

Reinco

HYDROGRASSER SAFETY MANUAL

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NOTICE

Every attempt has been made to make this manual complete, accurate and up-to-date. However, all information contained herein is subject to change due to updates and design modifications. Updated versions of this manual are available at www.reinco.com. All inquiries concerning this manual should be directed to [REINCO INC.](http://www.reinco.com)



CAUTION: The following information is **IMPORTANT** to the **HEALTH** and **SAFETY** of your employees. Please **READ**, take **ACTION** and **FILE** this document for future reference. Ask for additional copies if required.

STUDY THIS MANUAL CAREFULLY BEFORE ATTEMPTING TO OPERATE THE MACHINERY.



This safety alert symbol is used to call your attention to instructions concerning your personal safety.

Federal law requires you to explain the safety and operating instructions furnished with this machine to all employees before they are allowed to operate the machine. These instructions must be repeated to the employees at the beginning of each season. Be sure to observe and follow these instructions for you and your employee's safety.



This symbol is used to draw attention to those operational and maintenance instructions we consider important to insure long trouble-free operation of this machine.

CALIFORNIA PROPOSITION 65 WARNING

**DIESEL ENGINE EXHAUST AND SOME OF ITS
CONSTITUENTS ARE KNOWN TO THE STATE OF
CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS
AND OTHER REPRODUCTIVE HARM.**

DISCLAIMER: These materials are for training purposes only, and are not a substitute for OSHA's Occupational Safety and Health Standards.

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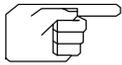
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FORWARD

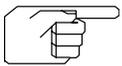
A MESSAGE FROM REINCO

Getting the most out of your new **Reinco Hydrograsser** should be within the reach of an inexperienced operator in a few hours. The purpose of this manual is to acquaint the new owner with safety procedures and concerns.

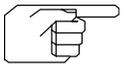
Your new **Reinco Hydrograsser** represents the culmination of over forty five years of expertise embodying field feedback, innovative design and manufacturing experience. Functional simplification and avoidance of mechanical complexities have been prime engineering objectives throughout this time. The benefits to be realized will be years of trouble free performance with minimum attention and maintenance.



Every operator and foreman should read this booklet and familiarize himself with the operational and mechanical aspects described. Some of the following commentary may appear to be obvious, but at the expense of being repetitive or assuming certain basics, this will serve as a guide for both owners and operators not acquainted with mulching procedures as well as providing instructions on the detailed operation of your new unit.



This manual is provided to ship with new units manufactured at the date of this document's revision. It is also supplied as a reference guide for units of similar construction, manufactured under prior designs. Some parts, options, engines, etc., may not be, or may not have been, available at the time of production of your machine. Contact **Reinco** for cost and availability of any requested upgrades.



For references made to engines, consult the appropriate engine manufacturer's literature for applicable detailed information.

Reinco welcome this opportunity to be of service to you and wish to express our appreciation for the confidence extended by your selection of **Reinco** mulching and seeding equipment.

WHAT IS HYDROGRASSING



HYDROGRASSING has emerged as one of the most practical methods of establishing ground cover, particularly on slopes and difficult access areas. Because of the varied slurry capabilities, prepared ground surfaces can be covered in a single pass, thereby realizing a significant labor savings.

In basic concept, **HYDROGRASSERS** are mobile slurry generators, which satisfy the needs of professional landscape or reclamation contractors. The concept of hydraulic grassing was researched by the Connecticut Department of Highways prior to World War II. Thereafter, developments followed making the technique more practical.

The early units combined earth, peat, seed and water to produce a slurry, which was then applied to slopes from an elevated platform through a boom and spray nozzle mechanism. This seeding process evolved to a degree which the industry is now highly committed.

It is our understanding, that these original units employed a diaphragm mud pump to develop spray pressure with a separate propeller blade mixer installed to agitate the granular solids. Each had its own gasoline engine drive resulting in a cumbersome and maintenance prone arrangement requiring skilled and highly trained operators.

