7 Power Take Off (PTO)

Only operate the mower on a tractor equipped to operate at 540 rpm PTO speed. Tractors operating at 540 rpm will have a 1-3/8" diameter 6-spline PTO shaft stub. Refer to the tractor operator's manual for operating the PTO at the proper speed.

OPERATION

If operating an older model tractor where the tractor's transmission and PTO utilize on master clutch, an over-running clutch must be used between the PTO output shaft and the driveline of the mower. Consult an authorized tractor dealer to purchase and install an over-running clutch if needed.

⚠ DANGER **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)

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

3. GETTING ON AND OFF THE TRACTOR

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

⚠ 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. Never use control levers for support when mounting the tractor. Seat yourself in the operator's seat and secure the seat belt around you.

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

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



OPERATION



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



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)



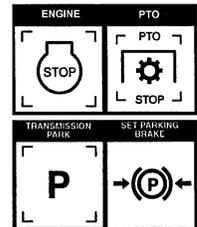
3.2 Dismounting the Tractor

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

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



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)



OPERATION

4. STARTING THE TRACTOR

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

Essential Tractor Controls:

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

Before starting the tractor ensure the following:

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

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

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



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



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



5. CONNECTING THE MOWER TO THE TRACTOR

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

OPERATION

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)

6. SETTING THE MOWER

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

Pull Type Models

Cutting height is set by adjusting ratchet jack which rotates rear wheel bar. On units fitted with hydraulic cylinder, height is set by adding split collar spacers around cylinder rod. Avoid any scalping or ground contact which may result in knife breakage. Cutting height should be set to avoid any ground contact. For optimum knife wear, raise knife tips above dust cloud (approximately 3-4 inches above row). On larger units, the overall level of rows should be considered to avoid ground contact over width of machine. Side plate should be parallel to ground. Tongue assembly has two height positions. Pin in top holes for standard shredding of crops. In tall crops such as cotton, pin in lower holes for additional crop clearance.

Lift Type Models

Adjustment of the wheel bar combined with the tractor lift arms maintain cutting height. The 3-Point Hitch is fitted with a floating link to reduce any load transferred to top link. The tractor lift should be set to correct level to maintain correct height at front of machine.

Machine should be held level by tractor lift while mowing. Link float may be locked out by reversing center lock plate in link assembly. This lock plate should only be used in level conditions and on tractors which are unable to maintain lift level.

Semi-Mount Models

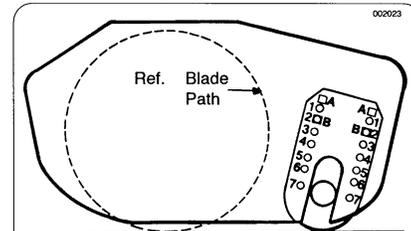
The cutting height is maintained with a combination of tractor 3-Point Lift adjustment and wheel bar adjustment. Individual caster adjustment is to level caster pivot pin angle perpendicular with the ground, for proper operation. Tractor should be attached to lower hitch point only. Always use a quick hitch to attach to mower otherwise driveline failure may result.

OPERATION

The mower's cutting height is set by positioning the roller assembly for each mower section. Each section must be set at the same height to ensure an even cut across the entire width of the mower.



1. Place the tractor and mower on a level surface and completely lower the mower to the ground.
2. Shut down the tractor, place the transmission in park, and set the parking brake before dismounting.
3. One section at a time, place lifting device (scissors jack or hydraulic jack) under center of cutter housing.
4. Remove hex nuts, washers and carriage bolts from bracket at each end of roller. Make certain that roller bracket is free to move once the fasteners are removed. A stuck roller could drop unexpectedly and cause injury.
5. Use lifting device to reposition cutter housing to desired cutting height. Align bracket holes with cutter housing, then reinstall hardware.
6. Lower cutter housing to the ground and remove lifting device.
7. Set cutting height according to procedures above for remaining two cutter sections. Make sure that all three rollers are set at the same height to ensure a even cut across the entire width of the mower.



MOWER CUTTING HEIGHT ADJUSTMENT

DESIRED CUTTING HEIGHT (INCHES)	ADJUSTMENT BRACKET HOLE	MOWER END PLATE HOLE
1/2	B	2
1	A	1
1-1/2	B	3
2	A	2
2-1/2	B	4
3	A	3
3-1/2	B	5
4	A	4
4-1/2	B	6
5	A	5
5-1/2	B	7
6	A	6

Op- 253

OPERATION

6.1 Leveling Deck

To Facilitate a safe and efficient mowing operation, the mower should be operated parallel to the ground at all times. Never operate if front or rear of mower is tilted upward. Objects may be discharged at high speeds causing possible injury or even death.

Adjust Top Link to level mower roller adjustment. Side Skid Shoes should always be parallel to ground throughout the full adjustment range. Adjust cutting height of machine by raising or lowering rear roller as specified in Operation Section.



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)



7. DRIVELINE ATTACHMENT

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

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



After the driveline is securely attached, place the tractor PTO master shield back in the operating position. OPS-R-0003

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)

Driveline Length Check

OPERATION

WARNING

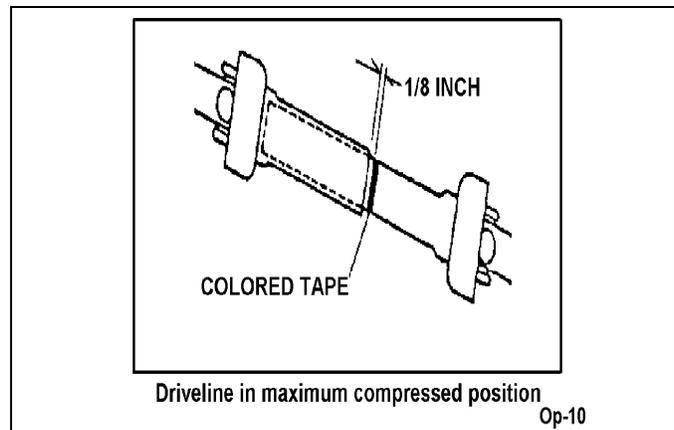
Before operating the Implement, check to make sure the Implement input driveline will not bottom out or become disengaged. Bottoming out occurs when the inner shaft penetrates the outer housing until the assembly becomes solid-it can shorten no more. Bottoming out can cause serious damage to the Tractor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

When fitting the mower to the tractor, the telescoping driveline must be inspected to ensure that at its most compressed position, the profiles do not “bottom out”, and when at its farthest extended position, there is sufficient engagement between the profiles to operate safely. At its shortest length, there must be at least a 1” clearance between each profile end and opposite profile universal joint. At its farthest operating extension, a minimum profile engagement of 12” must be maintained.

Driveline Clearance.

Pull Type Units - After adjusting drawbar to correct length and attaching mower, check driveline for telescoping clearance. Before engaging PTO ensure driveline does not bottom out during sharp turns. Check vertical clearance between driveline and hitch pin. Driveline should have a minimum overlap of 5” at all times.

- Disengage the driveline from the tractor PTO shaft.
- Slide the driveline together until it “bottoms out” solidly.
- Apply colored tape to the inner shield 1/8” from the end of the outer shield.
- Reattach the driveline to the PTO shaft. *OPS-F-0001_A*



CAUTION!



