

AUTOTOTAL MANUAL



Hyundai R210LC-7 Crawler Excavator Operating Manual

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8) HYDRAULIC OIL LUBRICATION(Item 8)

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 coolant temperature.
- ▲ Loosen the cap slowly and release internal pressure completely.

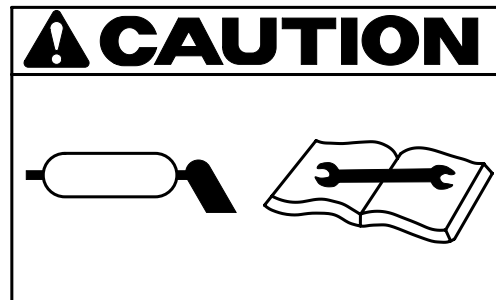


21070FW08

9) REDUCTION GEAR GREASE(Item 9)

This warning label is positioned in the front of upper frame.

- ▲ Grease is under high pressure. Grease coming out of the grease plug under pressure can penetrate the body causing injury or death.



21070FW35

10) KEEP CLEAR(Item 10)

This warning label is positioned on the counterweight.

- ▲ To prevent serious personal injury or death keep clear of machine swing radius.
- ▲ Do not deface or remove this label from the machine.

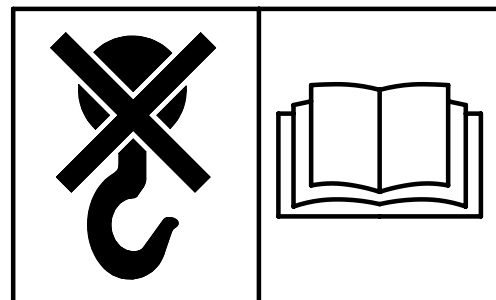


21070FW09

11) LIFTING EYE(Item 11)

This warning label is positioned on the counterweight.

- ▲ Do not lift the machine by using lifting eyes on the counterweight or the lifting eyes may be subject to overload causing its breaking and possible personal injury.
- ※ See page 5-7 for proper lifting method of the machine.



21070FW10

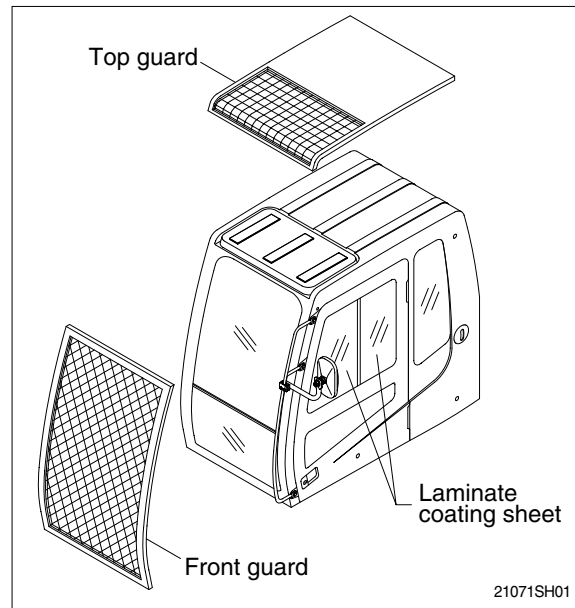
PROTECTION AGAINST FALLING OR FLYING OBJECTS

If there is any danger of falling or flying objects hitting the operator, install protective guards in place to protect the operator as required for each particular situation.

Be sure to close the front window before commencing work.

Make sure to keep all persons other than operator outside the range of falling or flying objects.

In case you need top guard, front guard and FOPS(Falling object protective structure), please contact Hyundai distributor in Europe.



UNAUTHORIZED MODIFICATION

Any modification made without authorization from Hyundai can create hazards.

Before making a modification, consult your Hyundai distributor. Hyundai will not be responsible for any injury or damage caused by any unauthorized modification.

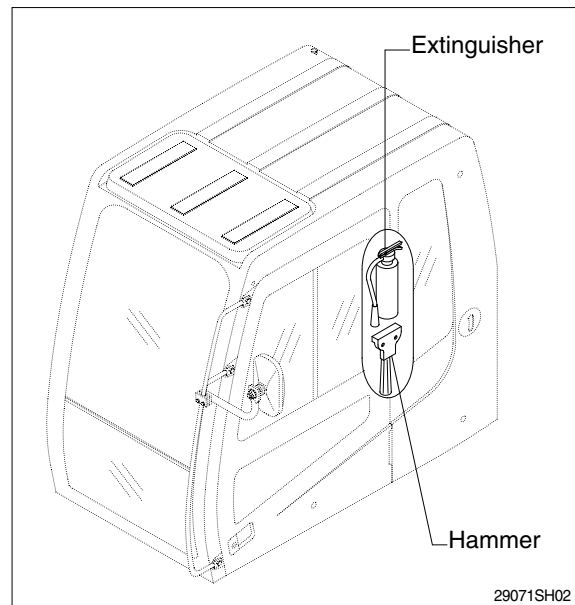
PREPARE FOR EMERGENCY

Only in case of emergency, use the installed hammer for breaking the windshield of the cab, and then exit carefully.

Have a fire extinguisher and first aid kit ready for emergencies such as fires or accidents.

Learn how to use the fire extinguisher.

