

No. OW-648AE

TCM[®]

**OPERATION &
MAINTENANCE MANUAL**

WHEEL LOADER

L20



**It is the responsibility of the Operator & Supervisor to read and understand this manual.
The loader should be operated only by qualified operators.**

TCM CORPORATION

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- 8.12 When necessary to tow the machine, do not exceed the recommended towing speed. Be sure the towing machine has sufficient braking capacity to stop the towed load. If the towed machine cannot be braked, a towbar must be used or two towing machines must be used - one in front pulling and one in the rear to retard. Avoid towing over long distances (see paragraph 7.15).
- 8.13 Observe proper maintenance procedures.
- 8.14 Whenever servicing or replacing hardened pins, etc. use a brass drift or other suitable material between the hammer and pin.
- 8.15 Keep the brakes and steering systems in good operating condition.
- 8.16 Replace all missing, illegible or damaged safety signs. Keep all safety signs clean.

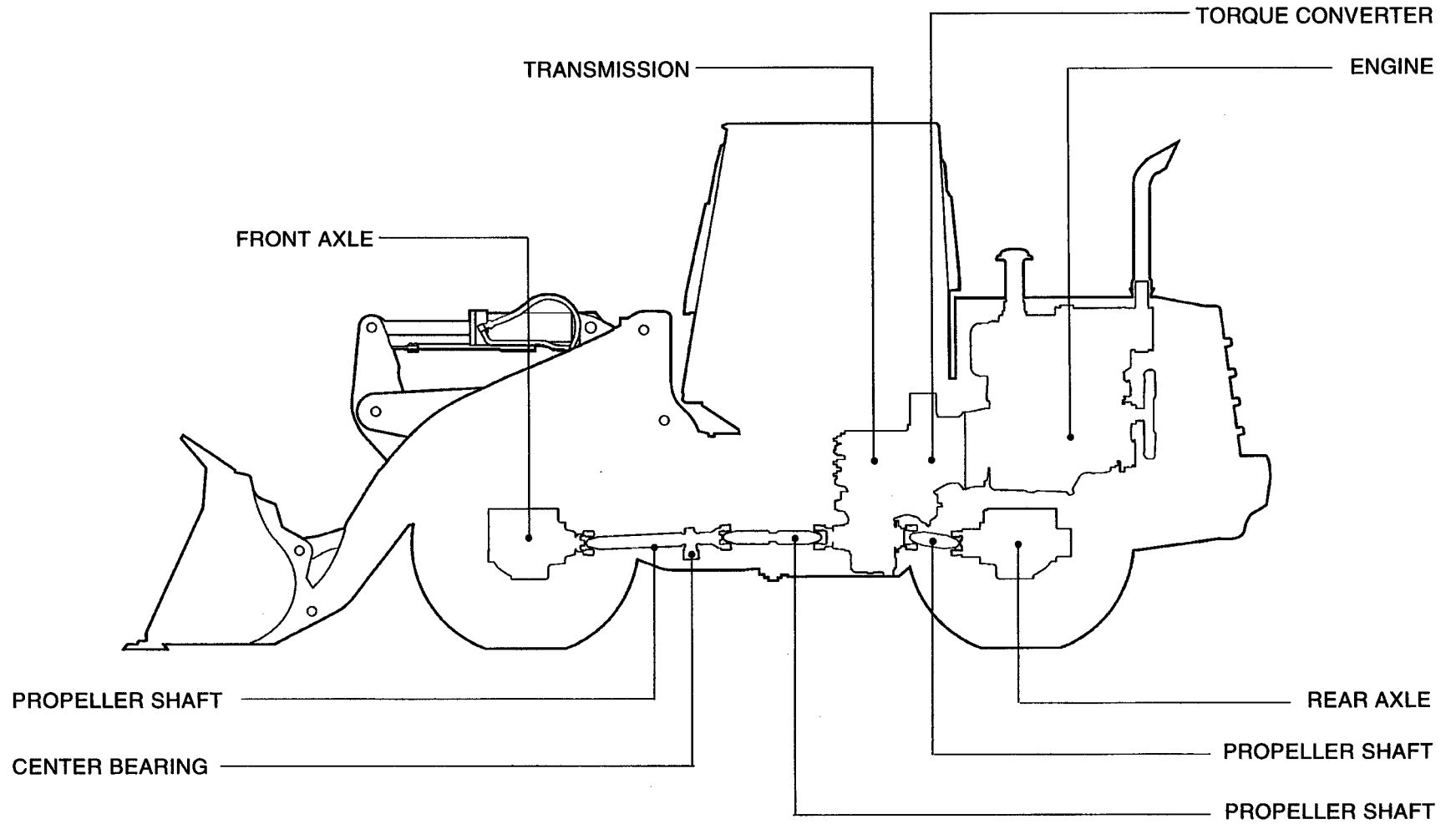
- 9.6 Tighten the fuel tank cap securely. Should the fuel cap be lost, replace it only with the original manufacturer's approved cap. Use of a non-approved cap without proper venting may result in pressurization of the tank.
- 9.7 Never use fuel for cleaning purposes.
- 9.8 Use the correct fuel grade for the operating season.

