



OWNER/OPERATOR MANUAL

GRADALL[®] LOED 534A

9020-5895

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GRADALL[®]

LOED[®] MATERIALS HANDLER

MODEL 534A

OPERATOR'S GUIDE

Part No. 9020-5895

This manual describes the LOED Handler as originally designed and built by the LOED Corporation. The LOED Handler product line was purchased October 15, 1982, by The Warner & Swasey Co., a subsidiary of The Bendix Corporation. Descriptions and specifications shown herein are subject to change without notice.

IMPORTANT

READ AND UNDERSTAND THIS MANUAL BEFORE STARTING, OPERATING OR PERFORMING MAINTENANCE PROCEDURES ON THIS MACHINE.

KEEP THESE MANUALS IN CAB.

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IMPORTANT SAFETY NOTICE

Safe operation depends on reliable equipment and proper operating procedures. Performing the checks and services described in this manual will help to keep your Gradall® Handler in reliable condition and use of the recommended operating procedures can help you avoid accidents. Because some procedures may be new to even the experienced operator we recommend that this manual be read, understood and followed by all who operate the unit.

Danger, Warning and Caution notes in this manual will help you avoid injury and damage to the equipment. These notes are not intended to cover all eventualities; it would be impossible to anticipate and evaluate all possible applications and methods of operation for this equipment.

Any procedure not specifically recommended by The Gradall Division must be thoroughly evaluated from the standpoint of safety before it is placed in practice. If you aren't sure, contact your Gradall Distributor before operating.

Do not modify this machine without written permission from the Gradall Division.

NOTICE

The Gradall Division retains all proprietary rights to the information contained in this manual.

The Company also reserves the right to change specifications without notice.

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GENERAL INFORMATION

INTRODUCTION

The operating instructions and maintenance recommendations in this manual will help you get acquainted with - and help you get satisfactory performance from - your LOED Handler.

BECAUSE THIS MACHINE HAS A NUMBER OF UNIQUE FEATURES, YOU SHOULD STUDY THIS MANUAL CAREFULLY BEFORE YOU ATTEMPT TO OPERATE THE LOED HANDLER - REGARDLESS OF YOUR PREVIOUS EXPERIENCE.

If at any time you have questions about a specific operation that are not answered in this guide, contact your distributor or LOED Corporation Service Department before proceeding. Do not do anything that is not safe!

REMEMBER, YOUR SAFETY AND THE SAFETY OF OTHERS DEPENDS ON YOUR PROPER CARE AND JUDGEMENT IN THE OPERATION OF THIS MACHINE.

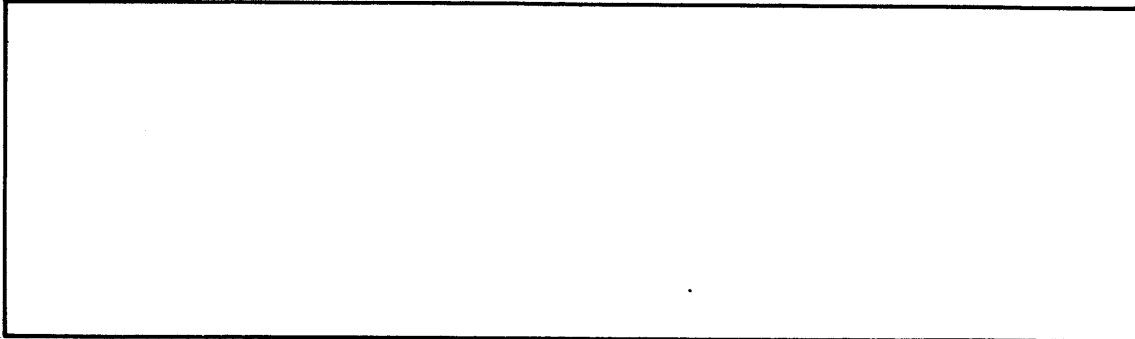


avoid accidents

GENERAL INFORMATION

REPLACEMENT PARTS

Replacement parts can be ordered from your nearest LOED Handler distributor.



Always furnish the machine model and serial number as well as a complete description of the part and the part number. This enables the distributor to quickly and accurately fill your order.

NOTE: For a safer, more dependable machine, use only factory approved parts.

SERVICE

Your LOED Handler distributor is properly equipped to service your LOED Handler. Repairs should be made by trained and qualified service personnel only.



CAUTION: Do not attempt to repair your machine unless you are trained and qualified to do so.



DANGER: Keep clothing and all parts of your body away from moving parts of the machine. DO NOT operate the machine when anyone is in danger of contacting moving parts.

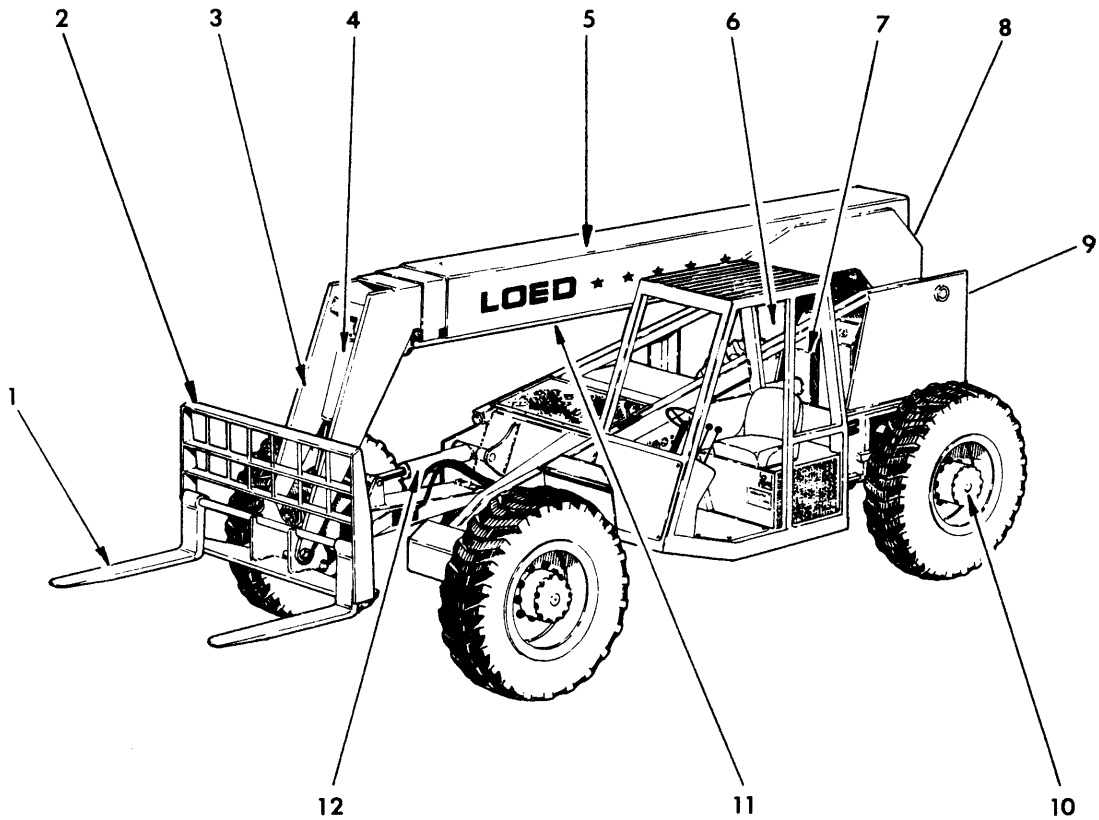
Modifications must not be made unless prior approval has been obtained from LOED Corporation. Your distributor has the necessary forms to request authorization for specific modifications.



