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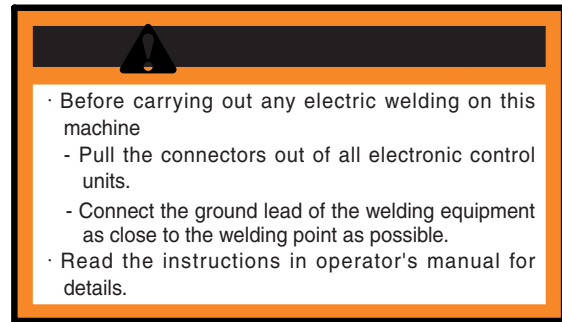
12) ECU CONNECTOR (item 16)

This warning label is positioned on the side of the battery box.

⚠ Before carrying out any electric welding on this machine

- Pull the connectors out of all electronic control units.
- Connect the ground lead of the welding equipment as close to the welding point as possible.

※ Refer to the page 6-43 for details.



7803AFW20

13) LIFT & TIE (item 18)

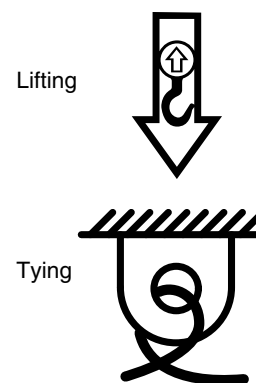
This label is positioned on the both side of the front and rear frame.

- 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.

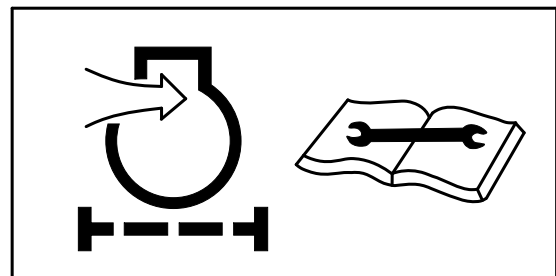


75790FW04

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.

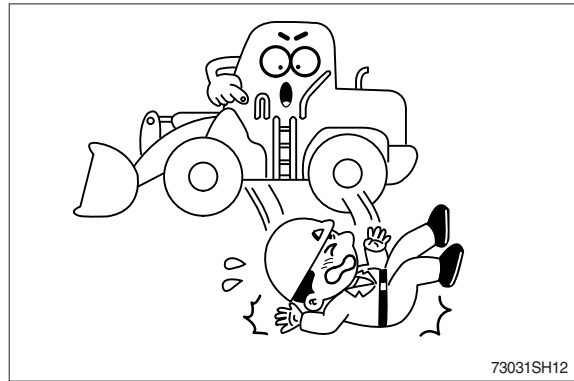
Dust that is generated from repairing nonmetallic hoods or fenders may be flammable and/or explosive. Repair such components in a ventilated area away from open flames or sparks. Use suitable Personal Protection Equipment (PPE).

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.

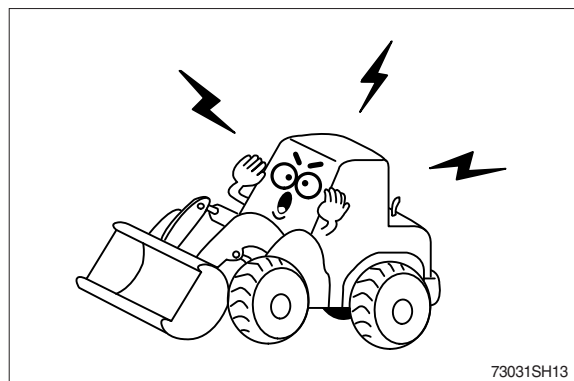


Sound the horn to warn nearby personnel before operating the machine.

KEEP RIDERS OFF MACHINE

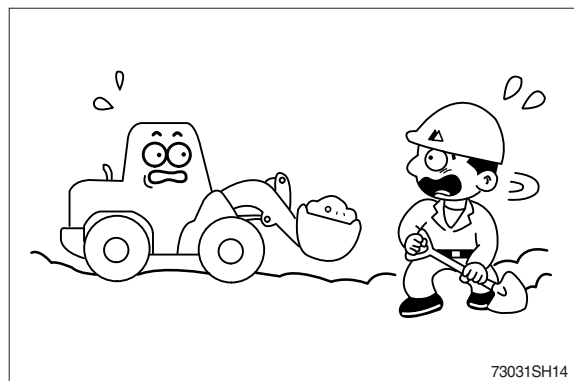
Riders on a machine are subject to injury such as being struck objects and being thrown off the machine.

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

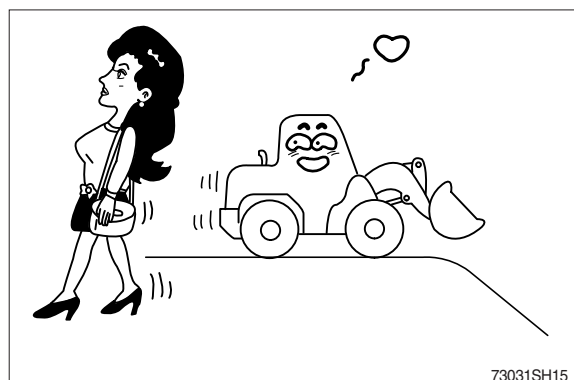


Operate carefully to make sure all personnel or obstacles are clear within the working range of the machine.

