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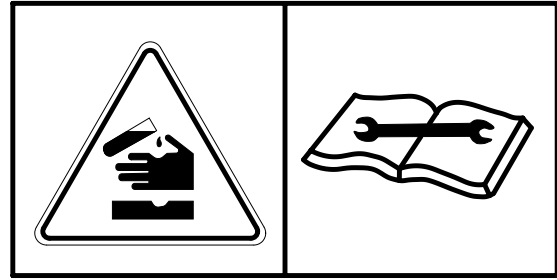
16) BATTERY (Item 22)

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

17) HYDRAULIC OIL LUB (Item 23)

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.**



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18) STAY FIX (Item 26)

The warning label is positioned on the engine side door.

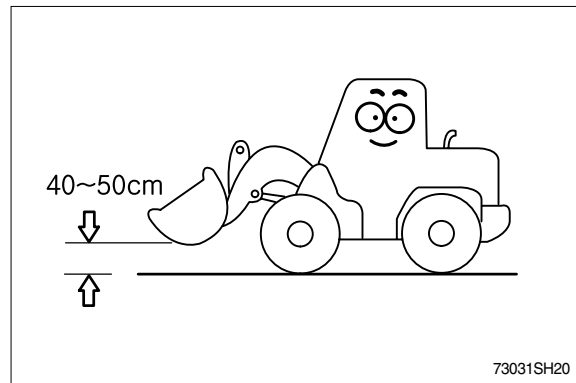
⚠ **Be sure to support the stay when the door needs to be opened.**

⚠ **Be careful that the opened door may be closed by the external or natural force like strong wind.**

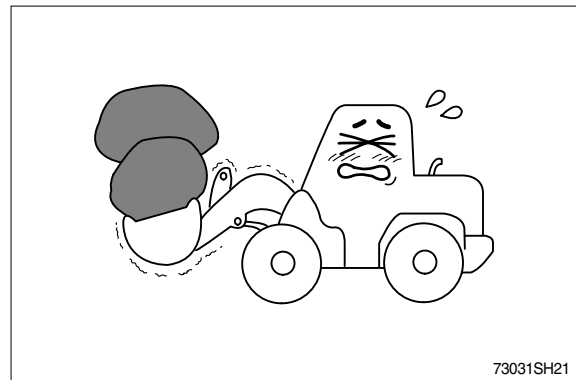


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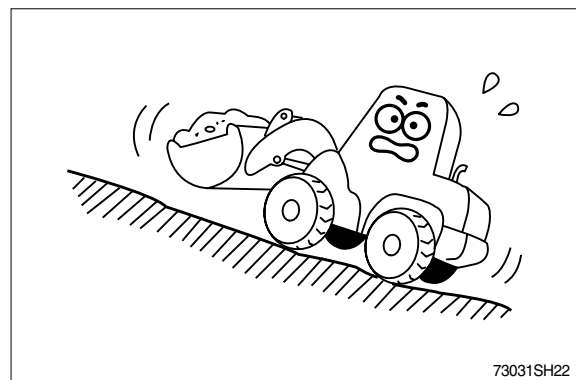
While traveling on public roads, lift the bucket 40~50cm above the ground. Do not drive with the bucket loaded.



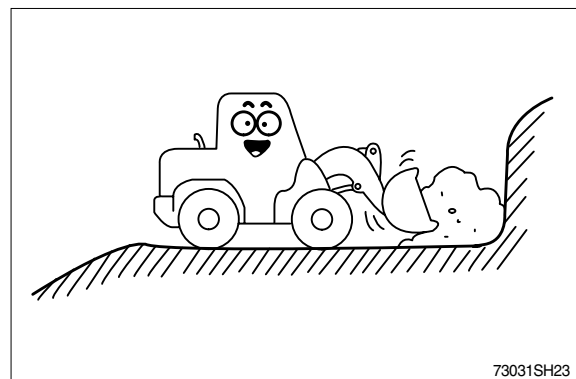
When the bucket is loaded, avoid sudden swinging or starting. Overloading is dangerous. Make sure the load does not exceed the permissible level.