Driveline may bottom out or come in contact with hitch while traveling over uneven terrain.

WARNING!

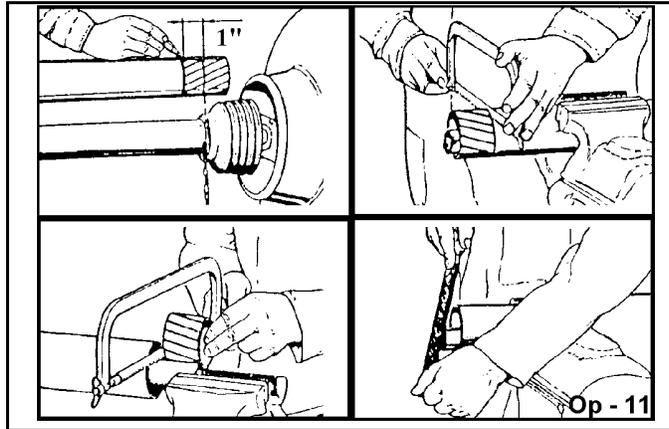


A loose driveline could slip off and result in personal injury or damage to shredder. When attaching driveline yoke to tractor PTO shaft, it is important that spring-activated locking collar be seated in groove on PTO shaft.

OPERATION

Shorten the driveline profiles as follows:

- Remove the driveline from the tractor.
- Position the mower to the point with the shortest distance between the tractor PTO shaft and cutter gearbox. Shut down the tractor and securely block the mower in this position.
- Pull driveline apart and reattach yoke to PTO shaft.
- Hold driveline sections parallel to one another and measure back 1" from yoke of each shaft and place mark on opposite section. Cut this length off with a saw.
- Round off all sharp edges and debur.
- Thoroughly grease then reinstall the driveline.
- Recheck for proper operation.



Engagement Check Procedure

- With the driveline attached, position the mower to the point where the telescoping driveline is at its maximum extension. Completely shut down the tractor and secure in position.
- Mark the inner driveline shield 1/8" from the end of the outer shield.
- Disconnect the driveline from the tractor and separate the two driveline halves.
- Measure the distance from the mark to the end of the inner profile. This length is the amount the driveline profiles were engaged.
- If the engaged length is less than 12" the shaft is considered too short and should be replaced with a longer shaft. Consult an authorized dealer to purchase the required driveline length.

NOTE: If the driveline cannot be shortened and still maintain the required profile engagement, the operator must be made aware of terrain conditions and avoid situations which pose a potential problem to avoid damaging the driveline.

OPS-F-0002

8. PRE-OPERATION INSPECTION AND SERVICE

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

DANGER! Always disconnect the main PTO Driveline from the Tractor before performing service on the Mower. Never work on the Mower with the tractor PTO driveline connected and running. Blades or Drivelines could turn without warning and cause immediate entanglement, injury or death. (SRM-3)



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)



OPERATION

WARNING

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



OPERATION

8.1 Tractor Pre-Operation Inspection/Service

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

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



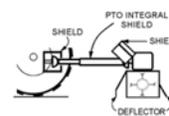
8.2 Mower Pre-Operation Inspection/Service

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

OPERATION



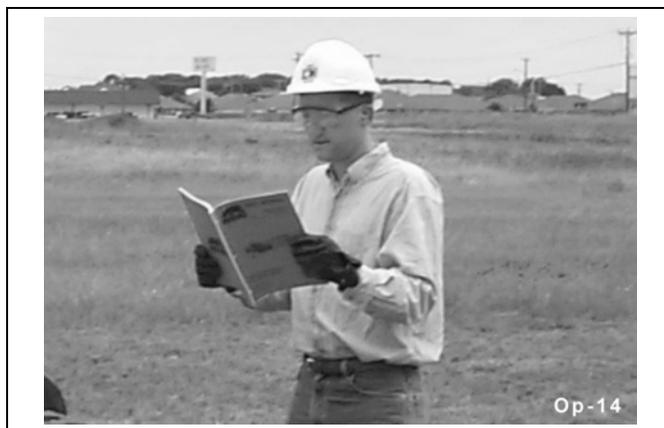
DANGER! All Safety Shields, Guards and Safety devices including (but not limited to) - the Deflectors, Steel Guards, Gearbox Shields, PTO integral shields, and Retractable Door Shields should be used and maintained in good working condition. All safety devices should be inspected carefully at least daily 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)



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)

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

- Ensure the manual canister is secured to the equipment with the operator's manual inside.
- Ensure all decals are in place and legible. Replace missing, damaged, and unlegible decals. *OPS-U-0011*
- Check that the main driveline is securely attached to the tractor and the locking collar is seated in the groove of the PTO Shaft.
- Inspect that the 3-point hitch pins are the proper size, correctly installed and secured to the tractor lift arms with retaining pins inserted.
- Ensure that a properly rated safety tow chain is equipped securing the mower to the tractor. *OPS-F-0015*



OPERATION

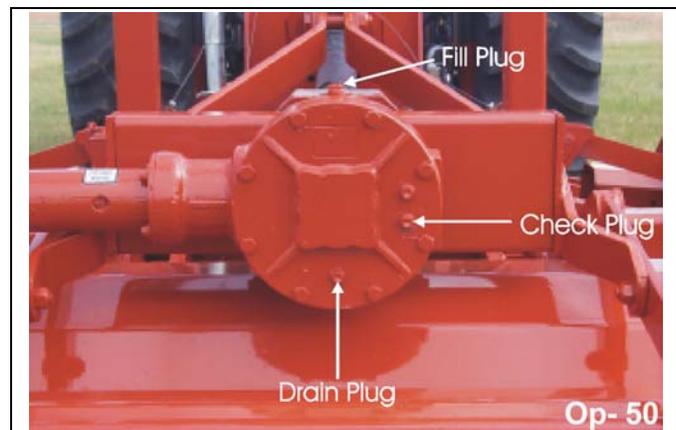
- Ensure rubber deflectors are in position and not damaged. Replace worn, broken, and missing sections immediately.
- Ensure the rollers are in good condition and rotate freely.
- Ensure the driveline integral shield is in good condition and rotate freely.
- Inspect that all bolts and screws are in position and are properly torqued. *OPS-F- 0004*



- Inspect the condition of the drive belts.
- Ensure the slip clutch (rear mower section only) is properly adjusted and the friction plates are not frozen together. Reference the Maintenance Section for proper slip clutch maintenance.
- Ensure the slop clutch shield and drive belts shields are in place and in good repair.
- Ensure the tractor PTO master shield is in place, lowered and in good condition. *OPS-F- 0016*



- .Inspect oil level in gearbox and replenish if needed. A low oil level is a warning sign that the gearbox may be cracked or its seal is damaged and needs to be replaced.
- Perform scheduled lubrication as specified in the maintenance section. *OPS-F- 0017*



OPERATION

OPERATION

- Inspect cutter knives and knife pins for looseness and excessive wear. Make sure the mower is securely blocked up before crawling beneath. Replace damaged, worn, and missing knives as complete sets to maintain cuttershaft balance.
- Remove any grass or other debris which may be wrapped around the cuttershafts.
- Inspect the condition of deck skid shoes and hardware. *OPS-F- 0007*



