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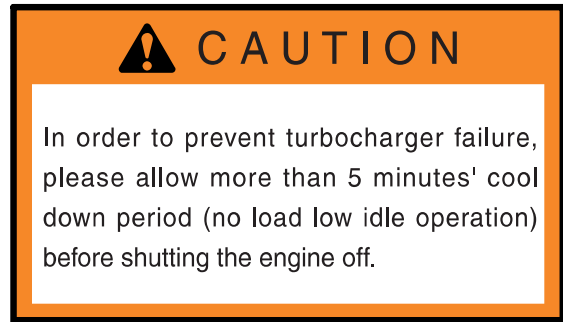
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### 12) TURBOCHARGER (item 16)

This warning label is positioned on the right side window of the cab.

- ▲ In order to prevent turbocharger failure, please allow more than 5 minutes' cool down period (no load low idle operation) before shutting the engine off.



7807AFW20

### 13) LIFT & TIE (item 18)

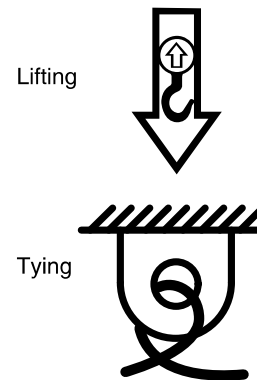
This label is positioned on the both side of the front and rear frame.

#### - Lifting point

In order to lift the machine, attach the lifting devices to the lifting points.

#### - Tying point

In order to tie down the machine, attach the tie-downs to the tying points.

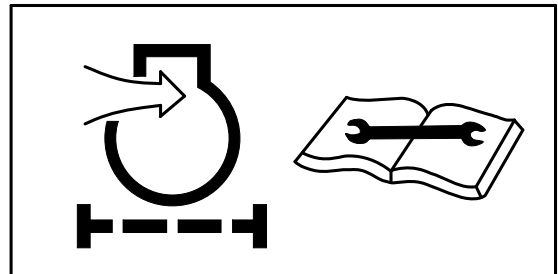


75790FW04

### 14) AIR CLEANER (item 19)

The warning label is positioned on the air cleaner.

- ▲ Periodic and proper inspection, cleaning and change of elements prolong engine life time and maintain the good performance of engine.



21070FW01

### 15) RADIATOR CAP (item 20)

This warning label is positioned on the radiator cover.

- ▲ Never open the filler cap while engine running or at high coolant temperature.



77070FW11

## FIRE PREVENTION AND EXPLOSION PREVENTION

### Regeneration

The exhaust gas temperatures during regeneration will be elevated. Follow proper fire prevention instructions and use the disable regeneration function when appropriate.

### General

All fuels, most lubricants, and some coolant mixtures are flammable.

To minimize the risk of fire or explosion, the following actions are recommended.

Always perform a Walk-Around Inspection, which may help you identify a fire hazard.

Do not operate a machine when a fire hazard exists. Contact your dealer for service.



3001SH01

Understand the use of the primary exit and alternative exit on the machine.

Do not operate a machine with a fluid leak. Repair leaks and clean up fluids before resuming machine operation. Fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire. A fire may cause personal injury or death.

Do not weld on or drill holes in the engine cover. Flammable material such as leaves, twigs, papers, trash may accumulate in engine compartment.

Remove flammable material such as leaves, twigs, papers, trash and so on. These items may accumulate in the engine compartment or around other hot areas and hot parts on the machine.

Keep the access doors to major machine compartments closed and access doors in working condition in order to permit the use of fire suppression equipment, in case a fire should occur.

Clean all accumulations of flammable materials such as fuel, oil, and debris from the machine.

Do not operate the machine near any flame.

Keep shields in place. Exhaust shields (if equipped) protect hot exhaust components from oil spray or fuel spray in a break in a line, in a hose, or in a seal. Exhaust shields must be installed correctly.

Do not weld or flame cut on tanks or lines that contain flammable fluids or flammable material. Empty and purge the lines and tanks. Then clean the lines and tanks with a nonflammable solvent prior to welding or flame cutting. Ensure that the components are properly grounded in order to avoid unwanted arcs.

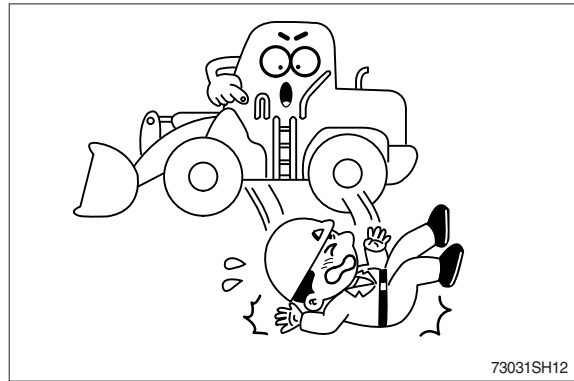
Dust that is generated from repairing nonmetallic hoods or fenders may be flammable and/or explosive. Repair such components in a ventilated area away from open flames or sparks. Use suitable Personal Protection Equipment (PPE).

