



# WARNING

## CALIFORNIA PROPOSITION 65

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to [www.P65warnings.ca.gov/diesel](http://www.P65warnings.ca.gov/diesel).

91K4-07310-EN

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## FOREWORD

This manual contains a number of instructions and safety recommendations regarding driving, handling, lubrication, maintenance, inspection and adjustment of the excavator.

The manual is to promote safety maintenance and enhance machine performance.

Keep this manual handy and have all personnel read it periodically.

If you sell the machine, be sure to give this manual to the new owners.

This machine complies with EC directive "2006/42/EC".

1. **Read** and **understand** this manual before operating the machine.

This operator's manual may contain attachments and optional equipment that are not available in your area. Please consult your local Hyundai distributor for those items you require.

Improper operation and maintenance of this machine can be hazardous and could result in serious injury or death.

Some actions involved in operation and maintenance of the machine can cause a serious accident, if they are not done in a manner described in this manual.

The procedures and precautions given in this manual apply only to intended uses of the machine.

If you use your machine for any unintended uses that are not specifically prohibited, you must be sure that it is safe for you and others. In no event should you or others engage in prohibited uses of actions as described in this manual.

2. **Inspect** the jobsite and **follow** the safety recommendations in the **safety hints** section before operating the machine.

3. Use **genuine Hyundai spare parts** for the replacement of parts.

We expressly point out that Hyundai will not accept any responsibility for defects resulting from non-genuine parts or non workmanlike repair.

In such cases Hyundai cannot assume liability for any damage.

Continuing improvements in the design of this machine can lead to changes in detail which may not be reflected in this manual. Consult Hyundai or your Hyundai distributor for the latest available information for your machine or for questions regarding information in this manual.

## **EMISSION-RELATED COMPONENTS WARRANTY (USA AND CANADA ONLY)**

Hyundai shall have obligation under the EPA (Environmental Protection Agency) regulation of warranty about Emission-related components. This warranty shall exist for 3,000 hours or five years, whichever occurs first.

Naturally, this warranty does not cover to damage arising from accident, misuse or negligence, use of non-Hyundai parts, or from alterations not authorized by Hyundai.

### **※ Emission-related components according to the EPA regulation.**

1. Air-induction system.
2. Fuel system.
3. Ignition system.
4. Exhaust gas recirculation systems.
5. After treatment devices.
6. Crankcase ventilation valves.
7. Sensors.
8. Electronic control units.



## BEFORE SERVICING THIS MACHINE

It is the responsibility of the owner and all service and maintenance personnel to avoid accidents and serious injury by keeping this machine properly maintained.

It also is the responsibility of the owner and all service and maintenance personnel to avoid accidents and serious injury while servicing the machine.

No one should service or attempt to repair this machine without proper training and supervision.

All service and maintenance personnel should be thoroughly familiar with the procedures and precautions contained in this manual.

All personnel also must be aware of any federal, state, provincial or local laws or regulations covering the use and service of construction equipment.

The procedures in this manual do not supersede any requirements imposed by federal, state, provincial or local laws.

Hyundai can not anticipate every possible circumstance or environment in which this machine may be used and serviced.

All personnel must remain alert to potential hazards.

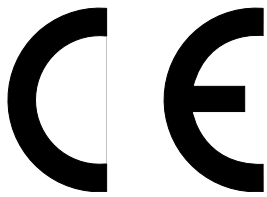
Work within your level of training and skill.

Ask your supervisor if you are uncertain about a particular task. Do not try to do too much too fast.

Use your common sense.

## EC REGULATION APPROVED

- Noise level (EN474-1 : 2006 and 2000/14/EC) are as followings.  
LWA : 99dB (EU only)  
LPA : 76dB
- The value of vibrations transmitted by the operator's seat are lower than standard value of (EN474-1 : 2006 and 2002/44/EC)



## EC Declaration of Conformity

1. Hyundai Construction Equipment Europe N.V. Hyundailaan 4, 3980 Tessenderlo (Belgium), as authorized representative in the European Community of HYUNDAI CONSTRUCTION EQUIPMENT Co. Ltd.(Korea) certifies that the construction equipment machinery.

Machine Type : \*\*\*\*\*

Brand : HYUNDAI

Model : \*\*\*\*\*

Serial No : \*\*\*

Year of Manufacturing : 20\*\*

2. Manufacturer

HYUNDAI CONSTRUCTION EQUIPMENT CO., LTD.  
12th Fl., Hyundai Bldg. 75, Yulgok-ro, Jongno-gu,  
Seoul 03058, Korea

Authorized representative :  
Owner of the technical file for  
machine production

HYUNDAI CONSTRUCTION EQUIPMENT EUROPE N.V.  
Hyundailaan 4, 3980 Tessenderlo  
Belgium

3. Harmonized European directives :

2006/42/EC (Machinery), 97/68/EC (Exhaust Gas Emission),  
2004/108/EC (Electromagnetic Compatibility), 2000/14/EC (Noise  
Emission)

4. Engine Manufacturer :

\*\*\*\*\*

Engine Type :

\*\*\*\*\*

Gross Power :

\*\*\* kW / \*\*\*\* rpm (SAE J1995)

Net Power :

\*\*\* kW / \*\*\*\* rpm (SAE J1349)

5. Noise level (Noise Emission Directive 2000/14/EC)

Certificate No :

\*\*\*\*\*

Issue Date :

DD/MM/YYYY

Conformity Assessment Procedure :

\*\*\*\*\*

Notified Body Involved :

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

Measured Sound Power Level :

\*\* dB(A)

Guaranteed Sound Power Level :

\*\* dB(A)

6. EMC Certification (EMC Directive 2004/108/EC)

Certificate No :

\*\*\*\*\*

Issued Date :

DD/MM/YYYY

Notified Body Involved :

\*\*\*\*\*

\*\*\*\*\*

Standard(s) :

\*\*\*\*\*

7. Remarks

J. H. CHUN

MANAGING DIRECTOR

Place and date of issue :