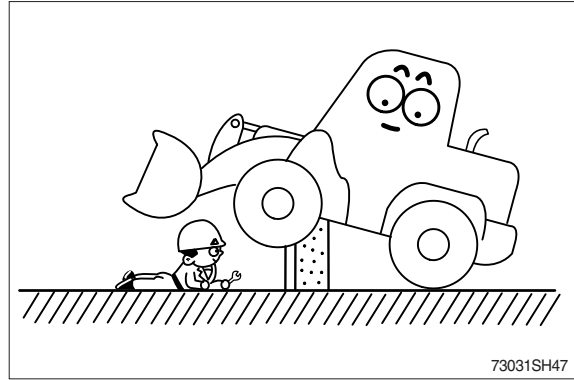
Place safety guards if necessary.



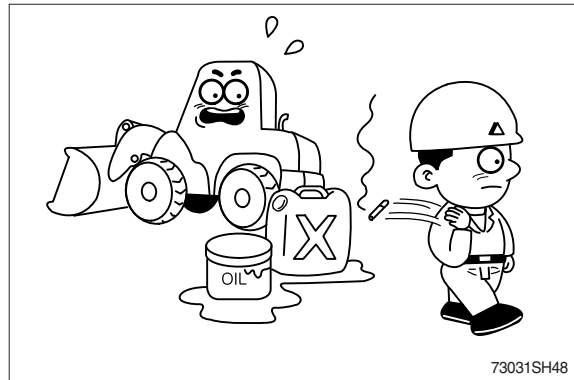
When using the work equipment, pay attention to jobsite.



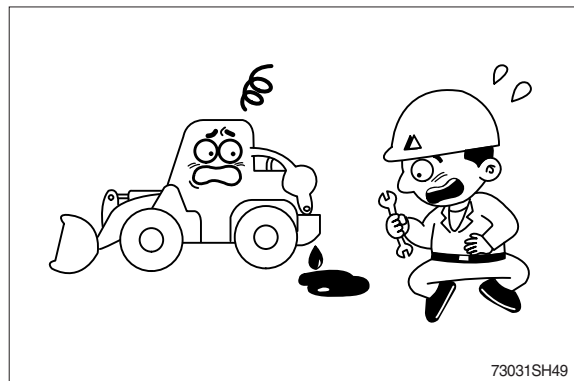
Do not work below the machine.
When working under or around the bucket or linkage, with the bucket raised, proper support must be provided for the bucket and / or the linkage.



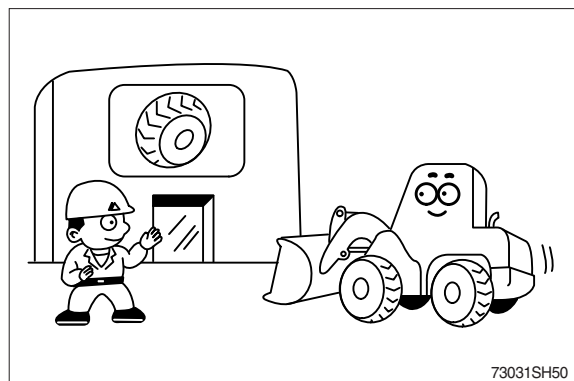
There is the danger of fire in fuel and oil.
Store in cool dry area, away from any open flames.
Do not refuel the machine while smoking or when near open flame or sparks.
Always stop engine before refueling machine.



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.

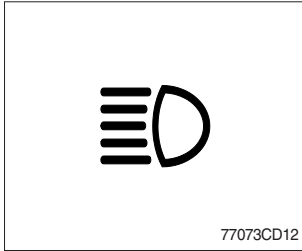


4. SPECIFICATION FOR MAJOR COMPONENTS

1) ENGINE

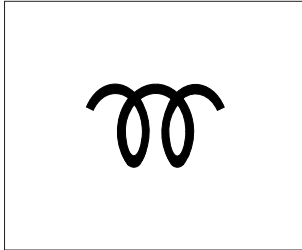
Item	Specification
Model	Cummins QSB6.7 /HYUNDAI HE6.7
Type	4-cycle turbocharged and charge air-cooled diesel engine
Control type	Electronic control
Cooling method	Water cooling
Number of cylinders and arrangement	6 cylinders, in-line
Firing order	1-5-3-6-2-4
Combustion chamber type	Direct injection type
Cylinder bore × stroke	107 × 124 mm (4.2" × 4.9")
Piston displacement	6730 cc (410cu in)
Compression ratio	17.2 : 1
Rated horse power (Gross)	173 hp at 2100 rpm
Maximum torque at 1500 rpm	83 kgf · m (600 lbf · ft)
Engine oil quantity	18 l (4.8 U.S. gal)
Wet weight	485 kg(1069 lb)
High idling speed	2230 ± 50 rpm
Low idling speed	800 ± 25 rpm
Rated fuel consumption	252 g/kW · hr
Starting motor	Nippondenso 228000-7902 (24V-3.7kW)
Alternator	Delco Remy 24SI (24V-70Amp)
Battery	2 × 12V × 130Ah

(4) High beam pilot lamp



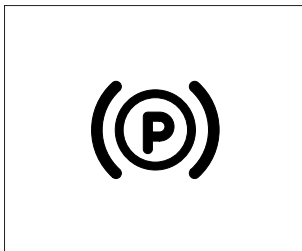
- ① This lamp works when the illuminating direction is upward.
- ② This lamp comes ON when the dimmer switch is operated, e.g., when passing another vehicle.