Inspect all lines and hoses for wear or deterioration. Replace damaged lines and hoses. The lines and the hoses should have adequate support and secure clamps. Tighten all connections to the recommended torque. Damage to the protective cover or insulation may provide fuel for fires.

## 2. DURING OPERATING THE MACHINE

Use the handle and footstep when getting on or off the machine.

Do not jump on or off the machine.

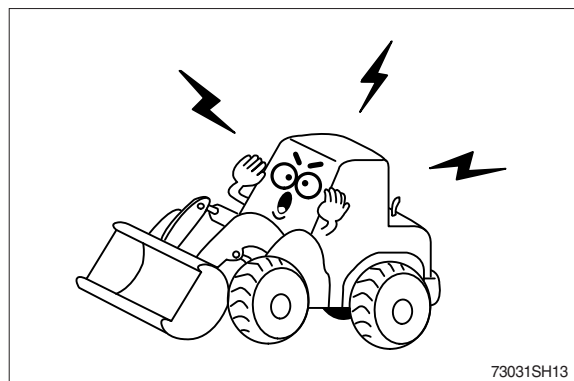


Sound the horn to warn nearby personnel before operating the machine.

### KEEP RIDERS OFF MACHINE

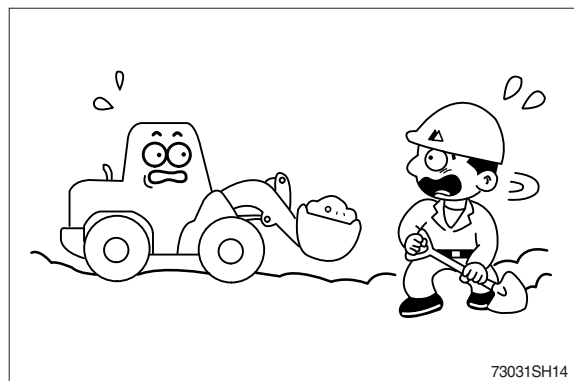
Riders on a machine are subject to injury such as being struck objects and being thrown off the machine.

Only allow the operator on the machine. Keep riders off.

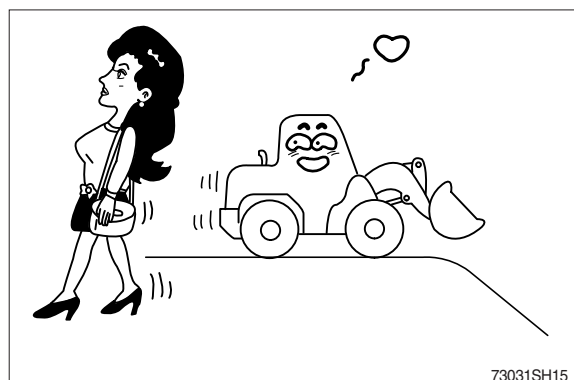


Operate carefully to make sure all personnel or obstacles are clear within the working range of the machine.

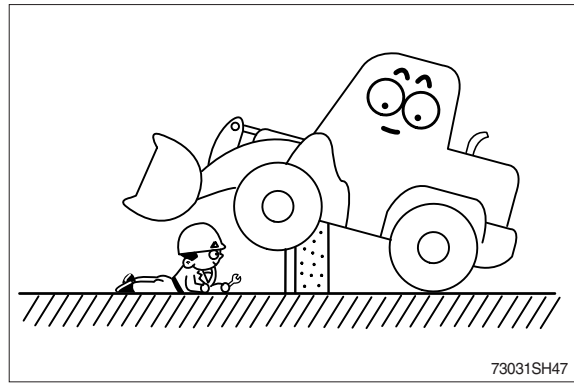
Place safety guards if necessary.



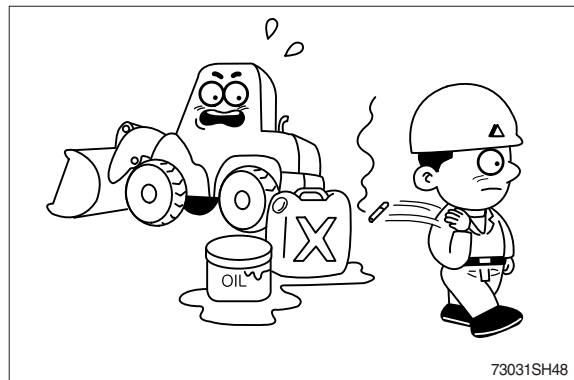
When using the work equipment, pay attention to jobsite.



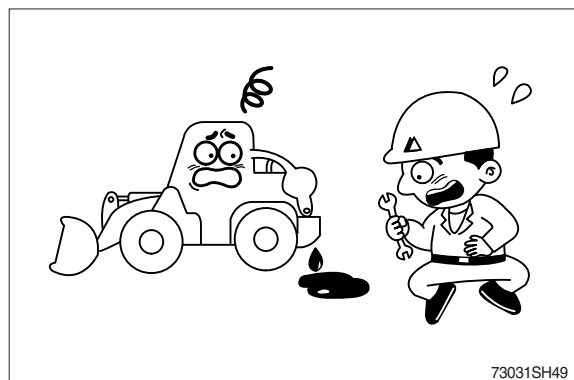
Do not work below the machine.  
When working under or around the bucket or linkage, with the bucket raised, proper support must be provided for the bucket and / or the linkage.



