

CONTENTS

Foreword	0-1	6. Efficient working method	4-11
Before servicing this machine	0-2	7. Operation in the special work sites	4-15
EC regulation approved	0-3	8. Normal operation of excavator	4-17
Table to enter S/No and distribution	0-4	9. Attachment lowering pattern	4-18
Safety labels	0-5	10. Storage	4-19
Machine data plate	0-14	11. RCV lever operating pattern	4-21
Guide (direction, S/No, symbol)	0-15		
SAFETY HINTS		TRANSPORTATION	
1. Before operating the machine	1-1	1. Preparation for transportation	5-1
2. During operating the machine	1-16	2. Dimension and weight	5-2
3. During maintenance	1-23	3. Loading the machine	5-4
4. Parking	1-26	4. Fixing the machine	5-6
		5. Loading and unloading by crane	5-7
SPECIFICATIONS		MAINTENANCE	
1. Major components	2-1	1. Instruction	6-1
2. Specifications	2-2	2. Tightening torque	6-6
3. Working range	2-3	3. Fuel, coolant and lubricants	6-9
4. Weight	2-4	4. Maintenance check list	6-11
5. Lifting capacities	2-5	5. Maintenance chart	6-16
6. Bucket selection guide	2-7	6. Service instruction	6-18
7. Undercarriage	2-8	7. Electrical system	6-36
8. Specification for major components	2-9	8. Air conditioner and heater	6-39
9. Recommended oils	2-12		
CONTROL DEVICES		TROUBLESHOOTING GUIDE	
1. Cab devices	3-1	1. Engine	7-1
2. Cluster	3-2	2. Electrical system	7-2
3. Switches	3-13	3. Others	7-3
4. Levers and pedals	3-17		
5. Full auto air conditioner and heater	3-19	HYDRAULIC BREAKER AND QUICK CLAMP	
6. Others	3-23	1. Selecting hydraulic breaker	8-1
OPERATION		2. Circuit configuration	8-2
1. Suggestion for new machine	4-1	3. Maintenance	8-3
2. Check before starting the engine	4-2	4. Precaution while operating the breaker	8-4
3. Starting and stop the engine	4-3	5. Quick clamp	8-6
4. Operation of the working device	4-7		
5. Traveling of the machine	4-8	INDEX	9-1

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8) GENERAL CAUTIONS-CABIN (item 10)

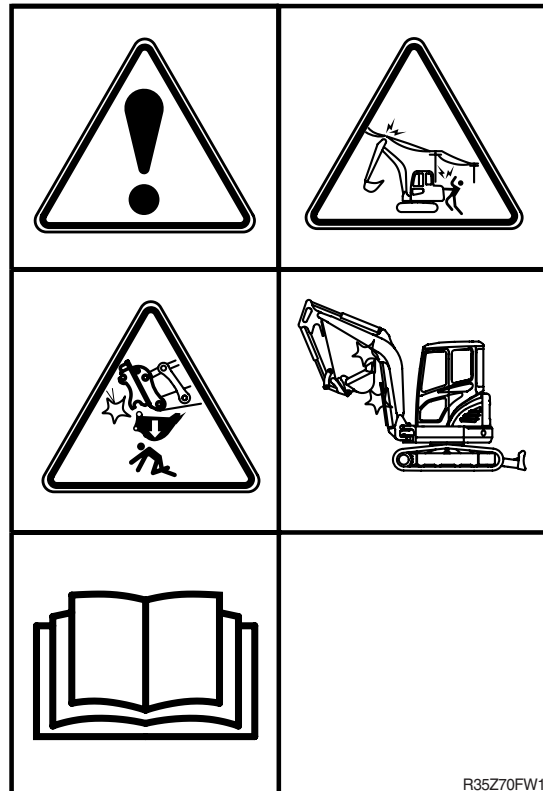
This warning label is positioned on the right side window of the cab.

- ▲ Serious injury or death can result from contact with electric lines.

An electric shock being received by merely coming into the vicinity of an electric lines, the minimum distance should be kept considering the supply voltage as page 1-7.

- ▲ Serious injury or death can result from dropping bucket.

- ▲ Operating the machine with quick clamp switch unlocked or without safety pin of moving hook can cause the bucket to drop off.

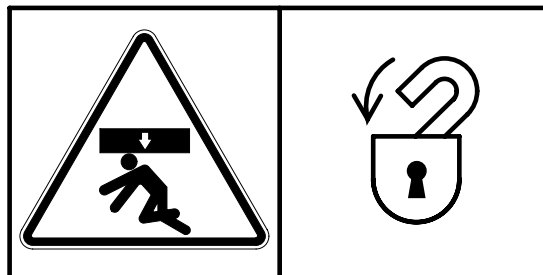


R35Z70FW11

9) SAFETY FRONT WINDOW (item 11)

This warning label is positioned on the both side window of the cab.

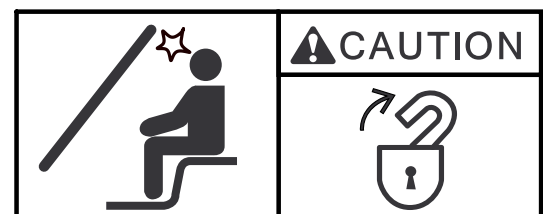
- ▲ Be careful that the front window may be promptly closed.



21070FW24

10) WARNING FRONT WINDOW (item 12)

This warning label is positioned on the front window of the cab.