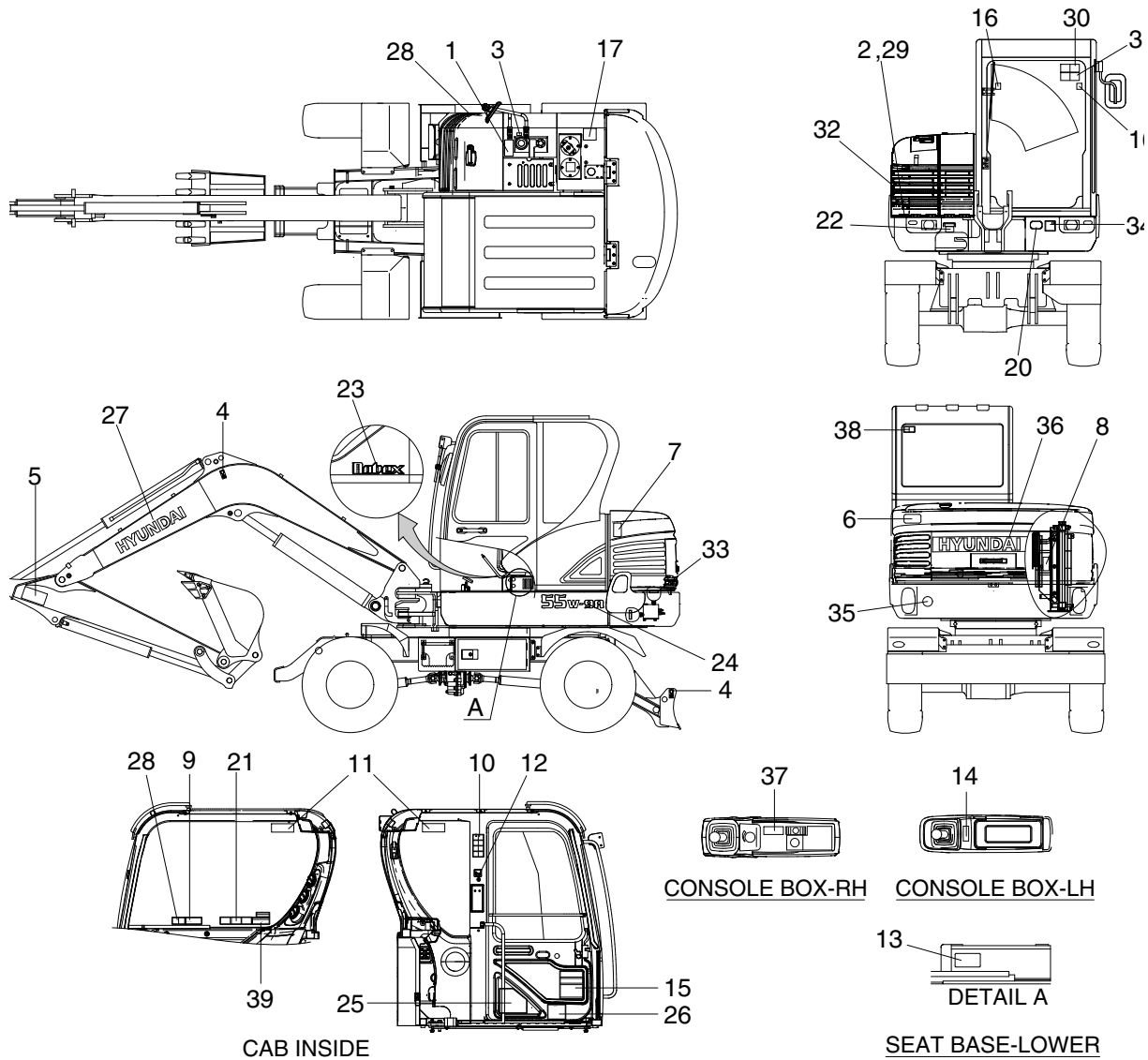
<b>TABLE TO ENTER SERIAL NO. AND DISTRIBUTOR</b>
--

Machine Serial No.	
Engine Serial No.	
Manufacturing year	
Manufacturer Address	HYUNDAI CONSTRUCTION EQUIPMENT CO., LTD. 12th Fl., Hyundai Bldg. 75, Yulgok-ro, Jongno-gu, Seoul 03058, Korea
Distributor for U.S.A Address	HYUNDAI CONSTRUCTION EQUIPMENT U.S.A, Inc. 6100 Atlantic Boulevard Norcross GA 30071 U.S.A
Distributor for Europe Address	HYUNDAI CONSTRUCTION EQUIPMENT EUROPE N. V. Hyundailaan 4 3980 Tessenderlo Belgium
Dealer Address	

## SAFETY LABELS

### 1. LOCATION

Always keep these labels clean. If they are lost or damaged, attach them again or replace them with a new label.



55W9A1FW01

- |                            |                              |                           |
|----------------------------|------------------------------|---------------------------|
| 1 Fueling                  | 14 Console tilting           | 28 Boom wing lock         |
| 2 Battery accident         | 15 Machine control-CAB       | 29 Electric welding       |
| 3 Ultra low sulfur fuel    | 16 Stay fix-cab              | 30 Warning front window   |
| 4 Lifting point ideogram   | 17 Hydraulic oil lubrication | 31 Sliding caution        |
| 5 Keep clear-boom/arm      | 18 Falling                   | 32 Battery position       |
| 6 Keep clear-rear          | 20 Name plate                | 33 Accumulator            |
| 7 Keep clear-side          | 21 General warning-frame     | 34 Noise level Lwa        |
| 8 Engine room caution      | 22 Indicate-grease           | 35 Reflecting             |
| 9 Control ideograms-swivel | 23 ROBEX                     | 36 Trade mark-CWT         |
| 10 General caution-cab     | 24 Model name                | 37 Control ideogram-dozor |
| 11 Safety front window     | 25 Service instruction       | 38 Beacon lamp            |
| 12 Hammer                  | 26 Lifting chart             | 39 Water separator        |
| 13 Air conditioner filter  | 27 Trade mark-boom           |                           |