CAUTION: Do not modify your machine in any way without prior approval of LOED Corporation. The safety and reliability of your machine may be affected by improper modification.

GENERAL INFORMATION

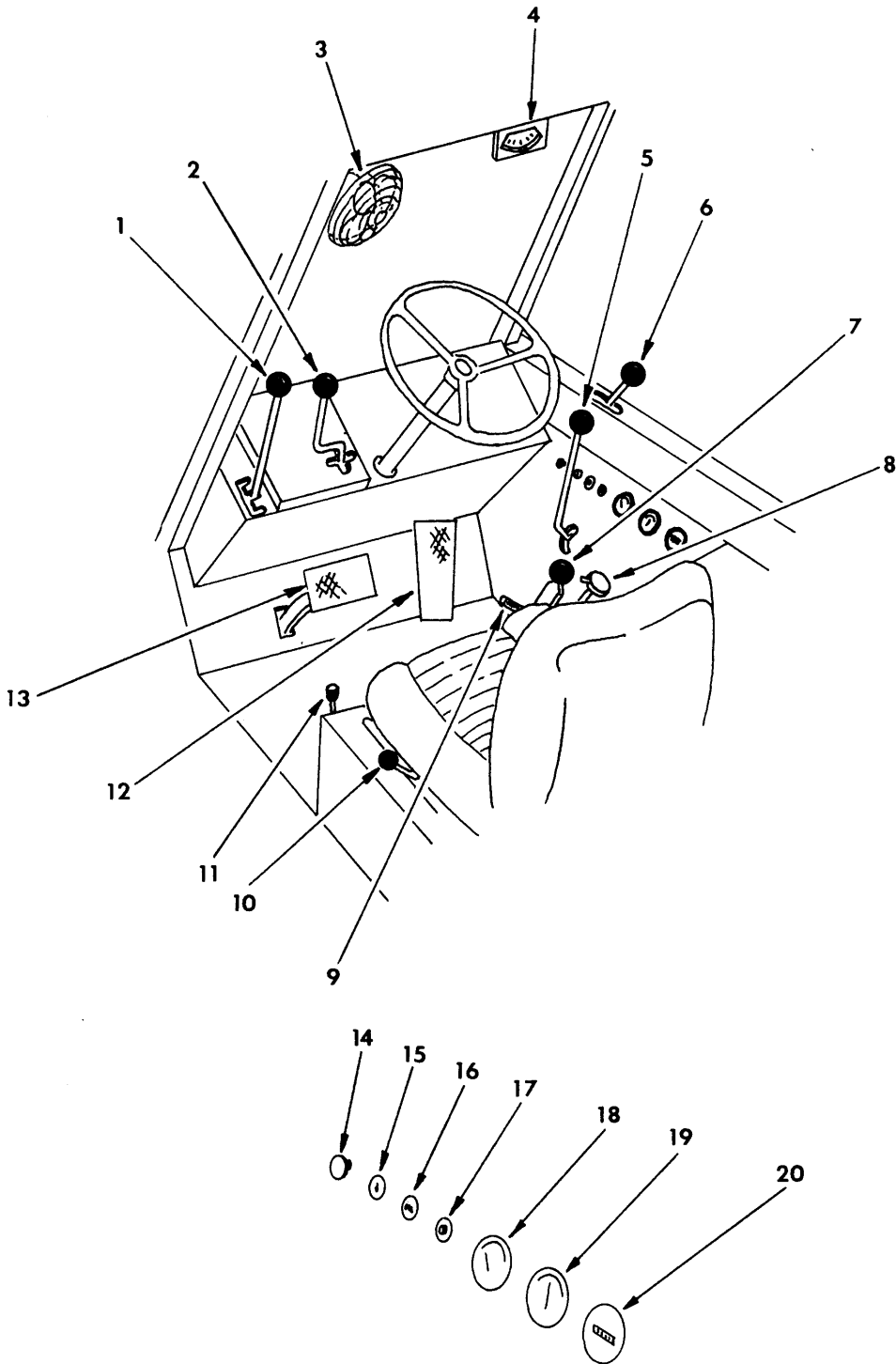
NOMENCLATURE



- | | |
|-----------------------|--------------------------|
| 1. FORKS | 7. COMPENSATING CYLINDER |
| 2. FORK FRAME | 8. HYDRAULIC RESERVOIR |
| 3. BOOM HEAD | 9. FUEL TANK |
| 4. TILT CYLINDER | 10. PLANETARY HUB |
| 5. THREE SECTION BOOM | 11. CROWD CYLINDER |
| 6. LIFT CYLINDER | 12. LEVEL CYLINDER |

GENERAL INFORMATION

CONTROLS and INSTRUMENTS



GENERAL INFORMATION

CONTROLS and INSTRUMENTS

Note: Some items shown are optional and may not be installed on your machine.

1. FORWARD - REVERSE LEVER

Push the lever forward for forward travel. Pull the lever back for reverse. Center the lever for neutral.

THE FORWARD REVERSE CONTROL MUST BE IN NEUTRAL FOR STARTING

2. CARRIAGE TILT - MACHINE LEVEL CONTROL

This is a dual-function control.

Carriage tilt -

Push the control forward to roll the carriage down, pull back to roll the carriage up.

Machine level -

This control sways the 534 a maximum of 8° left or right to maintain a level working platform while operating on uneven terrain. Push the lever left for left sway, right for right sway.



DANGER: The level control must not be used with the boom raised above the carry position. Swaying the machine with the boom raised may result in tipping the machine over sideways.

3. DEFROSTER FAN

Switch located on the fan.

4. LEVEL INDICATOR

The indicator pointer or ball must be at 0° before lifting a load.

5. BOOM CONTROL

Push lever forward to lower boom, pull back to raise it. Pull lever to the right to extend boom, push to the left to retract it. The lever may be moved diagonally to obtain any combination of simultaneous raise/lower and extend/retract.

6. SPIN LIMIT CONTROL

For machinery before serial number 238, pull the lever back for "ON", push forward for "OFF". Machines serial number 239 and after, push the lever forward for "ON", pull back for "OFF". This control is used to limit spinning of the front wheels when the machine is in mud or on ice. For specific operating instructions, consult the "Power Transmission Control Operation" section.

7. RANGE CONTROL

This lever shifts the front wheel drive transmissions. Push the lever forward for more power and low speed, pull it back for higher speed and less power. For specific operating instructions, consult the "Power Transmission Control Operation" section.

GENERAL INFORMATION

8. TRANSMISSION SPEED SELECTOR
Select 6 (5 in the case of machines equipped with Chrysler 318 gas engines) forward and reverse transmission ranges. For specific operating instructions, consult the "Power Transmission Control Operation" section.
9. PARKING BRAKE LEVER
Pull up to set brake. Turning the end of the handle clockwise, as viewed end on, increases the tension on the brake linings.
10. SEAT POSITION CONTROL
Located under left edge of seat.
11. MICO LOCK
This control holds pressure in the service brake calipers and can be used to help reduce operator fatigue while operating on hills. To lock the brakes, push the lever down (release position) apply service brakes, lift the lever up (lock position) release pressure on brake pedal.