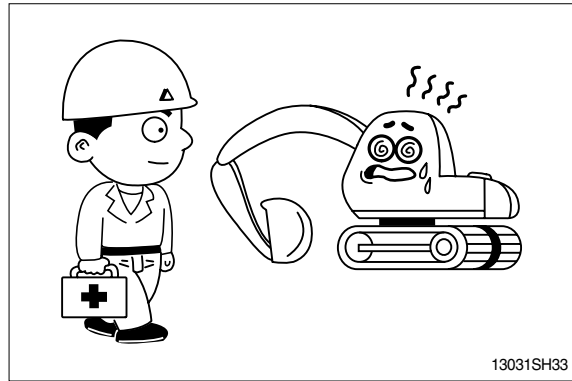
Be sure you know the phone numbers of persons you should contact in case of an emergency.



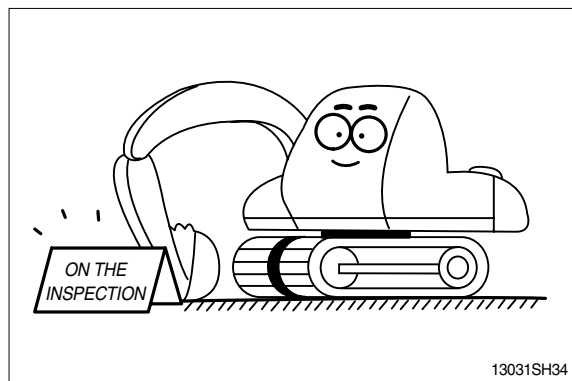
3. DURING MAINTENANCE

Stop the engine immediately when the trouble of the machine is found.

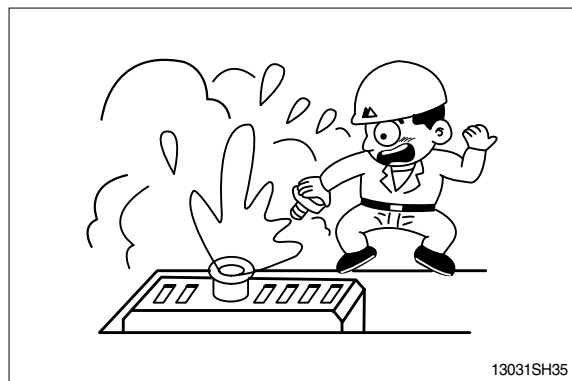
Inspect immediately the cause of trouble such as vibration, overheating and trouble in the cluster then repair.



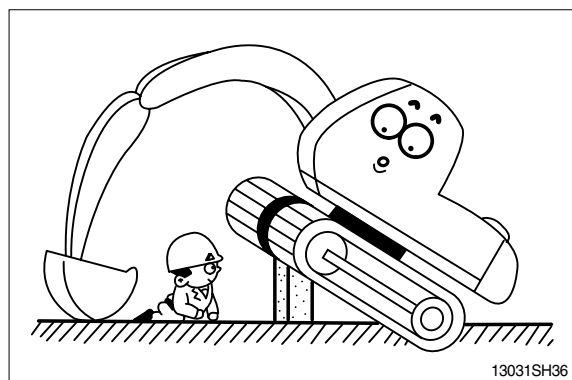
Park on a flat place and stop the engine for inspecting and repairing. Properly TAG machine is not operational. (Remove start key)
Extreme care shall be taken during maintenance work. Parts may require additional safe guard.



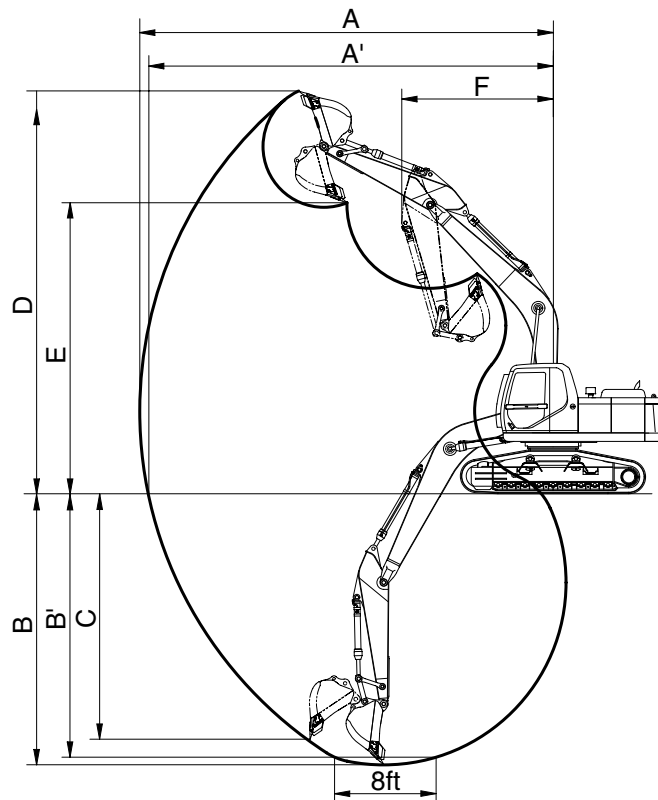
Do not remove the radiator cap from hot engine. Open the cap after the engine cools, below 50° C(122°F) to prevent personal injury from heated coolant spray or steam.



Do not work below the machine.
Be sure to work with proper safety supports.
Do not depend on the hydraulic cylinders to hold up the equipment and attachment.