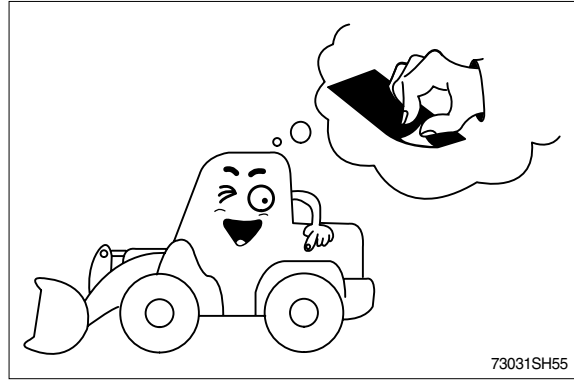
The operation on a slope is dangerous. Avoid operating the machine on a slope of over 10 degree.



Operate the machine after making ground flat when operation is required on a slope.



The anti-slip protection should be replaced if they have become worn or have been printed over.



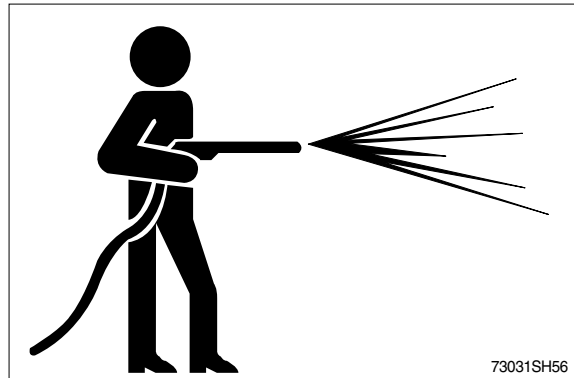
KEEP THE MACHINE CLEAN

Spilled oil or grease, or scattered tools or broken pieces are dangerous because they may cause you to slip or trip.

Always keep your machine clean and tidy.

If water gets into the electrical system, there is danger that the machine may not move or may move unexpectedly.

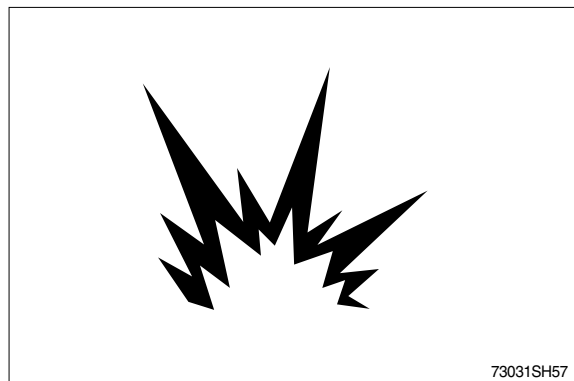
Do not use water or steam to clean the sensors, connectors, or the inside of the operator's compartment.



HANDLING TIRES

If tires are not used under the specified condition, they may overheat and burst or be cut and burst by sharp stones on rough road surfaces. This may lead to serious injury or damage.

To maintain safety, always keep to the suitable conditions : See page 6-29, 30.