## 2. DESCRIPTION

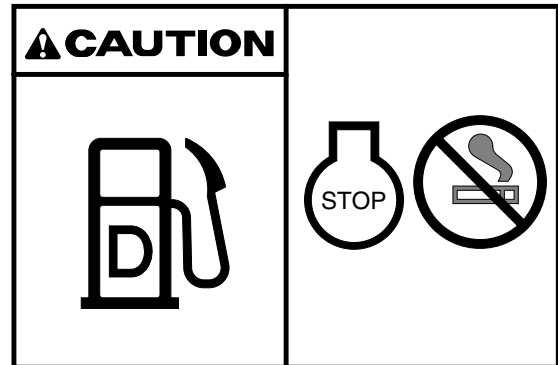
There are several specific warning labels on this machine please become familiarized with all warning labels.

Replace any safety label that is damaged, or missing.

### 1) FUELING (item 1)

This warning label is positioned on the right side of fuel filler neck.

- ▲ **Stop the engine when refueling. All lights or flames shall be kept at a safe distance while refueling.**

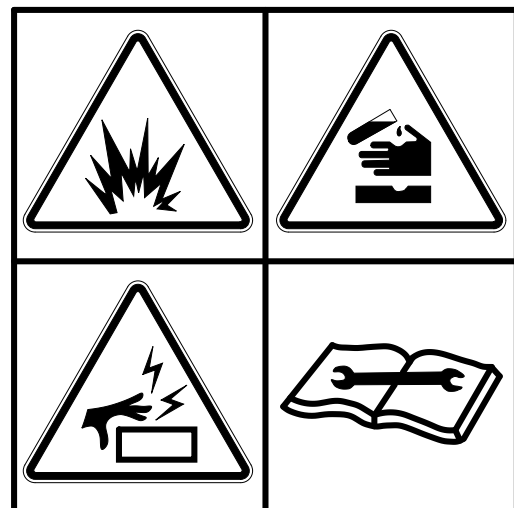


5591FW02

### 2) BATTERY ACCIDENT (item 2)

This warning label is positioned on the battery cover.

- ▲ **Electrolyte containing sulfuric acid cause severe burns. Avoid being in contact with skin, eyes or clothes. In the event of accident flush with sufficient water, call a physician immediately.**
- ※ **Maintain the electrolyte at the recommended level. Add distilled water to the battery only when starting up, never when shutting down.**  
**With electrolyte at proper level, less space may cause the gases to be accumulated in the battery.**
- ▲ **Extinguish all smoking materials and open flames before checking the battery.**
- ▲ **Do not use matches, lighters or torches as a light source near the battery for the probable presence of explosive gas.**
- ▲ **Do not allow unauthorized personnel to change the battery or to use booster cables.**
- ▲ **For safety from electric shock, do not battery terminals with a wet hand.**



36070FW05

### 3) ULTRA LOW SULFUR FUEL (item 3)

This warning label is positioned on the left side of the fuel filler neck.

- ※ Use ultra low sulfur fuel only.
- ※ Ultra low sulfur fuel  
sulfur content  $\leq 15$  ppm
- ※ If ultra low sulfur diesel is not used, the  
aftertreatment diesel particulate filter can  
be damaged.



559A1FW09

### 4) KEEP CLEAR-BOOM/ARM (item 5)

This warning label is positioned on both side of the boom.

- ▲ Serious injury or death can result from  
falling of the attachment.
- ▲ To prevent serious injury or death, keep  
clear the underneath of attachment.

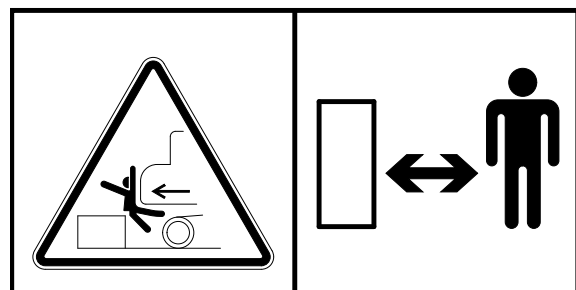


R5570FW31

### 5) KEEP CLEAR-REAR (item 6)

This warning label is positioned on the rear of engine hood.

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

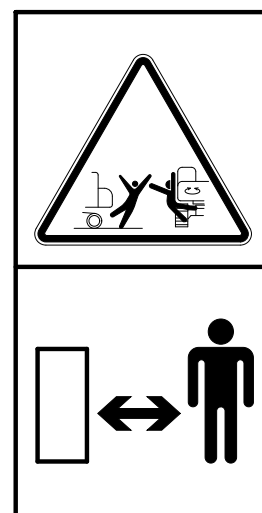


R5570FW09A

### 6) KEEP CLEAR-SIDE (item 7)

This warning label is positioned on the side of engine hood.

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

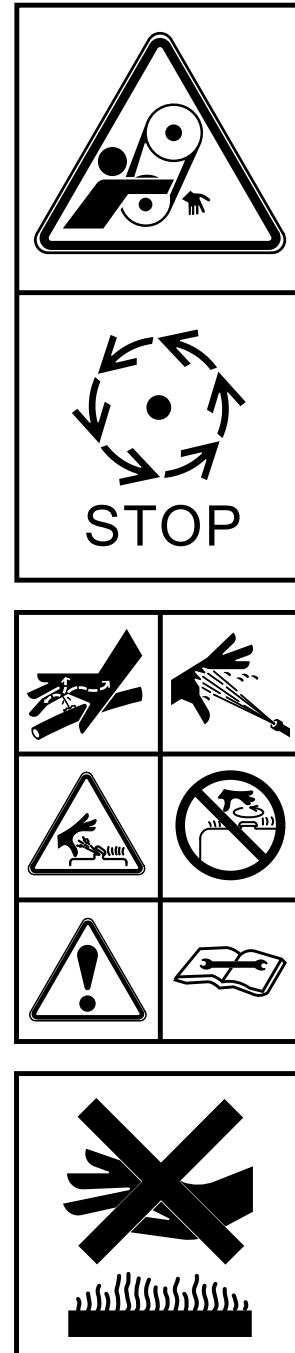


R5570FW13

## 7) ENGINE ROOM CAUTION (item 8)

This warning label is positioned on the side of radiator.