3) R210LC-7 HIGH WALKER [5.68m(18' 8") BOOM]



29072SP03

Description		2.0m(6' 7") Arm	2.4m(7' 10") Arm	2.92m(9' 7") Arm	3.90m(12' 10") Arm
Max digging reach	A	9140mm(30' 0")	9500mm(31' 2")	9940mm(32' 7")	10910mm(35'10")
Max digging reach on ground	A'	8920mm(29' 3")	9290mm(30' 6")	9740mm(31'11")	10730mm(35' 2")
Max digging depth	B	5630mm(18' 6")	6010mm(19' 9")	6550mm(21' 6")	7530mm(24' 8")
Max digging depth (8ft level)	B'	5390mm(17' 8")	5820mm(19' 1")	6360mm(20'10")	7390mm(24' 3")
Max vertical wall digging depth	C	5090mm(16' 8")	5630mm(18' 6")	5930mm(19' 5")	7050mm(23' 1")
Max digging height	D	9330mm(30' 7")	9530mm(31' 3")	9660mm(31' 8")	10300mm(33' 9")
Max dumping height	E	6520mm(21' 5")	6710mm(22' 0")	6860mm(22' 6")	7480mm(24' 6")
Min swing radius	F	3750mm(12' 4")	3740mm(12' 3")	3640mm(11'11")	3650mm(11'12")
Bucket digging force	SAE	133 [146] kN	133 [146] kN	133 [146] kN	133 [146] kN
		13600 [14840] kgf	13600 [14840] kgf	13600 [14840] kgf	13600 [14840] kgf
		29980 [32710] lbf	29980 [32710] lbf	29980 [32710] lbf	29980 [32710] lbf
	ISO	152 [166] kN	152 [166] kN	152 [166] kN	152 [166] kN
		15500 [16910] kgf	15500 [16910] kgf	15500 [16910] kgf	15500 [16910] kgf
		34170 [37280] lbf	34170 [37280] lbf	34170 [37280] lbf	34170 [37280] lbf
Arm crowd force	SAE	135 [148] kN	113 [123] kN	97 [106] kN	79 [87] kN
		13800 [15050] kgf	11500 [12550] kgf	9900 [10800] kgf	8100 [8840] kgf
		30420 [33190] lbf	25350 [27650] lbf	21830 [23810] lbf	17860 [19480] lbf
	ISO	142 [155] kN	118 [128] kN	101 [110] kN	85 [93] kN
		14500 [15820] kgf	12000 [13090] kgf	10300 [11240] kgf	8700 [9490] kgf
		31970 [34880] lbf	26460 [28870] lbf	22710 [24770] lbf	19170 [20910] lbf

