

OPERATOR'S MANUAL

MOVING YOU FURTHER

WHEEL LOADER
HL667VL

 **HYUNDAI**
CONSTRUCTION EQUIPMENT

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WARNING

Improper operation and maintenance of this machine can be hazardous and could result in serious injury or death.

Operator and maintenance personnel should read this manual thoroughly before beginning operation or maintenance.

Keep this manual in the storage compartment to the rear of the operator's seat, and have all personnel involved in working on the machine read the manual periodically.

Some actions involved in operation and maintenance of the machine can cause a serious accident, if they are not done in a manner described in this manual.

The procedures and precautions given in this manual apply only to intended use of the machine.

If you use your machine for any unintended uses that are not specifically prohibited, you must be sure that it is safe for any others. In no event should you or others engage in prohibited uses or actions as described in this manual.

We delivers machines that comply with all applicable regulations and standards of the country of which it has been sent. If this machine has been purchased in another country or purchased from someone in another country, it may lack certain safety devices and specifications that are necessary for use in your country. If there is any question about whether your product complies with the applicable standards and regulations of your country, consult the Agent before operating the machine.

Fire Hazards for Fuel, Oil and Hydraulic Oil

If fuel, oil and anti-freeze fluid are put close to the fire source, it is easy to cause fire. In particular, the fuel may cause extreme danger.

Pay strictly attention to the following conditions:

Make sure the premises are well ventilated when the fuel, oil, anti-freeze-fluid and hydraulic oil are filled in. Switch off the lamp, control lever and the starter switch after the machine is shut off. Shut off the engine. The equipment should be far away from the flame and heating element. The auxiliary heating element or the equipment which may cause sparks must be quenched, switched off and move away from the loader.

Static can produce electric sparks at the oil filler. When it is cold or dry, or in other conditions which easily cause the static, it is necessary to make the oil filler always contact with the oil-filling pipe, so as to guarantee a good grounding.

The covers for fuel tank and other liquid tanks shall be tightened. Strictly prohibit from starting the equipment before tightening.

Precautions When Fluids at High Temperature

When the operation has just been stopped, the temperature of coolant, engine oil and hydraulic oil is very high, and there is still pressure in Radiator and hydraulic tank. In this case, opening the cover to drain the oil or the coolant, or replacing the filtration element will cause burns. It is necessary to wait for the temperature to go down and perform the operation according to the specified procedures.

In order to prevent the splashing of HT coolant and oil, it is necessary to shut off the engine, and wait for cooling of coolant oil, then slowly loosen the cover to release the pressure.



Fig 11



Fig 12



Fig 13

OPERATION OF LOADER

Inspection after starting engine

If you do not correctly check after the engine is started up, then you may not timely find the abnormalities of the machine so that the personal injury or machine damage could occur.

Check the machine at a place without any obstacles, and do not let anybody to approach the machine while you are checking.

Check the operation of instrument and equipment. Check bucket, boom, brake system, transmission system and steering system for the normal working.

Check machine sound, vibration, heat, smell or instrument for any abnormalities: check for leakage of hydraulic oil, lubrication oil, gas or fuel.

Please immediately perform the maintenance if any abnormality is found. If the machine is working under the improper conditions, it will cause serious injury or damage.

Before traveling or starting operation, check the bumper for locking front/rear frame. The bumper shall securely lock onto the "Release" position.

Inspection after starting engine

- Before traveling, re-check the surrounding of the machine to conform that there is nobody and no obstacles there.
- When traveling, it is necessary to sound horn to issue the warning.
- The machine can be operated only by the person sitting on the operator seat.
- Attach the seat belt.
- Nobody shall be allowed in the cab except the operators. Nobody is allowed to sit on the machine body.
- The reverse warning alarm device shall be checked for normal work if any.

Fire protection and anti-explosion

All fuels, most lubrication oils and some coolant mixture are combustible. If the fuels are leaking or splashing onto the HT surface or on the electronic components, the fire will break out.

Put all fuels and lubrication oils at the specified places and make them far away from the unauthorized persons.

Put the oil foot and the combustible substances in the protective containers.

Prohibit smoking when the machine is oil-filled or is in the oil-filling area.

Prohibit smoking in the Battery Charging Area or in places where there are combustible substances.

Clean and tighten all cable connectors and check the cables for loose or wear every day. Tighten all loose cables and repair all worn cables before operating the machine.