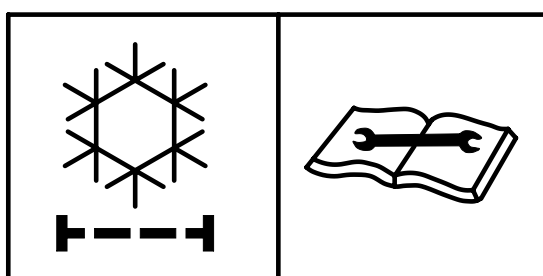


5591FW05

11) DECAL-AIRCON FILTER (item 13)

This warning label is positioned on the lower seat base.

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



21070FW26

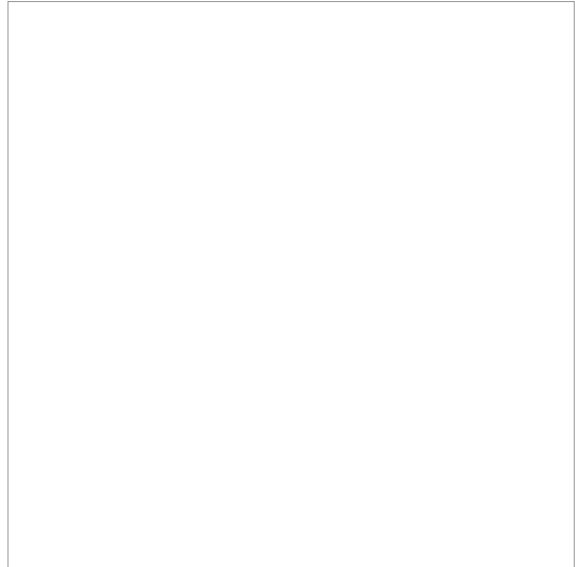
PRECAUTIONS FOR ATTACHMENTS

When installing and using an optional attachment, read the instruction manual for the attachment and the information related to attachments in this manual.

Do not use attachments that are not authorized by Hyundai or your Hyundai distributor. Use of unauthorized attachments could create a safety problem and adversely affect the proper operation and useful life of the machine.

Any injuries, accidents, product failures resulting from the use of unauthorized attachments are not the responsibility of Hyundai.

The stability of this machine is enough to be used for general work. When you operate this machine, allow for the lifting capacity tables. If you want to use other special applications (not covered in this manual), you have to attach additional counterweight or be cautious while running the machine.

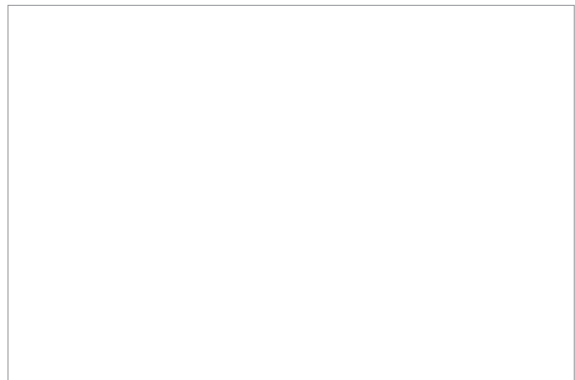


SAFETY RULES

Only trained and authorized personnel can operate and maintain the machine.

Follow all safety rules, precautions and instructions when operating or performing maintenance on the machine.

When working with another operator or a person on worksite traffic duty, be sure all personnel understand all hand signals that are to be used.



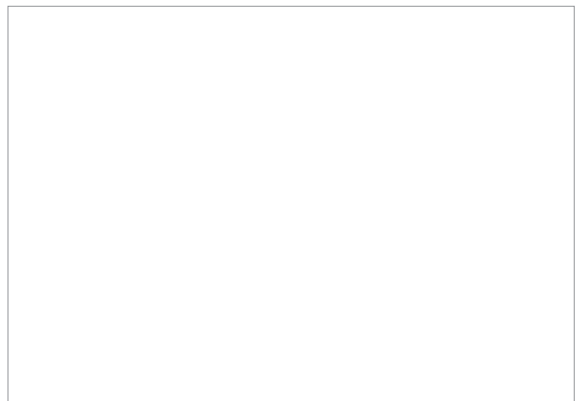
SAFETY FEATURES

Be sure all guards and covers are in their proper position. Have guards and covers repaired if damaged.

Use safety features such as safety lock and seat belts properly.

Never remove any safety features. Always keep them in good operating condition.

Improper use of safety features could result in serious bodily injury or death.



※ All vibration levels are in meter per second squared.

ISO Reference Table A – Equivalent vibration levels of whole body vibration emission for earthmoving equipment.

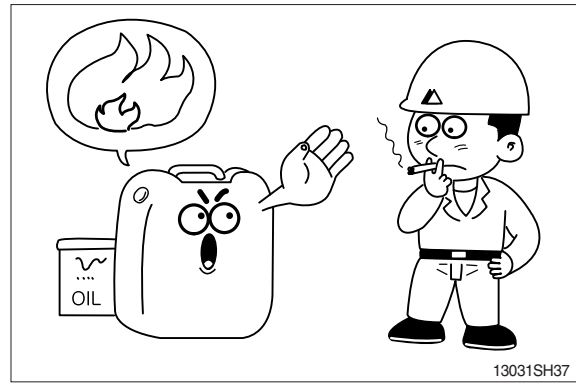
Machine family	Machine kind	Typical operating condition	Vibration Levels			Scenario Factors		
			X axis	Y axis	Z axis	X axis	Y axis	Z axis
Excavator	Compact crawler excavator	Excavating	0.33	0.21	0.19	0.19	0.12	0.10
		Hydraulic breaker app.	0.49	0.28	0.36	0.20	0.13	0.17
		Transfer movement	0.45	0.39	0.62	0.17	0.18	0.28
	Crawler excavator	Excavating	0.44	0.27	0.30	0.24	0.16	0.17
		Hydraulic breaker app.	0.53	0.31	0.55	0.30	0.18	0.28
		Mining application	0.65	0.42	0.61	0.21	0.15	0.32
		Transfer movement	0.48	0.32	0.79	0.19	0.20	0.23
	Wheeled excavator	Excavating	0.52	0.35	0.29	0.26	0.22	0.13
Transfer movement		0.41	0.53	0.61	0.12	0.20	0.19	

ISO Reference Table A – Equivalent vibration levels of whole body vibration emission for earthmoving equipment.

