

CONTENTS

Foreword -----	0-1	5. TRANSPORTATION	
Before servicing this machine -----	0-2	1. Road traveling -----	5-1
Table to enter S/No and distribution -----	0-3	2. Preparation for transportation -----	5-2
EC regulation approved -----	0-4	3. Loading the machine -----	5-3
Safety labels -----	0-5	4. Fixing the machine -----	5-4
Guide(Direction, S/No, Symbol) -----	0-12	5. Loading and unloading by crane -----	5-6
		6. Towing the machine -----	5-7
1. SAFETY HINTS		6. MAINTENANCE	
1. Before operating the machine -----	1-1	1. Instructions -----	6-1
2. During operating the machine -----	1-5	2. Tightening torque -----	6-5
3. During maintenance -----	1-14	3. Specification of fuel, coolant and lubricants -----	6-8
4. Parking -----	1-18	4. Maintenance check list -----	6-10
2. SPECIFICATIONS		5. Maintenance chart -----	6-13
1. Major components -----	2-1	6. Service instruction -----	6-15
2. Specifications -----	2-2	7. Electrical system -----	6-45
3. Weight -----	2-5	8. Air conditioner and heater -----	6-48
4. Specification for major components -----	2-6		
3. CONTROL DEVICES		7. TROUBLESHOOTING GUIDE	
1. Cab devices -----	3-1	1. Engine -----	7-1
2. Cluster -----	3-2	2. Electrical system -----	7-2
3. Switches -----	3-13	3. Power train system -----	7-3
4. Control device -----	3-18	4. Hydraulic system -----	7-4
5. Air conditioner and heater -----	3-20		
6. Others -----	3-23	8. INDEX -----	8-1
4. OPERATION			
1. Suggestion for new machine -----	4-1		
2. Check before starting the engine -----	4-2		
3. Starting and stop the engine -----	4-3		
4. Warming-up operation -----	4-6		
5. Operation of the working device -----	4-7		
6. Traveling of the machine -----	4-8		
7. Efficient working method -----	4-13		
8. Adjustment of the work equipment -----	4-20		
9. Operation in the special work sites -----	4-22		
10. Storage -----	4-24		

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



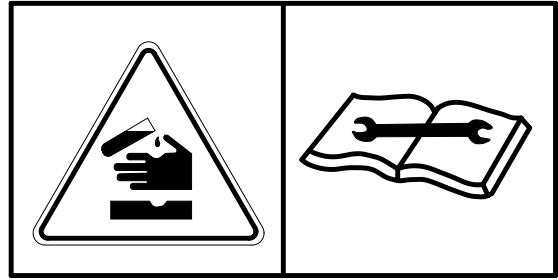
- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

15) **BATTERY**(Item 24)

This warning label is positioned on the battery box.

- ▲ **Electrolyte containing sulfuric acid cause severe burns. Avoid being in contact with skin, eyes or clothes. In the event of accident flush with sufficient water, call a physician immediately.**
- ※ **Maintain the electrolyte at the recommended level. Add distilled water to the battery only when starting up, never when shutting down. With electrolyte at proper level, less space may cause the gases to be accumulated in the battery.**



21070FW05

16) **HYDRAULIC OIL LUB**(Item 25)

This warning label is positioned on the top of the hydraulic oil tank.

Do not mix with different brand oils.

- ▲ **Never open the filler cap while engine running or at high coolant temperature.**
- ▲ **Loosen the cap slowly and release internal pressure completely.**



21070FW04

17) **STAY FIX**(Item 28)

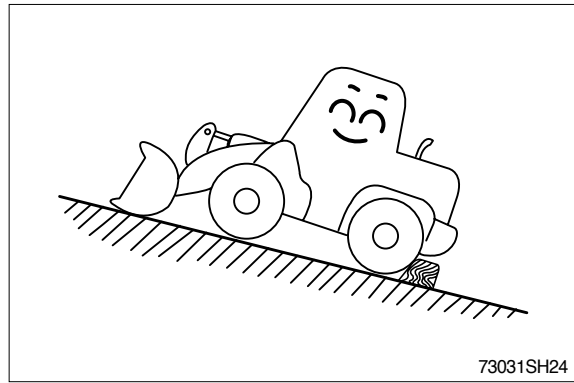
The warning label is positioned on the engine side door.

- ▲ **Be sure to support the stay when the door needs to be opened.**
- ▲ **Be careful that the opened door may be closed by the external or natural force like strong wind.**