9. DRIVING THE TRACTOR AND IMPLEMENT

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

⚠ DANGER

This Implement 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)

OPERATION

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:

- 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.
- 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.
- 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

9.1 Starting the Tractor

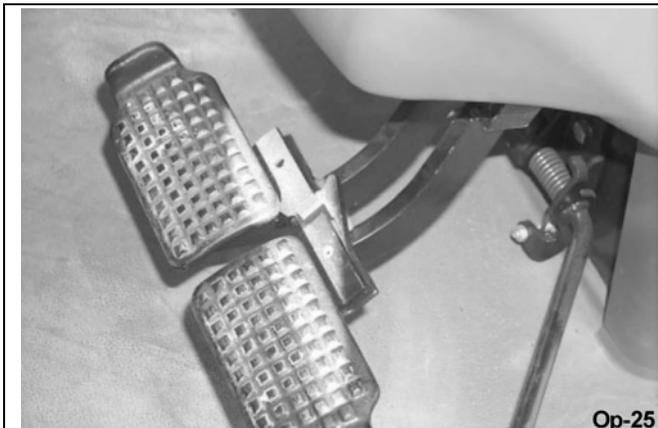
The procedure to start the tractor is model specific. Refer to the tractor operator's manual for starting procedures for your particular tractor. Consult an authorized dealer if the starting procedure is unclear. Ensure the 3-point control lever is in the lowered position and the PTO is disengaged before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



OPERATION

9.2 Brake and Differential Lock Setting

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



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

WARNING!



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

9.3 Raising the Mower

Using the tractor 3-point hitch control lever, raise the mower off the ground about 6", or just high enough to clear any ground obstacles. When raising the mower, make sure all connection points are securely attached and at least 1" clearance is maintained between the driveline and the deck. If necessary, place an upper lift strip on the 3-point hitch control lever to limit the height the mower can be raised to avoid driveline damage.



OPERATION

9.4 Driving the Tractor and Mower

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

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

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



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

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

OPS-F- 0018



WARNING!



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.

Turning Procedure

Pull-type units - Pull-type units are fitted with an equal angle hitch to allow operating during turns. Do not disengage PTO at end of row. Reduce speed and RPM slightly and proceed with turn. Make wide turns to reduce load on driveline caused by high joint angles.

OPERATION

Lift-type units - Do not disengage PTO at end of row. Reduce speed and lower RPM. Raise 3-Point lift and proceed with turn. Only raise machine sufficiently to clear from turn. High loads are placed on U-Joints when shredder is raised at steep angles causing premature wear and driveline failure. Raise RPM slowly and bring machine up to speed before entering cut.

Optimum speed should be maintained while shredding. Increasing forward speed adversely effects the shredding quality and result in larger material being discharged. Always be on the watch for foreign objects which could damage cutting reel.

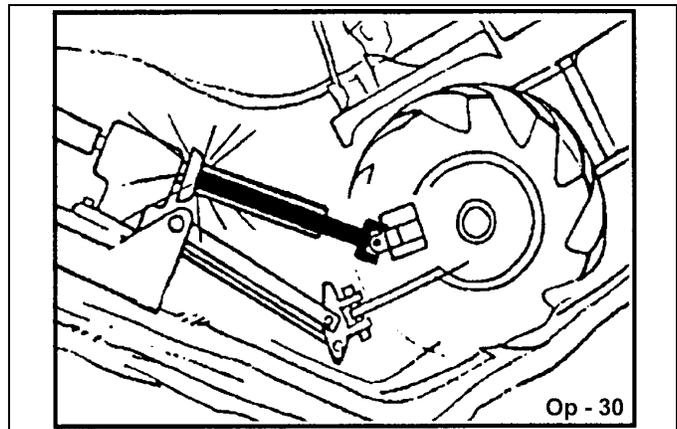
Stop machine if mower begins to vibrate excessively. Reduce RPM to idle speed, disengage PTO and stop tractor. Wait for all rotation to cease before dismounting tractor. Check for missing or broken knives.

CAUTION! Never operate machine while knives are missing.



9.5 Crossing Ditches and Steep Inclines

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



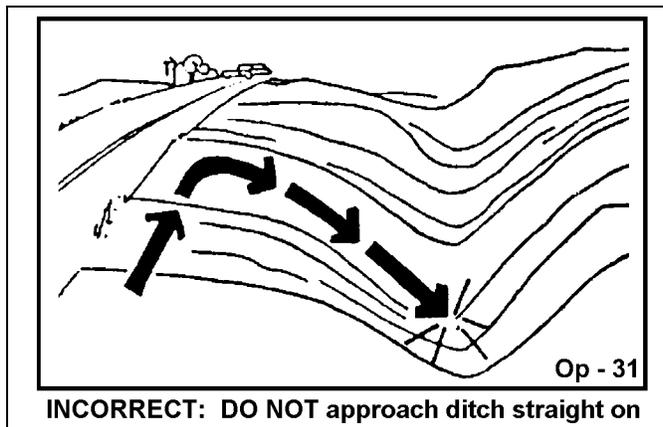
WARNING! Damage resulting from over-collapse of the driveline's inner profile and its outer housing may allow the driveline to come loose from the Tractor which could cause bodily injury to the operator or bystanders and/or extensive damage to the Tractor or Implement. *OPS-R-0020*



OPERATION

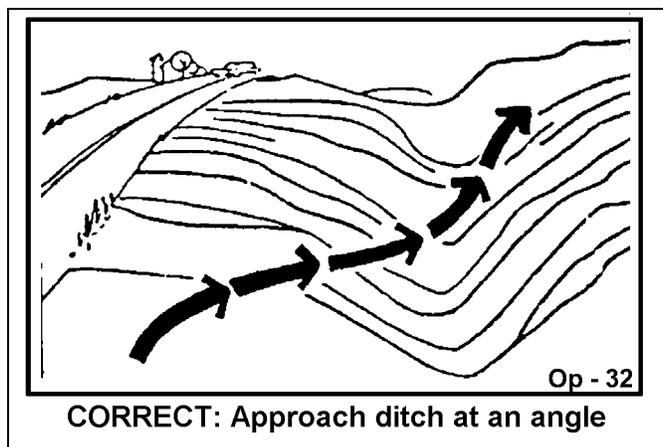
When confronted with an incline or ditch, do not approach from an angle which is perpendicular or straight on as damage to over collapse of the driveline may occur.