[] : Power boost

CONTROL DEVICES

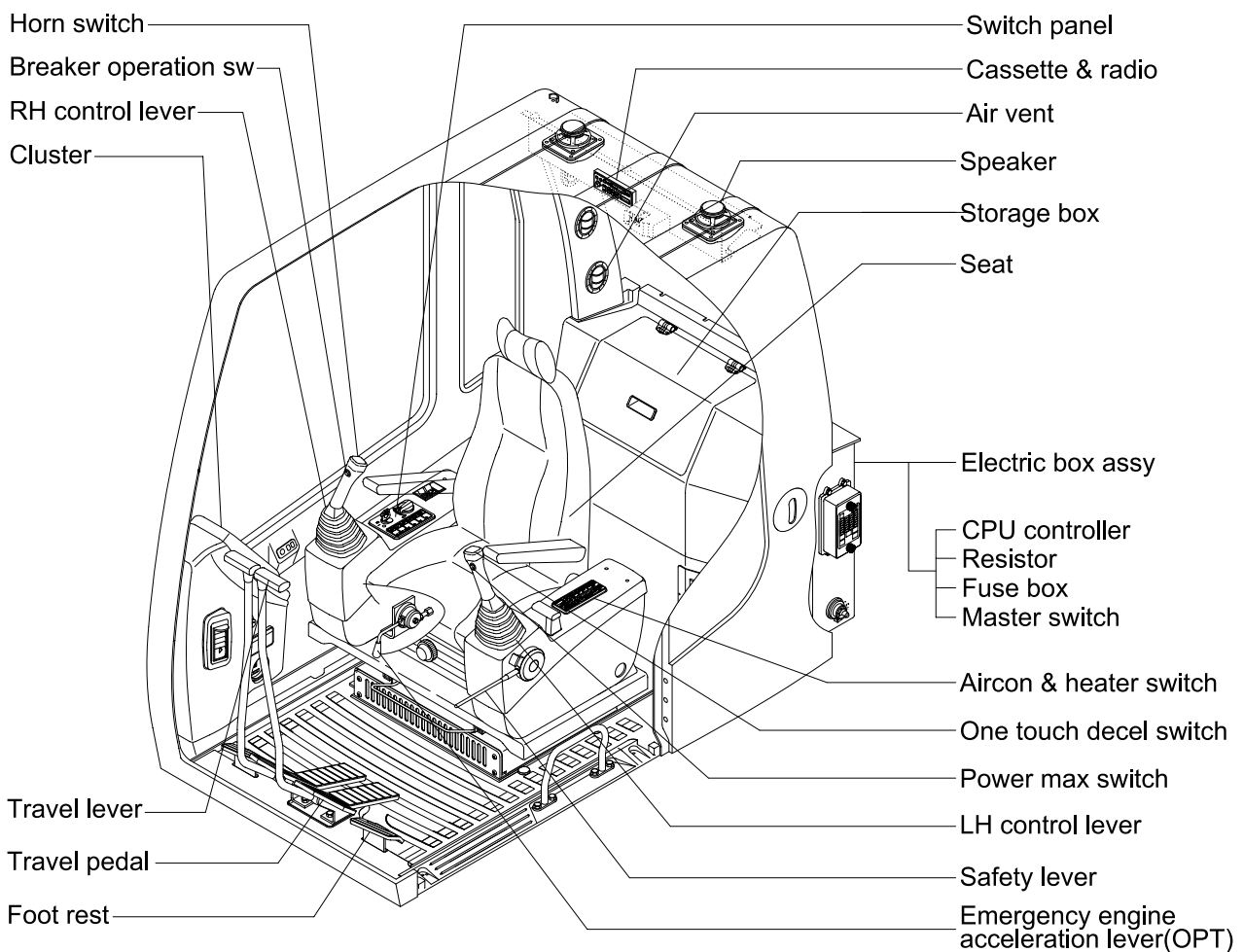
1. CAB DEVICES

1) The ergonomically designed console box and suspension type seat provide the operator with comfort.

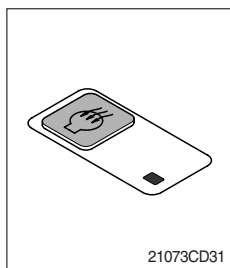
2) ELECTRONIC MONITOR SYSTEM

(1) The centralized electronic monitor system allows the status and conditions of the machine to be monitored at a glance.

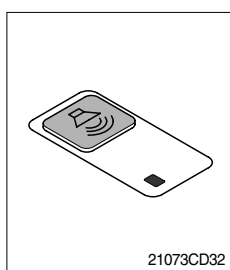
(2) It is equipped with a safety warning system for early detection of machine malfunction.



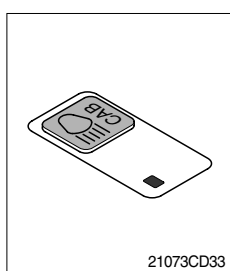
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7) PREHEAT SWITCH

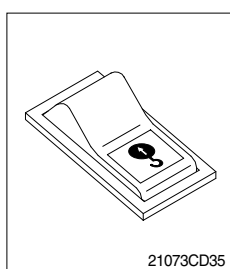
- (1) This switch is used for starting the engine in cold weather. If pressed, grid heater is activated to get easier engine starting.
- ※ **Never hold the push button switch in for more than 30 seconds, as this can damage the grid heater.**
- (2) The indicator lamp is turned ON when operating this switch.

8) TRAVEL ALARM SWITCH

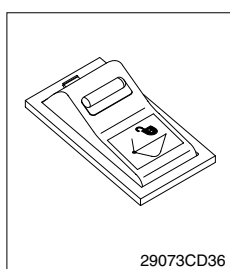
- (1) This switch is to activate travel alarm function when the machine travels forward and backward.
- (2) On pressing this switch, the alarm buzzer sounds only when the machine is traveling.

9) CAB LIGHT SWITCH(Optional)

- (1) This switch is used to turn ON the cab light on the cab.

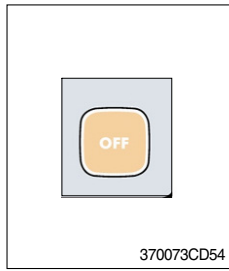
10) OVERLOAD SWITCH

- (1) When this switch turned ON, buzzer makes sound and overload warning lamp comes ON in case that the machine is overloaded.
- (2) When turned OFF, buzzer stops and warning lamp goes out.

11) QUICK CLAMP SWITCH(Optional)

- (1) This switch is used to engage or disengage the moving hook on quick clamp.
- ※ **Refer to the page 8-6 for details.**

1) POWER OFF SWITCH

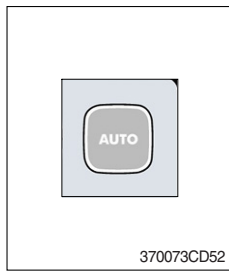


- (1) This switch makes the system and the LED OFF.
Just before the power OFF, setted values are stored.

(2) Default setting values

Function	Air conditioner	In/outlet	LCD	Temperature	Mode
Value	OFF	Inlet	OFF	Previous sw OFF	Previous sw OFF

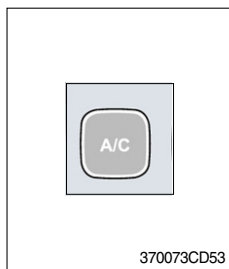
2) AUTO SWITCH



- (1) Turn the starting switch to ON position, LCD lights ON.
Auto air conditioner and heater system automatically keeps the optimum condition in accordance with operator's temperature configuration sensing ambient and cabin inside temperature.

- (2) This switch can restart system after system OFF.

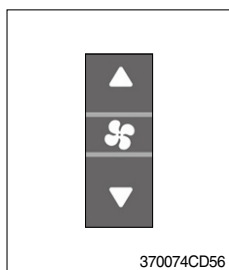
3) AIR CONDITIONER SWITCH(Compressor switch)



- (1) This switch turns the compressor and the LCD ON.
(2) In accordance with the temperature sensed by duct(evaporator) sensor, compressor turns ON or OFF automatically.
※ **Air conditioner operates to remove vapor and drains water through a drain hose. Water can be sprayed into the cab in case that the drain cock at the ending point of drain hose has a problem.**

In this case, exchange the drain cock.

