



**RG 1625A SUPER Jr.
STUMP CUTTER
OPERATOR MANUAL**



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This Manual is published by Rayco Manufacturing, Inc. for the benefit of the users of RAYCO products. Rayco Manufacturing, Inc. has made every effort to ensure that this manual is correct and up to date at the time of publication. However, due to continuous improvements, Rayco Manufacturing, Inc. reserves the right to make changes in the contents, at any time, without notice or obligation.

Each machine shipped contains an *Operator & Parts Manual* to familiarize the operator with the proper operating, lubricating, and maintenance instructions. This helps to ensure the best possible performance and service from the machine. Read and understand all instructions before attempting to operate this machine. This manual should be readily available for reference at all times. Additional copies of this manual may be purchased from RAYCO.

This RAYCO Stump Cutter was designed and manufactured by Rayco Manufacturing, Inc., Wooster, Ohio. Due to continuous improvements, RAYCO reserves the right to make changes in engineering, design, and specifications, or discontinue manufacture, at any time, without notice or obligation.

Always have a record of the model numbers and serial numbers for your machine to specify when ordering parts. Record your machine model and serial numbers below for your personal records.

IDENTIFICATION NUMBERS		
	Model Number	Serial Number
Stump Cutter		
Engine		

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Foreword

About These Manuals

These manuals contain safety, operating, lubrication, maintenance, troubleshooting and parts information.

Read - study - keep them with the machine - adhere to all of the recommendations.

NOTICE

Where the engine is concerned, this manual makes frequent reference to the Kohler Engines Owner's Manual, which was packed in your operator's kit. Keep it, therefore, with these RG1625 SUPER Jr. Stump Cutter Manuals so that it may be readily used.

Guards and covers may have been removed for illustrative purposes. Some photographs or illustrations in this publication show details or attachments that may be different from your machine. Continuing improvement and advancement of product design may have caused changes to your machine which are not included in this publication.

Whenever a question arises regarding your machine, or this publication, please consult RAYCO for the latest available information.

NOTICE

When the NOTICE heading appears in this publication, what follows is either a clarification or information that will assist you in avoiding damage to the machine or property.

Operator Manual

Safety

The "Safety" section lists basic safety precautions. In addition, this section identifies the text and locations of warning labels used on the machine. Read and understand the basic precautions listed in the "Safety" section beforehand, and apply them always as you operate, transport, perform maintenance, and repair the product.

Operation

The "Operation" section is a reference for the new operator and a refresher for the experienced one. This section includes a discussion of machine controls and how to operate the machine.

Photographs and illustrations assist the operator in correct procedures of checking, starting, operating, and stopping the machine.

Operating techniques outlined in this publication are basic. Skill and techniques develop as the operator gains knowledge of the machine and its capabilities.

Maintenance Manual

Maintenance

The "Maintenance" section is a guide to equipment care. A combination of step-by-step instructions and helpful illustrations and photographs accompany maintenance items throughout this section.

Trouble-Shooting

Possible symptoms are listed with a description of associated problems and solutions. A description of how the hydraulic system works is given, as well as diagrams of the hydraulic and electrical systems to assist the intuitive troubleshooter in solving problems.

Parts Manual

Parts are readily found through illustrations with accompanying RAYCO part numbers. The machine is broken down into its basic systems and assemblies to enable ease of finding parts. A separate engine Spare Parts Catalog is also provided for the aid in identification and ordering engine parts. Please consult your local Kohler dealer or your local RAYCO dealer for obtaining engine parts and service.

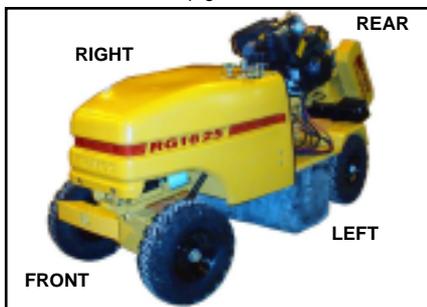
FOREWORD

A Description of the Machine

Design

The RG1625 SUPER Jr.™ stump cutter is designed for your maximum benefit for every dollar spent. The machine is constructed for durability and easy maneuvering, for those hard to reach tree stumps and roots. Its 17" diameter cutting wheel with 18 Rayco Superteeth is powerfully driven through dual V-belts and a low maintenance PolyChain® GT® belt with tough Kevlar® cords, starting and stopping via an electric clutch, with a 25 horsepower Kohler Command 25HP OHV V-TWIN engine at its source. Cutting boom motion and the self-propel drive are entirely hydraulic. The hydraulic controls each include self-centering fingertip control levers.

The machine chassis features rectangular steel tubing and steel guard construction, mounted on extra gripping deep tread tires. The operator benefits from a steel cutting wheel guard and heavy rubber curtains, such that his work may be performed with safety and efficiency. The RG 1625A SUPER Jr. has the unique ability to pass through a 36" gate under its own power. Other special features of the RG 1625A SUPER Jr. include dual cross travel cylinders, spherical bearing in the pivot head, hardened replaceable bushing on all cylinder ends, flange type bearings on the axle, 6-1/2 gallon fuel tank, steel belt and PolyChain® guards, and an easy access ignition switch on the engine control panel. Among available options are dual removable travel wheels for increased stability and travel traction, command cut, and additional chip guards.



NOTICE

The hood end is considered to be the front of the machine, while the cutting end is the rear. Accordingly, the left and right hand sides of the machine are considered to be the same as the operator's left and right hand side when he stands at the rear of the machine, facing towards the front.

For further design information see the "Specifications" section of the **Maintenance Manual**.

How it works

The machine removes tree stumps by the repeated gradual sweeping of a multi-toothed high-speed rotating cutting wheel. The cutting wheel has teeth on its side, in a strategic pattern. The rotating cutting wheel takes a sweep from one side of the stump to the other, each tooth rapidly tearing and stripping away small pieces of stump. After each sweep of 1/4 to 1/2 inches of depth, the cutting wheel is advanced 1/4 to 1/2 inches further into the stump, and the procedure is simply repeated again and again, under the precise control of the operator, until the stump is satisfactorily removed.

Serial Numbers



Whenever communicating with RAYCO or your RAYCO dealer, have your machine serial number handy, as it can help pinpoint most exactly what information is needed in caring for your machine.

It is stamped on the operator's side of the frame behind the bumper. Follow the instructions found in the *Kohler Engine Owner's Manual* for locating and recording the engine identification numbers. For ready reference, record them both in the boxes provided on the inside front cover of this manual.

Safety

Tragic accidents involving machinery operation, maintenance, and repair are normally caused by failure to observe basic safety rules or precautions. A machine designed for powerful benefit can become an even more powerful setback when potentially hazardous situations go unrecognized.

Rayco Manufacturing, Inc. is greatly concerned with the safety of the operator, as well as all in the vicinity of his work. RAYCO has provided shields, guards, safety decals and other important safety features to aid in using the machine properly. In order to further ensure your safety, therefore, we ask that you properly operate and service your stump cutter.



Improper operation, lubrication, maintenance, or repair of this product can be dangerous and could result in sudden injury or death to operator or bystanders!