Timely clear the combustible substances accumulated on the machine.

Do not weld the pipes containing the combustible liquids. Do not weld the pipes containing the combustible liquids. Please use anti-combustion solvent to thoroughly rub up the pipes before welding the pipes or cutting the pipes using flames.

TOWING

Matters needing attention on towing

If fault occurs during the selection or inspection of the traction string or during performance of traction, it will cause serious injury. Please obey the following items:

- Use the methods introduced in Operation and Maintenance Manual.
- Please wear the leather gloves for disposing string and ropes.
- When there are two or more persons to do the preparation, unify the signals and use them correctly.
- If there is fault in the machine or in the brake system, or the engine could not be started, please contact with the agent.
- When performing the traction operation, do not walk between the tractor and the towed machine.
- It is dangerous to perform the traction on slope, therefore, you should select a gentle slope. If there is no gentle slope, please reduce the slope angle before performing traction operation.
- Please use the string and ropes with enough traction force to tow the fault machine.
- Do not use the worn, kinked rope or the rope with too small cross-section.

2. Adjusting handle for Seat

To adjust the Seat position. Details see the Seat on page 2-42.

3. Bucket manipulating handle

Move left control lever forward (2) to dump bucket, or rearward (4) to roll back bucket

Return-to-Dig (Bucket manipulating handle in full rearward detent position (6)): Bucket will return to set dig position.

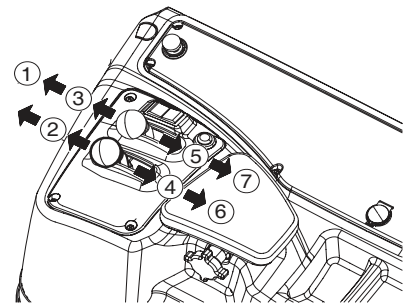


Fig 5

4. Bucket manipulating handle

Move right control lever forward (3) to lower boom or rearward (5) to raise boom.

Float (right lever in full forward detent position (1)): This position allows oil flow in and out both ends of cylinders so the bucket can follow the contour of the ground. Manually release lever from the position.

Boom Height Kick-out right lever in full rearward detent position (7)): Lever will remain in this position until boom is at a preset height, then will return to neutral automatically.

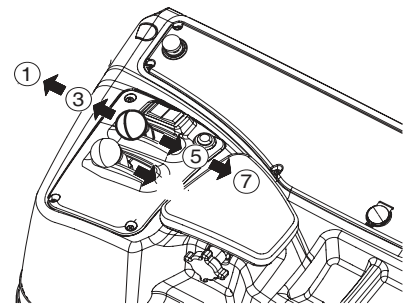


Fig 6

G4. Engine Coolant Temperature Gauge

This gauge displays temperature of engine coolant.



CAUTION

AVOID INJURY

When the pointer indicates red zone, it means the engine is overheated. Stop the operation, let the engine run at low rpm and wait for it to cool down.

Do not stop engine. If engine is shut down heat surge can occur.

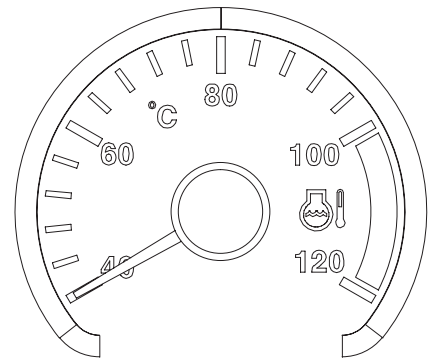


Fig 33

G5. Transmission Oil Temperature Gauge

This gauge displays temperature of oil in transmission converter and transmission circuit.



CAUTION

AVOID INJURY

When the pointer indicates red zone, it means the transmission is overheated. Stop the operation, let the engine run at low rpm and wait for transmission to cool down.

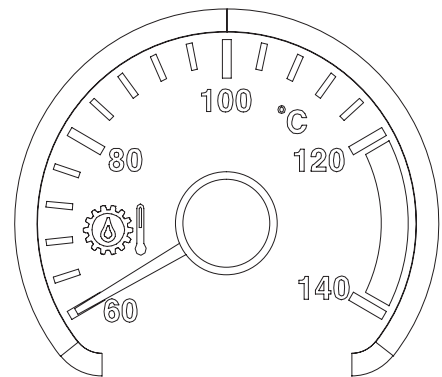


Fig 34

B. Button

the button is on the right side of the LCD. It can make the buzzer stop warning (pressing more than 3s) and it can change the display of speed and fuel consumption (pressing less than 3s).