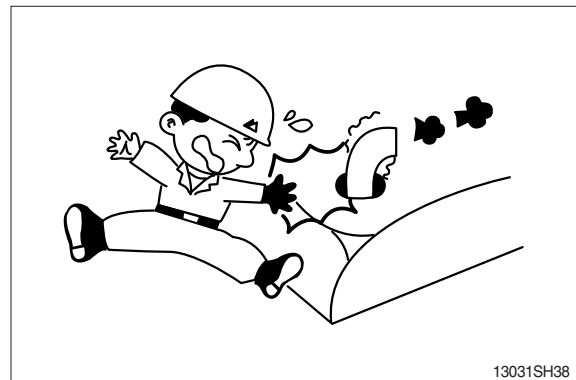
Machine family	Machine kind	Typical operating condition	Vibration Levels			Scenario Factors		
			X axis	Y axis	Z axis	X axis	Y axis	Z axis
Loader	skid steer loader (tracks)	V-shaped motion	1.21	1.00	0.82	0.30	0.84	0.32
	Wheel backhoe loader	Excavating	0.28	0.26	0.20	0.09	0.16	0.06
	Wheel loader	Load and carry motion	0.84	0.81	0.52	0.23	0.20	0.14
		Mining application	1.27	0.97	0.81	0.47	0.31	0.47
		Transfer movement	0.76	0.91	0.49	0.33	0.35	0.17
		V-shape motion	0.99	0.84	0.54	0.29	0.32	0.14

※ Refer to “ISO/TR 25398 Mechanical Vibration-Guideline for the assessment of exposure to whole body vibration of ride on operated earthmoving machines” for more information about vibration. This publication uses data that is measured by international institutes, organizations and manufacturers. This document provides information about the whole body exposure of operators of earthmoving equipment.

There is the danger of fire in fuel and oil.
Store in cool and dry area, away from any open flames.



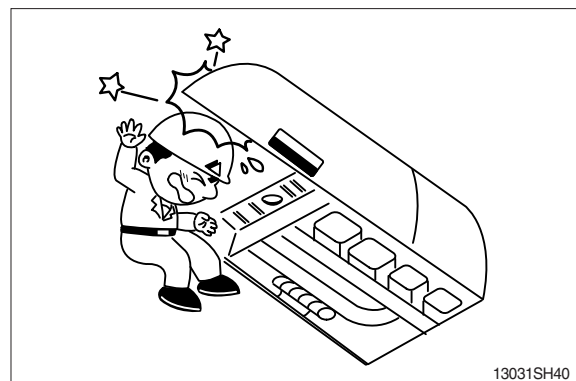
Do not touch exhaust pipe, or may cause severe burn.



Do not open the engine hood and covers while the engine is running.



Be careful of not hitting the edges when you service engine.

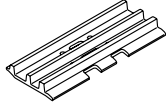
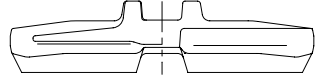


7. UNDERCARRIAGE

1) TRACKS

X-leg type center frame is integrally welded with reinforced box-section track frames. The design includes dry tracks, lubricated rollers, idlers, sprockets, hydraulic track adjusters with shock absorbing springs and assembled track-type tractor shoes with triple grousers.

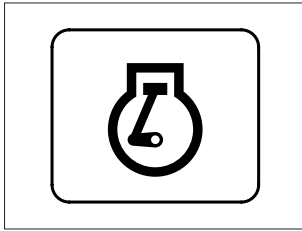
2) TYPES OF SHOES

Model	Shapes		Triple grouser	Rubber track
				
R60CR-9	Shoe width	mm (in)	380 (15)	400 (16)
	Operating weight	kg (lb)	5900 (13010)	5800 (12790)
	Ground pressure	kgf/cm ² (psi)	0.36 (5.12)	0.34 (4.83)
	Overall width	mm (ft-in)	2000 (6' 7")	2000 (6' 7")

3) NUMBER OF ROLLERS AND SHOES ON EACH SIDE

Item	Quantity
Carrier rollers	1 EA
Track rollers	5 EA
Track shoes	40 EA

(11) Auto idel pilot lamp



If the control lever and pedal are not moved for several seconds with auto idle switch pressed, the indicator illuminates and engine speed is decelerated.

If the auto idle switch is pressed once more or the control lever or pedal is moved, the indicator turns off and the number of engine revolution is turned to the previous condition.

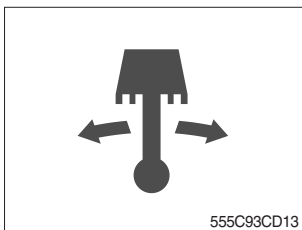
(12) M mode pilot lamp



①

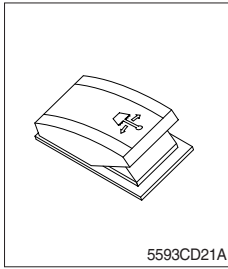
②

(13) Boom offset pilot lamp



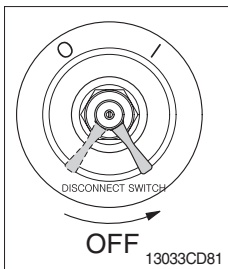
① This lamp is ON when the boom offset switch is pressed.

