

Rotobec 80 Elite Loader Operator's Manual



WARNING. This manual contains information essential to the safe operation of the 80 Elite loader. Read this manual and keep it with the loader.

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Credits

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Written by Gayle Lang

Symbols



This symbol indicates that a product or part is available from Rotobec.



This symbol points out a useful fact.



DANGER. This symbol identifies a hazard or unsafe practice that *will* result in severe personal injury or death.



WARNING. This symbol identifies a hazard or unsafe practice that *could* result in severe personal injury or death.



CAUTION. This symbol identifies a hazard or unsafe practice that could result in severe personal injury or property damage.

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About Rotobec

Thank you for choosing Rotobec®. We are confident that you will be satisfied with your loader for many years.

Rotobec was established in 1975, with the development and manufacture of the continuous rotator. We specialize in the design and manufacture of continuous rotators and hydraulic attachments. We also have some knuckleboom loader models to offer, including other versions of the 80 Elite.

Our wide selection of attachments are adapted to fit most needs and knuckleboom loaders or excavators that are used for logging. These attachments include:

- rotators,
- log grapples,
- pulpwood grapples,
- combination grapples, and
- butt'n top grapples.

With the experience we have gained in the development of forestry attachments, we have extended our product lines to serve other industries. These include construction, recycling, pipe and coil handling, and other materials-handling businesses. Our products are available in North and South America, Asia, and we continue to expand to other parts of the world.

We welcome your comments

Your comments are important to us when we update our existing products or design new ones. We attend trade shows and visit work sites to get your feedback and we also invite you to contact us.



For information on our other products or to give us your feedback, contact one of our Rotobec branches listed on the back cover.



About This Manual

This manual contains instructions for the operation and maintenance of the Rotobec 80 Elite Loader. The parts and components used in Rotobec products are specifically designed and manufactured to ensure the highest standards of performance and durability.

The illustrations, technical information, and specifications within this manual were accurate at the time of printing. However, we reserve the right to revise specifications, instructions, and design.

If you have questions about information in the manual, please consult the nearest Rotobec branch (for a list of branches, see the back cover).

To ensure access to the safety guidelines and to the instructions for the proper operation and maintenance of the loader, keep this manual with the loader at all times.

Overview

The Rotobec 80 Elite Loader is an A-frame self-loader with a nominal lift capacity of 8,000 lbs at a distance of 10 feet. It can be mounted on a truck or a trailer.

The 80 Elite comes with continuous rotation, electric swivel, and boom-mounted lights as standard components.

In comparison with competitive models, the hydraulic system of the Rotobec 80 Elite Loader produces exceptionally smooth movement resulting in

- less wear on the loader,
- better control of the load, and
- a smoother ride for the operator.

The lighter weight of the 80 Elite Loader allows for a larger payload to be loaded on the carrier.

The 80 Elite can be equipped with different boom configurations and accessories such as a tilt cabin or an oil cooler.

The 80 Elite is also offered in a stationary mounted version with an electric motor.



For information on other models of the loader, or our other products, contact one of our branches listed on the back cover.

Technical Specifications

Booms

Standard model reach	22' (6.72 m)
Pivot points	2" (50.8 mm) diameter, induction-tempered, and chromed steel pins mounted on bronze bushings
Main Boom	
Length	148" (3759 mm)
Structure	Rectangular 6" x 8" (152 mm x 203 mm) high tensile steel
Complete cycle time	8.4 sec. with 19.9 gpm (75.3 lpm)
Stick Boom	
Length	122" (3099 mm)
Structure	Rectangular 6" x 6" (152 mm X 152 mm) high tensile steel
Complete cycle time	6.8 sec. with 19.9 gpm (75.3 lpm)
Lights	55-watt halogen light on each side

Cylinders

Main boom	
Bore	5" (127 mm)
Rod	3" (76.2 mm)
Stick boom	
Bore	5" (127 mm)
Rod	2.5" (63.5 mm)
Stabilizer	
Bores	3" (76.2 mm)
Rods	1.75" (44.5 mm)

Hydraulic System

Controls	Foot pedal controls swing mechanism Joysticks control booms and attachment Levers control the stabilizers
Pump	Double pump, 19.9/19.9 U.S. gallons/minute (75.3 / 75.3 liters/minute) at 1300 rpm.
Swivel mechanism	8 hydraulic ports (with an option of 2 ports for the cooling system)
Operating pressure	3000 psi (207 bars)

Swing Mechanism

Rotation	360° at 9.8 rpm with 19.9 gpm
Slewing ring diameter	Outside diameter is 26.45" (673 mm)

Stabilizers

When lowered	9'6" (2895 mm) spread between stabilizers 16.5" (420 mm) below ground
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Weight

4825 lb (2189 kg) approximate weight with standard boom, excluding grapple and options

Grapples

Choice of grapple depends on its application

Options

Booms	M21 20'6" (6.25 m) reach M25 25'6" (7.77 m) reach
Telescopic stick boom	Activated by electric switch on joystick MT26 25'6" (7.77 m) extended reach 22' (6.72 m) retracted reach MT27 27' (8.23 m) extended reach 23'6" (7.16 m) retracted reach
Pump	Double gear pump
Hydraulic oil tank	Aluminum, 55 US gallons, return lines with filters and magnets, installed on the side of the truck frame
Loader mounting kit	Including spacer (if required)
Installation kit	For hydraulic components
Other options	Telescopic cab Hydraulic oil cooler

Rotobec reserves the right to change specifications and improve our products without notice or obligation.

Visual Overview of the Standard 80 Elite Loader

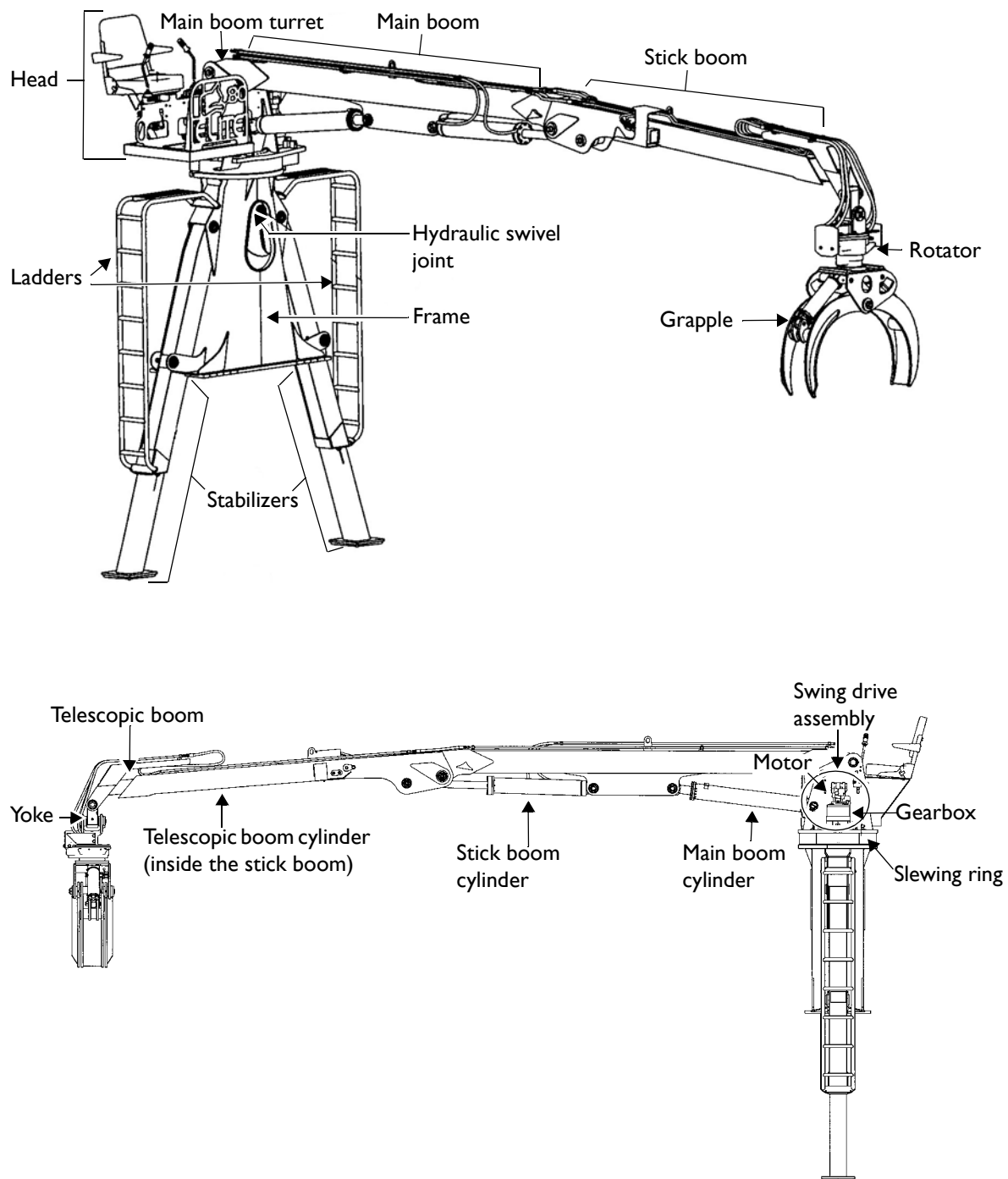


Figure 1

Safety Guidelines

This section provides guidelines to ensure the safety of the people working with and around the loader and to prevent damage to the loader. Rotobec assumes no liability or responsibility for injury or damages that may arise if these guidelines are not followed.

General Guidelines

- Follow all federal and state or provincial safety regulations for hydraulic mechanisms, lifting devices, grapples, spillage, and disposal of hydraulic oil.
- Ensure that the loader is safety-equipped according to federal and state or provincial regulations.

Service and Maintenance Guidelines

- Installation and removal of the loader, as well as all service and repairs, must be carried out by qualified hydraulic mechanics and/or an authorized repair shop.
- Welding on the loader can cause electrical and structural damage. Before welding on the loader:
 - contact your Rotobec representative for authorization,
 - disconnect the ECU power plug, both battery cables, radio, and all electric throttle and alternator connections, and
 - make sure the ground wire does not make contact with a moving part of the loader (slewing ring, hydraulic swivel joint, etc.)
- Loose or over-torqued bolts can cause parts to separate which can result in property damage, severe injury, or death. Keep the bolts correctly torqued by inspecting the nuts and bolts regularly according to the *Maintenance Schedule* on page 40 and the procedures in *Checking the Tightness of Nuts and Bolts* on page 51.

Power Line Guidelines

To prevent the loader or carrier from contacting a power line, do the following:

- Before starting to work with the loader, inspect the work area for power lines that you might have to work under.
- Before work starts, contact the utility company responsible for electricity in the work area and request that the power in that area be disconnected.
- Treat all power lines as live and dangerous. It may not be possible to disconnect the power in the work area.



Keep a distance between power lines and all parts of the loader, the load, and the carrier according to this formula: twice the line insulator length plus 10 feet.

For example: if the line insulator is 6 inches long, the distance to keep away is 2×6 inches = 12 inches (1 foot) plus 10 feet, which equals 11 feet. You must stay at least 11 feet from the power line (see *Figure 2*, below).