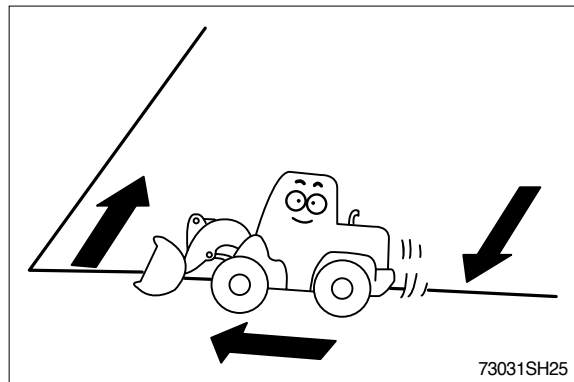


21070FW14

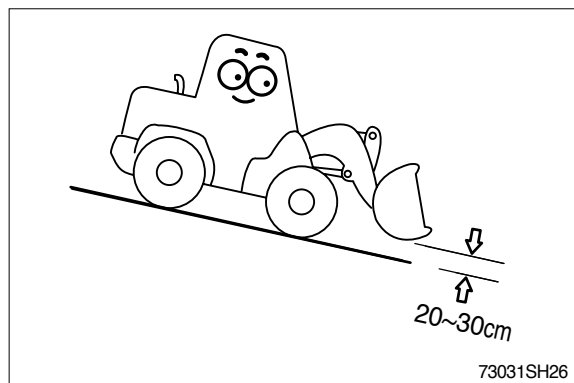
Avoid parking and stopping on a slope.
Lower the bucket to the ground and block the tire when parking.



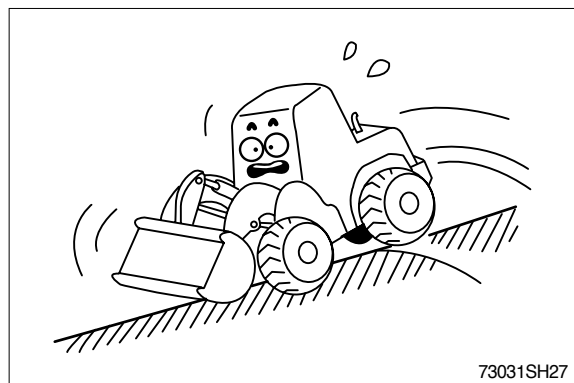
Avoid traveling in a cross direction on a slope as it can cause the danger of rolling over and sliding.



Traveling on the slope is dangerous.
Be sure to operate slowly when driving down a slope and maintain the bucket at a height of 20~30cm(1ft) above the ground so that it can be used as brake in an emergency.

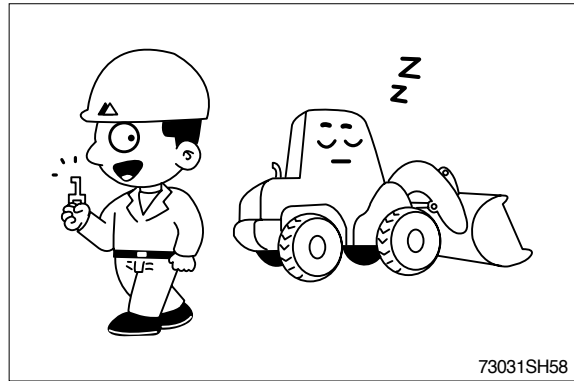


Steering of the machine while traveling on a slope is dangerous.
When an inevitable turning of direction is required, turn on the flat and solid ground.

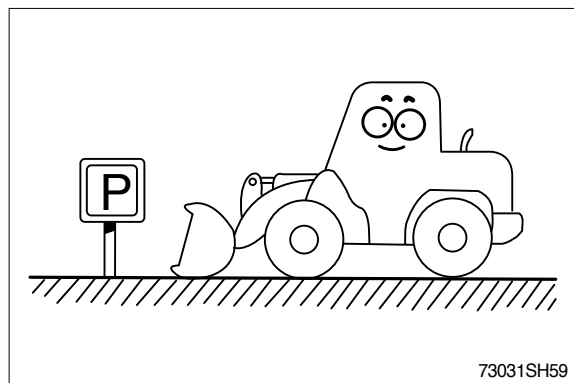


4. PARKING

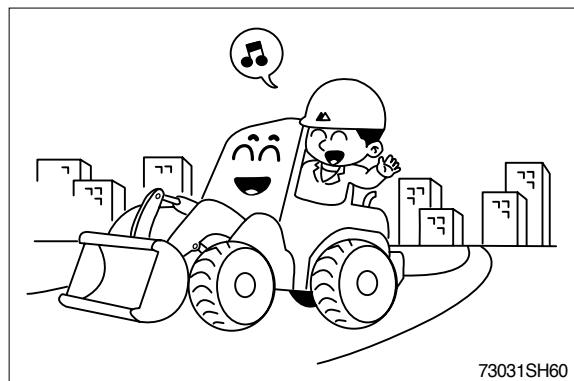
When leaving the machine lower the bucket to the ground completely and put the safety lever at parking position then remove the key. Lock the cab door.



Park the machine in the flat and safe place.



Hope you can work easily and safely observing safety rules.
For safe operation, observe all safety rules.