6) CYLINDER

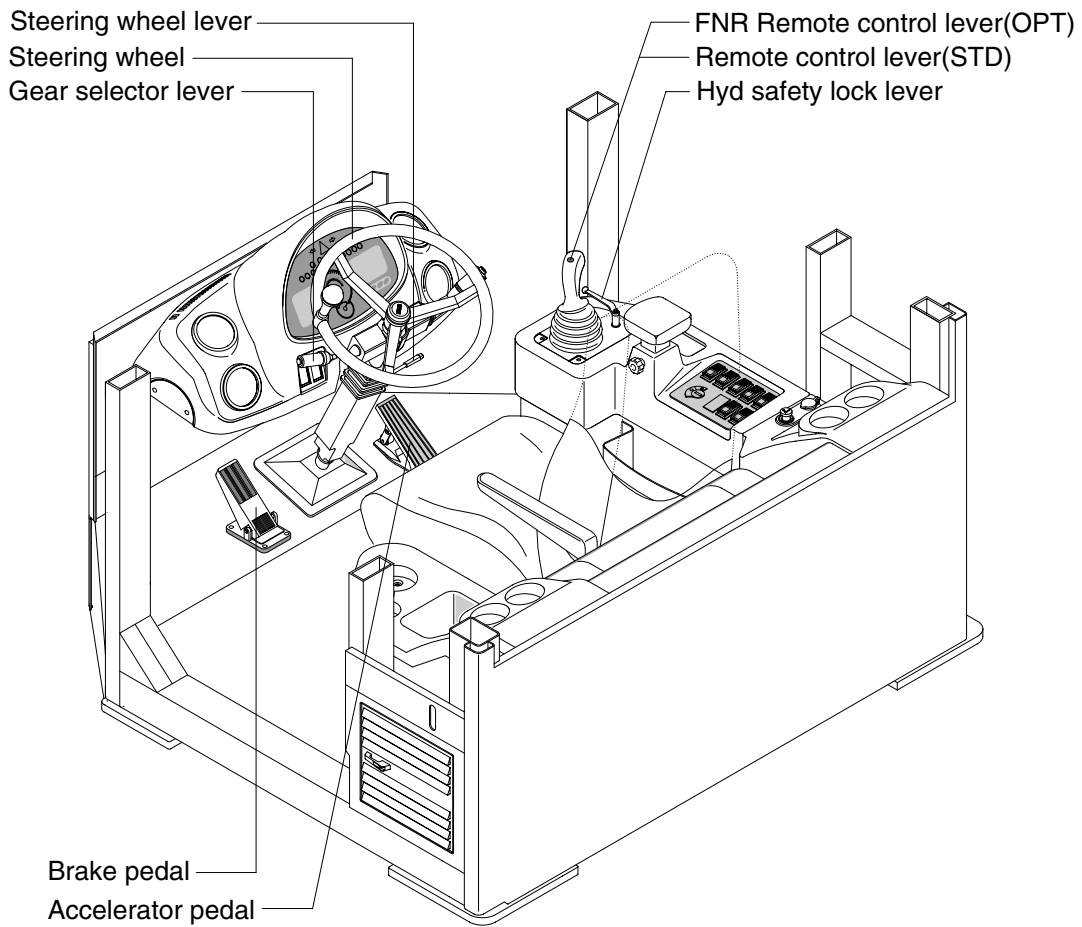
Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	∅ 160 × ∅ 90 × 757mm
Bucket cylinder	Bore dia × Rod dia × Stroke	∅ 180 × ∅ 90 × 530mm
Steering cylinder	Bore dia × Rod dia × Stroke	∅ 80 × ∅ 45 × 440mm

7) DYNAMIC POWER TRANSMISSION DEVICES

Item		Specification	
Transmission	Model	ZF 4WG210	
	Type	Converter	Single-stage, single-phase
		Transmission	Full-automatic power shift
	Gear shift	Forward fourth gear, reverse third gear	
	Adjustment	Electrical single lever type, kick-down system	
Axle	Drive devices	4-wheel drive	
	Front	Front fixed location	
	Rear	Oscillation $\pm 12^\circ$ of center pin-loaded	
Wheels	Tires	23.5-25, 20PR(L3)	
Brakes	Travel	Four-wheel, wet-disc type, full hydraulic	
	Parking	Spring applied, hydraulic released brake on front axle	
Steering	Type	Full hydraulic, articulated	
	Steering angle	40° to both right and left angle, respectively	