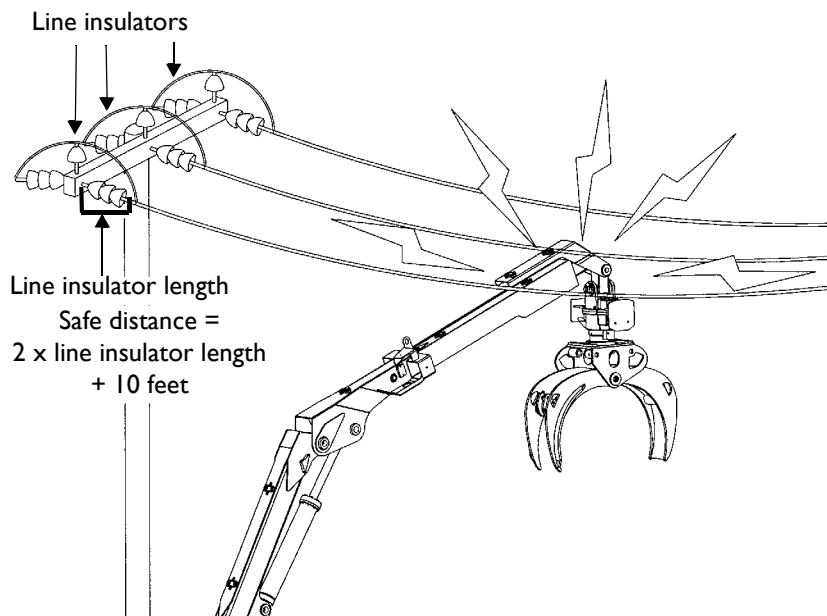


Figure 2

If the loader or carrier touches a power line, do the following:

- Stay in the loader.
- Do not let anyone touch the loader, the load, the carrier.
- Do not let anyone touch anything that might have directly or indirectly had contact with the power line or something else that touched it. Even a brief contact can create a charge.

- If you think you can move the carrier, loader, or load away from the line without pulling the line down, move away slowly and smoothly.

or

- If you think you **will** pull the line down if you move away, have someone contact the utility company to disconnect power from the line.

or

- If it is not possible to disconnect the power or if the loader, the load, or the carrier begins to burn, jump away from the loader and carrier in this way:
 1. All parts of your body must leave the loader at the same time. If a part of your body touches the ground while another part is still in contact with the loader or carrier, the electricity in the line will go through your body.
 2. Hold both arms in front and close to your body and both legs and feet together.
 3. Jump with your body forward so that you will not fall back towards the loader when you have landed.
 - Jump as far away from the loader as you can without falling. The charge is less the farther away you are.
 - Once you have landed, quickly shuffle away from the loader (with your arms still close to your body) to at least the same distance as determined by the formula given on page 14. Lifting a foot or placing one foot more than an inch from the other foot can change the charge in your body considerably and increase the chances of the electricity running through you.



DANGER. Do not directly or indirectly touch someone who is being electrocuted. The current will run through you as well. Call 9-1-1 or the emergency number of the power company for the area for information on the safe handling of the situation.

- Notify the utility company immediately about the situation, whether the loader, the load, or the carrier is still touching the power line or not.

Operation Guidelines

- Read the Operator's Manual completely and make sure you understand it before operating the loader.
- Inspect the loader regularly, according to the *Maintenance Schedule* on page 40.
- Repair any damage found during inspections before operating the loader.
- To prevent a fall while climbing onto or off the loader, remove oil, grease, mud, snow, and other debris from the ladders, the floor, and the seat.
- All personnel in the area where the loader is operating must be at least 25 yards/25 meters from the carrier, booms, and grapple.
- Only the operator should be on the loader or carrier once the loader is started up. Operating the loader with riders on the loader or the carrier can result in severe injury or death.
- Pay attention to clothing or other items that may catch on or knock the joysticks when climbing onto or off the head of the loader. An unexpected movement of the booms or grapple can result in a dangerous fall or destabilize the carrier.
- Jumping off the loader can cause severe injury or death. Do not jump off the loader, unless the loader has touched a live power line and is starting to burn.

To learn the safe way to jump off the loader if you have touched a live power line, read about it on page 15.

- Memorize the operation of all the controls (see *Controlling the Booms and Grapple* on page 29).
- Lower the stabilizers onto firm level ground. The loader, its load, or the carrier can topple over if a stabilizer is on a slippery surface like ice; an uneven surface like rocks, stumps, or curbs; or on soft or unstable ground. This can result in property damage, severe injury, or death.
- When the stabilizers are being lowered or raised, they can cause severe injury or death. Keep everyone away from them.

- The load or parts of it can fall at any time due to a wrong maneuver and can cause property damage, severe injury, or death. Keep personnel at least 25 meters/25 yards from the working area.
- If the loader is leaking hydraulic oil, turn off the hydraulic pump (see step 8 on page 33). High pressure hydraulic oil can penetrate skin causing severe injury, gangrene, or death.
- Do not readjust the factory-set pressure of the hydraulic oil. Too much pressure can cause leaks or other damage.
- Before leaving the loader, always lock the swing mechanism to prevent the boom from suddenly swinging around. An unexpected movement of the boom can cause severe injury or death to anyone within its range (for instructions on how to lock the swing mechanism, see step 4 on page 27).
- Exceeding the lift capacity of the 80 Elite Loader can result in mechanical failure, severe injury, or death (the loader's lift capacity is 8,800 lbs at a distance of 10 feet).



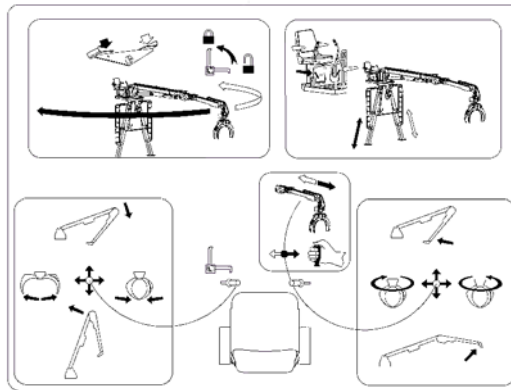
Rotobec has the rotator and attachments with the load capacity to match your loader. For information, contact one of our branches listed on the back cover.

Safety Sticker Guidelines

- Check regularly that the following safety stickers are on the loader in the places shown, in *Figure 3* on page 20.
- Check regularly that the safety stickers on the loader can be read.
- If stickers are missing or need to be replaced because they are damaged, you can order the Safety Stickers Kit from Rotobec. For the part number, check your parts manual or contact your Rotobec dealer (Rotobec branches are listed on the back cover).

Safety stickers





 WARNING	
	READING Read the operator's manual before operating this machine.
	FALLING HAZARD Keep 3 points of contact with hands and feet when getting on or off the machine. Do not jump off machine.
	HYDRAULIC PRESSURE Hydraulic leaks can penetrate skin causing severe injuries, gangrene or death. Do not change factory-set pressures without Rotobec inc. written approval.
NOTICE	
Grease gear and slewing ring every 60 hours. See the operator's manual.	
052-1063	

- For safety reasons, install the sticker shown below in the carrier's cabin. It tells you how to prepare the loader to be transported. For more information on transporting the loader, see *Shutting down the loader to transport it* on page 34.

 WARNING
BEFORE TRANSPORTING THE LOADER: Place booms in transportation position. Engage swing mechanism lock. Retract stabilizers. Fold back seat down. Secure attachment. Disengage the P.T.O. * Pay close attention that the overall loader height is according to the law and rules applicable to your area.
052-0970

Location of safety stickers



Figure 3

Operation

The safety of all the personnel in the work area depends on the proper operation and maintenance of the loader. This chapter explains how to operate the Rotobec 80 Elite Loader safely and properly. The following procedures are covered:

- preparing to start up the loader,
- starting up the loader,
- operating the stabilizers,
- controlling the swing mechanism,
- controlling the booms and grapple,
- shutting down the loader, and
- shutting down the loader for transportation.

Refer to provincial or state regulations for the minimum age, training, and qualifications required to operate a loader.



WARNING. Use the loader for loading and unloading operations only and use it according to the instructions given in this manual.

Preparing to Start Up the Loader

To ensure the safety of all personnel in the work area and to prevent damage to the carrier or loader, follow these steps before operating the loader:

1. Position the carrier on firm level ground to keep it stable during loading operations.
2. Position the carrier where the loader can operate fully without encountering any obstacles (power lines, trees, fences, buildings, other vehicles, etc.).
3. Shut down the carrier's engine and remove the key from the ignition.



WARNING. Shut down the carrier's engine and remove the key to prevent anyone from starting the engine before cleaning, inspecting, or lubricating the loader. Running the carrier's engine during those procedures can cause unexpected movements of the carrier or loader.

4. Note the location of any power lines in the area. If possible, get the power disconnected from them (see *Power Line Guidelines* on page 14).
 5. Follow these guidelines to avoid falling and getting injured when climbing onto and off the loader:
 - To prevent a fall while climbing onto or off the loader, remove oil, grease, mud, snow, and other debris from the ladders, the floor, and the seat.
 - Pay attention to clothing or other items that may catch on or knock the joysticks when climbing onto or off the head of the loader. Any unexpected movement of the booms or grapple can result in a dangerous fall, destabilize the carrier, or cause other problems.
-



WARNING. Do not jump off the loader. Only jump off the loader if the loader or carrier has touched a live power line and you must leave the loader quickly. To learn the safe way to jump off the loader in this case, read *Power Line Guidelines* on page 14.

6. Perform the daily inspection (see *Maintenance Schedule* on page 40).
 7. Repair any problems found during the inspection before operating the loader.
 8. Clear ice, snow, rocks, or other debris from the area where the stabilizer pads will be lowered.
-



WARNING. Lower the stabilizers onto firm and level ground and check for adequate stability. The loader, its load, or the carrier can topple over if a stabilizer is on a slippery surface (ice), an uneven surface (rocks, stumps, curbs), or on soft or unstable ground.

9. Alert personnel in the area that the loader is about to begin operating. They must be at a distance of at least 25 yards (25 meters) from the carrier, booms, and grapple.

10. Verify that all the controls on the loader head (joysticks, stabilizer levers, and the swing control pedal) are in the neutral position and the swing mechanism is locked before starting up the loader.



For the location of these controls, refer to *Figure 5* on page 25. The controls are shown in the proper positions for starting up the loader.

Starting Up the Loader

When the steps in the previous section, *Preparing to Start Up the Loader*, have been completed, you can safely start the loader.



WARNING. Only the operator should be on or around the loader or carrier once the loader is started up. Do not operate the loader with riders on the loader or the carrier.

Starting the hydraulic pump

1. Verify that the carrier's parking brake is on.
2. Start up the carrier's engine.
3. Start up the loader's hydraulic pump by doing the following:
 - Push and hold the carrier's clutch pedal down.
 - Pull the gear shift of the power take-off (see *Figure 4*, below).

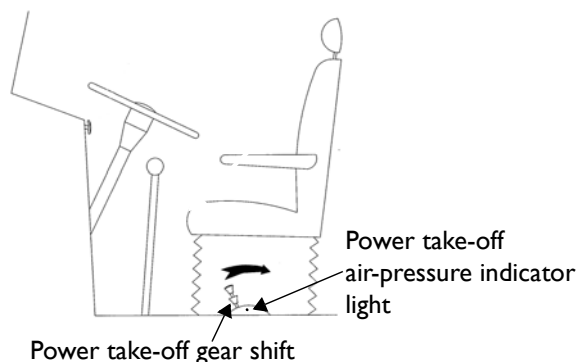


Figure 4 Carrier's cabin

- Continue to hold down the clutch pedal until the air-pressure indicator light, located on the gear shift box, glows red (it shows that the air pressure is sufficient to engage the power take-off).

- Release the clutch pedal.



CAUTION. Release the clutch pedal only once the red light is on. Releasing it before can damage the transmission and the power take-off.

4. Using the throttle button, increase the RPM of the carrier's engine. Stay below the maximum RPM for the hydraulic pump.

If the RPM of the pump is not written below, contact the Rotobec representative who installed the pump and the power take-off for this information and write it in.

**Maximum RPM
of the carrier's
engine**



CAUTION. The maximum RPM of the carrier's engine has been calculated to prevent the Rotobec-supplied hydraulic pump from exceeding 1300 RPM or 20 GPM. This would overheat the hydraulic oil and send too much oil into the loader's hydraulic system. The result is control of the loader is erratic and the life of the loader's hydraulic and mechanical components is reduced.