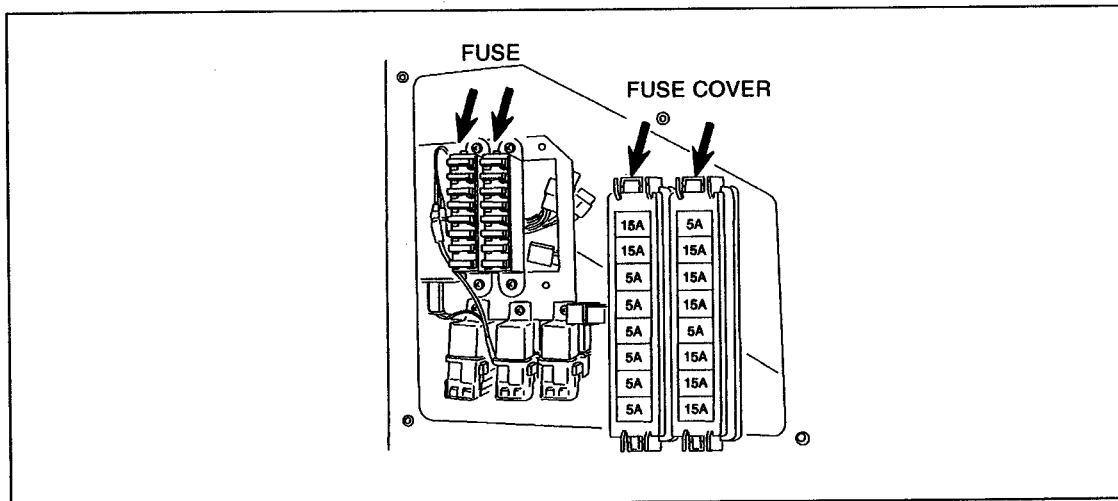
— END —

9. FUEL HANDLING PRECAUTIONS:

- 9.1 Do not smoke or permit open flames while fueling or near fueling operations.
- 9.2 Never remove the fuel cap or refuel gasoline engine powered machines with the engine running or hot. Never allow fuel to spill on hot machine components.
- 9.3 Maintain control of the fuel filler nozzle when filling the tank.
- 9.4 Do not fill the fuel tank to capacity. Allow room for expansion.
- 9.5 Clean up spilled fuel immediately.

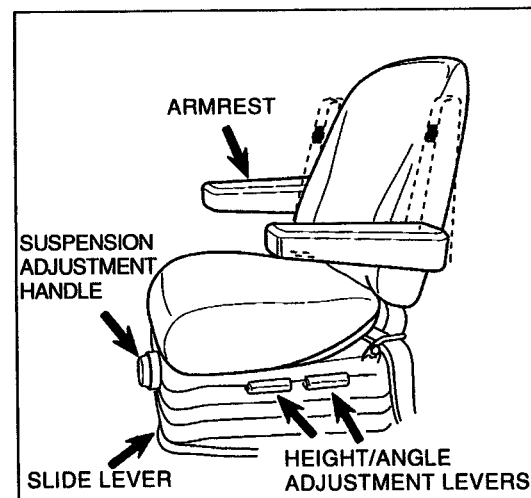
INSIDE THE LOADER





- Left side, from top down
- 15A: Lamps, back-up buzzer
 - 15A: Work light
 - 5A: Neutral
 - 5A: Meters, monitors, and buzzer
 - 5A: Horn, bucket leveler
 - 5A: Transmission, DSS, clutch cut off witch
 - 5A: Spare
 - 5A: Spare

- Right side, from top down
- 5A: Radio
 - 15A: Room lamp
 - 15A: Air conditioner unit
 - 15A: Air conditioner unit
 - 5A: Air conditioner unit
 - 15A: Front wiper
 - 15A: Rear wiper
 - 15A: Spare



OPERATOR'S SEAT

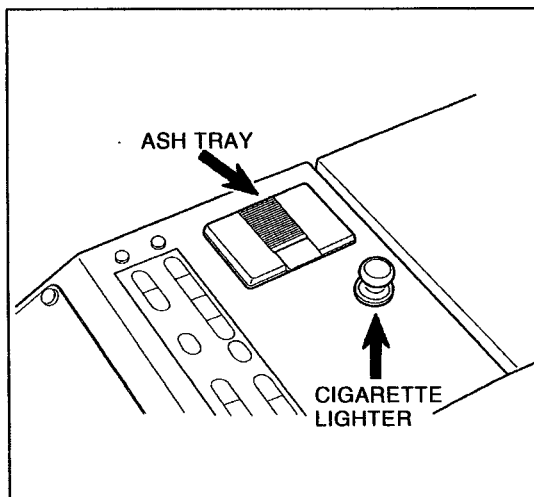
⚠ WARNING

Adjust the operator's seat to a position which provides easy access to all hand and foot controls.

Do not tilt the backrest too far back, even if the backrest is adjustable.

⚠ WARNING

If the loader is equipped with a seat belt, check the belt for damage or loose mounting bolts. Always fasten the seat belt after seating yourself in the operator's seat. Too slack a seat belt will not be effective enough to keep the operator safely secured. Adjust the



ASHTRAY

⚠ WARNING

Take due care to prevent fire hazards.