- ⚠ Do not open the engine hood during the engine's running.
- ⚠ Escaping fluid under pressure can penetrate the skin causing serious injury.
- ✳ Study the service manual before service job.
- ⚠ Never open the filler cap while engine running or at high coolant oil temperature.
- ⚠ Study the operator's manual before starting and operating machine.
- ⚠ Do not touch exhaust pipe or it may cause severe burn.

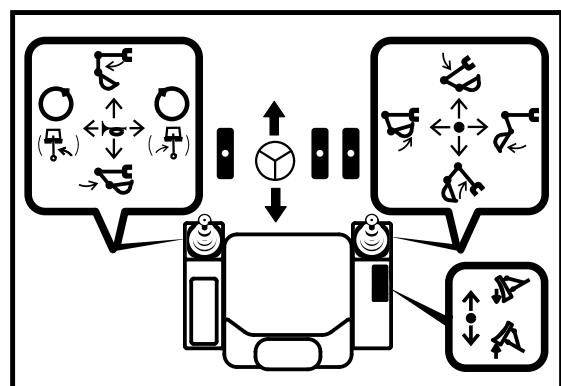


R5570FW14

## 8) CONTROL IDEOGRAM-SWIVEL (item 9)

This warning label is positioned in right window of the cab.

- ⚠ Check the machine control pattern for conformance to pattern on this label. If not, change label to match pattern before operating machine.
- ⚠ Failure to do so could result in injury or death.
- ✳ See page 4-7 for details.



55W91FW02



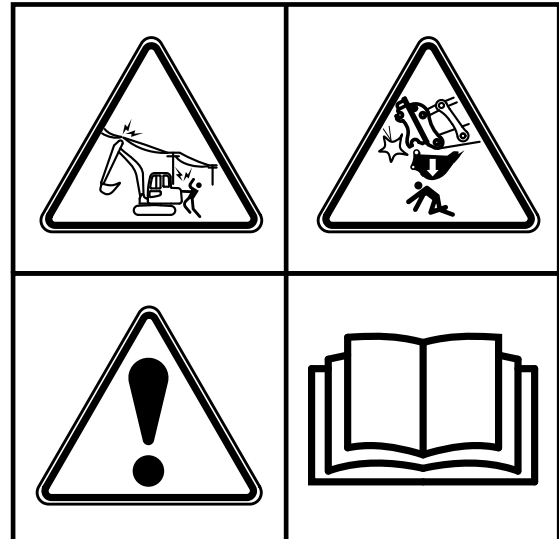
### 9) GENERAL CAUTIONS-CAB (item 10)

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 coupler switch unlocked or without safety pin of moving hook can cause the bucket to drop off.**

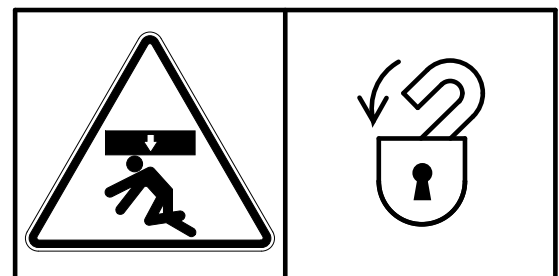


R5570FW15

### 10) 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.**

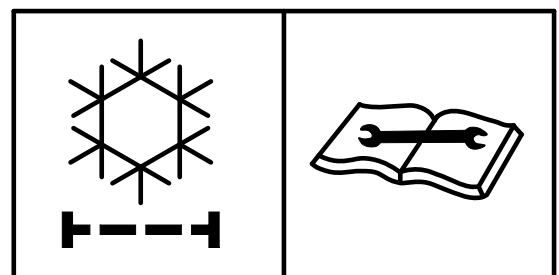


21070FW24

### 11) 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.**

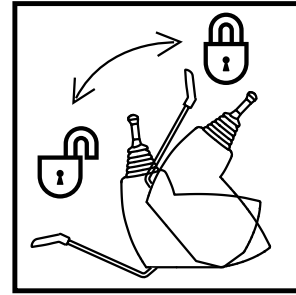


21070FW26

## 12) CONSOLE TILTING (item 14)

This warning label is positioned on the LH console box.

- ※ Before you get off the machine be sure to tilt the LH console box.

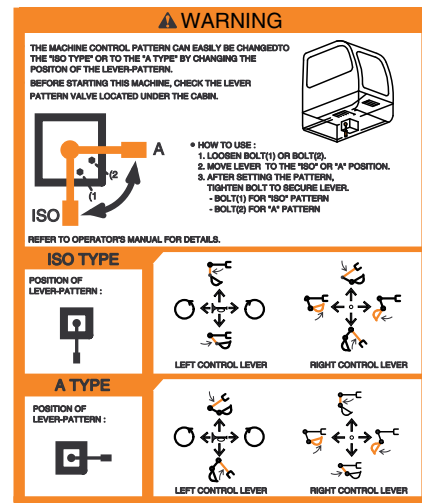


R5570FW17

## 13) MACHINE CONTROL-CAB (item 15)

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

- ▲ Check the machine control pattern for conformance to pattern on this label. If not, change label to match pattern before operating machine.
- ▲ Failure to do so could result in injury or death.



5591FW07A

## 14) STAY FIX-CAB (item 16)

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

- ▲ Be sure to support the stay when the window needs to be opened.
- ▲ Be careful that the opened window may be closed by the external or natural force.



