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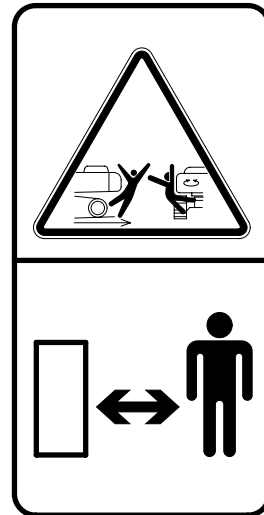
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11) SIDE KEEP CLEAR (item 13)

This warning label is positioned on the side of LH rear side cover.

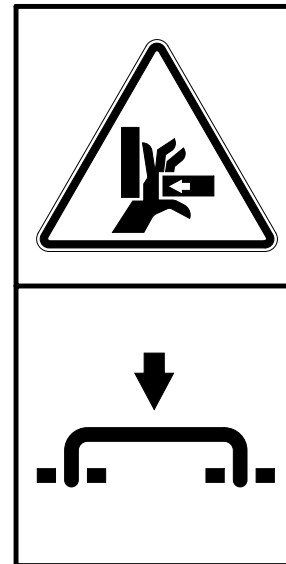
- ⚠ To prevent serious personal injury or death keep clear of machine swing radius.
- ⚠ Do not deface or remove this label from the machine.



21070FW13

12) STAY FIX

- ⚠ 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.

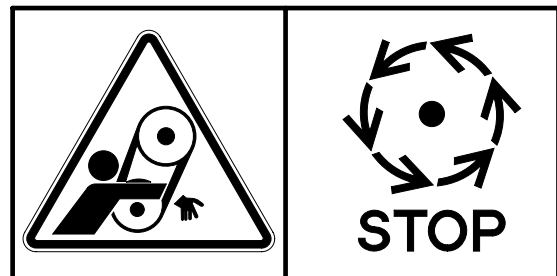


21070FW14

13) SHEARING-ENGINE HOOD (item 15)

This warning label is positioned on the engine hood.

- ⚠ Don't open the engine hood during the engine's running.
- ⚠ Don't touch exhaust pipe or it may cause severe burn.



21070FW15

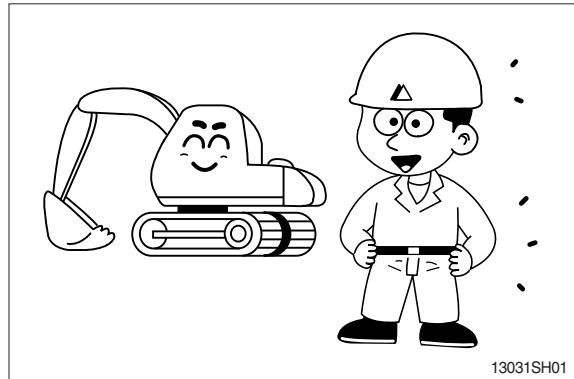
SAFETY HINTS

1. BEFORE OPERATING THE MACHINE

Think-safety first.

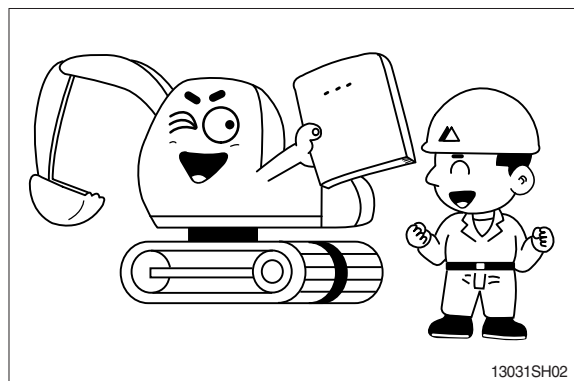
In special situation, wear protective clothing including a safety helmet, safety shoes, gloves, safety glasses and ear protection as required by the job condition.

Almost every accident is caused by disregarding the simple and fundamental safety hints.



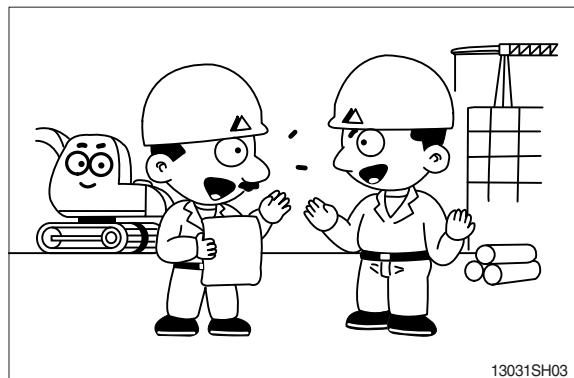
Be sure to understand thoroughly all about the operator's manual before operating the machine.

Proper care is your responsibility.

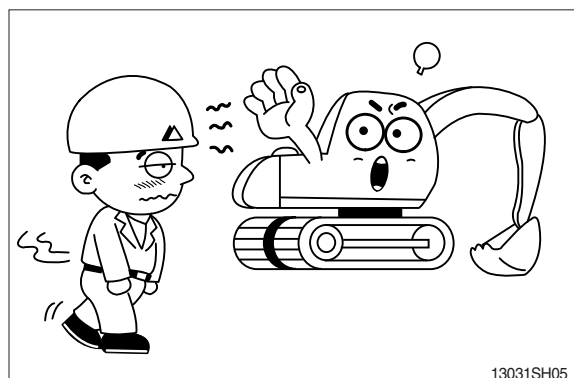


Fully understand the details and process of the construction before starting the work.

If you find anything dangerous on the job, consult with the job supervisor for the preventive measures before operating the machine.



Do not operate when tired, or after drinking alcoholic beverages or any type of drugs.



Fire Extinguisher

As an additional safety measure, keep a fire extinguisher on the machine.

Be familiar with the operation of the fire extinguisher. Inspect the fire extinguisher and service the fire extinguisher regularly. Follow the recommendations on the instruction plate.

Consider installation of an aftermarket Fire Suppression System, if the application and working conditions warrant the installation.

Fire Safety

※ **Locate secondary exits and how to use the secondary exits before you operate the machine.**

※ **Locate fire extinguishers and how to use a fire extinguisher before you operate the machine.**

If you find that you are involved in a machine fire, your safety and that of others on site is the top priority. The following actions should only be performed if the actions do not present a danger or risk to you and any nearby people. At all times you should assess the risk of personal injury and move away to a safe distance as soon as you feel unsafe.

Move the machine away from nearby combustible material such as fuel/oil stations, structures, trash, mulch and timber.

Lower any implements and turn off the engine as soon as possible. If you leave the engine running, the engine will continue to feed a fire. The fire will be fed from away damaged hoses that are attached to the engine or pumps.

If possible, turn the battery disconnect switch to the OFF position. Disconnecting the battery will remove the ignition source in the event of an electrical short. Disconnecting the battery will eliminate a second ignition source if electrical wiring is damaged by the fire, resulting in a short circuit.

Notify emergency personnel of the fire and your location.

If your machine is equipped with a fire suppression system, follow the manufacturers procedure for activating the system.

※ **Fire suppression systems need to be regularly inspected by qualified personnel. You must be trained to operate the fire suppression system.**

Use the on-board fire extinguisher and use the following procedure :

1. Pull the pin.
2. Aim the extinguisher or nozzle at the base of the fire.
3. Squeeze the handle and release the extinguishing agent.
4. Sweep the extinguisher from side to side across the base of the fire until the fire is out.