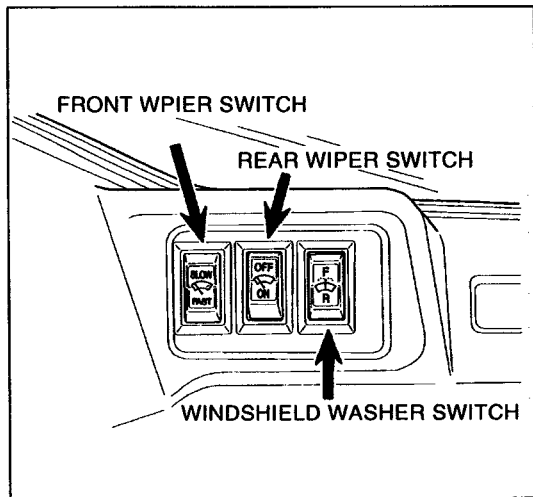
An ashtray is equipped for a smoker's convenience.

CIGARETTE LIGHTER

⚠ WARNING

Do not touch the areas other than the knob. You could get your fingers burnt.

Use to light cigarette. Push in the knob. When the lighter is hot enough to light a cigarette, it pops out.



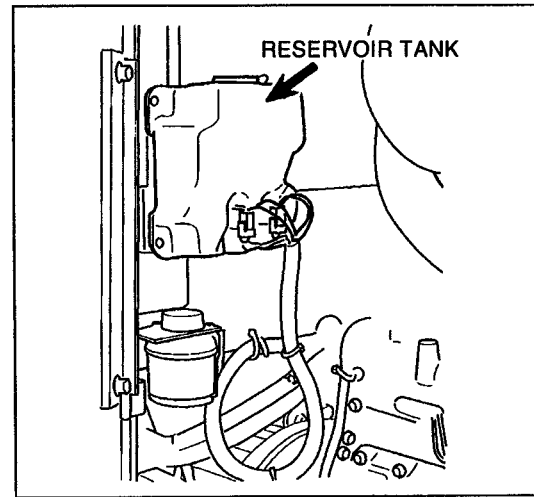
WIPER SWITCHES (FRONT AND REAR)

⚠ CAUTION

Eject a squirt of cleaning liquid over the windshield before starting the wiper, to prevent the wiper blades from deteriorating and the windshield from being damaged.

The front wiper operates in two modes: SLOW and FAST. Press either mode. Place the switch in neutral to stop the wiper.

The rear wiper is operated by pressing ON. Press OFF to stop the wiper.



WINDOW WASHER SWITCH

⚠ CAUTION

Before using the switch, check the cleaning liquid level in the reservoir. If you continue to push the switch without cleaning liquid, the motor will burn out.

A squirt of cleaning liquid covers the front windshield when "F" is pressed and covers the rear windshield when "R" is pressed. Remove your finger from the switch to stop the liquid.

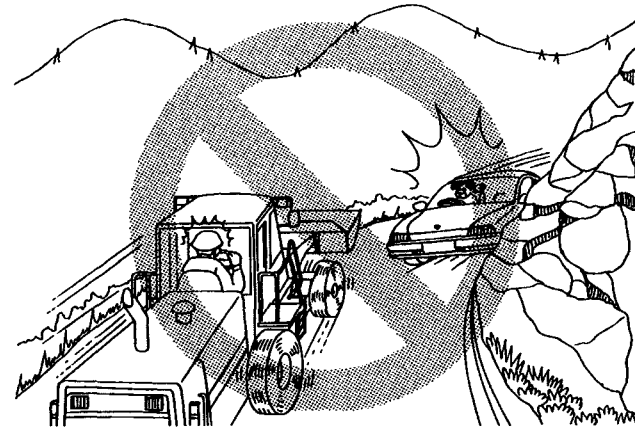
The cleaning liquid reservoir is found at the left side inside of the engine room. Use the cleaning liquid specified. It is good practice to put antifreeze in cleaning liquid, if the loader is to be operated when the ambient temperature is below freezing.

17. Be aware of the weather and the ground condition. Slow down when it is raining, snowing or foggy, because vision is impaired. Avoid working on rough, soft or swampy grounds if possible. If unavoidable, check the ground condition in advance.

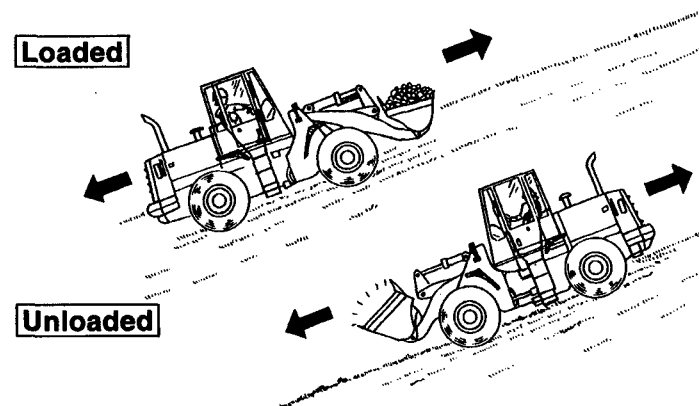


18. Go around obstacles on the road. They might upset the loader or damage assets or injure people around the loader.
19. When working with a loader with special equipment which restricts your vision or handling a high load which obstructs your front vision, use extreme caution, especially when operating the load handling lever. It is good practice to have a guide.
20. Stop and sound horn, if necessary, at corners and other locations where vision is restricted. It is good practice to have a guide.