12) BOOM OFFSET SWITCH



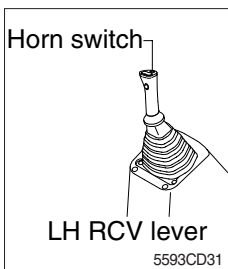
- (1) This switch is used to swing the boom to the right or left direction.
 - (2) The indicator lamp turned ON when selected this switch.
- ※ **Refer to the page 4-7 for the operation.**

13) MASTER SWITCH



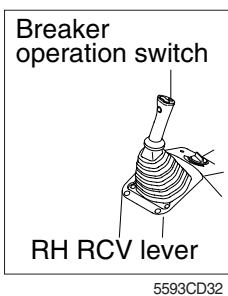
- (1) This switch is used to shut off the entire electrical system.
 - (2) I : The battery remains connected to the electrical system.
O : The battery is disconnected to the electrical system.
- ※ **Never turn the master switch to O (OFF) with the engine running. It could result in engine and electrical system damage.**

14) HORN SWITCH



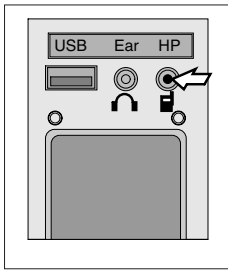
- (1) This switch is at the top of left side control lever.
On pressing, the horn sounds.

15) BREAKER OPERATION SWITCH

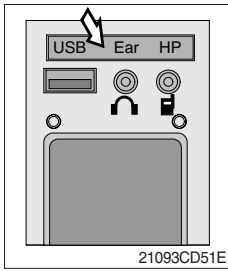


- (1) On pressing this switch, the breaker operates only when the breaker selection switch on the switch panel is selected.

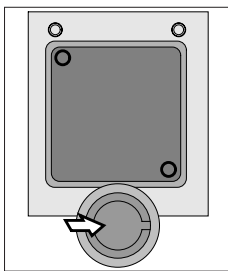
(4) Handsfree jack socket



(5) Indicator lamp

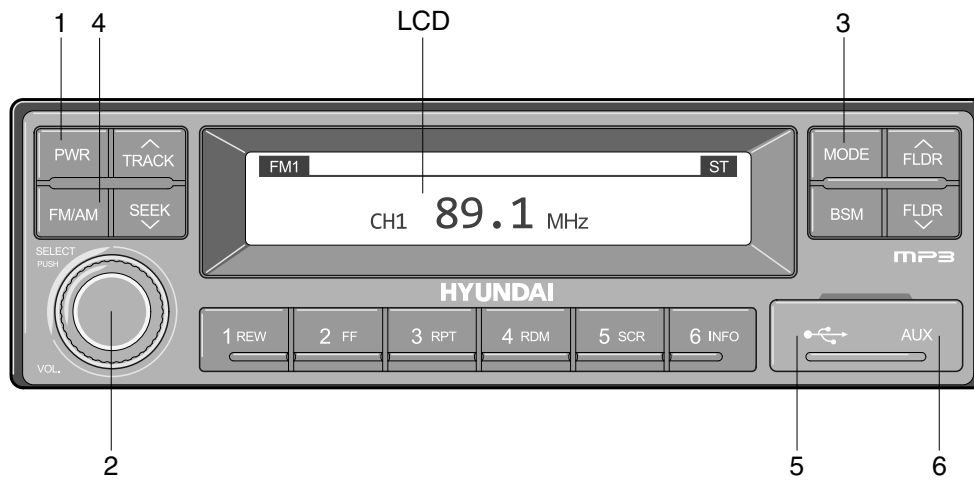


(6) Service socket



RADIO AND USB PLAYER (machine serial No. : #0008-#1194)

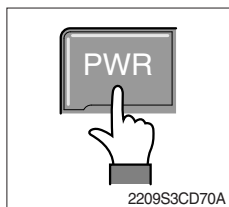
■BASIC FUNCTIONS



2209S3CD70

- | | |
|-------------------------------|----------------------------------|
| 1 Power (PWR) button | 4 Radio (FM/AM) selection button |
| 2 Volume/Sound setting button | 5 USB slot |
| 3 Mode selection button | 6 AUX terminal |

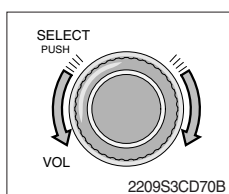
(1) Power (PWR) button



- ① Press the PWR button to turn on the audio. While the audio is operating, press the button to turn the power off.

(2) Volume/Sound setting button

· Volume (VOL) button



- ① Turn the VOL button clockwise to increase the volume and counter-clockwise to decrease the volume.

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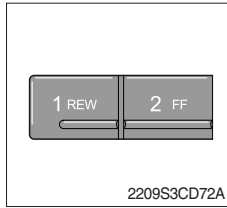
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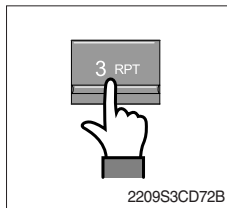
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(3) FF/REW button



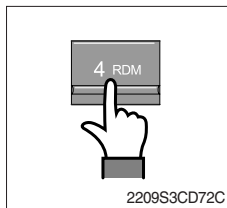
- ① While an iPod is operating, press and hold the FF button to fast-forward the song.
- ② When fast-forward is complete, the next song will properly play from the beginning even if you continue holding the button. Press and hold the REW button to rewind the song.
- ③ When rewind is complete, the current song will properly play from the beginning even if you continue holding the button.
- ④ Shortly pressing the buttons will not operate the FF/REW.