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



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

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



10. OPERATING THE TRACTOR AND IMPLEMENT

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

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

OPERATION

⚠ 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)

OPERATION

10.1 Foreign Debris Hazards

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

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

Always wear your seat belt securely fastened and only operate the tractor and mower with the ROPS in the raised position. If the tractor or mower hits a tree stump, rock, or bump, a sudden movement could throw you off of the seat and under the tractor and/or mower. The seat belt is your best protection from falling off the tractor and the ROPS provides protection from being crushed during a tractor roll-over. OPS-F-0010_A



Op - 33



10.2 Bystanders/Passersby Precautions

If a bystander comes within 100 yards of the tractor while the mower is being operated, stop the tractor at once, idle the engine and disengage the PTO. Do not engage the PTO again until all bystanders are well past the 100 yard distance. OPS-R-0024

OPERATION

OPERATION

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)

10.3 Engaging the Power Take Off (PTO)

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

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

WARNING

Do not let the Blades turn when the Mower Deck is raised for any reason, including clearance or for turning. Raising the Mower deck exposes the Cutting Blades which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the Blades. (SRM-7)



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



OPERATION

10.4 PTO RPM and Ground Speed

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

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



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



Mow at the speed that you can safely operate and control the tractor and mower. 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)

10.5 Operating the Mower

Only operate the mower from the tractor operator's seat with the seatbelt securely fastened on a ROPS or cab equipped tractor. The mower is designed for cutting grass and small weeds. Sharp blades will produce a cleaner cut and require less power. Travel at a speed that allows the mower sufficient time to cut through the vegetation and maintain the PTO operating speed to prevent overloading the mower and tractor. Choose a driving pattern that provides the maximum pass length and minimizes turning. Stay alert and watch for trees, low hanging limbs, power lines, and other overhead obstacles and solid ground objects while you are operating.

Under some conditions, tractor tires may roll vegetation down preventing a cut at the same height as the surrounding area. To minimize this problem, reduce the tractor ground speed while maintaining the operating speed of the mower. A slower ground speed allows grasses to partially rebound and be cut. Reversing the direction of travel may also help produce a cleaner cut in these conditions.

Avoid mowing in the reverse direction. If the mower must be backed to access an area to cut, make sure there are no persons or other foreign debris behind the mower before mowing in reverse. When mowing in reverse, operate the tractor and mower at a reduced ground speed to ensure control of the tractor and mower is maintained. *OPS-F-0020*

OPERATION

⚠ WARNING

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

⚠ WARNING

Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see at least 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 these type of items discontinue mowing. (SGM-1)

⚠ WARNING

Avoid mowing in reverse direction when possible. Check to make sure there are no persons behind the mower and use extreme care when 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 that you have not inspected and removed debris or foreign material. (SGM-8)

⚠ WARNING

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



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

OPERATION

10.6 Shutting Down the Implement

To shut down the implement, first bring the tractor to a complete stop. Then slow down the implement by reducing the engine speed before disengaging the PTO. Wait for all motion to stop before proceeding to drive or shut down the tractor.



Park the tractor on a level surface, place the transmission in park or neutral and apply the parking brake, lower the attached implement to the ground, shut down the engine, remove the key, and wait for all motion to come to a complete stop before exiting the tractor. *OPS-F- 0011*



OPERATION

11. DISCONNECTING THE MOWER FROM THE TRACTOR

Before disconnecting the mower, the PTO must be disengaged and all motion at a complete stop. Move the mower to a level storage location and lower to the ground. If the mower is not resting securely on the ground, block the mower up securely before attempting to disconnect it from the tractor. Use extreme care to keep feet and hands from under the mower and clear of any pinch points.

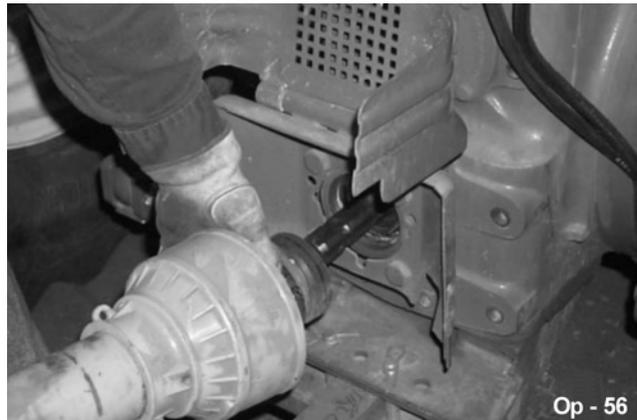


To disconnect the implement, first extend the tractor 3-point hitch top link to remove tension on the top link hitch pin. When the pin is loose and easy to rotate, remove the pin from the mower. Next remove both lower hitch pins.

Use extreme care to keep feet and hands from under the mower and clear of any pinch points.

OPS-F-0012_A

After disconnecting the 3 lift points, remove the mower driveline from the tractor PTO shaft. Lay the driveline down carefully to avoid damaging the driveline or its shield. Do not let the driveline fall into mud or dirt, which can contaminate the bearing and shorten the life of the driveline.
OPS-F-0013



▲ 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)



▲ 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)

OPERATION

DANGER!



Never stand or allow another person to stand between a running Tractor and the Mower when disconnecting the Implement from the Tractor 3-point hitch. Always shut the Tractor off completely and set the parking brake before attempting to disconnect the Mower pins from the Tractor hitch.

12. MOWER STORAGE

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

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

It is critical that the driveline clutch slip when an obstacle or heavy load is encountered to avoid mower and/or tractor damage. If the mower sits outside for an extended period of time or is exposed to rain and/or humid air, the clutch lining plates must be inspected to ensure they are not frozen together from rust or corrosion. If the mower has been exposed to such conditions, at the start of each mowing season, and any time it is suspected that the slip clutch plates may be frozen together, readjust the slip clutch as detailed in Clutch Maintenance section of this manual. *OPS-F-0014_A*



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)

13. TRANSPORTING THE TRACTOR AND IMPLEMENT

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



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)



OPERATION

OPERATION

Before transporting the tractor and mower, idle the tractor engine, disengage the PTO and wait for all mower moving parts to come to a complete stop. Raise the mower sections and ensure transport locks engage. *OPS-F- 0021*



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

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



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

OPERATION

13.1 Transporting on Public Roadways

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

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

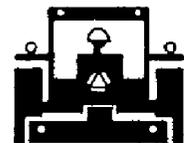
WARNING Only tow the Implement behind a properly sized and equipped Tractor which exceeds the weight of the Implement by at least 20%. **DO NOT** tow the Implement behind a truck or other type of vehicle. Never tow the Implement and another Implement connected in tandem. Never tow the Implement at speeds over 20 MPH. (STI-6)



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



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



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



OPERATION

OPERATION

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



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



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



OPERATION

13.2 Hauling the Tractor and Implement

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



Use adequately sized and rated trailers and equipment to transport the tractor and implement. Consult an authorized dealer to determine the proper equipment required. Using adequately sized chains, heavy duty straps, cables and/or binders, securely tie down both the front and rear of the tractor utilizing the proper tie down locations as specified by the tractor manufacturer. *OPS-U- 0025*



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

OPERATION

TROUBLE SHOOTING GUIDE

Problem	Possible Cause	Remedy
Excessive Vibrations	Check gearbox bolts.	Tighten if loose
	Check for missing knives on cutter shaft.	Replace missing knives
	Check to see if knives are free swinging.	Free knives so they swing.
	Blade broken or bent.	Replace blades.
	Cuttershaft bent.	Replace cuttershaft.
	Drivelines not phased correctly.	Replace driveline.
	Implement & Tractor yokes must be in line.	
Gearbox Overheating	Cuttershaft bearing worn	Replace bearings
	Low on lubricant. Improper type lubricant. Excessive trash build-up around gearbox. Bearing or gears set up improperly.	Fill to level plug. Replace with proper lubricant. Remove trash. Consult your Dealer.
Gearbox Noisy	Rough Gears. Worn Bearing.	Run in or change gears. Replace bearing.
Noise	Damaged Belt Shield (Rubbing on pulleys or belt).	Straighten or replace Shields.
	Worn Bearing or Gear.	Replace Bearing or Gear.
Gearbox Leaking	Damaged oil seal	Replace seal.
	Bent shaft.	Replace oil seal and shaft.
	Shaft rough in oil seal area.	Replace or repair shaft.
	Oil seal installed wrong.	Replace seal.
	Oil seal not sealing in the housing.	Replace seal or use a sealant on OD of Seal.
	Oil level too high.	Drain oil to proper level.
	Sand hole is casting.	Replace castings or gearbox.
	Gasket damaged.	Replace gasket.
Bolts loose.	Tighten bolts.	