21. Use extreme caution when traveling or making a turn in congested areas.



22. When ascending or descending grades, the loader should be driven with the loader's center of gravity uphill. That is, a loaded loader shall be driven with the load facing uphill and an unloaded loader shall be driven with the front attachment facing downhill.
- Do not make sudden stops.



TRANSPORTING THE LOADER

TRANSPORTING THE LOADER ON A TRAILER

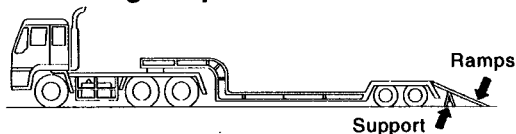
⚠ CAUTION

Securely lock the loader in place on the truck to prevent it from moving with chains or straps and by blocking the wheels. When transporting the loader over public roads, observe local traffic regulations relating to the overall length, width, height, and weight of both the loader and the truck.

CAUTIONS TO BE TAKEN WHEN LOADING AND UNLOADING THE LOADER

It is advisable to ask a specialist to load and unload the loader onto and from the trailer. The operator may not be familiar with this kind of work.

When using ramps



Set ramps with an angle of less than 15°, using the table as a rule of thumb.

Bed height	Ramp length
1000 mm (39 in)	3700 mm (146 in)
750 mm (30 in)	2775 mm (109 in)
500 mm (20 in)	1850 mm (73 in)

⚠ WARNING

Loads must be driven straight onto the ramps. Both front wheels (and or rear wheels) must be in contact with the ramps simultaneously.

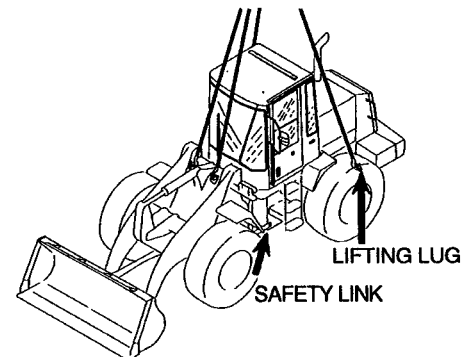
- Use ramps of sufficient length, width and strength.
- Before loading or unloading the loader, make sure to apply the parking brake to the trailer truck and block the wheels.
- Ramps must be spaced evenly from the center of the trailer's bed and securely locked to the trailer. The trailer surface must be clean and dry.
- Loading and unloading must be carried out on a level surface. The right and left ramps must be the same height.
- When loading the loader onto the truck, go up slowly in forward or reverse (according to the type of the bed), making sure the right and left wheels are properly aligned on the ramps.
- If the loader is not aligned properly with the ramps, go down the ramps and start over again.
- Use anti-skid ramps when you are going to work in the rain or the

snow; otherwise the loader may skid and fall off the ramps, causing a serious accident.

When using a crane.

⚠ WARNING

- Use a crane of sufficient capacity to hoist the weight of the loader (including the weight of an attachment, if so equipped.)
- Lock the front and rear frames with the safety link.
- Install optional 4 lifting lugs on the specified positions. Perform 4-point hoisting. Do not make 3-point or 2-point hoisting.
- Consult your local TCM dealer about the installation of optional lifting lugs.
- Lift the loader a little off the ground and make sure the chains or ropes are properly secured to the lugs and the loader is stable.



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HANDLING ONE-TOUCH COUPLER (NON-HYDRAULIC AND HYDRAULIC TYPES)

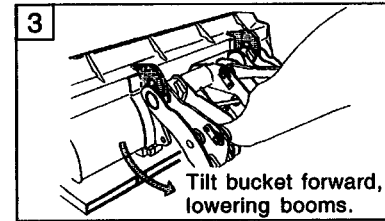
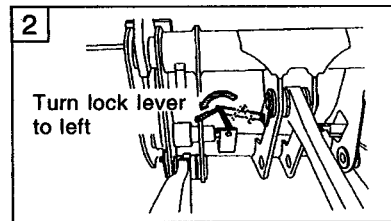
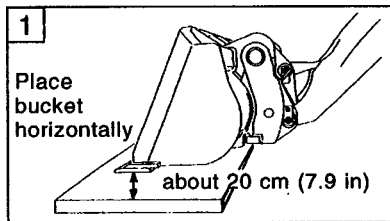
The one-touche coupler allows easy exchange between load handling attachments such as buckets.

Non-hydraulic one-touch coupler

⚠ WARNING: Do not allow bystanders to stand near the loader. The lock lever should be moved on the ground, not in the operator's seat.