(5) Preheat pilot lamp



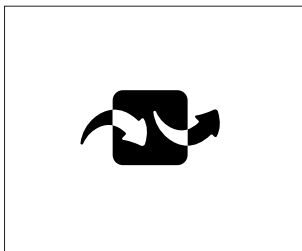
Refer to page 4-5.

(6) Parking brake pilot lamp

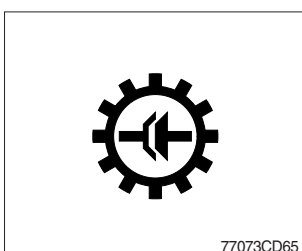


- ① When the parking brake is actuated, the lamp lights ON.
- ※ **Check the lamp is OFF before driving.**

(7) Maintenance pilot lamp

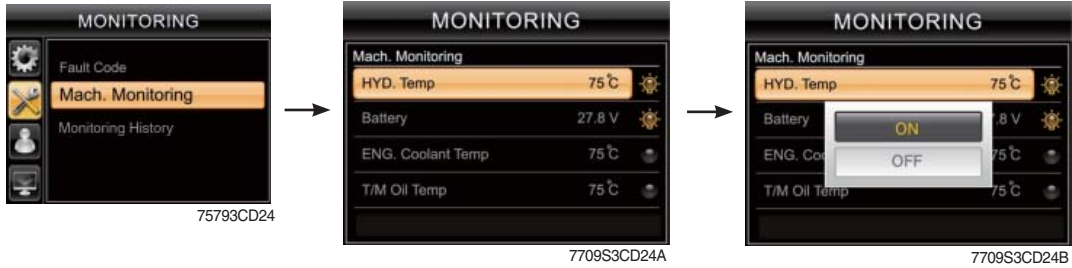



(8) Clutch cut off pilot lamp



Refer to page 3-29.

② Machine monitoring



- Monitor the status of the machine.
- To check the item in main display, choose it and press .
- The right icon shows ON/OFF status.

※ Priority in the main display



The example of the weighing system


- The priority of the weighing system is the highest.
- If selected the weighing system, the other items are not available.
- To check the other items, the weighing system should not be selected.

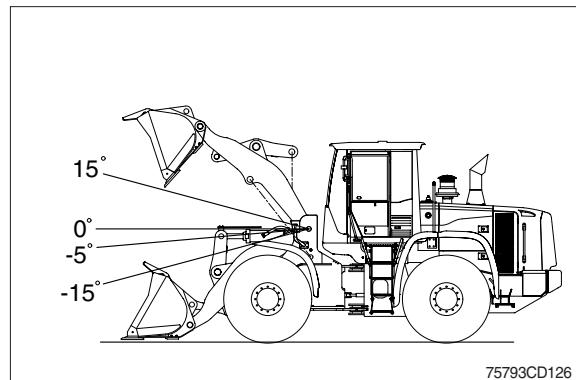
※ Weighing system

1. PRINCIPLE

- 1) The weight indication in bucket is calculated by measuring boom position and boom pressure.
 - (1) The weight is '0.0 ton' when the boom is placed at below -15° .
 - (2) The weight is indicated when the boom is placed at the range ($-5^{\circ} \rightarrow 15^{\circ}$).
 - (3) The weight is calculated when the boom is placed at above -5° and boom is lowered below -15° after dumping operation.