OPERATION

Clutch Slips Excessively	<p>Clutch linings badly worn or plates warped. Too much power for clutch.</p> <p>Oil on facings. Friction facings glazed.</p>	<p>Repair clutch per maintenance section of manuals. Reduce ground speed and material intake. Replace facings. Clean with emery cloth.</p>
Knives Wear Too Fast	<p>Cutting in sandy conditions. Cutting in rocky conditions. Soft "will fit" knives.</p>	<p>Increase cutting height. Increase cutting height. Use genuine Rhino knives.</p>
Discharging Bunches or Clogging-	<p>Belt installed improperly. Blades dull. Grass too wet. Grass too long. Travel speed too fast. PTO RPM too low.</p>	<p>Check belt for correct set-up. Check blades for sharpness. Wait for grass to dry. Mow at 3-1/2" and recut lower. Use a lower tractor gear. Mow at engine RPM to match 540 PTO RPM.</p>
Blades Scalping High Places	<p>Mowing too low. Rough, uneven ground.</p> <p>Turning Tractor too fast.</p>	<p>Raise height of cut. Use a slower speed. Lower rollers. Slow down when turning.</p>
Uneven Cut	<p>Travel speed too fast. Mower deck not level. Blades dull or unbalanced. Deck underside plugged. Grass too high.</p>	<p>Use a slower speed. Level the mowing deck. Sharpen or balance blades. Clean underside of deck. Mow at 3-1/2" and recut lower.</p>
Grass Clippings Windrow or clump	<p>Grass too wet. Grass too high. Housing plugged.</p>	<p>Wait for grass to dry. Mow at 3-1/2" and recut lower. Clean underside of deck.</p>
Grass Not being Cut Evenly	<p>Belt worn or slipping. Spring broke & belt off idler. Housing plugged. Debris around pulleys.</p> <p>Grass too high.</p>	<p>Replace or adjust belt. Replace spring or adjust belt. Clean underside of housing. Remove deck belt shield and clean out debris. Mow at 3-1/2" and recut lower.</p>

MAINTENANCE

MAINTENANCE

MAINTENANCE SECTION

MAINTENANCE

GENERAL MAINTENANCE

Before doing any maintenance or adjusting on the mower always stop the tractor, place in park, remove the ignition key, and wait for all mower rotation to stop. Place adequate support bracing as need to safely work on the mower.

In the day operation of the RC12 the operator should:

Check for and tightened any loose bolts and shields.

Lubricate all fittings every 8 hrs. See **Lubrication**.

Periodically check fluid level in gearbox. See **Lubrication**.

Periodically check belt for correct tension, and remove any debris from inside shield. See **Belt Drive**

Always inspect cutting reel for missing knives or hangers before operation. See **Knives**

Replace any missing or unreadable decals.

Carefully investigate any problems, noises, or excessive vibration.

LUBRICATION

Lubricate the driveline shaft slides and all universal joints every 8 hours. Grease PTO shaft as outlined on the diagram located on the rear of the deck. Grease all bearings and grease points before operating mower and after every 8 hours of operation.

The gearbox is shipped with the proper amount of Chevron Delo gear lubricant 80w-90w (Rhino p/n 00724177). Check the level of the gearbox. The oil level should be filled to the bottom of the plug at the rear of the gear box. Do not overfill the gearbox as this will damage the seals. The gearbox lubricant should be changed after 100 hours of operation and every 1000 hours of operation thereafter. The gearbox requires approximately 6 quarts of lubricant.

LUBRICATE MOWER BEFORE INITIAL USE. LUBRICATE ALL LOCATIONS INDICATED EVERY 8 HOURS WITH A CLEAN, LITHIUM-BASED NO. 2 GREASE. WIPE OFF FITTINGS AND END OF GREASE GUN BEFORE ATTACHING GREASE GUN.

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

The wheel bearings should be inspected and re-packed yearly.

Before each day's use, follow this procedure:

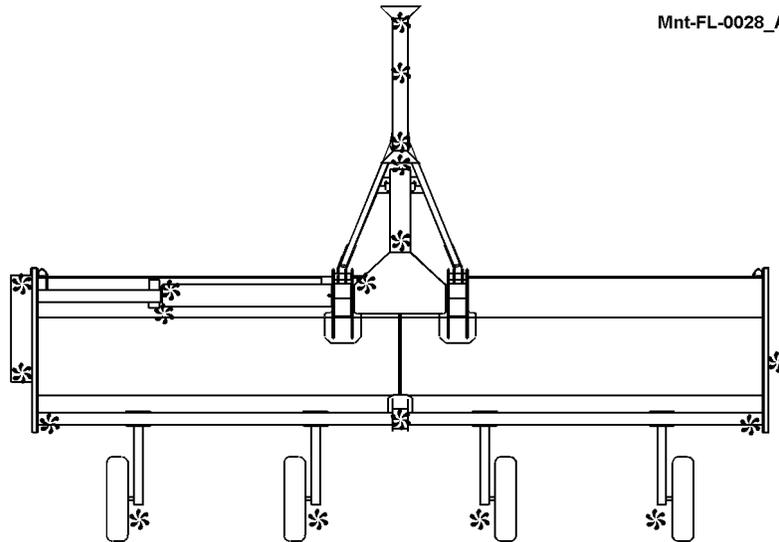
- Visually check the unit and make certain all items are properly tightened.
- Check the rotor shaft to make certain it is fully knifed. Replace any missing knives, then run the unit at full speed to check for vibrations. Do not operate the unit in an out-of-balance condition.

DANGER! Before doing maintenance, turn off power and securely block up mower.



NOTE: See Lubrication chart Mnt-FL-0028_A on following page, 5-3.

MAINTENANCE



Lubrication Points

To lubricate telescoping section of driveline, disconnect yoke from tractor and compress driveline until both slots on shields are aligned and grease fitting is exposed. Lubricate both u-joints before re-attaching to tractor. Inspect shields to ensure they rotate freely, replace bearings or shield if damaged.

ROUTINE MAINTENANCE:

Inspect belt drive for correct tension and remove any debris from inside belt shields. Incorrect tension will result in premature belt failure. Check belt tension after first hour of operation. **Mnt-FL-0029_A.**

Inspect for and tighten any loose fasteners.