4) FAN SPEED SWITCH



- (1) Fan speed is controlled automatically by setted temperature.
(2) This switch controls fan speed manually.
· There are 8 up/down steps to control fan speed.
· The maximum step or the minimum step beeps 5 times.
(3) This switch makes the system ON.
▲ : First step(AUTO)
▼ : First step(Manually)

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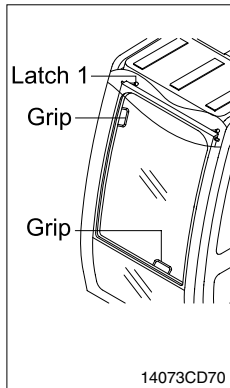
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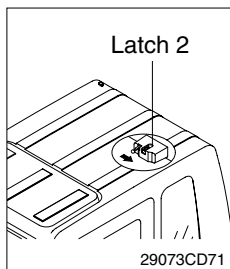
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11) UPPER WINDSHIELD



- (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.

OPERATION

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.**

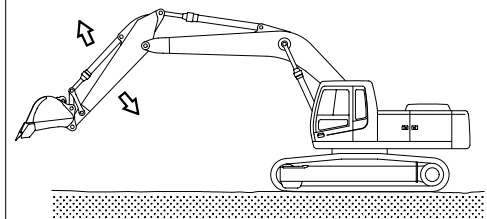
3) Be careful during the initial 100 hours operation

- (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 occasionally during the operation.
- (6) Check if the machine is operating normally during operation.

4) Replace followings after initial 50 hours of operation

Checking items	Service
Engine oil	Replace
Engine oil filter element	
Hydraulic oil return filter element	
Hydraulic oil tank drain filter cartridge	
Line filter element	
Fuel filter	
Prefilter	

Avoid excessive operation for initial 100 hours



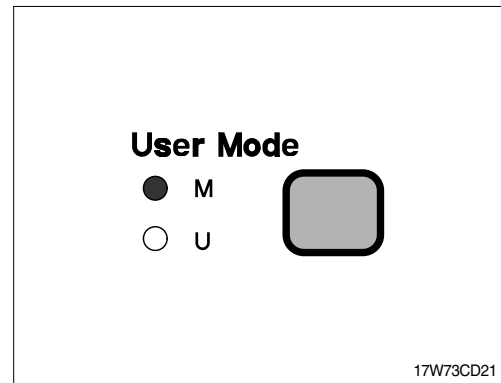
29074OP01

(3) M mode

When the accel dial is at setting 10 and auto decel mode is cancelled and M mode is selected.

Engine rpm	Effect
2150 ± 50	Approximately 130% of power and speed available than non mode type machine or S mode.

※ When the accel dial is located below 9 the engine speed decreases about 50~100rpm per dial set.



12) BUCKET WITH HOOK

When carrying out lifting work, the special lifting hook is necessary.

The following operations are prohibited.

- Lifting loads with a wire rope fitted around the bucket teeth.
- Lifting loads with the wire rope wrapped directly around the boom or arm.

When performing lifting operation, securely hook the wire rope onto the special lifting hook.

When performing lifting operation, never raise or lower a person.

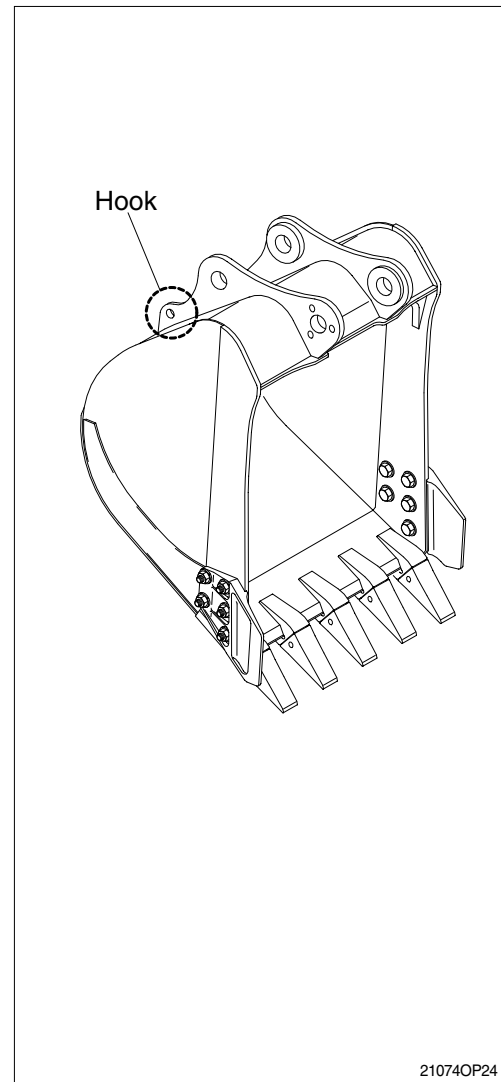
Due to the possible danger of the load falling or of collision with the load, no persons shall be allowed in the working area.

Before performing lifting operation, designate an operation supervisor.

Always execute operation according to his instructions.

- Execute operating methods and procedures under his direction.
- Select a person responsible for signaling. Operate only on signals given by such person.

Never leave the operator's seat while lifting a load.