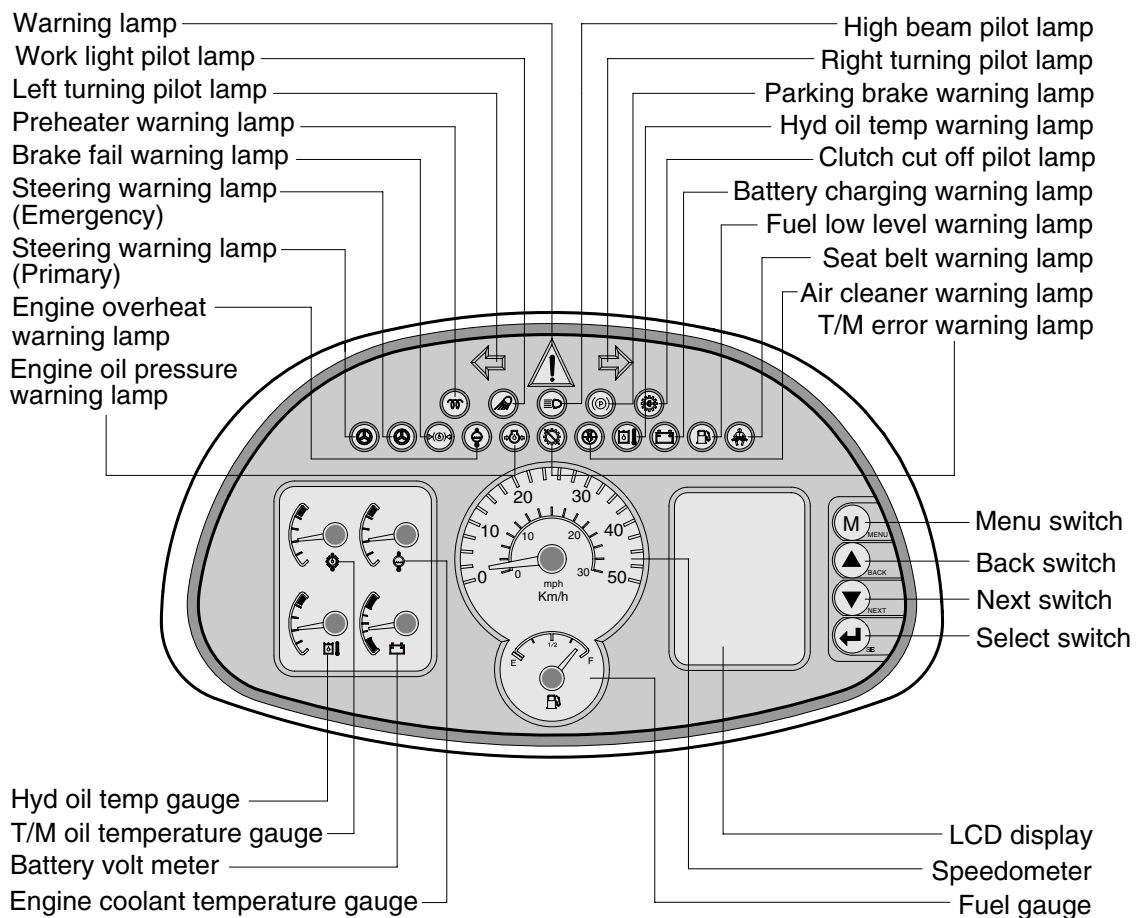


2. CLUSTER

The gauges panel consists of gauges and monitors as shown below, to warn the operator in case of abnormal machine operation or conditions for the appropriate operation and inspection.

- Gauges : Indicate operating status of the machine.
- Warning lamp : Indicate abnormality of the machine.
- Pilot lamp : Indicate operating status of the machine.
- ※ **The monitor installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, MAINTENANCE.**
- ※ **When the monitor provides a warning immediately check the problem, and perform the required action.**

■ Cluster(Machine serial no. ; -#1032)

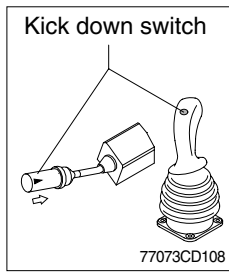


77073CD02

Description	Code	Meaning	Remark
Electrical system	010	Power input voltage low	Below 18V
	011	Power input voltage high	Above 38V
	012	Alternator voltage low	Below 5V
	013	Alternator voltage high	Above 36V
	014	Buzzer circuit open or short to ground	
	015	Buzzer circuit short to power	
Hydraulic system	020	Hydraulic oil temperature sensor open or short to power	
	021	Hydraulic oil temperature sensor short to ground	
Engine system	030	Fuel level sensor open or short to power	
	031	Fuel level sensor short to ground	
	034	Cooling fan driving valve open or short to ground	
	035	Cooling fan driving valve short to power	
T/M system	050	Auto select switch supply power open or short to power	
	051	Auto select switch supply power short to ground	
	052	Clutch cutoff supply power open or short to power	
	053	Clutch cutoff supply power short to ground	
Steering system	060	Emergency steering relay open or short to ground	Option
	061	Emergency steering relay short to power	Option
Communication	070	MCU communication error	
	071	TCU communication error	
	072	ECM communication error	

MCU : Machine control unit TCU : Transmission control unit ECM : Engine control module

14) KICK DOWN SWITCH



(1) Manual mode

It is effective 2nd speed to 1st speed only and recover to 2nd speed quickly when push the switch one more time.

(2) Automatic mode

① Mode 1(Down/Up)

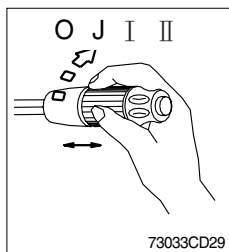
It shifts down quickly from current gear to one step lower speed by pushing the switch and recover to original speed quickly when push the switch one more time.

② Mode 2(Down)

It shifts down from current gear to one step lower speed when push the switch every time.

※ Refer to page 3-10,14.