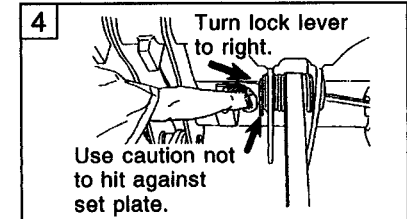
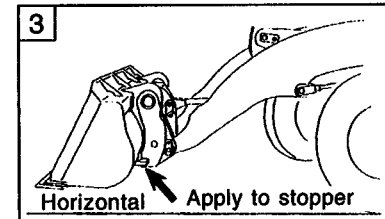
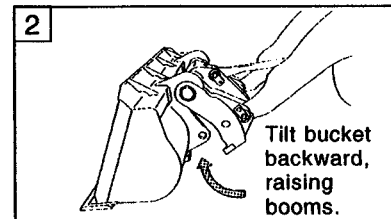
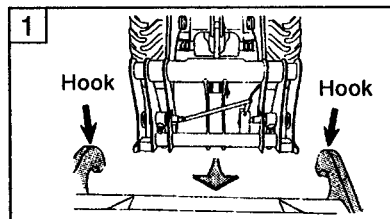
Removal

Place a pallet under the attachment you are about to remove. ① Keep the bucket horizontal about 20 cm (7.9 in) above the pallet. ② **⚠ WARNING:** Set the parking brake securely. Hold the lock lever and turn it to the left and make sure the right and left pins are disengaged from the attachment. ③ Make sure the bucket (attachment) is located on the near-side edge of the pallet for easy operation of the one-touch coupler. ④ Lower the booms a little and slowly and carefully tilt the bucket forward, and the bucket (attachment) will disengage from the one-touch coupler.



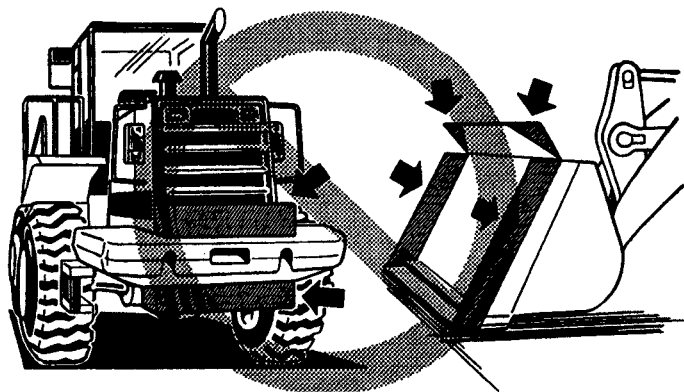
Installation

① With the lock lever in the "release" (left) position, slowly bring the one-touch coupler close to the bucket (attachment) hook and insert it. ② **⚠ WARNING:** Set the parking brake. Raise the booms a little and tilt the bucket (attachment) backward to almost upright or until the one-touch coupler touches the stopper. Shut off the engine. ③ Turn the lock lever to the pin insertion position (right). **⚠ WARNING:** Hold the lever securely not to get your fingers caught between the lever and the push rod pin set plate. Make sure the right and left pins are completely engaged.



NOTE 2: The illustrations do not necessarily depict the L20. The safety rules and cautions however apply to any model.

29. Do not add an additional counterweight or modify the bucket without the manufacturer's prior permission.
30. Do not try to make any modification that affects the performance or strength of the loader.



SEE NOTE

31. When loading the loader onto a trailer, make sure to:
 - Apply the trailer's parking brake and block its wheels.
 - Use ramps of sufficient strength and width.
 - Use nonskid ramps. When installing ramps (if they are not permanently attached to the trailer), engage them securely on the rear of the trailer and put supports under the middle of them.
 - Usually back the loader up the ramps, but the direction of loading may change the condition of the trailer.

- When going up a ramp, make sure the centers of the rear wheels are aligned with the centers of the ramps. Drive up slowly.
 - **Never try to turn the steering wheel when halfway up a ramp. If the loader is not aligned properly with the ramp, drive back down to the ground and start over again.**
 - If you have difficulty seeing if the tires are aligned on the ramp correctly, have someone else guide you. Follow their instructions.
32. Another attachment with hydraulic tubing may be installed and it is operated by manipulating an additional load handling lever (for attachment). Do not confuse it with the other levers.
 33. If a fork attachment is installed, use caution not to drop the loads from the pallet by controlling the angle of the forks properly.

WHEN THE LOADER IS OUT OF SERVICE LONGER THAN A MONTH

When the loader is out of service longer than a month, start the loader engine and operate the load handling system slowly, once a month, to provide lubrication to all of the parts.

⚠ DANGER

When trying to warm up the loader indoors, make sure there is good fresh-air ventilation. Exhaust fumes can kill.

- Do not increase the engine speed rapidly.
- Remove any antirust agent from the boom and bucket cylinders before operating the loader.
- If the loader is to be out of service another one month or more, apply antirust agent again.