Do not operate or perform any lubrication, maintenance, or repair on this product, until you have read, you understand, and you decide to do so in compliance with all of the operation, lubrication, maintenance, and troubleshooting information contained in these stump cutter owner's manuals and that contained in the *Kohler Engine Owner's Manual*, which are included with this machine. Additional manuals are available from RAYCO or your RAYCO dealer.



WARNING

**The meaning of this safety alert symbol is:
Attention! Become Alert!
Your safety is involved!**

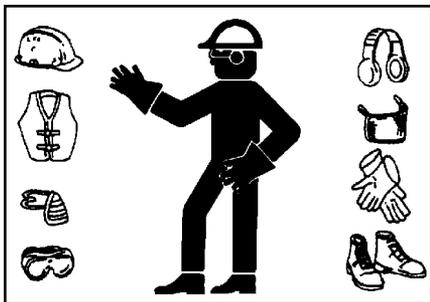
A message, either written or pictorial, follows to explain the hazard. RAYCO cannot anticipate every possible circumstance that might involve a potential hazard, however. The warnings in these publications and on the product are not all inclusive. If you desire to make use of a tool, procedure, work method, or operating technique not specifically outlined by RAYCO, therefore, you must use it only if you have accurately evaluated it and found that it threatens no one's safety. You should also ensure that the product will not be damaged or made unsafe by the operation, lubrication, maintenance, or repair procedures that you choose.

The procedures described in this "Safety" section may not be fully explained here, but a more complete explanation is given in the "Operation", section in this manual, or in the "Maintenance Intervals" or "Troubleshooting" sections of the **Maintenance Manual**.

The information, specifications, and illustrations in this publication were produced on the basis of information available at the time it was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items may change at any time. These changes can affect the service given to the product. Obtain the complete and most current information before starting any job. Your RAYCO dealer or RAYCO has the most current information available.

SAFETY

General Hazard Information



Wear a protective face shield, protective glasses, hearing protection, and other protective equipment as required by job conditions.

Do not wear loose clothing or jewelry that can catch on controls or other parts of the machine.

Make certain all protective guards and covers are secured in place on the machine.

Keep the machine free of foreign material, such as debris, oil, tools, and other items which are not part of the machine.

Never put maintenance fluids into glass containers.

Complete all needed repairs before operation.

Do not allow untrained personnel to use the machine.

The cutting boom can swing during loading and shipping and cause personal injury if it is not secured by the cutting boom lock block. Be sure that it is properly secured.

Beware of the possibilities of unsafe practices of others. Always consider what might have been neglected by a previous operator so that his possible oversight could not cause harm during your use of the machine.

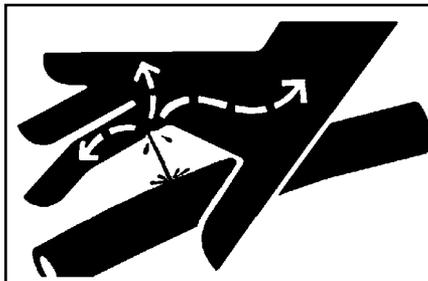
Pressure Air

Pressure air (i.e. from an air compressor) can cause personal injury.

When using pressure air for cleaning, wear a protective face shield, protective clothing, and protective shoes.

The maximum air pressure used for cleaning purposes must be less than 30 psi (205 kPa).

Fluid Penetration



Never allow your hand or other part of the body to get near a pressurized fluid leak. Instead, use a board or cardboard when checking for a leak. Escaping fluid under pressure, especially an invisible pinhole sized leak, can harmfully penetrate body tissue, causing serious injury, and possible death.



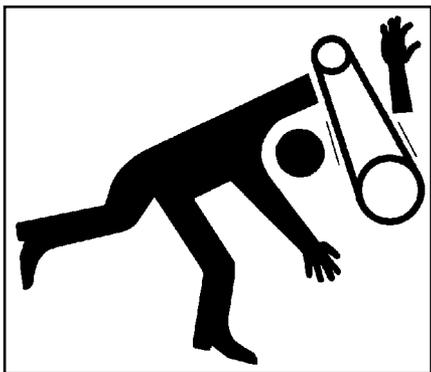
WARNING

The attention of a physician who is specially trained to treat such an injury, must be sought immediately if penetration into skin or any mucous membrane occurs. Serious infection or reaction will soon result if such a physician is not immediately consulted.

SAFETY

Crushing, Cutting Prevention

1. Support the cutting boom and the machine securely when working beneath them. Do not depend on the hydraulic cylinders to hold the cutting wheel up. It can fall if a control is moved or if a hydraulic line breaks.
2. Never attempt adjustments when the machine is moving or the engine running unless otherwise specified, and if so, only with extreme caution.
3. Where there are boom linkages, the clearance in the linkage area will increase or decrease with movement of the boom. Even without the engine running, therefore, a hand, for example could become severely injured if it were involved in the linkage when the cutting boom is being swung from left to right. Stay clear of linkages when movement is occurring.



4. Stay clear of all rotating and moving parts! A moving belt and pulleys or chain and sprocket can suddenly pull a limb into them, causing loss of or severe injury to an arm. A rotating cutting wheel can suddenly cut off an arm or leg.
5. Wear protective glasses when striking a machine part, to avoid eye injury.
6. Consult RAYCO or your RAYCO dealer for lifting instructions.
7. When the machine is parked, the wheels should be securely chocked to prevent the possibility of the machine rolling uncontrolled.

Burn, Explosion Prevention



1. All fuels and most lubricants are flammable. Fuel leaked or spilled onto hot surfaces or electrical components can cause a fire. Do not smoke while refueling, while in a refueling area, or where flammable materials are stored. Keep all fuels and lubricants stored in properly marked containers and away from all unauthorized persons. Store all oily rags or other flammable material in a protective container, in a safe place.
2. Do not weld or flame-cut on pipes, tubes, or tanks that contain flammable fluids. Clean them thoroughly with nonflammable solvent before welding or flame-cutting on them. Remove all flammable materials such as fuel, oil and other debris before they accumulate on the machine.
3. Dangerous explosion may occur with improper use or care of starting fluid!
 - Do not attempt to use starting fluid to help start engine when using heating plug.
 - Do not use starting fluid without a dispensing apparatus that is approved by the engine manufacturer.
 - Read and follow starting fluid manufacturer's instructions when using starting fluid to start a machine.
 - Starting fluid is poisonous and flammable.
 - Breathing starting fluid vapors or repeated contact of starting fluid with skin can cause personal injury.
 - Use starting fluid only in well ventilated areas.
 - Do not smoke when using starting fluid.
 - Use starting fluid with care to avoid fires.
 - Do not store replacement starting fluid cylinders in living areas.

SAFETY

- Do not store starting fluid in direct sunlight or at temperatures above 102°F (39°C).
 - Discard cylinders in a safe place. Do not puncture or burn cylinders.
 - Keep starting fluid cylinders out of the reach of unauthorized personnel.
4. Do not expose the machine to flames, burning brush, etc. Shields which protect hot exhaust components from oil or fuel spray in the event of a fire, tube, or seal failure must be installed correctly.
 5. Do not smoke in areas where batteries are charged. When using jumper cables always connect positive (+) cable, to positive (+) terminal of battery (the terminal that is connected to starter solenoid), and negative (-) cable from external source, to ground. Make last connection and first disconnection at a point away from battery. Always connect negative (-) cable last, and disconnect it first. See the "Operation" section of this manual for specific instructions.
 6. Clean and tighten all electrical connections. Check daily for loose or frayed electrical wires. Have all loose or frayed electrical wires tightened, repaired or replaced before operating the machine. Never allow a live electrical wire make contact with your body or with any metal that is touching your body.
 7. Have a fire extinguisher available and know how to use it. Inspect and have it serviced as recommended on its instruction plate.