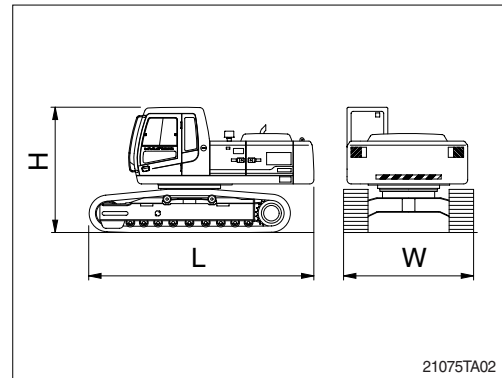
2. DIMENSION AND WEIGHT

1) ROBEX 210LC-7

(1) Base machine

Mark	Description	Unit	Specification
L	Length	mm(ft-in)	4990(16' 4")
H	Height	mm(ft-in)	2920(9' 7")
W	Width	mm(ft-in)	2990(9' 10")
Wt	Weight	kg(lb)	17410(38380)

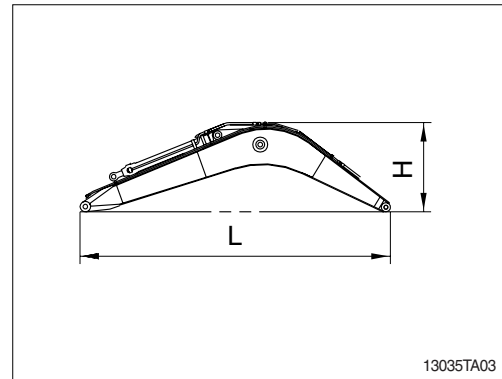
※ With 600mm(24") triple grouser shoes and 3800kg(8380lb) counterweight.



(2) Boom assembly

Mark	Description	Unit	Specification
L	Length	mm(ft-in)	5900(19' 4")
H	Height	mm(ft-in)	1550(5' 1")
W	Width	mm(ft-in)	700(2' 4")
Wt	Weight	kg(lb)	1950(4300)

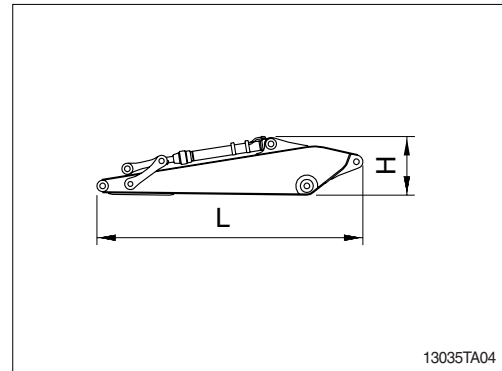
※ 5.68m(18' 8") boom with arm cylinder(Included piping and pins).



(3) Arm assembly

Mark	Description	Unit	Specification
L	Length	mm(ft-in)	3910(12'10")
H	Height	mm(ft-in)	870(2' 10")
W	Width	mm(ft-in)	350(1' 2")
Wt	Weight	kg(lb)	1050(2310)

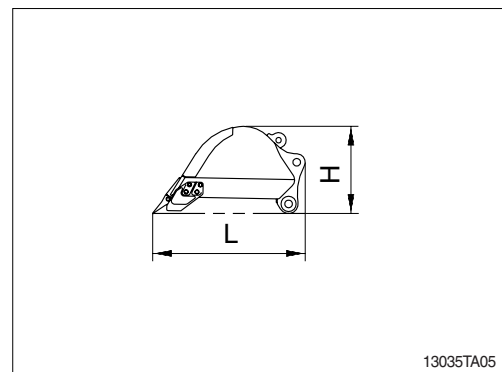
※ 2.92m(9' 7") arm with bucket cylinder(Included linkage and pins).



(4) Bucket assembly

Mark	Description	Unit	Specification
L	Length	mm(ft-in)	1600(5' 3")
H	Height	mm(ft-in)	980(3' 3")
W	Width	mm(ft-in)	1270(4' 2")
Wt	Weight	kg(lb)	770(1700)

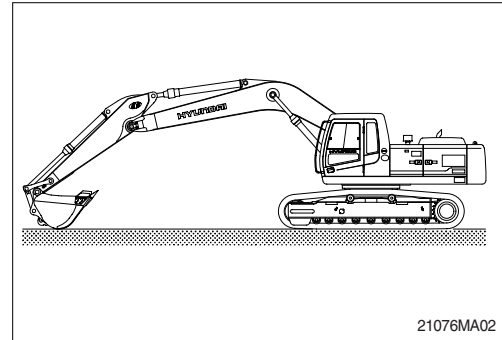
※ 0.92m³(1.20yd³) SAE heaped bucket(Included tooth and side cutters).



4) RELIEVING THE PRESSURE IN THE HYDRAULIC SYSTEM

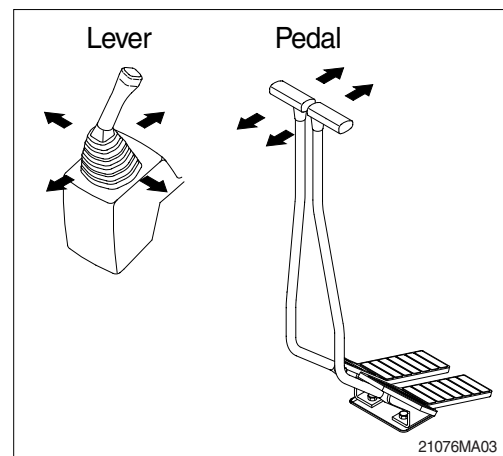
※ Spouting of oil can cause the accident when loosening the cap or hose right after the operating of machine as the machine or oil is on the high pressure on the condition. Be sure to relieve the pressure in the system before repairing hydraulic system.

- (1) Place machine in parking position, and stop the engine.