5591FW06

## 15) HYDRAULIC OIL LUBRICATION (item 17)

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

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



21070FW08

#### 16) FALLING (item 18)

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

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

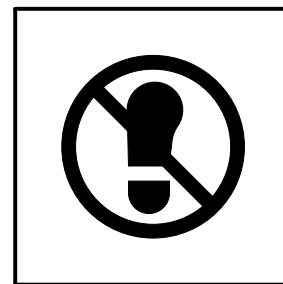


14070FW30

#### 17) NO STEP-ENGINE HOOD (item 19)

This warning label is positioned on the engine hood.

- ▲ Do not step on the engine hood.

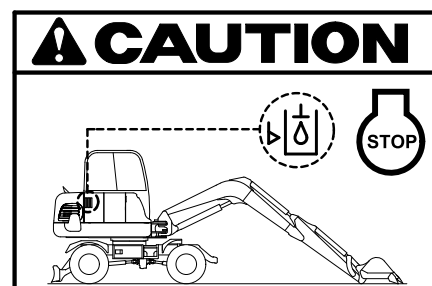
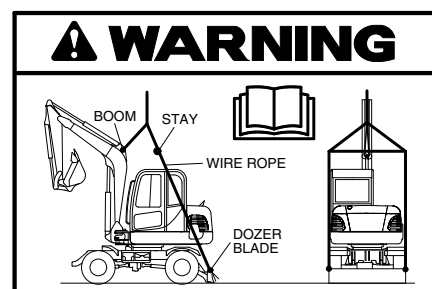


21070FW16

#### 18) GENERAL WARNING-FRAME (item 21)

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

- ▲ Study the operator's manual before transporting the machine, if provided and tie down arm and track to the carrier with lashing wire.
- ※ See page 5-7 for details.
- ▲ Make sure wire rope is proper size and keep correct hoisting method.
- ※ See page 5-8 for details.
- ▲ Place the bucket on the ground whenever servicing the hydraulic system.
- ※ Check oil level on the level gauge.
- ※ Refill the recommended hydraulic oil up to specified level if necessary.

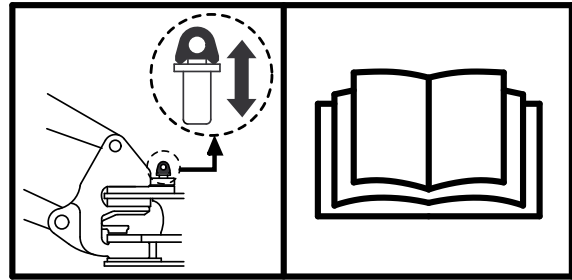


55W70FW21

19) **BOOM SWING LOCK** (item 28)

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

- ⚠ **Before operating the machine, be sure to release the swing lock device in the tool box.**

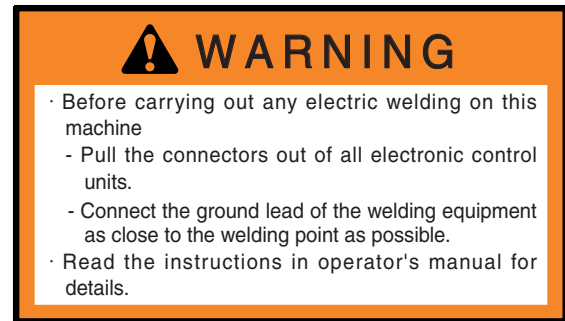


5591FW10

20) **ECM CONNECTOR** (item 29)

This warning label is positioned on the battery cover.

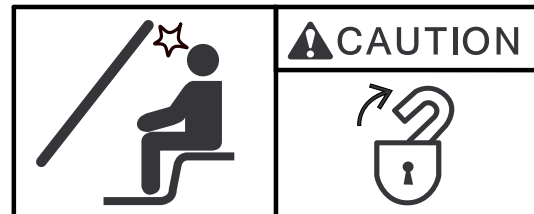
- ⚠ **Before carrying out any electric welding on this machine follow the below procedure.**
- Pull the connectors out of all electric control units.
  - Connector the ground lead of the welding equipment as close to the welding point as possible.
- ※ See page 6-40 for detail.



7807AFW20

21) **WARNING FRONT WINDOW** (item 30)

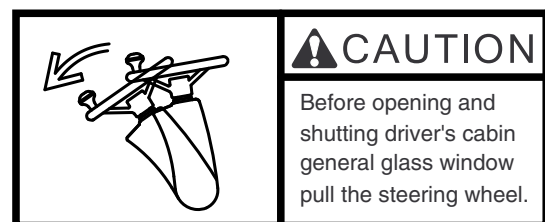
This warning label is positioned on the front window of the cab.



5591FW05

22) **SLIDING CAUTION** (item 31)

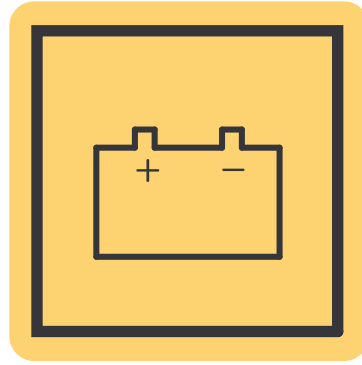
This warning label is positioned on the front window of the cab.



55W91FW04A

### 23) BATTERY POSITION (item 32)

This warning label is positioned right side of tool box.



38090FW03

### 24) ACCUMULATOR (item 33)

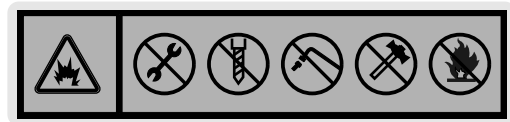
This warning label is positioned on the accumulator of the solenoid valve.

- ※ 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.

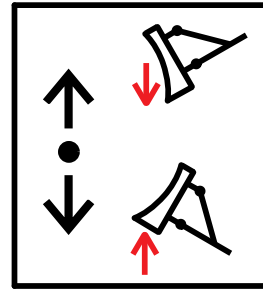


1107A0FW46

## 25) CONTROL IDEOGRAM-DOZER (item 37)

This warning label is positioned on the RH console box.