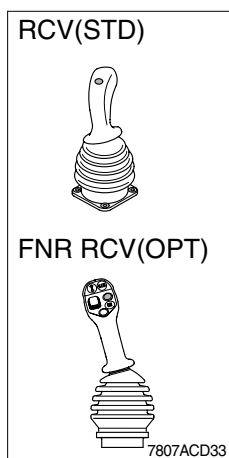
Main group	Sub group		Meaning	Display on LCD
Adjustment 	Unit	MKS	· Choose between metric and inch unit display.	Total 50.7 Km
		ENG		Total 31.5 Mile
	Wiper Intermittence		· When using the intermittent function of wiper motor, it regulates operation time.	
	Alternate RPM		· Regulate idle rpm. · Press  : Adjust idle rpm increments (or decrement) by 25rpm.	-
	Pulse		· Press  : Modification.	-
	AEB		· It controls the disk interval of the transmission, automatically.	ST
	Model		· It is set at the factory, so there's no need to change.	-
	ENG/KOR		· English : Display in English. · Korean : Display in Korean.	-
Display 1/2		· Type 1 : Indicate with the symbol. · Type 2 : Indicate with a letter.	 , 	
Diagnostics 	Machine	Fault code	· Error code display. · Refer to page 3-11.	-
		Monitor	· Hydraulic temperature and battery voltage display. · Press  : Display ON or OFF.	HYD temp 100.6°C Bat Volt 27.5 V
	Engine	Fault code	· Error code display. · Consult a Hyundai dealer to error code.	-
		Monitor	· Engine coolant temperature display. · Press  : Display ON or OFF.	Coolant Temp 57.6°C
	Transmission	Fault code	· Error code display. · Consult a Hyundai dealer to error code.	-
		Monitor	Transmission oil temperature display. · Press  : Display ON or OFF.	Oil Temp 37.6°C
	Version		· Display the controller(MCU) and cluster version.	-

4. CONTROL DEVICE



7707A3CD30

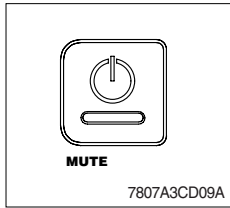
1) REMOTE CONTROL LEVER



- (1) These joystick are used to control the boom and the bucket.
- (2) Refer to operation of working device in chapter 4 at page 4-7.

■ AUDIO

(1) Power and mute button



① POWER ON/OFF

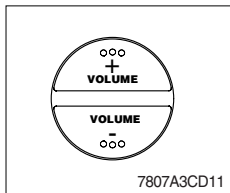
Press to switch on the set. Press for more than 2 seconds to switch off the set.

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).

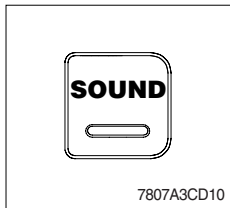
(2) Volume button



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.

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3) STARTING ENGINE IN A COLD WEATHER

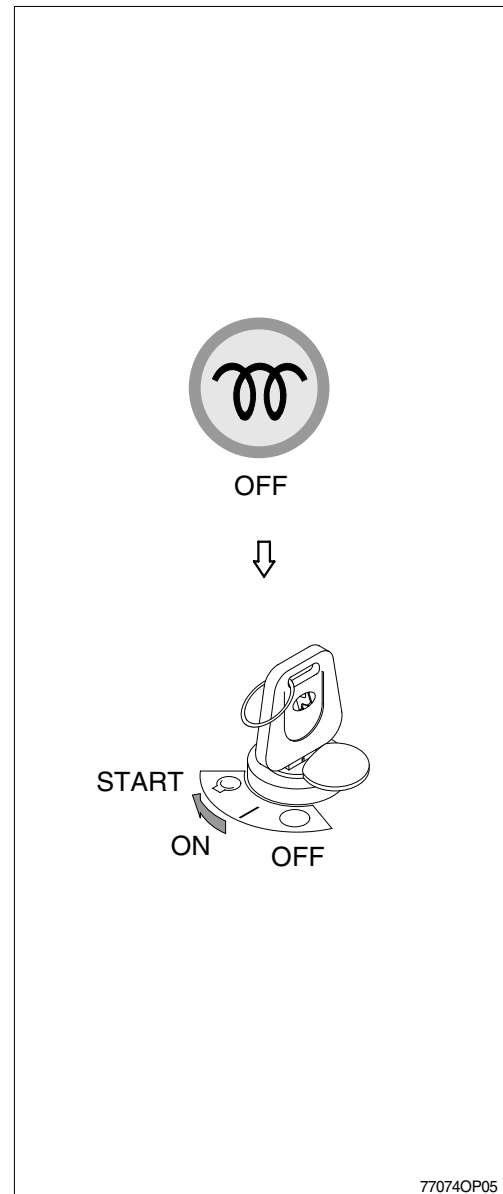
- ※ Sound horn to warn surroundings after checking if there are obstacles in the area.
- ※ Replace the engine oil and fuel referring to recommended oils at page 6-9.
- ※ Fill the anti-freeze solution to the coolant as required.