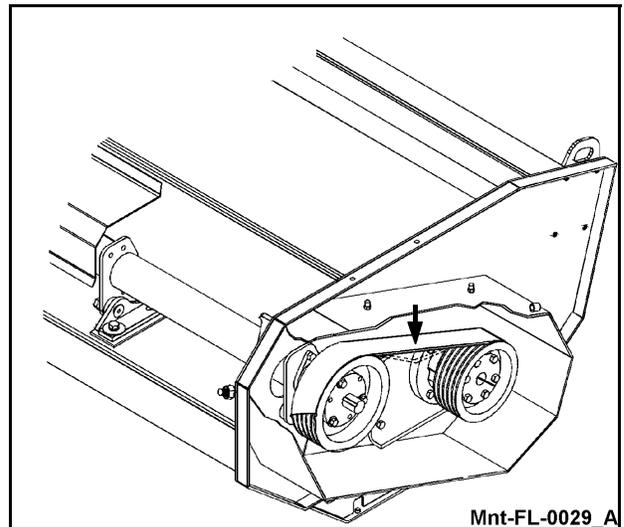
Routinely inspect cutter shaft for missing or worn knives. Replace knives as outlined in Blade Replacement Procedure, Maintenance Section, page 5-4.

Clear any debris from gear box area, to prevent overheating. Clean area around breather plug regularly.

Always ensure all hitch pins and clips are locked in place before operation.

Inspect bearing assemblies to ensure locking collars are locked in place. See Section 4.4.1 for locking procedure.

All shielding must be in place before operating shredder. Inspect front rubber shield for wear and replace if necessary.



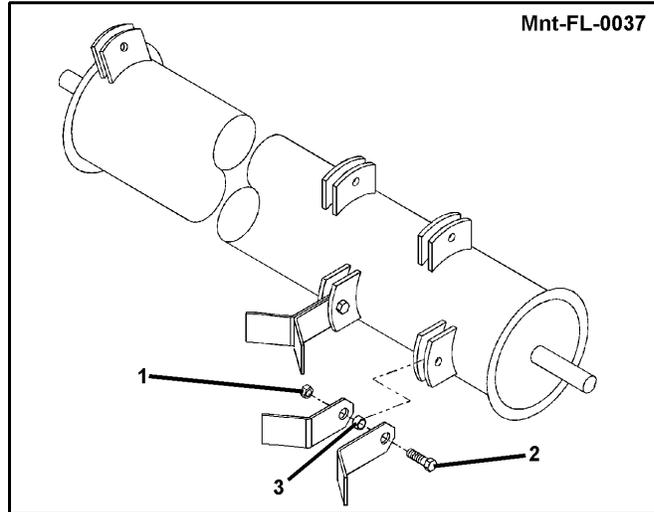
MAINTENANCE

CUTTER SHAFT

Routinely inspect cutter shaft for and replace any worn or damaged blades. When replacing worn blades always replace blade set directly opposite, (180 degrees) otherwise cutter shaft will be out of balance. Inspect bushing and bolt for wear and replace if necessary. Remove any debris which may become entangled around cutter shaft or bearings. Stop machine at first sign of excessive vibration and inspect cutter shaft and bearings.

BLADE REPLACEMENT

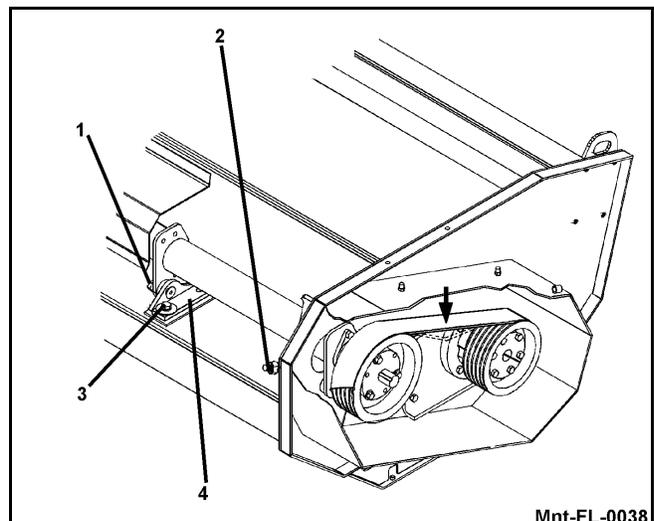
- Remove locknut (item 1), bolt (item 2), and inspect bushing (item 3) and bolt for wear. Replace if worn.
- Place new knives on bushing and insert between reel clip.



BELT ADJUSTMENT AND REPLACEMENT

To adjust belt, loosen both pivot bolts slightly (item 1), and tighten nut on tension rod (item 2), which pivots drive assembly forward to tension belt. Correctly tensioned belt should require a maximum of 85 lbs force across entire band to deflect belt 3/8" as illustrated. Do not over-tension belt as excessive loads will be placed on bearings. Tighten pivot bolts and lock in place with jam nuts.

To replace belt, loosen both pivot bolts (item 1), undo nuts from tension rod (item 2) and rotate drive tube assembly toward deck. Install new banded belt and rotate drive assembly forward by placing pry-bar in tube on front of assembly. Feed tension rod through slot as the tube is rotated forward and attach washer and adjustment nut. Before tensioning belt lightly tighten pivot bolts to remove play from pivot points. Tension belt as outlined above. Always check belt alignment after installing new belt.

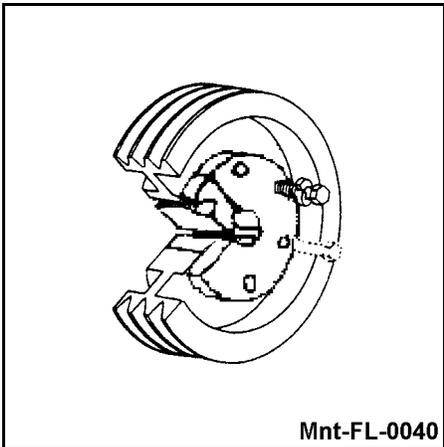
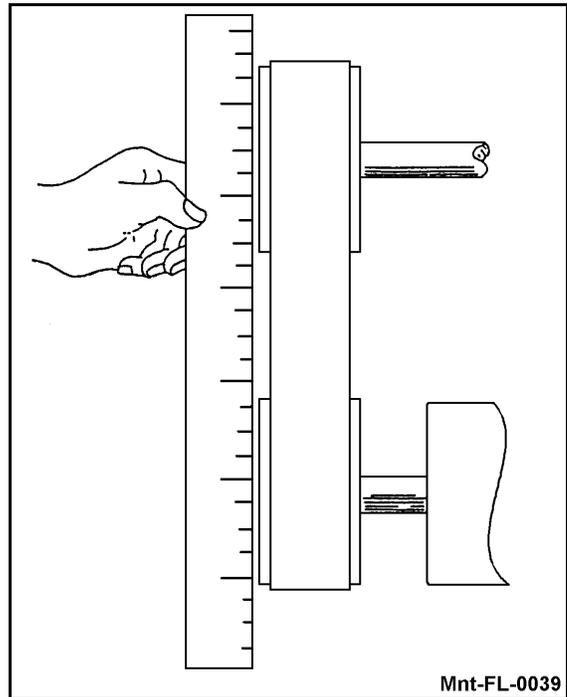


MAINTENANCE

PULLEY ALIGNMENT AND REMOVAL

Pulleys will remain aligned during belt tension if inside pivot mount bolts (item 3) have not been loosened. Check alignment of pulleys by placing a straight edge along flat face of both pulleys. Check alignment at lower and upper end of pulley face when belt is tensioned.