- ※ See page 4-12 for details.
- ※ Guidelines for using the general dozer blade.
  - Be careful not to apply an excessive load when using a blade.
  - Avoid impacts and loads on the bottom due to machine modification or excessive working conditions.
  - Check the BLADE UP status before traveling the machine.
  - Avoid any collision with the upper working device and the blade.
  - Do not move machine in the blade jack up state.
  - When using blade jack up, use it in an environment where the ground is not rough and the machine and ground are same level.



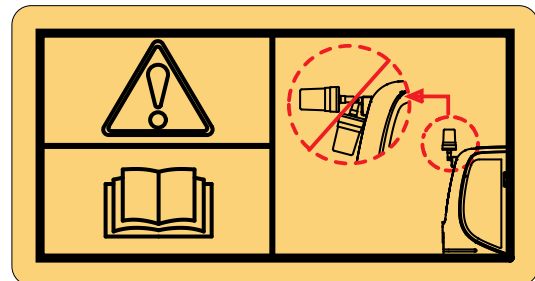
R25Z9A0FW06

## 26) BEACON LAMP (item 38)

This warning label is positioned on the rear outside of the cab.

- ※ Make sure the beacon lamp maintains a vertical position.

A horizontal position can result in a decrease in life time of the lamp due to the infiltration of foreign substances such as dust or water.
- ※ While the machine transfer, the beacon lamp is easy to break. In the case, change the position of the lamp to the horizontal.



140Z90FW49

## 27) WATER SEPARATOR (item 39)


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

- ※ In order to protect high pressure fuel system, please drain water in water separator before starting the engine.




559S0FW07


## MACHINE DATA PLATE

DO NOT DEFACE OR REMOVE THIS PLATE 이 명판을 훼손하거나 오손시키지 마시오	
MACHINE TYPE / MODEL	
PRODUCT IDENTIFICATION NUMBER	
ENGINE POWER	
OPERATING MASS	
 477, Bundanguseo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 13553, Korea 91LM-14112	


For general

DO NOT DEFACE OR REMOVE THIS PLATE 이 명판을 훼손하거나 오손시키지 마시오		
MACHINE TYPE / MODEL		
PRODUCT IDENTIFICATION NUMBER / VEHICLE IDENTIFICATION NUMBER		
ENGINE POWER	MAX. AXLE LOAD (FRONT / REAR)	
OPERATING MASS / GROSS VEHICLE WEIGHT	MFG. YEAR	YEAR INTO SERVICE
 477, Bundanguseo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 13553, Korea 91LM-14142		

For EU only

DO NOT DEFACE OR REMOVE THIS PLATE 이 명판을 훼손하거나 오손시키지 마시오	
MACHINE TYPE	
MODEL	
MAX. CERTIFIED WEIGHT	
STANDARDS ROPS : ISO 12117-2 TOPS : EN 13531 / ISO 12117 FOG : ISO 10262 (LEVEL 1)	
 477, Bundanguseo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 13553, Korea 91M3-01282	

For ROPS

DO NOT DEFACE OR REMOVE THIS PLATE 이 명판을 훼손하거나 오손시키지 마시오	
MACHINE TYPE	
MODEL	
STANDARDS FOG : ISO 10262 (LEVEL 1)	
 477, Bundanguseo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, 13553, Korea 94MS-01281	

For FOG

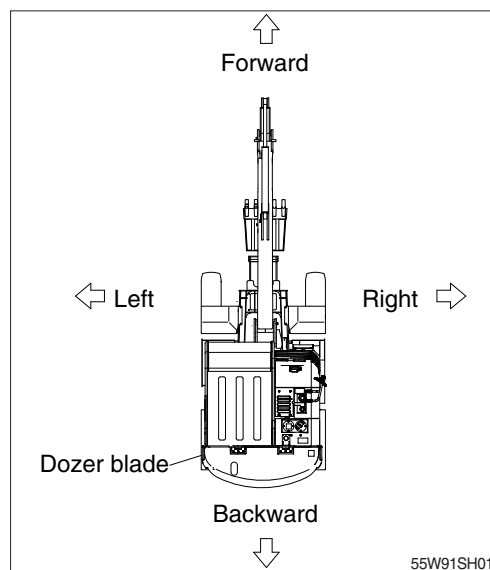
MEXOMD01

※ The machine serial number assigned to this particular machine should be used when requesting information or ordering service parts for this machine from your authorized HD Hyundai Construction Equipment dealer. The machine serial number is also stamped on the frame.

## GUIDE

### 1. DIRECTION

The direction of this manual indicate forward, backward, right and left on the standard of operator when the travel motor is in the rear and machine is on the traveling direction.

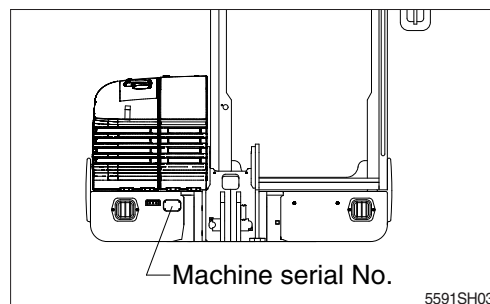


### 2. SERIAL NUMBER

Inform following when you order parts or the machine is out of order.

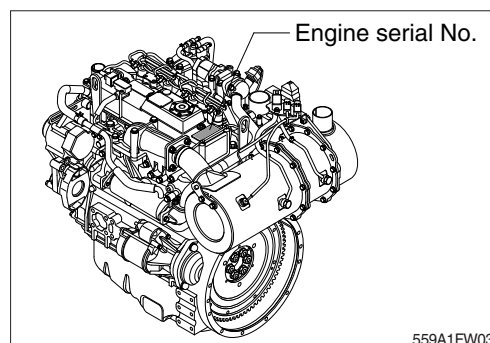
#### 1) MACHINE SERIAL NUMBER

The numbers are located below the front window of the operator's cab.