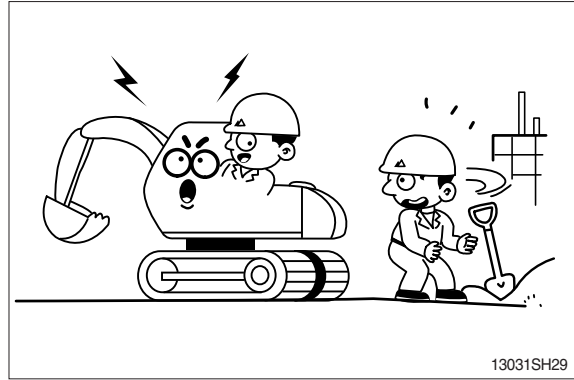
Remember, if you are unable to do anything else, shut off the machine before exiting. By shutting off the machine, fuels will not continue to be pumped into the fire.

If the fire grows out of control, be aware of the following risks :

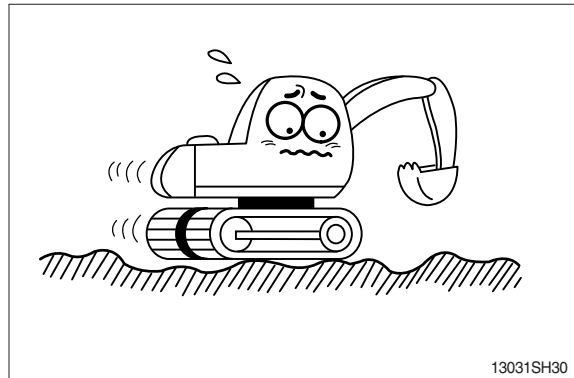
- Tires on wheeled machines pose a risk of explosion as tires burn. Hot shrapnel and debris can be thrown great distances in an explosion.
- Tanks, accumulators, hoses, and fittings can rupture in a fire, spraying fuels and shrapnel over a large area.

Remember that nearby all of the fluids on the machine are flammable, including coolant and oils. Additionally, plastics, rubbers, fabrics, and resins in fiberglass panels are also flammable.

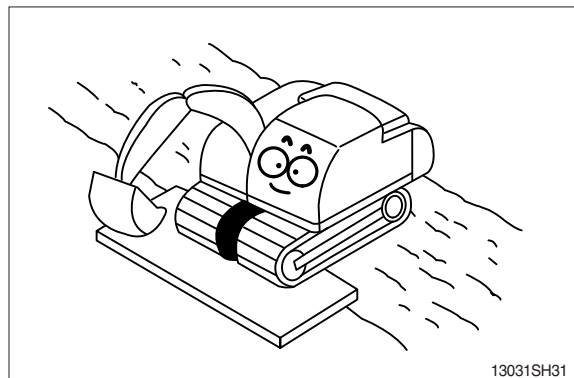
Before traveling the machine, sound the horn to warn nearby personnel.
Operate forward and backward correctly with confirming the location of the travel motor.



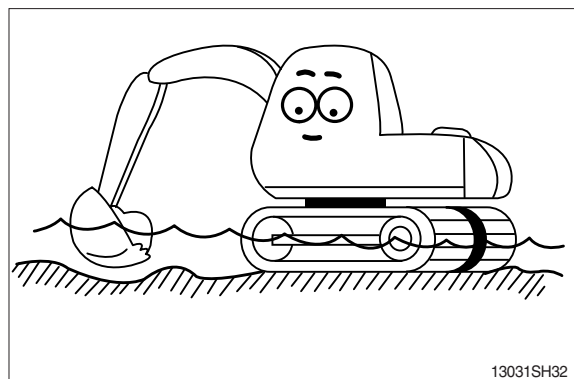
Slow down when traveling through obstacles or uneven ground.



When working on soft ground, place mats or wood boards on the ground to prevent the machine sinking.

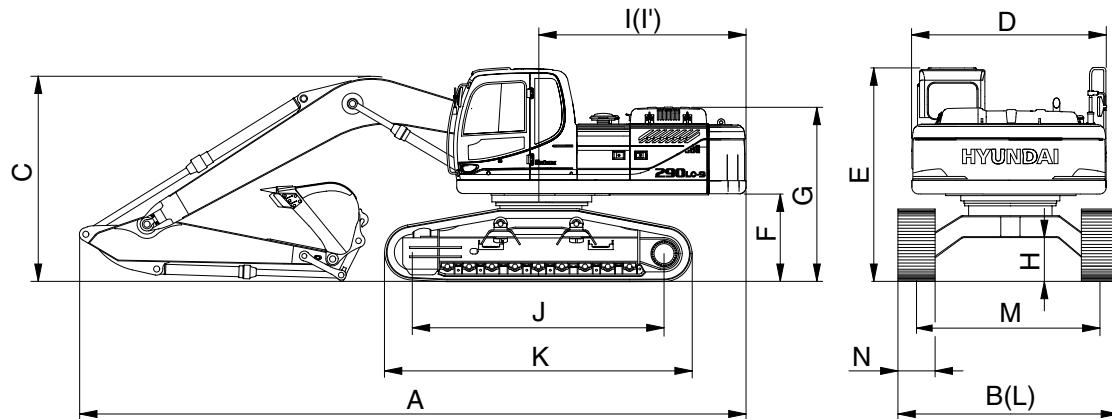


When operating in water or when crossing shallow, check the bed soil condition and depth and flow speed of water, then proceed taking care that water is not above carrier roller.



4) R290LC-9 HIGH WALKER


- 6.25 m (20' 6") BOOM and 3.05 m (10' 0") ARM













Description		Unit	Specification
Operating weight		kg (lb)	32140 (70860)
Bucket capacity (SAE heaped), standard		m ³ (yd ³)	1.27 (1.66)
Overall length	A	mm (ft-in)	10430 (34' 3")
Overall width, with 600 mm shoe	B		3470 (11' 5")
Overall height	C		3350 (11' 0")
Superstructure width	D		2980 (9' 9")
Overall height of cab	E		3380 (11' 1")
Ground clearance of counterweight	F		1500 (4' 11")
Engine cover height	G		3500 (11' 6")
Minimum ground clearance	H		765 (2' 6")
Rear-end distance	I		3120 (10' 3")
Rear-end swing radius	I'		3200 (10' 6")
Distance between tumbler	J		4030 (13' 3")
Undercarriage length	K		4950 (16' 3")
Undercarriage width	L		3470 (11' 5")
Track gauge	M		2870 (9' 5")
Track shoe width, standard	N		600 (23' 6")
Travel speed (low/high)			km/hr (mph)
Swing speed		rpm	10.2
Gradeability		Degree (%)	35 (70)
Ground pressure (600 mm shoe)		kgf/cm ² (psi)	0.62 (8.82)
Max traction force		kg (lb)	27300 (60200)

2) R290NLC-9

(1) 6.25 m (20' 6") boom, 2.10 m (6' 11") arm equipped with 1.27 m³ (SAE heaped) bucket and 600 mm (24") triple grouser shoe and 5200 kg counterweight.