Oils

Hot oils and components can cause personal burns. Do not allow hot oil or components to contact the skin.

At operating temperature, the hydraulic tank is hot.

Relieve all pressure in hydraulic system before any lines, fittings, or components are loosened or disconnected.

Battery Acid

Always wear protective clothing and eyeglasses when working with battery.

For further important battery safety information, consult the *Kohler Engines Owner's Manual*.

Starting Fluid

Read and follow the starting fluid manufacturer's instructions when using starting fluid to start a machine.

Starting fluid is poisonous and flammable.

Breathing starting fluid vapors or repeated contact of starting fluid with skin can cause personal injury.

Use starting fluid only in well ventilated areas.

Do not smoke when using starting fluid.

Use starting fluid with care to avoid fires.

Do not store cans of starting fluid in living areas.

Do not store starting fluid in direct sunlight or at temperatures above 102°F (39°C). Discard cans in a safe place. Do not puncture or burn cans.

Keep starting fluid cans out of the reach of children.

Lines, Tubes, and Hoses

Do not bend or strike high pressure lines. Do not install bent or damaged lines, tubes, or hoses.

Repair any loose or damaged fuel and oil lines, tubes, and hoses. Leaks can cause fires. Contact RAYCO or your RAYCO dealer for repair or replacement.

Check lines, tubes, and hoses carefully. Do not use your bare hand to check for leaks. See "General Hazard Information - Fluid Penetration" in this "Safety" section for more details. Tighten all connections sufficiently.

Replace if any of the following conditions are found:

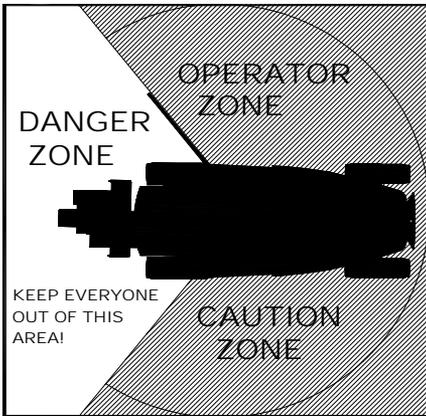
1. End fittings damaged or leaking
2. Outer covering chafed or cut, and fabric reinforcing exposed.
3. Outer covering ballooning locally.
4. Evidence of kinking or crushing of the flexible part of the hose.
5. End fittings displaced.

Make sure that all clamps, guards, and heat shields are installed correctly to prevent vibration, rubbing against other parts and against excessive heat, during operation.

SAFETY

Before Starting the Engine

1. Review all of the safety decals that are placed on the machine for your safety and convenience. See the **Parts** manual for locating all decals on the machine.
2. Make sure that all shields and guards are in place, and in good condition prior to operating the machine.
3. Only responsible, properly instructed individuals should operate this machine. Inexperienced operators must always be carefully supervised.
4. Check the cutting wheel for damaged, worn, or missing teeth, and replace as necessary.
5. Make sure that no one is working on, underneath or close to the machine before starting the engine or beginning to move the machine. Make sure that the area is free of personnel.
6. Check the stumps to be removed for embedded nails, wire, metal fence posts, and for rocks or other buried impediments which may become dangerously thrown or cause unexpected machine movements when encountered by the cutting wheel.



7. Ensure that everyone in the vicinity is aware of the DANGER ZONE associated with this machine. (See diagram above.) Everyone must avoid the DANGER ZONE at all times when the machine is in operation.
8. Make no alterations or modifications to your RAYCO stump cutter unless requested or recommended by Rayco Manufacturing Inc.

9. When starting the engine, the machine controls which cause machine movements (the valve bank levers and the cutting wheel ON/OFF switch) must be in the NEUTRAL or OFF positions, so that machine motion, which may result in death or severe injury, does not occur.



The self-propel FORWARD/REVERSE lever, the steer RIGHT/LEFT lever, the cutting wheel UP/DOWN lever, the and the cutting wheel travel RIGHT/LEFT control lever automatically return to the center position when left alone by the operator. No related machine motions are allowed when they are in the center position. Ensure that nothing is leaning against any of the controls and that each is in the center position when starting the engine, or uncontrolled machine movement may occur, resulting in possible death or severe injury.

The cutting wheel ON/OFF switch (see photo on page 15) is OFF when the switch is flipped DOWN in the OFF position. The machine is designed such that the engine will not start unless it is in the OFF position.

12. Do not start the engine or move any of the controls if there is a "DO NOT OPERATE" or similar warning tag attached to the machine.
13. Do not operate the controls without the engine running, to prevent uncontrolled cutting boom movement.
14. To ensure that the machine cannot roll on its own, the machine should be in at least one of the following states:
 - self-propel drive wheels securely chocked
 - parked on extremely level ground
 - self-propel engage pin and bolt engaged (positioned in deeper slot)
15. Check with the local utilities for the locations of buried pipes and cables where applicable, before operating the machine.

SAFETY

While in Operation

1. Know how to shut the machine off in an emergency.
2. The operator must never leave the controls while the machine is in operation.
3. The operator must take extreme precaution not to accidentally bump a control lever, particularly when any personnel are in the vicinity.
4. Never let clothing, long hair, jewelry, etc. hang loosely. It is possible that they can become entangled in the moving parts or the controls of the machine.
5. Keep head, hands and feet away from moving parts.
6. The engine should not be started within a building unless it is properly ventilated, so as to eliminate the breathing of exhaust fumes, which can cause death.
7. Warm up the engine and the hydraulic oil before operating the machine.
8. Check for proper operation of all controls and protective devices while operating them slowly.
9. Extreme caution must be exercised when cutting stumps on a steep slope. Use of optional dual travel wheels will increase stability. If unsure of stability, however, don't even attempt to cut stumps on a steep slope.
10. Wear appropriate safety equipment, including face shield, protective footwear, and hearing protection.
11. Ensure that everyone in the vicinity is aware of the **DANGER ZONE** associated with this machine. (See diagram in "Before Starting the Engine" section.) You and they must avoid the **DANGER ZONE** at all times when the machine is in operation.
12. For safety, local or state codes or job site operating directives may require a greater distance from obstacles.
13. Do not activate the cutting wheel drive until the boom has been raised and the cutting wheel can rotate freely.
14. Keep eye contact with the cutting wheel at all times that it is rotating.
15. Use only the rear lower portion of the cutting wheel below the shaft. Never undercut the stump, or use the upper portion of the wheel for cutting purposes. Sudden loss of machine control could result.

SAFETY

Normal Shutdown Procedure

In consideration of your own safety as well as that of others, you should always use the following normal shutdown procedures before abandoning the controls for any reason, including cleaning, servicing, transporting, or inspecting the stump cutter. Never deviate from this procedure unless so instructed in this manual or an extreme emergency requires it.

1. Move the engine throttle to the mid-range position.
2. Return the cutting wheel ON/OFF switch to the OFF position. (Flip downward.)