#### 2) ENGINE SERIAL NUMBER

The numbers are located on the engine name plate.



### 3. INTENDED USE

This machine is designed to be used mainly for the following work.

- Digging work
- Loading work
- Smoothing work
- Ditching work

※ Please refer to the section 4 (efficient working method) further details.

### 4. SYMBOLS

▲ Important safety hint.

△ It indicates matters which can cause the great loss on the machine or the surroundings.

※ It indicates the useful information for operator.



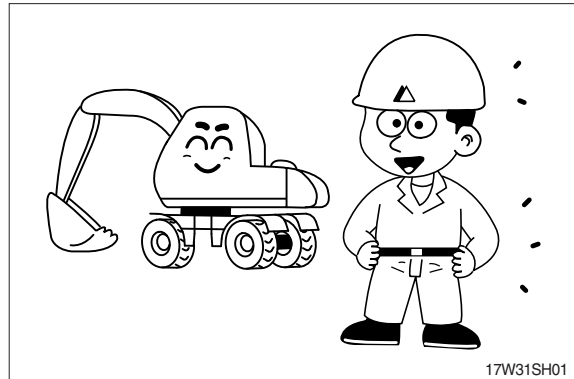
# SAFETY HINTS

## 1. BEFORE OPERATING THE MACHINE

Think-safety first.

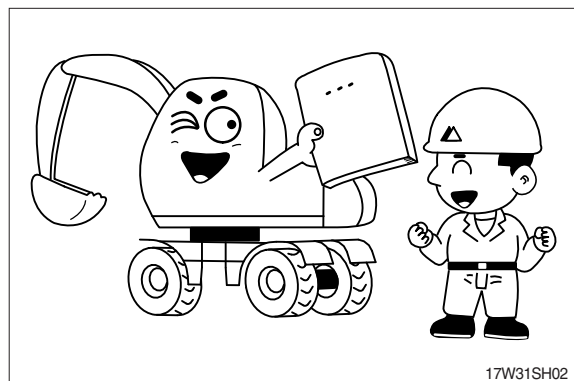
In special situation, wear protective clothing including a safety helmet, safety shoes, gloves, safety glasses and ear protection as required by the job condition.

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



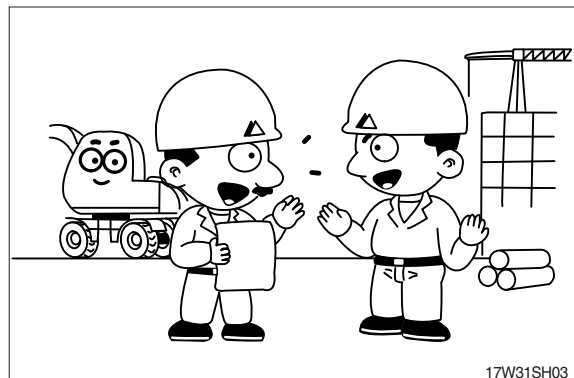
Be sure to understand thoroughly all about the operator's manual before operating the machine.

Proper care is your responsibility.

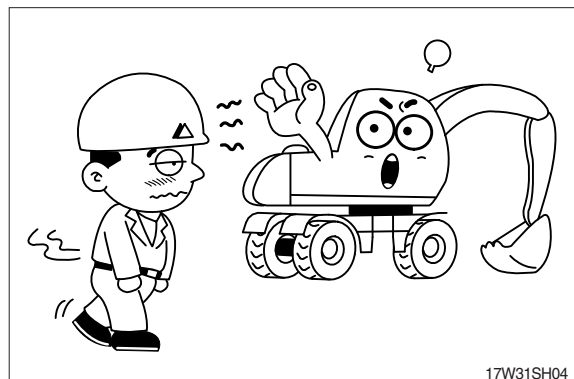


Fully understand the details and process of the construction before starting the work.

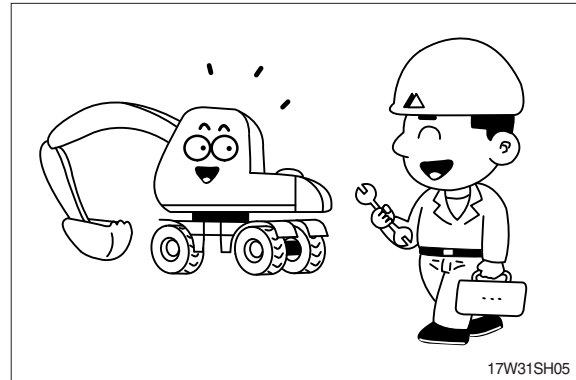
If you find anything dangerous on the job, consult with the job supervisor for the preventive measures before operating the machine.



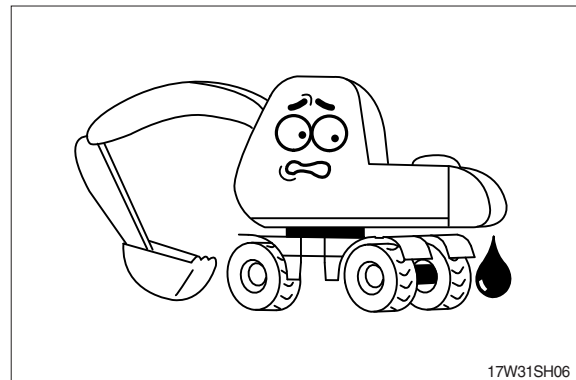
Do not operate when tired, or after drinking alcoholic beverages or any type of drugs.



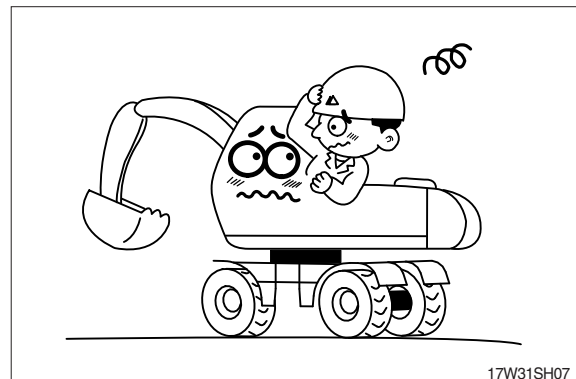
Check daily according to the operation manual.  
Repair the damaged parts and tighten the loosened bolts.