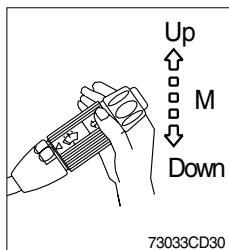
15) MULTI FUNCTION SWITCH



(1) Front wiper and washer switch

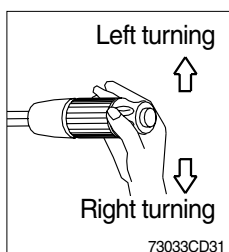
- ① When the switch is in J position, the wiper moves intermittently.
- ② When placed in I or II position, the wiper moves continuously.
- ③ If you push the grip of the lever, washer liquid will be sprayed and the wiper will be activated 2-3 times.

※ Check the quantity of washer liquid in the tank. If the level of the washer liquid is LOW, add the washer liquid (In cold, winter days) or water. The capacity of the tank is 1 liter.



(2) Dimmer switch

- ① This switch is used to turn the head lights direction.
- ② Switch positions
 - Up : To flash for passing
 - Middle : Head lights low beam ON
 - Down : Head lights high beam ON
- ③ If you release the switch when it's in up position, the switch will return to middle.

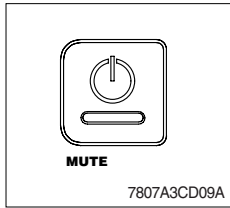


(3) Turning switch

- ① This switch is used to warn or signal the turning direction of the machine to other vehicles or equipment.
- ② Push the lever up for turning left, pull the lever down for turning right.

■ AUDIO

(1) Power and mute button



① POWER ON/OFF

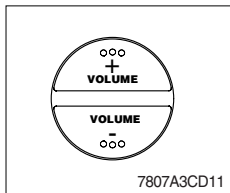
Press to switch on the set. Press for more than 2 seconds to switch off the set.

② MUTE(Silence)

Short press key to mute or cancel the mute(silence).

※ The silence period may be interrupted by ALARM announcement or traffic announcement messages(if TA is switched on).

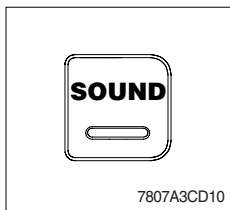
(2) Volume button



① Press the volume button up/down to adjust the volume.

Please make sure you can still hear the traffic(horns, sirens..).

(3) Sound button



① SOUND

Whether you listen to Jazz, Vocal, Pop, Classic or Rock music, the SOUND button is the perfect setting for your choice.

- Press SOUND then the sound button to select BASS-Treb for your own sound style, or adjust the settings with the volume up/down buttons to select one of the pre define sound styles:

- BASE -TRE : Your own settings of bass and treble.
- FLAT : Original
- JAZZ : Jazz music
- VOCAL : Speech
- POP : Pop music
- CLASSIC : Classical music
- ROCK : Rock music

② AUDIO SETTING

- Press SOUND to select desired audio mode.
- Adjust the settings with the volume up/down buttons :

- Sound style : BASS-TRE, FLAT, JAZZ, VOCAL, POP, CLASSIC, ROCK
- BASS : Low notes
- TREBLE : High notes
- BALANCE : Left-right
- FADER : Rear-front
- LOUD : OFF, LOW, MID, HIGH

- Press the volume button to adjust the selected audio mode. After 5 seconds the display goes back to the last mode of operation. Adjustment of Bass and Treble settings is only possible when BASS-TRE is selected as the sound style.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

2. CHECK BEFORE STARTING THE ENGINE

- 1) Make sure that the steering frame lock bar is stored in the unlocked position.

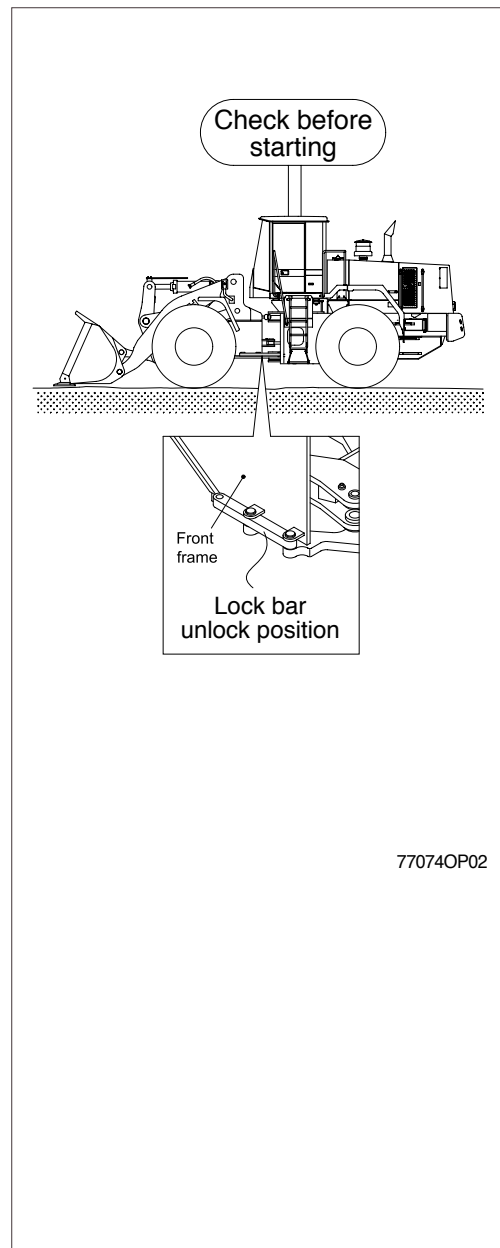
▲ The steering frame lock bar must be removed in order to steer the machine.