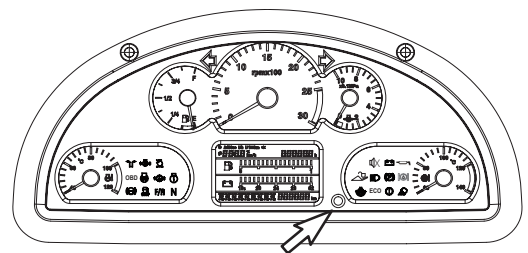


Fig 35

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1. Hazard Warning Light Switch

This warning light is used when the equipment is stopped due to a malfunction or when an emergency occurs. When this switch is pressed the directional indicator lights in front and back of the machine light up and flash, warning others in the area. At the same time the directional indicator lights on the instrument panel will turn “ON” to warn the operator. The hazard warning lights operate independent of the starter switch.

- O. In this position, this switch turns “OFF” hazard warning lights.
- I. In this position, this switch turns “ON” all turn signals and they flash simultaneously.

NOTE: *Hazard warning lights will function with starter switch in “OFF” position.*

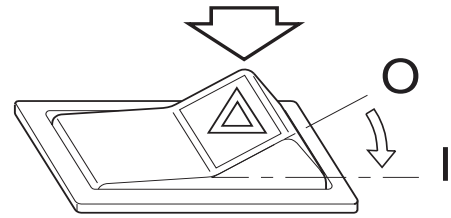


Fig 62

2. Head Light Switch

- O. In this position, this switch turns “OFF” clearance, tail, instrument panel, switch and headlights.

NOTE: *If the switch is not in this position with the engine not running, the pilot buzzer will sound to warn the operator that the batteries are being discharged.*

- I. In this position, this switch turns “ON” clearance, tail, instrument panel and switch lights.
- II. In this position, this switch turns “ON” clearance, tail, instrument panel, and headlights.

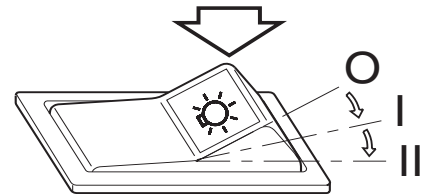


Fig 63



CAUTION

AVOID INJURY

Do not leave clearance, tail, instrument panel or headlights “ON” when the engine is not running. Leaving lights “ON” with the engine shut down will discharge batteries.

- When the engine started, preheating will work on heating later period. the preheating time is like below curve; if the battery voltage is lower,preheating system stop working;

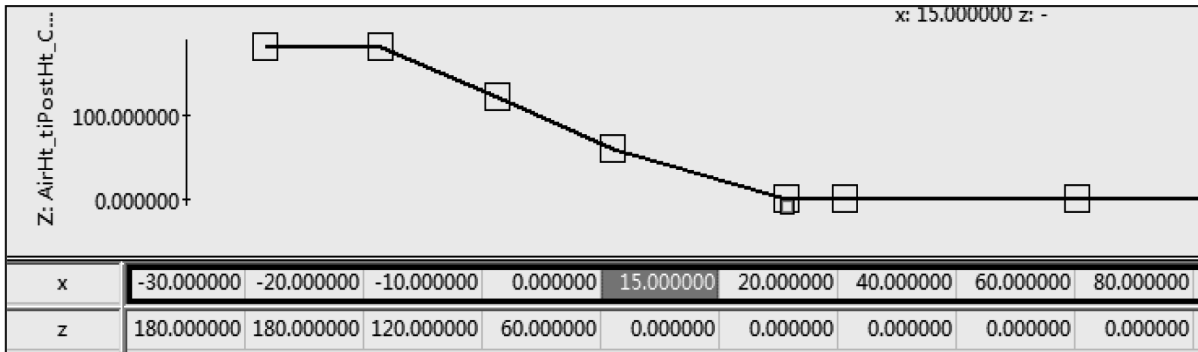


Fig 79

- The preheating indicator is not light when it on the later period.



Fig 80

Lubrication oil and filter element

1. Change oil and renew filter element after working for first 50 hours.
2. Change transmission oil after working for first 100 hours.
3. Change the filter element in hydraulic oil line and renew filter element after working for first 250 hours.
4. Change axle gear oil after working for first 100 hours.