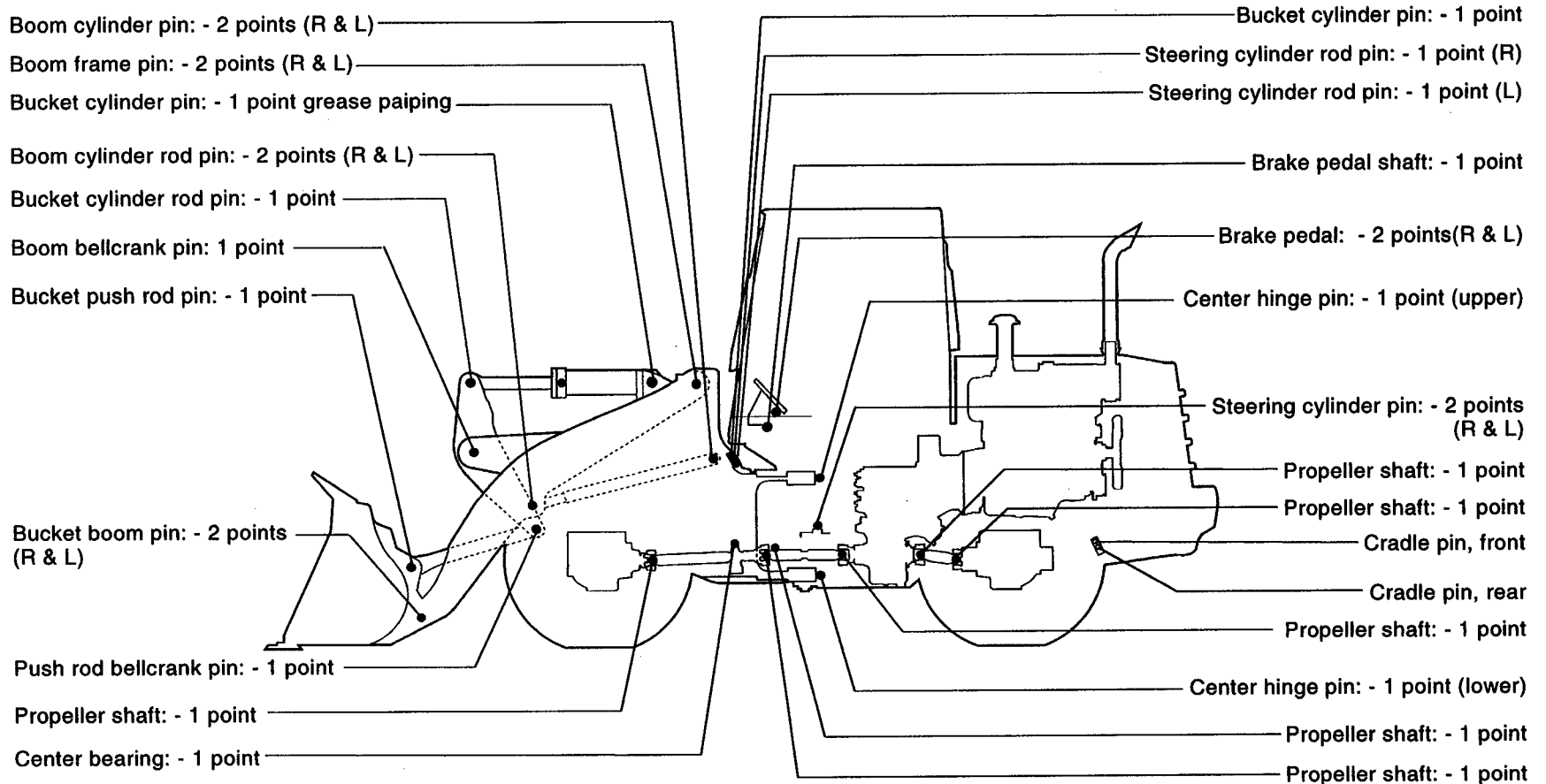
OPERATING THE LOADER AFTER LONG-TERM STORAGE

- Remove the covers used to protect against moisture.
- Thoroughly remove antirust agent from the cylinder rods.
- The oil might have deteriorated during a long storage period. Check each reservoir and change the oil if it has broken down (changed color), is contaminated or has any foreign material in it.
- Recharge the battery and install it on the loader.
- Follow the procedures described under the heading "BEFORE STARTING THE ENGINE," on page 51. Warm up the loader engine sufficiently.

GREASE FITTING LOCATIONS

GREASING

Wipe dirt and foreign material from grease fittings. Apply specified grease sufficiently through each grease fitting shown below. The grease fittings are provided with red caps. Be sure to reinstall the red cap after adding grease.





FUEL

Turn the starter switch to ON, to check that the pointer swings.

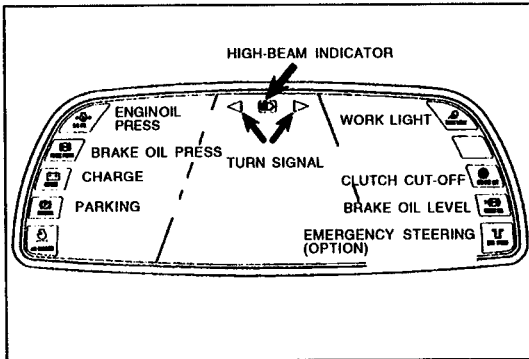
km/h SPEEDOMETER

Drive the loader and check to see if the pointer swings properly according to the traveling speed.

⚠ WARNING

Before starting the loader make sure there is no one around the loader. This check should be performed at an out-of-traffic area.

Monitors (warning lamps, indicator lamps)



ENGINE OIL PRESS

If light comes on, shut off the engine and check the lubricating system including the oil filter.