- 2) Look around the machine and under the machine to check for loose nut or bolts, collection of dirt, or leakage of oil, fuel or coolant and check the condition of the work equipment and hydraulic system. Check also loose wiring, and collection of dust at places which reach high temperature.

Refer to the daily check on the chapter 6, Maintenance.

- 3) Adjust seat to fit the contours of the operator's body for the pleasant operation.
- 4) Make sure that the machine is equipped with a lighting system that is adequate for the job conditions. Ensure that all lights are in proper working condition.
- 5) Adjust the rear view mirror.
- 6) Make sure that there are no personnel in the area before you start the engine. Make sure that there are no personnel in area before you move the machine. Make sure that there are no personnel on the machine, underneath the machine, or around the machine.

▲ If a warning tag is attached to the starting switch or to the controls, do not start the engine. Also, do not move any controls.



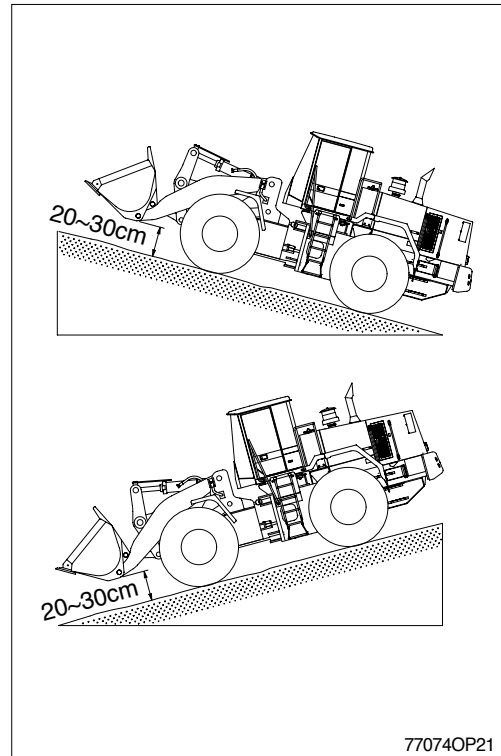
77074OP02

2) TRAVELING ON A SLOPE

- (1) Never travel down a slope in neutral.
- (2) Lower the bucket 20-30cm(1ft) to the ground so that it can be used as a brake in an emergency.
- (3) If the machine starts to slide or loses stability, lower the bucket immediately and brake the machine.
- (4) When parking on a slope, use the bucket as a brake and place blocks behind the tires to prevent sliding.

Machine cannot travel effectively on a slope when the oil temperature is low. Do the warming-up operation when it is going to travel on a slope.

Be careful when working on slopes. It may cause the machine to lose its balance and turn over.



77074OP21

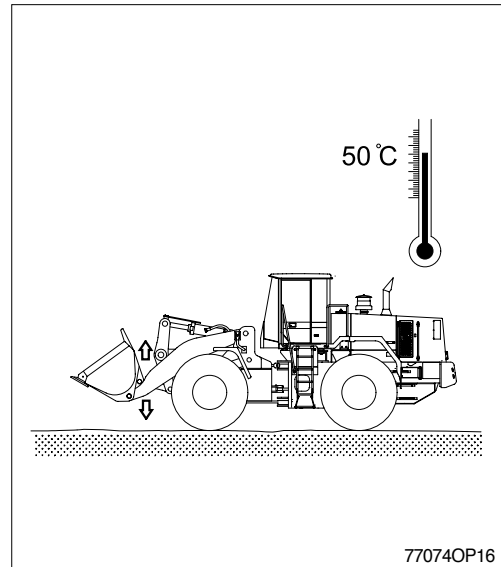
9. OPERATION IN THE SPECIAL WORK SITES

1) OPERATION THE MACHINE A COLD WEATHER

- (1) Use proper engine oil and fuel for the weather.
- (2) Fill the required amount of antifreeze in the coolant.
- (3) Refer to the starting engine in cold weather.
Start the engine and extend the warming-up operation.
- (4) Be sure to open the heater cock when using the heater.
- (5) Always keep the battery completely charged.

Discharged batteries will freeze more easily than fully charged.

- (6) Clean the machine and park on the wood plates.



2) OPERATION IN SANDY OR DUSTY WORK SITES

- (1) Inspect air cleaner element frequently. Clean or replace element more frequently, if warning lamp comes ON and buzzer sounds simultaneously, regardless of inspection period.
- (2) Inspect radiator frequently, and keep cooling fins clean.
- (3) Prevent sand or dust from getting into fuel tank and hydraulic tank during refilling.
- (4) Prevent sand or dust from penetrating into hydraulic circuit by tightly closing breather cap of hydraulic oil tank. Replace hydraulic oil filter frequently.
- (5) Keep all lubricated part, such as pins and bushings, clean at all times.
- (6) If the air conditioner and heater filters clogged, the heating or cooling capacity will drop. Clean or replace the filters more frequently.