-  : Rating over-front
-  : Rating over-side or 360 degree

Load point height		Load radius								At max. reach		
		3.0 m (10 ft)		4.5 m (15 ft)		6.0 m (20 ft)		7.5 m (25 ft)		Capacity		Reach
												m (ft)
7.5 m (25 ft)	kg lb					*5760 *12700	*5760 *12700			*5290 *11660	4140 9130	8.01 (26.3)
6.0 m (20 ft)	kg lb					*6090 *13430	*6090 *13430	*5900 *13010	4470 9850	*5380 *11860	3300 7280	8.90 (29.2)
4.5 m (15 ft)	kg lb			*8940 *19710	*8940 *19710	*7040 *15520	6390 14090	*6210 *13690	4350 9590	5250 11570	2860 6310	9.42 (30.9)
3.0 m (10 ft)	kg lb			*11660 *25710	9090 20040	*8270 *18230	5930 13070	*6800 *14990	4140 9130	4960 10930	2660 5860	9.64 (31.6)
1.5 m (5 ft)	kg lb			*13520 *29810	8420 18560	*9370 *20660	5550 12240	7290 16070	3940 8690	4950 10910	2640 5820	9.58 (31.4)
Ground Line	kg lb			*14060 *31000	8220 18120	*10020 *22090	5330 11750	7140 15740	3800 8380	5230 11530	2790 6150	9.23 (30.3)
-1.5 m (-5 ft)	kg lb	*13470 *29700	*13470 *29700	*13770 *30360	8240 18170	*10110 *22290	5270 11620	7110 15670	3780 8330	5930 13070	3210 7080	8.57 (28.1)
-3.0 m (-10 ft)	kg lb	*17570 *38740	*17290 *38120	*12710 *28020	8410 18540	*9440 *20810	5370 11840			*6180 *13620	4130 9110	7.47 (24.5)
-4.5 m (-15 ft)	kg lb	*14150 *31200	*14150 *31200	*10330 *22770	8800 19400							

- Note
1. Lifting capacity are based on SAE J1097 and ISO 10567.
 2. Lifting capacity of the ROBEX series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
 3. The load point is a hook located on the back of the bucket.
 4. * indicates load limited by hydraulic capacity.

4) SELECTION OF TRACK SHOE

Suitable track shoes should be selected according to operating conditions.

Method of selecting shoes

Confirm the category from the list of applications in **table 2**, then use **table 1** to select the shoe. Wide shoes (categories B and C) have limitations on applications. Before using wide shoes, check the precautions, then investigate and study the operating conditions to confirm if these shoes are suitable.

Select the narrowest shoe possible to meet the required flotation and ground pressure. Application of wider shoes than recommendations will cause unexpected problem such as bending of shoes, crack of link, breakage of pin, loosening of shoe bolts and the other various problems.

※ **Table 1**

Track shoe	Specification	Category
600mm triple grouser	Standard	A
700mm triple grouser	Option	B
710mm double grouser	Option	B
800mm triple grouser	Option	C
900mm triple grouser	Option	C
800mm triple grouser(Long reach)	Standard	C

※ **Table 2**

Category	Applications	Precautions
A	Rocky ground, river beds, normal soil	<ul style="list-style-type: none"> Travel at low speed on rough ground with large obstacles such as boulders or fallen trees
B	Normal soil, soft ground	<ul style="list-style-type: none"> These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees Travel at high speed only on flat ground Travel slowly at low speed if it is impossible to avoid going over obstacles
C	Extremely soft ground (swampy ground)	<ul style="list-style-type: none"> Use the shoes only in the conditions that the machine sinks and it is impossible to use the shoes of category A or B These shoes cannot be used on rough ground with large obstacles such as boulders or fallen trees Travel at high speed only on flat ground Travel slowly at low speed if it is impossible to avoid going over obstacles

(4) Emergency warning lamp



21093CD30

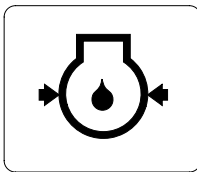
① This lamp pops up and the buzzer sounds when each of the below warnings is happened.

- Engine coolant overheating (over 107°C)
- Hydraulic oil overheating (over 105°C)
- Pump EPPR circuit abnormal or open
- Attachment flow EPPR circuit abnormal or open
- MCU input voltage abnormal
- Accel dial circuit abnormal or open
- Cluster communication data error
- Engine ECM communication data error

※ **The pop-up warning lamp moves to the original position and blinks when the select switch is pushed. Also the buzzer stops. This is same as following warning lamps.**

② When this warning lamp blinks, machine must be checked and serviced immediately.

(5) Engine oil pressure warning lamp

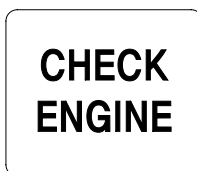


21093CD32

① This lamp blinks when the engine oil pressure is low.

② If the lamp blinks, shut OFF the engine immediately. Check oil level.

(6) Check engine warning lamp



21093CD33

①

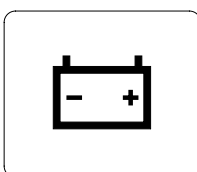
②

③



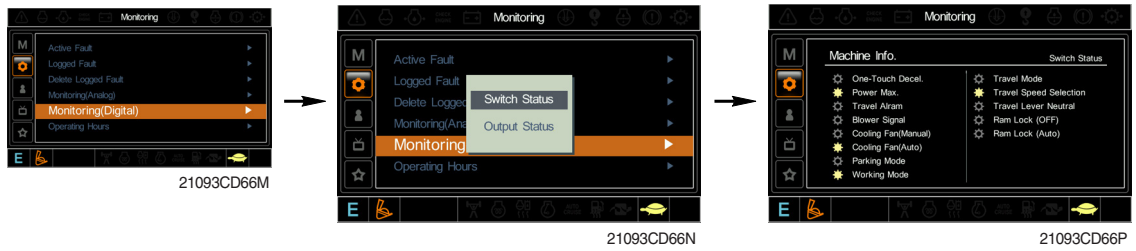
29093CD03


(7) Battery charging warning lamp



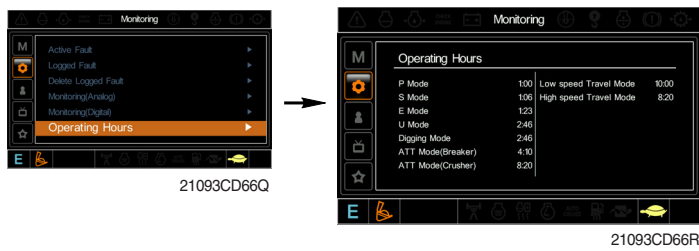
This lamp blinks when the battery charging voltage is low. Check the battery charging circuit when this lamp blinks.

⑤ Monitoring (digital)



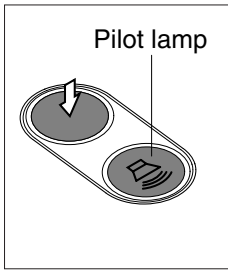
- The switch status or output status can be confirmed by this menu.
- The activated switch or output pilot lamps  are light ON.

⑥ Operating hours



- The operating hour of each mode can be confirmed by this menu.

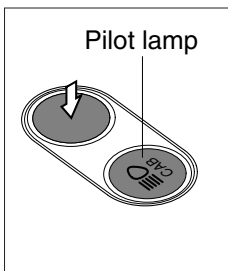
7) TRAVEL ALARM SWITCH



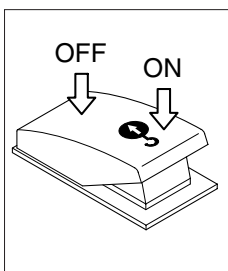
This switch is to activate travel alarm function surrounding when the machine travels to forward and backward.

On pressing this switch, the alarm operates only when the machine is traveling.

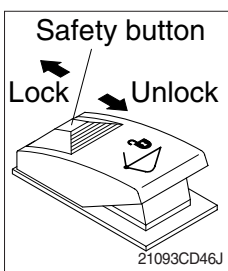
8) CAB LIGHT SWITCH



9) OVERLOAD SWITCH



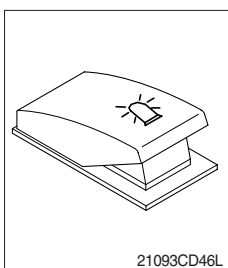
10) QUICK CLAMP SWITCH



(1)

※ Refer to the page 8-6 for details.