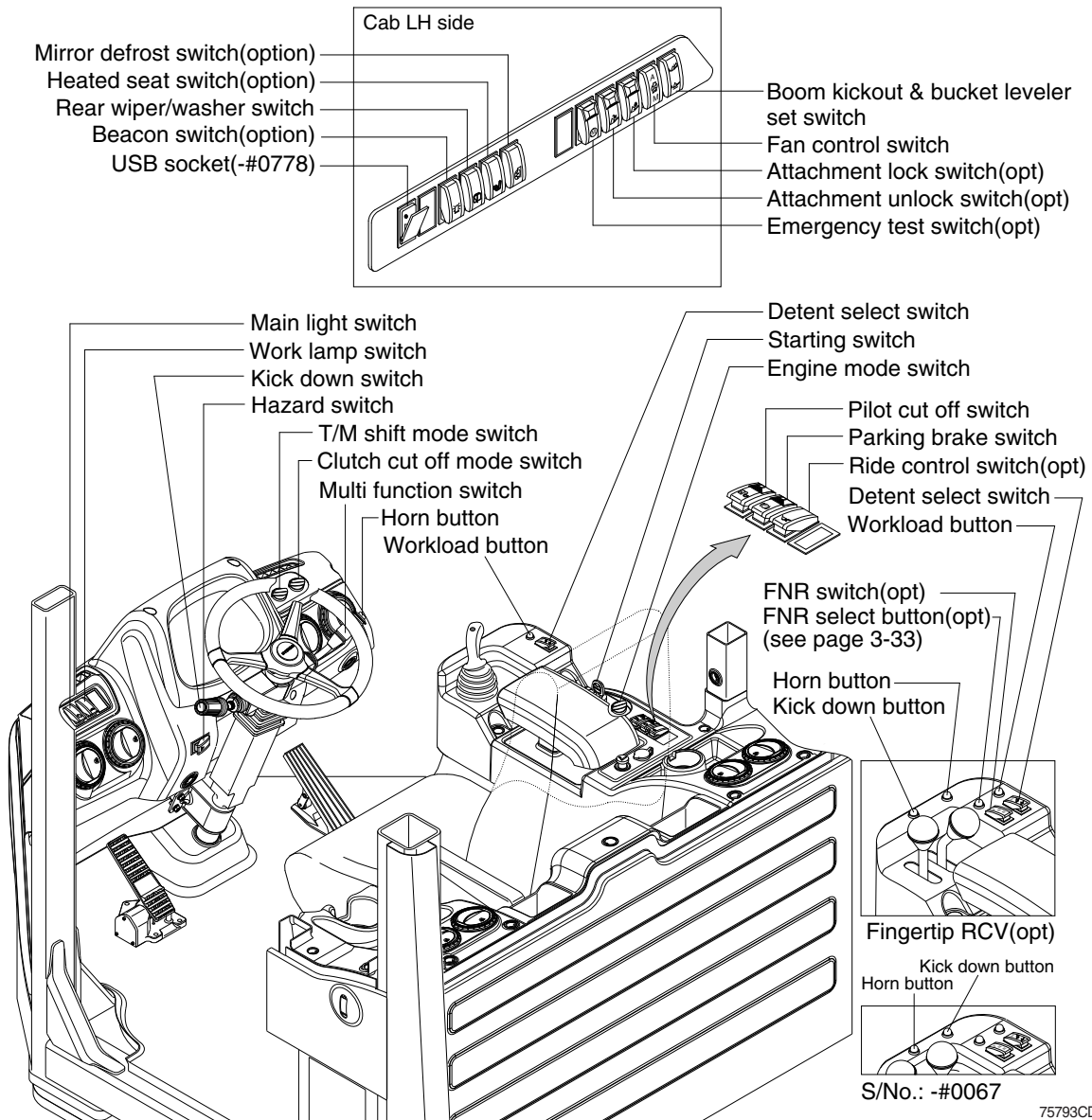
In order to re check weight, go to the (2) after changing boom position (below -15°).

(The other way is to select  of monitor and go to (2) in case boom is placed at above -5°).
- 2) Dump operation : It is checked by bucket cylinder's stroke change (below 250 mm).

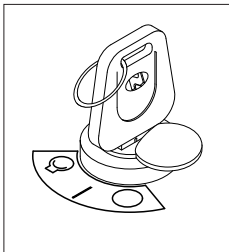


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4. SWITCHES



1) STARTING SWITCH



There are three positions, OFF, ON and START.

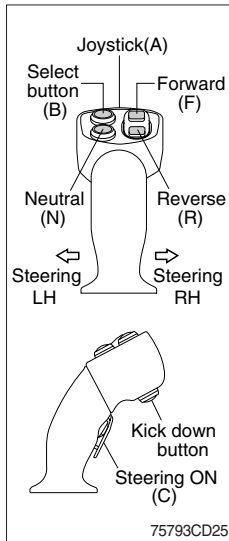
- ○ (OFF) : None of electrical circuits activate.
- | (ON) : All the systems of machine operate.
- Ⓚ (START) : Use when starting the engine.

Release key immediately after starting.

If you turn ON the starting switch in cold weather, the fuel warmer is automatically operated to heat the fuel by sensing the coolant temperature. Start the engine in 1~2 minutes after turning ON the starting switch. More time may take according to ambient temperature.

Key must be in the ON position with engine running maintain electrical and hydraulic function and prevent serious machine damage.

8) JOYSTICK STEERING CONTROL LEVER (option)



- (1) The system has the following functions concentrated to a collapsible arm rest : steering, forward / reverse selection and kickdown function.
- (2) This means that during normal loading work, the operator does not need to touch the steering wheel.
- (3) The joystick steering pilot lamp on the cluster will be ON when the lever steering is activated.

▲ As a safety precaution, the joystick steering is functioned while pressing the steering ON button (C).

▲ When operating on a public road, the steering wheel should always be used and the joystick steering be disconnected. Also when operating at high speeds (above 20 km/h) on a work site, always use the steering wheel.

(4) Joystick (A)

Activate the lever-controlled steering by pushing in the steering ON button (C).

The steering wheel works as usual, even if the joystick steering is activated.

The joystick steering pilot lamp  on the cluster will be ON when the steering ON button (C) is pushed.

(5) Forward/reverse selection button

F : Forward drive

N : Neutral


R : Reverse drive

To be able to operate the forward / reverse selection and kick-down button the system must first be activated using select button (B).

The ordinary gear selector control should be in neutral.

When this function is engaged, it is possible to operate the forward -reverse selection. If the ordinary gear selector control is activated at the same time as the joystick steering is activated, the ordinary gear selector control overrides any selection made by the joystick steering.

To reactivate the joystick steering, the ordinary gear selector control must first be moved to neutral and the system again be activated.