Operating the stabilizers

1. Climb onto the loader's head and, to prevent falling, sit in the operator's seat.

The control levers for the stabilizers are located on both sides of the seat below the joysticks (see *Figure 5*, below)

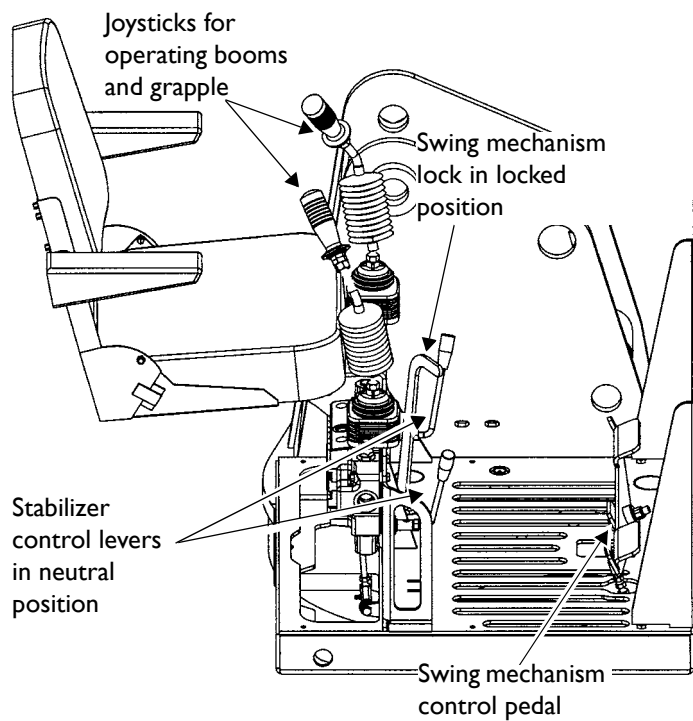


Figure 5

- The stabilizers are **lowered** by pushing and holding the stabilizer control levers **forward** from the neutral position (see *Figure 6*, below).

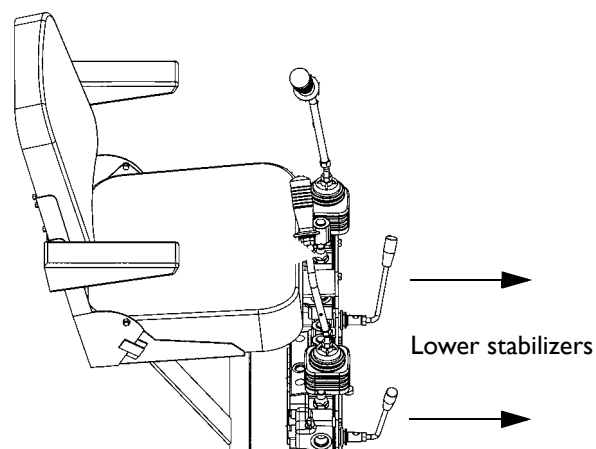


Figure 6

- The stabilizers are **raised** by pulling and holding the stabilizer control levers **back** towards the seat (see *Figure 7*, below).

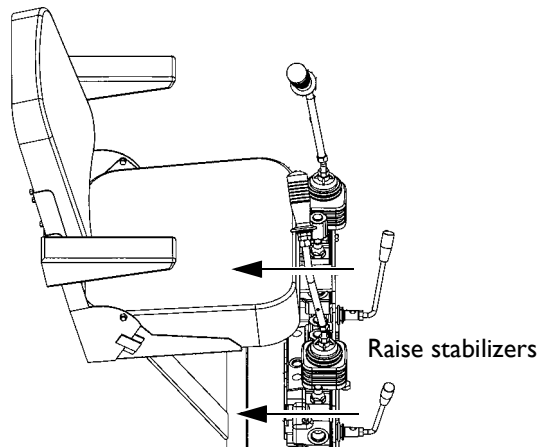


Figure 7

2. Lower both the stabilizers to the ground.



WARNING. Always operate the loader with the stabilizers properly positioned and lowered firmly on the ground. This is especially important when lifting a load with the booms extended. Operating the loader with the stabilizers raised or improperly positioned and lowered can cause the carrier to topple over.

3. Set the stabilizers to balance the empty carrier. The carrier's wheels and the stabilizers must both be firmly on the ground. The stabilizers are designed to prevent the carrier from tipping, **not** to bear its weight.

Learning the controls

1. Read the section on *Controlling the Booms and Grapple* on page 29.
2. Locate the lock handle of the swing mechanism on the left side of the floor. It should be in the locked position down and pointing 30° to the left (as shown in *Figure 5* on page 25).

If the lock handle is not in the locked position, lock it until you are ready to use it (see step 4 on page 27).

3. Locate the swing mechanism control pedal at your feet (see *Figure 5* on page 25). Do not use the pedal until the swing mechanism is unlocked.



WARNING. Memorize the operation of the joysticks and the swing mechanism control pedal before lifting loads. Operating the controls without knowing them can result in unexpected movements of the booms or of the grapple.

- The loader swings to the **right** when you press the swing control pedal down on the **right** side (see *Figure 8*, below).

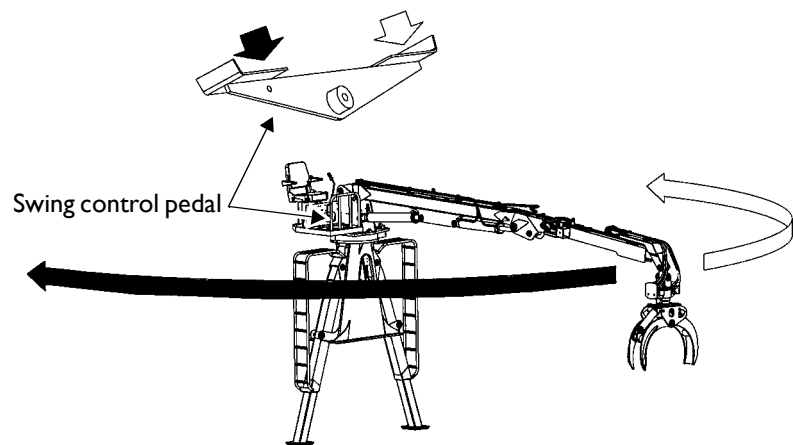


Figure 8

- The loader swings to the **left** when you press the swing control pedal down on the **left** side (see *Figure 8*, above).
4. Unlock the swing mechanism.
 - The swing mechanism is **unlocked** by pulling up on the lock handle and turning it **left** 30° angle from the locked position, to face forward.
 - The swing mechanism is **locked** by turning it 30° to the right from the forward facing position and releasing it. It snaps down into place (see *Figure 5* on page 25).
 5. Lift the boom from its resting or transportation position by pulling the **left** joystick **back** towards the seat (see *Figure 10* and *Figure 11* on page 34).
 6. Practice the joystick controls without a load until they are memorized (see *Controlling the Booms and Grapple* on page 29).

Lifting loads



WARNING. Never move the carrier while the operator is on the loader. This can cause the operator to fall.

1. Make a test lift of about 500 lbs. to verify that the ground under the stabilizers is firm.

If the ground is not firm, reposition the carrier so the stabilizers are on firm ground (see *Shutting down the loader to transport it* on page 34).

If the ground is firm, it is safe to start loading.

2. Adjust the stabilizers at least three times during a loading period. The carrier remains level and on the ground and excessive weight on the stabilizers is relieved.

Adjust the stabilizers by doing the following:

- Raise the stabilizers until the carrier is resting with its full weight on the ground.
- Lower the stabilizers again until they are set firmly on the ground.



CAUTION. Adjust the stabilizers to relieve them of the weight of the carrier and its load and to maintain the stability of the carrier. Carrying the weight of both the carrier and the load can damage the stabilizers.

Controlling the Booms and Grapple

The joystick controls for the booms and the grapple are located within easy reach on both sides of your seat as shown in *Figure 9*, below.

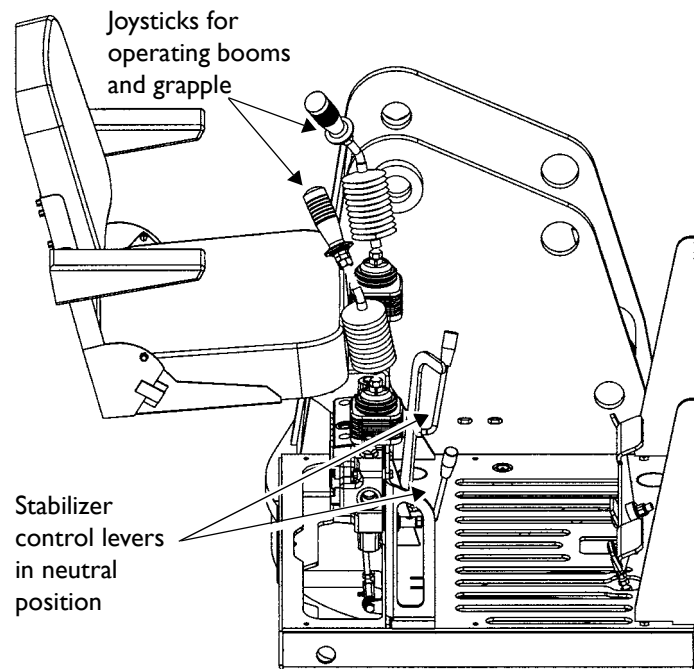


Figure 9



WARNING. Memorize the operation of the joysticks before lifting loads. Unplanned movements or rotation of the booms and grapple or accidental opening of the grapple can result in loss of control of the load.

Using the joysticks properly does the following:

- maintains the stability of the carrier and the loader,
- maintains control of the load,
- prolongs the working life of the loader, and
- prevents strain and potential injury to the operator.

The proper ways to operate the joysticks are the following:

- Always hold the joystick. If released, it pops back to neutral and can cause a sudden and dangerous movement of the booms and grapple.
- Move the joysticks slowly from neutral to the starting position to produce a smooth controlled movement of the booms or grapple.
- Move the joysticks slowly back to neutral to stop the booms or grapple in a controlled smooth movement.
- Always move the joysticks slowly through neutral first to change a position. This produces a controlled and smooth movement of the booms and grapple.



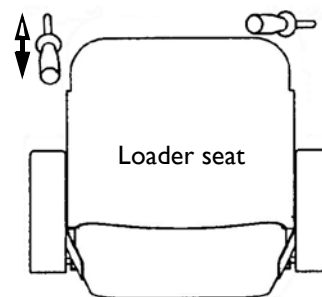
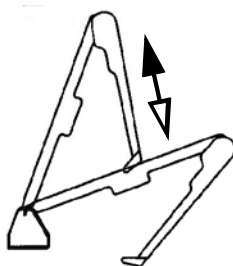
CAUTION. Rough handling of the joysticks can damage the joysticks and loader and destabilize the load.



DANGER. The hydraulic hoses for the booms and grapple must be connected to the joysticks to produce the operating sequences described below. Altering the sequence (for example, switching the hoses of the stick boom with the hoses of the main boom) can cause confusion about operations.

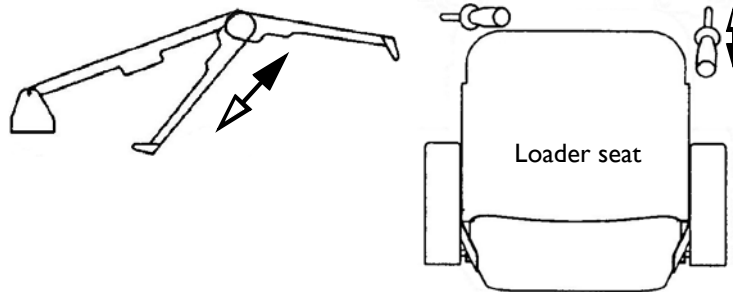
Operating the main boom

- To **raise** the main boom, pull the **left** joystick **back**.
- To **lower** the main boom, push the **left** joystick **forward**.



Operating the stick boom

- To **extend** the stick boom, pull the **right** joystick **back**.
- To **retract** the stick boom, pull the **right** joystick **forward**.