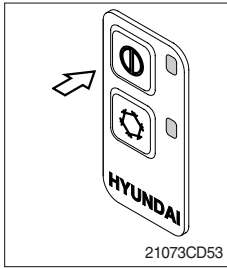
11) BEACON SWITCH (option)



(1) This switch turns ON the rotary light on the cab.

(2) The indicator lamp is turned ON when operating this switch.

1) POWER SWITCH

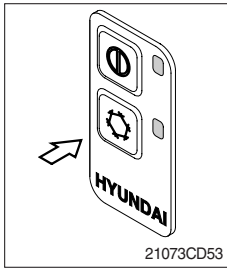


(1) This switch makes the system and the LED simultaneously ON or OFF.

(2) Default setting values

Function	Air conditioner	Fan speed	Temperature	Outlet	Inlet
Value	OFF	1	Max cool	Face	Recirculation

2) AIR CONDITIONER SWITCH (compressor switch)

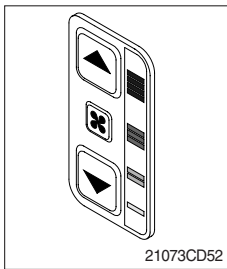


(1) Operating this switch turns the compressor and the LED simultaneously ON or OFF.

(2) In accordance with the evaporator temperature, compressor turns on or off automatically without changing LED state.

※ **Air conditioner operates to remove vapor and drains water through a drain hose. Water can be sprayed into the cab in case that the vacuum valve of drain hose has a problem. In this case, exchange the vacuum valve.**

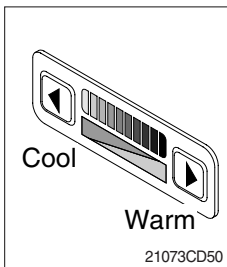
3) FAN SPEED SWITCH



(1) It is possible to control the fan to four steps.

(2) The first step or the fourth step gives 5 times beeps.

4) TEMPERATURE CONTROL SWITCH



(1) There are 9 steps to control temperature from max cool to max warm controlled up and down by 1 step.

(2) Max cool and max warm arouse 5 times beeps.

(3) For the max warm or the max cool it's better to be configured as following table.

Temperature	Air conditioner	Fan speed	Outlet	Inlet
Max cool	ON	4	Face	Recirculation
Max warm	OFF	3	Foot	Fresh

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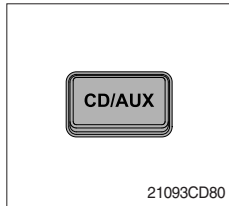


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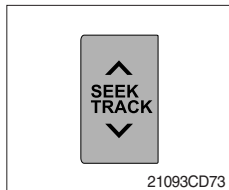
■ CD/MP3 PLAYER

(1) CD playback button



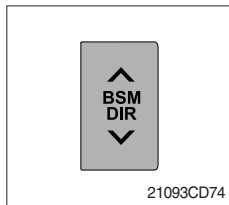
- ① It is possible to change CD playback during broadcasting.
- ② If there was no CD on audio, "NO DISC" displays on LCD during 5 seconds.

(2) Track button



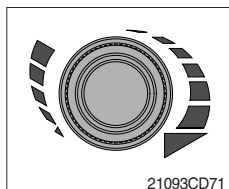
- ① **CD player**
 - Short press : Select the next/previous track
 - Long press : Select the fast forward or rewind
- ② **MP3 player**
 - Memory file search up/down

(3) DiR mode button (MP3)



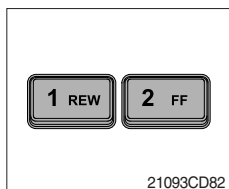
- ① You can find the desired mp3 folder up/down.
- ② If you find desired folder, press the file search button to playback the first file in the folder.
 - ※ **If a file is not selected until 5 seconds after search folder, the function will be terminated.**

(4) File search button



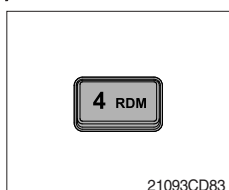
- ① It is possible to search the desired CD track or mp3 file.
 - Turned to clockwise, the CD track or mp3 file number is increased.
 - If it is turned to counterclockwise, CD track or mp3 file number is decreased.
- ※ **If a file or track is not selected until 5 seconds, function will be terminated.**

(5) Fast rewind/Fast forward button (CD)



- ① Continually press these button to quickly move rewind or forward through the disc.
 - ※ **The CD player sound level is lower while press this button.**
- ② Normal playback resumes when you release the button.

(6) Random track button (CD)






















- ① Press this button to activate random track playback.
 - ※ **The LCD displays "RDM".**
- ② It is canceled press one more this button.

RADIO AND USB PLAYER : MACHINE SERIAL NO.: #2203-#2479



75793CD62-2

■ FRONT PANEL PRESENTATION

- | | |
|--|---|
| <p>1  Audio selection button</p> <p> Audio selection knob</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> <p>15  Send</p> <p>16  End</p> <p>17  MIC (microphone)</p> <p>18  Aux connector</p> |
|--|---|

■ GENERAL

(1) Power and volume button



① Power ON / OFF button

Press power button (1) to turn the unit on or off.

② Volume UP/DOWN control knob

Turn VOL knob (1) right to increase the volume level.

Turn VOL knob (1) left to decrease the volume.

After 5 seconds the display will return to the previous display mode.

③ Initial volume level set up

I-VOL is the volume level the unit will play at when next turned on. To adjust the I-VOL level, press and hold VOL button (1) for longer than 2 seconds. The current volume level displays on the display panel.

Then turn button (1) right or left to set the volume level as the I-VOL level.

④ Clock ON/OFF control

The CLOCK was default at off status. To turn CLOCK ON, press and hold VOL button (1) for longer than 2 seconds to display I-VOL, then short press VOL again, turn VOL knob while CLOCK OFF display, then the CLOCK ON will be displayed.

※ **Due to time tolerance, the clock display on the Audio unit might have little difference.**

⑤ Clock adjustment

With CLOCK ON selected, press VOL knob again after CLOCK ON display, the hour will blink, turn VOL knob right or left to adjust hour. Simply press VOL again, the minute will blink, turn VOL knob to adjust minute. Then press VOL again to confirm the clock once finished.

4) Bluetooth connection and disconnection

- (1) When established bluetooth connection between this audio unit and the cellular phone, bluetooth icon on the display appears and then the display shows HF/AV CONN when handsfree & AV profile connected.



- (2) To disconnect bluetooth link
Press and hold CALL END button (4) for 2 seconds, it shows DIS CON and disappears bluetooth icon on the display.



- (3) To disconnect bluetooth link
Press CALL button (3) briefly, it blinks bluetooth icon on the display while bluetooth is being connected. If the connection is completed, it appears bluetooth icon on the display.

- ※ When your cellular phone battery is at low charge, the bluetooth connection may occasionally be lost. To maintain good connectivity ensure that your phone battery is adequately charged.
- ※ In case of failure of bluetooth pairing :
 - Delete item in paired list on your phone.
 - Reset both phone by power off/on and the audio unit by ACC off/on.
- ※ Connecting priority of handsfree profile is higher than headset profile.
- ※ The headset mode does not support caller ID, reject call and call Transfer.

5) Using the audio unit as a handsfree device

- (1) When the audio unit is ringing, it shows CALL and follows with the phone number ***** on the display.



- (2) To accept call
Press CALL button (4), it appears ANSWER CALL and follows TALKING on the display.
- (3) To end call
To end call, press CALL END button (5), it appears REJECT on the display.
- ※ If reject call is activated in your phone, then your cellular phone does not support reject call function.