The FNR select pilot lamp  on the cluster will be ON when the forward / reverse selection is activated.

(6) Kick-down button : Refer to page 3-31.

RADIO AND USB PLAYER +BLUETOOTH (Machine serial No. : #0431~#0876)



75793CD62-1

■ FRONT PANEL PRESENTATION

- | | | | | | |
|---|--|---|----|--|--|
| 1 | | Sound function selection button (audio selection) | 10 | | Preset memory button 6 D+ Directory up |
| 2 | | Power and volume button | 11 | | Aux function |
| 3 | | Mode button (select RADIO / USB / AUX) | 12 | | Preset scan (PS) Best station memory (BSM) |
| 4 | | UP / DOWN tuning button | 13 | | Audio mute button |
| 5 | | Preset memory button 1 DISP ID3 v2 display | 14 | | AM / FM button (radio) |
| 6 | | Preset memory button 2 SCN File scan | 15 | | Send |
| 7 | | Preset memory button 3 RPT Repeat play selector | 16 | | End |
| 8 | | Preset memory button 4 RDM Random play selector | 17 | | MIC (microphone) |
| 9 | | Preset memory button 5 D- Directory down | | | |

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
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- (g) The bluetooth radio will give connection priority to the last connected mobile phone.
- (h) It is recommended that all other bluetooth devices other than mobile phones are switched off during the registration or pairing process.

② **Disconnecting a bluetooth device**

If you need to disconnect your bluetooth mobile phone or music player with the bluetooth radio, follow the steps below.




- a. Press button  for 2 seconds in any mode.
- b. When the bluetooth connection is lost, bluetooth logo disappears and the previously connected device name (e.g. Samsung or Nokia) and **DISCONNECTED** appear on the display.

③ **Select a bluetooth device**

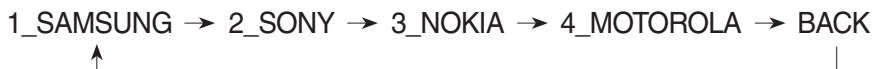
The bluetooth radio can pair up to 6 bluetooth devices. A previously paired mobile phone or music player can be selected for connection using the method described below. Refer to the table 2-1 for examples.



Preset No.	Bluetooth device name
1	Samsung (for example)
2	Sony (for example)
3	Nokia (for example)
4	Motorola (for example)
5	EMPTY
6	EMPTY

Table 2-1

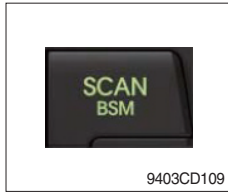
- a. Press button , to select **PHONES** mode.
- b. Press SEL button. **SELECT PHONE** will appear on the display.
- c. Turn , until **SELECT PHONE** is displayed.
- d. When **SELECT PHONE** appears on the display, press SEL button.
- e. Press the preset button to display the name of the bluetooth device name of the mobile phones or music players previously paired. You may also turn  to display the paired devices.

· Each time you turn , the LCD displays as follows :



- f. If the bluetooth mobile phone name is Samsung as in the example of table 2-1, then **Samsung** appears on the display. When preset button  is pressed or knob  is turned 1 click to the right.
- g. Once the name of the bluetooth device you wish to connect is displayed, in this example **Samsung**, press SEL button to have the Samsung device connected.
- h. If the connection is successful, the bluetooth logo appears on the display and paired phone name **Samsung** and **CONNECTED** appears on the display for 2 seconds.

(5) Preset scan (PS) / Best station memory (BSM) button



① Press BSM button (12) momentarily to scan the 6 preset stations stored in the selected band. When you hear your desired station, press it again to listen to it.

Press BSM button (12) for longer than 2 seconds to activate the Best Station Memory feature which will automatically scan and enter each station into memory.

※ **If you have already set the preset memories to your favorite stations, activating the BSM tuning feature will erase those stations and enter into the new ones. This BSM feature is most useful when travelling in a new area where you are not familiar with the local stations.**

1. SUGGESTION FOR NEW MACHINE

- 1) It takes about 100 operation hours to enhance its designed performance.
- 2) Operate according to below three steps and avoid excessive operation for the initial 100 hours.

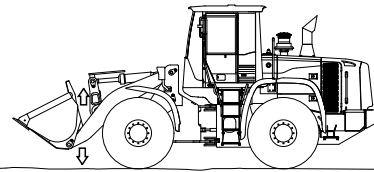
Service meter	Load
Until 10 hours	About 60%
Until 100 hours	About 80%
After 100 hours	100%

※ **Excessive operation may deteriorate the potential performance of machine and shorten lifetime of the machine.**

- 3) Be careful during the initial 100 hours operation.
 - (1) Check daily for the level and leakage of coolant, engine oil, hydraulic oil and fuel.
 - (2) Check regularly the lubrication and fill. Grease daily all lubrication points.
 - (3) Tighten bolts.
 - (4) Warm up the machine fully before operation.
 - (5) Check the gauges during operation.
 - (6) Check if the machine is operating normally during operation.
- 4) Replace followings after initial operation hours.