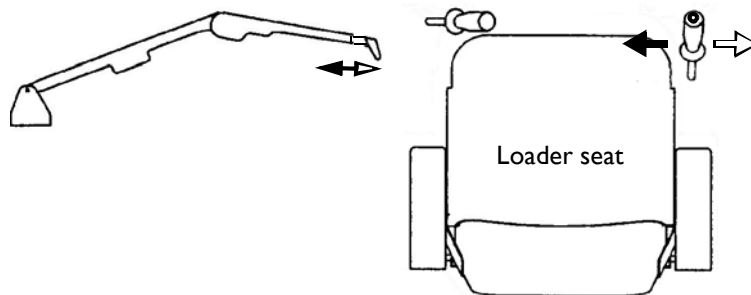


Operating the telescopic boom



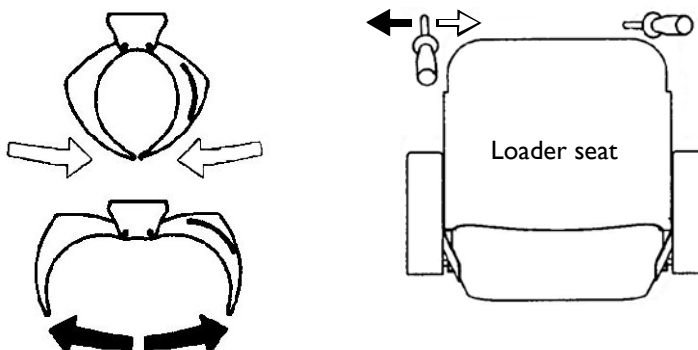
The telescopic boom is designed to reach for a load that is farther than the reach of the loader and **pull** it toward the loader. It is **not** designed to lift a load. Never lift a load with the telescopic boom extended.

- To **extend** the telescopic boom, **press and hold** the switch on the top of the **right** joystick, then push the joystick to the **right**.
- To **retract** the telescopic boom, **press and hold** the switch on the top of the **right** joystick, then push the joystick to the **left**.

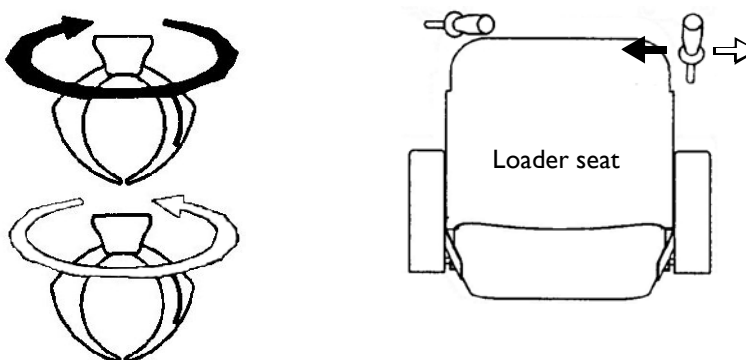


Operating the grapple

- To close the grapple, push the **left** joystick to the **right**.
- To **open** the grapple, push the **left** joystick to the **left**.



- To **rotate** the grapple **clockwise**, pull the **right** joystick to the **left**.
- To **rotate** the grapple **counterclockwise**, pull the **right** joystick to the **right**.



WARNING. Always clamp the log or branch fully with the grapple jaws. Seizing a single log or branch by pinching the sides with the tips of the grapple's jaws can cause the load to fall when rotating the booms.



Rotobec has the rotator and attachment with the load capacity to match your carrier. For information on them, see our list of dealers on the back cover.

Shutting Down the Loader

- The loader can be shut down and left to resume work in the same area, or be shut down to be transported to another work area.

Shutting down the loader without transporting it

1. Retract the telescopic boom, if there is one (see *Operating the telescopic boom* on page 31).
2. Position the booms at a 90° angle from the stabilizers, facing either front or back (as shown in *Figure 1* on page 12).



WARNING. The swing mechanism lock only works when the booms are positioned at a 90° angle from the stabilizers. The booms will not lock while they are in another position, which can result in them swinging unexpectedly.

3. Rest the booms on the carrier or on the ground.



WARNING. Always support the booms when they are not moving or when the loader is shut down. The booms can fall if they are not properly supported.

4. Lock the swing mechanism by pulling the lock handle forward and releasing it. It will snap down (for the locked position see *Figure 5* on page 25).



WARNING. Always lock the swing mechanism when not lifting loads. Failure to lock the swing mechanism can result in the booms swinging unexpectedly.

5. Shut down all the controls in the loader for the accessories (lights, fans, etc.).
6. Dismount from the loader following the guidelines given in step 5 on page 22.
7. Shut down any controls in the carrier's cabin for accessories.
8. Shut down the hydraulic pump by engaging the clutch pedal and pulling the gear shift of the power take-off.
9. Shut down the carrier's engine.

Shutting down the loader to transport it

1. Retract the telescopic boom, if there is one (see *Operating the telescopic boom* on page 31).
2. Lower the main and stick booms to below the legal maximum height required for road travel.
3. If there is a cradle for the booms and grapple, place them in it.

or

If there is no cradle and the carrier is filled with wood, place the booms and grapple in the transportation position shown in *Figure 10*, below.

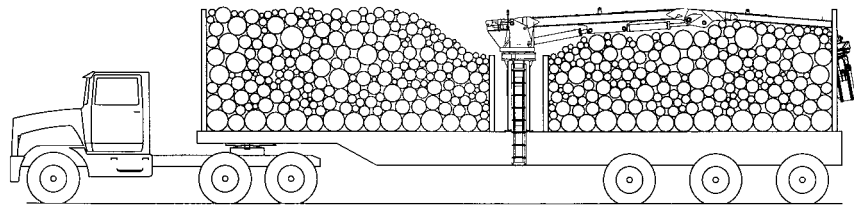


Figure 10

or

If there is no cradle and the carrier is empty, place the booms and grapple in the transportation position shown in *Figure 11*, below.

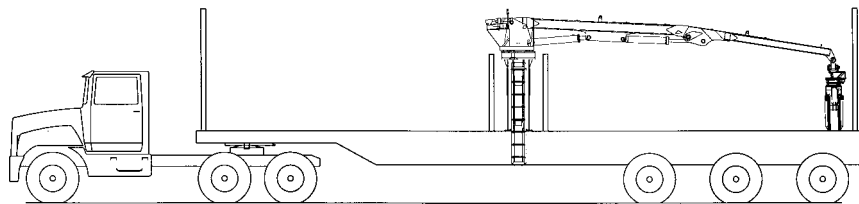


Figure 11



WARNING. Position the loader according to the illustrations above. Improper positioning of the loader for transportation can result in uncontrolled movements of the loader.

-
4. Lock the swing mechanism by pulling the lock handle forward and releasing it. It will snap down (for the locked position see *Figure 5* on page 25).



WARNING. Always lock the swing mechanism when not lifting loads. The swing mechanism lock only works when the booms are positioned at a 90° angle from the stabilizers. Failure to lock the swing mechanism can result in the booms swinging unexpectedly.

5. Shut down the controls for all the accessories controlled in the loader (lights, fans, etc.).
6. Raise the stabilizers completely (see *Operating the stabilizers* on page 24).
7. Flip the back of the operator's seat forward to conform to the legal height for transportation.
8. Dismount from the loader following the procedures given in step 5 on page 22.
9. Lower the telescopic cabin if there is one.
10. Shut down any controls in the carrier's cabin for accessories.
11. Shut down the hydraulic pump by engaging the clutch pedal and pulling the gear shift of the power take-off.

Storage

This chapter explains how to store the loader while it is installed on a carrier. Proper storage ensures the safety of personnel and prolongs the loader's working life.

If the loader needs to be removed from the carrier to be stored, have it removed by authorized Rotobec personnel, who will also provide information on how to store it (see the back cover for a list of Rotobec branches).

Before Storage

Before storing the loader, do the following:

1. Hose the loader down thoroughly.
2. With a rag and solvent, remove remaining dirt, oil, and grease. This debris can hide cracks, leaks, loose bolts, and other problems.
3. Inspect the loader for cracks, wear, loose or missing parts, vandalism, leaks, or other damage (follow the guidelines for the daily inspection in the *Maintenance Schedule* on page 40).
4. Repair any damage found during the inspection before storing the loader.
5. Protect the cylinder rods from rusting by retracting the following:
 - the telescopic boom (if there is one),
 - the stick boom,
 - the main boom, and
 - the stabilizers.

If it is not possible to retract the cylinder rods because of the way the loader must be positioned for storage, generously coat the rods with grease.



Grease the attachment's hydraulic cylinder rods and pins at the same time. See the rotator and attachment manuals for their storage requirements.

6. Lubricate the loader according to its next required lubrication as determined by the maintenance schedule (see *Maintenance Schedule* on page 40).
7. Store the loader in the position shown in *Figure 12*, below, if possible. It prevents rusting of the cylinder rods.

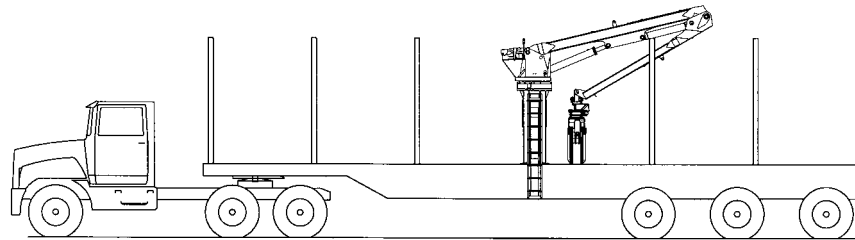


Figure 12

After Storage

After storage and before operating the loader again, follow these procedures:

1. Hose the loader down thoroughly.
2. With a rag and solvent, remove remaining dirt, oil, and grease. This debris can hide cracks, leaks, loose bolts, or other problems.
3. Inspect the loader for cracks, wear, loose or missing parts, vandalism, leaks, or other damage (follow the guidelines for the daily and quarterly inspections in the *Maintenance Schedule* on page 40).
4. Repair any damage found during the inspection before operating the loader.
5. If the loader has been in storage for three months or more, lubricate it according to both the daily and the weekly schedule of lubrication in the *Maintenance Schedule* on page 40.
6. If the loader has been in storage for a year or more, change the hydraulic oil (see *Cleaning the Oil Tank and Changing the Oil* on page 57).

Maintenance

This chapter explains how to prolong the life of your Rotobec 80 Elite Loader with regular maintenance. Maintenance involves regularly performing these tasks:

- cleaning the loader,
- inspecting the loader for damage, leaks, or wear,
- maintaining oil levels,
- tightening nuts and bolts,
- changing filters,
- lubricating the moving parts of the loader to prevent damage and wear,
- cleaning the oil tank and changing the hydraulic oil, and
- changing the gearbox oil.



WARNING. In general, before cleaning, inspecting, or lubricating the loader, shut off the carrier's engine and remove the key so no one else can start the engine.

However, the engine needs to be running to grease the slewing ring ball bearings (done weekly) and to inspect certain electrical components (done every three months).



CAUTION. Making unauthorized modifications to the loader voids the warranty. Modifications may impair the safety and the functioning of the loader.

Maintenance Schedule

To keep your loader in peak working condition and to ensure the safety of personnel, follow the maintenance schedules given in this section.

If your loader is used in extreme temperatures (either below 0°F/-20°C or above 100°F/40°C), difficult conditions (a foundry or mill yard for example), or works more than 60 hours a week, inspect and lubricate the loader at shorter intervals than those given below.

Preparing for maintenance

Thoroughly clean the loader before each inspection in the following ways:

- Hose it down.
- Remove remaining dirt, excess oil, and grease that may hide cracks, leaks, loose bolts, or other problems.

Maintenance schedule

The following table shows the maintenance schedule that will keep the 80 Elite Loader in the most efficient and safest working condition. It is recommended that the lubrication procedures be performed first in each time period.

Daily		
<i>Inspect:</i>	loader's structure for damage	p. 46
	hydraulic system for leaking oil	p. 47
	for low hydraulic oil level	p. 47
Semiweekly (every 10 working hours or 3 days, whichever comes first)		
<i>Lubricate:</i>	all booms	p. 42
	pinion gear and slewing ring teeth	p. 43
Weekly (every 20 working hours or weekly, whichever comes first)		
<i>Inspect:</i>	for low gearbox oil level	p. 63
<i>Lubricate:</i>	swing mechanism control pedal	p. 43
	power take-off	p. 44
	slewing ring ball bearings	p. 44
<i>On a new loader: inspect:</i>	all nuts and bolts for tightness	p. 51
<i>change:</i>	hydraulic filters	p. 57
	oil in the loader's gearbox	p. 63
Quarterly (every 250 working hours or 3 months, whichever comes first)		
<i>Inspect:</i>	all nuts and bolts for tightness	p. 51
	all electrical components	p. 56
Semiannually (every 500 working hours or 6 months, whichever comes first)		
<i>Change:</i>	hydraulic filters	p. 57
Annually (every 1000 working hours or 1 year), whichever comes first)		
<i>Clean:</i>	hydraulic oil tank	p. 57
<i>Change:</i>	oil in the hydraulic oil tank	p. 57
	oil in the loader's gearbox	p. 63

Table 1: Regular Maintenance Schedule

Lubricating the Loader

Lubricate the loader after it has been working for several hours because the new grease penetrates more easily when the old grease is hot. After lubricating, wipe excess grease from all surfaces of the loader.