3. STARTING AND STOP THE ENGINE

1) CHECK INDICATOR LIGHTS

Check if all the operating levers are in the neutral position.

Turn the starting switch to the ON position.
Buzzer sounding for 4 seconds with HYUNDAI logo on cluster.

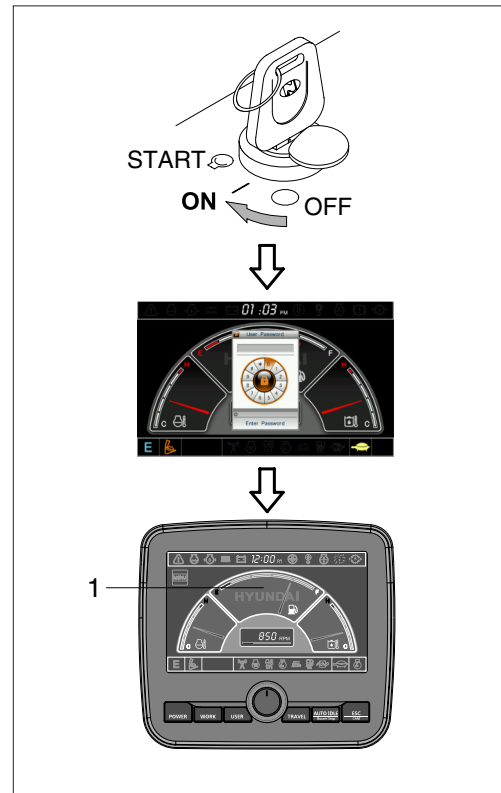
If the ESL mode is set to the enable, enter the password to start engine.

If the password has failed 5 times, please wait 30 minutes before re-attempting to enter the password.

Refer to page 3-17 for ESL mode.

After initialization of cluster, the operating screen is displayed on LCD (1).

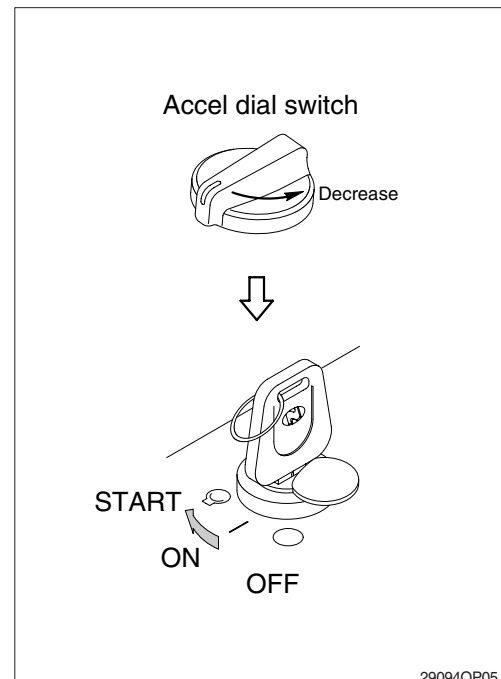
Also, self-diagnostic function is carried out.



2) STARTING ENGINE IN NORMAL TEMPERATURE

※ **Sound the horn to warn the surroundings after checking if personnel or obstacles are in the area.**

- (1) Turn the accel dial switch to low idle position.
- (2) Turn the starting switch to START position to start the engine.
 - ※ **Do not hold the starting switch in the START position for longer than 20 seconds.**
The start system may be seriously damaged.
 - ※ **If the engine does not start, allow the stator to cool for about 2 minutes before re-attempting to start the engine again.**
- (3) Release the starting switch instantly after the engine starts to avoid possible damage to the starting motor.



29094OP05

6. TRAVELING OF THE MACHINE

1) BASIC OPERATION

(1) Traveling position

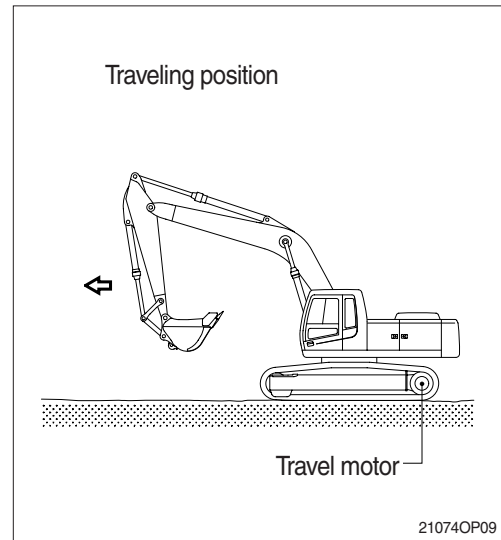
It is the position which the traveling motor is in the rear and the working device is forward.

▲ Be careful as the traveling direction will be reversed when the whole machine is swung 180 degree.

(2) Traveling operation

It is possible to travel by either travel lever or pedal.

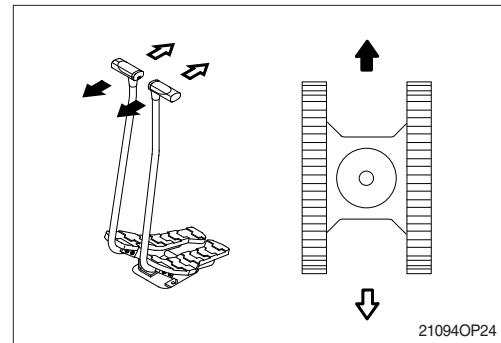
- ※ Do not travel continuously for a long time.
- ※ Reduce the engine speed and travel at a low speed when traveling on uneven ground.



(3) Forward and backward traveling

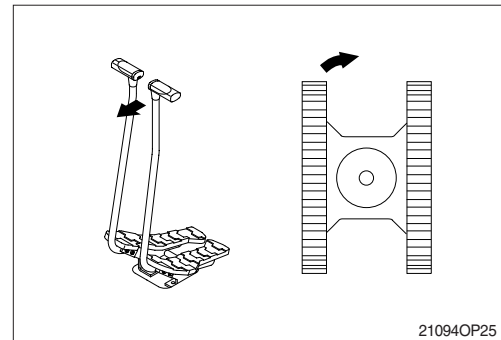
When the left and right travel lever or pedal are pushed at the same time, the machine will travel forward or backward.

The speed can be controlled by the operation stroke of lever or pedal and change of direction will be controlled by difference of the left and right stroke.



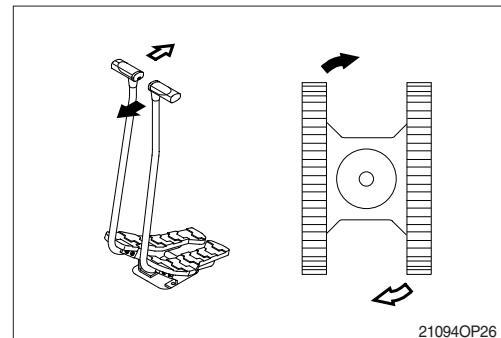
(4) Pivot turning

Operating only one side of lever or pedal make the change of direction possible by moving only one track.



(5) Counter rotation

It is to change the direction at the original place by moving the right and left track. Both side of lever or pedal are operated to the other way at the same time.



10. ATTACHMENT LOWERING (when engine is stopped)

1) On machines equipped with an accumulator, for a short time (within 1 minute) after the engine is stopped, the attachment will lower under its own weight when the attachment control lever is shifted to LOWER. That is happen only starting switch ON position and safety lever UNLOCK position. After the engine is stopped, set the safety lever to the LOCK position.