WARNING

Due to high speed low-friction rotation, the cutting wheel may continue to rotate unnoticed, even after the ON/OFF switch has been flipped OFF, and even after the engine has stopped. Be sure to wait for the cutting wheel rotation to completely stop before moving the machine or leaving the controls!

3. Stop the cutting wheel rotation quickly by gently lowering the cutting wheel into the soil.
4. After the cutting wheel has ceased rotation, turn the engine start key to the "OFF" position.
5. Remove the key from the engine start switch.
6. To ensure that machine cannot roll on its own, the machine should be in at least one of the following conditions:
 - self-propel drive wheels securely chocked
 - parked on extremely level ground
 - self-propel engage pin and bolt engaged (positioned in deeper slot)

Emergency Shutdown Procedure

1. Disable the engine by turning the engine keyswitch to the OFF position (downward).
2. If the situation allows, lower the cutting wheel to the ground in order to stop the cutting wheel rotation more quickly.
3. Be sure to allow all moving parts to come to a complete stop.
4. If the situation allows, remove the key from the engine keyswitch.



WARNING

Due to high speed low-friction rotation, the cutting wheel may continue to rotate unnoticed, even after the ON/OFF switch has been flipped OFF, and even after the engine has stopped. Be sure to bring the cutting wheel rotation to a complete stop before moving the machine or leaving the controls!

5. Correct the emergency situation and return to normal operation.

SAFETY**While Servicing and Performing Maintenance on the Machine**

- The machine should be in at least one of the following conditions:
 - self-propel drive wheels securely chocked
 - parked on extremely level ground
 - self-propel engage pin and bolt engaged (positioned in deeper slot)



If the hydraulic system develops a leak, the machine may become free to roll if the wheels are not securely chocked.

- The boom should be resting on the ground or otherwise secured. Do not depend on the hydraulic system to hold the boom in position; if a hose becomes ruptured or a lever is moved it could drop or swing, resulting in personal injury.
- The start key switch should be in the OFF position and engine and all moveable parts stopped.
- The engine start key should be removed and in safekeeping.
- The battery should be disconnected to avoid accidental starts.
- Periodically check the machine for missing, loose or worn bolts, cracked hoses, and loose connections. The cutting wheel should be checked closely for worn or broken teeth, loose pocket bolts, and cracked pockets.
- Leaking hydraulic fluid that is under high pressure may escape visual detection and may have enough force to penetrate the skin surface. Always use a piece of cardboard or wood to detect leaks. See "General Hazard Information - Fluid Penetration" in this "Safety" section for more details.
- Always relieve the pressure in the hydraulic system before loosening line connections or working on the system by pressing and releasing each of the hydraulic control valve levers, with engine OFF. Before the system is repressurized, check connections for tightness and hoses for serviceable condition.

- Replacement parts which are authorized by RAYCO are the only parts which should be used for repair or replacement.

While Transporting the Machine

Refer to page 23 for detailed transporting instructions.

- Center and fully raise the cutting boom, and install the cutting boom lock block and retaining pin.
- Fully close the cutting wheel cross travel control valve.
- Be sure that the machine is securely attached to the trailer lock pin.
- Use extreme caution and drive slowly over terrain that is rough or uneven.
- Obey all local traffic laws, and extend courtesy to other drivers.

Safety Decals

The safety decals located on this machine contain useful and important information which will help you to operate your machine safely. The complete decal kit and location of each decal is given in the **Parts** manual. For your protection, familiarize yourself with each label until you completely understand the warning intended.

To assure that all decals remain in place and in good condition, follow the instructions given below:

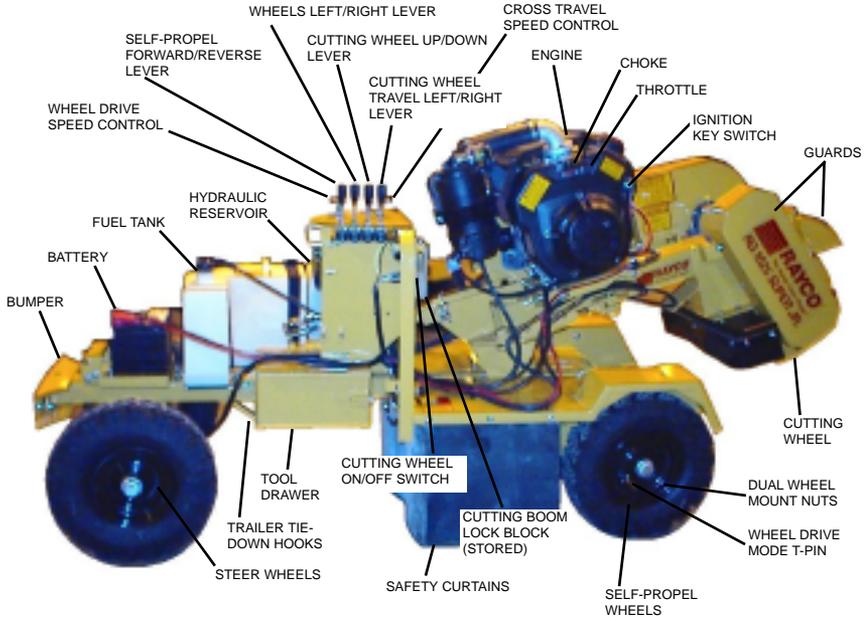
- Use soap and water to keep decals clean. DO NOT use mineral spirits, abrasive cleaners or similar cleaners which will damage the decals.
- Replace any damaged or missing decals. Before attaching decals, the surface temperature of the metal must be at least 40 degrees. The metal should also be clean and dry before attaching the decal.
- If a machine component to which a decal is attached is replaced, be sure to replace the decal as well.
- Replacement decals kits may be purchased from RAYCO or your RAYCO dealer.

Operation

WARNING

Before operating, please consult the "Safety" section for vital information related to operating this powerful machine!

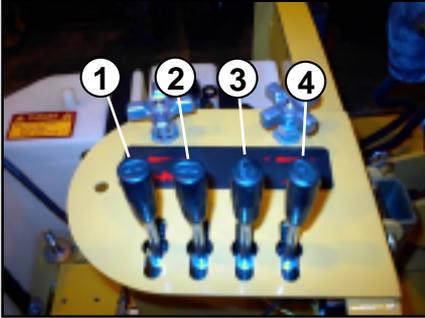
Know Your Machine



Above is an overview of the basic machine components. They are explained in more detail on the following pages.

OPERATION

Machine Controls

**Self-Propel FORWARD/REVERSE Lever (1)**

Pull to move the machine forward (e.g. away from the stump). Push to move the machine in reverse (e.g. toward the stump). Release gradually to hold the machine in place.

Steer RIGHT/LEFT Lever (2)

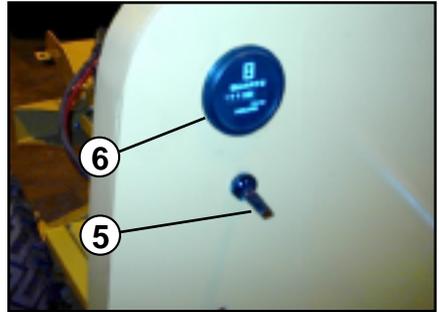
Pull to turn the wheels left. Push to turn the wheels right.