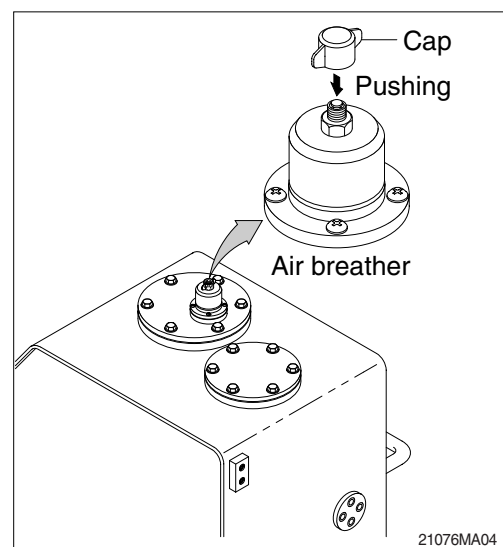


- (2) Set the safety lever completely in the release position, operate the control levers and pedals fully to the front, rear, left and right, to release the pressure in the hydraulic circuit.

※ This does not completely release the pressure, so when serving hydraulic component, loosen the connections slowly and do not stand in the direction where the oil spurt out.



- (3) Loosen the cap and relieve the pressure in the tank by pushing the top of the air breather.



6) EVERY 250 HOURS SERVICE

Check items	Service	Page
Battery electrolyte	Check, Add	6-40
Hydraulic oil return filter	Replace	6-31
Drain filter cartridge	Replace	6-32
Pilot line filter	Replace	6-32
Aircon & heater flesh filter	Check	6-44
Air breather element	Replace	6-32
Bolts & Nuts	Check, Tight	6-8
· Sprocket mounting bolts		
· Travel motor mounting bolts		
· Swing motor mounting bolts		
· Swing bearing mounting bolts		
· Engine mounting bolts		
· Counterweight mounting bolts		
· Turning joint locating bolts		
· Track shoe mounting bolts and nuts		
· Hydraulic pump mounting bolts		

7) INITIAL 500 HOURS SERVICE

Check items	Service	Page
Travel reduction gear oil	Change	6-34

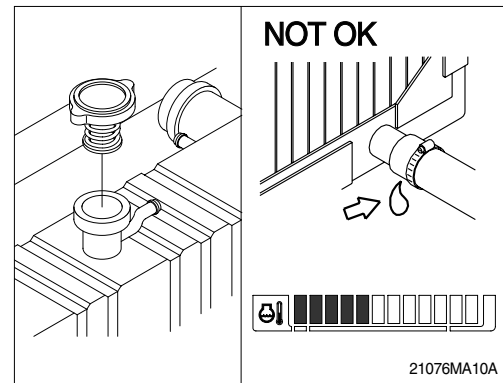
8) EVERY 500 HOURS SERVICE

Check items	Service	Page
★Engine oil	Change	6-18, 19
★Engine oil filter	Replace	6-18, 19
Radiator, cooler fin and charge air cooler	Check, Clean	6-23
☆Air cleaner element(Primary)	Check, Clean	6-25
Fuel filter element	Replace	6-26-1
Prefilter(#3342~)	Change	6-26

★ If you use high sulfur containing fuel above than 0.5% or use low grade of engine oil reduce change interval.

☆ Clean the primary element only after 500 hours operation or when the air cleaner warning lamp blinks. Replace primary element and safety element after 4 times cleanings of primary element.

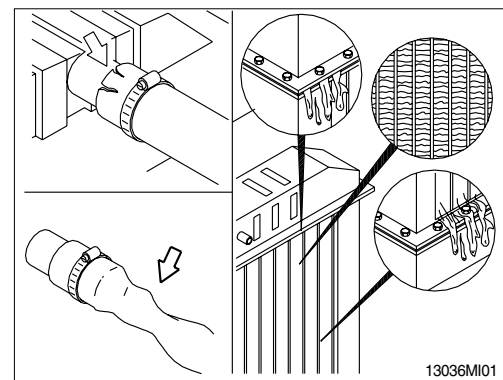
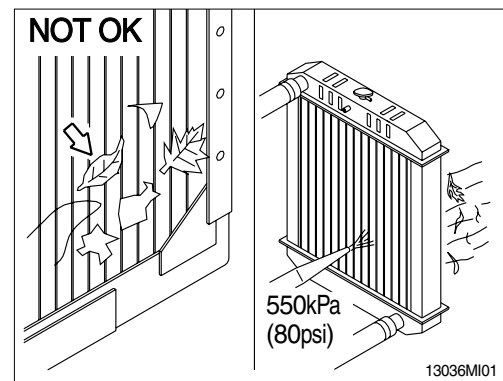
- ③ Install the pressure cap. Operate the engine until it reaches a temperature 80°C(176°F), and check for coolant leaks. Check the coolant level again to make sure the system is full of coolant.



5) CLEAN RADIATOR AND OIL COOLER

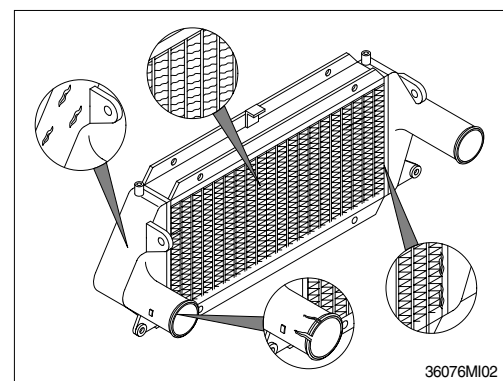
Check, and if necessary, clean and dry outside of radiator and oil cooler. After working in a dusty place, clean radiator more frequently.