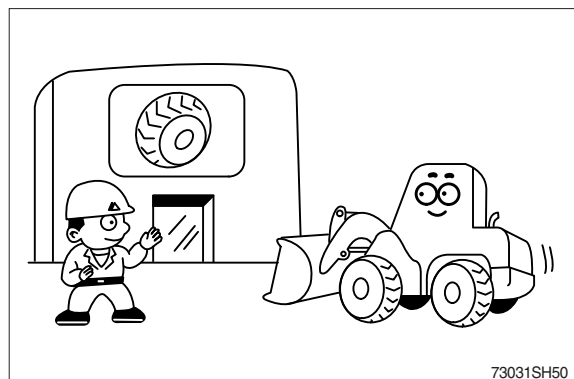
There is the danger of fire in fuel and oil.  
Store in cool dry area, away from any open flames.  
Do not refuel the machine while smoking or when near open flame or sparks.  
Always stop engine before refueling machine.



Spilled grease and oil are dangerous to safety.  
Keep your machine always clean and dry.



Disassembly, reassembly and repair of tire requires special skills and equipment.  
Contact a tire repair shop.

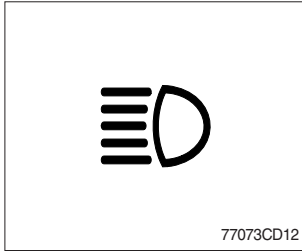


## 4. SPECIFICATION FOR MAJOR COMPONENTS

### 1) ENGINE

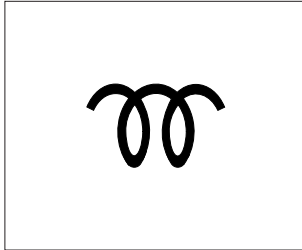
Item	Specification
Model	Cummins 6BTAA5.9 / HYUNDAI HE 6.7
Type	4-cycle turbocharged and charge air-cooled diesel engine
Control type	Mechanical control
Cooling method	Water cooling
Number of cylinders and arrangement	6 cylinders, in-line
Firing order	1-5-3-6-2-4
Combustion chamber type	Direct injection type
Cylinder bore × stroke	102 × 120 mm (4.0" × 4.7")
Piston displacement	5900 cc (359 cu in)
Compression ratio	18.0 : 1
Rated horse power	173 hp at 2200 rpm
Maximum torque at 1300 rpm	80 kgf · m (579 lbf · ft)
Engine oil quantity	15 l (4.0 U.S. gal)
Wet weight	432 kg (952 lb)
High idling speed	2400 ± 50 rpm
Low idling speed	800 ± 25 rpm
Rated fuel consumption	225 g/kW · hr
Starting motor	Denso PA908 (24V-4.5kW)
Alternator	Delco Remy 24SI (24V-70Amp)
Battery	2 × 12V × 130Ah

(4) High beam pilot lamp



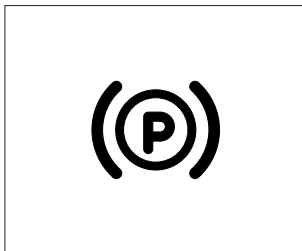
- ① This lamp works when the illuminating direction is upward.
- ② This lamp comes ON when the dimmer switch is operated, e.g., when passing another vehicle.

(5) Preheat pilot lamp



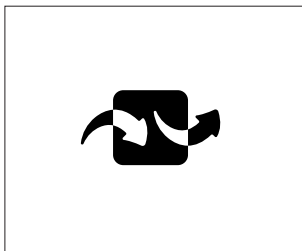
Refer to page 4-5.

(6) Parking brake pilot lamp

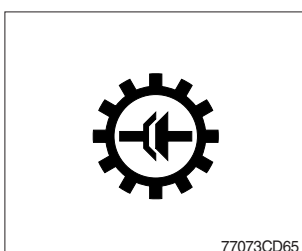


- ① When the parking brake is actuated, the lamp lights ON.
- ※ Check the lamp is OFF before driving.

(7) Maintenance pilot lamp



(8) Clutch cut off pilot lamp



Refer to page 3-28.

#### (4) Management

##### ① Machine security



##### · ESL system setting

- ESL : Engine Starting Limit
- ESL mode is designed to be a theft deterrent or will prevent the unauthorized operation of the machine.
- If the ESL mode was selected Enable, the password will be required when the start switch is turned ON.
- Disable : Not used ESL function
- Enable : The password is required whenever the operator start engine.

Interval mode : The password is required when the operator start engine first. But the operator can restart the engine within the interval time without inputting the password.  
The interval time can be set maximum 2 days.

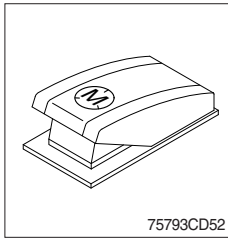
※ Default password : 00000 \*

##### · Interval setting

- If set interval setting to 5 minutes, ESL system is activated after 5 minutes.
- Therefore, the password does not need to restart engine within 5 minutes.