Materials needed

- an extreme-pressure grease (Shell Albida LC E.P.2, or an equivalent).

The grease should have excellent water-repulsion durability, anti-rust capabilities, adhesive abilities, and mechanical stability.

- a grease gun adjusted to eject 2 cc/0.12 cubic in. of grease per pump. If you are using an automatic grease gun, verify that it pumps the correct amount.

Safety procedure

- Shut down the loader properly so working around it is safe (see *Shutting Down the Loader* on page 33).

Greasing the booms

Grease the booms every 10 working hours or every three days (whichever comes first).

- Pump the grease gun **2 times** each into both the main boom bushing and the stick boom bushing.
- Pump the grease gun **once** into each of the 6 other grease fittings on the booms (for their location, see *Figure 13*, below).

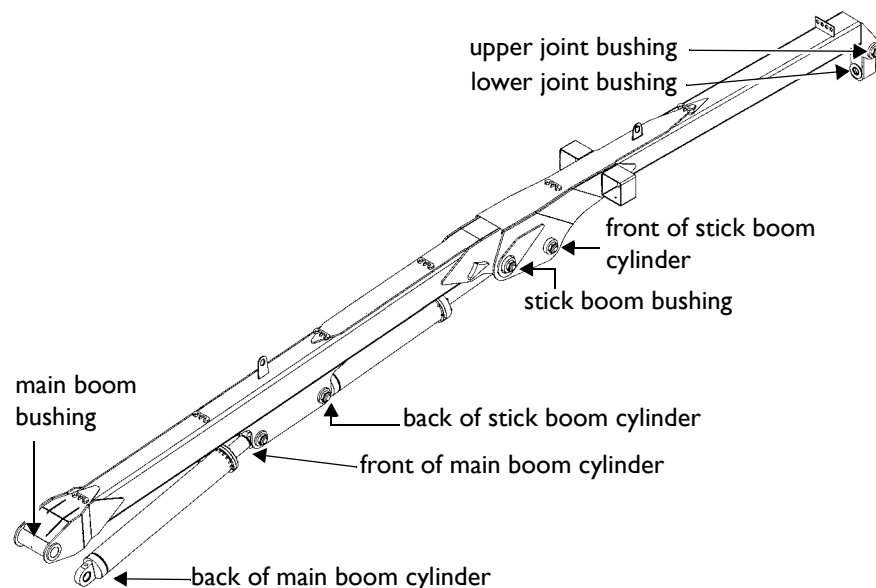
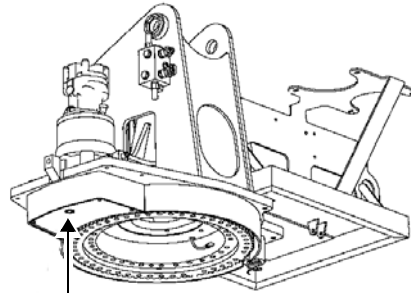


Figure 13

Greasing the pinion gear and slewing ring

Grease the pinion gear and slewing ring teeth every 10 working hours or every three days (whichever comes first).

- Pump the grease gun **6 times** into the grease fitting located under the floor of the head of the loader (see *Figure 14*, below).



Grease fitting for pinion gear and slewing ring teeth

Figure 14

Greasing the swing mechanism control pedal

Grease the grease fittings of the swing mechanism control pedal every 20 working hours or weekly (whichever comes first).

- Pump the grease gun **once** into each of the 3 grease fittings of the swing mechanism control pedal (see *Figure 15*, below).

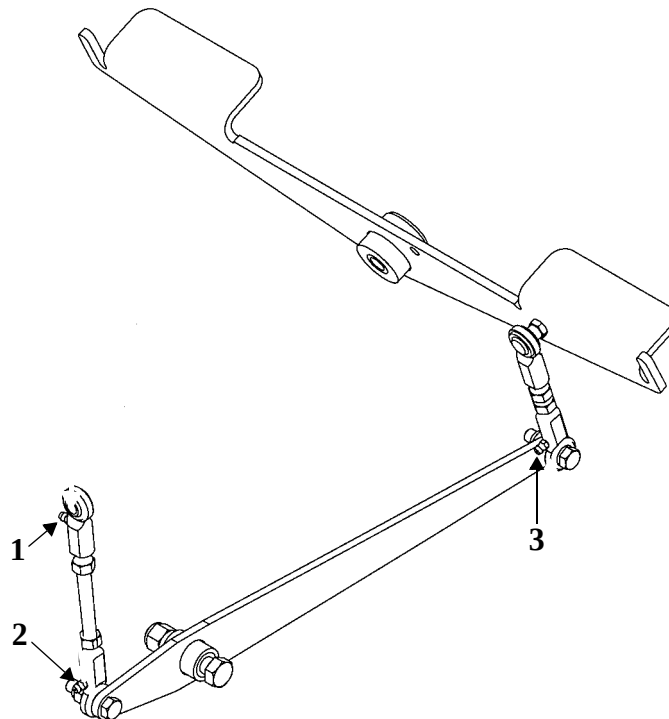


Figure 15

Greasing a Muncie TG power take-off

Grease the Muncie TG model every 20 working hours or weekly (whichever comes first) to prevent rust from eroding the splines.

- Pump the grease gun **twice** into the grease fitting on the side of the power take-off (see *Figure 16*, below).

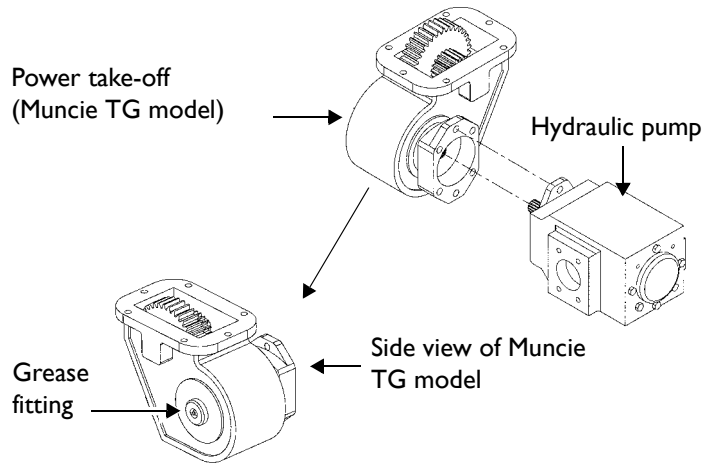


Figure 16

Greasing other models of the power take-off

For the models of the power take-off that do not have a grease fitting, the pump shaft should be greased by hand every 250 working hours or three months (whichever comes first). Follow the steps below.



Some models of the power take-off have an adaptor flange with open holes. If yours does, fill the holes with high-quality silicone or similar product in order to prevent water and sand from getting into the shaft's splines and causing deterioration and premature failure.

1. Remove the bolts that attach the pump to the power take-off.
2. Grease the shaft by hand.
3. Reattach the pump to the power take-off.



For some models of the power take-off, you may have to remove a small cover over the grease nipple on the end of the shaft. Pump the grease gun **twice** into the grease nipple.

Greasing the slewing ring ball bearings

Grease the slewing ring ball bearings every 20 working hours or weekly (whichever comes first).

Do this procedure at the end of the inspection because the carrier's engine and the hydraulic pump must be started up.



WARNING. The booms turn 360° during this procedure. Clear the area of people and obstacles.

Safety procedures

1. Alert people in the area that the loader is about to begin operating and the booms will be making a complete circle. People must be at a distance of at least 25 yards/25 meters from the stabilizers, booms, and grapple.
2. Verify that all the controls on the loader head (joysticks, stabilizer levers, and the swing control pedal) are in the neutral position and the swing mechanism is locked before starting up the loader.
3. Start up the loader according to the instructions in *Starting Up the Loader* on page 23
4. Unlock the swing mechanism (for instructions, see step 4 on page 27).
5. Position the booms so that they can make a complete circle without coming into contact with anything including the carrier.

Greasing procedure

- Rotate the booms slowly while you pump the grease gun **6 times** during the rotation into the grease fitting on the floor of the loader's head (see *Figure 17*, below). Pump the grease evenly (1 pump every 60°).

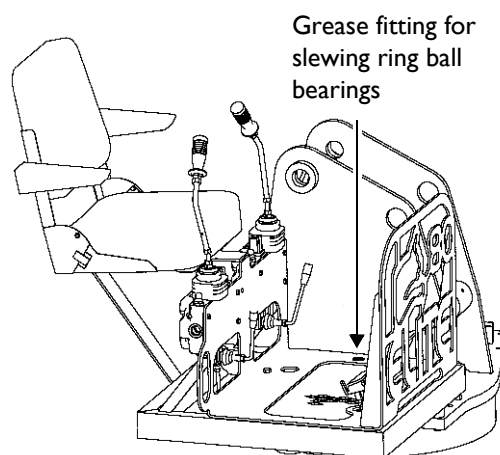


Figure 17



If you are also doing the three month maintenance at this time, we suggest that at this time you check the slewing ring bolts (see *Slewing ring nuts and bolts* on page 54) and the electrical components (see *Checking the Electrical Components* on page 56). These procedures also require the engine to be running.

Inspecting for Damage

Look for signs of damage to the loader daily.

Safety procedures

- Shut down the loader properly so working around it is safe (see *Shutting Down the Loader* on page 33).
- Repair any damage before using the loader again.

Inspecting for damage

Look for cracks or cracked paint that could indicate fatigue, wear on the parts, loose or missing parts, vandalism, or other damage on all of the following:

- all welds and joints,
- both stabilizers,
- the entire head of the loader,
- the swing drive assembly (gearbox and hydraulic motor)
- the main boom turret and all booms,
- the yoke,
- the hydraulic oil tank,
- the anchoring ties where the loader is mounted onto the carrier (for their location, see *Figure 21* on page 51),
- the frame, and
- the hydraulic pump and power take-off where they are installed near the carrier's transmission.

Inspecting for Leaking Oil

Inspect for leaking hydraulic oil twice daily, both before starting the loader and after operating it for awhile (warm hydraulic oil flows more easily and therefore leaks more easily).

Safety procedure

- Shut down the loader properly so working around it is safe (see *Shutting Down the Loader* on page 33).



DANGER. Disengage the power take-off to shut down the hydraulic pump before checking for leaks. High-pressure hydraulic oil can penetrate the skin causing severe injury, gangrene, or death.

Checking for leaks

Look for puddles of oil underneath the loader and its booms or hydraulic oil on any part listed below:

- the suction hoses that run from the hydraulic oil tank to the pump and their adapters,
- the hydraulic pump under the carrier,
- the hydraulic tubes, hoses, and fittings from the beginning to end.
- the rods, cylinder heads, tubing, and welded adaptors of the cylinders,
- the hydraulic filter on the entry line of the oil tank (see *Figure 27* on page 57),
- the hydraulic oil tank (see step 3 on page 52), and
- the hydraulic swivel joint (see step 3 on page 52).

Checking the Oil Level in the Hydraulic Tank

Check the level of oil in the hydraulic tank daily.



CAUTION. Keep the oil level above the hydraulic inlet line leading to the pump (see *Figure 18*, below). The pump will be seriously damaged if oil does not flow into it.

Safety procedure

- Shut down the loader properly so working around it is safe (see

Shutting Down the Loader on page 33).

Checking the oil level

The oil tank is located on the side of the carrier. The oil level gauge is located on the side of the tank (see *Figure 18*, below).