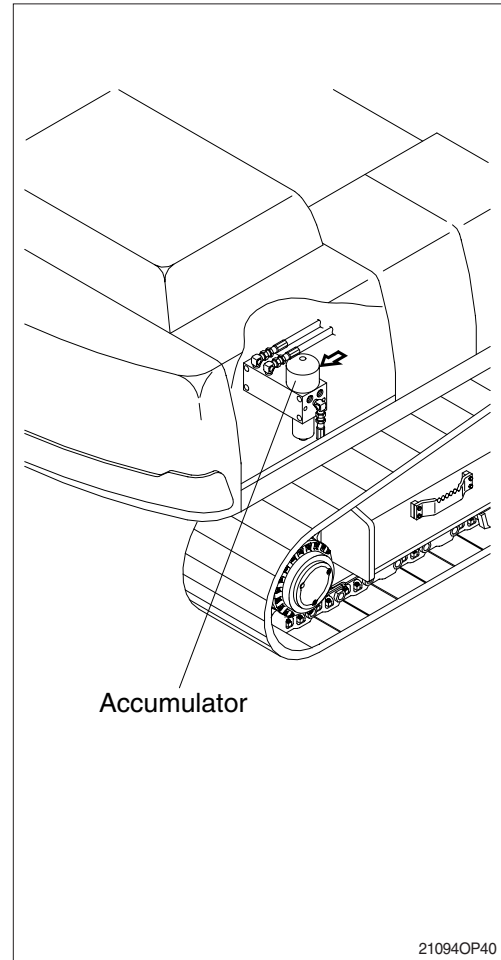
▲ Be sure no one is under or near the attachment before lowering the boom.

2) The accumulator is filled with high-pressure nitrogen gas, and it is extremely dangerous if it is handled in the wrong way. Always observe the following precautions.

▲ Never make any hole in the accumulator expose it to flame or fire.

▲ Do not weld anything to the accumulator.

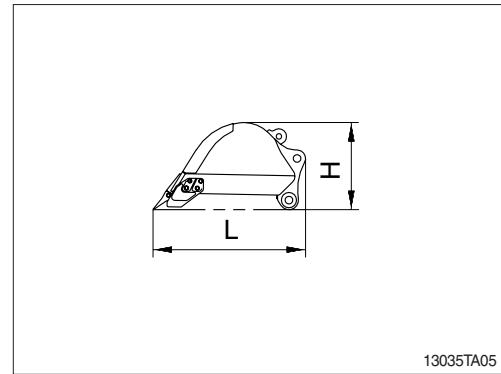
※ **When carrying out disassembly or maintenance of the accumulator, or when disposing of the accumulator, it is necessary to release the gas from the accumulator. A special air bleed valve is necessary for this operation, so please contact your Hyundai distributor.**



(4) Bucket assembly

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	1400 (4' 7")
H	Height	mm (ft-in)	820 (2' 8")
W	Width	mm (ft-in)	1035 (3' 5")
Wt	Weight	kg (lb)	460 (1010)

※ 0.52 m³ (0.68 yd³) SAE heaped bucket (included tooth and side cutters).

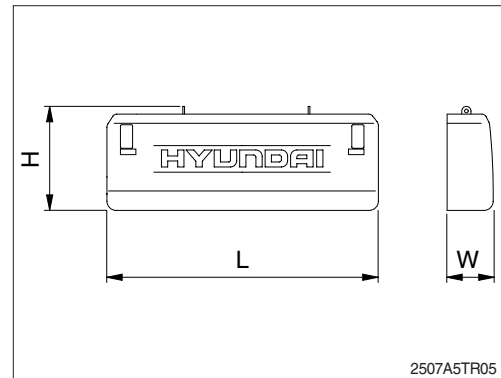


13035TA05

(5) Counterweight

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	2980 (9' 9")
H	Height	mm (ft-in)	1050 (3' 5")
W	Width	mm (ft-in)	590 (1' 11")
Wt	Weight	kg (lb)	6200 (13670)

※ Included piping.



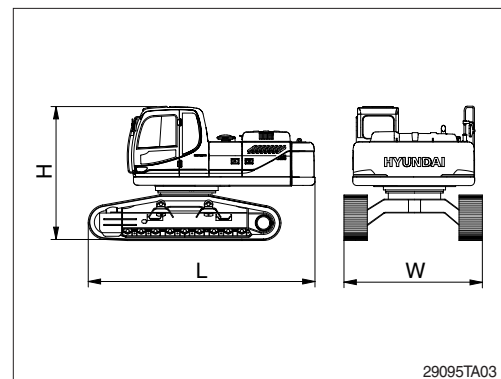
2507A5TR05

4) R290LC-9 HIGH WALKER

(1) Base machine

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	5595 (18' 4")
H	Height	mm (ft-in)	3380 (11' 1")
W	Width	mm (ft-in)	3470 (11' 5")
Wt	Weight	kg (lb)	26690 (58840)

※ With 600 mm (24") triple grouser shoes and 5200 kg (11460 lb) counterweight.



29095TA03

2. TIGHTENING TORQUE

Use following table for unspecified torque.