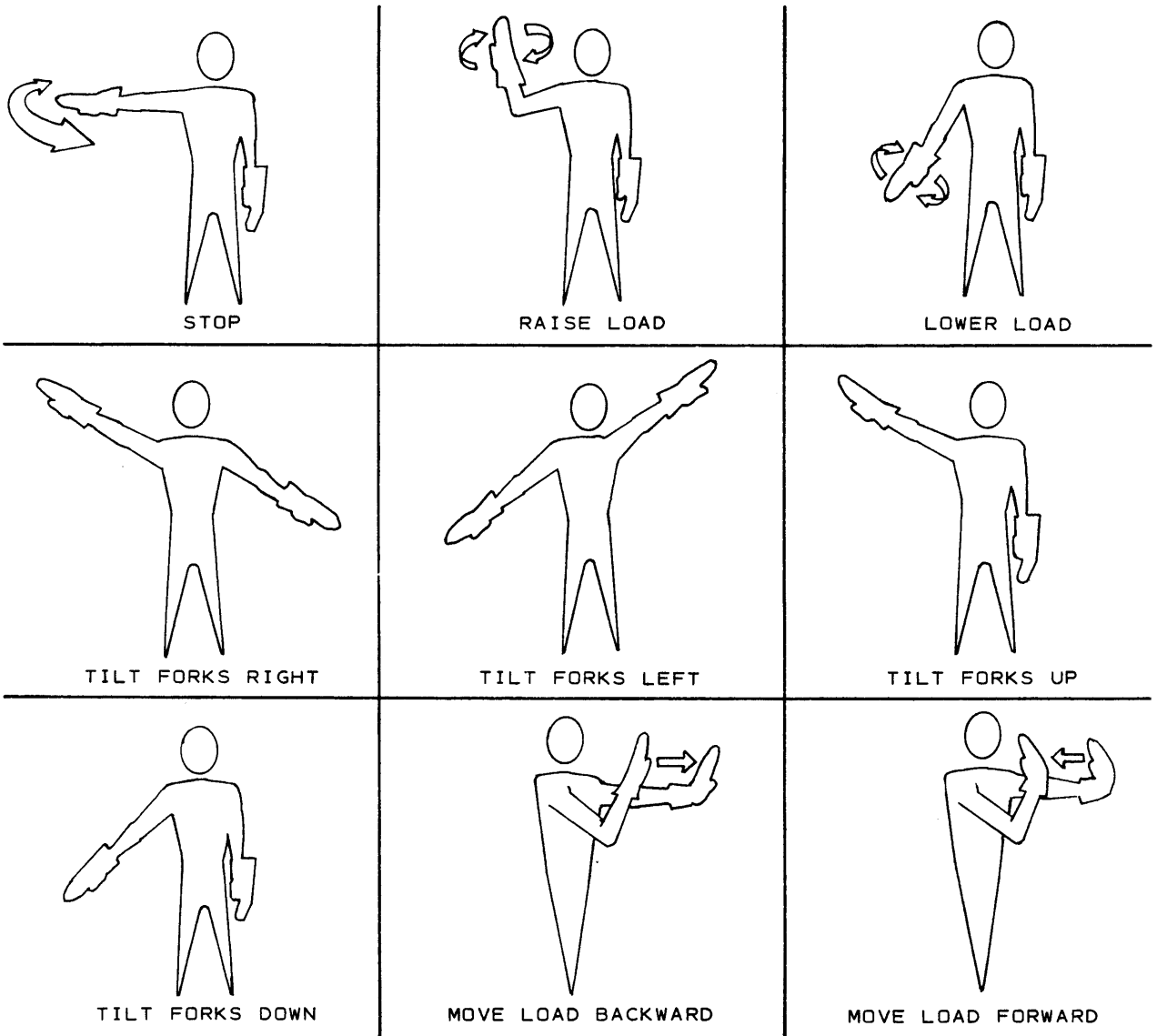
IMPORTANT: This control cannot be used as a parking brake. DO NOT leave the machine with the mico lock set as it will bleed off in a short period of time.
12. ACCELERATOR PEDAL
13. BRAKE PEDAL
The primary service braking on the 534 is dynamic with front wheel discs and calipers for additional stopping and holding power.

The first 3/4 of the pedal travel provides little braking and little pedal effort. Braking increases rapidly through the last 1/4 of pedal travel, as increasing pedal resistance is encountered.

As the braking response is somewhat different in the 534 than in other equipment you may have operated, we suggest you make several stops under various terrain conditions before operating the machine for the first time.
14. CHOKE (gas engine)
COLD STARTING AID (diesel engine)
See starting procedures for proper use.
15. IGNITION KEY
16. ENGINE OIL PRESSURE LIGHT
Stop operating machine immediately if light comes on.
17. HORN
18. ENGINE TEMPERATURE GAUGE
19. AMMETER
20. HOURMETER
Operates whenever the ignition switch is on. Because of the importance of knowing the operating hours in order to perform necessary preventive maintenance, this meter should be kept working at all times.

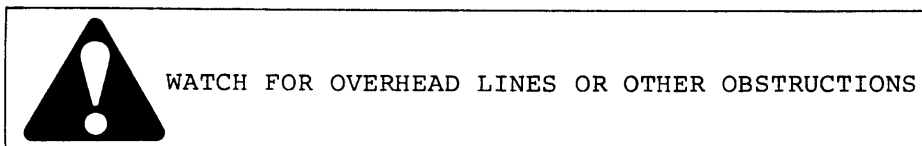
GENERAL INFORMATION

FORKLIFT SIGNALS



INSTRUCTIONS TO SIGNALMEN

1. ONLY ONE PERSON SHOULD GIVE SIGNALS
2. MAKE SURE THE OPERATOR CAN SEE YOU & THAT HE ACKNOWLEDGES THE SIGNALS
3. THE SIGNALMAN MUST WATCH THE LOAD - THE OPERATOR IS WATCHING YOU
4. NEVER RAISE OR LOWER THE LOAD OVER WORKMEN - KEEP THEM OUT OF THE WAY



OPERATING INSTRUCTIONS

THIS EQUIPMENT SHOULD BE OPERATED ONLY BY TRAINED AND QUALIFIED PERSONNEL.

Because of the large number of different applications and variety of job locations and conditions, it is not possible to give specific instructions for every situation. However, the following general guidelines should be followed for maximum safety and efficiency.

PAY ATTENTION TO ALL SAFETY PRECAUTIONS!



WHEN YOU SEE THIS SYMBOL, PAY PARTICULAR ATTENTION TO THE CAUTION OR DANGER NOTE - YOUR SAFETY AND THE SAFETY OF OTHERS IS INVOLVED.

Delivery Inspection

Your LOED Handler has been serviced and tested at the factory. As an added precaution, perform the Delivery Inspection listed in the Preventive Maintenance section before attempting to operate the machine.

Preventive Maintenance

Recommended preventive maintenance is listed in the Preventive Maintenance Section of this guide. The recommendations are based on average operating conditions and should be considered MINIMUM requirements.

Failure to follow this schedule will result in accelerated component wear and will void the warranty.

Starting Procedure - Gas Engine

- Place all controls in neutral. Shut off all electrical systems (lights, wipers, heater, etc.)
- Pull the choke out about half way.
- Press the accelerator down half way.
- Turn the ignition key to start.
- When the engine starts, adjust the choke and accelerator for fast idle warm-up.

In very cold weather, pull the choke out all the way until the engine starts. Adjust the choke to keep the engine running smoothly until it reaches normal operating temperature.

Before operating any of the controls, push the choke in all the way.

Warm Starts

- Place all controls in neutral. Shut off all electrical systems (lights, wipers, heater, etc.).
- Press the accelerator down about half way.
- Turn the ignition key to start.

If the engine does not start promptly, pull the choke out about one-third of the way. As soon as the engine starts, push the choke all the way in.

NOTE: Do not engage the starter for more than 30 seconds as damage due to overheating could occur. If the engine does not start after 30 seconds, allow the starter to cool for a few minutes, then try again.