- (1) Check if the parking brake is locked(With the parking switch ON).
- (2) Check if the gear selector lever is in the neutral position.
- (3) Check if the hydraulic safety lock lever is in the lock position.
- (4) Turn the starting switch to ON position, and wait the preheater pilot lamp OFF.

- ※ When the preheater pilot lamp is turned ON, the preheating function is actuated within 10~45 seconds in accordance with temperature of the air intake manifold.

- (5) Start the engine by turning the starting switch to START position after the preheater warning lamp OFF.
- (6) Release starting switch immediately after starting engine. The starting switch will automatically return to the ON position.

- ※ After engine started, the preheating function is actuated to reduce the white smoke.

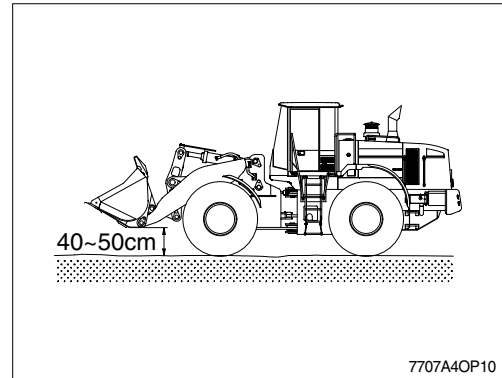


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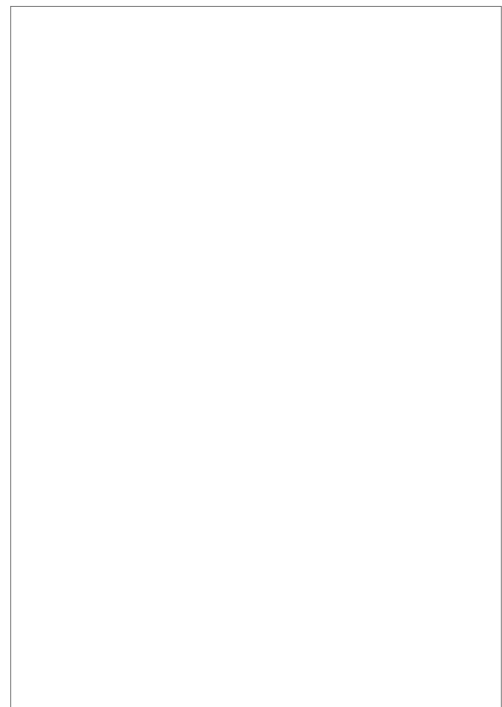
7. EFFICIENT WORKING METHOD

1) GENERAL

- (1) Lift the bucket about 40-50cm(2ft) above the ground to ensure safety and to gain a good range of view.

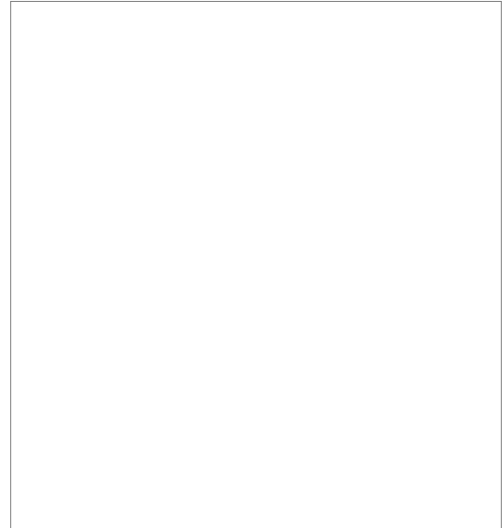


- (2) Clear the jobsite and level the ground.
- (3) Be careful that excessive force is not applied to the bucket.
- (4) When handling hard materials, use bucket teeth or bolt on cutting edge.
- (5) When doing dumping work, put the control lever in the DUMP position, then return it to a former state. Repeat this procedure until the work is finished.
- (6) Position the machine with its back against the wind so that dust does not get into the engine.
- (7) Check if the proper bucket is used for the work.
If the capacity of the bucket exceeds that of the machine, the machine's service life may be shortened.