Cutting Wheel UP/DOWN Lever (3)

Pull to raise the cutting wheel. Push to lower the cutting wheel.

Cutting Wheel Travel LEFT/RIGHT Lever (4)

Pull to move the cutting wheel to the left. Push to move the cutting wheel to the right.

**Cutting Wheel ON/OFF Switch (5)**

Flip up to enable Cutting Wheel rotation. Flip down to cut off power to the cutting wheel.

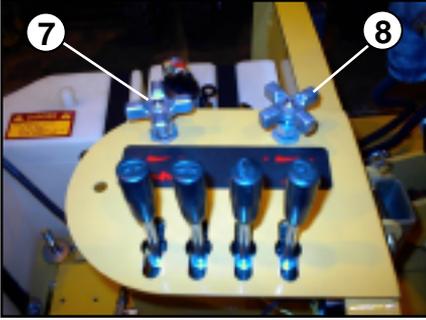
**WARNING**

Rotation does not stop instantly. A rotating cutting wheel is very DANGEROUS! Stand at the controls and watch the cutting wheel until it comes to a complete stop before doing anything else.

Engine Hour Meter (6)

The engine hour meter is a convenient means of tracking machine usage so that maintenance intervals may be accurately measured.

OPERATION

**Wheel Drive SPEED Control (7)**

Turning this valve counterclockwise will decrease the travel speed.
Turning the valve clockwise will increase the travel speed.

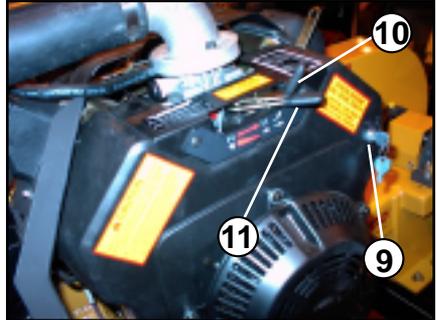
Cross Travel SPEED Control (8)

Turning this valve counterclockwise will decrease the cross travel speed.
Turning the valve clockwise will increase the cross travel speed.

NOTICE

If the cross travel speed control valve is opened too far, drifting of the cutting boom may occur when cutting on a hillside.

WHEN TRANSPORTING, TURN THE VALVE FULLY CLOCKWISE TO CLOSE.

**Ignition Keyswitch (9)**

Turn the key clockwise to the START position to engage the starter. Release the key when the engine starts. (The key will automatically return to the ON position.) Turn the key to the OFF position to shut off the engine. The key cannot be removed from the keyswitch unless in the OFF position.

NOTICE

The engine will not start when the Cutting Wheel ON/OFF Switch is ON.

Choke (10)

The choke should be used when starting a cold engine. Move the handle to the left to engage it. When the engine warms up, move the choke handle back to the right for normal operation. It may be required to move the choke to various positions to start and keep the engine running until warmed up.

Throttle (11)

Pulling this handle to the left will increase the engine speed. Moving this lever to the right will decrease the engine speed. The throttle lever should normally be in the SLOW position when turning the cutting wheel ON or OFF. It may be necessary to increase engine speed slightly, however, when turning the cutting wheel ON, in order to prevent stalling. Position the throttle lever in the maximum position when cutting stumps.

OPERATION

Other Machine Components**Cutting Boom Lock Block**

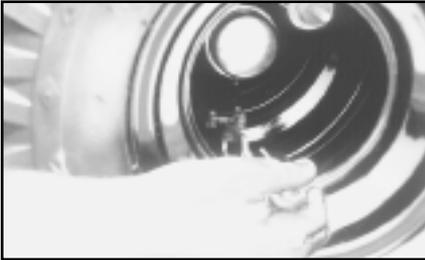
The cutting boom lock block prevents the cutting boom from settling during transportation and when the machine is not in use.

When ready to transport the machine, raise the cutting boom all the way up, and remove the hairpin and the ring pin that hold the transport block in place under the cutting boom. Swing the transport block down and place it in the cradle on the main frame between the fenders. Lower the cutting boom so that the block rests securely in the cradle. Before operating the machine, reverse the above procedure.

Dual Wheels (Optional)

The dual wheels provide increased stability & traction, yet can be easily removed for maneuvering machine through tight spots. To remove a wheel:

- Drive the machine over a small wooden board under the inner wheel so that the outer wheel is slightly raised off of the ground.



- Loosen the nut on the outer end of each stud until the larger hole in the stud aligns with the shoulder bolt that is attached to the inner wheel "wings" (1).



- Pivot each stud so that it is released from the shoulder bolts on the inner wheel.
- Remove the outer wheel.



- Place the outer wheel in safe-keeping until needed again. The shoulder bolts, lockwashers and nuts may be left on the inner wheels until the next use.
- To remount the wheel, reverse the above procedure. Tighten the nuts firmly.

OPERATION

Pre-Starting Inspection

NOTICE

To ensure the long life and economical operation of your stump cutter, we highly recommend that the operator be well instructed in both the operation and maintenance of this machine.

Inspect the hydraulic system for leaks. Check the hydraulic oil level. Inspect the machine and perform each of the "10 Service Hours or Daily" maintenance inspections and services (see "Maintenance Intervals" section in the **Maintenance Manual**) as needed before operating the machine.

Starting the Engine



Understand and heed the instructions in the "Safety" section of this manual, in its entirety, before proceeding.

NOTICE

Do not operate the starter for more than 10 seconds at a time. If the engine does not start, allow a 60-second cool-down period between starting attempts. Failure to follow these guidelines may burn out the starter motor.

If the key switch is released before the engine starts, wait until the starter and the engine stops turning before trying again. This will prevent possible damage to the starter and/or flywheel.

If the temperature is extremely cold, it may be necessary to use cold weather starting aids. Follow the manufacturer's recommended procedure when using starting aids.

Always change the hydraulic oil filter at the proper times. Do not allow the engine to run without the filter installed. Failure to heed either directive will result in poor machine performance and severe damage.

Normal Starting



DO NOT start cutting wheel rotation until machine is in cutting position, next to stump!

1. Position the engine throttle at idle.
2. If the engine is cold, slide the choke knob to the left.
3. Insert the key, and turn the ignition switch to the START position. Release the key upon starting.
4. Gradually slide the choke knob back to the right as the engine warms up.
5. If the engine is cold, allow the engine to idle (throttle in SLOW position), for a few minutes to warm up the engine before using the machine.

Pre-operation Warm up

1. Allow the engine to warm up at low idle for two minutes.
2. To warm up the hydraulic oil, move the engine throttle to medium engine speed. Run the engine for about two minutes while intermittently holding the cutting wheel raise lever in the RAISE position.
3. Move the engine throttle to the maximum engine speed. Run the engine for an additional two minutes while intermittently holding the cutting wheel raise lever in the RAISE position. This will allow the oil to reach relief pressure, which causes it to warm up more rapidly.
4. Cycle all the controls to allow warm oil to circulate through all the cylinders and lines.