- (1) Visually inspect the radiator for clogged radiator fins.
- (2) Use 550kPa(80psi) air pressure to blow the dirt and debris from the fins. Blow the air in the opposite direction of the fan air flow.
- (3) Visually inspect the radiator for bent or broken fins.
 - ※ If the radiator must be replaced due to bent or broken fins which can cause the engine to overheat, refer to the manufacturer's replacement procedures.
- (4) Visually inspect the radiator for core and gasket leaks.



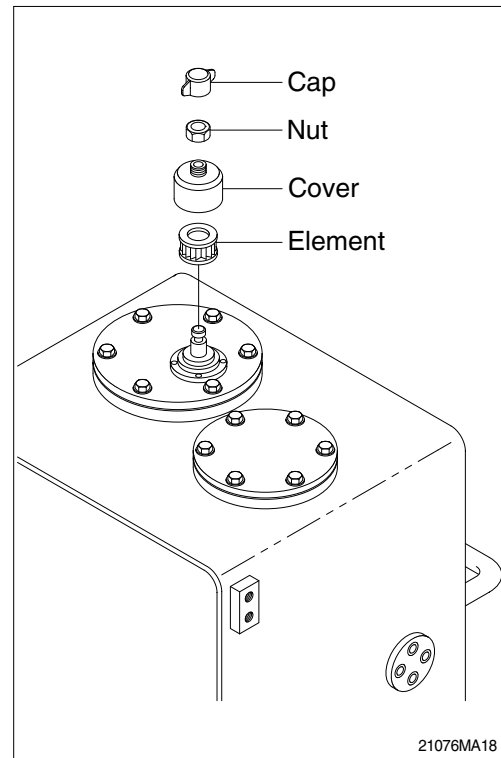
6) CHECK CHARGE AIR COOLER

Inspect the charge air cooler for dirt and debris blocking the fins. Check for cracks, holes, or other damage. If damage is found, please contact Hyundai distributor.



19) REPLACEMENT OF ELEMENT IN HYDRAULIC TANK BREATHER

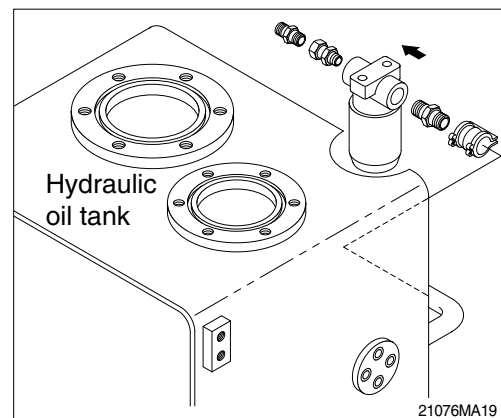
- (1) Loosen the cap and relieve the pressure in the tank by pushing the top of the air breather.
- (2) Loosen the lock nut and remove the cover.
- (3) Pull out the filter element.
- (4) Replace the filter element new one.
- (5) Apply oil on the O-ring and reassemble by reverse order of disassembly.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



20) REPLACE OF DRAIN FILTER CARTRIDGE

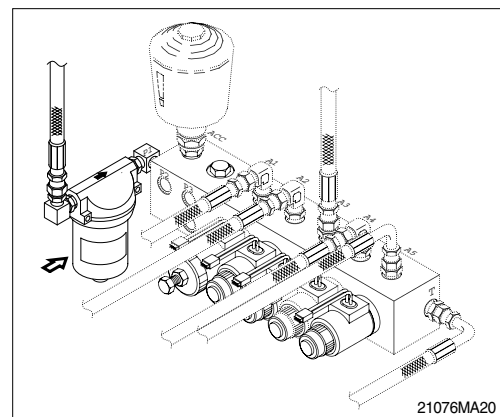
Clean the dust around filter and replace with new one after removing the cartridge.

- ※ **Tighten about 2/3 turn more after the gasket of cartridge contacts seal side of filter body for mounting.**
- ※ **Change cartridge after initial 50 hours of operation. Thereafter, change cartridge every 250 hours.**



21) 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.**



(4) Welding repair

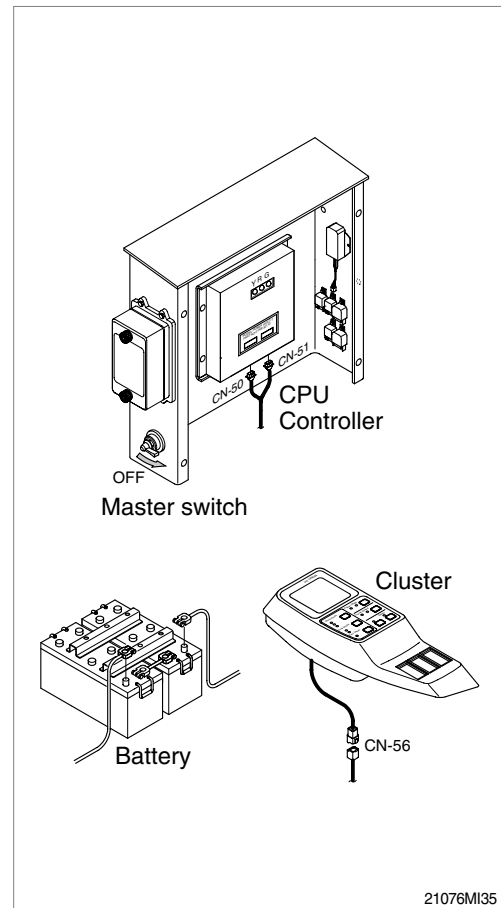
Before start to welding, follow the below procedure.

- 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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