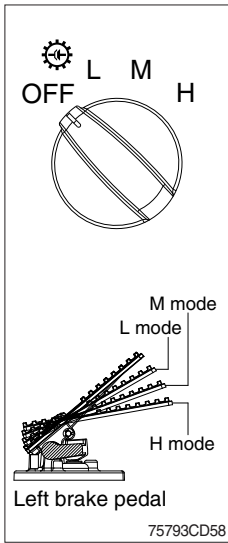


### 11) EMERGENCY TEST SWITCH (option)



- (1) The emergency steering system can be manually tested. Push the switch in order to determine if the emergency steering and the emergency steering lamp are functional.
- (2) When the switch is pressed, the emergency steering pump motor will run. The emergency steering lamp will light. If the emergency steering lamp does not light, do not operate the machine.

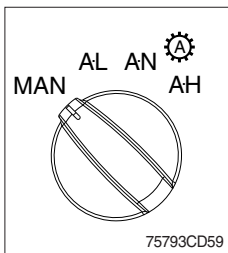
### 12) CLUTCH CUT OFF MODE SWITCH



- (1) Four modes are available for operator's preference and job condition.
  - OFF : The clutch cut off function is disable.
  - L (Low) : The clutch is disengaged early for short-distance and rapid loading.
  - M (Medium) : The clutch is disengaged normally for general digging and loading operation.
  - H (High) : The clutch is disengaged lately for slope ground.
- (2) The clutch cut off functions of the left brake pedal depend on the position of the left brake pedal and the position of the clutch cut off mode switch.

Positions for clutch cut off function			
Clutch cut off mode switch	L	M	H
Left brake pedal	L, M, H	M, H	H

### 13) TRANSMISSION SHIFT MODE SWITCH



- (1) Four modes are available for operator's preference and job condition.
  - MAN (Manual) : Machine is operated by selected gear on lever.
  - AL (Auto Light) : Automatic shifting point is fast for long-distance transportation and fuel efficiency.
  - AN (Auto Normal) : Automatic shifting point is normal without automatic kick-down to 1st gear for general digging and loading operation.
  - AH (Auto Heavy) : Automatic shifting point is normal with automatic kick-down to 1st gear for more powerful operation.

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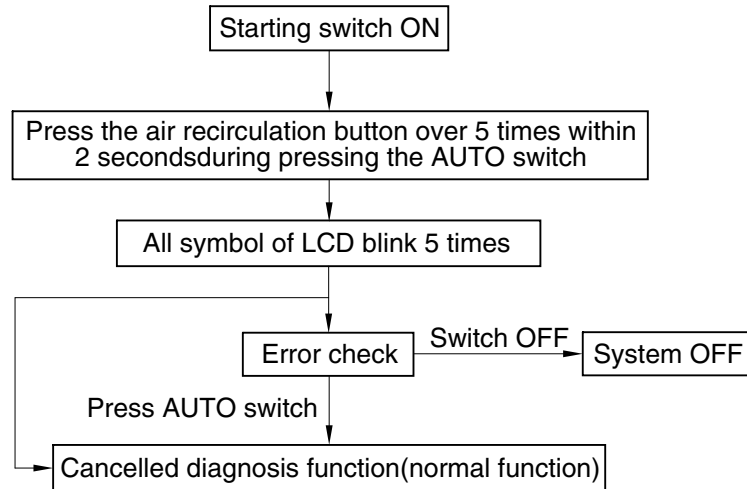


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## 8) SELF DIAGNOSIS FUNCTION

### (1) Procedure



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### (2) Error check

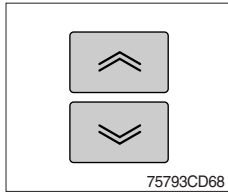
- The corresponding error code flickers on the setup temperature display panel, the other symbol will turn OFF.
- Error code flickers every 0.5 second.
- If error code is more than two, each code flickers 2 times in sequence.
- Error code

Error code	Description	Error code	Description
11	Cabin inside sensor	16	Mode actuator 1
12	Ambient sensor	17	Mode actuator 2
14	Duct (evaporator) sensor	18	Intake actuator
15	Temp actuator	-	-

### (3) Fail safe function

Error description	Fail safe function
Cabin inside sensor (11)	25°C alternate value control
Ambient sensor (12)	20°C alternate value control
Duct (evaporator) sensor (14)	1°C alternate value control
Temp actuator (15)	If opening amount is 0 %, the alternate value is 0 %
	If not, the alternate value is 100 %
Mode actuator 1, 2 (16, 17)	The alternate value is Vent

## (2) File selection & cue / review button



### ① File selection function

This button is used to select file up / down. Each time the forward file select  $\rightrightarrows$  is pressed, file number is increased.

Each time the backward file select  $\leftrightsquigarrow$  is pressed, file number is decreased.

### ② Cue / review functions

High-speed audible search of file on a USB can be made by this button (the cue and review functions).

Press and hold the cue button  $\rightrightarrows$  to advance rapidly in the forward direction or the review button  $\leftrightsquigarrow$  to advance rapidly in the backward direction.

## (3) MP3 directory / file searching

① The power button is used to select a particular directory and file.

Press and hold for more than 3 seconds while playing MP3 file.

Turn right / left the power button to search the directory. Press the button when you find the wanted directory.