Starting with Jumper Cables

NOTICE

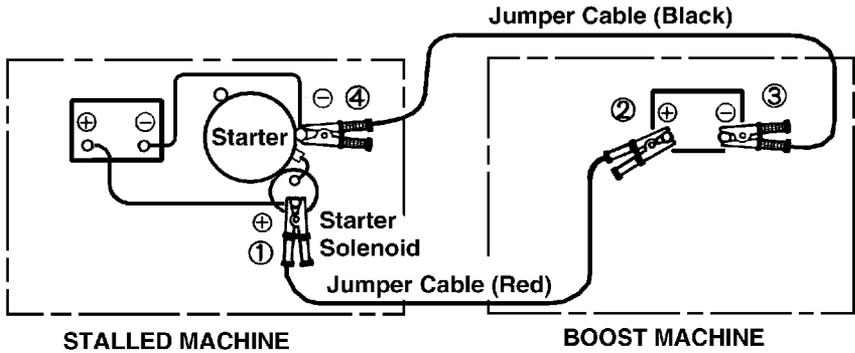
When starting from another machine, make sure the machines do not touch each other. This can prevent damage to engine bearings and electrical circuits.

This machine has a 12 volt starting system. Use only equal voltage for jump starting. Use of a welder or higher voltage will damage electrical system.

OPERATION

SEQUENCE FOR CONNECTING CABLES ① → ② → ③ → ④

SEQUENCE FOR DISCONNECTING CABLES ④ → ③ → ② → ①



1. On the stalled machine, turn the start switch to OFF.
2. Move the boost machine near enough to the stalled machine for cables to reach, but DO NOT ALLOW THE MACHINES TO TOUCH.
3. Stop the engine on the boost machine.
4. Open the battery covers of both machines to purge flammable fumes.
5. Remove all of the battery caps from the batteries (if not maintenance-free type) on both machines, allowing explosive vapors to disperse.
6. Connect the jumper cables:



- (a) Connect the red positive (+) jumper cable to the positive (+) terminal of the starter solenoid of the stalled machine, where the battery red positive (+) cable is already connected. (Pull back the rubber boot to gain access.)
- (b) Connect the other end of the red positive (+) jumper cable to the positive (+) terminal of the battery of the boost machine.
- (c) Connect the black negative (-) jumper cable to the negative (-) terminal of the boost machine battery.
- (d) Connect the other end of the black negative (-) jumper cable to the starter mounting bolt of the stalled machine, where the battery black negative (-) cable is already connected. (Scrape away any paint or rust, and make the connection to bare metal.)
8. Start the engine on the boost machine and allow it to run at high idling speed for about ten minutes. This will partially charge the stalled engine's battery.
9. Start the stalled engine.
10. Immediately after starting the stalled engine, disconnect the jumper cables, in reverse order.
11. Reinstall the battery caps and battery covers.
12. After completion of the above procedure, perform a failure analysis on the starting/charging system of the stalled machine as required.

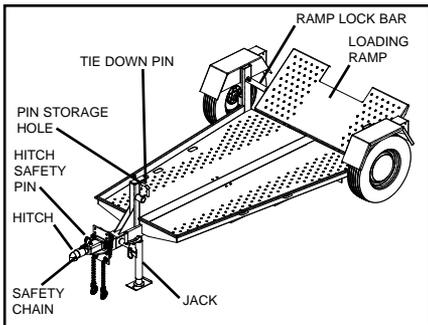
**WARNING**

Do not allow jumper cable clamp to touch the other solenoid terminal. Uncontrolled starting of the engine would occur, which could cause severe injury or death.

OPERATION

Transporting the Machine

The stump cutter may be transported with a pickup truck when proper ramps are used to drive the machine into the truck bed. The preferred method, however, is towing it on a RAYCO trailer (available from RAYCO). Comply with all local laws dealing with the towing of a trailer.



Before towing the machine on the RAYCO trailer (optional equipment), make sure of the following:

1. The cutting boom lock block is installed.
2. The cutting wheel right-left travel speed control valve is closed.
3. The trailer is hitched to the towing vehicle with the safety pin in place, safety chains are in use, and the jack is raised and pivoted away from the ground.
4. The tail lights on the trailer are operating properly and the loading ramps are raised and held up by the lock bars and retaining pins.
5. The speed control valve is closed.

Unloading the Machine From the RAYCO Trailer (optional equipment)

- Both self-propel wheels must be engaged in drive mode (pin and bolt positioned in the deep slot).
- Remove the ramp lock bar retaining pins, and lower the loading ramps.
- Remove the tie-down pin from the bumper of the machine and store it in the sleeve on the trailer.
- Start the engine. (See "Starting the Engine" and "Pre-operation Warm up".)
- Position the engine throttle halfway between SLOW and FAST.

- Gradually push the FORWARD/REVERSE lever and slowly back the machine off of the trailer, until all four wheels are on the ground.



Do not release or jerk the FORWARD/REVERSE lever until the machine is completely unloaded. Otherwise, tipping may result!

- To drive the machine, set the engine at the desired speed, and use the FORWARD/REVERSE lever.

Loading the Machine onto the Trailer

- Both self-propel wheels must be engaged in drive mode (pin and bolt positioned in the deep slot).
- Drive the machine forward and align it with the trailer.
- Unlock and lower the trailer ramp.
- Drive the machine forward so that the front wheels enter the trailer channels, and continue driving the machine up the ramp until the rear drive wheels are on the trailer.
- Remove the machine tie-down pin from the storage sleeve on the trailer and insert it through the matching holes in the machine and the trailer.
- Raise the trailer ramp and lock it in the travel position with the lock bars and associated retaining pins.

OPERATION

Transporting the Machine with Freewheel Disconnects

In the event of a machine malfunction, the RG1625 SUPER JR™ stump cutter may be towed a short distance by using the wheel drive disconnects. These should be used to move the machine in the event that it can not power itself to a desired spot to be repaired.

NOTICE

The freewheel disconnects of the wheel drive should only be used for very short distances. It is advisable to bring a trailer or other means of transportation as close to the RG1625 SUPER JR™ as possible. Use the freewheel disconnects to move the machine to and onto the trailer, or to tow the machine.

Before using freewheel disconnects make sure of the following:

1. Cutting boom lock pin is installed.
2. Cutting wheel swing SPEED control valve is closed.
3. Wheels are chocked.

To disconnect the rear wheel drives:



When the pin (1) on the left-hand wheel is in the deepest slot, the unit is in the self-propel mode (wheels engaged with the hydraulic motor). Pulling out on the pin and rotating a half turn will place the pin in the shallow slot and place the unit in the free-wheeling mode. The machine will be able to turn without front wheel push.



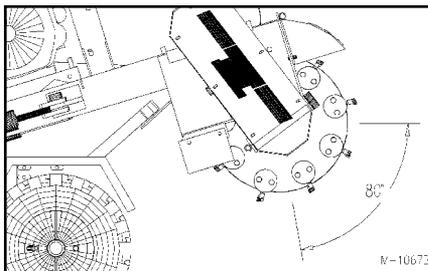
On the right-hand wheel, remove the bolt (2).

WARNING

After the machine is moved to its desired area, switch the wheel drive disconnects back to the original position. If the disconnects are left on, the machine has no braking system and will roll freely. This may cause injury or death.

OPERATION

Removing Stumps



WARNING

Before operating, please consult the "Safety" section for vital information related to operating this powerful machine!

WARNING

Only the portion of cutting wheel within the 80° area shown above should engage stump. Never undercut the stump or use the bottom of the cutting wheel for cutting purposes.