(4) Repeat (RPT) button



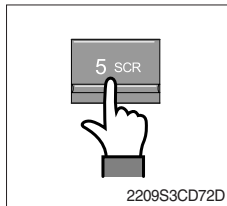
- ① While music is playing, press the RPT button to repeat the currently playing song.

(5) Random play (RDM) button



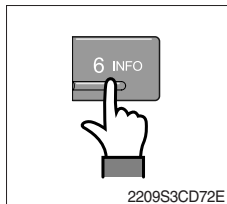
- ① While music is playing, press the RDM button to randomly play the songs.

(6) Scroll (SCR) button



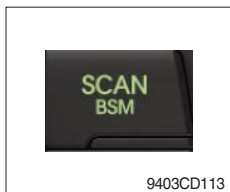
- ① Displays the file name of the currently playing song on the LCD. Here, the SCR button turns the file name SCROLL ON/OFF.

(7) View music info (INFO) button



- ① Each time the INFO button is pressed, the info on the currently playing song will be displayed in order of ARTIST → ALBUM → TITLE.

(5) Track Scan Play (SCAN) button



- SCAN playback : Simply press SCAN (12) button to play the first 10 seconds of each track.
- SCAN folder : Press and hold SCAN button for longer than 2 seconds to scan play the tracks in current folder.
- SCAN off : Simply press it again to cancel SCAN feature.

(6) Track Repeat Play (RPT) button



- REPEAT playback : Simply press RPT (8) button to play current track repeatedly.
- REPEAT folder : Press and hold RPT for longer than 2 seconds to repeat play the tracks in current folder.
- REPEAT off : Simply press it again to cancel REPEAT feature.

(7) Track Random Play (RDM) button



- RANDOM playback : Simply press RDM (9) button to play the tracks in the device in a random sequence.
- RANDOM folder : Press and hold RDM button for longer than 2 seconds to random play the tracks in current folder.
- RANDOM off : Simply press it again to cancel RANDOM feature.

(8) ID3 v2 (DISP)



- ① While a MP3 file is playing, press DISP button (6) to display ID3 information. Repeat push DISP button (6) to show directory name / file name and album name / performer / title.

※ **If the MP3 disc does not have any ID3 information, it will show NO ID3.**

* USB Information and Notice

a. Playback FILE SYSTEM and condition allowance.

- FAT, FAT12, FAT16 and FAT32 in the file system.
- V1.1, V2.2 and V2.3 in the TAG (ID3) version.

b. Display up to 32 characters in the LCD display.

c. No support any of MULTI-CAED Reader.

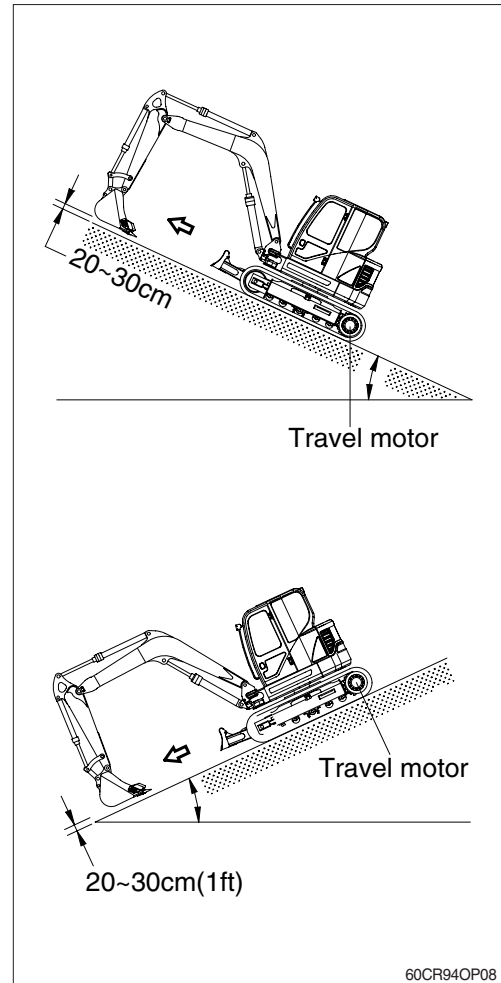
d. No high speed playback but only playing with normal full speed.

※ **DRM files in the USB may cause malfunction to playback in the radio unit.**

※ **The temperature below -10 Celsius, the audio unit with USB hook up would be affected to play well.**

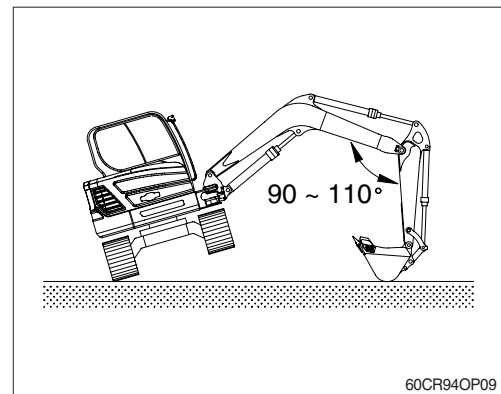
2) TRAVELING ON A SLOPE

- (1) Make sure that the travel lever is properly maneuvered by confirming the travel motor is in the right location.
 - (2) Lower the bucket 20 to 30 cm (1 ft) to the ground so that it can be used as a brake in an emergency.
 - (3) If the machine starts to slide or loses stability, lower the bucket immediately and brake the machine.
 - (4) When parking on a slope, use the bucket as a brake and place blocks behind the tracks to prevent sliding.
- ※ Machine cannot travel effectively on a slope when the oil temperature is low. Do the warming-up operation when it is going to travel on a slope.
- ▲ Be careful when working on slopes. It may cause the machine to lose its balance and turn over.
- ▲ Be sure to keep the travel speed switch on the LOW (turtle mark) while traveling on a slope.