6. TOWING THE MACHINE

▲ Personal injury or death could result when towing a disabled machine incorrectly.

▲ Block the machine to prevent movement before releasing the brakes. The machine can roll free if it is not blocked.

Except for an emergency, do not tow this machine. If it is inevitable to tow this machine, observe the following.

1) GENERAL

(1) Parking brake cylinder of the machine is operated by the spring force and released by hydraulic pressure.

If the engine does not operate, the brake will be operated to stop the machine.

(2) When the machine is towed move it for a repair to nearby place at the speed less than 2km/hr(1.2mph). Transport it on a trailer, if it has to be moved for a long distance.

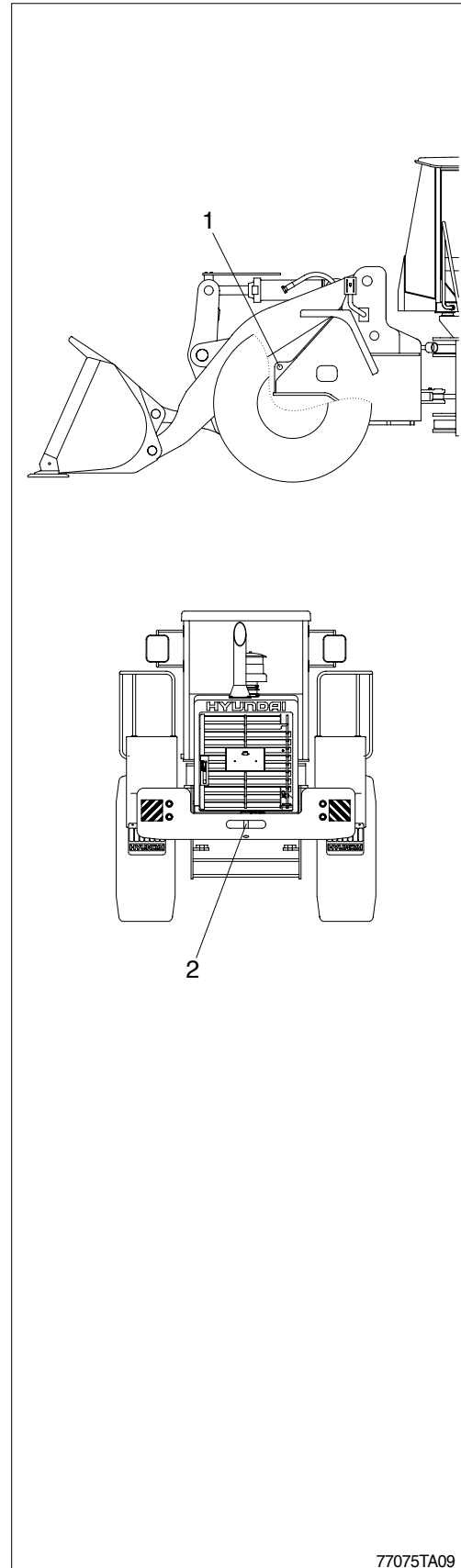
(3) When the steering device and the brake of the machine to be towed can not be operated, transport by trailer.

▲ Be careful when towing.

▲ Be careful that the brake will not work if there is any disorder in the braking system.

(4) When you tow the machine from the front, attach the tow line to the tow eyes on the front frame(1). When you tow the machine from the rear, attach the tow line to the towing pin(2).

(5) Do not use a chain for pulling a disabled machine. A chain link can break. This may cause personal injury. Use a wire rope cable with ends that have loops or rings. Place an observer in a safe position in order to watch the pulling procedure. The observer can stop the procedure, if necessary. The procedure should be stopped if the cable starts to break. Also, stop the procedure if the cable starts to unravel. Stop pulling whenever the towing machine moves without moving the towed machine.



77075TA09

3. SPECIFICATION OF FUEL, COOLANT AND LUBRICANTS

1) NEW MACHINE

New machine used and filled with following lubricants.

Description	Specification
Engine oil	SAE 15W-40(API CH-4)
Hydraulic oil	ISO VG46(ISO VG32, ISO VG68 based on the ambient temperature)
Transmission oil	SAE 10W-30/15W-40
Axle oil	SAE 85W-90 with LS-ADDITIVE(API GL-5)
Grease	Lithium base grease NLGI No. 2
Fuel	ASTM D975-No. 2
Coolant	Mixture of 50% ethylene glycol base antifreeze and 50% water

- SAE : Society of Automotive Engineers
- API : American Petroleum Institute
- ISO : International Organization for Standardization
- NLGI : National Lubricating Grease Institute
- ASTM : American Society of Testing and Material

4) FLUSHING AND REFILLING OF RADIATOR

(1) Change coolant

⚠ **Avoid prolonged and repeated skin contact with used antifreeze. Such prolonged repeated contact can cause skin disorders or other bodily injury.**

Avoid excessive contact-wash thoroughly after contact.

Keep out of reach of children.

⚠ **Protect the environment : Handling and disposal of used antifreeze can be subject to federal, state, and local law regulation.**

Use authorized waste disposal facilities, including civic amenity sites and garages providing authorized facilities for the receipt of used antifreeze.