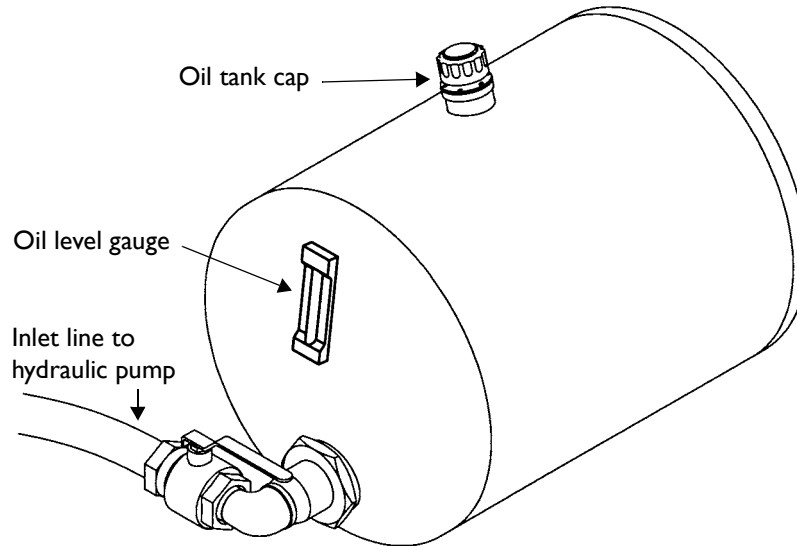


Figure 18

The line of the oil level should be seen at the top of the gauge. If the level is higher than the top of the gauge, the oil can overflow. If the level is lower, the hydraulic system can overheat and cause damage to the hydraulic components (the pump, control valves, and seals).

If the oil needs to be topped up, do the following:

1. Choose the same type of oil as already in the tank (for the types of oil to use and when to use them, see *Table 2, Recommended Hydraulic Oil* on page 58).



To change the type of oil being used, follow the instructions for *Draining the oil tank and the boom cylinders* on page 59.

2. Unscrew the cap on the top of the tank and add the oil while watching the gauge (see *Figure 18*, above).

Checking the Oil Level in the Gearbox

Check the level of oil in the gearbox every 20 working hours or weekly (whichever comes first).

Safety procedure

- Shut down the loader properly so working around it is safe (see *Shutting Down the Loader* on page 33).

Materials needed

- 60 oz/1.7 liters of the extreme-pressure synthetic oil, Traxxon Synthetic 75W90

Checking the oil level

The loader's gearbox is located on the head of the loader, to the left of the operator's seat and the turret supporting the main boom (see *Figure 19*, below).

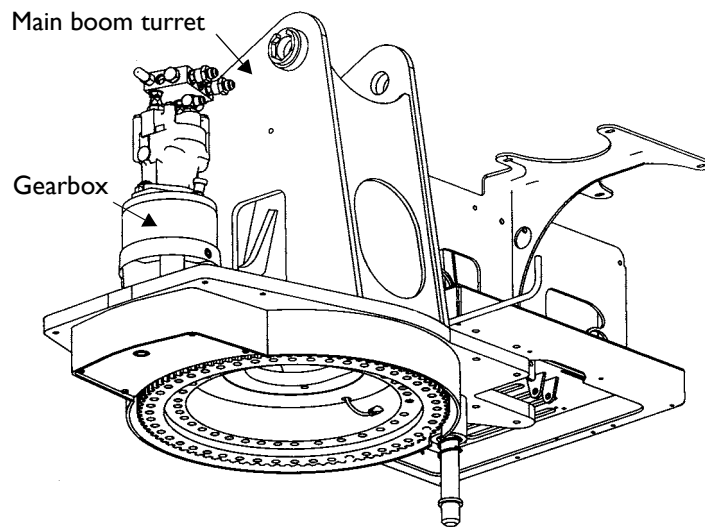


Figure 19

1. Unscrew the hydraulic fitting on the top of the gearbox (see *Figure 20*, below)

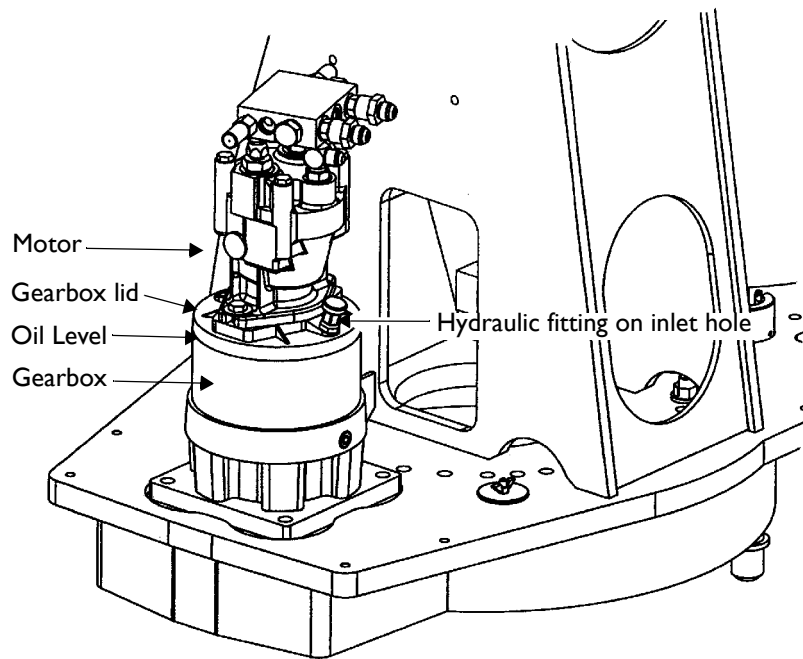


Figure 20

2. Look in the inlet hole. The oil should come to the bottom of the gearbox lid as shown in *Figure 31*, above. This completely covers the sun gear with oil.
3. Add oil, if necessary, to bring the level to the bottom of the gearbox lid.
4. Screw the hydraulic fitting back on the inlet hole.

Checking the Tightness of Nuts and Bolts

Check the loader's nuts and bolts for tightness every 250 working hours or three months (whichever comes first).

Materials needed

- torque wrench
- Loctite 242, 262

Safety procedure

- Shut down the loader properly so working around it is safe (see *Shutting Down the Loader* on page 33).



WARNING. Apply Loctite (if indicated) to loose bolts and tighten them to the proper torque value. Loose bolts can result in parts separating from each other.

Checking torque values

1. The anchoring tie nuts are located where the loader's frame is mounted onto the carrier. Check one nut from each of the eight pairs for a torque value of **900 ft-lb** (see *Figure 21*, below).

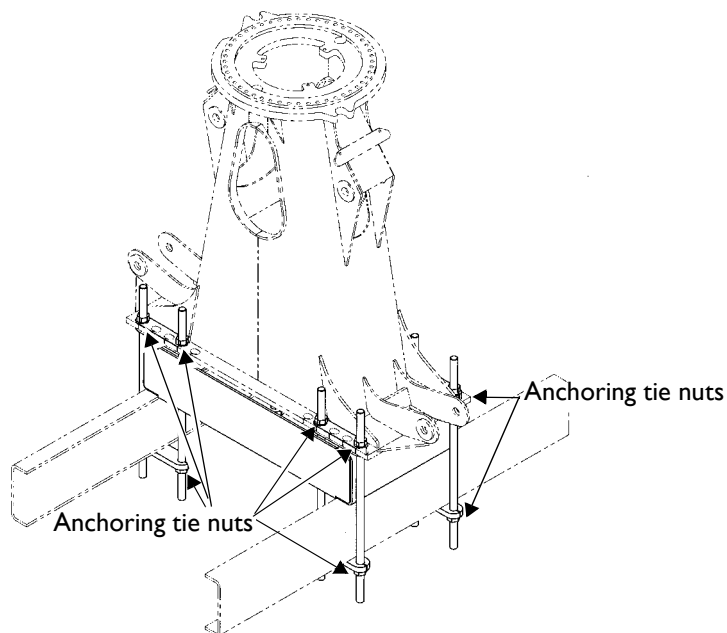


Figure 21

2. Check the two sets of swivel joint bolts shown in *Figure 22*, below, for the correct torque values.

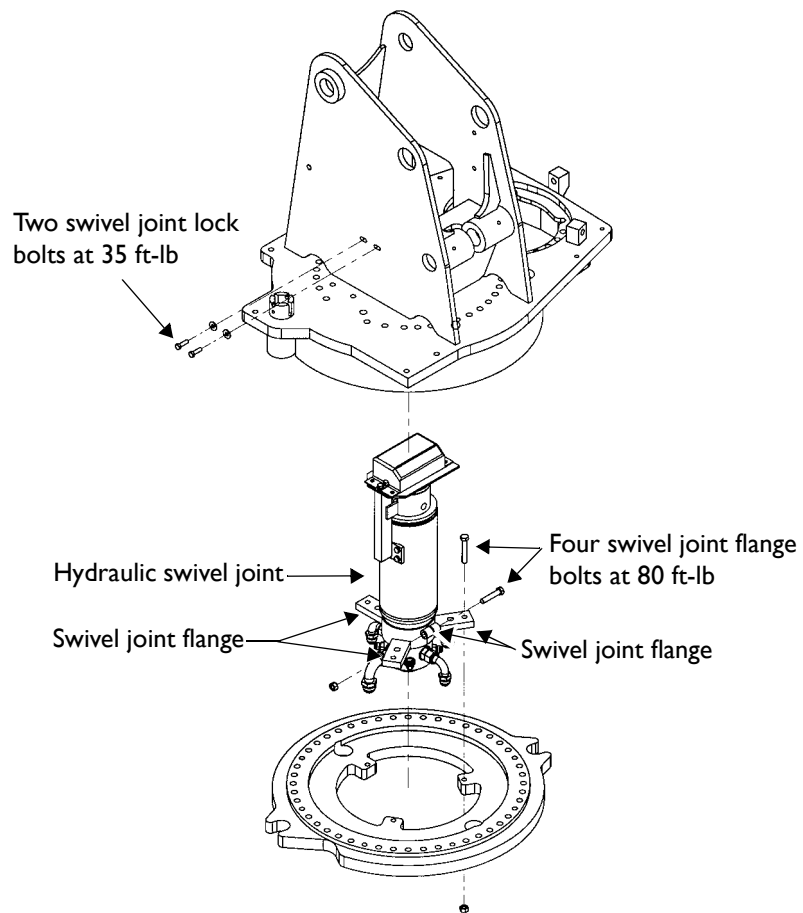


Figure 22

3. If the bolts are loose, apply Loctite 242 and torque the bolts to their proper values.

4. Check the two sets of installation bolts of the hydraulic swing assembly, shown in *Figure 23*, below, for the correct torque values.

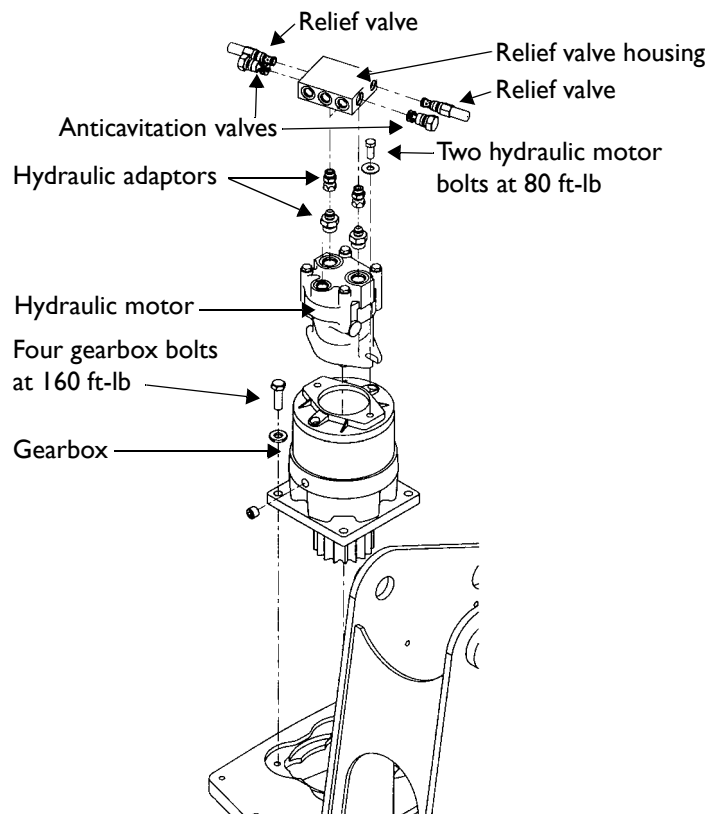


Figure 23

5. If the bolts are loose, apply Loctite (262 to the motor bolts and 242 to the gearbox bolts), then torque the bolts to their proper values.
6. Check all other bolts on the loader visually (except for the slewing ring bolts shown in *Figure 24*, below) and tighten loose bolts, according to the values given in the parts manual.