The present day **REINCO HYDROGRASSER** is a far cry from the early prototypes. Gone are the multiple engines, the antiquated horizontal agitators and the necessity of having a master mechanic's background for operational reliability.



Simplicity, without sacrificing performance, has been **REINCO's** prime development concept over the years. This credo has proven its merit since the first hydraulically agitated seeder was built back in 1960.

REINCO's exclusive **HYDRO-JET** mixing system generates powerful and concentrated streams of water supplied from a common mixing manifold. These streams continuously flush over and across the tank bottom carrying the entrained materials up to the surface and then drift downward, thereby producing a well distributed homogeneous slurry. The benefits to be realized, in addition to performance, produces dividends year after year with reduced maintenance.

HYDROGRASSER

SAFETY

HYDROGRASSER SAFETY OVERVIEW



Personnel responsible for your Hydrograsser training program, maintenance, and operations must read and understand this safety and operator's manual. No one should set up, operate or maintain a Hydrograsser until they understand it, its operation and know how to do their job safely.

DISCLAIMER: THESE MATERIALS ARE FOR TRAINING PURPOSES ONLY, AND ARE NOT A SUBSTITUTE FOR OSHA'S OCCUPATIONAL SAFETY AND HEALTH STANDARDS.

RECOGNIZE SAFETY INFORMATION



This is the safety alert symbol. When you see it in your operations manual be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

UNDERSTAND SAFETY WORDS

A signal word - **DANGER**, **WARNING**, or **CAUTION** is used to identify a potential for serious injury. **DANGER** identifies the most serious hazards.

DANGER or **WARNING** safety signs are located near specific hazards. General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.



FOLLOW SAFETY INSTRUCTIONS



Carefully read all safety messages in your operations manual and on your Power Mulcher. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include current safety signs and safety guards. Replacement safety signs and guards are available from your Reinco dealer or directly from Reinco.

Learn how to operate the machine and how to use the controls properly. Do not let anyone operate without instruction.

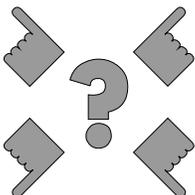
Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact Reinco directly.



800-526-7687

CONCENTRATE ON YOUR JOB



Daydreaming, worrying about other problems or other improper operation of a machine could cripple you for life. Operating a Power Mulcher requires your complete attention. Talking, joking or participating in or watching horseplay could result in physical injury to you . . . and that is not something to joke about. So watch what you are doing and concentrate on your job.

KEEP CLEAR OF THE WORK AREA

The purpose of a Hydrograsser is to mix and discharge the processed slurry away from the machine. The Hydrograsser utilizes a powerful engine, which turns a main pump shaft at high speed to produce the agitation and spray pressures required to process the slurry. It is obvious that this same capacity may sever arms, hands, fingers or any other part of the body that is in the work area when the machine is activated.

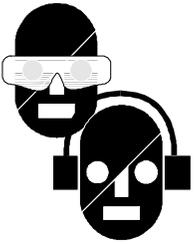
Additionally, some machines are capable of spraying slurry at distances up to 200 feet. The machine's discharge is powerful enough to dislodge pebbles, stones or other debris, which may cause eye injury. Never discharge in the direction of any person.

The person responsible for activating the machine is the primary operator. It is his responsibility to see not only that his own body is clear of the work area and all moving parts, but that his co-workers are clear also and are entirely visible in a safe location before activating the machine.



During set-up, maintenance or other work on the machine which requires manipulation within the tank, pump, engine or other work area, the engine run switch should be turned 'OFF', and the battery disconnected.

WEAR PROTECTIVE CLOTHING



Protect your eyes from blowing chaff, as well as rocks and other foreign debris, which may be found in mulch bales. Use approved impact resistant eyewear.

As the conditions dictate, the use of respirators to protect you from inhaling nuisance dust is recommended.