OPERATING INSTRUCTIONS

The engine cannot be started by towing or pushing. If the battery is discharged, you must use the technique explained in the "Using Booster Battery" section to start the machine.

Warm-Up

The greatest engine wear occurs when a cold engine is first started. To increase engine life:

ALWAYS RUN THE ENGINE AT FAST IDLE SPEED FOR AT LEAST FIVE MINUTES BEFORE OPERATING MACHINE.

Starting Procedure - Diesel Engines

Warm Starts

- Place all controls in neutral. Shut off all electrical systems (lights, wipers, heater, etc.)
- Depress accelerator pedal about 1/4 way down and turn key to start.

Cold Starts

- See your engine operation manual.

NOTE: Do not engage the starter for more than 30 seconds as damage due to overheating could occur. If the engine does not start after 30 seconds, allow the starter to cool for a few minutes, then try again.

If the engine will not start after 4 attempts, consult the engine Operator's Manual included with your machine.

The engine cannot be started by towing or pushing. If the battery is discharged, you must use the technique explained in the "Using Booster Battery" section to start the machine.

Warm-Up

The greatest engine wear occurs when a cold engine is first started. To increase engine life:

ALWAYS RUN THE ENGINE AT FAST IDLE SPEED FOR AT LEAST FIVE MINUTES BEFORE OPERATING MACHINE.

Using Booster Battery

- Set parking brake and place all controls in neutral. Turn off all electrical systems.



CAUTION: Wear eye protection when working with batteries to avoid eye injury from battery acid.

- Remove vent caps from both the booster and discharged batteries. This will reduce the hazard of explosion.

OPERATING INSTRUCTIONS



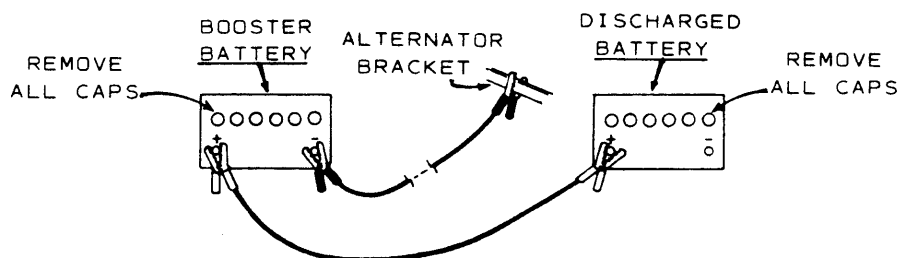
CAUTION: Never expose batteries to open flame or electric sparks - explosion could result.

- Disconnect the alternator field.
- Connect one end of the jumper cable to the positive terminal of the booster battery. Connect the other end of the same cable to the positive terminal of the discharged battery.



CAUTION: Because of the danger of explosion, do not lean over the batteries when making the connection.

- Connect one end of the remaining cable to the negative terminal of the booster battery. Connect the other end of this cable to the alternator mounting bracket (located on the cab side of the engine on the end closest to the radiator) on the engine. **NOT TO THE BATTERY!**



CAUTION: Do not allow battery fluid to contact skin, eyes, fabrics, or painted surfaces.

Reverse this procedure exactly when removing the jumper cables. Reconnect the alternator field only after the jumper cables have been removed.

Stopping the Engine

- On both diesel and gasoline engines, allow the engine to run at idle for several minutes.
- Put all controls in neutral. Shut off all electrical systems.

NOTE: Whenever leaving the machine unattended, REMOVE THE IGNITION KEY!

End of Work

Before leaving the machine at the end of the work period, park it on level ground, retract the boom and lower it to the ground, and set the parking brake. Then follow the procedure in "Stopping the Engine". REMOVE KEY!

OPERATING INSTRUCTIONS

To prevent condensation buildup in the fuel tank, fill it at the end of each working day. With diesel engines the fuel should never be allowed to drop below the 1/8 tank level as engine fuel starvation will necessitate bleeding the fuel injection system.

Storage

When the machine is to be stored for an extended period:

- Inspect and test machine thoroughly. Make all necessary repairs and adjustments.
- Service machine completely, performing all preventative maintenance procedures.
- Clean machine thoroughly. Repaint where required for rust protection.
- Cover all cylinder rods with a good grade of protective grease.
- Cover all exposed surfaces with a good rust preventative.
- Remove batteries.
- Prepare the engine according to the Engine Manufacturer's instructions.

Operating Practices

- Wear proper clothing including safety shoes, hard hat, and safety glasses.

WARNING: Never refuel when the engine is hot or running. DO NOT SMOKE when refueling or working with batteries.

- Do not make adjustment or repairs unless you are trained and qualified to do so.



CAUTION: This machine should be operated only by trained and qualified personnel who have been familiarized with all the operating procedures and safety warnings contained in this manual.

- Never exceed the rated capacity of the machine (see "Machine Capacities" section).
- Never carry passengers.
- Always lock the cab door in its fully open and latched or fully closed and latched position.

Keep all parts of the machine and load at least 10 feet from electrical conductors carrying less than 50,000 volts. Voltages above 50,000 require greater clearance. Consult applicable Federal, State, and local codes and regulations for minimum safe clearances.

OPERATING INSTRUCTIONS

IN NO CASE MAY ANY PART OF THE MACHINE OR LOAD COME CLOSER THAN 10 FEET TO ANY ELECTRICAL CONDUCTOR!



DANGER: Do not operate this machine near any electrical or utility lines without using extreme caution. Failure to maintain adequate clearance can result in severe injuries or death.

- Keep hands and arms inside the cab!



DANGER: Never service the machine with the engine running. Always park the machine on level ground, set the parking brake, and remove the ignition key before servicing.

- Smooth, safe operation of the hydraulics is obtained by having the engine at low throttle to start, then feathering the controls. Always move the control lever gradually and increase engine speed slowly and smoothly. This permits the cylinders and motors to start smoothly and minimizes the chances of jarring the load off the forks.
- Because of the extra weight and increased load center of attachments, operate machines equipped with attachments as partially loaded machines.
- While the lift, crowd and tilt cylinders are hydraulically counterbalanced to reduce the possibility of accidentally dumping the load or lowering the boom, do not operate the machine unless everyone is well clear of the boom and load.
- Never obscure the view through the windows or overhead guard.
- When working with an assistant to help you load or pick up and load, work out hand signals in advance.

Recommended hand signals for forklift operations are located on page 9.

- Use extreme care when handling long, high, or wide loads.
- Drive around obstacles, not over them.

WARNING: Be sure to check local regulations before driving the machine on a public roadway. Special warning lights, slow-moving vehicle signs, or operating permit may be required.

- Downshifting the transmission at high speed should be done with great care. The rapid deceleration could be enough to shift or lose the load on the forks.

OPERATING INSTRUCTIONS



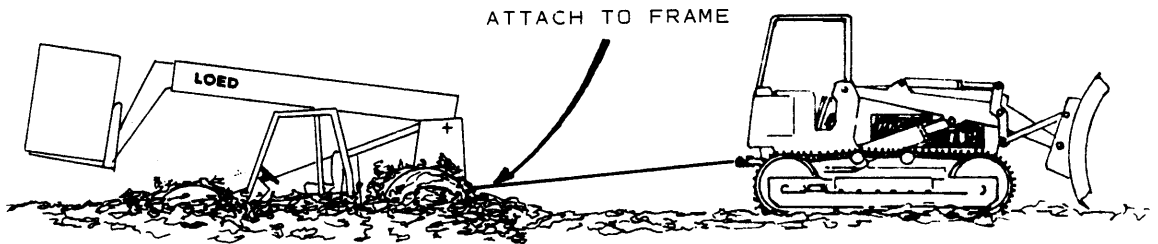
CAUTION: Turn corners slowly to avoid losing the load or tipping the machine.