3) SEA SHORE OPERATION

- (1) Prevent ingress of salt by securely tightening plugs, cocks and bolts of each part.
- (2) Wash machine after operation to remove salt residue.
Pay special attention to electrical parts and hydraulic cylinders to prevent corrosion.
- (3) Inspection and lubrication must be carried out more frequently.
Supply sufficient grease to replace all old grease in bearings which have been submerged in water for a long time.



- (6) Keep the tow line angle to a minimum. Do not exceed a 30 degree angle from the straight ahead position.
 - (7) Quick machine movement could overload the tow line or the tow bar. This could cause the tow line or the tow bar to break. Gradual, steady machine movement will be more effective.
 - (8) Normally, the towing machine should be as large as the disabled machine. Make sure that the towing machine has enough brake capacity, enough weight, and enough power. The towing machine must be able to control both machines for the grade that is involved and for the distance that is involved.
 - (9) You must provide sufficient control and sufficient braking when you are moving a disabled machine downhill. This may require a larger towing machine or additional machines that are connected to the rear of the disabled machine. This will prevent the machine from rolling away out of control.
 - (10) All situation requirements cannot be listed. Minimal towing machine capacity is required on smooth, level surfaces. On inclines or on surfaces in poor condition, maximum towing machine capacity is required.
 - (11) When any towed machine is loaded, this machine must be equipped with a brake system that is operable from the operator compartment.
- ※ **Consult your HYUNDAI dealer for the equipment that is necessary for towing a disabled machine.**

2) WHEN THE ENGINE WORKS

- (1) When the transmission system or steering wheel is workable and the engine is running, **the machine can be towed only for a short distance.**
For example, pull the machine out of mud or pull the machine to side of the road.
- (2) The operator of the towed machine should turn the steering wheel into the direction in which the machine is towed.

2) RECOMMENDED LUBRICANTS

Use only oils listed below or equivalent.

Do not mix different brand oil.

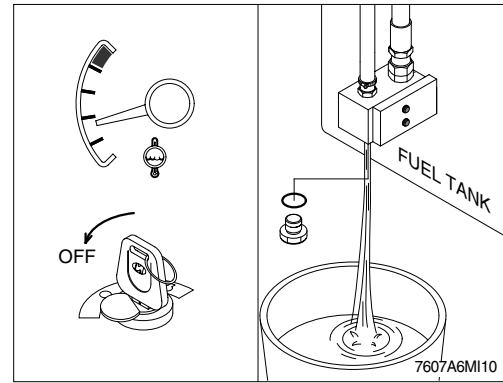
Service point	Kind of fluid	Capacity l (U.S. gal)	Ambient temperature °C (°F)						
			-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil pan	Engine oil	18(4.8)	SAE 30						
			SAE 10W						
			SAE 10W-30						
			SAE 15W-40						
Transmission	Engine oil	32(8.5)	SAE 10W-30						
			SAE 15W-40						
VOLVO axle (-#0293)	Gear oil	Front : 45(11.9) Rear : 40(10.6)	SAE 80W-90LS/API GL-5						
ZF axle (#0294-)	UTTO	Front : 38(10.0) Rear : 31(8.2)	*Refer to below list						
Hydraulic tank	Hydraulic oil	Tank: 150(39.7) System: 260(69)	ISO VG 32						
			ISO VG 46						
			ISO VG 68						
Fuel tank	Diesel fuel	330(87.2)	ASTM D975 NO. 1						
			ASTM D975 NO. 2						
Fitting (Grease nipple)	Grease	As required	NLGI NO. 1						
			NLGI NO. 2						
Radiator	Mixture of antifreeze and water 50 : 50	39(10.3)	Ethylene glycol base permanent type						

- 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
- UTTO : Universal Tractor Transmission Oil