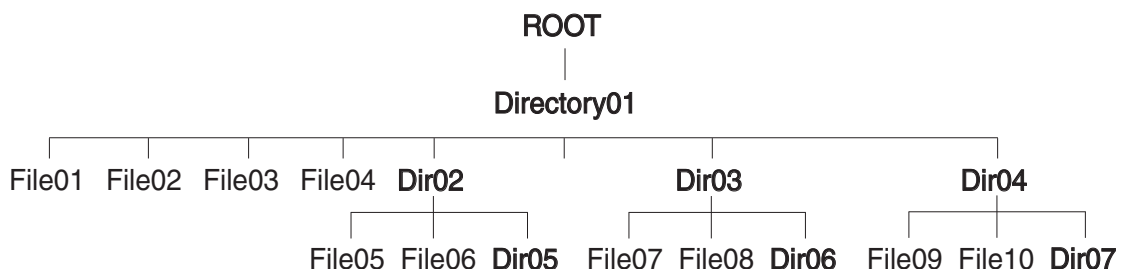
For example, the directory search generally changes in two methods depending on the order of writing as follows.

- Method 1 : ROOT → Dir01 → Dir02 → Dir03 → Dir04 → Dir05 → Dir06 → Dir07
- Method 2 : ROOT → Dir01 → Dir02 → Dir05 → Dir03 → Dir06 → Dir04 → Dir07

If you want to search the file in the located directory, turn right / left the power button consecutively. Press the button when you find the wanted file. The unit will then play the selected file. For instance, the file search changes in Dir01 as follows.

File01 → File02 → File03 → File04  
↑

※ MP3 direction / file configuration



## 4. WARMING-UP OPERATION

※ The most suitable temperature for the hydraulic oil is about 50°C (112°F). It can cause serious trouble in the hydraulic system by sudden operation when the hydraulic oil temperature is below 25°C (77°F). The temperature must be raised to at least 25°C (77°F) before starting work.

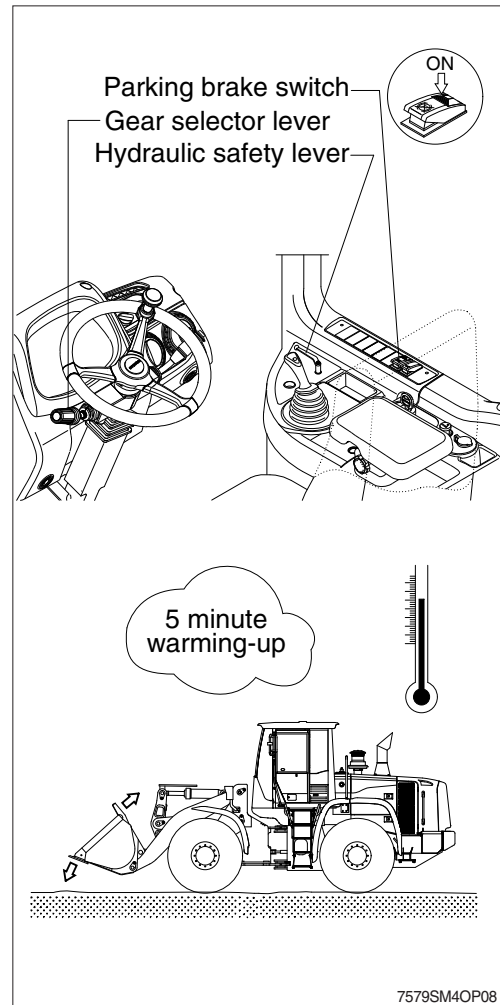
- 1) Run the engine at low idling for 5 minutes.
- 2) Speed up the idling and run the engine at mid-range speed.
- 3) Release the hydraulic safety lever.
- 4) Lift the boom slightly and extend the bucket cylinder to the stroke end to relieve hydraulic pressure.

※ Do not leave hydraulic pressure relieved for more than 30 seconds.

- 5) Shorten the bucket cylinder to the stroke end to relieve hydraulic pressure.

※ Do not leave hydraulic pressure relieved for more than 30 seconds.

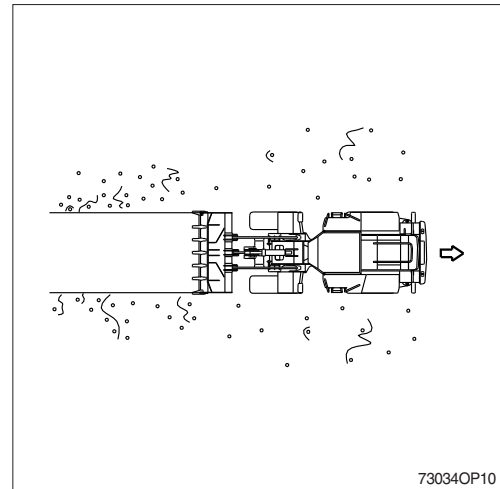
- 6) Repeat the procedure 4) - 5) several times until warm-up operation is completed.