Checking items	Hours
Engine oil and filter	250
Fuel filter element	
Fuel pre-filter	
Transmission oil and filter	
Axle oil (front and rear)	
Hydraulic oil return filter	
Pilot line filter element	

Avoid excessive operation for initial 100 hours

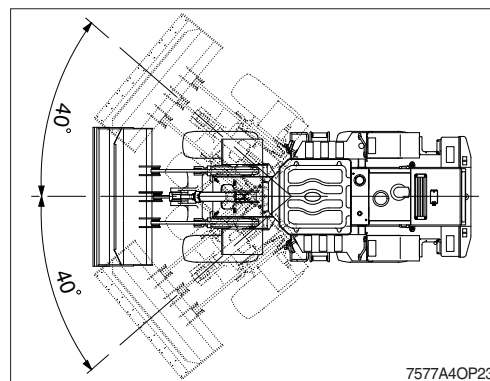


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- ※ When traveling at high speed, do not abruptly decelerate by using the transmission lever, to slow down instead press the brake pedal.
- ※ When changing direction, check beforehand there is no obstacle in the direction you will be headed.
- ※ Avoid changing direction at high speed.

(4) Turning the machine

- ① Turn the machine by moving the steering wheel into the desired direction.
 - ② You can turn the machine to the left or right by 40 degree.
- ※ Do not turn the machine abruptly when traveling at high speed and avoid turn on a slope.
- ▲ Steering does not function with engine OFF.



(5) Precautions when driving

- ① If the monitor warning lamp lights up, put the gear selector lever in the neutral position and stop the machine. Stop the engine after running it at low idling. Then resolve any problems regarding operation of the machine.
- ② When operating the machine, if the load is lightened rapidly, the speed of the machine will increase. So, be careful.
- ③ When the machine travels on uneven ground, keep the machine traveling at low speed.

② When traveling down a slope

- a. If the main brake is used too often when traveling down a slope, it may be overheated and damaged. So put the transmission lever in the low speed position and use the engine as a brake.
- b. If there is a mismatch of speed, torque converter oil temperature may be overheated. Set the speed in 1st speed position to allow the temperature to drop.
- c. When the gauge does not move into the green range at the 1st speed, stop the machine and put it in neutral. Run the engine at a mid range speed until the gauge moves into the green range.

③ When the engine stops

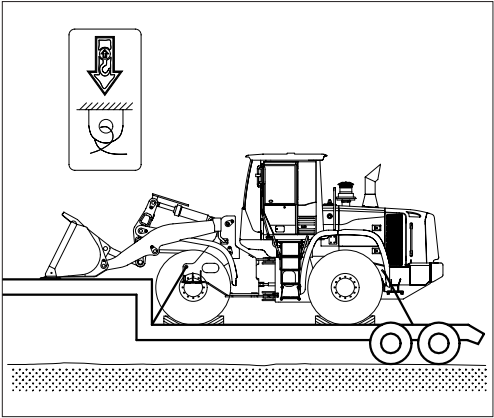
If the engine stops on a slope, press the parking brake switch immediately and lower the work equipment to stop the machine.

(4) Precautions when traveling

Do not travel a long distance at high speed. It may overheat tires and cause premature damage. If it is necessary to travel a long distance at high speed, observe the following.

- ① Comply with the regulations concerning this machine to ensure safety.
- ② Do the pre-inspection before starting off.
- ③ As the optimum air pressure of tire and optimum driving speed is different according to the kinds of tires and road conditions, consult Hyundai dealer or tire distributor.
- ④ Check the air pressure of tire before driving.
- ⑤ After 1 hour driving, stop for 30 minutes to check any abnormality of tires and other parts, and level of oil and coolant.
- ⑥ Travel with the bucket empty.

6) Block the tires and fix firmly with wire rope or chain to prevent the machine from moving during transportation.



2) PIPE AND HOSE (FLARE type)

Thread size	Width across flat (mm)	kgf · m	lbf · ft
1/4"	19	4	28.9
3/8"	22	5	36.2
1/2"	27	9.5	68.7
3/4"	36	18	130
1"	41	21	152
1-1/4"	50	35	253

3) PIPE AND HOSE (ORFS type)

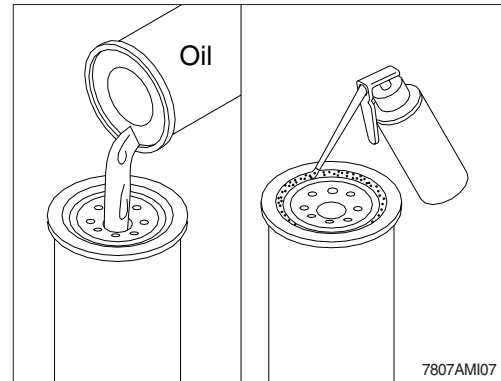
Thread size	Width across flat (mm)	kgf · m	lbf · ft
9/16-18	19	4	28.9
11/16-16	22	5	36.2
13/16-16	27	9.5	68.7
1-3/16-12	36	18	130
1-7/16-12	41	21	152
1-11/16-12	50	35	253

4) FITTING

Thread size	Width across flat (mm)	kgf · m	lbf · ft
1/4"	19	4	28.9
3/8"	22	5	36.2
1/2"	27	9.5	68.7
3/4"	36	18	130
1"	41	21	152
1-1/4"	50	35	253

(6) Apply a light film of lubricating oil to the gasket sealing surface before installing the filter.