3) TRAVELING ON SOFT GROUND

- ※ If possible, avoid to operate on soft ground.
- (1) Move forward as far as machine can move.
 - (2) Take care not to go beyond the depth where towing is impossible on soft ground.
 - (3) When driving becomes impossible, lower bucket and use boom and arm to pull the machine. Operate boom, arm, and travel lever at the same time to avoid the machine sinking.



10. STORAGE

Maintain the machine taking care of following to prevent the deterioration of machine when storing the machine for a long time, over 1 month.

1) BEFORE STORAGE

(1) Cleaning the machine

Clean the machine. Check and adjust tracks.
Grease each lubrication part.

(2) Lubrication position of each part

Change all oil.

※ **Be particularly careful when you reuse the machine.**

As oil can be diluted during storage.

Apply an anticorrosive lubricant on the exposed part of piston rod of cylinder and in places where the machine rusts easily.

(3) Master switch

Turn OFF the master switch mounted electric box and store the machine.

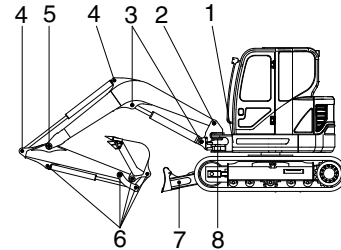
(4) Be sure to mix anticorrosive antifreezing solution in the radiator.

(5) Prevention of dust and moisture

Keep machine dry. Store the machine setting wood on the ground.

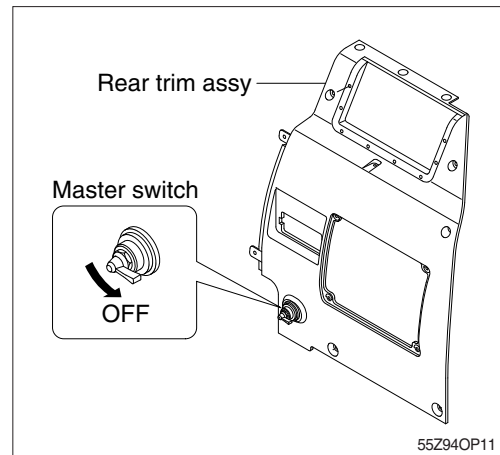
※ **Cover exposed part of piston rod of cylinder.**

※ **Lower the bucket to the ground and set a support under track.**

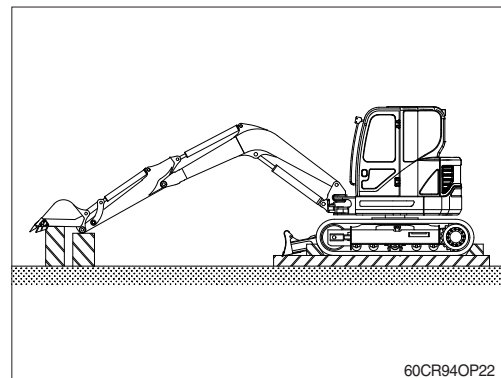


- 1 Lubricating manifold (4EA)
- 2 Boom connection pin (2EA)
- 3 Boom cylinder pin (2EA)
- 4 Arm cylinder pin (2EA)
- 5 Boom and arm connection pin (1EA)
- 6 Arm and bucket (5EA)
- 7 Dozer blade and cylinder (4EA)
- 8 Boom swing post (2EA)

60CR94OP21



55Z94OP11



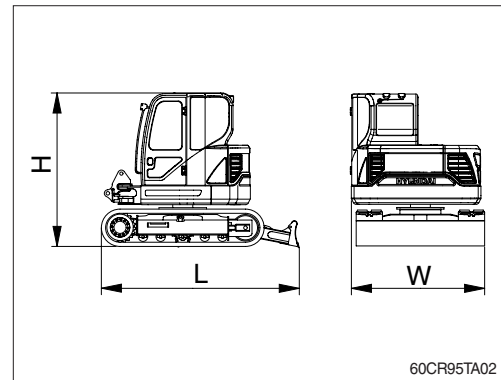
60CR94OP22

2. DIMENSION AND WEIGHT

1) Base machine

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	3070 (10' 1")
H	Height	mm (ft-in)	2550 (8' 4")
Wd	Width	mm (ft-in)	2000 (6' 7")
Wt	Weight	kg (lb)	5170 (11400)

※ With 380 mm (15") triple grouser shoes and 470 kg (1040 lb) counterweight.

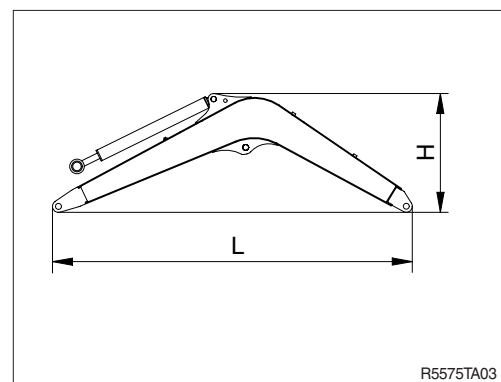


2) Boom assembly

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	3020 (9' 10")
H	Height	mm (ft-in)	1160 (3' 10")
Wd	Width	mm (ft-in)	330 (1' 1")
Wt	Weight	kg (lb)	300 (660)

※ 2.9 m boom with arm cylinder (included piping and pins).