### 3) LEVELING

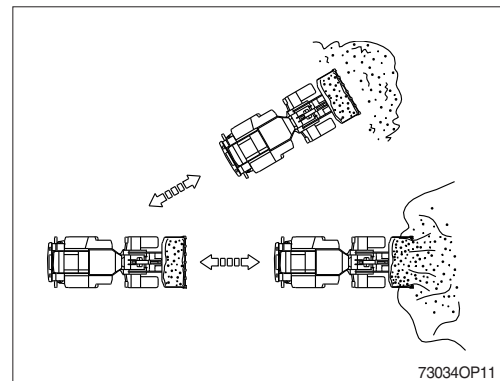
- (1) Load the bucket with soil and dump gradually the soil while driving backward.
- (2) After dumping the soil, move backward with the bucket lowered to the ground to level the ground.
- (3) Load the bucket with soil and place the bucket in the horizontal position. Then put the control lever in the BOOM FLOAT position and move backward.

※ **Make sure that the machine moves always backward when doing leveling work.**



### 4) TRANSPORTATION

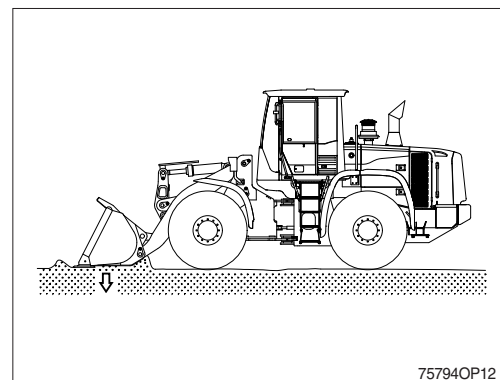
- ※ **Make sure that the traveling path is always cleared.**
- ※ **When transporting material, lift the bucket 40-50 cm above the ground.**



### 5) COMPACTION

When operating, keep the bottom of the bucket horizontal to the ground.

- ※ **Do not work with the bucket set in the DUMP position.**

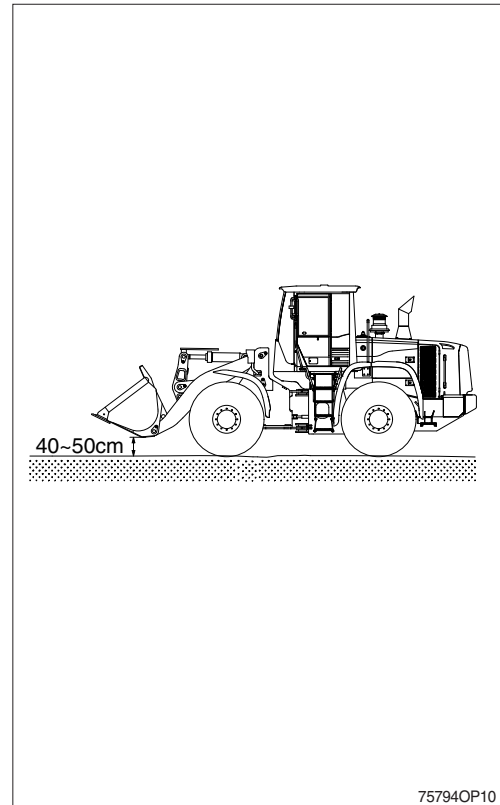


## 5. TRANSPORTATION

### 1. ROAD TRAVELING

If it is necessary to travel on a road, observe the followings.

- 1) Comply with regulations regarding this machine for the sake of safety.
- 2) Perform daily inspection before starting the machine.
- 3) Check the air pressure of tires and traveling speed limitations.
  - Air pressure : 3.5 kgf/cm<sup>2</sup> (50 psi)
  - Maximum speed : 38.0 km/hr (23.6 mph)
- 4) When traveling for a long distance, stop every hour or every 40 km (25 mile) to allow tires and other components to cool down and check any abnormality.
- 5) Drive with the bucket empty.
- 6) Travel at a mid-range speed and be careful to drive within the limited speed when driving on a public road.



### 3) PROPER MAINTENANCE

(1) Replace and repair of parts

It is required to replace the wearable and consumable parts such as bucket tooth, cutting edge, filter and etc., regularly.

Replace damaged or worn parts at proper time to keep the performance of machine.

(2) Use genuine parts.

(3) Use the recommended oil.

(4) Remove the dust or water around the inlet of oil tank before supplying oil.

(5) Drain oil when the temperature of oil is warm.

(6) Do not repair anything while operating the engine.

Stop the engine when you fill the oil.

(7) Relieve hydraulic system of the pressure by opening of breather when repairing the hydraulic system.

(8) Confirm if the cluster is in the normal condition after completion of service.

(9) For more detail information of maintenance, please contact local Hyundai dealer.