NOTE: Refer to *“Inspection, Maintenance And Adjustment”* on Page 4-1 of this manual for replacement of lubrication oil or grease.

Running-in of the new vehicle

Running-in of the new vehicle plays an important role in extending the operation life, eliminating fault and hidden troubles, as well as avoiding major faults. After buying this machine, the user must perform the machine operation and maintenance according to the regulations on the running-in of new vehicles specified in this manual, and then you can normally use this machine.

Requirements on running-in of the new vehicle

1. The period for running-in of the new vehicle is 100 hours.
2. Start the engine and run at idle for 5 minutes.
3. During the running-in period, you should evenly arrange the running-in test for each gear of Forward I II III and IV Reverse I II and III Gears.
4. Run the vehicle in a sequence at low speed (small power) first, and then at a high speed gradually. Except in emergency, you should avoid sudden start, acceleration, steering and abrupt braking.
5. It is appropriate to operate the vehicle with a load of loose materials during the running-in period, without too abrupt or too urgent actions. During the running-in period, the loaded weight should not exceed 70 % rated load, and the travel speed should not exceed 70% rated maximum speed.
6. Pay attention to the lubrication of the machine, change the lubrication oil and lubrication grease as per the specified interval.
7. You must pay attention to the temperatures of gearbox, torque converter, front/rear axles, hubs, parking brake, immediate supporting shaft, and hydraulic oil, cooling fluid, engine oil. Perform the troubleshooting if the overheat phenomenon is found.
8. Check bolt and nut of each component for the tightening.

OPERATION OF LOADER

1. Preparation before operation

Before operation, first use this machine to level the working site, remove the protrusions, fill and level up the pits, shovel the surface of wet ground, clear large and sharp stones on the site to prevent from scratching Tires.

If you want to use this machine to load the materials onto or unload them from the truck or hopper, you should adjust the limit height of the arm limiting device to make the bucket of the loader able to safely access the truck or hopper, and to prevent the truck or hopper from being damaged due to the impact by materials because the unloading height is too high.

2. General technologies

- Common shoveling and loading method

Common shoveling and loading method is suitable for shoveling and loading of loose materials.

The loader travels at a speed of Gear 2 to approach the materials, and align the bucket middle portion to the materials. The driver holds the steering wheel with left hand and operate, with right hand, arm control lever to lower down the arm to a height 500 mm above the ground.

When the machine is 1 meter away from the stock pile, then lower the arm to make it contact with the ground and change machine's Gear Forward II into Gear Forward I.

NOTE: *When the bucket touches the ground, you should prevent the bucket from producing excessive force on the ground and inducing unnecessary resistance for the advance. Meanwhile, the front and rear frames of the loader should be laid straight, and there shall be no included angle between front and rear frames.*

8. Put a backup external air filter in the cab to replace the frozen components in case.
9. Perform auxiliary startup in cold weather, see Section “Start in Cold Weather” in this Manual.
10. In order to prevent from icing, remove all mud, snow and ice. If possible, use canvas to cover the machine, and prevent the canvas edges from being frozen onto the ground.

Operation under high temperature conditions

Operating the machine continuously under high temperature may cause overheat of the machine. Monitor the engine and gearbox temperature if necessary, and stop the machine to cool it down.

1. Frequently check and maintain the fans and radiator. Check the coolant level for the radiator. Check whether the radiator fins are accumulated with dust, sands or insects etc which blocks the cooling pipeline.
 - A. Under high temperature, the dirt is generated more quickly in the cooling system. Change the anti-freeze fluid each year to keep the preservative function.
 - B. Regularly flush the cooling system, if necessary, to keep the cleanness of the pipeline. Avoid using the water containing high Alkali, otherwise, the dirt will be generated more easily.
2. Check electrolytes level every day. Keep proper electrolytes level to prevent from damaging the battery. In high temperature environment, use weaker electrolytes. Dilute the electrolytes with a specific weight of 1.280 into one with a specific weight of 1.200-1.240, and fully charge it. Whenever the specific weight of 1.160 reaches, it is necessary to re-charge the battery. If stored under high temperature for a long time, the battery will self discharge quickly. If the machine stops for several days, please put it in a cool place.



WARNING

Do not store acidic batteries near tires, because the acidic gases will be harmful to rubber.

RECOMMENDED LUBRICANTS TABLE

Do not use un-recommended lubrication oil. Do not use unapproved products.