If pulleys are not correctly aligned check tightness of pivot bolts (3). Drive tube inner mount (4) is slotted and may be moved toward front, rear or shimmed for height adjustment to correct pulley alignment. **Mnt-FL-0039.**



To relocate pulleys on drive and cuttershaft, first loosen belt tension and check for shaft movement to ensure they are not loose or have moved. Mark present location of bushing on shaft for future reference. Pulleys are locked to shaft by a tapered hub bushing. Loosen socket head set screw located above key. Loosen and remove all mounting cap screws in bushing. Insert cap screws in all threaded jack screw holes on bushing. Start with the screw furthest from the bushing slot and tighten all screws alternately and progressively. Keep turning the screws in small equal amounts until the bushing and pulley start disengaging. **Mnt-FL-0040.**

CAUTION! Uneven pressure on the jack screws may break the bushing flange.



Once both pulley and hub start separating, attempt to move assembly on shaft.

MAINTENANCE

CAUTION!

Never hammer edge of pulley which may crack. To move assembly, a soft blow hammer may be used on bushing only.



If the pulley is free and the bushing is still tight on shaft, it may be necessary to wedge a screwdriver in saw slot of bushing to loosen and move hub.

CAUTION!

Do not apply excessive force which may split bushing.



CAUTION!

Never apply lubrication to threads or mating surfaces when assembling pulley and bushing.



After correctly locating hub and placing key in shaft keyway, move pulley into position over taper hub and align tapped holes with through holes in hub. Install all mounting cap screws . Carefully tighten the cap screws alternately and progressively until tapers are seated. Check alignment of pulley and proceed to carefully tighten to 40 ft lbs torque. Maximum torque should be reached on each individual bolt only twice in the consecutive tightening.

MAINTENANCE

CUTTER SHAFT AND BEARING REMOVAL

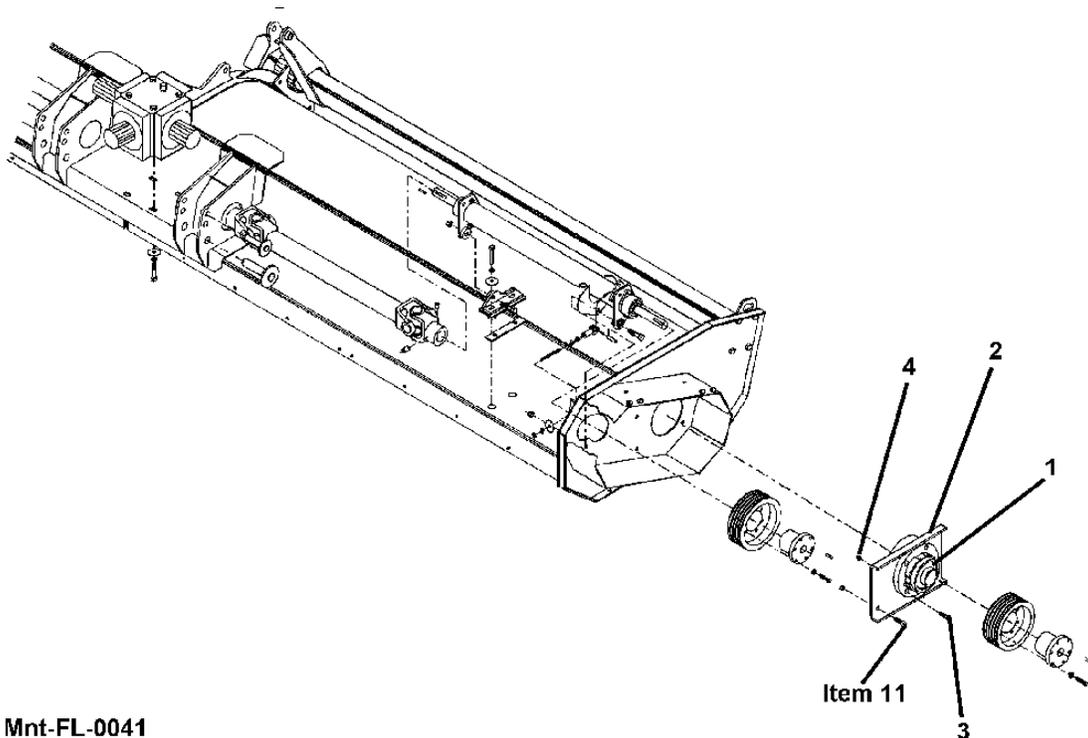
Cutter Shaft Bearing Removal - Mnt-FL-0041

OUTER CUTTER SHAFT BEARING REMOVAL:

- Remove belt; disconnect tension rod; loosen adjustment tube pivot points bolts; rotate assembly toward deck; remove belt.
- Remove lower sheave: see Maintenance 5-6.
- Disconnect grease line.
- Remove both set screws from bearing lock collar. (NOTE: set screws align with dimples in shaft), set screws are lock tightly in place.
- Place floor jack under cuttershaft inside end plate to support weight of shaft.
- Remove dirt, debris, and paint from shaft.
- Unbolt bearing and mount plate assembly by removing four outer bolts. (**Mnt-FL-0041 - item 11**)
- Remove bearing from mount plate.

INSTALLATION:

Clean all debris from shaft. Attach bearing (1) to bearing plate (2) using four 5/8" bolts (3) and locknuts (4). Slide assembly over shaft and align set screws with dimples in shaft. Install lock collar and apply thread locking compound to set screws and tighten in place. Attach bearing assembly and plate with outer four 5/8" bolts. Install belt as outline in Maintenance 5-6.



MAINTENANCE

Cutter Shaft Removal

Support and block cutter shaft at both ends of bearings and support the shaft which is being removed under the drive side. Remove outer bearing as outlined in the Maintenance Section, page 5-7. Remove knockout which is fastened by 2-1/2" bolts. Remove free end skid.

WARNING! Shaft may drop or slide toward center and cause injury. Add sufficient support under both cuttershafts.



Use floor jack to lower the non-drive end of the cutter shaft. Remove bearing from drive end, page 5-7. Use floor jack to support drive end inside deck. Move toward free end to loosen. It is not necessary to remove shaft if only bearing is being serviced.

The center bearing is locked to the cutter shaft at two points (3). These set screws align with dimpled holes in the shaft and are "locktightened" in place. Remove both set screws. Both are secured with thread locking compound and may require considerable pressure to loosen. Clean shaft and remove any burrs before attempting to slide bearing outward on shaft.

To install the bearing, slide bearing over shaft and align set screws with dimples in shaft. Tighten both set screws securely to shaft. Lock with both set of set screws, apply a thread locking compound. Installation of shaft assembly is reverse of removal procedure.

TOP DRIVE ASSEMBLY SERVICING

To replace outboard bearing, remove belt and top pulley assembly as outlined in Maintenance Section, page 5-4. Clean all burrs from shaft and remove bearing and lock collar as outlined in Maintenance Section, page 5-7. Inner bearing can be replaced either by following above procedure and sliding shaft outward or by unbolting entire drive assembly.