※ **Be sure to start the maintenance after fully understand the chapter 1, Safety hints.**

### 9) EVERY 1000 HOURS SERVICE

Check items	Service	Page
Center pivot pin	Lubricate	6-36
Transmission oil	Change	6-32, 33
Transmission oil filter	Replace	6-32, 33
Air conditioner and heater outer filter	Replace	6-44

### 10) EVERY 1500 HOURS SERVICE

Check items	Service	Page
Front axle oil	Change	6-34, 35
Rear axle oil	Change	6-34, 35

### 11) EVERY 2000 HOURS SERVICE

Check items	Service	Page
Hydraulic oil *1	Change	6-27
Radiator coolant	Change	6-17, 18, 19, 20
Hoses, fittings, clamps (fuel, coolant, hydraulic)	Check, Retighten, Replace	-

\*1 Conventional hydraulic oil

### 12) EVERY 5000 HOURS SERVICE

Check items	Service	Page
Hydraulic oil *2	Change	6-27

\*2 Hyundai genuine long life hydraulic oil

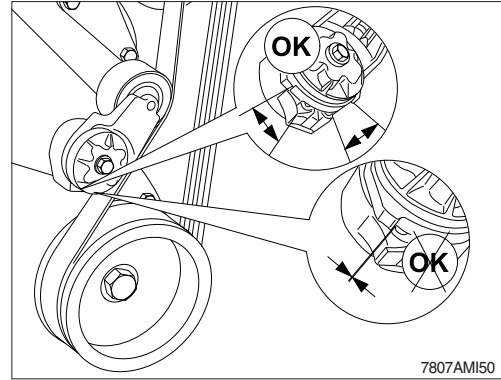
### 13) WHEN REQUIRED

Check items	Service	Page
Air cleaner element		
· Safety	Replace	6-23
· Primary	Check, Clean, Replace	6-23
Air conditioner and heater		
· Outer filter	Replace	6-44
· Inner filter	Check, Clean, Replace	6-44

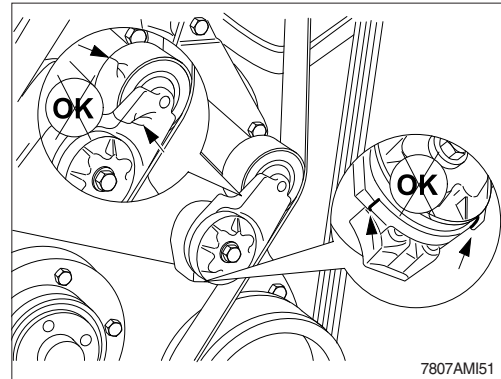
## 8) BELT TENSIONER, AUTOMATIC ADJUSTMENT

- (1) Every 1000 hours, or 1 year, whichever occurs first, inspect the automatic belt tensioner.

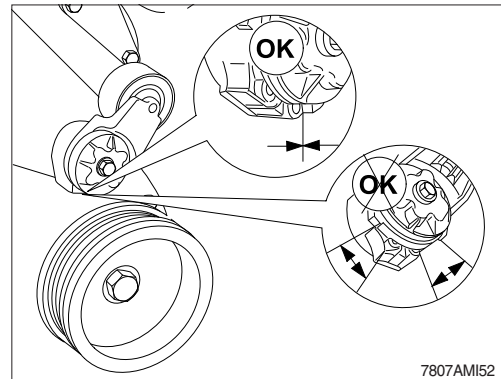
With the engine turned off, check that neither the top nor bottom tensioner arm stop is touching the cast boss on the tensioner body. If either of the stops is touching a boss, the alternator belt must be replaced. Check to make sure the correct belt part number is being used if either condition exists.



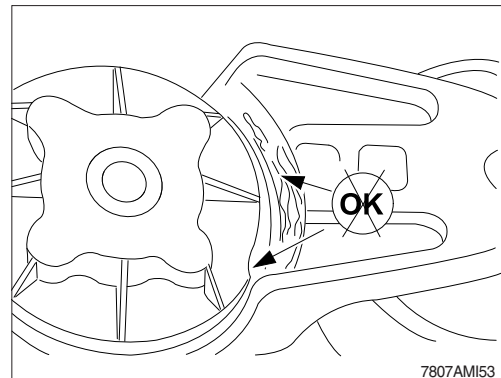
- (2) Check the tensioner pulley and body for cracks. If any cracks are noticed, the tensioner must be replaced. Refer to a Cummins Authorized Repair facility. Check the tensioner for dirt build-up. If this condition exists, the tensioner must be removed and steam-cleaned.



- (3) Check that the bottom tensioner arm stop is in contact with the bottom tensioner arm stop boss on the tensioner body. If these two are not touching, the tensioner must be replaced.



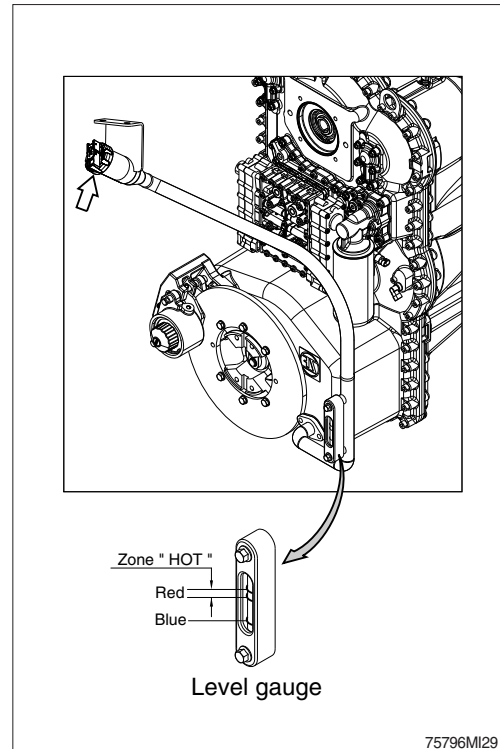
- (4) Inspect the tensioner for evidence of the pivoting tensioner arm contacting the stationary circular base. If there is evidence of these two areas touching, the pivot tube bushing has failed and the tensioner must be replaced.