Slewing ring nuts and bolts

You must check the three sets of slewing ring nuts and bolts shown in *Figure 24*, below, at the end of the inspection because you must turn the booms to access the #3 bolts.

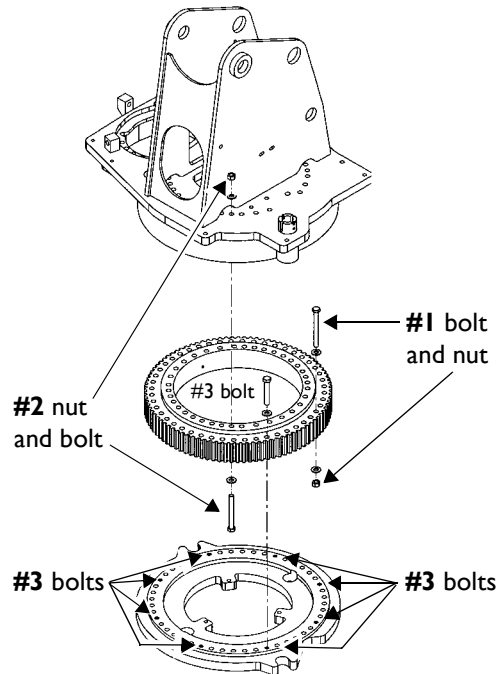


Figure 24

Check the nuts and bolts with the torque wrench for a torque value of **100 ft-lb** (or 140 ft-lb for a new installation) according to the following procedure:



Whenever possible, apply the torque wrench to the nut. However, if you cannot access it, you may apply the torque wrench to the bolt. To ensure adequate torque, hold the end opposite to the one you are torquing and prevent it from turning.

1. Check the torque value of the 40 #1 nuts that are visible around the plate protecting the slewing ring and tighten if necessary. (see *Figure 25*, below).

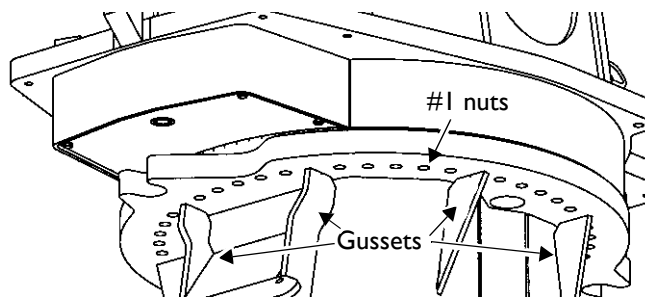


Figure 25

2. Check the torque value of the 32 #2 nuts that are visible on the loader head and tighten if necessary (see *Figure 24*, above).
3. To gain access to the 8 #3 bolts, first follow the safety procedures listed below:
 - Alert people in the area that the loader is about to begin operating and the booms will be making a complete circle. People must be at a distance of at least 25 yards/25 meters from the stabilizers, booms, and grapple.
 - Verify that all the controls on the loader head (joysticks, stabilizer levers, and the swing control pedal) are in the neutral position and the swing mechanism is locked before starting up the loader.
 - Start up the loader according to the instructions in *Starting Up the Loader* on page 23.
 - Unlock the swing mechanism (for instructions, see step 4 on page 27).
 - Position the booms so that they can make a complete circle without coming into contact with anything, including the carrier.
4. Unscrew both access plugs, located on either side of the gear box (see *Figure 26*, below).

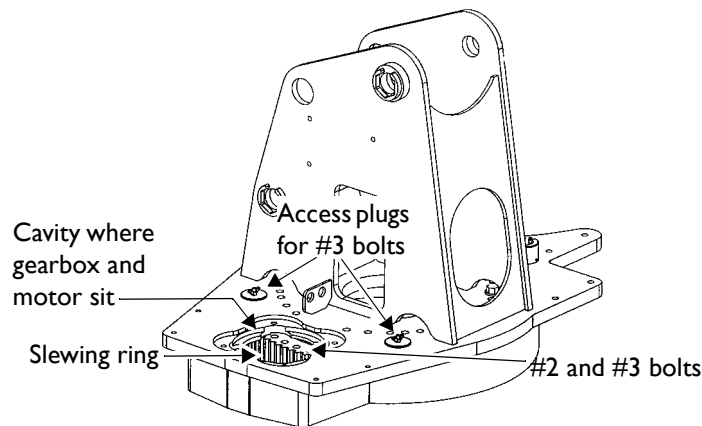


Figure 26

5. Starting with the booms straight out from the frame as in *Figure 1* on page 12, turn the booms 22° clockwise. This should align the first pair of bolts with the access holes (the bolts are indicated by the black points in the mounting in *Figure 24* on page 54, and are aligned with the gussets visible in *Figure 25* on page 54).

You may have to adjust the position of the booms slightly to complete the alignment.

6. Check the torque value of both bolts seen through the access holes.

7. Turn the booms 45° clockwise to align the second pair of bolts with the access holes.
8. Check the torque value of both bolts seen through the access holes.
9. Turn the boom 180° clockwise to align the third pair of bolts with the access holes and check their torque values.
10. Turn the booms **counterclockwise** 45° to access the fourth pair of bolts and check their torque values.



If you will be greasing the slewing ring's ball bearings during this inspection (a weekly procedure), we suggest that you do it now (see *Greasing the slewing ring ball bearings* on page 44). We also recommend that you check the electrical components that require the engine running (see step 3 on page 56).

Checking the Electrical Components

Inspect the electrical components of the loader every 250 working hours or three months (whichever comes first).

1. Check all along the electrical cables for damage.
2. Check for loose or hanging cables. They can get caught in the machinery and be cut, causing a short circuit.



Because the carrier's engine needs to be running for the next part of the inspection, do it last, after having checked the torque of the slewing ring bolts (see *Slewing ring nuts and bolts* on page 54). If you will be greasing the slewing ring's ball bearings during this inspection (a weekly procedure), we suggest that you do it now (see *Greasing the slewing ring ball bearings* on page 44).

3. Check that the following components work:
 - lights
 - telescopic cabin accessories like the wiper, fan ventilator, and heater

Changing the Hydraulic Filters

Change the hydraulic filters every 500 working hours or six months (whichever comes first).

Parts needed

- two hydraulic filters (see the 80 Elite Loader's *Parts Manual* for the order number)

Safety procedure

- Shut down the loader properly so working around it is safe (see *Shutting Down the Loader* on page 33).

Changing the filters

1. Locate the hydraulic filters on the entry line running into the hydraulic tank on the side of the carrier (see *Figure 27*, below).

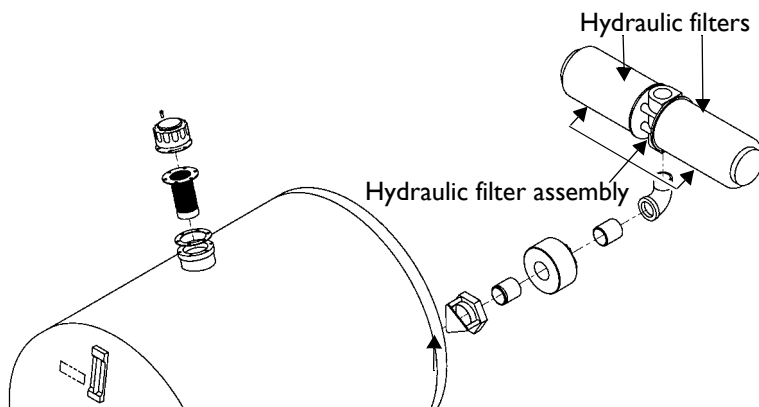


Figure 27

2. Unscrew the two hydraulic filters and replace them with the new ones.

Cleaning the Oil Tank and Changing the Oil

Clean the hydraulic oil tank and change the oil every 1000 working hours or once a year (whichever comes first).

Parts needed

- two hydraulic filters (see the 80 Elite Loader's *Parts Manual* for the order number)

Materials needed

- empty container (90 U.S gals/340 liters)
 - nonflammable solvent
 - rags
 - pipe wrench
 - anti-friction additive such as Emerest 2427 (one U.S. gallon per 50 gallons of hydraulic oil)
- Each new loader comes with one U.S. gallon of Emerest 2427 supplied from Rotobec.



Order Emerest 2427 by the gallon from Rotobec (order number 053-0036).

- a hydraulic oil with a high viscosity index (for example, Petro-Canada Hydrex MV)



Dextron-type automatic transmission oil is **not** recommended.

The loader leaves the factory containing Petro-Canada Hydrex MV 36 oil.

For the best results, choose the hydraulic oil suitable to the weather conditions, according to the table below.

Minimum oil temperature when starting loader	Oil temperature when operating loader	Petro-Canada Oil (or equivalent)
-53°C/ -63°F	-50–48°C/ -58–118°F	Hydrex Arctic 15
-38°C/ -36°F	-34–64°C/ -29–165°F	Hydrex MV 22
-28°C/ -18°F	-20–74°C/ -4–165°F	Hydrex MV 36
-17°C/ 1°F	-7–87°C/ 19–188°F	Hydrex MV 60

Table 2: Recommended Hydraulic Oil

Draining the oil tank

If you need to fill the tank with a different type of oil from what is already in the system, drain the system completely. This means the tank and the boom cylinders. For the instructions on how to do this, skip this section and go the next section, *Draining the oil tank and the boom cylinders*.

If you are going to fill the tank with the same type of oil that it already contains, you only need to drain the oil that is in the tank, **not** in the cylinders. Follow the steps for draining the oil tank given below:

- 1.** Support the boom and grapple on the empty carrier bed or on the ground.
- 2.** Lock the swing mechanism (see step 4 on page 27).
- 3.** Shut down the loader's hydraulic pump by disengaging the power take-off.
- 4.** Shut down the carrier's engine.
- 5.** Place an empty container (90 U.S gals/340 liters) under the drain hole of the tank to catch the oil (see *Figure 28*, below).
- 6.** Unscrew the drain hole's magnetic plug and let the oil drain completely from the tank (see *Figure 28* on page 60).
- 7.** Dispose of the oil as per regulations.

Draining the oil tank and the boom cylinders

If you are going to fill the tank with the same type of oil that it already contains, you do not need to totally drain the system. In this case, follow the instructions in the section, *Draining the oil tank*, above.

If you need to fill the tank with a different type of oil than what is already in the system, drain the system completely. To do this, follow the steps given below:

- 1.** Set the boom towards the back or on either side of the truck where it can be safely and completely extended.
- 2.** Extend the stick boom fully.
- 3.** Lift the main boom to its maximum position.
- 4.** Lock the swing mechanism (see step 4 on page 27).

5. Shut down the loader's hydraulic pump by disengaging the power take-off.
6. Shut down the carrier's engine.
7. Place an empty container (90 U.S gals/340 liters) under the drain hole of the tank to catch the oil (see *Figure 28* on page 60).
8. Unscrew the drain hole's magnetic plug and let the oil drain completely (see *Figure 28* on page 60).
9. Dispose of the oil as per regulations.



CAUTION. For the following step, do not start the hydraulic pump. Because the oil tank is empty and there is no oil in the system, starting the pump now would severely damage it.

10. Retract the stick boom completely and lower the main boom completely. Place the booms on the empty carrier bed or on the ground.

Cleaning the oil tank

1. Remove the cap on top of the oil tank (see *Figure 28*, below).
2. Lift out the input filter located just under the cap (see *Figure 28*, below).

