



# FA513, 613, 713

MOWERS

REVISED 09/16

PART NO. 00788552C

## 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



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## To the Owner/Operator/Dealer

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

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

# ! DANGER

FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE SERIOUS BODILY INJURY OR EVEN DEATH TO OPERATOR AND OTHERS IN THE AREA.

<b>1.</b> 	<b>2. NO RIDERS. NO CHILDREN OPERATORS.</b> 	<b>3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEAT BELTS, &amp; ROPS</b> 	<b>4. BLOCK UP SECURELY BEFORE WORKING UNDER.</b> 
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1. Study and understand operator's manual, safety signs, and Instructional decals for tractor and implement to prevent misuse, abuse, and accidents.  
● Learn how to stop engine suddenly in an emergency. Be alert for passerby and especially children.

2. Allow no children on or near implement or tractor. Allow no riders on tractor and implement. Falling off may cause serious injury or death from being run over by tractor or cutter or contact with rotating blades.

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.

4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted components to prevent crushing injury or death from sudden dropping or inadvertent operation of controls. Make certain area is clear before lowering or folding.

5. Before transporting, put Lift Lever in detent or full-lift position. Secure the implement for transport by installing Cylinder Stops or Transport Pin on Pull-type implement center axle and Wing Transport Locks on folding implements.  
● Attach Safety Chain to cutter and towing unit securely. See Operator's Manual.

6. Make certain that the SMV sign, Warning Lights, and Reflectors are clearly visible. Follow local traffic codes.

7. Never operate with Cutting Head raised if passerby, bystanders, or traffic are in the area to reduce possibility of injury or death from Objects thrown by Blades under Guard or cutter structure.

8. Before dismounting, secure implement in transport position or lower to ground.  
● Put tractor in park or set the brake, disengage PTO, stop engine, and remove key, and wait until noise of rotation has ceased to prevent entanglement in rotating parts which can cause injury or death.  
● Never mount or dismount a moving vehicle. Crushing from runover may cause injury or death.

<b>5. TRANSPORT SAFELY, LOCK UP.</b> 	<b>6. USE SMV, LIGHTS, &amp; REFLECTORS.</b> 	<b>7. DO NOT OPERATE WITH CUTTER OR WING RAISED.</b> 	<b>8. DO NOT MOUNT OR DISMOUNT WHILE MOVING.</b> 
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### WARRANTY INFORMATION:

Read and understand the complete Warranty Statement found in this manual. Make sure your dealer has completed the warranty registration online at [www.alamoag.com](http://www.alamoag.com). Record your machine's model and serial numbers, the purchase date, and your dealer name in the spaces provided on the Warranty Statement page for future reference.

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# **SAFETY SECTION**

# SAFETY SECTION

## General Safety Instructions and Practices

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



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

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

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

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

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

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

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

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.

**⚠ PELIGRO** Si no lee ingles, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad.



## Operator Safety Instructions and Practices

**⚠ WARNING** The rotating parts of this machine continue to rotate even after the PTO has been turned off. The operator should remain in the operator's seat for 60 seconds after the brake has been set, the PTO disengaged, the tractor turned off, and all evidence of rotation has ceased.

**"Wait a minute...Save a life!"**

**⚠ WARNING** Always maintain the safety signs in good readable condition. If the safety signs are missing, damaged, or unreadable, obtain and install replacement safety signs immediately.

**⚠ 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.

**⚠ 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.



## SAFETY SECTION

### ⚠ WARNING

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



### ⚠ 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.



### ⚠ WARNING

Always read carefully and comply fully with the manufacturer's instructions when handling oil, solvents, cleansers, and any other chemical agent.



### ⚠ DANGER

**KEEP AWAY FROM ROTATING ELEMENTS** to prevent entanglement and possible serious injury or death.



### ⚠ 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. Inadvertent contact with controls can cause the Implement to shift or fall crushing themselves or others.

### ⚠ 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.



### ⚠ WARNING

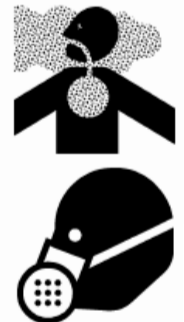
Prolonged operation may cause operator boredom and fatigue affecting safe operation. Take scheduled work breaks to help prevent these potentially impaired operating conditions. Never operate the Implement and Tractor in a fatigued or bored mental state which impairs proper and safe operation.

### ⚠ DANGER

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

### ⚠ WARNING

Repeated or substantial breathing of hazardous dusts, including crystalline silica, could cause fatal or serious respiratory disease including silicosis. Concrete, masonry, many types of rock, and various other materials contain silica sand. California lists respirable crystalline silica as a substance known to cause cancer. Operation of this equipment under certain conditions may generate airborne dust particles that could contain crystalline silica. In those conditions, personal protective equipment including an appropriate respirator must be used. If excessive dust is generated, a dust collection or suppression system should also be used during operation.



### ⚠ WARNING

For your protection while operating or servicing equipment, wear relatively tight and belted clothing to avoid entanglement in moving parts. Tie up and protect long hair that could become entangled in machinery. Remove all jewelry including necklaces, rings and watches which can get caught in machinery or on corners or edges of the equipment. Serious injury can result from entanglement with the machinery. (SG-42)

## SAFETY SECTION

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



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

**⚠ DANGER** Do not operate the implement while wearing loose fitting clothing. Entanglement of the clothing with the rotating elements can result in serious injury or even death. Stay clear of all rotating elements at all times.

### Equipment Operation Safety Instructions and Practices

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

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

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

**⚠ WARNING** Do not operate Mower if excessive vibration exists. Shut down PTO and the Tractor engine. Inspect the Mower to determine the source of the vibration. If Mower blades are missing or damaged replace them immediately. Do not operate the mower until the blades have been replaced and the Mower operates smoothly. Operating the Mower with excessive vibration can result in component failure and broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the Mower to be operated with blades missing.

**⚠ DANGER** There are obvious and hidden potential hazards in the operation of this Mower. REMEMBER! This machine is often operated in weeds and in heavy grass. 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. (SFM-1)



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



STOP MOWING IF PASSERSBY ARE WITHIN 300 FEET UNLESS:

- Mower Deck Shielding, and Discharge Deflector are installed and in good, working condition;
- Mower section is running close to and parallel with the ground without exposed Blades;
- Passersby are outside the existing thrown-object zone;
- All areas have been thoroughly inspected and all foreign material such as rocks, cans, glass, and general debris has been removed.

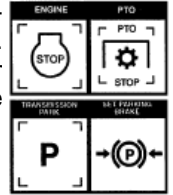
NOTE: Where there are grass and weeds high enough to hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height, inspected closely with any remaining debris being removed, and mowed again at desired final height. (This will also reduce power required to mow, reduce wear and tear on the Mower drivetrain, spread cut material better, reduce streaking, and make the final cut more uniform). (SFM-3)

# SAFETY SECTION

**WARNING** Operate this Equipment only with a Tractor equipped with an approved rollover-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.



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



**DANGER** Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in serious injury or death.



**WARNING** Do not mow with two machines in the same area except with Cab tractors with the windows closed.

**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.



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



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



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

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

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

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

**WARNING** Do Not operate this equipment in areas where insects such as bees may attack you and/or cause you to lose control of the equipment. If you must enter in such areas, use a tractor with an enclosed Cab and close the windows to prevent insects from entering. If a tractor cab is not available, wear suitable clothing including head, face, and hand protection to shield you from the insects. Attacking insects can cause you to lose control of the tractor, which can result in serious injury or death to you or bystanders. Never dismount a moving tractor. (SG-40)

## SAFETY SECTION

**⚠ WARNING** Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see at least 300 feet (90 m) in front and to the sides of the tractor and mower. Make sure that you can clearly see and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects. If you are unable to clearly see these type of items discontinue mowing. (SGM-1)

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



**⚠ 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-05)



**⚠ WARNING** Many varied objects, such as wire, cable, rope, or chains, can become entangled in the operating parts of the mower head. These items could then swing outside the housing at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the cutting area for such objects before mowing. Remove any like object from the site. Never allow the cutting blades to contact such items. (SGM-06)

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

**⚠ WARNING** Avoid mowing in reverse direction when possible. Check to make sure there are no persons behind the mower and use extreme care when maneuvering in reverse. Mow only at a slow ground speed where you can safely operate and control the tractor and mower. Never mow an area that you have not inspected and removed debris or foreign material. (SGM-08)

**⚠ WARNING** 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 under frame exhaust.
- Do Not smoke or have an open flame near the Mower and Tractor.
- Do Not drive into burning debris or freshly burnt areas.
- Ensure slip clutches are properly adjusted to prevent excessive slippage and plate heating.
- Never allow clippings or debris to collect near drivelines, slip clutches, and gearboxes.



Periodically shut down the Tractor and Mower and clean clippings and collected debris from the mower deck. (SGM-12)

**⚠ 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 nonvegetative 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)



## SAFETY SECTION

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

**⚠ DANGER** Use extreme caution when raising the Mower above ground level. Stop the Blades from turning when the Mower is raised and passersby are within 100 yards. Raising the Mower exposes the Cutting Blades which creates a potentially serious hazard and can cause serious injury by objects thrown from the Blades or by contact with the Blades. (SPU-1)

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



### STOP MOWING IF PASSERSBY ARE WITHIN 300 Feet UNLESS:

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

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

**⚠ 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-04)

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



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

**⚠ 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. Push and pull the driveline back and forth several times to ensure it is securely attached. 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 driveline can cause personal injury. (S3PT-18)

## SAFETY SECTION

**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-02)

**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)



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



Before transporting the Tractor and Implement, determine the proper transport speeds for you and the equipment. Make sure you abide by the following rules:

Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum transport speed not to exceed 20 mph (30 kph) for transporting this equipment. Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that the equipment can be operated at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum turning speed for you and this equipment before operating on roads or uneven ground. Only transport the Tractor and Implement at the speeds which allow you to properly control the equipment.



Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes or worn tires. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)

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

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



**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)



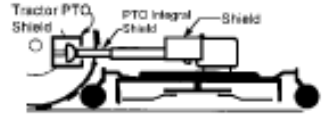
# SAFETY SECTION

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



**⚠ 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 Discharge Deflectors, Steel Guards, Gearbox Shields, Belt Shields, and PTO 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. (SFM-2)



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

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

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



**⚠ WARNING** Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. (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)

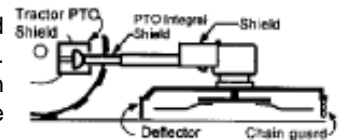


**⚠ DANGER** Do Not fill fuel tank while engine is running. Refuel only after engine has cooled down. If fuel is spilled, move machine away from the area of the spill and avoid creating any source of ignition until the gasoline has evaporated. (SG-28)

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

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

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



## SAFETY SECTION

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

**⚠ 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

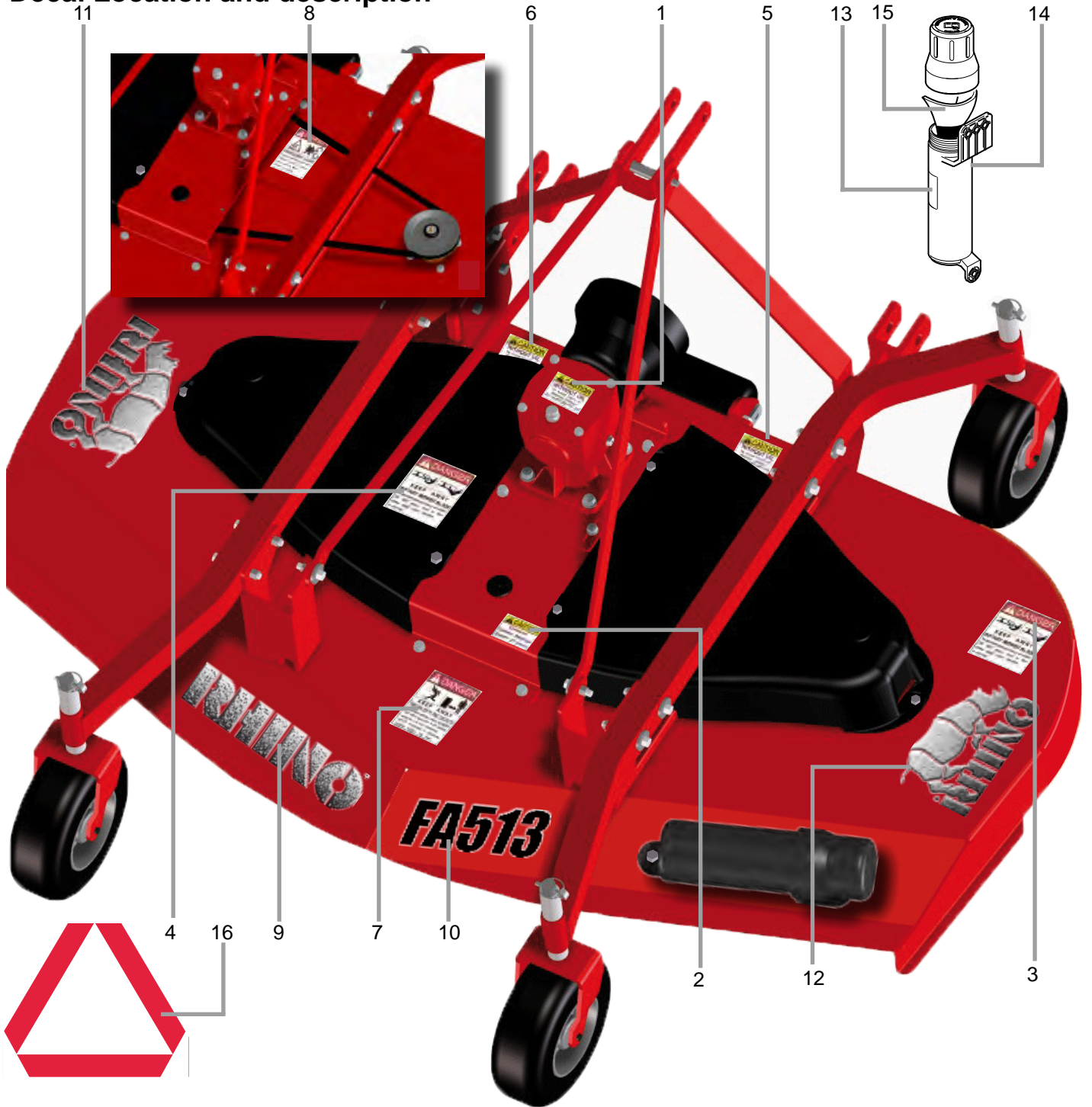
**⚠ WARNING** Be sure you have adequate knowledge of the property you will be working on. Take time to make yourself aware of any area underwater or underground lines or cables. Contact with buried lines or cable could result in serious injury or death. (STL-1)