- Arm CYL : 55 kg

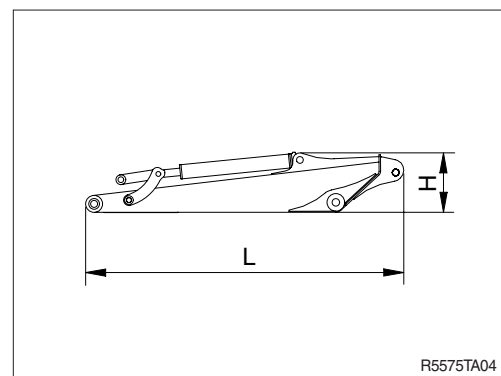


3) Arm assembly

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	2000 (6' 7")
H	Height	mm (ft-in)	510 (1' 8")
Wd	Width	mm (ft-in)	165 (0' 7")
Wt	Weight	kg (lb)	205 (450)

※ 1.48 m (4'10") arm with bucket cylinder (included linkage and pins).

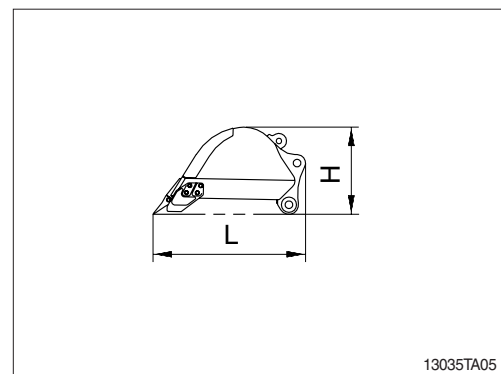
- Bucket CYL : 35 kg



4) Bucket assembly

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	1020 (3' 4")
H	Height	mm (ft-in)	570 (1' 10")
Wd	Width	mm (ft-in)	740 (2' 5")
Wt	Weight	kg (lb)	170 (380)

※ 0.18 m³ (0.24 yd³) SAE heaped bucket (Included tooth and side cutters).



6) PERIODICAL REPLACEMENT OF SAFETY PARTS

(1) It is desirable to do periodic maintenance the machine for using the machine safely for a long time.

However, recommend to replace regularly the parts related safety not only safety but maintain satisfied performance.

(2) These parts can cause the disaster of life and material as the quality changes by passing time and it is worn, diluted, and gets fatigued by using repeatedly.

These are the parts which the operator can not judge the remained lifetime of them by visual inspection.

(3) Repair or replace if an abnormality of these parts is found even before the recommended replacement interval.

Periodical replacement of safety parts			Interval
Engine		Fuel hose(tank-engine)	Every 2 years
		Heater hose (heater-engine)	
Hydraulic system	Main circuit	Pump suction hose	Every 2 years
		Pump delivery hose	
		Swing hose	
	Working device	Boom cylinder line hose	Every 2 years
		Arm cylinder line hose	
Bucket cylinder line hose			

※ 1. Replace O-ring and gasket at the same time when replacing the hose.

2. Replace clamp at the same time if the hose clamp is cracked when checking and replacing the hose.

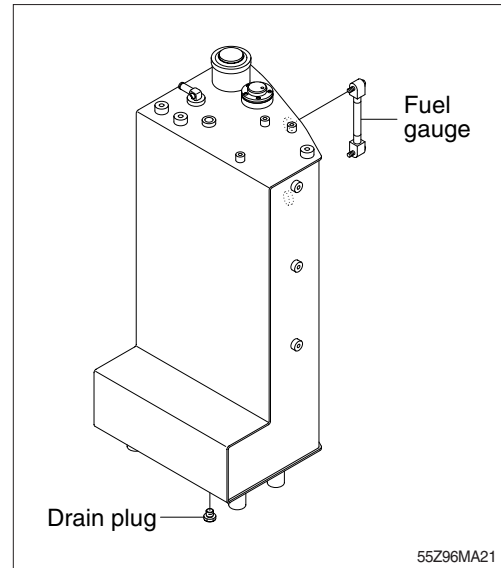
10) WHEN REQUIRED

Whenever you have trouble in the machine, you must perform the service of related items, system by system.

Check items	Service	Page
Fuel system		
· Fuel tank	Drain or Clean	6-25
· Prefilter	Clean or Replace	6-25
· Fuel filter element	Replace	6-26
Engine lubrication system		
· Engine oil	Change	6-18, 19
· Engine oil filter	Replace	6-18, 19
Engine cooling system		
· Coolant	Add or Change	6-20, 21, 22, 23
· Radiator	Clean or Flush	6-20, 21, 22, 23
· Charge air cooler	Check	6-23
Engine air system		
· Air cleaner element	Replace	6-24
Hydraulic system		
· Hydraulic oil	Add or Change	6-27
· Return filter	Replace	6-28
· Pilot line filter	Replace	6-29
· Element of breather	Replace	6-29
· Suction strainer	Clean	6-28
Under carriage		
· Track tension	Check, Adjust	6-32
Bucket		
· Tooth	Replace	6-34
· Side cutter	Replace	6-33
· Linkage	Adjust	6-33
· Bucket assy	Replace	6-33
Air conditioner and heater		
· Fresh air filter	Clean, Replace	6-39
· Recirculation filter	Clean	6-40

9) FUEL TANK

- (1) Fill fuel fully when system the operation to minimize water condensation, and check it with fuel gauge before starting the machine.
 - (2) Drain the water and sediment in the fuel tank by opening the drain cock.
 - ※ **Be sure to LOCK the cap of fuel tank.**
 - ※ **Remove the strainer of the fuel tank and clean it if contaminated.**
- ▲ **Stop the engine when refueling.**
All lights and flames shall be kept at a safe distance while refueling.

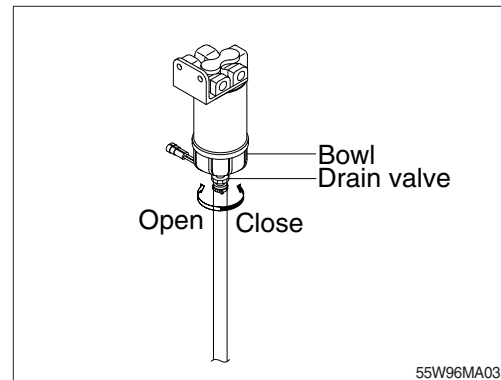


10) Prefilter

- ※ **Inspect or drain the collection bowl of water daily and replace the element every 500hours.**

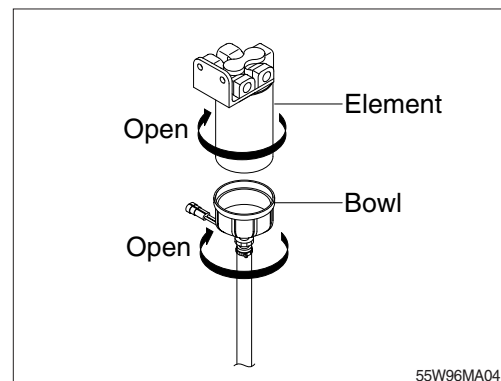
(1) Drain water

- ① Open bowl drain valve to evacuate water.
- ② Close drain valve.



(2) Replace element

- ① Drain the unit of fuel. Follow "Drain water" instructions above.
- ② Remove element and bowl from filter head.
 - ※ **The bowl is reusable, do not damage or discard.**
- ③ Separate element from bowl. Clean bowl and seal gland.



29) LUBRICATION PIN AND BUSHING

- (1) Lubricate to each pin of working device
Lubricate the grease to the grease nipple according to the lubricating interval.

No.	Description	Qty
1	Lubrication manifold at upper frame	4
2	Boom connection pin	2
3	Boom cylinder (head and rod side)	2
4	Arm cylinder pin (head and rod side)	2
5	Boom and arm connection pin	1
6	Bucket cylinder pin (Head and rod)	2
	Bucket link (Control rod)	1
	Arm and bucket connection pin	1
	Arm and control link connection pin	1
7	Dozer connection pin	2
	Dozer cylinder pin	2
8	Boom swing post	2

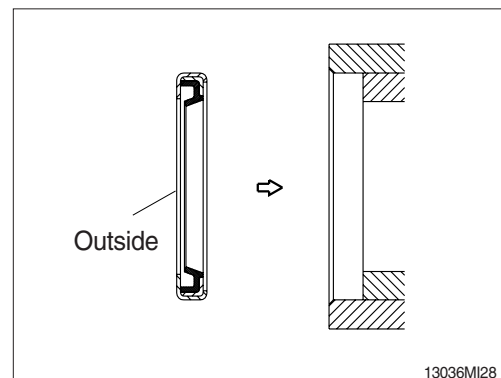
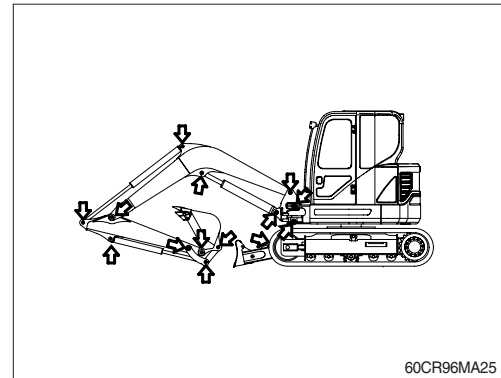
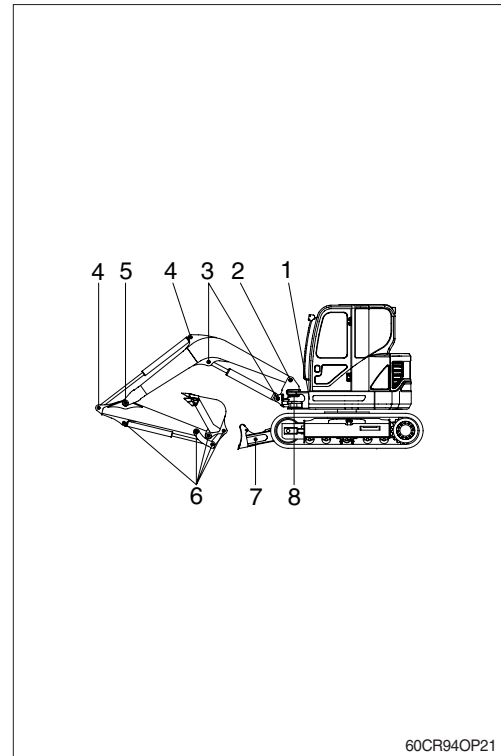
※ Shorten lubricating interval when working in the water or dusty place.

- (2) Dust seals are mounted on the rotating part of working device to extend the lubricating interval.

※ Mount the lip to be faced outside when replace the dust seal.

※ If it is assembled in wrong direction, it will cause fast wear of pin and bushing, and create noise and vibration during operation.

※ Assemble the seal same direction with picture and use with plastic hammer when replacing it.



3. OTHERS

Trouble	Service	Remark
Track slip out of place. Excessive wear of the sprocket.	· Adjust tension of track.	
Bucket either rises slowly or not at all.	· Add oil to specified level.	
Slow speed of travel, swing, boom, arm and bucket.	· Add oil to specified level.	
Unusual noise emitted from pump.	· Clean the hydraulic tank strainer.	
Excessive oil temperature rise of hydraulic oil.	· Clean the oil cooler. · Adjust fan belt tension. · Add oil to specified level.	

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