Note: *On 20' models, pulley shaft is stepped down at bearing journals and cannot be slid through without unbolting bearing assembly.*

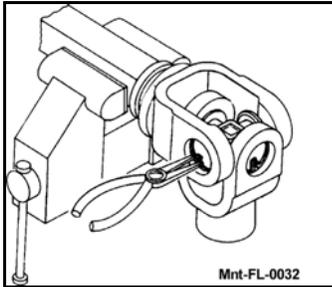
To replace inner bearing or top drive u-joints, first remove belt, pivot bolts and inboard mount weldment before sliding entire assembly toward pulley side. It may be necessary to remove set screws which lock top shaft to pulley shaft. There are no locking screws located on spline side by gear box.

MAINTENANCE

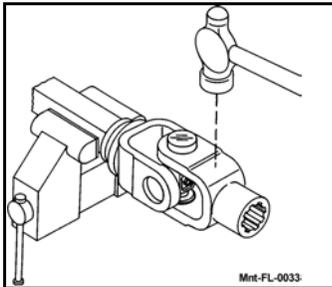
DRIVELINE:

Driveline Shield Replacement:

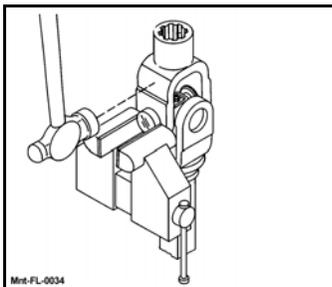
Slide apart both halves of driveline and remove shield by unfastening nylon bearing retainer. The Snap ring can be removed by inserting screwdriver under on end. Snap ring may also be accessed through slots in side of shield by bell-end. Always replace nylon bearing kit when installing a new shield. When assembling both portions of driveline, align phase key on end of square shaft half with groove in tube side.



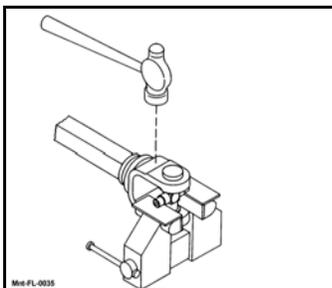
Step 1: To disassemble the universal joint, remove the four snap rings. **FIGURE Mnt-FL-0032.**



Step 2: With snap rings removed, support drive in vise, hold yoke in hand and tap on yoke to drive cup up out of yoke. **FIGURE Mnt-FL-0033.**

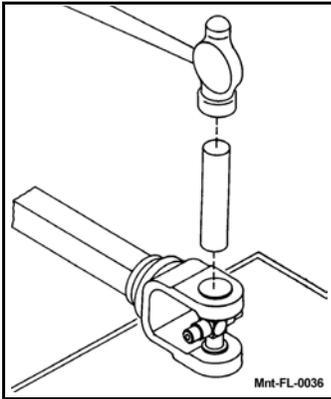


Step 3: Clamp vise as shown and tap on yoke to completely remove cup from yoke. Repeat step two and three for opposite cup **FIGURE Mnt-FL-0034.**



Step 4: Place universal cross in vise as shown and tap on yoke to remove cup. Repeat step 3 for final removal. Drive remaining cup out with drift and hammer. **FIGURE Mnt-FL-0035.**

MAINTENANCE



Step 5: To reassemble, place seals securely on bearing cups. Apply grease to needles to hold them in place. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup. Be careful not to disturb needle bearing. Insert another bearing directly across from bearing cup and press in as far as possible with hand pressure. Be sure journal cross is started into bearings and continue pressure with vice, squeezing in as far as possible. Tap yoke to aid in process.

Step 6: Seat cup by placing a drift or socket slightly smaller than the cup on the cup and squeeze in vise. Install snap ring and repeat on opposite cup. Repeat steps five and six to install remaining cups in remaining yoke.

FIGURE Mnt-FL-0036.

Move both yokes in all directions to check for free movement. Should movement be restricted, strike forged surfaces of yoke ears a sharp blow with a mallet to relieve any tension. Repeat until both yokes move in all directions without restriction.

Add universal lithium EP lubricating grease NLGI #2. Grease every 8 hours.

MAINTENANCE

MAINTENANCE

STORING THE RC12

- When storing the RC12 for an extended period of time, or at the end of a season, lubricate all bearings with enough grease to eliminate any cavities where water condensation may occur and cause damage. Refer to "Lubrication" for location of all grease fitting. Be sure the vent on top of the Gearbox is open.

NOTE: IMPORTANT - Use a hand grease gun. Do not over-lubricate. Too much grease may damage the bearing seals.

- Loosen the Set Nut and Spindle Jack to relieve drive belt tension.

NOTE: Before next season's use be sure to adjust the drive belt tension.

- Coat all exposed surfaces inside the mower with oil or grease to prevent rusting and pitting during storage.

Pre-season Check

1. Check the oil level in the Gearbox and lubricate all bearings. See "Lubrication".
2. Adjust drive belt tension. See "Belt Drive".
3. Inspect for missing and / or broken Blades / Knives. Replace as necessary. See "Knife Replacement".
4. Be sure that the Safety Guard is in place and secure.
5. Run the Orchard at a low RPM checking to make sure that all driveline parts are moving freely.

RHINO

LIMITED WARRANTY

1. LIMITED WARRANTIES

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

2. REMEDIES AND PROCEDURES.

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

The choice of remedy shall belong to Manufacturer.

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

3. LIMITATION OF LIABILITY.

- 3.01. MANUFACTURER DISCLAIMS ANY EXPRESS (EXCEPT AS SET FORTH HEREIN) AND IMPLIED WARRANTIES WITH RESPECT TO THE GOODS INCLUDING, BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
- 3.02. MANUFACTURER MAKES NO WARRANTY AS TO THE DESIGN, CAPABILITY, CAPACITY, OR SUITABILITY FOR USE OF THE GOODS.
- 3.03. EXCEPT AS PROVIDED HEREIN, MANUFACTURER SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO PURCHASER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS, OR DAMAGE CAUSED OR ALLEGED TO BE CAUSED DIRECTLY OR INDIRECTLY BY THE GOODS INCLUDING, BUT NOT LIMITED TO, ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES RESULTING FROM THE USE OR OPERATION OF THE GOODS OR ANY BREACH OF THIS WARRANTY. NOT WITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, MANUFACTURER'S LIABILITY HEREUNDER FOR DAMAGES INCURRED BY PURCHASER OR OTHERS SHALL NOT EXCEED THE PRICE OF THE GOODS.
- 3.04. NO ACTION ARISING OUT OF ANY CLAIMED BREACH OF THIS WARRANTY OR TRANSACTIONS UNDER THIS WARRANTY MAY BE BROUGHT MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS OCCURRED.

4. MISCELLANEOUS.

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

KEEP FOR YOUR RECORDS

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

Servis-Rhino Implement Model _____

Serial Number _____

Date Purchased _____

Dealer _____

ATTENTION: _____

READ YOUR OPERATOR'S MANUAL

Rhino

An Alamo Group Company
1020 S. Sangamon Ave.
Gibson City, IL 60936
800-446-5158

Email: parts@servis-rhino.com





TO THE OWNER/OPERATOR/DEALER

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

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

REQUIRED OF THE OWNER:

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

REQUIRED OF THE OPERATOR

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

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- Keep children away from danger all day, every day.
 - Equip tractors with rollover protection (ROPS) and keep all machinery guards in place.
 - Please work, drive, play and live each day with care and concern for your safety and that of your family and fellow citizens.