Construction equipment is noisy. Prolonged exposure to loud noise can cause impairment or loss of hearing. Use approved ear protection to control this hazard.

Reflective gear and hard hats may also be necessary depending on your job site.

PRACTICE WORK AREA SAFETY RULES

The location of your job site will demand that additional safety practices be implemented. Always follow the applicable OSHA regulations.

While working on road sides and interstate highways, insure that appropriate strobes, flashers and other warning devices are installed on all vehicles as required by law. All workers should be wearing high visibility reflective vests. Anti-crash vehicles should be employed when appropriate. The use of barriers and flagmen is suggested. Be aware of the traffic flow and use caution to avoid discharging towards vehicles.



Since Power Mulchers are used at a variety of locations (strip mines, coal storage areas, land fills, refineries, power plants, and protected wilderness areas) it is imperative to contact the appropriate safety official or regulating agency to obtain information regarding any special safety considerations on specific job sites.

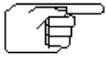
FIRE IS ALWAYS A POSSIBILITY



The potential for fire always exists. The combinations of fuels, heat from engines, and clean dry straw increase the risk. Have a fire extinguisher near the work area. Learn to look for it before you begin working. Always keep the machine clean of chaff and debris.

CHEMICAL REACTIONS

With the wide variety of Hydrograssing amendments available, it stands to reason that all may not be compatible.

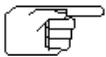


CERTAIN FERTILIZERS REACT WITH LIME PRODUCING FREE AMMONIA.

Wetting agents may cause foaming. Binders may agglomerate (stick together) because of the minerals in the water. Foaming and aeration are visible conditions that point to material problems.



AERATION- This is not a chemical problem, but does affect pump performance. Too much air getting into the water will cause vapor blocks and consequent erratic pumping. The obvious cause is over agitation. Simply slow down the engine. Extremely light granular loads or low tank levels contribute to entraining air in the suction line and pump casing.



FOAMING- Excessive bubbles and froth point directly to this. The problem is that the pump has a reduced efficiency to move liquid because of vapor blockages and the impeller vanes cannot properly pump out. One solution is to add corn oil to the mix. Perhaps a 1/2-pint to 150 gallons. However, the materials suppliers should be contacted to establish a cause and offer recommendations.

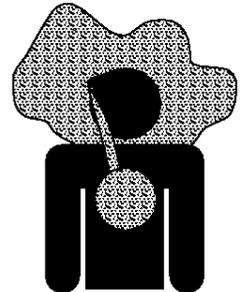


DANGER! CERTAIN AMENDMENTS, WHEN COMBINED WITH OR WITHOUT THE ADDITION OF WATER OR HEAT OR THE ELEMENT OF TIME, MAY REACT CAUSING HARMFUL OR DEADLY GASSES! CONSULT YOUR MATERIAL SUPPLIERS REGARDING REACTIVITY INFORMATION

CONFINED SPACE HAZARD



The hazards encountered and associated with entering and working in confined spaces are capable of causing bodily injury, illness, and death. Accidents occur among workers because of failure to recognize that a confined space is a potential hazard. **The inside of a Hydrograsser tank is potentially one such hazard area.** It should therefore be considered that the most unfavorable situation exists in every case and that the danger of poisoning, and asphyxiation will be present at the onset of entry.



As a result, only employees familiar with, and trained in confined space hazards, should enter and/or service the interior of Hydrograsser tanks. See OSHA's Occupational Safety and Health Standards for more detailed information.

PREVENT SLIPPING ACCIDENTS

The ingredients used in a Hydrograsser are extremely slippery by nature. Use care to prevent accidental falling or slipping on, or around, the Hydrograsser, which can result in painful or perhaps even fatal injuries.

Additionally, prevent bystanders from injury, by keeping them off newly seeded areas and by washing off over sprayed areas.