1) BOLT AND NUT

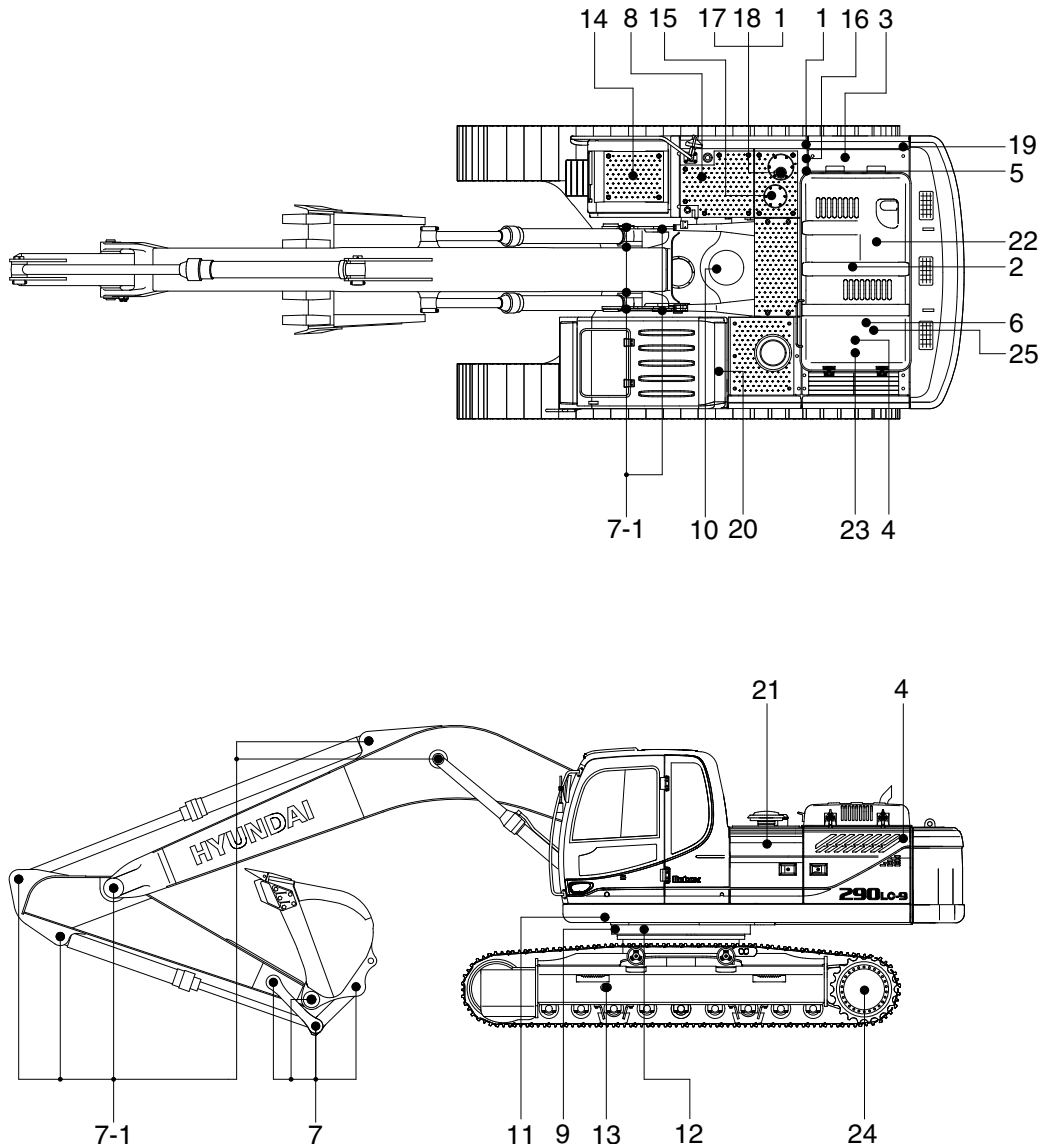
(1) Coarse thread

Bolt size	8T		10T	
	kgf · m	lbf · ft	kgf · m	lbf · ft
M 6 × 1.0	0.9 ~ 1.3	6.5 ~ 9.4	1.1 ~ 1.7	8.0 ~ 12.3
M 8 × 1.25	2.0 ~ 3.0	14.5 ~ 21.7	2.7 ~ 4.1	19.5 ~ 29.7
M10 × 1.5	4.0 ~ 6.0	28.9 ~ 43.4	5.5 ~ 8.3	39.8 ~ 60.0
M12 × 1.75	7.4 ~ 11.2	53.5 ~ 81.0	9.8 ~ 15.8	70.9 ~ 114
M14 × 2.0	12.2 ~ 16.6	88.2 ~ 120	16.7 ~ 22.5	121 ~ 163
M16 × 2.0	18.6 ~ 25.2	135 ~ 182	25.2 ~ 34.2	182 ~ 247
M18 × 2.5	25.8 ~ 35.0	187 ~ 253	35.1 ~ 47.5	254 ~ 344
M20 × 2.5	36.2 ~ 49.0	262 ~ 354	49.2 ~ 66.6	356 ~ 482
M22 × 2.5	48.3 ~ 63.3	349 ~ 458	65.8 ~ 98.0	476 ~ 709
M24 × 3.0	62.5 ~ 84.5	452 ~ 611	85.0 ~ 115	615 ~ 832
M30 × 3.5	124 ~ 168	898 ~ 1214	169 ~ 229	1223 ~ 1656
M36 × 4.0	174 ~ 236	1261 ~ 1704	250 ~ 310	1808 ~ 2242

(2) Fine thread

Bolt size	8T		10T	
	kgf · m	lbf · ft	kgf · m	lbf · ft
M 8 × 1.0	2.2 ~ 3.4	15.9 ~ 24.6	3.0 ~ 4.4	21.7 ~ 31.8
M10 × 1.25	4.5 ~ 6.7	32.5 ~ 48.5	5.9 ~ 8.9	42.7 ~ 64.4
M12 × 1.25	7.8 ~ 11.6	56.4 ~ 83.9	10.6 ~ 16.0	76.7 ~ 116
M14 × 1.5	13.3 ~ 18.1	96.2 ~ 131	17.9 ~ 24.1	130 ~ 174
M16 × 1.5	19.9 ~ 26.9	144 ~ 195	26.6 ~ 36.0	192 ~ 260
M18 × 1.5	28.6 ~ 43.6	207 ~ 315	38.4 ~ 52.0	278 ~ 376
M20 × 1.5	40.0 ~ 54.0	289 ~ 391	53.4 ~ 72.2	386 ~ 522
M22 × 1.5	52.7 ~ 71.3	381 ~ 516	70.7 ~ 95.7	511 ~ 692
M24 × 2.0	67.9 ~ 91.9	491 ~ 665	90.9 ~ 123	658 ~ 890
M30 × 2.0	137 ~ 185	990 ~ 1339	182 ~ 248	1314 ~ 1796
M36 × 3.0	192 ~ 260	1390 ~ 1880	262 ~ 354	1894 ~ 2562

5. MAINTENANCE CHART



29096MA01

Caution

1. Service intervals are based on the hour meter reading.
2. The number of each item shows the lubrication point on the machine.
3. Stop engine while filling oil, and use no open flames.

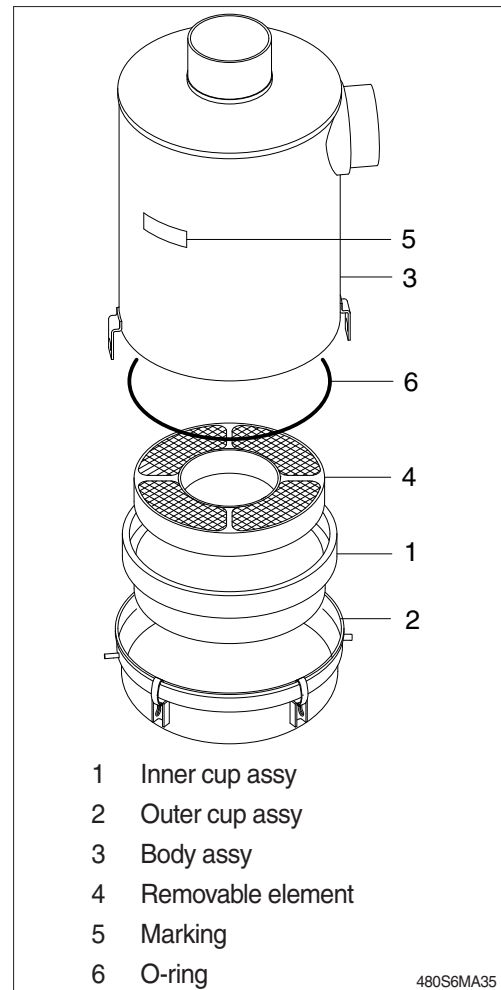
Service interval	No.	Description	Service action	Oil symbol	Capacity / (U.S.gal)	Service points No.
10 Hours or daily	1	Hydraulic oil level	Check, Add	HO	190 (50)	1
	2	Engine oil level	Check, Add	EO	24 (6.3)	1
	4	Radiator coolant	Check, Add	C	35 (9.2)	1
	5	Prefilter (water, element)	Check, Clean	-	-	1
	6	Fan belt tension and damage	Check, Adjust	-	-	1
	8	Fuel tank	Check, Refill	DF	500 (132)	1
	21	Air cleaner (oil bath)	Check, Clean, Add	EO	-	1

9-1) AIR CLEANER (OIL BATH)

△ Always cover the engine intake hole while the air cleaner is being serviced.

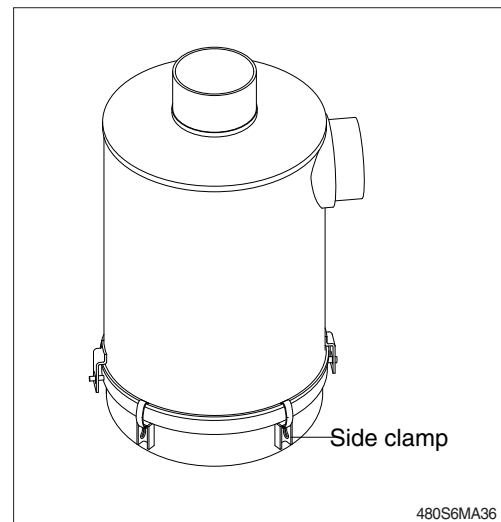
(1) General service

- ① The oil bath air cleaner should be inspected constantly for leaks and damage.
- ② The removable element assembly (4) should be removed from the oil cups (1, 2) and inspected daily or at each oil cup service.
- ③ Watch all connections for mechanical tightness. Be sure cleaner outlet pipe is not fractured.
- ④ If air cleaner has been dented or damaged, check all connections immediately.
- ⑤ In case of leakage and if adjustment does not correct the trouble, replace necessary parts or O-ring.