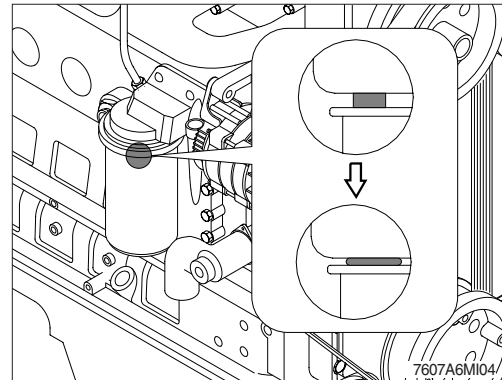
※ **Fill the filter with clean lubricating oil.**



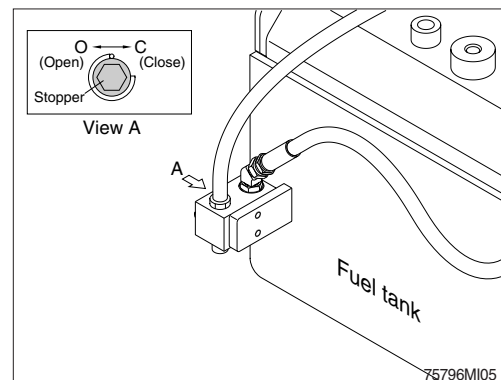
(7) Install the filter to the filter head.

Tighten the filter until the gasket contacts the filter head surface.

※ **Mechanical over-tightening may distort the threads or damage the filter element seal.**

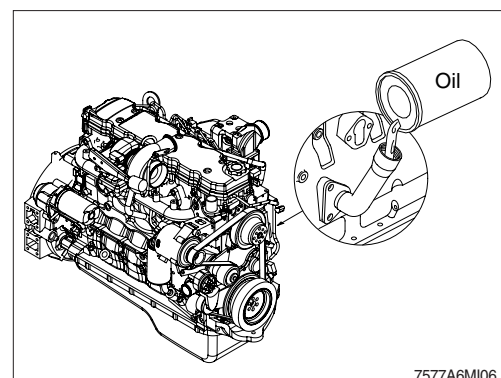


(8) Turn the stopper to the close position.



(9) Fill the engine with clean oil to the proper level.

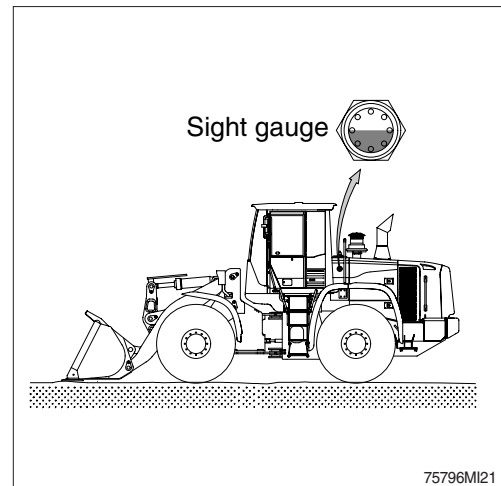
· Quantity : 18 l (4.8 U.S.gallons)



16) HYDRAULIC OIL CHECK

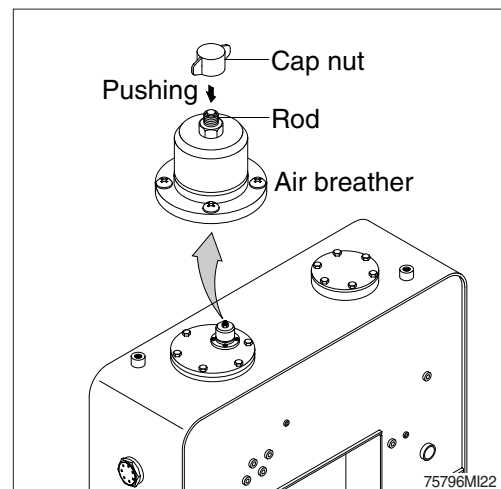
- (1) Lower the bucket on the ground at a flat location as in the illustration.
Stop the engine and then leave for about 5 minutes.
- (2) Check the oil level at the sight gauge. The sight gauge is located on the left side of the hydraulic oil tank.
- (3) The sight gauge should indicate the middle position.

※ **Add hydraulic oil, If necessary.**



17) FILLING HYDRAULIC OIL

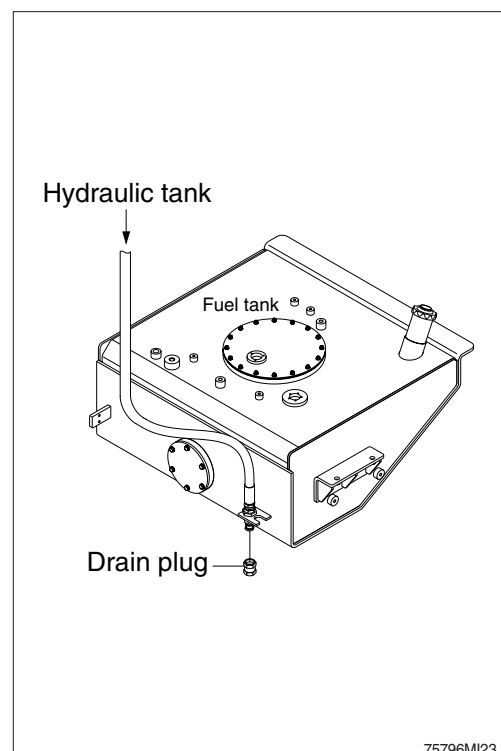
- (1) Stop the engine to the position of level check.
- (2) Rotate the cap nut counter-clockwise by hand and push the rod to release the air pressure.
- (3) Remove the breather on the top of oil tank and fill the oil to the specified level.
- (4) Start engine after filling and operate the work equipment several times.
- (5) Check the oil level at the level check position after engine stops.