If in doubt, contact your local authorities for guidance as to proper handing of used antifreeze.

⚠ **Wait until the temperature is below 50°C (120°F) before removing the coolant system radiator cap. Failure to do so can cause personal injury from heated coolant spray.**

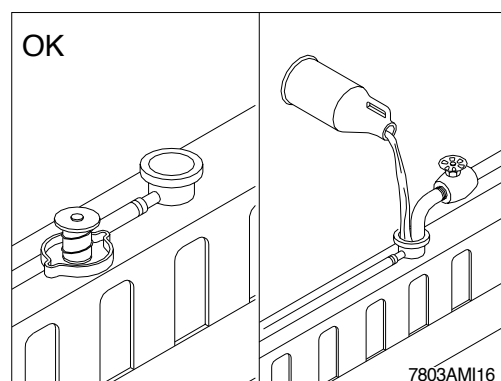
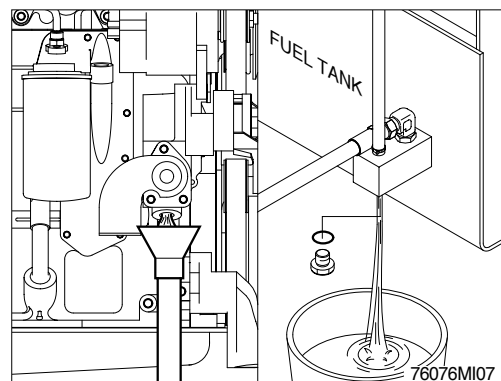
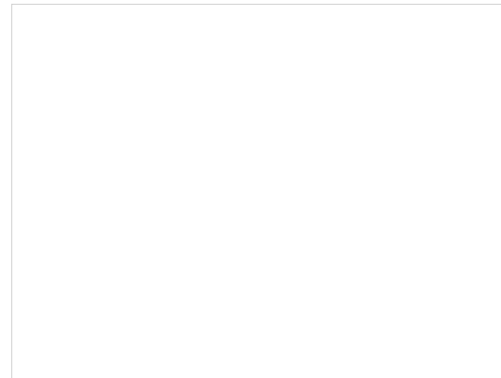
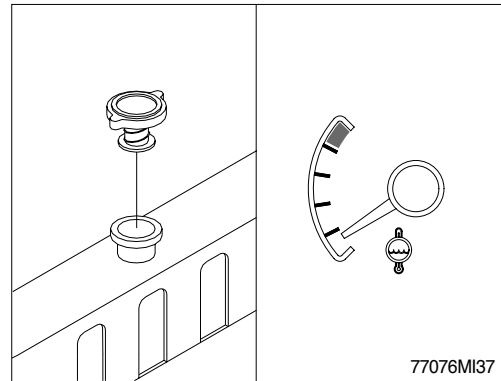
Drain the cooling system by removing the plug on the fuel tank and removing the plug in the bottom of the water inlet.

A drain pan with a capacity of 45 liters (11.9 U.S.gallons) will be adequate in most applications.

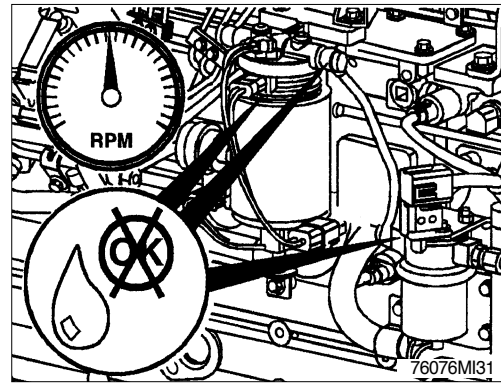
(2) Flushing of cooling system

Fill the system with a mixture of sodium carbonate and water(or a commercially available equivalent).

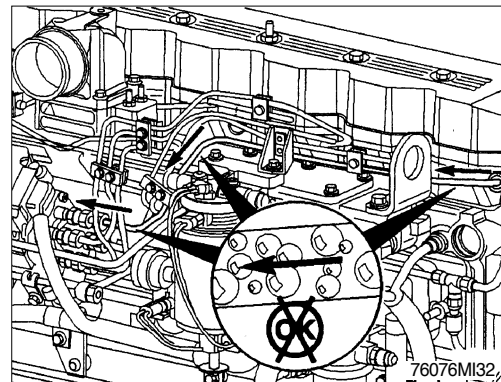
- ※ **Use 0.5kg (1.0pound) of sodium carbonate for every 23 liters(6.0 U.S. gallons) of water.**
- ※ **Do not install the radiator cap. The engine is to be operated without the cap for this process.**



Since the fuel lift pump provides a positive pressure through the fuel filter and supply line to the fuel injection pump, loose connections or defective seals should show as a fuel leak, **not** as an air leak.



A stuck-open injector can also blow combustion gas back into the pump and cause air to be present in the overflow. If the engine seems to be misfiring or running rough, break all the injector supply lines loose at the pump end. Crank the engine, and observe the lines. If combustion gas seems to be blowing back through the line, the injector is stuck open.



Use two wrenches when loosening the lines at the fuel pump; one to hold the delivery valve and one to loosen the line.