(2) Oil cup

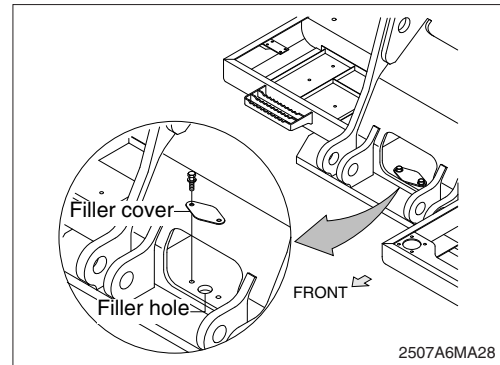
- ① Service the inner oil cup (1) and outer oil cup (2) daily or when 1/2" of dirt has collected in bottom of either cup.
- ※ Severe operating conditions may require several inspections daily.
- ② Loosen the side clamps and removing bottom of unit and lift the removable element assembly (4) from the oil cup.
 - ③ Pour out the oil and remove inner cup (1) from out cup (2) and remove sludge and wipe clean.
 - ④ Reassembled inner cup (1) in outer cup (2) and refill both cups to indicated oil level.
 - ⑤ The same oil specified for the engine crankcase is generally acceptable.
- ※ Do not over fill or under fill the cup.
Overfilling means loss of capacity and under filling means lack of efficiency.



28) SWING GEAR AND PINION

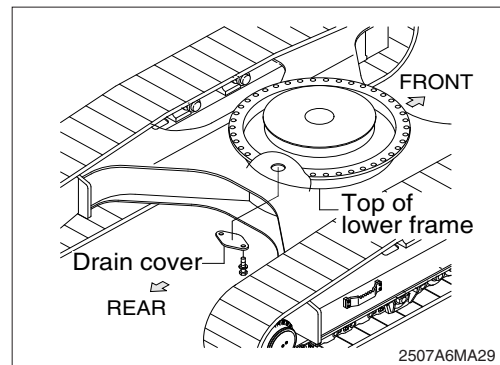
(1) Drain old grease

- ① Remove under cover of lower frame.
- ② Remove drain cover of lower frame.
- ③ Remove filler cover of upper frame.
- ④ Operate full turn (360°) of swing several times.



(2) Refill new grease

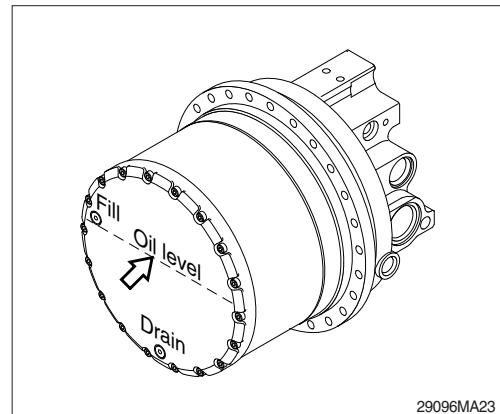
- ① Install drain cover.
- ② Fill with new grease.
- ③ Install filler cover.
 - Capacity : 11.5 kg (25.4 lb)



29) CHECK THE TRAVEL REDUCTION GEAR OIL

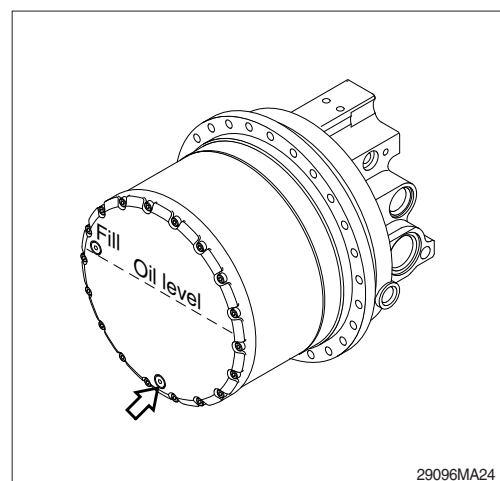
- (1) Operate the machine to the position of drain plug down to the flat ground.
- (2) Loosen the level plug and check the oil level.
If the level is at the hole of the plug, it is normal.
Fill the oil if it is not sufficient.

- Amount of oil : 9.5 l (2.5 U.S.gal, #0317)
8.0 l (2.1 U.S.gal, #0318-)

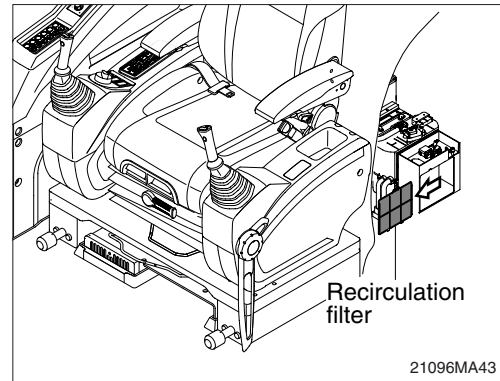


30) CHANGE OF THE TRAVEL REDUCTION GEAR OIL

- (1) Raise the temperature of the oil by traveling machine first.
- (2) Stop when the position of the drain plug is down.
- (3) Loosen the level plug and then the drain plug.
- (4) Drain the oil to adequate container.
- (5) Tighten the drain plug and fill specified amount of oil at filling port.
- (6) Tighten the level plug and travel slowly to check if there is any leakage of oil.



(2) Remove recirculation filter.

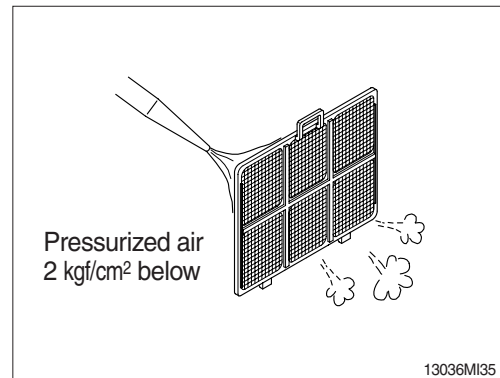


(3) Clean the recirculation filter using a pressurized air (below 2 kgf/cm², 28 psi) or washing with water.

△ When using pressurized air, be sure to wear safety glasses.

※ Dry off after washing with water.

(4) Inspect the filter after cleaning. If it is damaged or badly contaminated, use a new filter.



3) PRECAUTIONS FOR USING AIR CONDITIONER

- (1) When using the air conditioner for a long time, open the window once every one hour.
- (2) Be careful not to overcool the cab.
- (3) The cab is properly cooled if the operator feels cool when entering there from outside (about 5°C lower than the outside temperature).
- (4) When cooling, change air occasionally.

4) CHECK DURING SEASON

Ask the service center for replenishment of refrigerant or other maintenance service so that the cooling performance is not damaged.

5) CHECK DURING OFF-SEASON

Operate the air conditioner 2 or 3 times a month (each for a few minutes) to avoid loss of oil film in the compressor.

6) Refrigerant (R134-a) amount : 800 ± 20 g

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