18) CHANGE THE HYDRAULIC OIL

- (1) Lower the bucket on the ground extend the bucket cylinder to the maximum.
- (2) Loosen the cap and relieve the pressure in the tank by pushing the top of the air breather.
- (3) Prepare a suitable container.
- (4) To drain the oil loosen the drain plug at the fuel tank block.
- (5) Tighten the drain plug.
- (6) Fill proper amount of recommended oil.
- (7) Put the breather in the right position.
- (8) Start engine and run continually. Release the air by full stroke of control lever.

※ **The oil must be free of bubbles. If bubbles are present in the oil, air is entering the hydraulic system. Inspect the suction hoses and hose clamps.**



33) LUBRICATION

(1) Supply grease through the grease nipple, using grease gun.

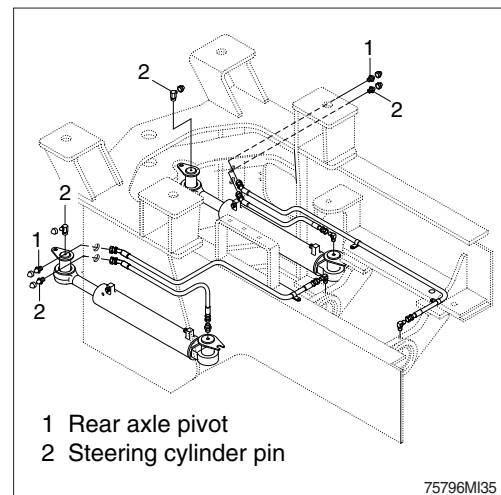
(2) After lubricating, clean off spilled grease.

▲ Press the parking brake switch and fix front and rear frames using the safety lock bar.

▲ Set the work equipment in a stable position and turn the hydraulic safety lock valve into the lock position.

(3) Rear axle pivot : 2EA

(4) Steering cylinder pin : 4EA

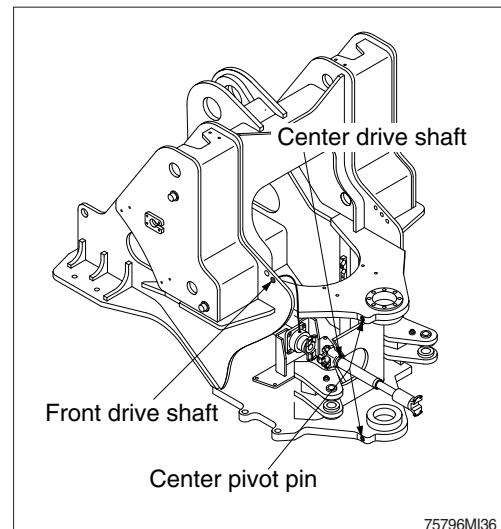


(5) Center pivot pin : 2EA

(6) Drive shaft

- Front (flange bearing) : 1EA

- Center (slip yoke) : 2EA



TROUBLESHOOTING GUIDE

1. ENGINE

※ This guide is not intended to cover every conditions, however many of the more common possibilities are listed.

Trouble	Service	Remark
Engine oil pressure lamp fails to go off immediately after the engine is started.	<ul style="list-style-type: none"> · Add the oil to the specified level. · Replace the oil filter. · Check oil leakage from the tube or the joint. 	
Steam is emitted from the top part of the radiator (The pressure valve). Engine coolant temperature gauge indicates red range.	<ul style="list-style-type: none"> · Supply the cooling water and check leakage. · Adjust fan belt tension. · Wash out inside of cooling system. · Clean or repair the radiator fin. · Check the thermostat. · Check the engine coolant temperature gauge. · Tighten the radiator cap firmly or replace the gasket of it. 	
Engine does not start when the starting motor is turned over.	<ul style="list-style-type: none"> · Add fuel · Repair where air is inhaled into fuel system. · Check the injection pump or the nozzle. · In cold weather, check if fuel warmer system is working normal. · Check the valve clearance. 	Refer to the pages 4-5.
Exhaust gas is white or blue.	<ul style="list-style-type: none"> · Adjust to specified oil quantity. · Replace with specified fuel. 	
Exhaust gas occasionally turns black.	<ul style="list-style-type: none"> · Clean or replace the air cleaner element. · Check the nozzle. · Check engine compression pressure. · Check or replace the turbocharger. 	
Combustion noise occasionally changes to breathing sound.	<ul style="list-style-type: none"> · Check the nozzle. · Check the injection pump. 	
Unusual combustion noise or mechanical noise.	<ul style="list-style-type: none"> · Check with specified fuel. · Check overheating. · Check the muffler. · Adjust valve clearance. 	

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