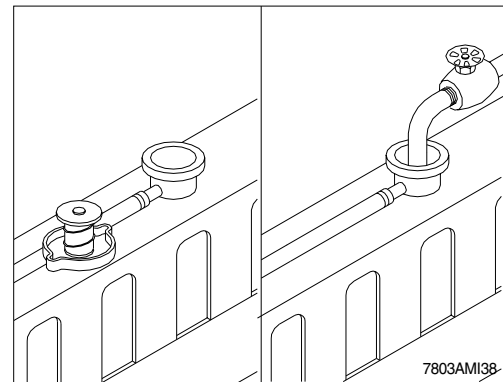
* Recommended oil list

- BP TERRAC SUPER TRANSMISSION 10W-30
- CASTROL AGRI TRANS PLUS 10W-30
- MOBILFLUID 426
- SHELL DONAX TD 10W-30
- TOTAL DYNATRANS MPV

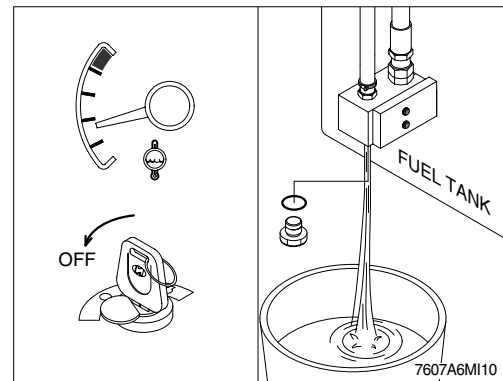
- ② Operate the engine for 5 minutes with the coolant temperature above 80°C (176°F). Shut the engine off, and drain the cooling system.



- ③ Fill the cooling system with clean water.
- ※ Be sure to vent the engine and aftercooler for complete filling.
 - ※ Do not install the radiator cap or the new coolant filter.



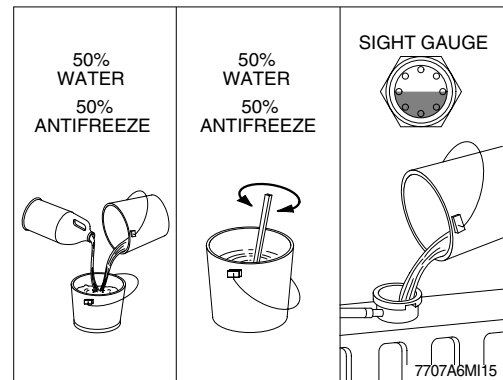
- ④ Operate the engine for 5 minutes with the coolant temperature above 80°C(176°F). Shut the engine off, and drain the cooling system.
- ※ If the water being drained is still dirty, the system must be flushed again until the water is clean.



(3) Cooling system filling

- ① Use a mixture of 50 percent water and 50 percent ethylene glycol antifreeze to fill the cooling system.

- ※ Never use water alone for coolant. This can result in damage from corrosion.



24) TIRE PRESSURE

(1) Inappropriate tire pressure is a primary cause for tire damage. Insufficient tire pressure will damage internal carcass of tire. Repeated excessive bending will damage or break the carcass. Excessive pressure will also cause premature damage of tire.

(2) Recommended tire pressure(When tire is cooled)

Size	Pressure
23.5 × 25, 20PR(L3)	3.9bar(55psi)

(3) Continuous operation will produce heat and increase pressure on tire. But such phenomenon was already taken into account when designing a tire. Do not try to remove normally increased air because tires may be crushed or overinflated.

(4) The three major causes for excessive heat and pressure of tire are insufficient pressure, excessive load and overspeed. Avoid excessive load and overspeed in order to keep tires in good shape.

▲ Do not inflate tires using flammable gases or alcohol injector.

▲ This cause explosion or personal injury.
Inflate tires at the pressure level recommended by the manufacturer, and check periodically pressure and wear of tires.

▲ When replacing the inflated tire, do not stand near the tire. Contact a tire repair shop.