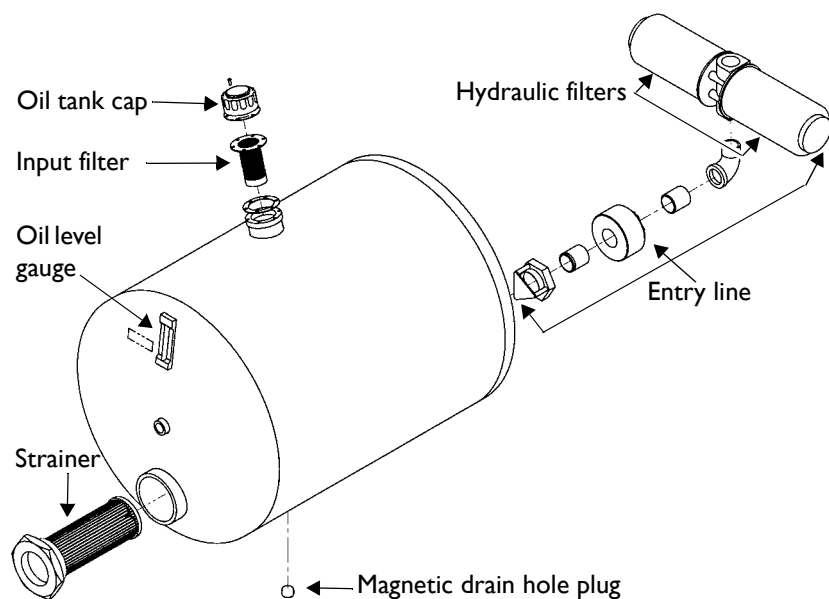


Figure 28

3. Clean the input filter by soaking it in an oil-based solvent, then wiping it with a rag.
4. Unscrew and remove the strainer located on the side of the oil tank (see *Figure 28*, above).
5. Clean the strainer by soaking it in an oil-based solvent, then wiping it with a rag.
6. Use a pipe wrench to disassemble the entry line (see *Figure 28*, above).
7. Remove the dirt and sediment from inside the oil tank by wiping the inside with a rag:
 - Reach inside the tank through the strainer hole on one side (see *Figure 28*, above),
 - Reach inside the tank through the entry line hole on the other side (see *Figure 28*, above).
8. Replace the hydraulic filters with new ones.
9. Reassemble the entry line.
10. Reinsert the strainer.
11. Clean the magnetic plug with a rag and solvent and screw it back into the drain hole on the bottom of the oil tank (see *Figure 28*, above).

Filling the oil tank

1. Remove the oil tank cap.
2. Using the appropriate oil for the season (see *Table 2, Recommended Hydraulic Oil* on page 58), fill the tank until the oil reaches the top of the oil gauge on the side of the tank (see *Figure 29*, below)
3. Replace the oil tank cap.

4. Check that the valve on the inlet line to the pump is open completely (see *Figure 29*, below).

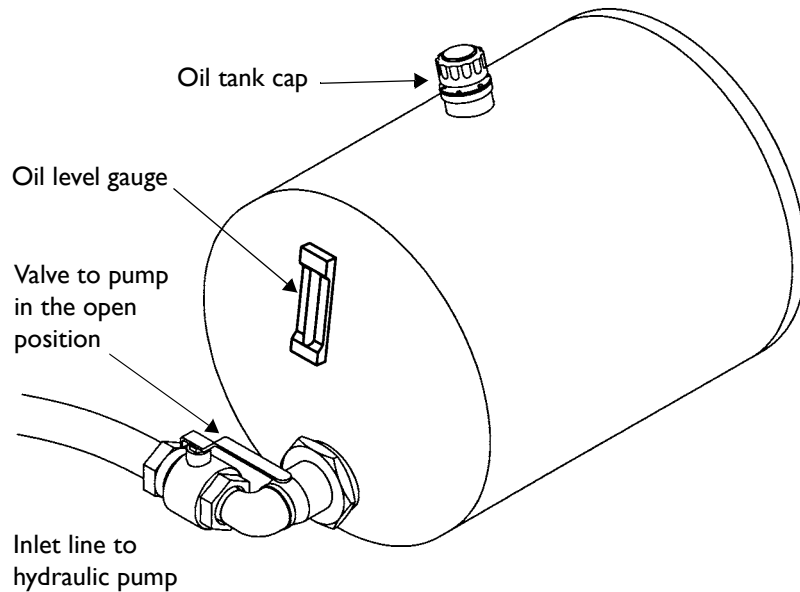


Figure 29

5. Verify that all the controls in the loader's head are in the neutral position (see *Figure 5* on page 25).
6. Start the carrier's engine and engage the power take-off to start the hydraulic pump.
7. Let the pump run for several minutes to circulate the oil through the system.
8. Check the oil level again and add oil if the level is below the top of the oil gauge.
9. Lift the main boom and extend the stick boom completely.
10. Recheck the oil level and top up the oil if necessary.



CAUTION. Keep the oil level above the hydraulic inlet line that leads to the pump (see *Figure 29*, above). The pump will be seriously damaged if oil does not flow into it. The same oil must be in the oil tank and boom cylinders.

Changing the Gearbox Oil

Change the oil in the loader's gearbox every 1000 working hours or once a year (whichever comes first).

The loader's gearbox is located on the head of the loader, to the left of the operator's seat and the turret supporting the main boom (see *Figure 30*, below).

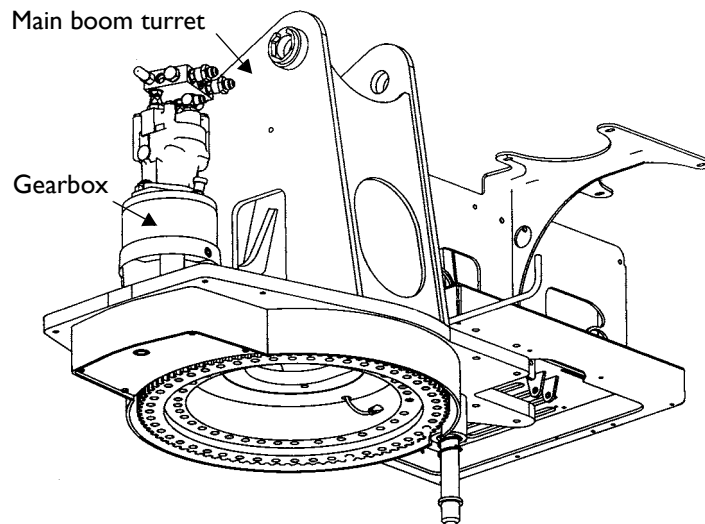


Figure 30

Materials needed

- 60 oz/1.7 liters of the extreme-pressure synthetic oil, Traxxon Synthetic 75W90
- an empty container (60 oz./1.7 litres)

Safety procedure

- Shut down the loader properly so working around it is safe (see *Shutting Down the Loader* on page 33).

Changing the oil

1. Hold an empty container (60 oz./1.7 litres) under the drain hole of the gear box (see *Figure 31*, below)

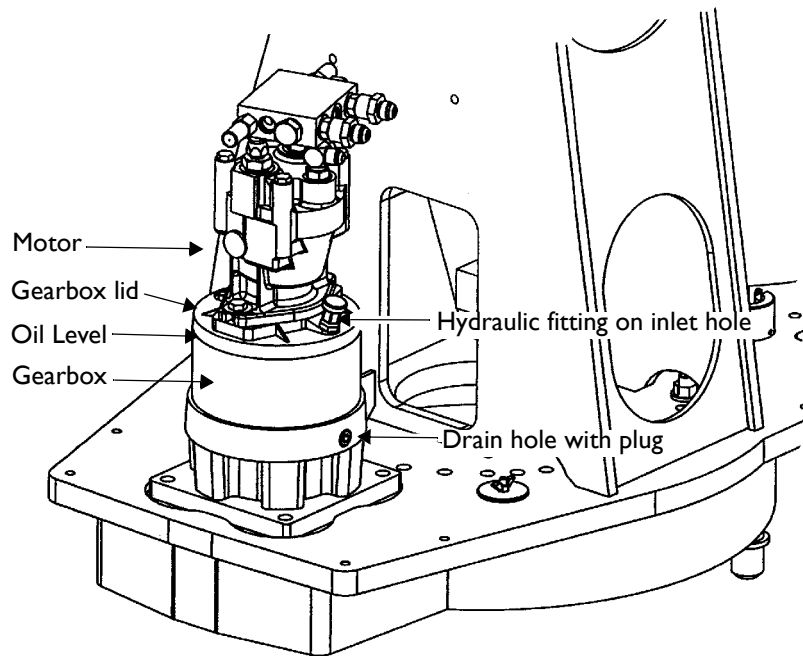


Figure 31

2. Remove the plug from the drain hole in the side of the gearbox and let the old oil drain out.
3. Clean the plug and reinsert it into the drain hole.
4. Dispose of the old oil as per regulations.
5. Unscrew the hydraulic fitting on the top of the gearbox (see *Figure 31*, above).
6. Fill the gearbox with new oil to the bottom of the gearbox lid as shown in *Figure 31*, above. This completely covers the sun gear with oil (you must look in the hole where you are pouring the oil to see the level of the oil).
7. Screw the hydraulic fitting back on the inlet hole.

Tightening the Boom Pins

If you need to change the brass bushings on the main boom or the seal kit in the main or stick boom cylinder, follow the instructions below when you tighten the boom pins while reassembling the boom.

Materials needed

- torque wrench

Tightening the main boom pins

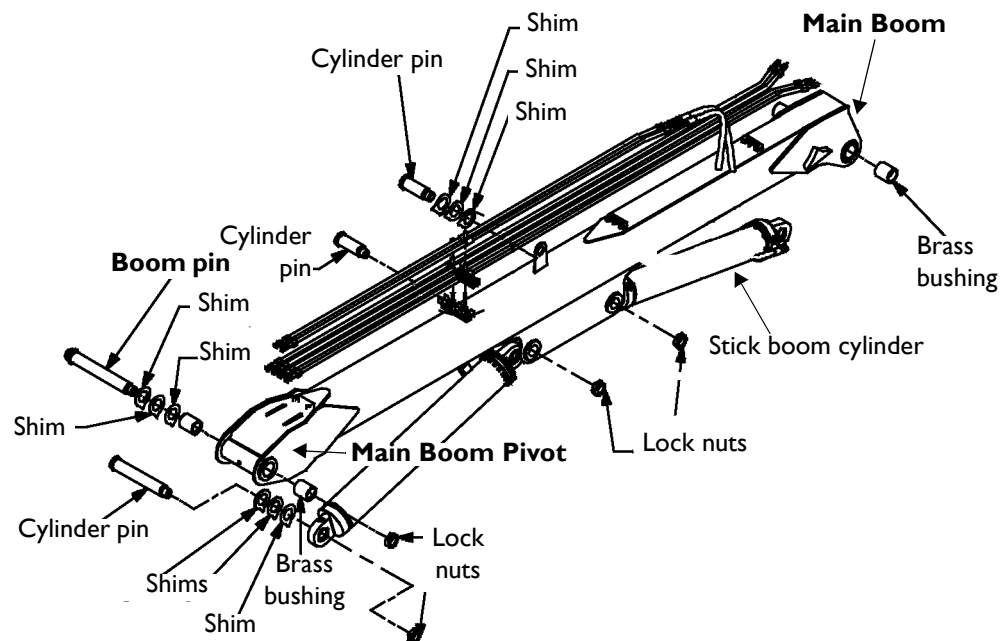


Figure 32

1. On the main boom pivot, fill extra space with shims. With the torque wrench set to 100 ft-lb, tighten the boom pins. If some play remains, increase the torque up to a maximum of 300 ft-lb.
2. On the main boom at the attachment of the cylinder rod, fill extra space with shims, but leave between 0.03 and 0.06 inches of play. With the torque wrench set to 100 ft-lb, tighten the boom pins.

Tightening the stick boom pins

- On the boom pin nut between the main boom and stick boom (not illustrated), with the torque wrench set to 100 ft-lb, tighten the boom pin.

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