## 26) CHECK TRANSMISSION OIL LEVEL

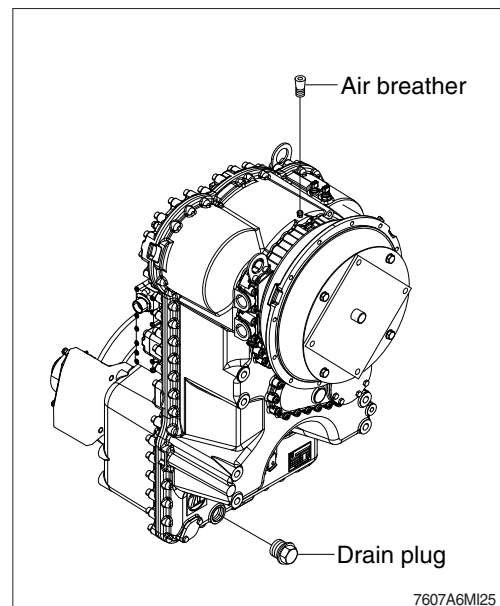
- (1) The oil level check must be carried out as follows; oil level check (weekly).
- (2) Before the oil level check, Transmission must have been running to warm up enough.
- (3) When the oil level is checked, machine must be on flat ground and engine must be at idling speed, transmission must be in neutral position.
- (4) Check the oil level on level (sight) gauge.
- (5) Oil level
  - Operating temperature (about 80~90°C)  
:The Oil level must be lying in zone HOT (between two red lines).
  - Cold phase (about 40°C)  
: The Oil level must be lying near cold mark (blue line).

**▲ When checking, press the parking brake switch and fix the front and rear frames with the safety lock bar.**



## 27) REPLACEMENT OF TRANSMISSION OIL AND FILTER ELEMENT

- (1) Operate the machine for a few minutes in order to warm the transmission oil.
- (2) Move the machine to flat ground. Lower the bucket to the ground and slightly apply downward force.
- (3) Press the parking brake switch and stop the engine.
- (4) Open transmission air breather to relieve internal air pressure.
- (5) Remove the transmission drain plug. Allow the transmission oil to drain into a suitable container.



## (2) Recycle

Never discard a battery.

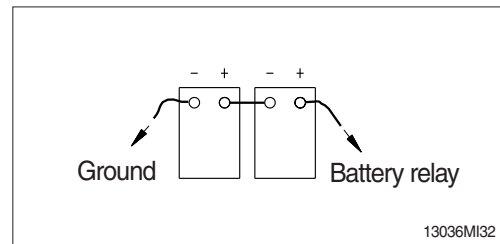
Always return used batteries to one of the following locations.

- A battery supplier
- An authorized battery collection facility
- Recycling facility

## (3) Method of removing the battery cable

Remove the cable from the ground connection first (⊖ terminal side) and reconnect it last when reassembling.

※ Pay attention to the correct polarity.



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## 3) STARTING THE ENGINE WITH A BOOSTER CABLE

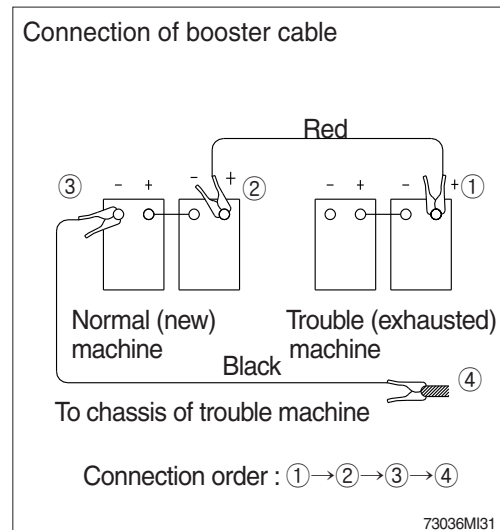
Keep following order when you are going to start engine using booster cable.

### (1) Connection of booster cable

※ Use the same capacity of battery for starting

- ① Connect the red terminal of booster cable to the battery(+) terminal between exhausted and new battery.
- ② Connect the black terminal of the booster cable to the battery (-) terminal between exhausted and new battery.

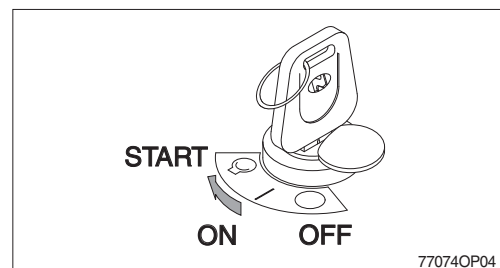
※ Keep firmly all connection, the spark will be caused when connecting finally.



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### (2) Starting the engine

- ① Start engine with starting key.
- ② If you can not start it by one time, restart the engine after 2 minutes.



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