NOTE: *Refer to maintenance time interval table to make lubrication for the specified positions.*

Matters needing attention on lubrication

- The oil must be cleaned and the diesel oil must be sedimented for 72 hours; hydraulic system cleanness must meet the requirements from 18/15(GB/T14039-93) or NAS10 (American Standard), otherwise, the failure of the hydraulic system or pump excess wear will be caused.
- The oil filling device and oil position must be clean.
- The machine must be kept to be horizontal during inspection of oil flow.
- For oil filling of front and rear axles, you should fill the oil into the oil filler on the left hub and the right hub, the oil filling quantity is subject to the overflow at the oil level plug of the axle.
- Oil filling for the gearbox: fill oil into oil filling into oil filling pipe of the gearbox. Open the oil level switch, oil filling pipe of t/m, when the oil level switch overflow, the t/m is full-load. If filling t/m fist start the vehicle run for 5 minutes then check the oil level again.
- Filling of hydraulic oil tank: Open the cover of hydraulic oil tank, and fill oil into the tank. When the oil level reaches 10-15 on the tank scale label, this indicates the oil in the tank is to be about full; if this is the first time to fill oil into hydraulic oil tank, you should start the engine to run for 5 minutes, then check the oil level again.
- Do not mix using, replacing of various kinds of oils, otherwise it will cause aging and ineffectiveness of rubber parts and the premature wear of the parts.

Check fluid level of battery

The battery installed in this machined is the one without needing maintenance, and you need not add electrolyte into the battery. When the charge indicator is transparent, it indicates that the electrolyte is less, and the possible reason is leakage or the faults in charging system. Immediately perform the troubleshooting and replace the fault battery. (Fig.6)

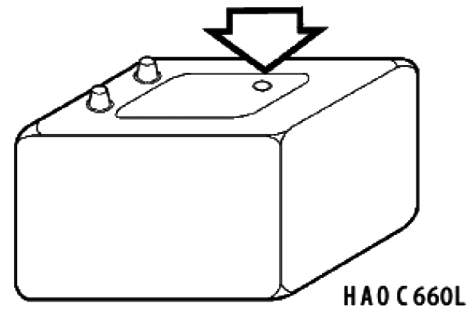


Fig 6

Check the charge state

Check the charge state by observing the indicator color set inside.

- Green: Normal
- Black: Charge is inadequate. Check the generator.
- Transparent: Electrolyte is inadequate. Replace with a new battery.

Check terminals of battery

Ensure the battery is fixed securely. Clean the battery terminals and battery wire connectors. The soda and water can neutralize the electrolyte on battery surface, terminals and wire connectors. Coat Vaseline or grease on the connector to prevent the corrosion.(Fig 9)



Fig 7

Replace battery

When the charge indicator is transparent, it is necessary to replace the battery. The batteries shall be replaced in pairs.

The mixed-use of new and old battery will shorten the service life of the new battery

STORAGE FOR A LONG TIME

Store the machine as shown in the following table if it will stop for more than one month

Conditions	Maintenance requirements
1. Cleaning	1. Flush the chassis and wheel drive assy using HP water gun. Check for the damage or the loose components.
2. Lubrication	1. Execute all routine lubrication operations. 2. Coat a layer of oil on the surface of the exposed metal parts, such as hydraulic oil cylinder lever. 3. Coat oil on all control connecting components and at the control oil cylinder (control valve plug etc) .
3. Battery	1. Fully charge the battery, remove battery or battery wires, and keep them in reserve.
4. Cooling system	1. Check whether the anti-freeze fluid level in cooling fluid reservoir is correct. 2. Check every 90 days or 750 hours the anti-freezing conditions of anti-freeze fluid or coolant using gravimeter. Refer to the required level for filling anti-freeze fluid.
5. Hydraulic system	1. Start the engine once every month by referring to “Temperature Increase Method for Hydraulic System” specified in this manual.

Characteristics of faults	Cause:	Remedy
Driving force not adequate	Shifting pressure low	See I, II
	Torque converter oil temperature too high	See III
	Impeller of torque converter damaged	Disassemble torque converter and replace impeller
	Big overrunning clutch damaged	Disassemble big overrunning clutch and replace damaged parts.
	Poor engine output power	Repair the engine
Gearbox oil level increase	Steering pump shaft end mixing oil	Replace oil gland at steering pump shaft end
	Working pump of working hydraulic system mixing oil	Replace oil gland at working pump shaft end

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