- Proceed with extreme caution where clearances are unknown. Be aware of the dimensions and turning radius of your machine.
- Come to a complete stop before reversing direction.
- Always check all around the machine before moving. If you can't tell whether there is an obstacle - get out and look.



DANGER: Do not move the machine until you are sure there is adequate clearance.

- If the machine becomes stuck, do not pull with a chain attached to the boom. Fasten the tow chain to the frame. Shock loads caused by pulling on the boom can cause boom failure.



be careful

OPERATING INSTRUCTIONS

Preparing to Operate

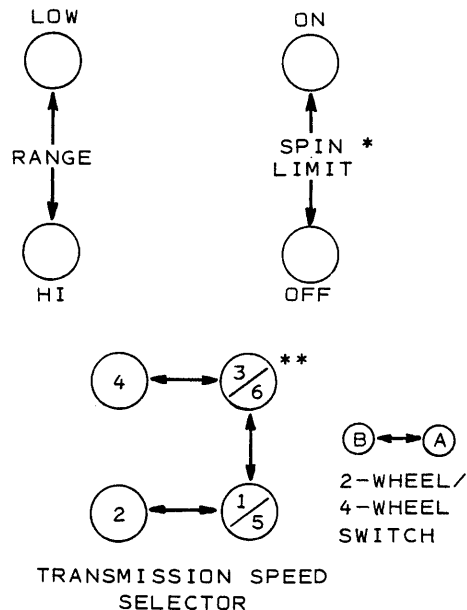
- Review all safety information.
- Perform daily preventive maintenance.
- Inspect machine thoroughly. Have any defects or damage repaired before beginning operation.
- Check all controls and warning devices (such as horn, back-up alarm, and lights) for proper operation. Do not operate the machine until any defects are corrected.



CAUTION: Do the inspection and safety checks yourself. Don't count on the previous operator.

Power Transmission Control Operation

The hydrostatic transmission in the 534 has several unique advantages. One of these is the possibility of matching the transmission characteristics more closely to jobsite conditions than is possible with a mechanical transmission. Four controls are used to do this:



* ON AND OFF POSITIONS ARE REVERSED ON MACHINES BEFORE S/N 238

** MACHINES WITH CHRYSLER 318 ENGINE HAVE NO POSITION 6

1. Transmission Speed Selector - Positions "1" through "4" are 4 wheel drive. Positions "5" and "6" ("1" and "2" with the 2 wheel - 4 wheel switch in "A") are 2 wheel drive. The system does not permit selection of 2 wheel drive while the speed selector is in position "2" or "4".

OPERATING INSTRUCTIONS

2. Range Control
3. Spin Limit Control

NOTE: When not required to prevent spinning of the front wheels, leave the Spin Limit Control in "OFF".

4. 2 Wheel - 4 Wheel Switch (the switch labeled "A - B", which may be located on the handle of the Transmission Speed Selector or on the instrument panel near the Transmission Speed Selector).

As you gain experience on your jobsite, you will probably find that 2 or 3 different control combinations are all that you need use. While it is impossible to give specific instructions for all the different conditions that may be encountered, we suggest you start by following these general guidelines:

NORMAL JOBSITES

Range Control - Hi
Spin Limit Control - Off
2 Wheel - 4 Wheel Switch - "A"
Start in "2", maneuver in "2", travel in "5"

ROUGH JOBSITES

Range Control - Hi
Spin Limit Control - Off
2 Wheel - 4 Wheel Switch - "B"
Start in "1" or "2", maneuver in "1" or "2", travel in "3" or "4".

STEEP GRADES and DEEP MUD

Range Control - Low
Spin Limit Control - Normally Off - On if front wheels spin
2 Wheel - 4 Wheel Switch - "B"
Use "1" for normal travel. If rear wheels spin, use "2".

ICE

Range Control - Hi
Spin Limit Control - Normally Off - On if front wheels spin
Use "1" for normal travel. If rear wheels spin, use "2".

ROADING

Range Control - Hi
Spin Limit Control - Off
2 Wheel - 4 Wheel Switch - "A"
Unlock rear planetary hubs. Start in "5", travel in "5" or "6".

Unlock rear hubs by removing thumb screws and turning over keeper pin at the center of the hubs.

NOTE: Do not move the machine while the keeper pin is removed as the input shaft pin will pop out.

IMPORTANT: Failure to unlock the rear planetary hubs while roading the machine will cause excessive rear motor wear and may cause the rear motors to overheat and fail.

OPERATING INSTRUCTIONS

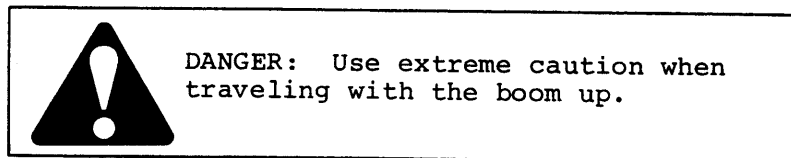
Operation with a Load

Before moving a load with any vehicle it is necessary to know the approximate weight.

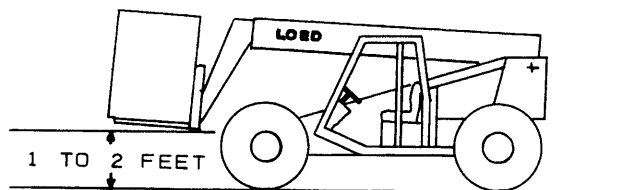
If you do not know the weight of your load, use the following steps to help determine an estimated value:

- With the boom retracted and lowered, place load on forks.
- Extend boom slowly until rear wheels are just ready to leave the ground.
- Read boom extension mark.
- Repeat to see if boom extension reading is the same.
- Subtract two feet from reading. Example: 18'-2'=16'.
- Read on capacity chart for 16' and 0° Boom angle.
- Use this value for determining safe lift and reach positions.

Driving the Machine



- The normal travel position is - boom fully retracted, load raised 1 to 2 feet off the ground. This position gives maximum stability while keeping the load high enough to reduce the possibility of hitting the ground or obstructions while traveling over uneven ground.



TRAVEL WITH THE LOAD OR CARRIAGE AS LOW AS POSSIBLE.

- When you must move the machine with the boom raised to clear obstructions or land a load:

Drive slowly.

Drive only on firm, level ground.

Do not drive over any obstacles or through any pot holes.

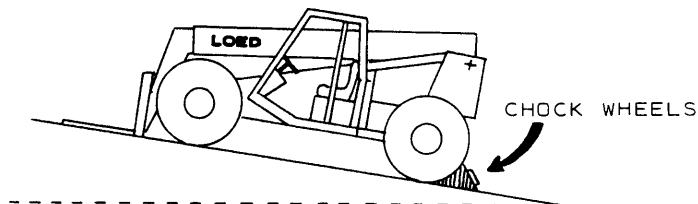
The machine can tip sideways with very little or no warning when moving with a raised load.

KEEP THE MACHINE LEVEL!

OPERATING INSTRUCTIONS



CAUTION: Always chock the wheels when leaving your machine parked on a slope.



- Use the weight of the load as a guide to the maximum safe operating speed. Slow down with loads more than 60% of capacity.
- When driving over rough terrain, soft ground, or wet or icy surfaces, it will be necessary to slow down and/or reduce the load.

IT IS YOUR RESPONSIBILITY TO EVALUATE GROUND CONDITIONS AND ADJUST YOUR OPERATION ACCORDINGLY.