NOTICE

Remove all loose pieces of wood, stones, wire and other debris from the work area before beginning stump removal.

Wind direction should be considered, as it influences the direction that dust and wood chips will be directed.

Always allow a cold engine time to warm up before cutting a stump.

When swinging the cutting wheel, do not use the cutting wheel or boom to stop the swinging motion. Inspect the machine for damage if the boom has been swung hard into the stump or side of a hole.

Whenever the tires of the machine raise off the ground while operating, lower the machine back to the ground smoothly. **DO NOT DROP OR CATCH IT SUDDENLY WITH THE HYDRAULICS.** Damage to the machine can result.

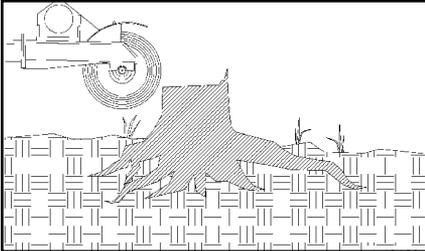
OPERATION

Normal Procedure for Cutting a Stump

WARNING

Never leave the controls when the cutting wheel is rotating!

1. Prepare the machine at the stump:
 - Drive the machine into position with the cutting wheel near the top edge of the stump.



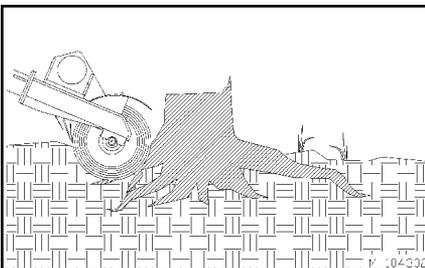
- Engage the self-propel drive wheel engage pin (pull, rotate, release into the deep slot in the sleeve).
- Remove the cutting boom lock-block from under the cutting boom, and store it with its lock-pin on the control bulkhead.
- Move the engine throttle to FAST.
- While moving the boom left and right, adjust the LEFT/RIGHT speed with the cutting wheel cross-travel valve. (Turn counterclockwise for slower travel, clockwise for faster travel.)

WARNING

Keep everyone away when the cutting wheel is ON!

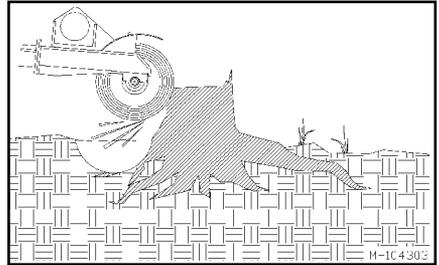
- Start cutting wheel rotation.

2. Remove the roots:



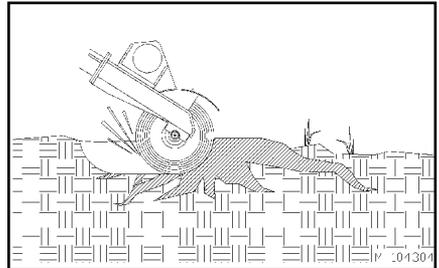
- Swing the cutting wheel to one side, then lower it approximately 1/2" into the near-side roots that are buried at the foot of the stump, and swing the cutting wheel across them, lowering cutting wheel approximately 1/2" before each sweep, until they are sufficiently removed.
- Raise cutting wheel to where center of cutting wheel is just above top of stump.

3. Cut the stump proper:



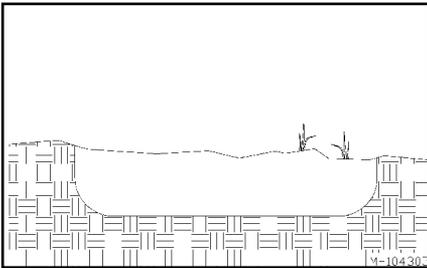
- With the cutting wheel off to one side, advance it horizontally so that when swept across the stump it will remove 1/4" to 1/2" of the stump.
- Sweep the cutting wheel across the stump, cutting away 1/4" to 1/2" of wood.
- Advance the cutting wheel 1/4" to 1/2", and sweep across the stump in the opposite direction.
- Continue sweeping the cutting wheel left and right across the stump, advancing it before each sweep, cutting 1/4" to 1/2" depth of wood with each sweep, until the top level of the stump is all removed.
- Raise the cutting wheel, and retract the machine from the stump until at the near edge of the remaining stump.

4. Cut another level of stump, by repeating step 3.



OPERATION

5. Complete the roots removal:



- Cut the remaining roots as described in STEP 2 until satisfactorily removed.
6. Once the stump has been completely cut:
- Lower the engine speed, and shut off the cutting wheel rotation.

**WARNING**

Due to high speed low-friction rotation, the cutting wheel may continue to rotate unnoticed, even after the ON/OFF switch has been flipped OFF, and even after the engine has stopped. Be sure to bring cutting wheel rotation to a complete stop before moving the machine or leaving the controls!

- Stop the cutting wheel rotation quickly by gently lowering the cutting wheel into the soil.
- Raise and center the cutting wheel and replace the locking devices. Turn the cutting wheel cross-travel valve clockwise until tight, and disengage the left side self-propel wheel. The machine may then be self-propelled to the next destination.

**WARNING**

Shut off the engine by turning the ignition keyswitch to OFF and removing the key when finished using the machine!

OPERATION

Helpful Tips for Operating Machine

- Open the cross travel SPEED control valve one half turn. Fine adjustments can then be made depending on operator preference.
- Open the machine travel speed control valve to control movement into the stump.
- Use smooth, comfortable speeds while operating.
- When it is desired to cut smaller roots, it may be more effective to do so before, rather than after, cutting the stump.
- When chasing long roots across a yard, cut them while driving the entire machine in self-propel mode.
- Should the chip buildup become excessive when cutting, shut off the cutting wheel, wait for the cutting wheel to stop rotation, retract the machine from the stump, stop the engine, and rake away the chips. Start the engine, advance the machine toward the stump again, and resume cutting.
- On larger stumps, when cutting from one side, eventually a tire may tend to roll into the hole. This may be prevented by moving the machine to another side of the stump to continue removal, or by filling the hole with chips before continuing.
- For making turns most easily, disengage the left self-propel wheel from drive mode (see page 18).
- To move the entire end of the machine sideways, stop the cutting wheel, move it to the side in the direction of destination, and lower it into the ground to raise one tire slightly. Then, using the cutting wheel cross-travel lever, pull the machine sideways, dragging the other tire. (This maneuver should be used only where conditions allow.)
- In colder weather the machine may be sluggish at first. Operating all machine controls, one at a time, will cause the hydraulic oil to warm up quickly. Operate the machine lightly until the hydraulic oil is warm.

Machine Stopping

1. When stopping the machine after normal operation, lower the engine speed to SLOW, and cycle each of the hydraulic controls slowly for about 30 seconds each to help the hydraulic components to cool slowly.
2. Flip the cutting wheel ON/OFF Switch down to the OFF position, stopping the cutting wheel rotation.



WARNING

Due to high speed low-friction rotation, the cutting wheel may continue to rotate unnoticed, even after the ON/OFF switch has been flipped OFF, and even after the engine has stopped. Be sure to bring cutting wheel rotation to a complete stop before moving the machine or leaving the controls!

3. Stop the cutting wheel rotation quickly by gently lowering the cutting wheel into the soil.
4. Close fully the cutting wheel cross-travel SPEED control valve.
5. Either center and raise the cutting wheel to the fully UP position and install the cutting boom lock block, or lower it to the ground.
6. Reduce the engine speed.

Engine Stopping

1. Reduce the engine speed to slow idle.

NOTICE

Before stopping an engine that has been operating at working load, allow the engine to continue running with the throttle at midway between SLOW and FAST at least 15 seconds.

2. Turn the engine start switch to the OFF position to stop the engine. Remove the engine start key.

OPERATION

Storing the Machine

Preparing the Machine for Storage

Store the machine in a dry protected place. If the machine must be stored outside, cover it with a waterproof canvas or other material.

Clean all grease, dirt, mud and other foreign matter from the machine. Wash the machine. Start and operate machine to help rid it of puddled or excess water. To inhibit rusting, paint all exposed surfaces.

Take the weight of the machine off of the tires by resting the machine chassis on blocks. Do not deflate the tires, however.

Remove the belt sheaves, and store in wrapped condition. Spray the grooves of belt sheaves and sprockets with an anticorrosive agent.

All exposed hydraulic cylinder rods should be coated with Valvoline Tectyl 506 oil or equivalent. Rusty or pitted cylinder rods will damage O-Rings and cause leakage.

Lubricate all parts that have grease fittings, as outlined in the "Maintenance Intervals" section of the **Maintenance** manual, to prevent rust.

With the engine OFF, remove any pressure from the hydraulic cylinders by working the control levers back and forth.

Store the battery inside where temperatures do not drop below 32° F. Place the battery on wood, not on a concrete floor or steel table. Always keep the battery fully charged. Store it away from wherever an open flame or sparks might occur.

Information on preparing the engine for storage, are contained in the "Storage" section of the *Kohler Engines Owner's Manual*, shipped with this machine.

Check your machine for any worn or broken parts at this time. By ordering replacement parts now, you can avoid unnecessary delays when you remove the machine from storage.

Removing the Machine from Storage

Remove all coverings. Remove blocks from under the machine. Check tires for proper inflation. Wipe excess oil from hydraulic cylinder rods.

Lubricate machine entirely, as instructed in the "Maintenance Intervals" section of the **Maintenance** manual.

Check the hydraulic hoses and fuel lines for deterioration, and replace as necessary. Tighten all nuts, bolts and hydraulic fittings. Replace the hydraulic filter and fuel filter. After prolonged storage, change the hydraulic oil, engine oil, and fuel.

Wipe off the anticorrosive agent from the grooves of the PolyChain® belt sheaves, and remount the PolyChain® belt.

Adjust the tension of the PolyChain® belt in accordance with the instructions contained in the **Maintenance** manual's "Every 50 Service Hours" section.

Mount the battery and connect the cables to the machine. Be sure that the spark plug wires are connected.

Review the machine according to the "Before Starting the Engine" as found in the "Safety" section of this manual, and perform all maintenance services necessary as described in the **Maintenance** manual's "10 Service Hours or Daily" section before starting the engine.

Start the machine according to the "Starting the Engine" and "Pre-Operation Warm-up" sections of this manual.

NOTES

RAYCO WARRANTY CERTIFICATE

A. General Outline

Rayco Manufacturing, Inc. warrants to the first user that the products it supplies will be free from defects in material and workmanship under normal and proper usage for a period of 365 days from the date of delivery to the first user. In addition, with respect to "Mini Work-Force" models, the mainframe and control bar will be free from defects in material and workmanship under normal and proper usage for a period of two (2) years from said date of delivery.

This warranty does not cover and Rayco makes no warranties with respect to (i) any product that has been subject to abuse, misuse, misapplication, neglect, alteration or accident; to improper or incorrect repair or maintenance; or to abnormal conditions of use, temperature, moisture, dirt or corrosive matter; and (ii) any material, parts or other components that are manufactured by someone other than Rayco, which items carry only the manufacturer's warranty, if any. Furthermore, this warranty does not cover expendable parts.

Individual components such as engines, engine drive systems, batteries, and hydraulic components, etc. shall be covered by standard warranties of their respective manufacturers. Any claims must be submitted within 30 days of the repair.

B. Individual Components

1. Engines

All engines have specific warranties issued by OEM and honored thru their respective dealer.

2. Hydraulic Components

Hydraulic components have variable warranties. Rayco must preauthorize all hydraulic component product warranties prior to removal from the machine, and all warranty considerations are the sole responsibility of the manufacturer.

3. Batteries

Batteries have a warranty that is honored thru manufacturer. For warranty service, the purchaser is to contact manufacturer directly.

4. Various Components

A. Belts will be covered under warranty only if Rayco receives warranty from their supplier.

B. Sprockets Sheaves have a six month limited warranty.

C. Electric clutches have a six month limited warranty.

D. Hydraulic Cylinders will be covered under warranty only if Rayco receives warranty from their supplier.

5. Pockets and Teeth

Pockets and Teeth will be covered under warranty only if they are defective before they are mounted on a stump grinder. Once they are used, all warranty stops.

C. Items not Covered

Rayco is not responsible for the following:

1. Premiums charged for overtime labor requested by the purchaser.
2. Transporting the product to and from the place at which warranty work is performed.
3. Any product that has been altered or modified in ways not approved by Rayco.
4. Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage, or accident.

D. Unapproved Service or modification

Rayco is relieved of its obligation under this warranty if:

1. Service (other than normal maintenance and replacement of service items) is performed by someone other than an authorized Rayco dealer; or
2. The product is modified or altered in ways not approved by Rayco.

E. Obtaining Warranty Service

To obtain performance of this warranty, the original retail purchaser must request warranty service from a Rayco dealer authorized to sell the product to be serviced. When making such a request, the purchaser must present evidence of the product's delivery date, make the product available at the dealer's place of business, and inform the dealer in what way the purchaser believes the product to be defective.

Warranty repairs can be made in the field if the purchaser and servicing dealer so desire. However, travel time expense to and from the job site will be purchaser or dealer responsibility.

F. No Implied Warranty or Other Representation

Where permitted by law, neither Rayco nor any company affiliated with it makes any warranties, representations or promises, expressed or implied, as to the quality or performance, or freedom from defect of its products other than those set forth above, and NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS IS MADE.

G. Limitation of Purchaser's Remedies

Where permitted by law, the purchaser's only remedies in connection with the branch of performance on any warranty on any Rayco product are those set forth on this page. In no event will the dealer and or Rayco be liable for incidental or consequential damages, including but not limited to: loss of profits, rental of substitute equipment, or other commercial loss.

H. No Dealer Warranty

The selling dealer makes no warranty of his own on any item warranted by Rayco, and makes no warranty on other items unless he delivers to the purchaser a separate written warranty certificate specially warranting the item. A dealer has no authority to make any representation to promise on behalf of Rayco, or to modify the terms or limitations of this warranty in any way.

If you have a situation where you are not sure if a component is covered under warranty, please do not hesitate to contact us. Rayco wants you and your customer to be 100% satisfied with our products and service.

SUPER Jr.™

Manufactured by

 **RAYCO®**
MANUFACTURING, INC.