BRAKE OIL PRESS

⚠ WARNING

If light comes on and the buzzer sound, stop the loader, lower the bucket on the ground, place the shift lever and the load handling lever in neutral, and apply the parking brake.

Press the accelerator pedal about half way to let the engine run at medium rpm. This will store brake oil pressure in the accumulator. When the specified brake oil pressure is stored in the accumulator, the monitor lamp goes out and the buzzer stops sounding. Start the loader after making sure there is no one around the loader.

⚡ CHARGE

If light comes on, check V-belt for tension, alternator for failure, electrical wiring for breakage or poor connection, and the batteries for electrolyte level and specific gravity.

(P) PARKING

Light comes on when the parking brake "ON" switch is pressed and goes out when the parking brake OFF switch is pressed. If light does not go out when the parking brake OFF switch is pressed, check wiring and parking brake linkage.



BRAKE OIL

If light comes on, check the brake oil for level. If low, add to the specified level.



HIGH BEAM INDICATOR,



TURN SIGNAL INDICATOR,



WORK LIGHT,



T/M CUT OFF

Operate each of the above switches and levers to check to see if light comes on. If not, check the bulb and wiring.

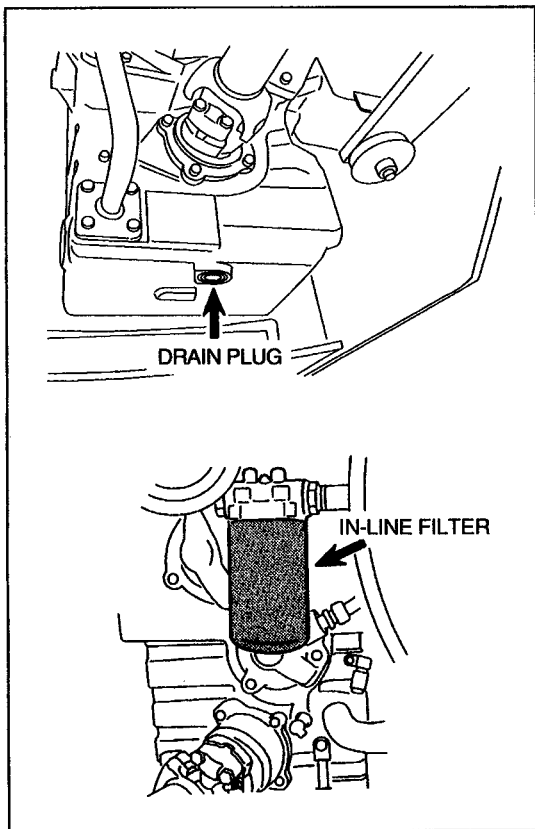


EMERGENCY STEERING (OPTION)

Light comes on when emergency steering pump is operating.

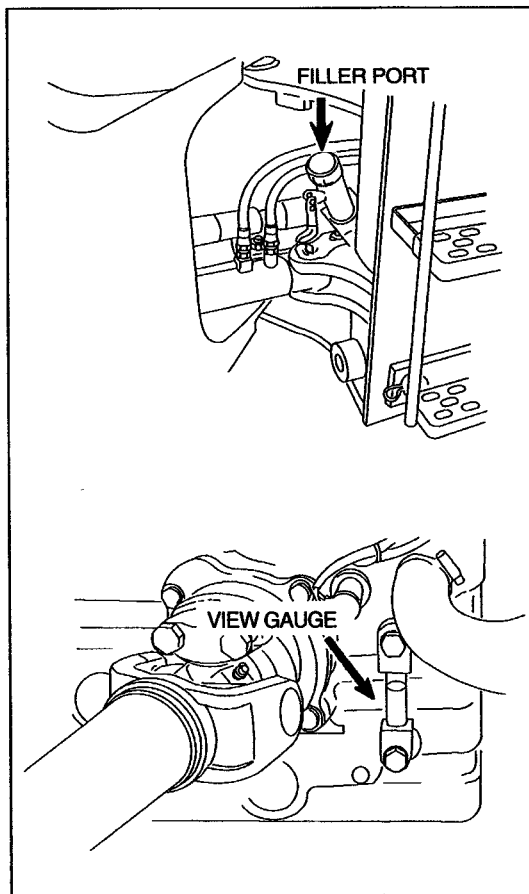
⚠ WARNING

Light blinks while the emergency steering pump is operating. Move to a level, out-of-traffic area and check the loader.



- ① Wipe the drain plug and areas around it clean.
- ② Put an oil receiving pan under the drain plug. Slowly turn the plug to drain off the oil.
- ③ Using a filter wrench, slowly turn the in-line filter and remove. Use care to prevent oil from spilling. Use a receiving pan and a shop rag.

- ④ After draining the oil, reinstall the drain plug.
- ⑤ Apply a thin coat of transmission oil to the seal of a new filter and tighten it until the seal surface comes in contact with the base.
- ⑥ Then, give the filter 1/2 of a turn.



- ⑦ Add new oil to the specified level. Run the engine at idling rpm for a few minutes. Make sure there is no oil leakage from the drain plug or in-line filter. Check the oil level. For oil check procedure, see page 108.