- When driving on a floor, dock or bridge, be sure the weights of the machine, attachments, and load do not exceed the safe limit of the surface on which you are driving.



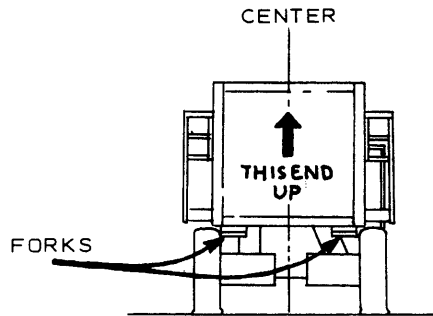
CAUTION: Always set the parking brake when leaving the machine unattended.

- If your machine is equipped with a MICO lock, it may be used in addition to the parking brake. Never depend on the MICO lock as a parking brake.

OPERATING INSTRUCTIONS

Using the forks (when using attachments other than the fork carriage refer to the operator's guide to that attachment for additional precautions).

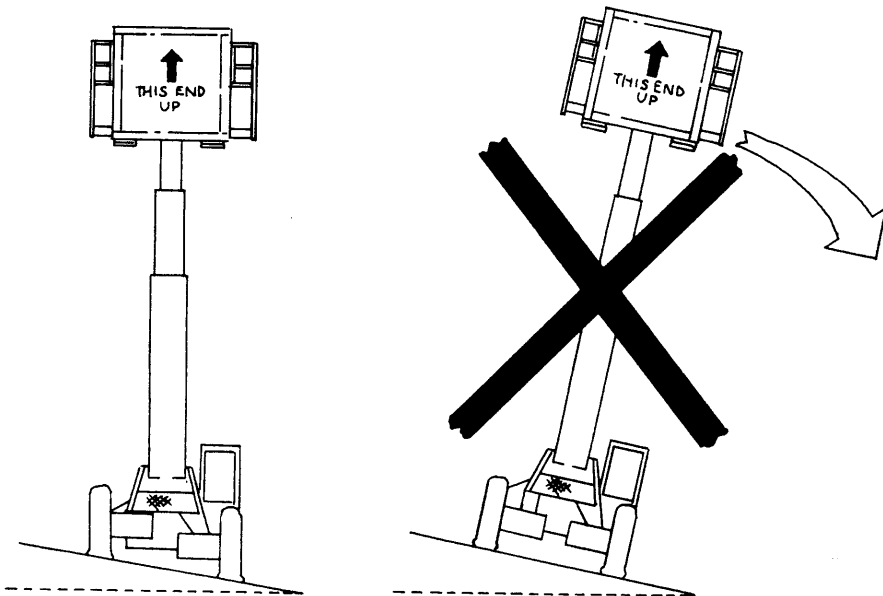
- Position loads evenly on both forks. Forks should be spaced equally from the center of the carriage and as far apart as possible for a given load.



- Inspect the load for stability before lifting.



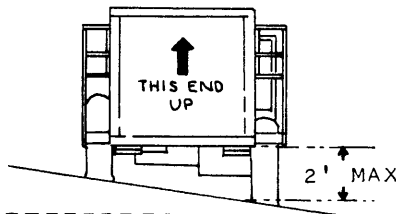
DANGER: Level the machine before raising the boom with or without a load. Failure to do so could result in tipping the machine. Do not attempt to sway machine with boom raised.



LEVEL YOUR MACHINE - DON'T TIP IT OVER

OPERATING INSTRUCTIONS

- Lateral leveling should not be used to position an elevated load. Instead, lower the load and reposition the truck.
- Use the level control to keep the frame level while traveling on side slopes.

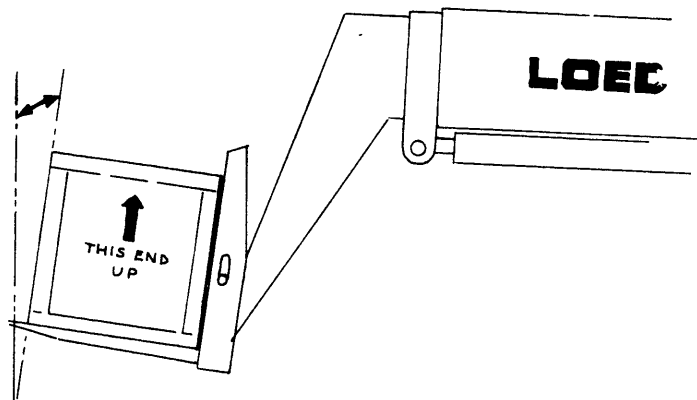


Never travel on a side slope with the carriage - loaded or unloaded - more than two feet off the ground.



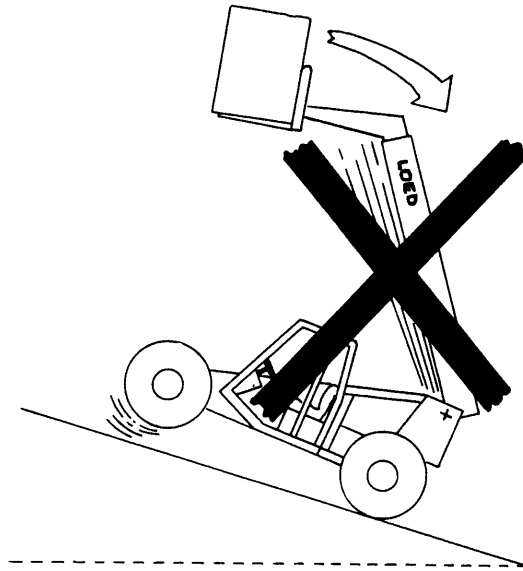
DANGER: Do not travel on a side slope of more than 8°. THE LEVEL CONTROL MUST BE USED TO KEEP THE FRAME LEVEL ON SIDE SLOPES OF OVER 3°. Soft or uneven ground reduces the maximum safe side slope considerably.

- Tilt the load well back for carrying.



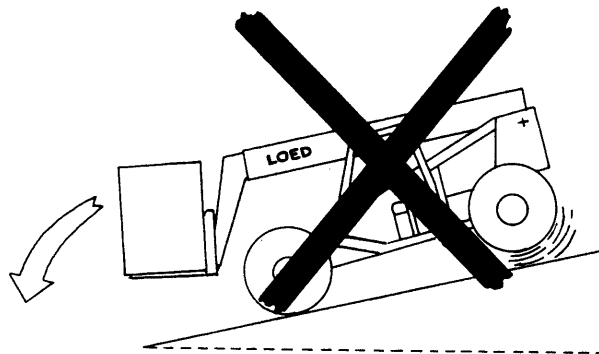
- Be extremely careful when lifting directly overhead while the machine is parked on a slope with the front end higher than the rear. The capacity chart applies to machines on level ground ONLY.

OPERATING INSTRUCTIONS



DANGER: Never back down a slope with the boom raised - loaded or empty. The machine can overturn sideways or backward with very little or no warning.

- A load that is within safe limits on level ground could cause the machine to tip forward on a slope with the front end lower than the rear.



CAUTION: When carrying any loads on slopes, keep the load on the uphill side of the machine. If this is not practical, keep the load within 6 inches of the ground and travel very slowly to minimize the danger if the machine tips up.

OPERATING INSTRUCTIONS

- The forks can be moved into and out of a load horizontally by feathering the boom control diagonally.

to pull the forks out of a load with the boom raised:

Run engine at idle speed.

Pull the boom control lever all the way back.

Push the lever to the right until forks are moving horizontally.