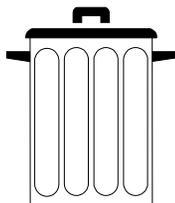
NEATNESS IS IMPORTANT



Keep the floor of your work area clear of bales or flakes of mulch, twine, scrap and trash that could cause you to stumble. Falling or slipping can result in painful or perhaps even fatal injuries.

Put all fuel, tools and other equipment away when you are not using them. Even a screwdriver can be deadly if left on an enclosure of the machine.

CLEAN AS YOU GO !

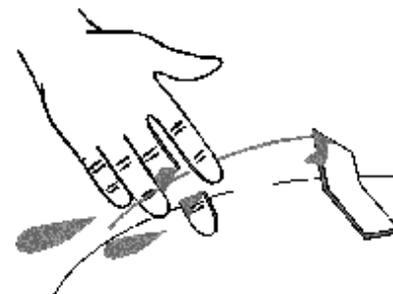


Twine, when removed, should be disposed of immediately in a container away from the Power Mulcher. That loose piece of twine around the machine could cause you to fall or loose a hand or finger.

SAFE MATERIAL HANDLING IS IMPORTANT

When cutting and removing packaging from a mulch bale or opening other materials, the handler must make sure that the wrap is not pulled or dropped into the machine. Loose twine can wrap around a shaft and pull an arm or hand into the machine. It is capable of cutting through fingers. Knives can be extremely dangerous. Never reach into any rotating area of the machinery.

It takes only a fraction of a second to lose fingers. Pay attention to your fingers, debris, and the moving equipment when handling packaging.



HYDRAULIC SYSTEM HAZARDS

Some Hydrograssers are manufactured with hydraulically operated agitator systems. Hydraulic fluid lines are a high-pressure fluid hazard. To prevent serious injury or death always relieve system pressure before repairing or adjusting or disconnecting.

Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Leaking hoses, fittings or components should be reported to your supervisor immediately.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed in a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

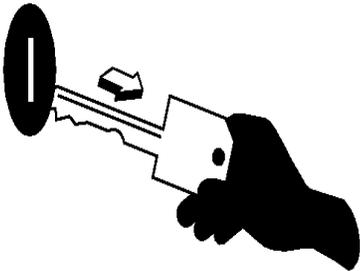


VIBRATION IS A WARNING SIGN

A rotational unbalance of any sort will become obvious in the form of vibration. Vibration is an important warning sign of impending mechanical failure. Instruct all users of your equipment to report unusual vibration at the onset.



PRACTICE SAFE MAINTENANCE



- Understand service procedure before doing work.
- Keep areas clean and dry.
- Keep clothing away from moving or power driven parts.
- Disengage all power and operational controls, and relieve pressure.
- Stop engine and remove key. Allow engine to cool down before working on any engine component.
- Disconnect the battery before machine adjustments or welding on machine.
- Keep all parts in good condition and properly installed.
- Fix damaged components immediately.
- Replace worn or broken parts.
- Remove any build-up of grease, oil or debris.

PROPER ENGINE SERVICING IS IMPORTANT



Do not perform service on an engine if you are not qualified.

Use care when refueling all engines, whether gas or diesel units. Fuels and their vapors are extremely flammable and can explode when ignited. Do not fill the fuel tank when engine is hot or running, since spilled fuel could ignite if it comes in contact with hot parts or sparks from the ignition. Do not start the engine near spilled fuel; wipe up spills immediately. Never use gasoline as a cleaning agent.

Store fuels in approved containers only. After refueling remove containers from work area.

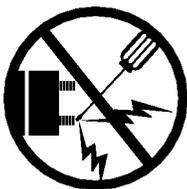
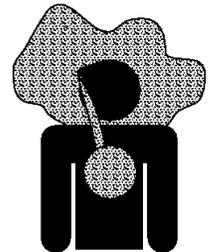
Do not add oil when engine is hot or running as oil could vaporize and ignite.

Engines are a burn hazard. The crank case, cylinder head, exhaust system, and other components can get extremely hot from operation.

Engine exhaust gasses contain poisonous carbon monoxide. Never run engine in an enclosed area. Avoid inhaling exhaust fumes.

The electrical systems of engines can be a source of high voltage. Never touch electrical wires or components when engine is running. Never attempt to start the engine by shorting across the starter solenoid. Avoid accidental starts which could cause injury to yourself or fellow workers. Disconnect and ground the spark plug wire.

Refer to the engine manufacturer's operation and safety manuals for more detailed information.



ENGINE SPEED IS IMPORTANT

Never tamper with the governor components settings to increase the maximum speed. The components used to build the Hydrograsser are designed to operate at a specific maximum speed. Severe personal injury and damage to the Hydrograsser can result at speeds set above the maximum.

A rotation unbalance of any sort will become obvious in the form of vibration. Vibration is an important warning sign of impending mechanical failure. Notify your supervisor of any unusual vibrations or noises at the onset.

VEHICLE REQUIREMENTS

Insure the Hydrograsser is mounted on a large enough vehicle. Water weighs about 8 lbs. per gallon, or about 8000 pounds per 1000 gallons of Hydrograsser capacity. This does not even include the weight of the machine, or make allowances for the granular solids that may be added to the Hydrograsser mix! For example, a fully loaded model HG-30GX Hydrograsser weighs 44,000 lbs.

The point is, a fully loaded Hydrograsser requires a truck sufficiently rated for the machine. Its characteristics are that of a "tanker" type vehicle, and therefore requires an experienced driver. In fact, many states will require the vehicle driver to possess a Commercial Drivers License (CDL).

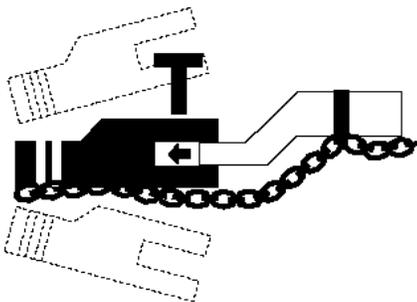
MOUNTING ISSUES

Chains looped over the ends of the base frame and tensioned with binders, is perhaps the most practical way to temporarily secure the machine to the truck bed while transporting the empty unit only.

When permanently mounting the unit, a truck of adequate Gross Vehicle Weight (GVW), and proper Cab to Axle (CA) dimension must be used not only to get the desired handling capability, but to comply with Federal and State legislation. Federal Motor Vehicle Safety Standard (FMVSS) guidelines mandate strict requirements when mounting machinery on truck frames for over the road use. Installation of this HYDROGRASSER requires a Completed or Altered Vehicle Certification sticker issued by the installing dealer, and/or fleet owner.

TRAILED UNIT CONCERNS

The machine's frame must be level for ease of towing, as well as operator and crew safety. The hitch should be located so that the truck bed overhang will not interfere with the extended load tray.

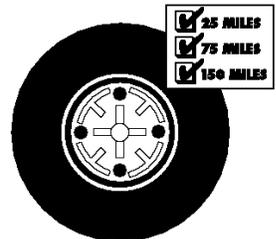


- Provide adequate set back from the vehicle chassis frame so that jack knifing, when backing up, will not damage machine.
- Provide for securing the safety chains and breakaway (if provided). Make sure hitch is secured before attempting to tow machinery.
- Running lights are standard for over the road travel. They include stop, directional, tail side markers and license plate.
- Make sure all running lights are working at the start of each day.
- The flasher light switch of the truck, when engaged will also activate the directional and taillights mounted in the rear bumper.
- Whenever emergency signaling is required, use this circuit.

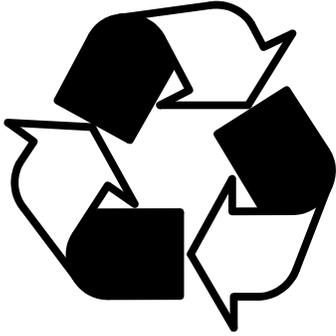
It is important to check the torque of the wheel lug nuts.

Initially, These are set at the factory at 90-ft. lb. Due to relaxation associated with travel, they must be torqued at 25, 75, and 150-mile intervals.

Braking systems, if supplied, must be checked for proper adjustment and operation. Brake adjustments should be made after the first 200 miles (seating) and again at 3000-mile intervals.



DISPOSE OF WASTE PROPERLY



Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste associated with Reinco equipment include such items as oil, fuel, coolant, filters, batteries, emulsified asphalt, tackifier and fertilizers. Bale wire or twine should be disposed of in appropriate containers.

Use labeled, leak proof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from these. Do not pour waste onto the ground, into a drain or into any water source.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your state's Environmental Protection Agency.

LOOK THINGS OVER CAREFULLY

Before operating your Hydrograsser, look to see if your machine is in the proper condition. Are the beater chains or flail knives all in place? Are they worn? Is the blower wheel in operating condition? Is the workspace clean? Is the fuel properly stored? Are all the bale ties cleaned up? Are the machine guards and covers all in place? Are all nuts, bolts and screws tight? Do you know where the fire extinguisher is? Do all workers have protective safety gear? Is everything in proper operating condition? If not, report the unsafe condition to your supervisor and be sure the problem is corrected before beginning operation.



KNOW YOUR MACHINE

The Hydrograsser has one characteristic in common with most machinery. Do not assume that simply turning off the machine will insure that all moving parts have stopped. The moving machinery can cause serious injury and even death. Be aware that a shaft which rotates at speeds exceeding 2000 revolutions per minute is extremely dangerous.

1. **Before operating this machine be sure to read this entire manual.**
2. Do not operate unit if unfamiliar with operational and safety procedures on this or any unit.
3. Use of chains and binders to secure the machine is recommended for temporary transport of the empty unit only.
4. Unit must be permanently mounted on a suitable truck and the applicable certification must be obtained.
5. The force from the discharge can kick up dust, dislodge unsecured items and damage property.
6. Never discharge the unit towards people. Bodily injury may occur.
7. Use caution to prevent injury due to slipping and falling.
8. Clean over-sprayed material promptly.
9. Never force any material into the machine.
10. Never attempt to clear the machinery of debris or make adjustments while the engine is running.
11. Be sure to keep all body parts and clothing away from moving parts while engine is running.
12. Do not attempt to mix or discharge rocks, nails, or other debris, which may damage the machinery or cause premature wear.
13. Do not operate machine without required coupling, shaft, or bearing guards installed.
14. Materials packaging must be removed carefully to prevent being pulled into the machine.
15. Do not allow fingers to become entangled in the bale twine or packaging.
16. Do not wear loose clothing, which may become entangled with the machinery.
17. Do not add oil, water or fuel while engine is running or hot.
18. Do not perform maintenance while unit is running or battery is connected.
19. Service the tank interior only pursuant to OSHA Confined Space Hazard guidelines.
20. Do not under any condition operate the machine when vibrating.
21. Working space must be allowed not only for the machine operator, but also for access to the stacked materials .
22. Daily, inspect the machinery for signs of wear. Do not operate the machinery until problems have been remedied.
23. Always make sure fittings are secure and valves are operational and in good order.
24. The pump impeller is made of cast iron. If a vein breaks, or is clogged with debris an unbalance or vibration will occur. Do not under any condition operate the machine when vibrating.
25. Check the agitating jets and fittings for wear. The granular nature of materials used will abrade and enlarge the nozzles causing a noticeable reduction in mixing and discharge pressures. Rocks and foreign matter found in some materials may clog the nozzles or pump impeller and cause noticeable reduction in pressure or vibration.
26. Secure the discharge boom and hose(s) before transporting the machine.
27. **IT IS IMPERATIVE THAT COMMON SENSE AND GOOD JUDGMENT BE EMPLOYED WHEN OPERATING THIS MACHINE.**