Change axle oil (initial 250 hrs. only)

Change axle oil (initial 250 hrs. only)

⚠ WARNING

Before changing axle oil, make sure to:

- Press the parking brake "ON" switch.
- Set the load handling lever lock.
- Set the safety link on the frames.

Be sure to wear a hard hat. If unavoidable to work under a raised load handling means, take necessary measures to prevent it from dropping. See page 6.

(to be continued)

Check brake disk for wear (service and parking brakes)

Consult your local TCM dealer.

Loaders with cab (one year)

Check door lock for operation

The left-side door is locked with the starter key from outside. Check key cylinder motion and lock state.

The right-side door is locked from inside by pressing the lock knob. Check the door and knob for operation.

Check windshield wiper for operation

Check the windshield wiper for proper operation. If the front or rear windshield cannot be sufficiently cleaned by the wiper, replace the wiper blade with a new one.

Check window washer liquid for spray condition

Check that cleaning liquid is injected from the nozzle properly. If not, check the cleaning liquid level and the nozzle for clogging.

4000 HRS.

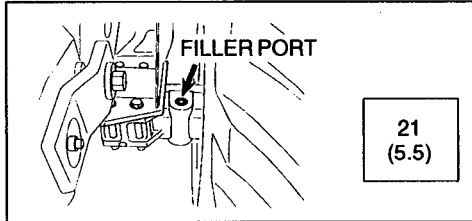
Change engine water pump grease.

Consult your local TCM dealer.

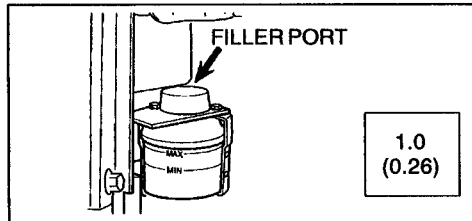
OIL CAPACITY

unit:liters(USgal)

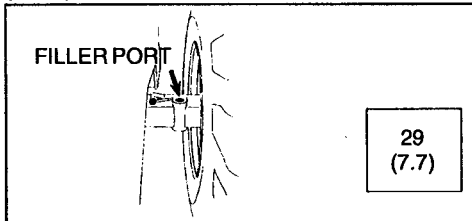
Differential and final reduction gear (front)



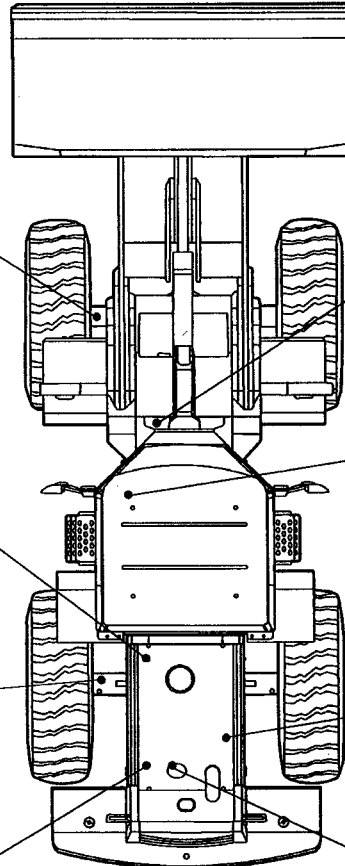
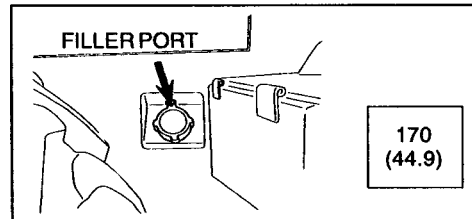
Brake oil supply tank



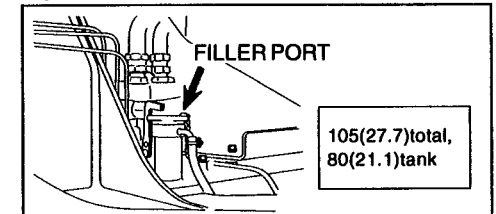
Differential and final reduction gear (rear)



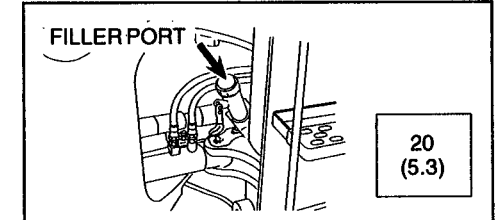
Fuel tank



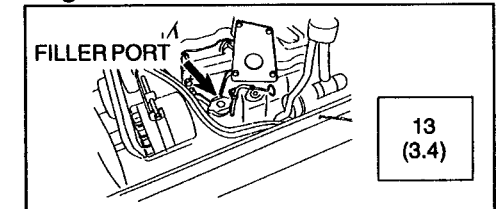
Hydraulic oil tank



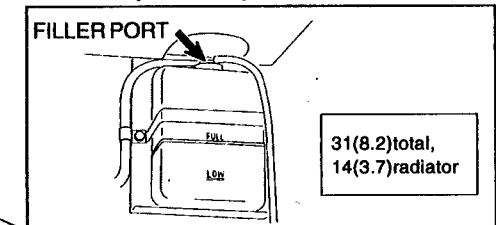
Torque converter and transmission



Engine crank case



Radiator (sub tank)



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