Increase the engine speed slowly and smoothly.

to put the forks under a load with the boom raised:

Run the engine at idle speed.

Push the boom control lever all the way forward.

Pull the lever to the left until the forks are moving horizontally.

Increase the engine speed slowly and smoothly.

If the boom is below a zero degree angle with respect to the frame (0° on angle indicator while parked on level ground), the boom control lever must be moved forward and to the left to retract the forks, back and to the right to insert them under a load.

Because of the design of the hydraulic system, anytime you desire to use a combination of boom lift and crowd simultaneously, the boom control lever must be moved all the way forward or back, then left or right.

Machine Capacities

IMPORTANT!

The capacity chart in the cab of your machine, unless otherwise indicated, lists at various combinations of lift and reach, the maximum capacity of your machine on level ground with the standard fork carriage. Boom attachments, stabilizers, unlevel ground, under inflated or under-size tires, hydraulic system and other defects - all reduce the loads which may be handled safely.



DANGER: Do not exceed the recommended limits for safe operation.

If your maintenance checks uncover any damage or defects, have them repaired immediately. If you have any attachments on your machine that are not accounted for on the capacity chart, contact LOED Corporation for help in computing the new load limits.



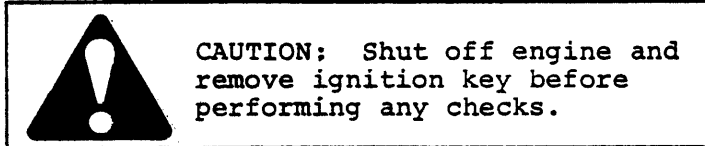
DANGER: Do not attempt to lift a load unless you know what its weight and load center are.

SCHEDULED PREVENTIVE MAINTENANCE

SCHEDULED PREVENTIVE MAINTENANCE

Our recommendations are based on average conditions and should be considered a minimum requirement. Perform each check at the shorter interval listed. For example, if the chart lists a function to be performed every 50 hours or weekly and you only use the machine 30 hours per week, you should still do it weekly. If you use the machine more than 50 hours per week, do it at the end of each 50 hour period.

Capacities, lubrication specifications, and specific servicing information follow the Preventive Maintenance Check Lists.



CHECK LISTS

Delivery Inspection

Fuel Tank	Fill
Hydraulic Reservoir	Check Oil Level
Engine Crankcase	Check Oil Level
Radiator	Check Coolant Level
Batteries	Check Electrolyte Level
Planetary Hubs	Check Oil Level
Brake Master Cylinder	Check Fluid Level
Tires	Check for Proper Inflation
Boom	Grease
Axle	Grease
Brake Caliper Slide	Grease
Rear Chain Sheave	Grease
Boom Slide Bearings	Check Retaining Bolt Torque

After first week or first 50 hours

Transmissions	Drain and Refill
Boom Slide Bearings	Check Retaining Bolt Torque
Wheel Lug Nuts	Retorque

Daily or every 10 hours

Air Cleaner (in dusty conditions)	Clean Element
Fuel Tank	Fill
Engine Crankcase	Check Oil Level
Radiator	Check Coolant Level
Hydraulic Reservoir	Check Fluid Level
Tires	Check for Proper Inflation
Boom	Grease
Rear Chain Sheave	Grease
Axle	Grease

Weekly or every 50 hours

Planetary Hubs	Check Oil Level
Brake Master Cylinder	Check Fluid Level
Batteries	Check Electrolyte Level
Engine Crankcase (gas)	Change Oil and Filter

SCHEDULED PREVENTIVE MAINTENANCE

Every 2 weeks or 100 hours

Air Cleaner Clean Element
Boom Slide Bearings Check Retaining Bolt Torque
Boom Slide Bearings Check for Wear and Shim or Replace As Required
Boom Chains Check for Proper Adjustment
Boom Chains Check Adjusting Nuts for Proper Torque
Hoses Inside Boom Check for Proper Adjustment
Brakes Check for Wear and Proper Adjustment

Every 3 months or 200 hours

Engine Crankcase (diesel) Change Oil and Filter
Fuel Filters Change
Crankcase Breather Clean
Water Filter Change

Every 6 months or 1000 hours

Transmissions Change Oil
Planetary Hubs Change Oil
Hydraulic Reservoir Clean Filter Screen
Hydraulic System Inspect Oil

Every year or 2000 hours

Hydraulic System Change Oil

SCHEDULED PREVENTIVE MAINTENANCE

SERVICING PROCEDURES



CAUTION: To prevent eye injuries, wear safety glasses when servicing this machine.



DANGER: Keep hands, body, and clothing away from moving parts!

Engine

For specific information, consult the engine manufacturers literature.

Radiator

The drain petcock is located at the bottom of the radiator on the engine side.



CAUTION: When servicing the cooling system, be sure to relieve pressure in the system by carefully turning radiator cap to its first position before removing it completely. **PROTECT YOUR HAND WHILE REMOVING CAP.**

Batteries

Batteries should be kept filled to the split ring with distilled water.



CAUTION: Battery electrolyte is an acid. If it contacts skin or clothing, flush area immediately and thoroughly with water.

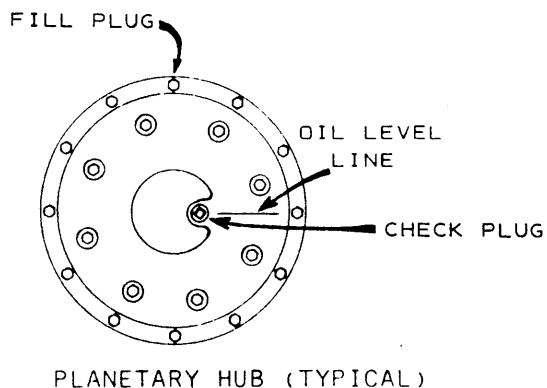
SCHEDULED PREVENTIVE MAINTENANCE

Transmission

The transmissions are filled by removing the breathers and filling through the breather holes.

Planetary Hub

Position the hub with the fill plug up. Check the level at the check plug in the center of the hub.



Brake Master Cylinder

The master cylinder is located under the deck plate in front of the seat.

Tire and Wheels

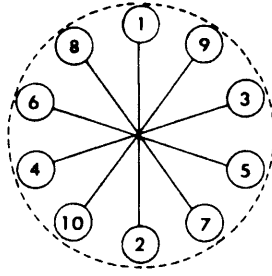
Only fully trained and qualified personnel should attempt to perform any service to the tires other than checking and adjusting the pressure.

TIRE PRESSURES		
Model 534	13 x 24 6 or 8 ply	55 psi



CAUTION: Be extremely careful working with tires - they can come apart with explosive force. NEVER ATTEMPT TO DISASSEMBLE AN INFLATED TIRE.

SCHEDULED PREVENTIVE MAINTENANCE



Wheel nuts must be torqued to 450-500 foot pounds per the pattern. After torquing once, relax and retorqued to 450-500 foot pounds per the pattern.

Hydraulic System

The hydraulic filter is equipped with a visual bypass indicator. When the window in the hydraulic filter cap (located on top of the hydraulic reservoir) shows RED, hydraulic fluid is bypassing the filter and the filter MUST BE REPLACED AT ONCE.

The filter does not require any other service except:

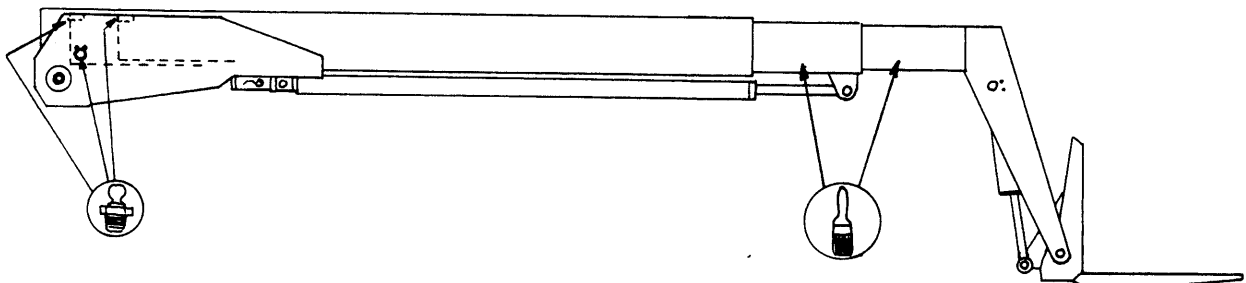
1. If a pump or motor in the hydraulic system has been replaced, the filter should be changed after the first 2 days or 20 hours of operation with the new component.
2. Replace the filter when the hydraulic oil is changed.

Chassis

The 534 has been designed for low maintenance. Many items which would normally require daily greasing have been equipped with greaseless bearings. All items with grease fittings should be lubricated according to the Preventive Maintenance Schedule.

Boom Greasing

Grease all fittings with a grease gun. The boom bearing tracks, both outside and inside the boom, must be greased by hand. We suggest painting on grease with a brush.



SCHEDULED PREVENTIVE MAINTENANCE

NOTE: Boom bearing track greasing is very important and failure to keep them greased will result in boom chatter and may result in a stuck boom. Once all the grease is worn off, it is extremely difficult and time-consuming to properly regrease it.

Boom Bearing Shimming

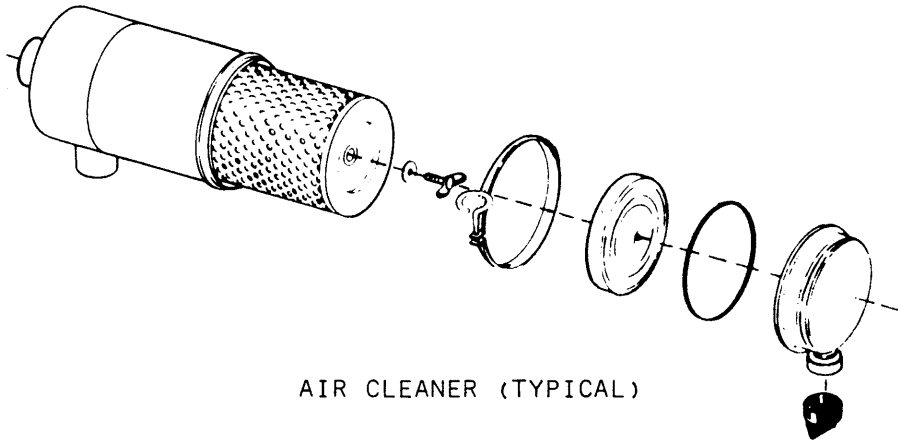
All boom slide bearings should be kept shimmed snut (no more than 1/8" total play). Consult your parts manual for the proper shims to use in your boom.

Chains

The chains must be kept in proper adjustment. If the chain appears loose or if the adjusting nuts are loose, do not operate the machine until it has been checked and corrected by a trained and qualified service man.

Air Cleaner

Dissassemble filter and clean element. We suggest you keep an extra element on hand to use while the cleaned element is drying.



AIR CLEANER (TYPICAL)

Wash the element in a light solution of non-sudsing detergent.

IMPORTANT: Never start the engine with the air cleaner element removed.

SCHEDULED PREVENTIVE MAINTENANCE

CAPACITIES - LUBRICANT and FLUID SPECIFICATIONS

COMPONENT	CAPACITY	LUBRICANT/FLUID
Engine Crankcase Gas Diesel	9 quarts w/filter 24 quarts w/filter	S.A.E.10W-30 SERVICE S.E. S.A.E.30 Service M.S. (Summer) S.A.E.20 Service M.S. (Winter)
Engine Coolant Gas Diesel	24 quarts 32 quarts	50% water/50% Glycolase Permanent type anti-freeze
Fuel Tank	32 gallons	See Engine Mfg.information
Hydraulic Reservoir	32 gallons	S.A.E.10W-40 SERVICE S.E.
Transmission	1.5 quarts	EP 80/90 Gearlube w/ Molybdenum disulfide additive
Planetary Hubs	2.5 quarts	Same as above
Brake Master Cylinder	1 quart	Type A brake fluid S.A.E.std J-1703C
All grease fittings and boom slide bearings	as required	Multi-purpose grease with Molybdenum disulfide

IMPORTANT!


For every high or low ambient temperature applications, contact LOED Corporation for revised lubricant and fluid recommendations.


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SCHEDULED PREVENTIVE MAINTENANCE

BOLT TORQUE CHART

BOLT SIZE	SAE Grade 5		SAE Grade 8	
	Min.	Max.	Min.	Max.
1/4	10	11	14	16
5/16	20	23	30	33
3/8	35	40	52	59
1/2	85	95	103	145
5/8	170	190	250	290
3/4	280	320	420	470
7/8	440	490	670	750
1	660	740	1010	1130
1-1/8	890	1005	1480	1645
1-1/4	1260	1420	2070	2320

 Grade 5--3 radial dashes
120 degrees apart.

 Grade 8--6 radial dashes
60 degrees apart.

Bolts found to be loose should be removed, wiped clean, and re-installed using LOCTITE 242 (blue-medium strength) or LOCTITE 271 (red-high strength).

SCHEDULED PREVENTIVE MAINTENANCE

HYDRAULIC FITTING TORQUE CHART

1. Wipe fittings.
2. Apply LOCTITE Hydraulic Sealant to the first 1/3 (closest to the flange or seat) of the fitting threads.
3. Seat flange hand tight, then torque to specification.

MAXIMUM RECOMMENDED TORQUE VALUES FOR J I C SWIVEL NUTS (37° SEAT)

Use this chart every time hydraulic fittings are tightened or checked.

THD. SIZE	SIZE	OD TUBE	FT./LBS. TORQUE
7/16-20	-4	1/4	9
1/2 -20	-5	5/16	15
9/16-18	-6	3/8	20
3/4 -16	-8	1/2	30
7/8 -14	-10	5/8	40
1-1/6 -12	-12	3/4	70
1-3/16-12	-14	7/8	82
1-5/16-12	-16	1-0/0	90
1-5/8 -12	-20	1-1/4	120
1-7/8 -12	-24	1-1/2	131
2-1/2 -12	-32	2-0/0	300
	-40	2-1/2	400
	-48	3-0/0	500

These values are the maximum recommended torque values for JIC (37°) Seat Swivel Nuts either swaged or brazed type. The swivel nuts will normally withstand this torque for a minimum of 15 repeated assemblies.

The torque required to seal swivel female fittings or hose couplings to a male connector depends on many variables, such as fluid medium, pressure, surface finish, etc. The above values are intended only as a guide for the maximum torque values the fitting may be subjected to.

Procedure: Torque per chart above. Back fitting off 1/2 turn and re-tighten to recommended torque value in chart.



ATTACHMENTS and ACCESSORIES

Operating and servicing information for any attachments or accessories installed on your machine should be put in this section.

Fill in the name of the attachment or accessory in the blanks provided in the table of contents.

ALWAYS KEEP YOUR BOOK UP TO DATE!

CALIFORNIA

Proposition 65 Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Wash hands after handling.

GRADALL[®]
Hydraulic Equipment

New Philadelphia, OH 44663

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.

THE
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