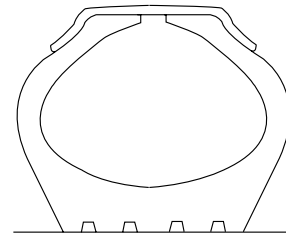
※ Check the tire when the tire is at normal temperature and the machine is not loaded.

▲ Do not use recycled wheel parts.

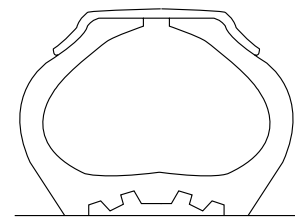
▲ When removing lockering or inflating tire, use safety cable or chain to ensure safety.
Be sure to bleed air before removing lockering. Never inflate tires unless the lockering is assembled in its place.

※ Avoid the followings when traveling.

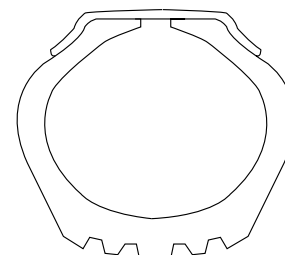
- ① Rubbing tires against road bank or rack at cargo-unloading spot.
- ② Tires slippage during working.
- ③ Abrupt starting of machine.
- ④ When oil, grease or gasoline smeared on tire, clean those. Otherwise it may cause of permanent deformation.



Normal



Too low pressure

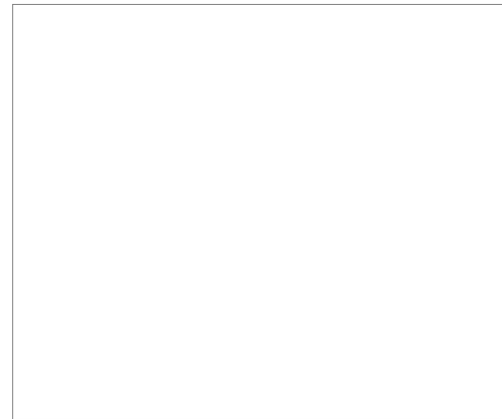


Excess pressure

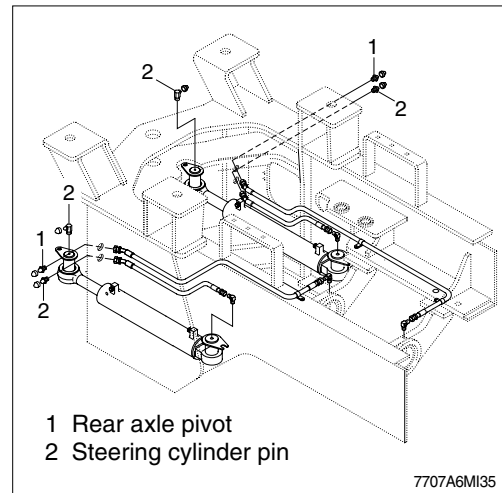
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32) LUBRICATION

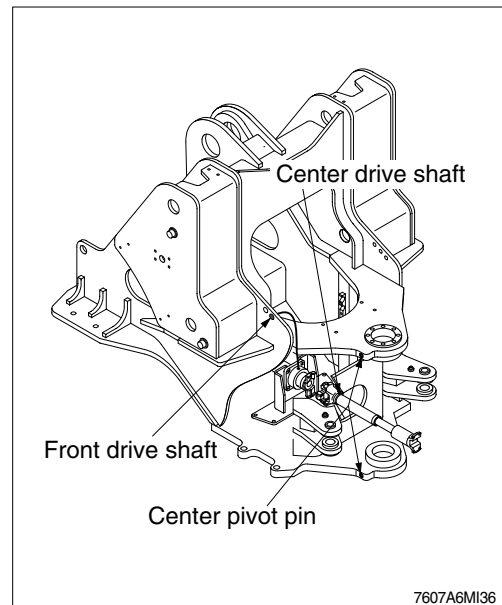
- (1) Supply grease through the grease nipple, using grease gun.
 - (2) After lubricating, clean off spilled grease.
- ▲ Press the parking brake switch and fix front and rear frames using the safety lock bar.
 - ▲ Set the work equipment in a stable position and turn the hydraulic safety lock valve into 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) : 1EA



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