- Wrench size : 19mm
- Tightening torque : 2.45kgf · m(18lbf · ft)

(2) Venting the high pressure lines

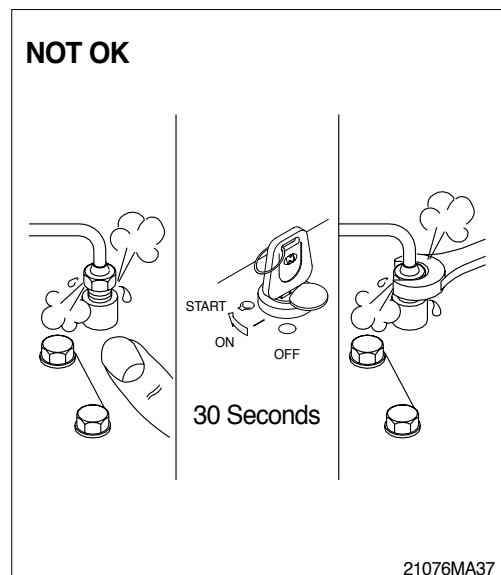
▲ The pressure of the fuel in the line is sufficient to penetrate the skin and cause serious bodily harm.

Loosen the fittings at the cylinder head and crank the engine to allow entrapped air to bleed from the line. Tighten the fittings.

- Wrench size : 19mm
- Torque : 3.9kgf · m(28lbf · ft)

Start the engine and vent one line at a time until the engine runs smoothly.

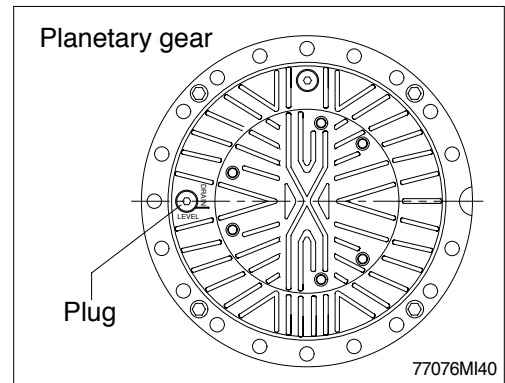
▲ Do not bleed a hot engine as this can cause fuel to spill onto a hot exhaust manifold, creating a danger of fire.



- (4) If the oil level is below the plug hole, supply oil through a plug hole.

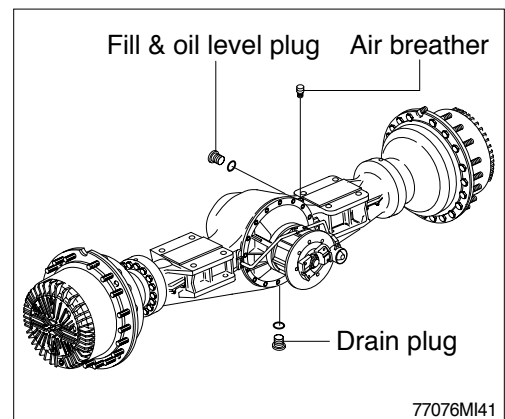
⚠ When checking the oil level, press the parking brake switch and fix front and rear frames using the safety lock bar.

**⚠ As the machine is hot after operation, wait until the temperature has dropped.
Set the plug of planetary gear in parallel to the ground.**

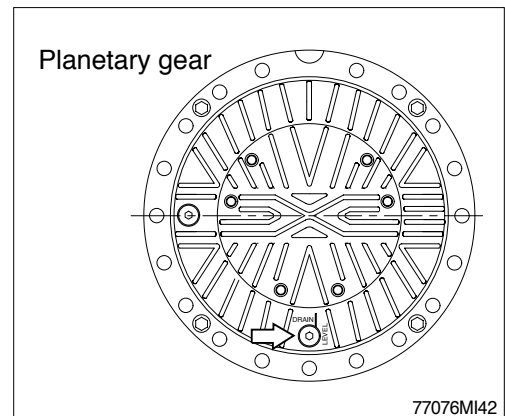


30) CHANGE THE AXLE OIL

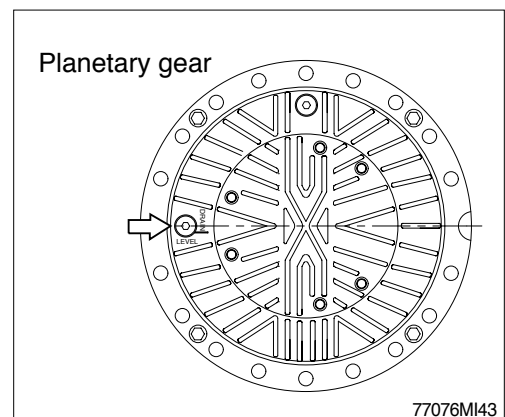
- (1) Place a case under drain plug to catch oil.
- (2) Remove the air breather to relieve internal pressure.
- (3) Drain oil the differential gear.
Remove the refilling plug and remove the drain plug to drain oil off.
Wash drain plug and install it.



- (4) Drain oil planetary gear.
Drain oil by removing drain plug.
The drain plug should be facing the ground.



- (5) After draining, put the drain plug of planetary gear in parallel to the ground.



CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

- Thank you very much for reading the preview of the manual.
- You can download the complete manual from: www.heydownloads.com by clicking the link below



- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL