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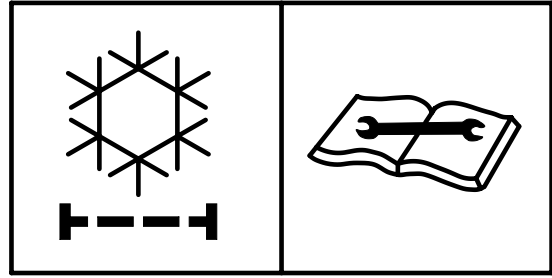
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12) AIR CONDITIONER FILTER (Item 14)

This warning label is positioned on the air conditioner cover up.

- ※ Periodic and proper inspection, cleaning and change of filter prolong air conditioner life time and maintain good performance.



21070FW26

13) HYDRAULIC OIL LUBRICATION (Item 15)

This warning label is positioned on the right side of air breather.

- ※ Do not mix with different brand oils.
- ⚠ Never open the filler cap while engine running or at high hydraulic oil temperature.
- ⚠ Loosen the cap slowly and release internal pressure completely.

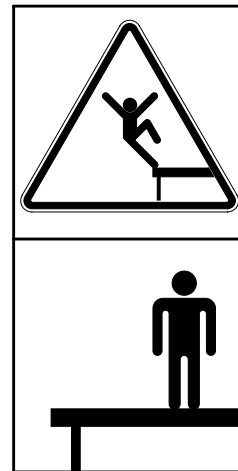


21070FW08

14) FALLING (Item 16)

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

- ⚠ Falling is one of the major cause of personal injury.
- ⚠ Be careful of slippery conditions on the platforms, steps and handrails when standing on the machine.

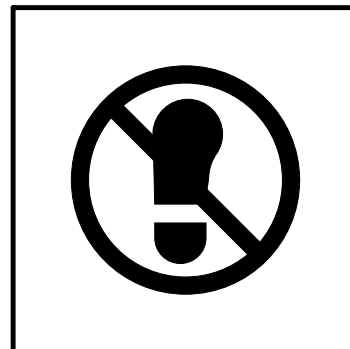


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15) NO STEP-ENGINE HOOD (Item 17)

This warning label is positioned on the engine hood.

- ⚠ Do not step on the engine hood.

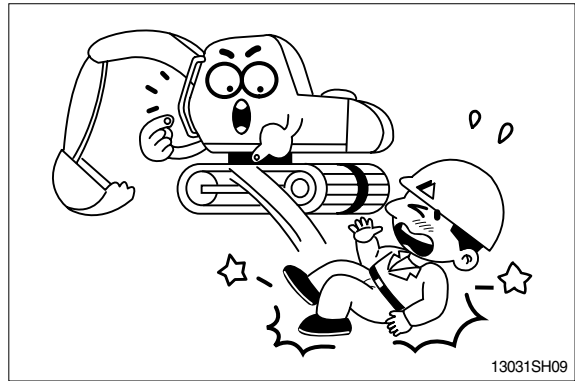


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2. DURING OPERATING THE MACHINE

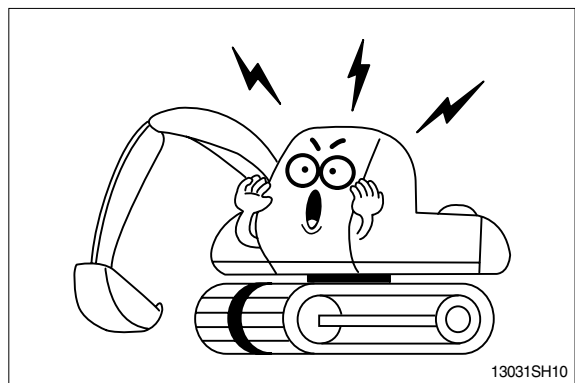
Use the handle and footstep when getting on or off the machine.

Do not jump on or off the machine.



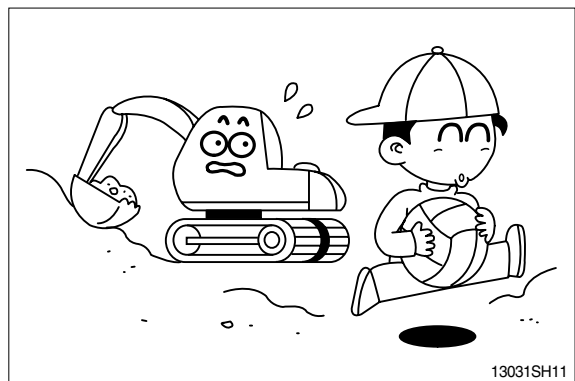
Sound the horn to warn nearby personnel before operating the machine.

Remove all the obstacles like frost on the window before operating the machine for the good visibility.

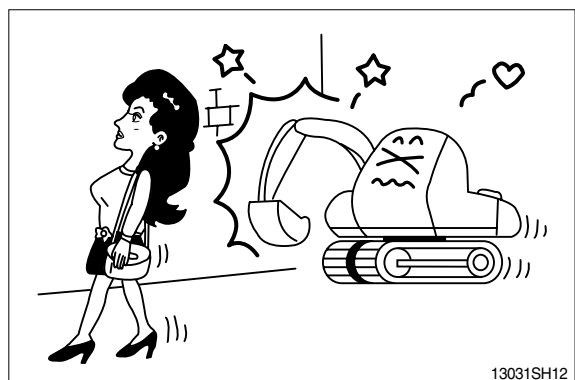


Operate carefully to make sure all personnel or obstacles are clear within the working range of the machine.

Place safety guards if necessary.



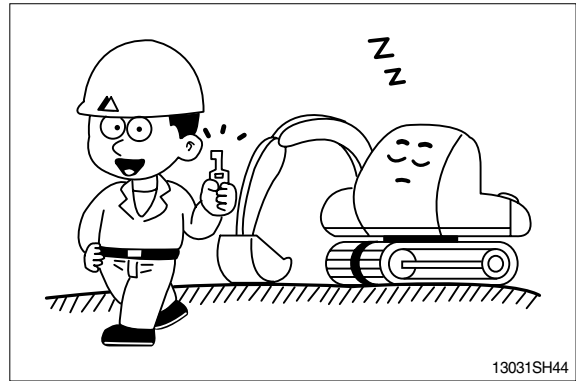
When using the work equipment, pay attention to job site.



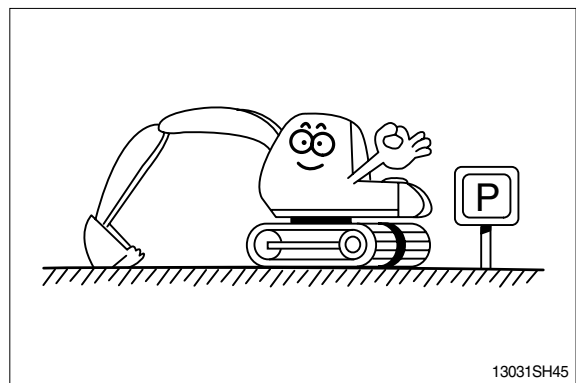
4. PARKING

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

Lock the cab door.

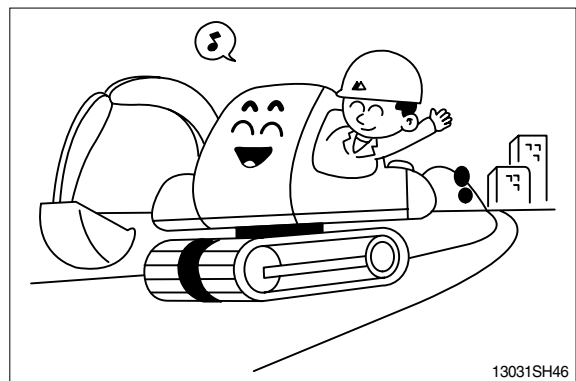


Park the machine in the flat and safe place.



Hope you can work easily and safely observing safety rules.

For safe operation, observe all safety rules.



7) REMOTE CONTROL VALVE

Item		Specification
Type		Pressure reducing type
Operating pressure	Minimum	5kgf/cm ² (71psi)
	Maximum	20kgf/cm ² (284psi)
Push rod stroke	Lever	6.5/8.5mm(0.26/0.34in)

8) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	∅ 115 × ∅ 70 × 980mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	∅ 95 × ∅ 60 × 860mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	∅ 85 × ∅ 55 × 650mm
	Cushion	Extend only
Dozer cylinder	Bore dia × Rod dia × Stroke	∅ 110 × ∅ 65 × 152mm
	Cushion	-

※ Discoloration of cylinder rod can occur when the friction reduction additive of lubrication oil spreads on the rod surface.

※ Discoloration does not cause any harmful effect on the cylinder performance.

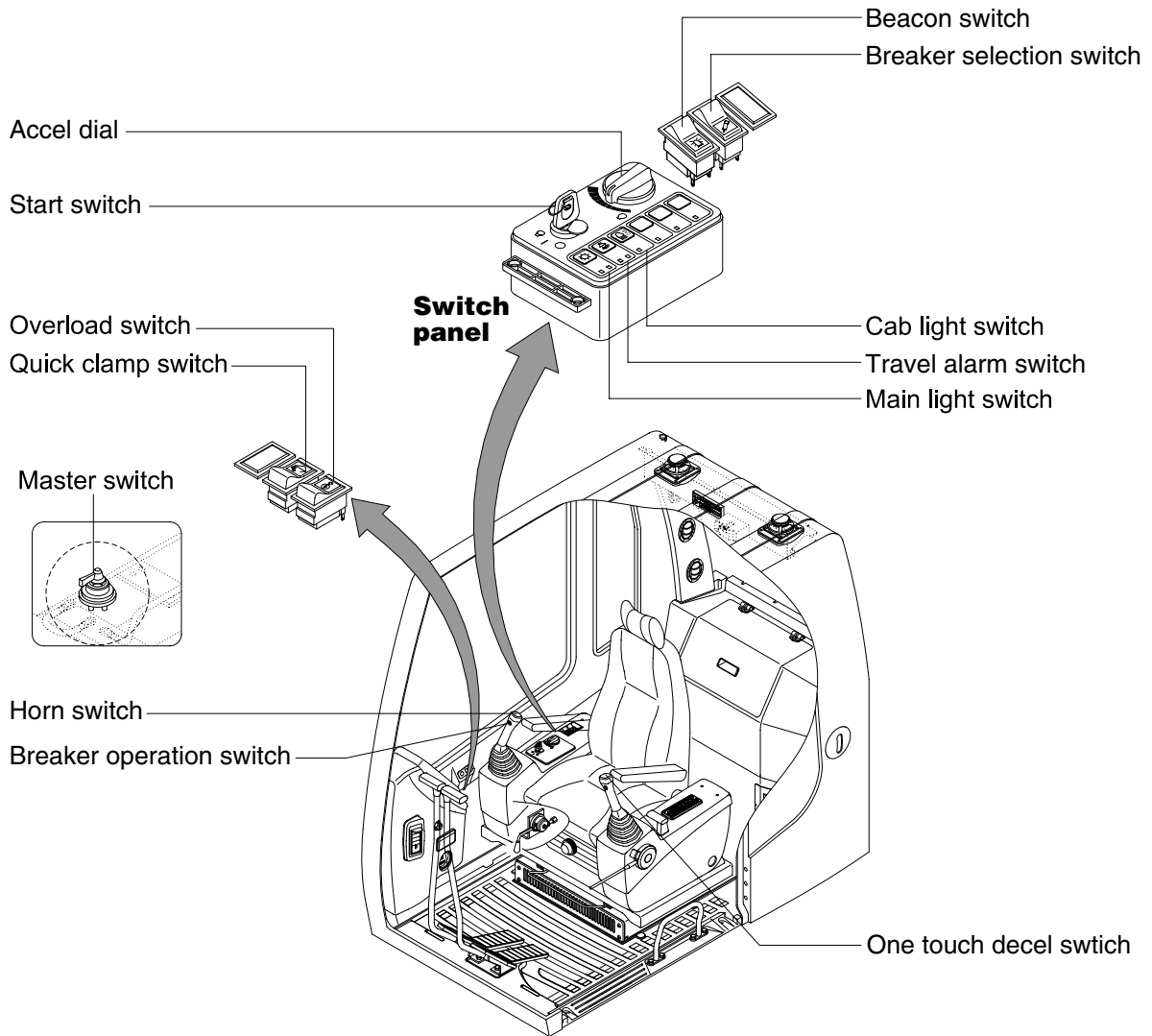
9) SHOE

Item		Width	Ground pressure	Link quantity	Overall width
R80-7	Standard	450mm(18")	0.37kgf/cm ² (5.26psi)	38	2260mm(7' 5")
	Option	600mm(24")	0.28kgf/cm ² (3.98psi)	38	2350mm(7' 9")

10) BUCKET

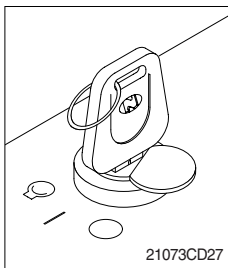
Item		Capacity		Tooth quantity	Width	
		SAE heaped	CECE heaped		Without side cutter	With side cutter
R80-7	STD	0.28m ³ (0.37yd ³)	0.25m ³ (0.33yd ³)	4	670mm(26.4")	750mm(29.5")

3. SWITCHES



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1) STARTING SWITCH



(1) There are three positions, OFF, ON and START.

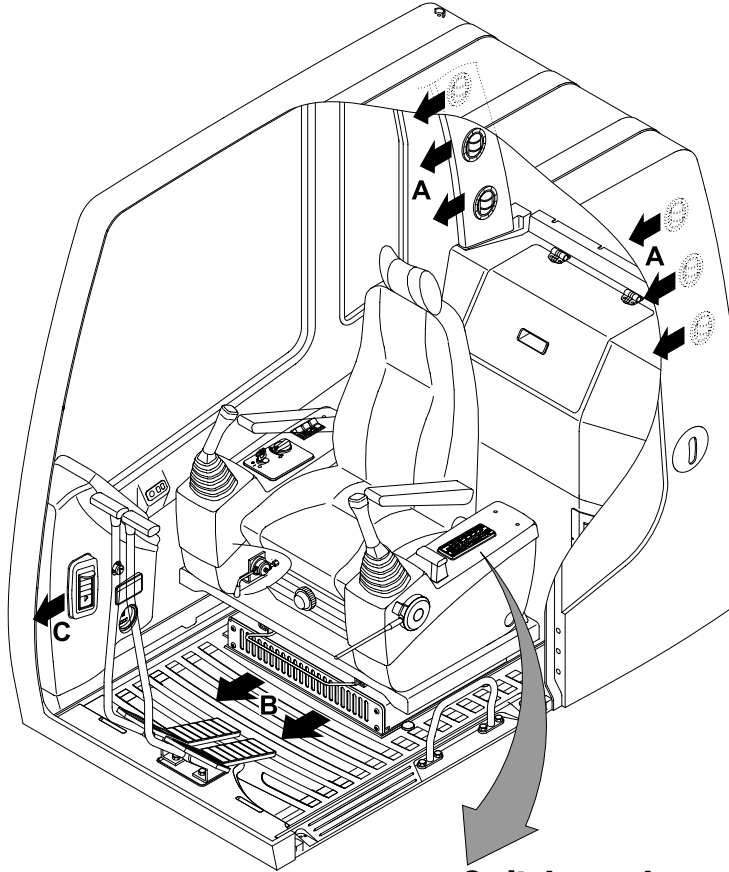
- ○ (OFF) : None of electrical circuits activate.
- | (ON) : All the systems of machine operate.
- ◌ (START) : Use when starting the engine. Release key immediately after starting.

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

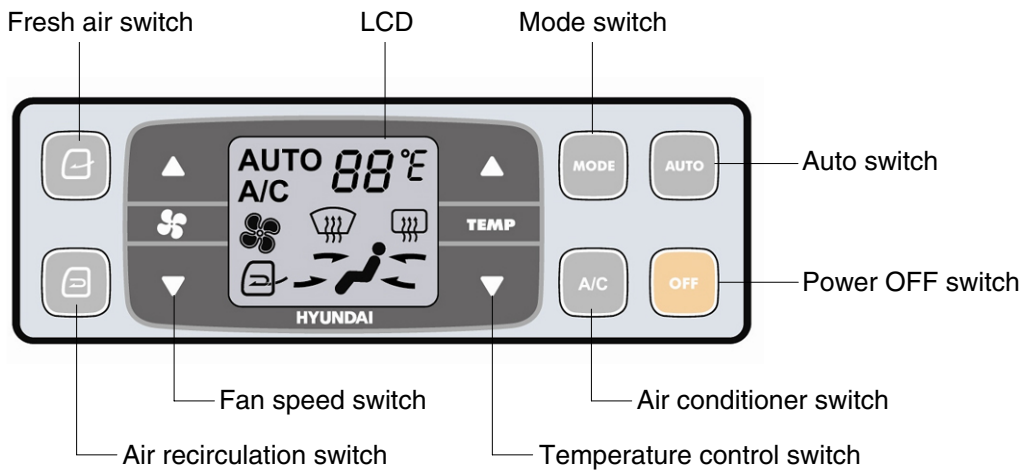
■ **AUTO AIR CONDITIONER AND HEATER(OPTION)**

Auto air conditioner and heater system automatically keeps the optimum condition in accordance with operator's temperature configuration sensing ambient and cabin inside temperature.

- Location of air flow ducts

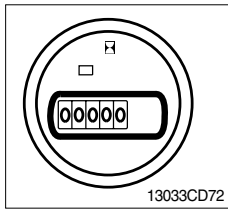


Switch panel



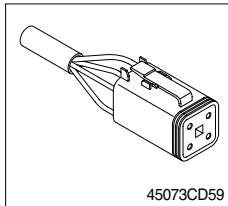
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8) SERVICE METER



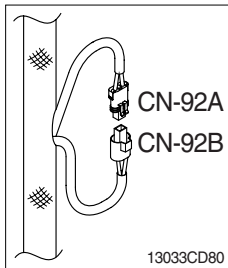
- (1) This meter shows the total operation hours of the machine.
- (2) Always ensure the operating condition of the meter during the machine operation. Inspect and service the machine based on hours as indicated in chapter 6, **maintenance**.

9) RS232 SERIAL CONNECTOR



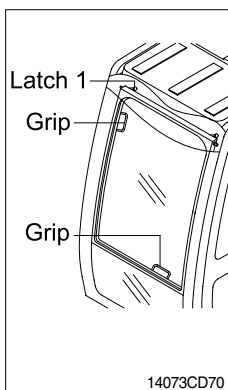
- (1) CPU controller communicates the machine data with Lap top computer through RS232 connector.

10) EMERGENCY ENGINE STARTING CONNECTOR

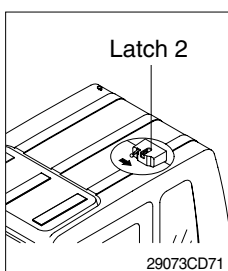


- (1) If the abnormality is occurred in the CPU controller, the engine does not start.
 - (2) Before starting the engine, connect the connector CN-92 A with B.
- ※ **Do not connect these connectors when the CPU is normal condition.**

11) UPPER WINDSHIELD



- (1) Perform the following procedure in order to open the upper windshield.
 - ① Release both latches(1) in order to release the upper windshield.
 - ② Hold both grips that are located at the bottom of the windshield frame and at the top of the windshield frame push the windshield upward.
 - ③ Hold both grips that are provided on the windshield frame and back into the storage position until auto lock latch(2) is engaged, move the levers of both latches(1) into the locked position. Push the levers toward the rear of the cab in order to hold the windshield in storage position.

















- (2) Perform the following procedure in order to close the upper windshield.
 - ① Move the lever of the auto lock latch(2) in the direction of the arrow in order to release the auto lock latch.
 - ② Reverse step ① through step ③ in order to close the upper windshield.

5) RADIO AND USB PLAYER (machine serial No. : -#1353)



75793CD62

■ FRONT PANEL PRESENTATION

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

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④ Balance control

To adjust the left-right speaker balance, first select the balance mode by pressing the SEL button until the BAL indication appears on the LCD display.

Within 5 seconds of choosing the balance mode, turn selection knob right / left to adjust the balance as desired.

The balance position will be shown on the LCD display from BAL 10L (full left) to BAL 10R (full right).

When the volume level between the left and right speakers is equal, BAL L=R will be shown on the LCD display panel.

The display will automatically return to the normal indication in 5 seconds after the last adjustment or when another function is activated.

⑤ Loud control

When listening to music at low volume levels, this feature will boost the bass and treble response.

This action will compensate for the reduction in bass and treble performance experienced at low volume.

To select the loudness feature, press SEL button until LOUD ON or LOUD OFF is displayed, then turn selection knob left or right to activate or deactivate loudness.

⑥ Equalizer (EQ)

You can select an equalizer curve designed for 4 music types (POP, ROCK, CLASSIC, JAZZ).

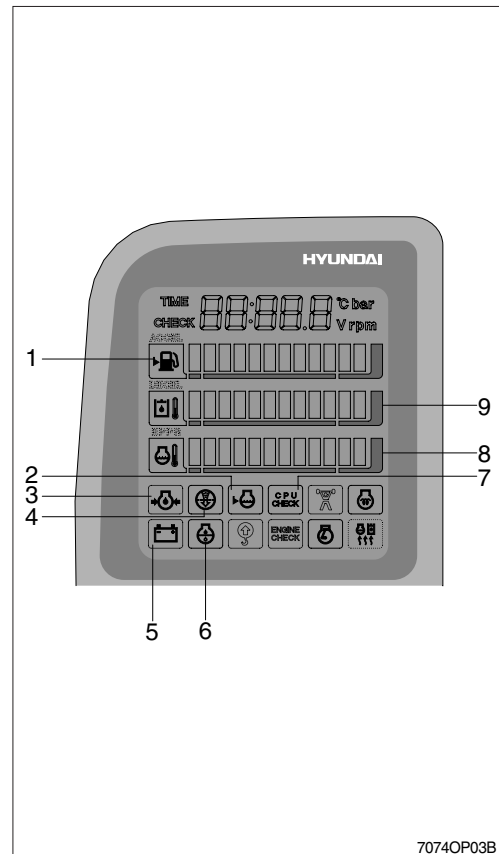
To select the desired curve, first select the EQ mode by pressing SEL button until the "EQ OFF" indication appears on the display panel. Within 5 seconds of choosing the EQ mode, turn selection knob to select an equalizer curve as desired.

3) INSPECTION AFTER ENGINE START

Inspect and confirm the following after engine starts.

- (1) Is the level gauge of hydraulic oil tank in the normal level?
- (2) Are there leakages of oil or water?
- (3) Are all the warning lamps OFF(1-7)?
- (4) Is the indicator of engine coolant temperature gauge(8) and hydraulic oil temperature gauge(9) in the green zone?
- (5) Is the engine sound and the color of exhaust gas normal?
- (6) Are the sound and vibration normal?

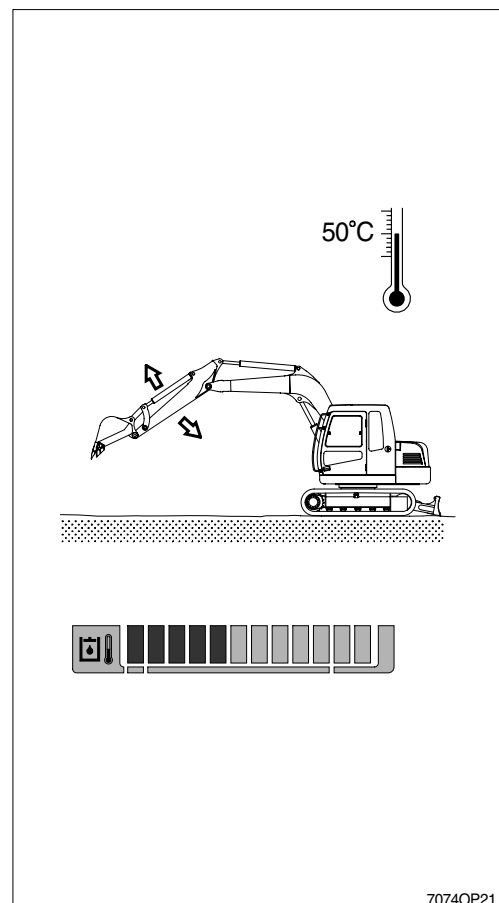
- ※ Do not increase engine speed quickly after starting, it can damage engine.
- ※ If there are problems in the control panel, stop the engine immediately and correct problem as required.



4) WARMING-UP OPERATION

- ※ The most suitable temperature for the hydraulic oil is about 50°C (122°F). It can cause serious trouble in the hydraulic system by sudden operation when the hydraulic oil temperature is below 25°C (77°F). Then temperature must be raised to at least 25°C (77°F) before starting work.

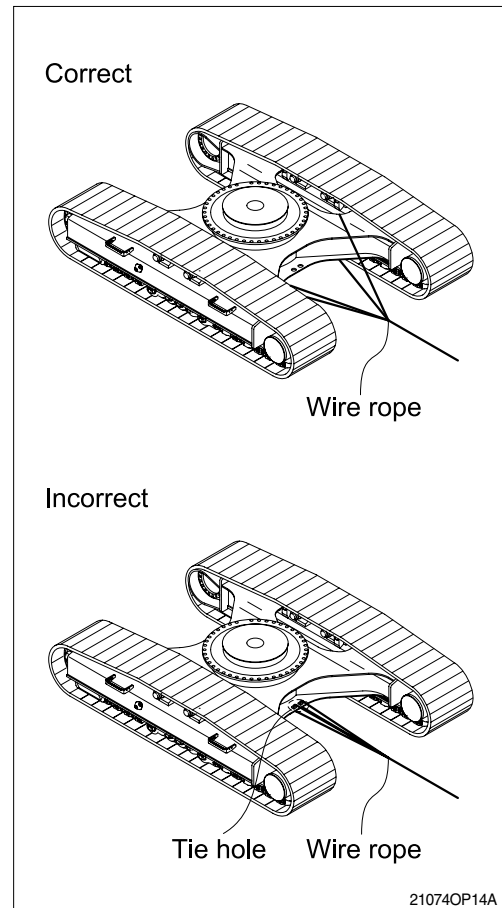
- (1) Run the engine at low idling for 5 minutes.
- (2) Speed up the idling and run the engine at mid-range speed.
- (3) Operate bucket lever for 5 minutes.
 - ※ Do not operate anything except bucket lever.
- (4) Run the engine at the high speed and operate the bucket lever and arm lever for 5-10 minutes.
 - ※ Operate only the bucket lever and arm lever.
- (5) This warming-up operation will be completed by operation of all cylinders several times, and operation of swing and traveling.
 - ※ Increase the warming-up operation during winter.



4) TOWING THE MACHINE

Tow the machine as follows when it can not move on it's own.

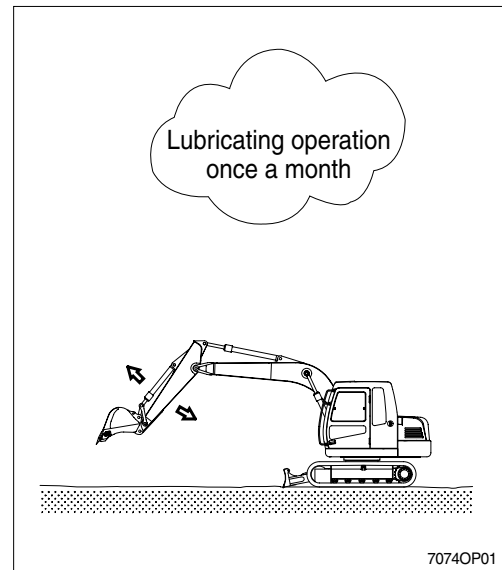
- (1) Tow the machine by other machine after hook the wire rope to the frame as shown in picture at right.
 - (2) Hook the wire rope to the frame and put a support under each part of wire rope to prevent damage.
- ※ **Never tow the machine using only the tie hole, because this may break.**
 - ▲ **Make sure no personnel are standing close to the tow rope.**



6) DURING STORAGE

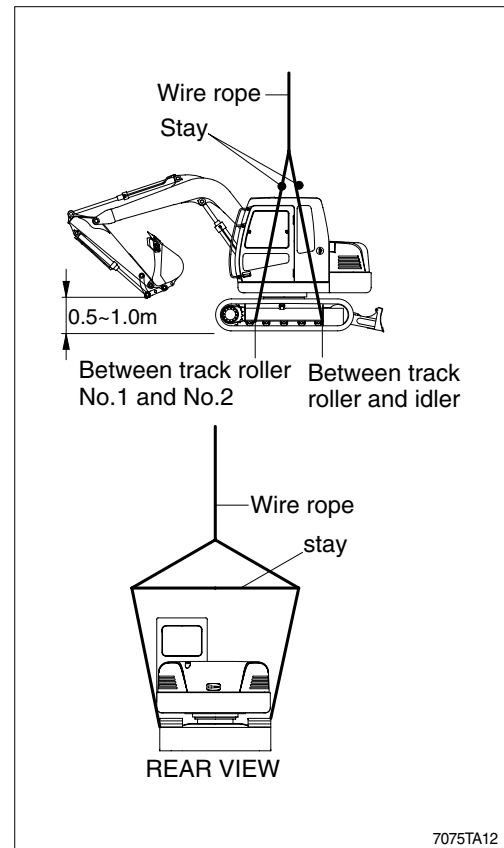
Start engine and move the machine and work equipment once a month and apply lubrication to each part.

- ※ Check the level of engine oil and coolant and fill if required when starting engine.
- ※ Clean the anticorrosive on the piston rod of cylinder.
- ※ Operate the machine such as traveling, swing and work equipment operation to make sure enough lubrication of all functional components.



5. LOADING AND UNLOADING BY CRANE

- 1) Check the weight, length, width and height of the machine referring to the chapter 2, specification when you are going to hoist the machine.
 - 2) Use long wire rope and stay to keep the distance with the machine as it should avoid touching with the machine.
 - 3) Put a rubber plate contact with wire rope and machine to prevent damage.
 - 4) Place crane on the proper place.
 - 5) Install the wire rope and stay like the illustration.
- ⚠ **Make sure wire rope is proper size.**
 - ⚠ **Place the swing lock lever and safety lever to LOCK position to prevent the machine moving when hoisting the machine.**
 - ⚠ **The wrong hoisting method or installation of wire rope can cause damage to the machine.**
 - ⚠ **Do not load abruptly.**
 - ⚠ **Keep area clear of personnel.**



2) RECOMMENDED OILS

Use only oils listed below or equivalent.

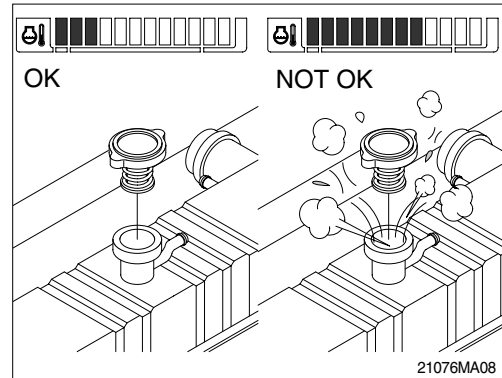
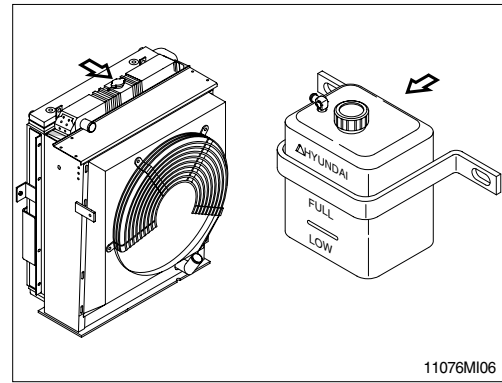
Do not mix different brand oil.

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	12(3.17)					SAE 30				
			SAE 10W								
			SAE 10W-30								
						SAE 15W-40					
Swing drive	Gear oil	1.5(0.4)									
Final drive		1.2×2 (0.32×2)	SAE 85W-140								
Swing drive	Grease	0.2kg(0.4lb)	NLGI NO.1								
					NLGI NO.2						
Hydraulic tank	Hydraulic oil	Tank:75(19.8) System: 130(34.3)	ISO VG 32								
						ISO VG 46					
						ISO VG 68					
Fuel tank	Diesel fuel	135(35.7)	ASTM D975 NO.1								
					ASTM D975 NO.2						
Fitting (Grease nipple)	Grease	As required	NLGI NO.1								
					NLGI NO.2						
Radiator (Reservoir tank)	Mixture of antifreeze and water 50 : 50	11(2.9)	Ethylene glycol base permanent type								

3) CHECK COOLANT

- (1) Check if the level of coolant in reservoir tank is between FULL and LOW.
- (2) Add the mixture of antifreeze and water after removing the cap of the reservoir tank if coolant is not sufficient.
- (3) Be sure to add the coolant by opening the cap of radiator when coolant level is below LOW.
- (4) Replace gasket of radiator cap when it is damaged.

▲ Hot coolant can spray out if radiator cap is removed while engine is hot. Remove the cap after the engine has cooled down.



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.

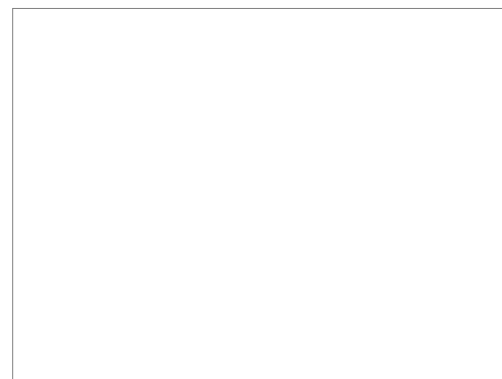
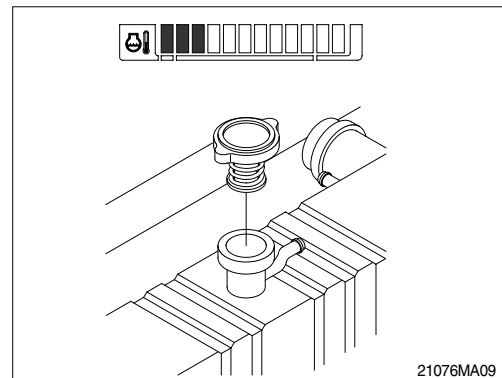
Avoid excessive contact-wash thoroughly after contact.

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.

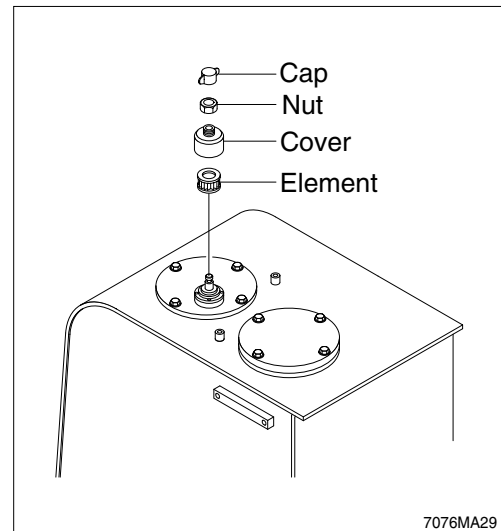
Use authorized waste disposal facilities, including civic amenity sites and garages providing authorized facilities for the receipt of used antifreeze.

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



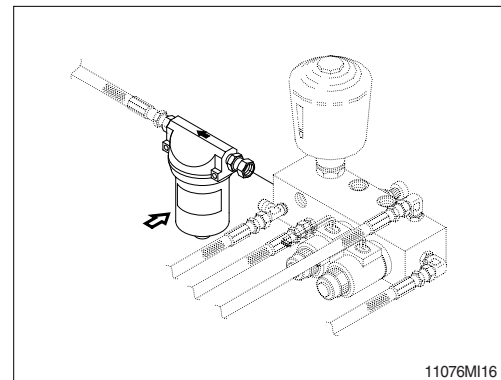
19) REPLACEMENT OF ELEMENT IN HYDRAULIC TANK BREATHER

- (1) Loosen the cap and relieve the pressure in the tank by pushing the top of the air breather.
- (2) Loosen the lock nut and remove the cover.
- (3) Pull out the filter element.
- (4) Replace the filter element new one.
- (5) Apply oil on the O-ring and reassemble by reverse order of disassembly.
 - Tightening torque : 0.2~0.3kgf · m
(1.4~2.1lbf · ft)



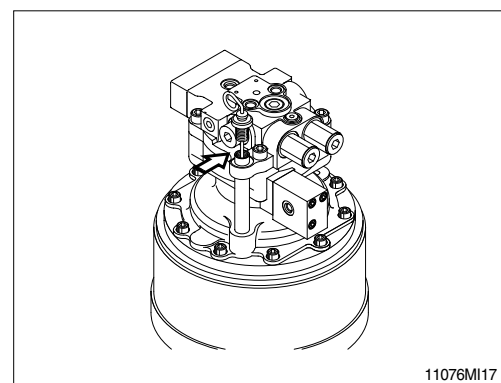
20) REPLACE OF PILOT LINE FILTER

- (1) Loosen the nut positioned on the filter body.
 - (2) Pull out the filter element and clean filter housing.
 - (3) Install the new element and tighten using specified torque.
- ※ **Change cartridge after initial 50 hours of operation. Thereafter, change cartridge every 250 hours.**



21) CHECK THE SWING REDUCTION GEAR OIL

- (1) Pull out the dipstick and clean it.
- (2) Insert it again.
- (3) Pull out one more time to check the oil level and fill the oil if the level is not sufficient.



(4) Welding repair

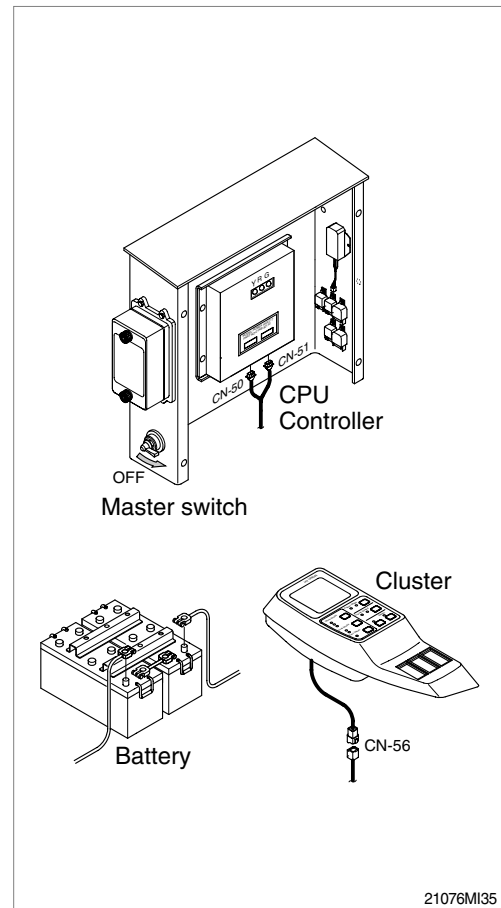
Before start to welding, follow the below procedure.

- ① Shut off the engine and remove the starting switch.
- ② Disconnect ground cable from battery by master switch.
- ③ Before carrying out any electric welding on the machine, the battery cables should be disconnected and the connectors pulled out of the electronic control units(CPU, cluster etc).
- ④ Connect the earth(ground) lead of the welding equipment as close to the welding point as possible.

※ Do not weld or flame cut on pipes or tubes that contain flammable fluids. Clean them thoroughly with nonflammable solvent before welding or flame cutting on them.

▲ Do not attempt to welding work before carry out the above.

If not, it will caused serious damage at electric CAPO system.



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