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

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

# SAFETY SECTION

## Decal Location and description



ITEM	PART NO.	QTY	TYPE	DESCRIZIONE	ITEM	PART NO.	QTY	TYPE	DESCRIZIONE
1	5782713	1	SAFETY DECALS	CAUTION: without oil	9	54691	1	RHINO	DECAL, RHINO SMALL
2	5782715	1	SAFETY DECALS	CAUTION: grease	10	00788533	1	NAME	FA513
3	5782717	1	SAFETY DECALS	DANGER: keep away	10	00788534	1	NAME	FA613
4	5782719	1	SAFETY DECALS	DANGER: entanglement hazard (OUT)	10	00788535	1	NAME	FA713
5	5782714	1	SAFETY DECALS	CAUTION: operate only WITH 540 RPM	11	55722	1	LOGO NAME	DECAL, RINO LOGO, LEFT
6	5782716	1	SAFETY DECALS	CAUTION: PTO direction	12	55723	1	LOGO NAME	DECAL, RINO LOGO, RIGHT
7	5782718	1	SAFETY DECALS	DANGER: keep away	13	00776481	1	SER PLT	Operator's Manual inside
8	5782720	2	SAFETY DECALS	DANGER: entanglement hazard (IN)	14	00776031	1	INSTRUCTION	Canister, operator's manual
					15	00788552C	1		Operator's manual
					16	03200347	*	REFLECT	Slow mowing vehicle

# SAFETY SECTION

P/N 00788591  
CAUTION: without oil



P/N 00788592  
CAUTION: grease



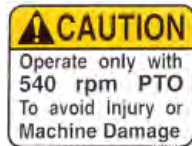
P/N 00788593  
DANGER: keep away



P/N 00788594  
DANGER: entanglement hazard (OUT)



P/N 00788595  
CAUTION: operate only WITH 540 RPM



P/N 00788596  
CAUTION: PTO direction



P/N 00788597  
keep away



P/N 00788598  
DANGER: entanglement hazard (IN)



P/N 55723  
DECAL, RINO LOGO, RIGHT



P/N 55722  
DECAL, RINO LOGO, LEFT



P/N 54691  
DECAL, RHINO SMALL



P/N 00788533  
NAME FA513



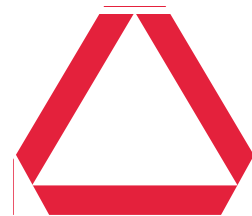
P/N 00788534  
NAME FA613



P/N 00788535  
NAME FA713



P/N 03200347  
Slow Moving Vehicle Decal. Keep MV reflector clean and visible. DO NOT transport or operate without the SMV. Provided by Tractor Manufacturer. Replace if missing on tractor.



P/N 00776031  
Read Operator's Manual! The operator's manual is located inside this canister. If the manual is missing order one from your dealer.





# SAFETY SECTION

## Federal Laws and Regulations

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

### Employer-Employee Operator Regulations

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

#### This Act Seeks:

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

#### DUTIES

Sec. 5 (a) Each employer-

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

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

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

### OSHA Training Requirements

*Title 29, Code of Federal Regulations Part 1928.57(a)(6).* [www.osha.gov](http://www.osha.gov)

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

Keep all guards in place when the machine is in operation;

Permit no riders on equipment

Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.

Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine.

### Employer Responsibilities:

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

1. Train the employee in the proper and safe operation of the Tractor and Implement.
2. Require that the employee read and fully understand the Tractor and Implement Operator's manual.
3. Permit only qualified and properly trained employees to operate the Tractor and Implement.
4. Maintain the Tractor and Implement in a safe operational condition and maintain all shields and guards on the equipment.
5. Ensure the Tractor is equipped with a functional ROPS and seat belt and require that the employee operator securely fasten the safety belt and operate with the ROPS in the raised position at all times.
6. Forbid the employee operator to carry additional riders on the Tractor or Implement.
7. Provide the required tools to maintain the Tractor and Implement in a good safe working condition and provide the necessary support devices to secure the equipment safely while performing repairs and service.
8. Require that the employee operator stop operation if bystanders or passersby come within 300 feet.

### Child Labor Under 16 Years of Age

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

# **INTRODUCTION SECTION**

## INTRODUCTION SECTION

### Introduction

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

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

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

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

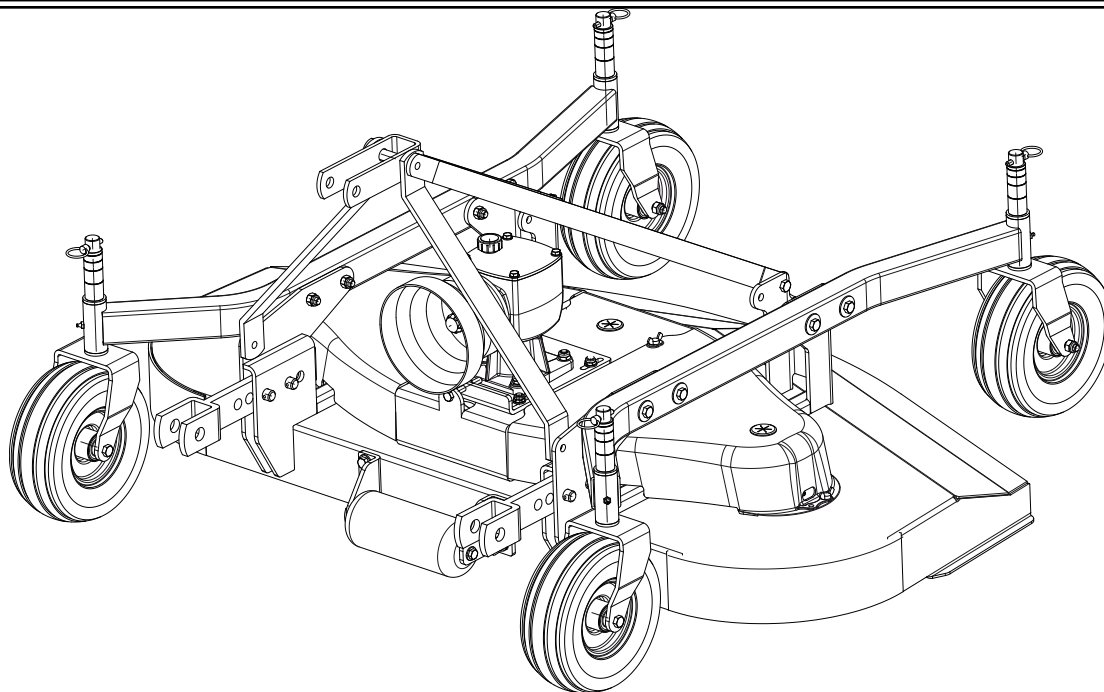
**⚠ DANGER** Indicates an imminently hazardous situation that, if not avoided, WILL result in DEATH OR VERY SERIOUS INJURY.

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

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

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

## INTRODUCTION SECTION



- The FA513 requires between 10HP - 60HP with adequate front end weight.
- The FA613 requires between 10HP - 60HP with adequate front end weight.
- The FA713 requires between 10HP - 60HP with adequate front end weight.

Your RHINO FA finishing mower is designed for light-duty cutting such as lawn maintenance plus small weed and grass control. With a reasonable amount of preventive maintenance, your Mower will provide years of dependable service.

**⚠ DANGER** NEVER ALLOW CHILDREN TO OPERATE, RIDE ON, OR COME CLOSE TO MOWER OR TRACTOR. Usually, 15-16 year-old children who are mature and responsible can operate the mower with reasonable safety if they have read Operator's Manual, been trained in safe operation of the machine, and are physically large and strong enough to reach and operate controls easily.

**⚠ DANGER** For Non-Agricultural use, OSHA, ASABE, SAE, and ANSI standards require the use of chain Chain Guards, Deflectors, or Solid Skirts at all times. The Mower manufacturer strongly recommends the use of Chain Guards 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.

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

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

# IMPORTANT

For your safety and to guarantee optimum product reliability, always use Genuine RHINO replacement parts. The use of inferior "will-fit" parts will void Warranty of your RHINO implement and may cause premature or catastrophic failure which can result in serious injury or death. If you have any questions concerning the repair parts you are using, contact Rhino, 1020 S. Sangamon Ave., Gibson City, Illinois 60936 A Member of Alamo Group



# INTRODUCTION SECTION

## Attention Owner/Operator

BEFORE OPERATING THIS MACHINE:

1. Carefully read the Operator's Manual, completely understand the Safety Messages and instructions, and know how to operate correctly both the tractor and implement.
2. Make sure your dealer has completed the warranty registration online at [www.alamoag.com](http://www.alamoag.com).

NOTE: Warranties are honored only if registration has been completed within thirty days of delivery of the implement.

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

<b>⚠ WARNING</b>	<b>⚠ ADVERTENCIA</b>
<p><b>Non-genuine parts can fail catastrophically. TO AVOID SERIOUS INJURY OR DEATH:</b></p> <ul style="list-style-type: none"> <li>● ONLY use genuine RHINO replacement parts.</li> <li>● Non-genuine parts can fail creating hazardous conditions for operator and bystanders.</li> </ul> <p>Contact local dealer or RHINO about repair parts at:</p> <p>1020 S. Sangamon Ave., Gibson City, IL 60936          Customer Service: 800-446-5158          Email: <a href="mailto:parts@servis-rhino.com">parts@servis-rhino.com</a></p> <p style="text-align: right; font-size: small;">00760657_A</p>	<p><b>Partes que no son auténticas pueden fallar catastróficamente. PARA EVITAR LESION SERIA O MUERTE:</b></p> <ul style="list-style-type: none"> <li>● Use SOLAMENTE las partes de reemplazo auténticas de RHINO.</li> <li>● Partes que no son auténticas pueden fallar y causar condiciones peligrosas para el operador y personas presentes.</li> </ul> <p>Contacte a su distribuidor local o RHINO sobre partes de reparo a:</p> <p>1020 S. Sangamon Ave., Gibson City, IL 60936          Servicio al Cliente: 800-446-5158          Correo Electronico: <a href="mailto:parts@servis-rhino.com">parts@servis-rhino.com</a></p>
<b>IMPORTANT</b>	<b>IMPORTANTE</b>
<p><b>BE AWARE      BE TRAINED</b>  <b>BE ALERT     Before Operating</b>  <b>BE ALIVE     this Mower</b></p>	<p><b>ESTE CONSCIENTE    SEA ENTRENADO</b>  <b>ESTE ALERTO        Antes de Funcionar</b>  <b>ESTE VIVO            Cortacésped</b></p>
<p>To prevent serious injury to yourself and/or bystanders, be trained in Safe Mowing Practices.</p> <p>Alamo Group Companies, Alamo Industrial, Bush Hog, M&amp;W, Rhino, Schulte and Tiger as well as AEM and FEMA provide training material that is critical for your Safety and the Safety of others when operating this equipment. Make these Safety Procedures an important part of every workday.</p> <p>Read and understand the Operator's Manual.</p> <p>Do not let untrained individuals operate this equipment.</p> <p>Contact your Dealer, AEM (<a href="http://www.aem.org">www.aem.org</a>), FEMA (314-878-2304, <a href="http://www.FarmEquipment.org">www.FarmEquipment.org</a>), or Alamo Group (<a href="http://www.Alamo-Group.com">www.Alamo-Group.com</a>) for information on training material or courses that provide training in Safer Operating Practices for Mowers.</p>	<p>Para prevenir lesiones graves a usted y/o personas presentes, sea entrenado en la Practica de Segar Seguro.</p> <p>Companias de Alamo Group, Alamo Industrial, Bush Hog, M&amp;W, Rhino, Schulte y Tiger asi como AEM y FEMA proporcionan material para entrenar que es esencial para su seguridad y la seguridad de otros al operar este equipo. Haga estos procedimientos de seguridad una parte importante de su dia de trabajo.</p> <p>Lea y entienda el Manual de Operadores.</p> <p>No permita que personas sin entrenamiento funcionen este equipo.</p> <p>Contacte a su distribuidor, AEM (<a href="http://www.aem.org">www.aem.org</a>), FEMA (314-878-2304, <a href="http://www.FarmEquipment.org">www.FarmEquipment.org</a>), o Alamo Group (<a href="http://www.Alamo-Group.com">www.Alamo-Group.com</a>) para la informacion sobre el material de entrenamiento o cursos que ofrecen el entrenamiento de Prácticas de Operación para Cortadoras.</p> <p style="text-align: right; font-size: small;">00760657_B 00760657</p>

# **ASSEMBLY SECTION**



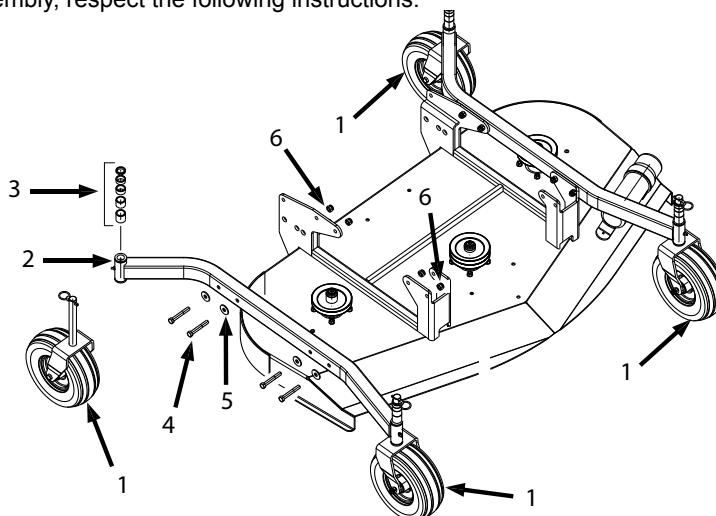
# ASSEMBLY SECTION

## Assembly mower

The mower is delivered in parts to be assembled; for correct assembly, respect the following instructions.

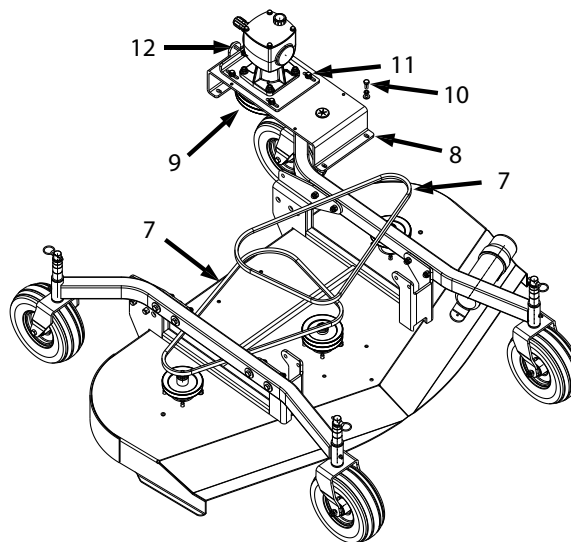
### STAGE 1

(1) Place the wheel supports on the machine frame and tighten the four bolts (2) with the nuts (4) insert the four wheels (3) washers and nuts (5) in the support bushings (6) to adjust the cut height by means of the spacers.



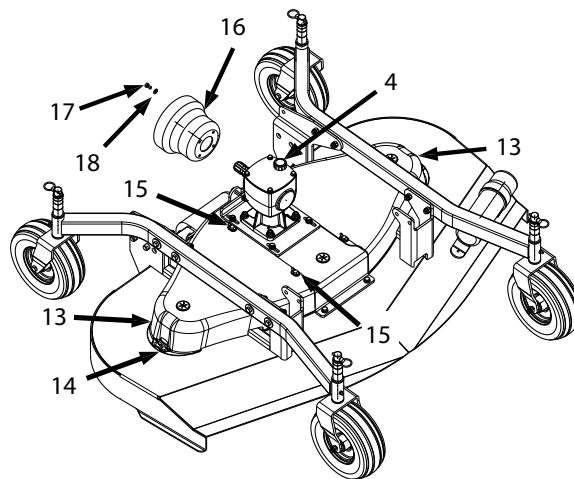
### STAGE 2

Place the belts (7) onto the pulleys. Place the gearbox support (8) on the machine, insert both belts in the pulley guides (9) of the gearbox and tighten the four mounting bolts (10). Loosen the screws (11) of the gearbox and adjust the belt tensioning by means of the adjustment screw (12); finally tighten the four screws (11).



### STAGE 3

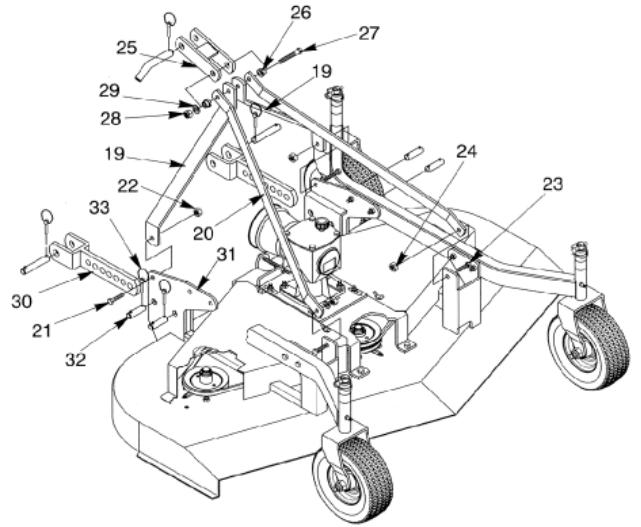
Place the covers (13) on the belts and tighten the screw on the frame (14) and the two screws on the gearbox support (15). Anchor the joint plastic cover (16) by means of four screws (17) and the washers (18).



## ASSEMBLY SECTION

### STAGE 4

Install the uprights (19) on the machine and insert the bolts (21), with the relative nuts (22). Install the tie-rods (20) on the machine and insert the bolts (23), with the relative nuts (24). Place the top link (25) on both tie-rods and uprights, by inserting the spacer (26) between the top link and the tie-rods; finally tighten the screw (27) with the nut (28) and the washer (29). Make sure that the top link turns freely on the bolt. Finally tighten the bolts (21) with the nuts (22) and the bolts (23) with the nuts (24). Install the lower hitches (30) on the supports (31); adjust the length and install the pins (32) anchoring them by means of the split pins (33).

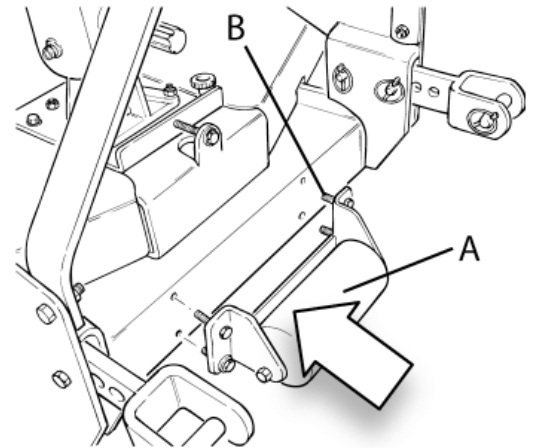


### FRONT ROLLER KIT ASSEMBLING

As an option (only on the FA713 mower) it is possible to install on the front part of the machine a levelling roller which improves the working of the machine, smoothing small obstacles and roughnesses of the land.

To install the roller on the mower:

- Attach the roller A to the mower inserting the bolts B into the right holes;
- Tighten the screws B with the nuts supplied within the kit.



These activities must be carried out with the engine off, the power take off disengaged and the hand brake applied. If needed, lift the equipment and place it on supports, thus preventing any injuries that might be caused by a sudden fall of the equipment.

# **ATTACHMENT TO THE TRACTOR SECTION**

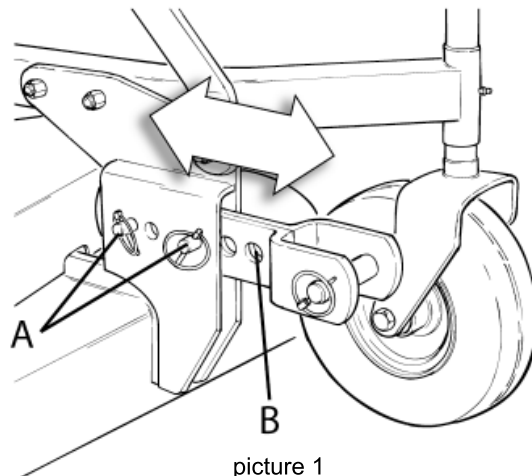
# ATTACHMENT TO THE TRACTOR SECTION

## Attachment To The Tractor

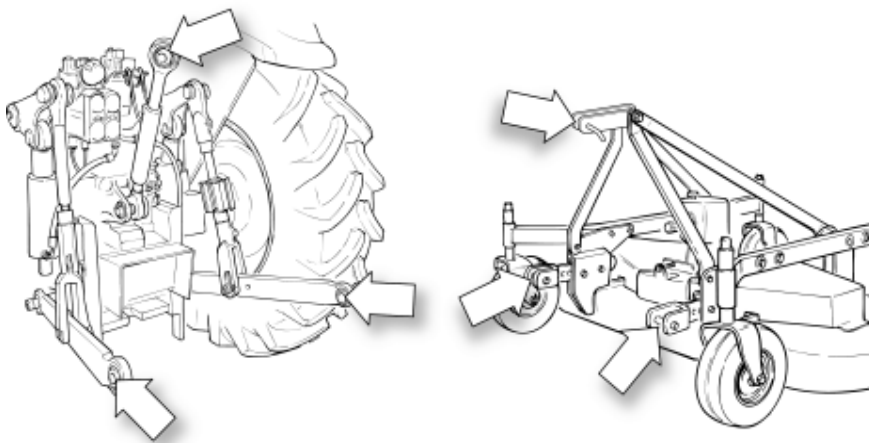
Carefully read this instruction manual and the manuals of the tractor and PTO shaft manufacturer. All mowers are built to be attached to any tractor equipped with a three point lift of the correct category and with suitable ball ends.

Before attaching the equipment to the tractor, make sure that the ground is smooth and flat and that nobody is standing between the tractor and the mower; slowly move the tractor towards the mower by aligning the tractor lifter arms with the two mower coupling side pins; turn the engine off and pull the brake.

It is possible to adjust the attachment position by releasing the pins A (picture 1) and modifying the position of the plates B.



After adjusting the couplers, connect the lower arms by removing the catch pins from the pins located on the hitch blocks, inserting the lift arm pins through the hitch block and ball ends and secure them by means of the pins which were previously removed.

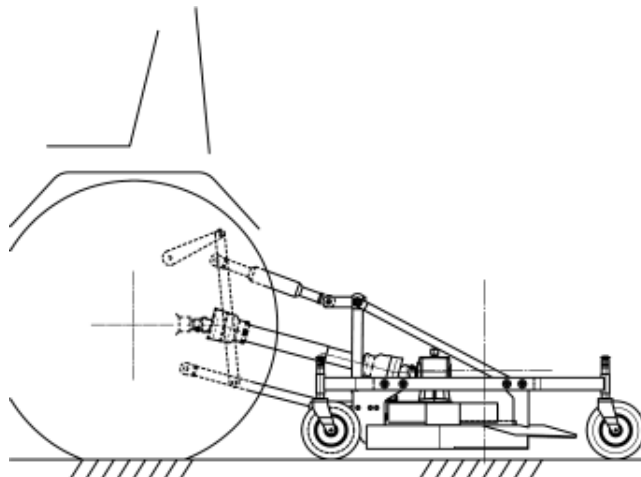


Connect the tractor top link to the third upper point by removing the pin located between the two plates, inserting the top link and securing it by means of the pin.

Adjust the top link so that the upper part of the frame is parallel to the ground.

Block all the linking parts by means of the sway chains or arms.

Make sure that the central unit axis (case/bevel gear pair) is parallel to the ground, thus minimizing the stresses on the power take off and increasing the working life of the equipment.



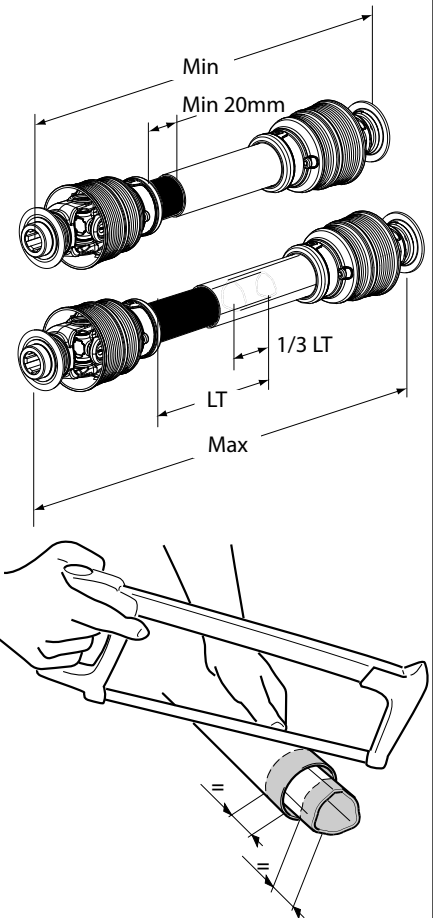
# ATTACHMENT TO THE TRACTOR SECTION

## DRIVELINES ATTACHMENT

Before assembling the Cardan shaft, the operator must:

Read the Cardan shaft and tractor manual.

- Make sure that the number of revs. of the tractor PTO correspond to those of the shredder (the choice of the number of shredder revs. must be made in the purchase phase). If this is not the case, contact after-sales
- Check that the Cardan shaft minimum and maximum lengths are those required by shredder-tractor coupling. Remember that when at maximum extension, the pipes must overlap at least 1/3 of the length of the internal pipe. Moreover, in the maximum closure position of the pipes, the minimum play allowed of the plastic protections must be at least 2 cm. in order to prevent damage to the protections and the gear transmission. If this is not the case, it must be shortened suitably by cutting it accordingly. Consult the Cardan shaft use and maintenance manual or contact the authorised dealer.
- Use Cardan shafts with power/torque drive capacity and number of revs. suitable for that recommended.
- Position the Cardan in the right direction, making reference to the figure of the tractor embossed on the external protection pipe.
- Insert the first hub of the Cardan shaft onto the shredder PTO, holding the safety pin or safety collar pressed. Release the pin and retract with the Cardan until the pin itself engages in the relevant seat with an audible "clack". Repeat the operation successively with the hub opposite the shaft, inserting it into the tractor PTO.
- Connect the Cardan shaft protection retainer chain snap hook in the relevant seat on the shredder PTO protection hood, indicated in the figure.
- Carry out the same operation on the tractor PTO.



# **SET-UP SECTION**



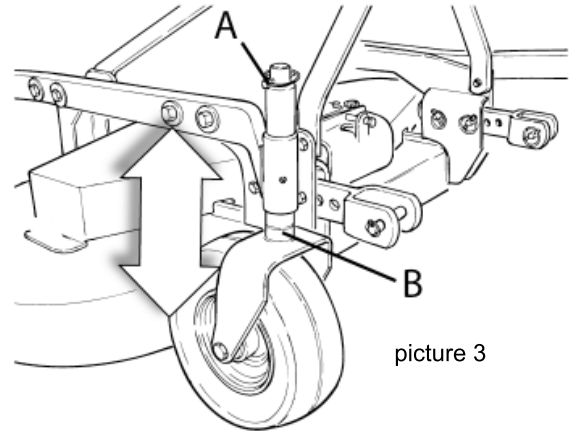
## SET UP SECTION

### Cutting height adjustment

The cutting height of the equipment depends on the position of the wheels. If the wheels are raised, the cutting height increases; if the wheels are lowered, the cutting height decreases.

Make sure that the wheels are set at the same height on both sides.

To adjust the cutting height on the mowers loosen and remove pin A (picture 3) and adjust the wheels height according to the bushing B. When the adjustment is completed, reinsert the pin A.

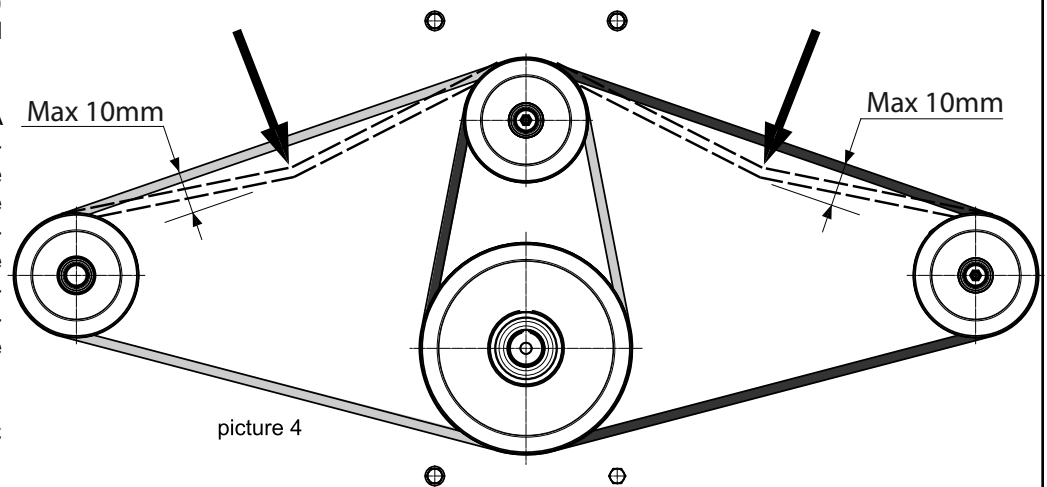


picture 3

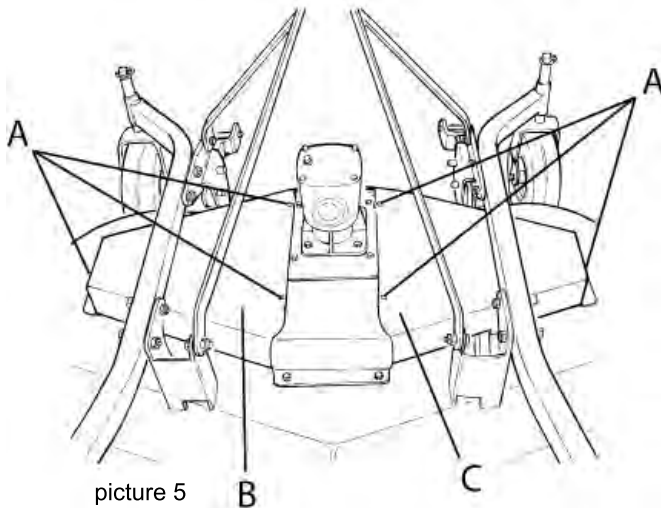
### Belts adjusting

In the mowers it is possible to adjust the tension of the belts; the right belts tensioning insures that the machine works in the right way and decreases the wear of rotating parts. To adjust the belts tensioning:

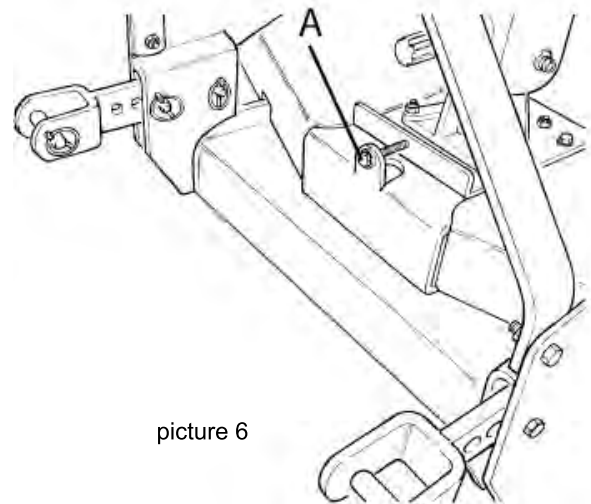
- unscrew the bolts A (picture 5) and take off the shields B and C;
- screw or unscrew the bolt A (picture 6) to adjust the tension of the belts; if you turn the screw in clockwise direction the belts are tensioned, while turning it counterclockwise they are loosened; when the belt is correctly tensioned it can be lowered in the middle part not more than 10mm (picture 4)
- reassemble the carters B and C



picture 4



picture 5



picture 6



These activities must be carried out with the engine off, the power take off disengaged and the hand brake applied. If needed, lift the equipment and place it on supports, thus preventing any injuries that might be caused by a sudden fall of the equipment.

# **OPERATION SECTION**

## OPERATION SECTION

### Operation instructions

The implement mower is manufactured with quality material by skilled workers. This implement is ideal in horticultural, agricultural, or commercial applications, especially for landscapers, rental yards, vineyards, vegetable farms, and nurseries. The implement is equipped with protective deflectors to prevent objects being thrown from the implement by the blades, however, no shielding is 100% effective. All shields, guards, and deflectors equipped on the unit must be maintained on the implement in good operational condition.

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

This section of the Operator's Manual is designed to familiarize, instruct, and educate safe and proper implement use to the operator. Pictures contained in this section are intended to be used as a visual aid to assist in explaining the operation of a implement mower. Some pictures may show shields removed for purposes of clarity. NEVER OPERATE this implement without all shields in place and in good operational condition. The operator must be familiar with the implement and tractor operation and all associated safety practices before operating the implement and tractor. Proper operation of implement, as detailed in this manual, will help ensure years of safe and satisfactory use of the implement.

**IMPORTANT:** To avoid implement damage, retorque all bolts after the first 10 hours of operation. Refer to the Torque Chart at the end of the Maintenance Section to ensure bolts are properly tightened.

**READ AND UNDERSTAND THE ENTIRE OPERATING INSTRUCTIONS AND SAFETY SECTION OF THIS MANUAL AND THE TRACTOR MANUAL BEFORE ATTEMPTING TO USE THE TRACTOR AND IMPLEMENT.**

If you do not understand any of the instructions, contact your nearest authorized dealer for a full explanation. Pay close attention to all safety signs and safety messages contained in this manual and those affixed to the implement and tractor.

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.

**SAFETY INSTRUCTIONS**



### Standard equipment and specification

#### FA series

	FA513	FA613	FA713
Cutting width	60"	72"	84"
Cutting height range	3/4" - 4 1/4"	3/4" - 4 1/4"	1 1/2" - 4 1/2"
Blade Speed (rpm)	2650	2240	2030
Blades number	3	3	3
HP max requirement	40	50	60
PTO Input (rpm)	540	540	540
Weight (lb)	432	472	816
Gearbox Oil Type	EP SAE 80W/90		
Oil quantity (gal)	0,20		

\*Ratings based on actual field performance.

**⚠ DANGER** Operating this implement in an application for which it is not designed and/or operating the implement with the wrong size Tractor can cause implement component damage and equipment failure resulting in possible serious injury or death.

## OPERATION SECTION

### Operator requirements

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

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

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

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

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



### Tractor requirements

The tractor used to operate the implement must have the power capacity to lift, pull, and operate the Power Take Off (PTO) at the implement's rated speed while traveling at a ground speed between 2 and 5 MPH.

Operating the implement with a tractor that does not meet the following requirements may cause tractor or implement damage and be a potential danger to the operator and passersby.

### Tractor Requirements and Capabilities

- ASABE approved Roll-Over Protective Structure (ROPS) or ROPS cab and seat belt.
- Slow Moving Vehicle (SMV) emblem, lighting, PTO master shield
- Tractor Horsepower:
  - FA513, 613, 713 .....15-60 HP
- Hitch- Lifting Capacity
  - FA513, 613, 713 .....740 lbs, 804 lbs, 978 lbs
- 3-Point Hitch .....CAT I
- Front End Weight .....As needed to maintain 20% weight on front axle
- Power Take Off.....540 RPM 6-spline, 1-3/8" diameter output shaft

### 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.

Operate this Equipment only with a Tractor equipped with an approved rollover-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.



## OPERATION SECTION

### Operating Check

Hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training involved in the storage, operation, transport, and maintenance of the Grooming Mower. Therefore, it is absolutely essential that no one operates the mower without first having read, fully understood, and become totally familiar with the Operator's Manual. Make sure the operator has paid particular attention to:

- Important Safety Information, page 1
- Section 1: Assembly & Set-Up, page 8
- Section 2: Adjustments, page 14
- Section 3: Operating Instructions, page 16
- Section 4: Maintenance & Lubrication, page 20

### Tractor Shut Down Procedure

It is essential that the tractor be shut down as noted below before making any inspections, maintenance and/or repairs to the tractor and/or mower.

1. Park tractor on a level surface. Don't work under or around an implement parked on a steep incline.
2. Place tractor in park and set park brake.
3. Disengage PTO if operating.
4. Shut engine off and remove switch key.
5. Wait for PTO to come to a complete stop before dismounting from tractor.
6. Wear safety glasses to inspect, make adjustments, and to preform maintenance.

### Pre-Start Checklist

Make sure operator has completed the Operating Checklist below.

Operating Checklist		
	Check	Page No.
	Read and follow all Safety Information carefully. Refer to "Important Safety Information".	Page ?
	Read and follow hook-up & preparation instructions. Refer to "Assembly & Set-up".	Page ?
	Make sure all guards and shields are in place and in good working condition.	
	Make all necessary adjustments. Refer to section on "Adjustments".	Page ?
	Read and follow all Maintenance Instructions. Refer to "Maintenance & Lubrication"	Page ?
	Lubricate mower as required. Refer to "Lubrication".	Page ?
	Check oil level in gearbox. Make certain all oil plugs are properly replaced. Refer to "Gearbox".	Page ?
	Check mower initially and periodically for loose bolts and pins. Be sure all nuts and bolts are tight. Especially make sure mower blade bolts are tight. Refer to "Torque Values Chart for Common Bolt Sizes"	Page ?

## OPERATION SECTION

### Inspection Procedures

**⚠ DANGER** Do not engage tractor PTO while hooking-up and unhooking driveline or while someone is standing near the driveline. A person's body and/or clothing can become entangled in the driveline resulting in serious injury or death.

**⚠ WARNING** Do not engage tractor PTO while hooking-up and unhooking driveline or while someone is standing near the driveline. A person's body and/or clothing can become entangled in the driveline resulting in serious injury or death.

NOTE: Always disengage PTO before raising mower to transport position.

1. Park tractor and mower on a level surface.
2. Make sure tractor PTO is disengaged and mower blades have come to a complete stop.
3. Inspect tractor safety equipment to make sure it is in good working condition.
4. Carefully raise and lower implement to ensure drawbar, tires, and other equipment on the tractor do not contact the mower or driveline.
5. With PTO disengaged and driveline completely stopped, check mower blades for sharpness. See "Blade Inspection" on page 20.

The remaining inspections are made by engaging the PTO to check for normal operation.

**⚠ DANGER** All guards and shields must be installed and in good working condition at all times during mower operation!

**⚠ WARNING** Do not over speed PTO or mower damage may result. Some tractors are equipped with multispeed PTO ranges. Be certain your tractor's PTO is set for 540 rpm.

#### IMPORTANT:

Stop PTO rotation immediately if vibration occurs during start-up or thereafter. Follow all tractor shut down procedures before dismounting from tractor. Investigate cause. Make necessary repairs and adjustments before continuing.

6. Start tractor, set throttle to an idle or slightly above idle, and slowly engage PTO. Initial start-up vibration is normal and should stop after a few revolutions. Stop PTO rotation immediately if vibration continues.
7. Once mower is running smoothly, increase tractor PTO speed to the appropriate rpm. Stop PTO rotation immediately if vibration occurs.
8. Investigate the cause of vibration. Make necessary corrections before continuing.

### Transporting

**⚠ WARNING** When traveling on public roads, use accessory lights, SMV sign, clean reflectors, and other adequate devices to warn operators in other vehicles of your presence. Always comply with all federal, state, and local laws.

**⚠ WARNING** Do not exceed maximum transport speed of 20 MPH with mower attached. Travel below 20 MPH on rough terrain. The mower can lose a tire or tires can break apart causing the operator to lose control of tractor and/or implement.

1. When raising mower to transport position, be sure driveline does not contact tractor or mower. Adjust and set tractor's 3-point hitch lift height so that the PTO shaft does not contact mower deck in the fully raised position.
2. Be sure to reduce tractor ground speed when turning and leave enough clearance so the mower does not contact obstacles such as buildings, trees, or fences.
3. Select a safe ground speed when transporting from one area to another.
4. When traveling on roadways, transport in such a way that faster moving vehicles may pass you safely. A slow moving vehicle sign should always be properly displayed when traveling on public roads or right-of ways.
5. Shift tractor to a lower gear when traveling over rough or hilly terrain.

### Safety Information

**⚠ DANGER** Keep others away from the mower while it is operating. Grooming Mowers have the ability to discharge objects at high speeds causing serious injury or death. Stop blade rotation if bystanders are nearby!

**⚠ DANGER** Tractor PTO shield, Gearbox shaft shield and driveline shields must be secured in place when operating mower to avoid injury or death from entanglement in driveline!

**⚠ DANGER** Do not operate mower with a bent or broken driveline. Such a driveline can break apart while rotating at high speeds causing serious injury or death. Always remove mower from service until damaged driveline is repaired or replaced.

## OPERATION SECTION

- ⚠ DANGER** Do not engage tractor PTO while hooking-up and unhooking driveline or while someone is standing near the driveline. A person's body and/or clothing can become entangled in the driveline resulting in serious injury or death.
- ⚠ DANGER** Always disconnect main driveline from tractor PTO before servicing underside of mower. PTO can be engaged if tractor is started causing mower damage, bodily injury or death.
- ⚠ DANGER** All V-belt guards must be in good working condition and installed before PTO is engaged. Never allow fingers, hands, or other body extremities to come near a moving V-belt or pulley. Doing so can result in server bodily injury or death.
- ⚠ DANGER** Never place hands or feet under the deck or attempt to make adjustments to the mower with PTO engaged. Mower blades rotating at high speeds cannot be seen and are located close to the deck housing. Body extremities can be cut off instantly.
- ⚠ DANGER** Never allow riders including children on the tractor or mower. They can fall and be ran over, become entangled in rotating components, and/or pinched by moving components causing serious injury or death.
- ⚠ DANGER** Do not operate on or travel across steep inclines where a tractor or mower could roll-over resulting in serious injury or death. Consult your tractor's manual for acceptable inclines the tractor is capable of traveling across.
- ⚠ DANGER** Clear area to be cut of debris and unforeseen removable objects before mowing. Mark any potential hazards that cannot be removed such as dirt mounds, tree stumps, posts, large rocks, holes, and drop-offs with a visible flag.
- ⚠ DANGER** Always disengage PTO before lifting mower up and never operate mower in the raised position. The mower can discharge objects at high speeds resulting in injury or death.
- ⚠ DANGER** Do not use mower as a working platform. The mower is not properly designed or guarded for this use. Using mower as a working platform can cause serious injury or death.
- ⚠ DANGER** Do not use mower blades for a fan. Mower blades are not properly designed or guarded for this use. Using mower blades as a fan can result in serious injury and/or death.
- ⚠ DANGER** Use Grooming Mower for its intended purpose only. Do not use mower to lift or carry objects; to pull fence posts, stumps, or other objects; or to tow other equipment. Doing so can damage the mower, cause serious bodily injury, or death.
- ⚠ DANGER** Always disengage PTO, place tractor in park or set park brake, shut tractor engine off, remove switch key, and wait for blades to stop rotating before dismounting from tractor!
- ⚠ DANGER** Do not operate mower with loose pins, bolts and nuts. Loose hardware can cause the mower to not preform properly and may lead to breakage that can cause bodily injury or death.
- ⚠ DANGER** Always make certain driveline yokes are secured to the tractor PTO shaft and mower drive shaft before engaging PTO. A loose driveline can slips off the end of a connected shaft while rotating and cause serious bodily injury or death.
- ⚠ DANGER** Do not over speed PTO or mower damage may result. Some tractors are equipped with multispeed PTO ranges. Be certain your tractor's PTO is set for 540 rpm.

## OPERATION SECTION

### IMPORTANT:

Stop PTO rotation immediately if vibration occurs during start-up or thereafter. Follow all tractor shut down procedures before dismounting from tractor. Investigate cause. Make necessary repairs and adjustments before continuing.

1. Clear the area to be mowed of rocks, branches, and other foreign objects that might be picked up and thrown by the mower blades. Mark any potential hazards that can't be cleared.
2. Lower mower to ground. Set tractor throttle at idle. Engage PTO to start blades rotating. Increase throttle to 540 PTO rpm.
3. At first, begin mowing in a low gear and shift up until the desired speed is achieved - always maintain 540 PTO rpm regardless of gear selection. Mower blades will cut better at a faster blade speed than at reduced throttle.
4. After mowing the first 50 feet, stop and check to see that the mower is adjusted properly.
5. Do not make sharp turns or attempt to back up while mower is on the ground Do not engage PTO with mower in the fully raised position. Do not engage or disengage PTO at full throttle.
6. Grass is best cut when it is dry. Mowing wet grass can cause plugging resulting in grass clumps behind the mower.
7. Grass should be mowed frequently as shorter clippings deteriorate faster.
8. If mowing extremely tall grass, it is best to raise cutting height and mow the area, then lower cutting height and mow a second time at the desired height.
9. Periodically check for foreign objects wrapped around the mower blades. Remove foreign objects only after following "Tractor Shut Down Procedure" on page 16.
10. Frequently inspect the mower for loose bolts and nuts. Tighten all loose bolts and nuts as indicated in the "Torque Values Chart" on page 28.

### Un-hooking the Mower

The following steps should be done when un-hooking the Grooming Mower from the tractor.

1. Park on a level solid surface.
2. Shut tractor engine off and engage parking brake.
3. Lower mower to the ground and chock front and back side of wheels to keep mower from moving.
4. Follow all tractor shut down procedures outlined on page 16 before dismounting from the tractor.
5. Unhook 3-Point hitch from tractor. Reinstall hitch pins, linch pins, and hairpin cotters in cutter hitch.
6. Rotate upper hitch (#1) up and store driveline (#3) in driveline hanger (#2) to keep dirt out of its u-joints.
7. See "Long Term Storage Instructions" on page 22 if mower is to be stored for a long time.

### General Operating Instructions

When transporting to your mowing site, select a safe ground transport speed. When traveling on roadways, transport in such a manner that faster moving vehicles can easily see you and pass you safely. When travelling over rough and hilly terrain, reduce your speed and avoid quick or sharp steering corrections. Take extra care to insure that the mower doesn't come into contact with obstacles such as trees, buildings, or fences. When you have arrived at the mowing site, start the tractor, raise the deck to make sure that everything is properly attached and that the driveline is not in a bind or in contact with the mounting frame. Also make sure the tractor tires aren't in contact with the deck. With the deck still in the raised position, proceed to your starting point and lower your deck to the ground in mowing position. Reduce your tractor engine rpm to idle and engage PTO. Gradually raise tractor engine rpm to achieve the 540-rpm PTO speed. Now begin mowing at a ground speed of approximately 4-5 mph. The proper mowing speed will ultimately be determined by ground conditions, desired finish, common sense, and good safe mowing practices by the operator. Grass is best cut when it is dry. Mowing in wet grass can cause plugging resulting in grass clumps behind the mower. If you need to dismount the tractor on a hill or incline to inspect, adjust, or park the mower for any reason, place wheel chocks under the rear tires for added safety. Once you have made necessary adjustments, you may continue mowing. Do not engage the PTO at high engine rpm and avoid making sharp turns if at all possible. If anyone approaches while you are mowing, disengage the PTO and stop the tractor.



# **MAINTENANCE SECTION**

# MAINTENANCE SECTION

## Maintenance

Maintenance is crucial for the working life and efficiency of any agricultural equipment. If the equipment is properly maintained and operated, a long working life and operator safety are assured.

The maintenance intervals indicated in this booklet are provided as a mere reference and are related to normal working conditions; changes may occur depending on the type of activities, environmental dust, seasonal factors, etc.

**CAUTION** Before injecting lubricating grease into the grease fittings, clean the fittings to prevent mud, dust, or any other foreign matter from contaminating the grease and reducing the lubrication effect.

**CAUTION** When adding or changing the oil, use the same type of oil to prevent mixing oils with different features.

**CAUTION** All maintenance activities must be carried out with the mower resting horizontally on the ground.

**CAUTION** After using the equipment for a few hours, make sure that all the bolts (especially blade bolts) are tightened; regularly check all the machine guards.

## Program

### First check

- After 50 working hours, check the oil in the gearbox (A – picture 7) and make sure that all the screws and bolts are tightened.

### every 20 working hours

- lubricate the pulley support bearing (B – picture 8).

### every 30 working hours

- check belt tensioning.

### every 40 working hours

- lubricate the wheel supports (A – picture 8).

### after the first 50 working hours and, later, every 800 working hours

- replace the oil in the gearbox. Use oil AGIP-ENI BLASIA 150

### every 1000 working hours

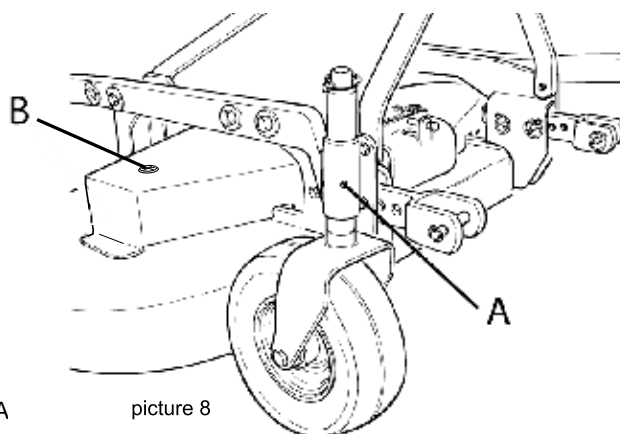
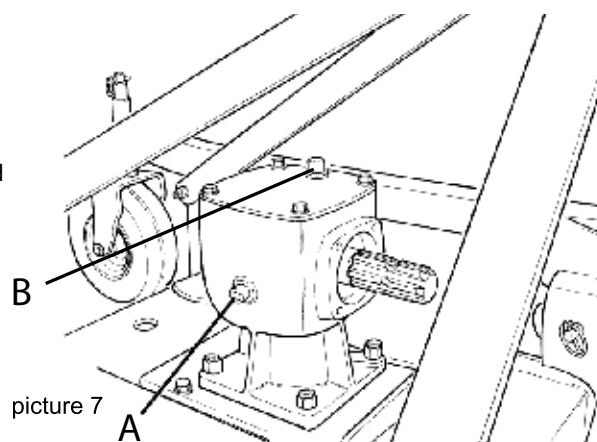
- replace belts

### For replace the oil in the gearbox proceed as follows:

- drain the oil in the gearbox.
- dispose of the drained oil in appropriate containers for waste oils.
- use a suitable wrench to loosen and extract the oil load cap B.
- top-up the AGIP-ENI BLASIA 150 oil until it is visible inside the cap A inspection window.
- screw the filler cap B.

**CAUTION** The old oil must be disposed of in compliance with local laws where these activities are carried out; do not spill or dispose of waste oil on the ground.

**DANGER** The maintenance activities must be carried out with the engine off, the power take off disengaged, the parking brake engaged, and the equipment placed on the ground.



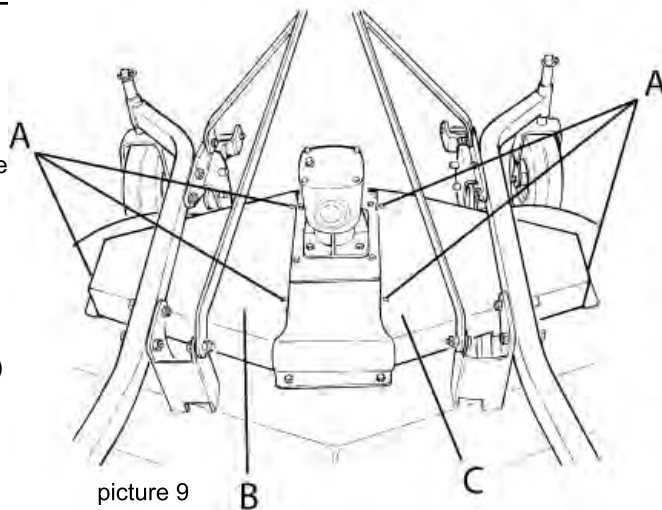
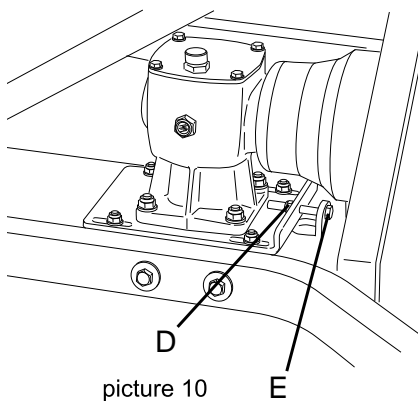
## Belt replacement

For replacement belts proceed as follows:

- unscrew the bolts A (picture 9) and take off the shields B and C;
- completely slacken the belts before unscrewing the nut D, then the screw E (picture 10);
- remove the belt lower and then the upper;
- insert the new set of belts.

For Belts adjusting to see section 5-1.

- reposition the shields B and C and tighten the screws A (picture 9)

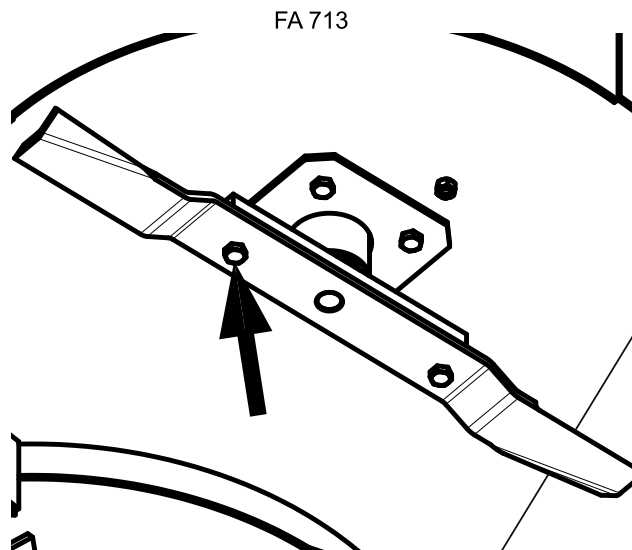
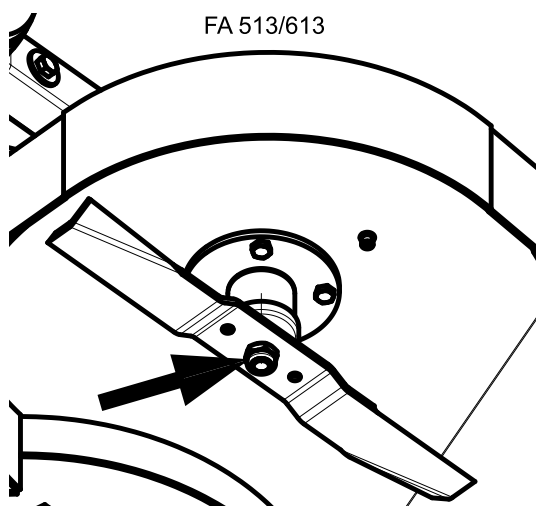


## Blade check and replacement

For perfect machine operation, frequently check the lawn mower blades: make sure that they are efficient, sharp and perfectly anchored by means of the bolts. Follow the procedure below to replace the blades:

- Adopt any measures to prevent accidental machine start-up;
- Place the equipment on sturdy supports;
- Remove the screws anchoring the blades as shown in picture; remove the old blades and install the new ones.

**⚠ DANGER** Before replacing the blades, turn the tractor engine off, pull the parking brake, disengage the power take off, raise the mower using the tractor lift, and install supports to prevent accidental dropping of the machine.



# MAINTENANCE SECTION

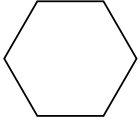
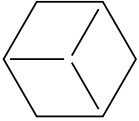
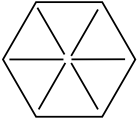
## Proper torque for fasteners

The chart lists the correct tightening torque for fasteners. When bolts are to be tightened or replaced, refer to this chart to determine the grade of bolts and the proper torque except when specific torque values are assigned in manual text.

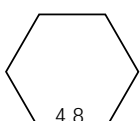
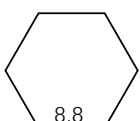
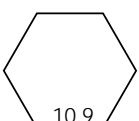
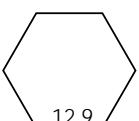
RECOMMENDED TORQUE IN FOOT POUNDS UNLESS OTHERWISE STATED IN THE MANUAL \*

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

Proper Torque values for bolts that are measured in inches

Bolt diameter			
	Head Marking No Marks Grade Two Pound-Foot Value Dry	Head Marking Three Lines Grade Five Pound-Foot Value Dry	Head Marking Six Lines Grade Eight Pound-Foot Value Dry
1/4"	5.5	9	12.6
6/16"	11	18	26
3/8"	20	33	46
7/16"	32	52	76
1/2"	60	80	115
9/18"	70	115	100
6/8"	100	160	225
3/4"	175	280	400
7/8"	175	460	660
1"	270	675	975
1-1/8"	376	860	1360
1-1/4"	630	1200	1960
1-3/8"	700	1550	2550
1-1/2"	930	2100	3350

Proper Torque values for metric bolts

Bolt diameter				
	Head Marking 4.8 Pound-Foot Value Dry	Head Marking 8.8 or 9.8 Pound-Foot Value Dry	Head Marking 10.9 Pound-Foot Value Dry	Head Marking 12.9 Pound-Foot Value Dry
6mm	4.5	8.5	12	14.5
8mm	11	20	30	35
10mm	21	40	60	70
12mm	37	70	105	120
14mm	80	110	165	190
18mm	92	175	255	300
18mm	125	250	360	410
20mm	180	360	600	580
22mm	250	475	675	800
24mm	310	600	860	1000
27mm	460	875	1260	1600
30mm	625	1200	1700	2000

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

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

### 2. REMEDIES AND PROCEDURES.

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

The choice of remedy shall belong to Manufacturer.

- 2.05. Purchaser is responsible for any labor charges exceeding a reasonable amount as determined by Manufacturer and for returning the goods to the Dealer, whether or not the claim is approved. Purchaser is responsible for the transportation cost for the goods or part(s) from the 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. NOTWITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, MANUFACTURER'S LIABILITY HEREUNDER FOR DAMAGES INCURRED BY PURCHASER OR OTHERS SHALL NOT EXCEED THE PRICE OF THE GOODS.
- 3.04. NO ACTION ARISING OUT OF ANY CLAIMED BREACH OF THIS WARRANTY OR TRANSACTIONS UNDER THIS WARRANTY MAY BE BROUGHT MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS OCCURRED.

### 4. MISCELLANEOUS.

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

#### KEEP FOR YOUR RECORDS

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

Rhino Implement Model \_\_\_\_\_ Serial Number \_\_\_\_\_

Date Purchased \_\_\_\_\_ Dealer \_\_\_\_\_

ATTENTION:

READ YOUR OPERATOR'S MANUAL

**RHINO®**  
1020 S Sangamon Ave.  
Gibson City, IL 60936  
800-446-5158  
Email: [parts@servis-rhino.com](mailto: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 Seat belts that meet the requirements of this paragraph of this Standard and SAE J4C; and
3. Ensure that each employee uses such Seat belt while the tractor is moving; and
4. Ensure that each employee tightens the Seat belt sufficiently to confine the employee to the protected area provided by the ROPS

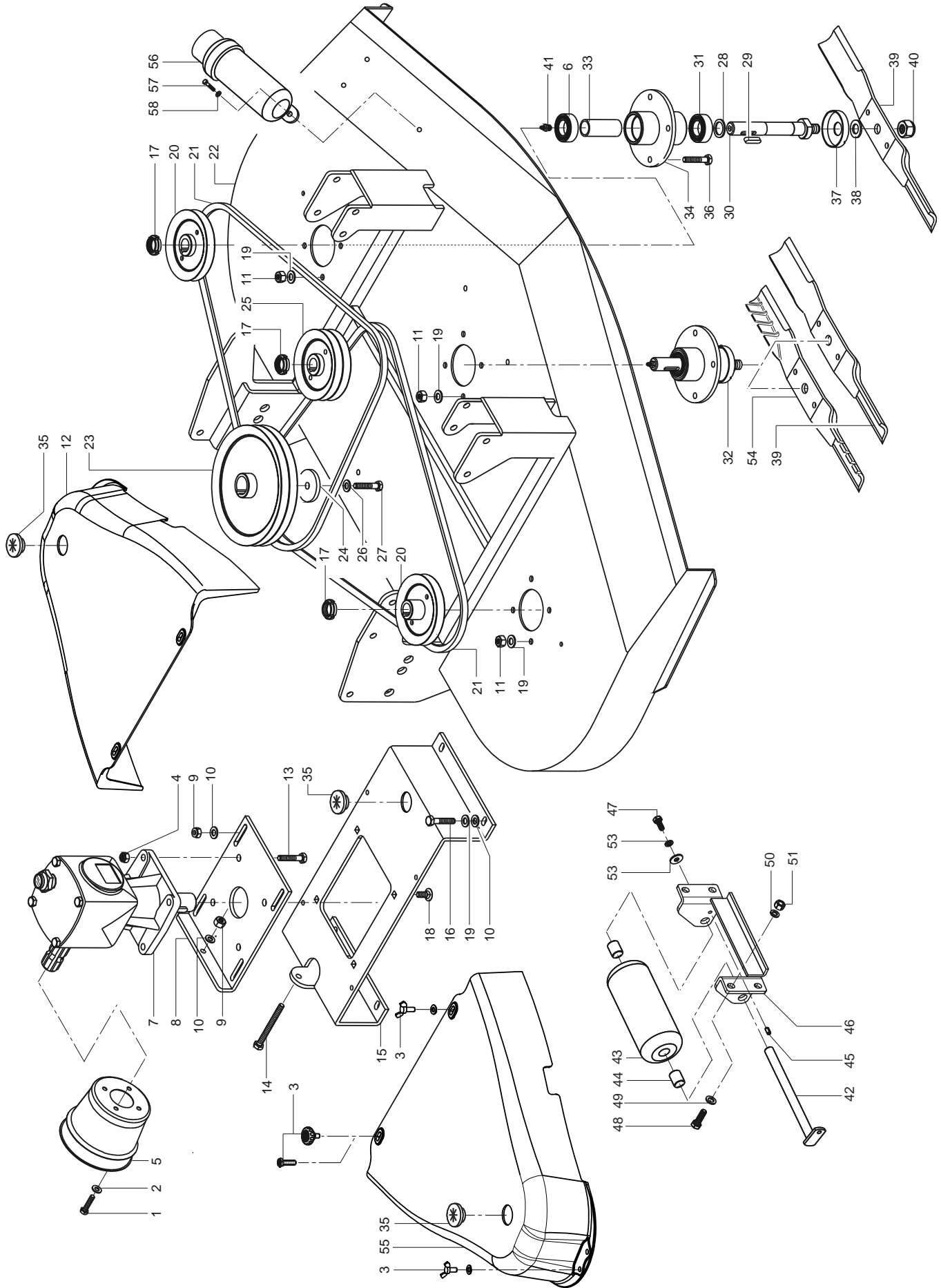
### REQUIRED OF THE OPERATOR:

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

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

# **PART LISTING SECTION**

# PART LISTING SECTION FA513/FA613



MOWER 04/13

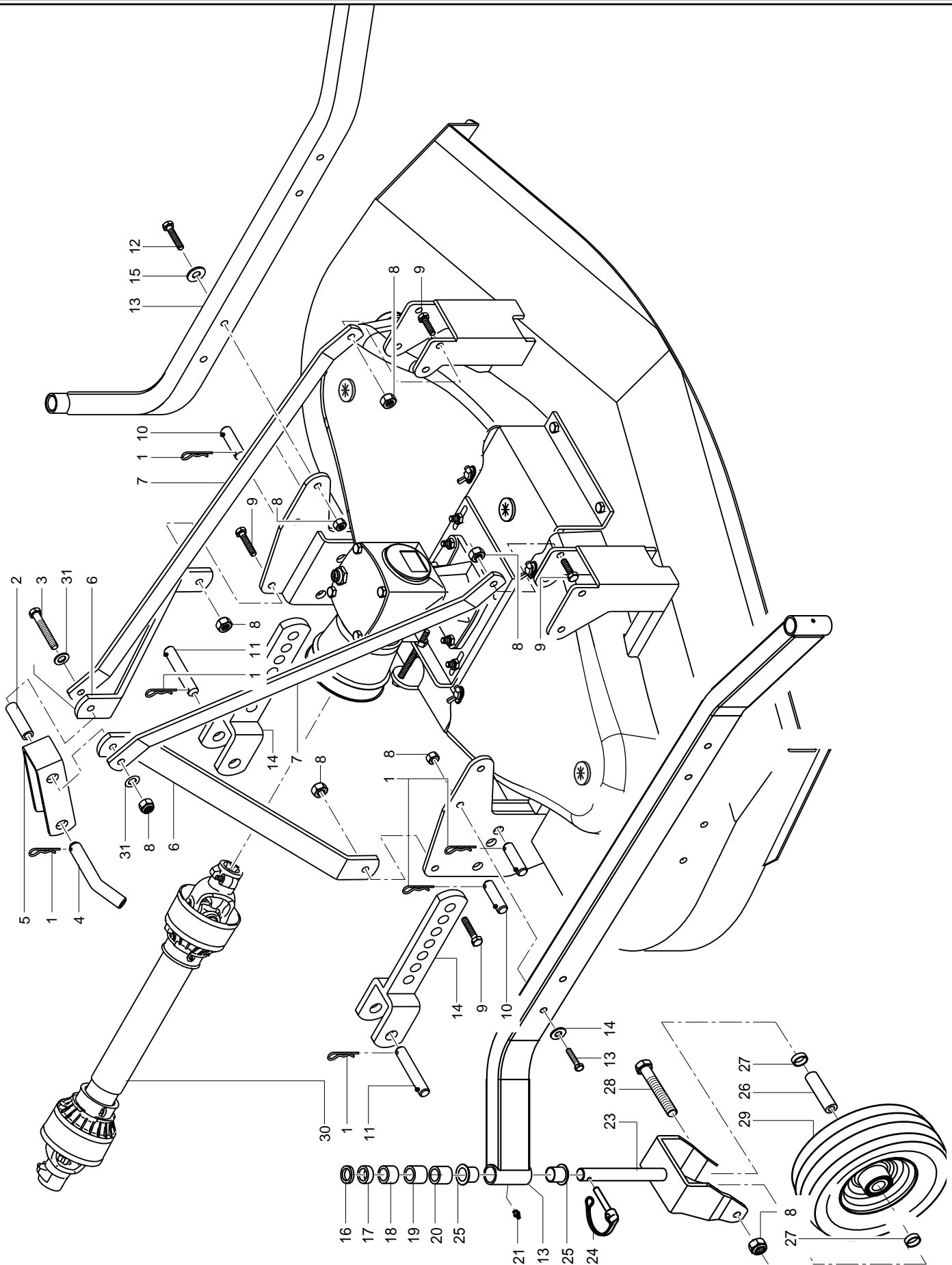
Part listing section 8 - 2



## PART LISTING SECTION FA513/FA613

ITEM	PART. NO.	QTY	DESCRIPTION
1	6134C8	4	Screw M8X16 UNI5739
2	70234C	4	Flat washer UNI6593
3	02958784	8	Screw M8X20 UNI5739
3	0078424	8	Screw knob M8X20
3	00788018	8	Screw M8X20 UNI5449
4	701112C	1	Self-locking nut M12 UNI7474
5	00788425	1	Shield, D/L
6	3676002	3	Bearing 6205 2RS
7	00788426	1	AS9, gearbox
8	00788427	1	Belt-tensioning plate
9	701111C	5	Self-locking nut M10 UNI7474
10	70235C	9	Flat washer UNI6593
11	00756024	12	Nut M10 UNI5587
12	00788428	1	Belt cover RH FA513
12	00788430	1	Belt cover FA613
13	00762401	4	Screw M12X40 UNI5737
14	616320C8	1	Screw M10x80 UNI5739
15	00788432	1	Gearbox support FA513
15	00788433	1	Gearbox support FA613
16	61368C8	4	Screw M10X25 UNI5739
17	3698422	3	Self-locking ring M25X1.5
18	70632C4	4	Screw M10X30 UNI5731
19	02971997	16	Schnorr washer M10
20	00788434	2	Side driven pulley Dp130 FA513 - FA613
21	3536101	2	Belt B68 FA513
21	00788557	2	Belt B74 FA613
22	0078435	1	Deck FA513
22	00788436	1	Deck FA613
23	00788437	1	Drive pulley Dp. 225 FA513
23	00788438	1	Drive pulley Dp. 190 FA613
24	00788439	1	Drive pulley anchoring washer
25	00788440	1	Central driven pulley spb 110 FA513 - FA613
26	9900206	1	Grower washer Ø12 UNI1751
27	61379C8	1	Screw M12X40 UNI5739
28	00788441	3	Spacer
29	710635	3	Key 8x35x7 UNI6604
30	00788442	3	Blade-holder driven shaft
31	3696002	3	Bearing 6205 RS
32	00788456	3	Kit blade support
33	00788443	3	Holder bearing spacer
34	00788444	3	Support hub
35	00788445	3	Grommet
36	61368C8	12	Screw M10x25 UNI5739
37	00788446	3	Dust cover
38	00788447	3	Schnorr washer M18
39	00788448	3	Blade FA513
39	00788449	3	Blade FA613
40	701115C	3	Self-locking nut M18 UNI7474
41	00762535	3	Lubricator M8X125
42	00788452	1	Pin
43	00788453	1	Roller
44	00788454	2	Bearing
45	70353W	1	Split pin 8x14
46	00788455	1	Support
47	61368C8	1	Screw M10x25 PG UNI5739
48	61379C8	4	Screw M12x40 PG UNI5739
49	70236C	4	Washer Ø12 UNI6593
50	9100206	4	Washer Ø12 UNI1751
51	00762371	4	Nut M12 PG UNI5587
52	00755954	1	Washer ø10 UNI1751
53	00756024	1	Washer ø10x24 UNI6593
54	00788450	3	Blade FA513 (mulching)
54	00788451	3	Blade FA613 (mulching)
55	00788428	1	Belt cover FA513, LH
55	00788431	1	Belt cover FA613, LH
56	00776031	1	Canister
57		3	Screw M6X16 UNI5739
58		3	Washer Ø6 UNI1751

PART LISTING SECTION FA513/FA613



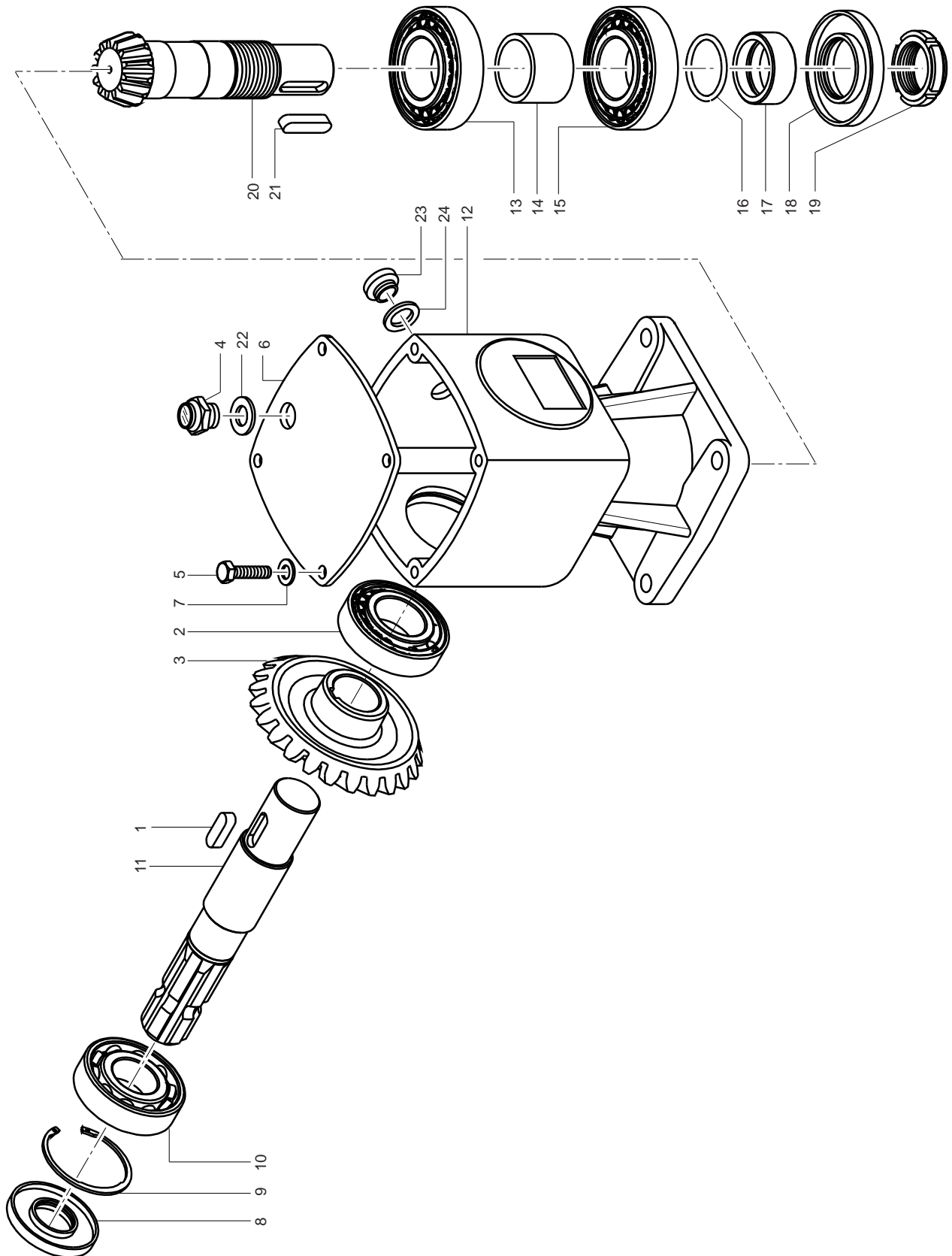
MOWER 04/13

Part listing section 8 - 4

## PART LISTING SECTION FA513/FA613

ITEM	PART. NO.	QTY	DESCRIPTION
1	37107B13	7	Release pin
2	00788457	1	Spacer bushing 3rd point
3	610715C8	1	Screw M12X130 UNI5737
4	00788458	1	Pin 3rd point
5	00788459	1	Bracket
6	00788460	2	Arm,a-frame
7	00788461	2	Arm,rear brace FA513
7	00788462	2	Arm,rear brace FA613
8	00787993	15	Self-locking nut M12 high UNI7473
9	02959661	4	Screw M12X35 UNI6739
10	00788463	4	Lower coupling arm pin
11	00788464	2	Pin 3rd lower point
12	61071068	8	Screw M12X85 UNI5737
13	00788465	2	Wdmt,axle arm FA513
13	00788466	2	Wdmt,axle arm FA613
14	00788467	2	Arm, 3rd lower point
15	70236C	8	Flat washer Ø12 UNI6593
16	00788468	4	Spacer height: 6 mm
17	00788469	4	Spacer height: 12.5 mm
18	00788470	4	Spacer height: 16 mm
19	00788471	4	Spacer height: 25 mm
20	00788472	4	Spacer height: 32 mm
21	00762535	4	Lubricator M8
22	00788441	4	Spacer
23	00788473	4	Wheel fork
24	00788474	4	Release pin snap
25	00788476	8	Bearing iglodur M250
26	00788475	4	Wheel mounting spacer
27	00788488	8	Short solid tire spacer
28	610715C8	4	Screw M12X130, UNI5737
29	00788489	4	Solid tire Ø250x85
30	EAX40091-10104	1	Joint AX4 910/1126 1024010-1024010 CE SS
31	701513C	2	Flat washer UNI6592

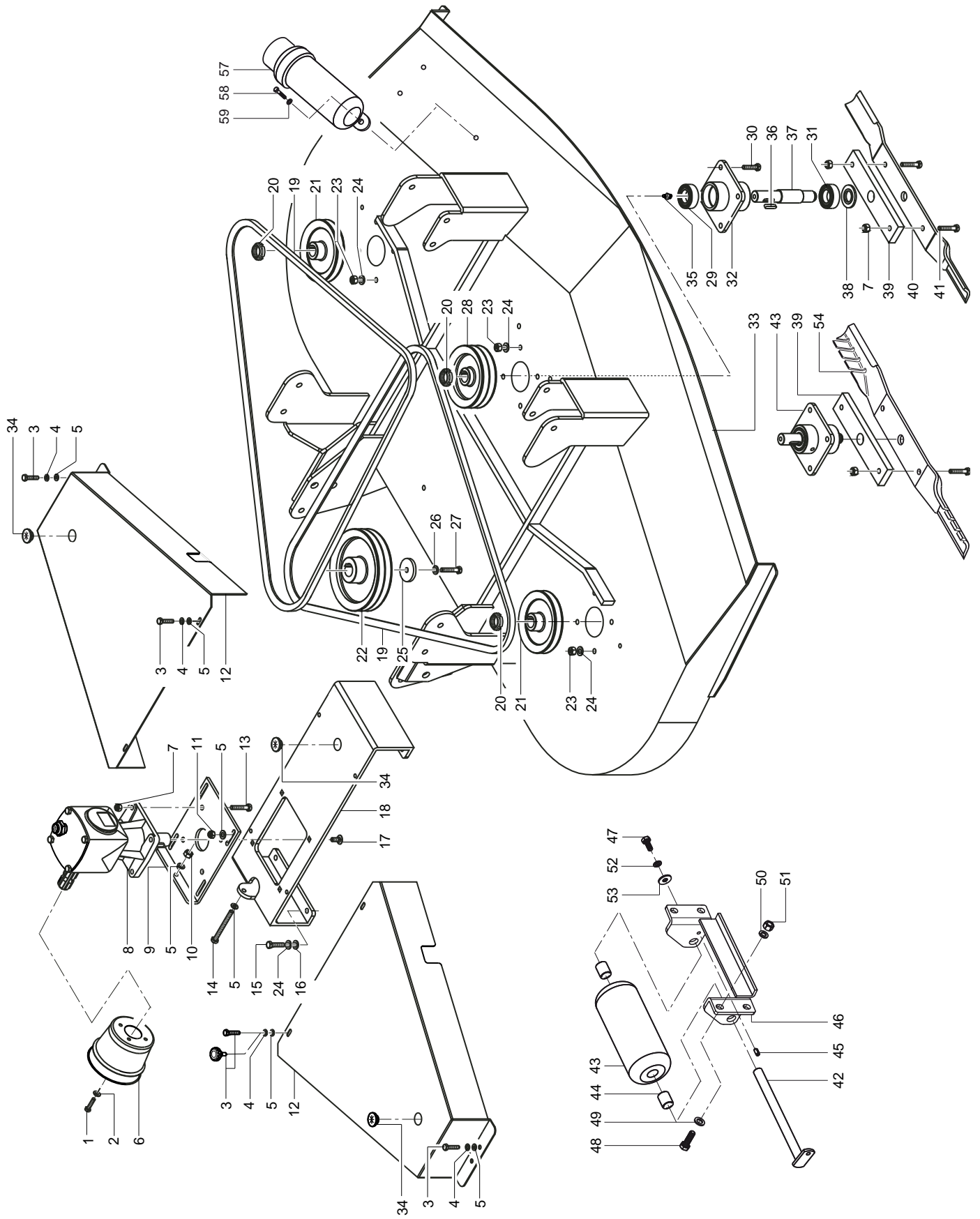
PART LISTING SECTION FA513/FA613



## PART LISTING SECTION FA513/FA613

ITEM	PART. NO.	QTY	DESCRIPTION
1	710830	1	Key 10X30X8 UNI6604
2	00754757	1	Bearing 30207
3	00788478	1	Ring bevel gear Z34
4	00765694	1	Valve plug
5	02958784	4	Screw M8X20 UNI5739
6	00788479	1	Cover
7	00753231	4	Washer Schnorr M8
8	00763206	1	Oil seal Ø35x72x10
9	00762510	1	Inner Seeger-clip
10	00564800	1	Bearing 6207
11	00788480	1	Ring shaft
12		1	Gear box housing
13	00788485	1	Bearing 32008
14	00788481	1	Bearing spacer
15	00752916	1	Bearing 30208
16	00788482	1	O ring 129
17	00788483	1	Spacer
18	00763205	1	Oil seal 50x80x10
19	00788066	1	Locknut M40x1.5
20	00788484	1	Taper pinion Z12
21	710840	1	Key 10X40X8 UNI6604
22	00785993	1	Screw Al/Cu
23	00762419	1	Plug M14
24	00785981	1	Screw Al/Cu

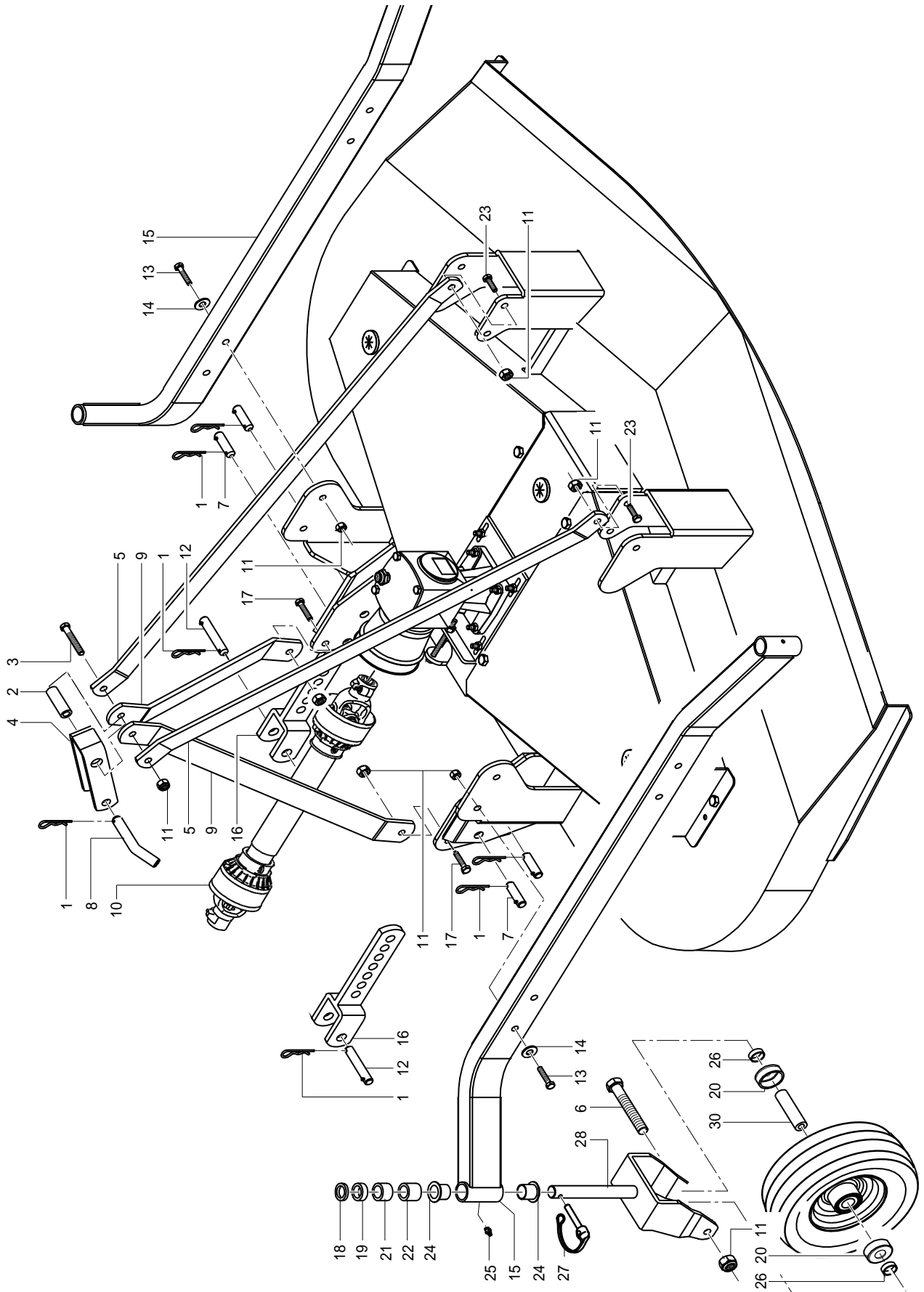
# PART LISTING SECTION FA713



## PART LISTING SECTION FA713

ITEM	PART. NO.	QTY	DESCRIPTION
1	61354C8	4	Screw M8x16x1,25 UNI5739
2	00788490	4	Washer Ø9x24x2,5 UNI6593
3	00754764	8	Screw M10x20x1,5 UNI5739
3	00788491	8	Knob M10x20
4	02971997	8	Washer Ø10
5	701512C	8	Washer Ø10 UNI6592 DIN125
6	00788425	1	Protection
7	00787993	10	Self locking nut M12 PG UNI7473
8	00788426	1	Overgear
9	00788427	1	Plate
10	00788492	1	Self locking nut M10 PG UNI7473
11	701111C	4	Self locking nut M10 PG UNI7474
12	00788493	1	Belt cover LH
13	61379C8	4	Screw M12x40x1,75 UNI5737
14	613620C8	1	Screw M10x80x1,5 UNI5739
15	0295661	4	Screw M12x35x1,5 UNI5739
16	70236C	4	Flat washer, Ø12x25 UNI6593
17	70632C4	4	Screw M10x30x1,5 UNI5731
18	00788494	1	Support
19	00788495	2	Belt SPB 2360
20	3668425	3	Self-locking ring M30x1,5
21	00788496	2	Driven pulley SPB 160x1
22	00788497	1	Driving pulley SPB 212x2
23	00756024	12	Self locking nut M12 PG UNI5587
24	02971997	16	Washer Ø12
25	00788439	1	Washer
26	9100206	1	Cock washer Ø12 UNI1751
27	61379C8	1	Screw M12x40x1,75 UNI5737
28	00788498	1	Central driven pulley SPB 160x2
29	3636003	2	Bearing 6206 2RS
30	02959661	12	Screw M12x35x1,75 UNI5739
31	50032187	3	Bearing 6206 RS
32	00788499	3	Support, hub
33	00788500	1	Deck
34	00788445	3	Plug for lubrication
35	00762535	3	Grease nipple M8x1,25
36	00785133	3	Key 10x8x35 UNI6604
37	00788501	3	Shaft
38	00788502	3	Shaft spacer
39	00788503	3	Blade bar
40	00788504	3	Uplift blade
41	00766177	6	Screw M12x45x1,75 UNI5737
42	00788452	1	Roller pin
43	00788453	1	Front roller
44	00788454	2	Bearing
45	70353W	1	Split pin 8x14
46	00788455	1	Support
47	61368C8	1	Screw M10x25 PG UNI5739
48	61379C8	4	Screw M12x40 PG UNI5739
49	70236C	4	Washer Ø12 UNI6593
50	9100206	4	Washer Ø12 UNI1751
51	00762371	4	Nut M 12 PG UNI5587
52	00755954	1	Washer Ø10 UNI1751, LOCR
53	00788506	1	Washer Ø10x24 UNI6593
54	00788505	3	Blade (mulching)
55	00788507	1	Belt cover RH
56	00788508	3	AS9 blade support hub
57	00776031	1	Canister
58		3	Screw M6X16 UNI5739
59		3	Washer Ø6 UNI1751

# PART LISTING SECTION FA713

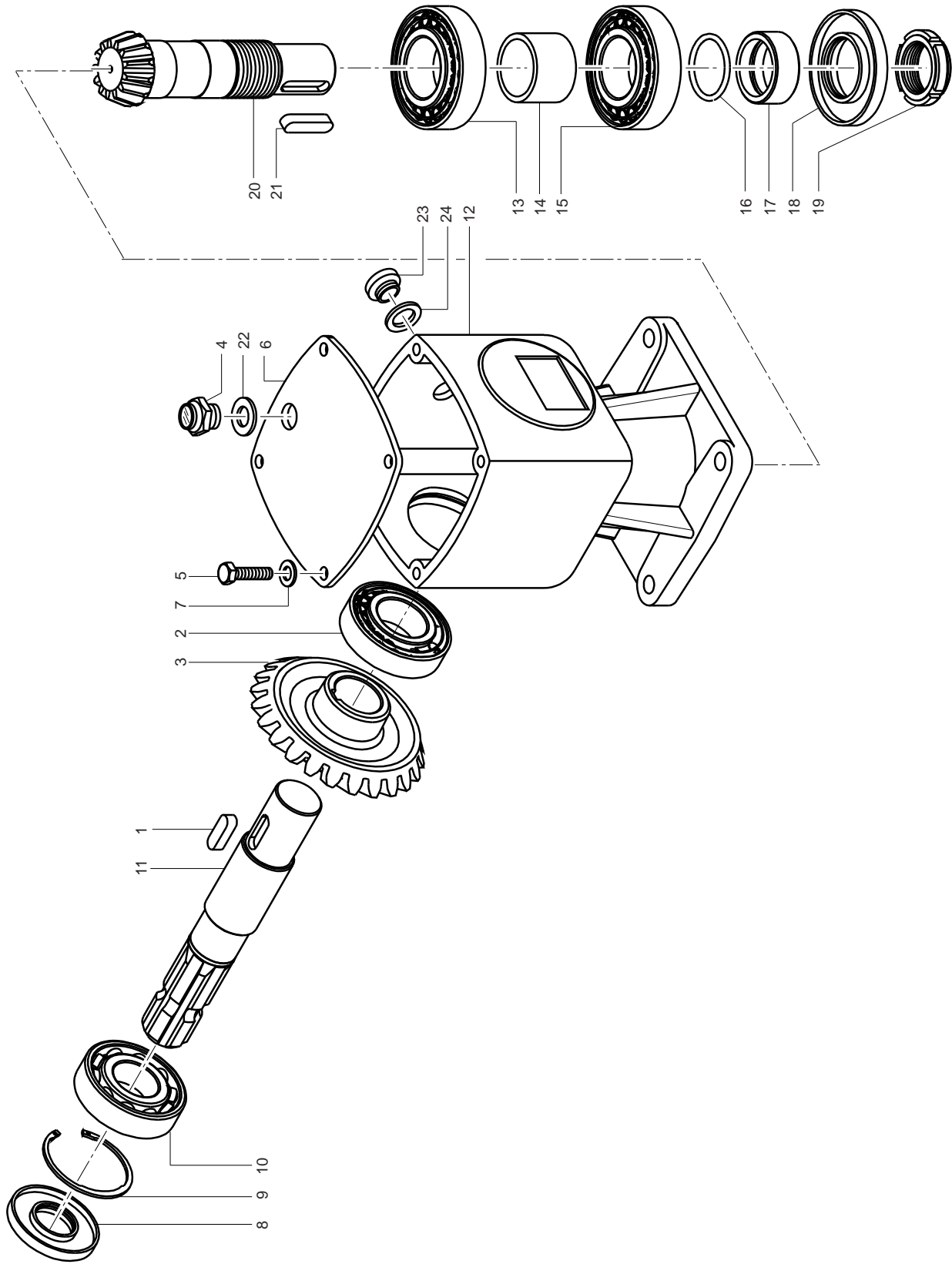




## PART LISTING SECTION FA713

ITEM	PART. NO.	QTY	DESCRIPTION
1	37107B13	7	Split pin Ø4
2	00788509	1	Bushing
3	610814C8	1	Screw M14x130x2 UNI 5737
4	00788510	1	Bracket
5	00788511	2	Brace, rear arm
6	610818C8	4	Screw M14x170x2 UNI 5737
7	00788463	4	Pin, lower arm
8	00788458	1	Pin 3rd upper point
9	00788512	21	Upper junction for 3rd point
10	EAX40091-10104	1	Joint AX4 910/1126 1024010-1024010 CE SS
11	00788513	15	Self locking nut M14 PG UNI 7473
12	00788464	2	Pin
13	61089C8	8	Screw M14x85 UNI 5737
14	00788514	8	Washer Ø14x48x4 UNI 6593
15	00788515	2	Arm, axle
16	00788467	2	Lower junction for 3rd point
17	61387C8	2	Screw M14x40x2 UNI 5739
18	00788516	4	Spacer, height ADT 61mm
19	00788517	4	Spacer, height ADT 12.5mm
20	00788520	4	Bearing stud/solid tire
21	00788518	4	Spacer, height ADT 25mm
22	00788519	4	Spacer, height ADT 32mm
23	00765672	2	Screw M14x35x2 UNI 5739
24	00788521	8	Bushing M250 MFM-2836-20
25	00762535	4	Grease nipple M8x1,25
26	00788488	8	Spacer H 25 mm
27	00788474	4	Linch pin Ø8x45
28	00788523	4	Fork Ø320
29	00788522	4	Solid wheel RC40 310x100 P
30	00788524	4	Spacer, wheel mount

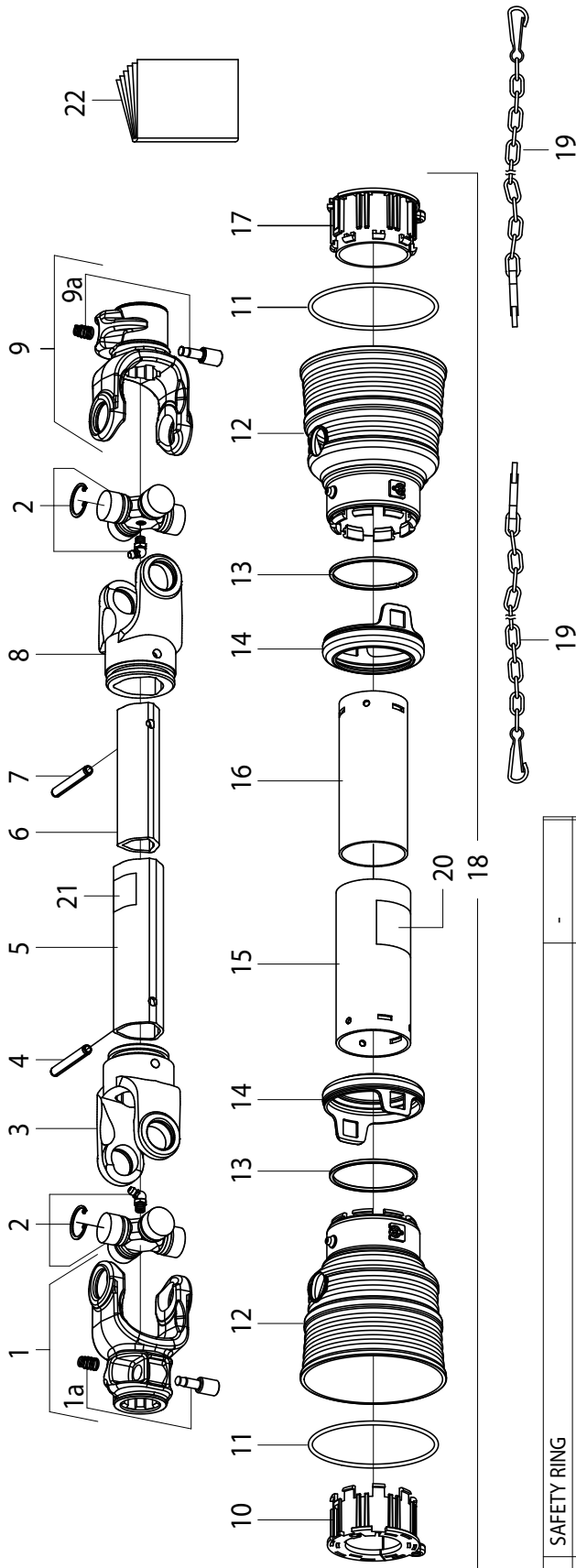
# PART LISTING SECTION FA713



## PART LISTING SECTION FA713

ITEM	PART. NO.	QTY	DESCRIPTION
1	710830	1	Key 10X30X8 UNI6604
2	00754757	1	Bearing 30207
3	00788478	1	Ring bevel gear Z34
4	00765694	1	Valve plug
5	02958784	4	Screw M8X20 UNI5739
6	00788479	1	Cover
7	00753231	4	Washer Schnorr M8
8	00763206	1	Oil seal Ø35x72x10
9	00762510	1	Inner Seeger-clip
10	00564800	1	Bearing 6207
11	00788480	1	Ring shaft
12		1	Gear box housing
13	00788485	1	Bearing 32008
14	00788481	1	Bearing spacer
15	00752916	1	Bearing 30208
16	00788482	1	O ring 129
17	00788483	1	Spacer
18	00763205	1	Oil seal 50x80x10
19	00788066	1	Locknut M40x1.5
20	00788484	1	Taper pinion Z12
21	710840	1	Key 10X40X8 UNI6604
22	00785993	1	Screw Al/Cu
23	00762419	1	Plug M14
24	00785981	1	Screw Al/Cu

# PART LISTING SECTION FA513/FA613



DET.	QTY	DESCRIPTION	CODE	DET.	QTY	DESCRIPTION	CODE
13	2	SAFETY RING	-	19	2	ANTIROTATION CHAIN	00756005
12	2	SOFT STANDARD CONE	-	19	2	COMPLETE PROTECTION	00787527
11	2	STIFFENING RING	-	26	1	USER MANUAL	-
10	1	TUBE BEARING (outer tube)	00787524	25	1	INNER DECAL	00756004
9a	1	PUSH PIN KIT	00787523	24	1	OUTER DECAL	00756005
9	1	YOKE ASSEMBLY (IMPLEMENT END)	00786709	23	1	ANTIROTATION CHAIN	-
8	1	INNER TUBE YOKE	703517W	22	1	COMPLETE PROTECTION	00787527
7	1	8x55 1485DIN ROLL PIN (inner tube)	-	21	1	TUBE BEARING (inner tube)	-
6	1	INNER TUBE	-	20	1	INNER TUBE SHIELD	-
5	1	OUTER TUBE	-	19	2	OUTER TUBE SHIELD	-
4	1	8x60 1485DIN ROLL PIN (outer tube)	703518W	18	1	SAFETY SLEEVE	-
3	1	OUTER TUBE YOKE	00786708	17	1		
2	2	CROSS ASSEMBLY	00787525	16	1		
1a	1	PUSH PIN KIT	00787524	15	1		
1	1	YOKE ASSEMBLY (TRACTOR END)	00787523	14	1		

drawn:	V. DI GIOVANNI	date:	11/02/2013
scale:	1:1	part no.:	AX40091-10104
rev.:	A4	description:	SPARE PARTS LAY-OUT
customer (part no.):	ALAMO	weight (kg/lb):	
title:	AX4 910/1126 1024010-1024010 CESS	note:	
name:		temporary:	
date:		customer (part no.):	ALAMO
R.A.T.:		title:	SPARE PARTS LAY-OUT











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