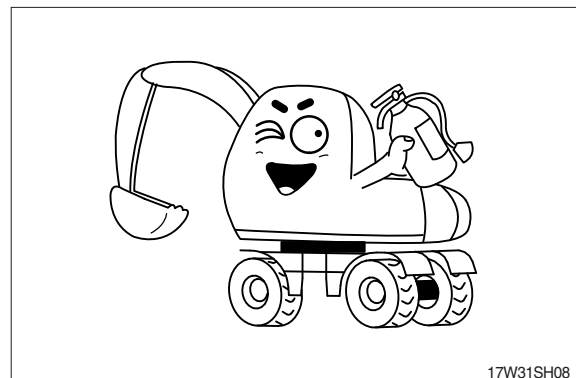
Check for leakage of engine oil, hydraulic oil,  
fuel and coolant.  
Keep machine clean, clean machine regularly.



Do not operate the machine if it requires repairs.  
Operate after complete repair.



Be prepared if a fire starts.  
Keep a fire extinguisher handy and emergency  
numbers for a fire department near your  
telephone.



## 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.

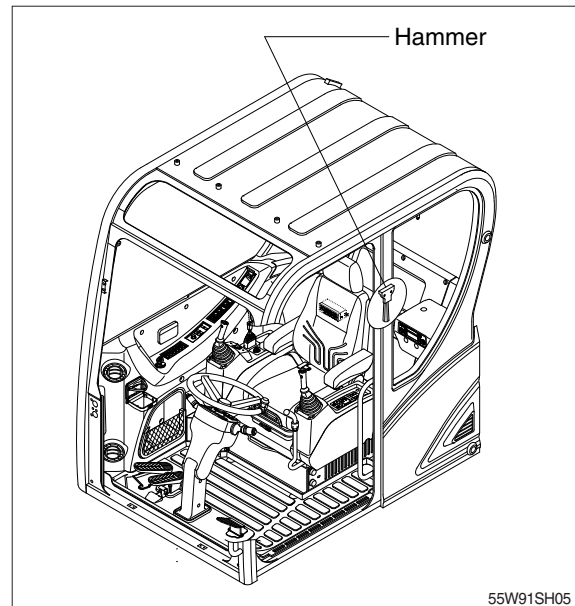
## PREPARE FOR EMERGENCY

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.

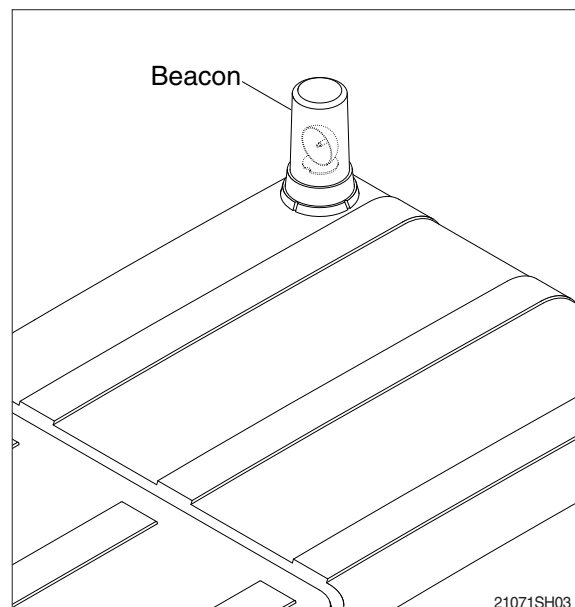
Be sure you know the phone numbers of persons you should contact in case of an emergency.



## ROTATING BEACON

When you operate a machine on a road or beside a road, a rotating beacon is required to avoid any traffic accident.

Please contact your Hyundai distributor to install it.



## **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.

## **MACHINE CONTROL PATTERN**

Check machine control pattern for conformance to pattern on label in cab.

If not, change label to match pattern before operating machine.

Failure to do so could result in injury.

## FIRE PREVENTION AND EXPLOSION PREVENTION

### Regeneration

The exhaust gas temperatures during regeneration will be elevated. Follow proper fire prevention instructions and use the disable regeneration function when appropriate.

### General

All fuels, most lubricants, and some coolant mixtures are flammable.

To minimize the risk of fire or explosion, the following actions are recommended.

Always perform a Walk-Around Inspection, which may help you identify a fire hazard.

Do not operate a machine when a fire hazard exists. Contact your dealer for service.



3001SH01

Understand the use of the primary exit and alternative exit on the machine.

Do not operate a machine with a fluid leak. Repair leaks and clean up fluids before resuming machine operation. Fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire. A fire may cause personal injury or death.

Do not weld on or drill holes in the engine cover. Flammable material such as leaves, twigs, papers, trash may accumulate in engine compartment.

Remove flammable material such as leaves, twigs, papers, trash and so on. These items may accumulate in the engine compartment or around other hot areas and hot parts on the machine.

Keep the access doors to major machine compartments closed and access doors in working condition in order to permit the use of fire suppression equipment, in case a fire should occur.

Clean all accumulations of flammable materials such as fuel, oil, and debris from the machine.

Do not operate the machine near any flame.

Keep shields in place. Exhaust shields (if equipped) protect hot exhaust components from oil spray or fuel spray in a break in a line, in a hose, or in a seal. Exhaust shields must be installed correctly.

Do not weld or flame cut on tanks or lines that contain flammable fluids or flammable material. Empty and purge the lines and tanks. Then clean the lines and tanks with a nonflammable solvent prior to welding or flame cutting. Ensure that the components are properly grounded in order to avoid unwanted arcs.

Dust that is generated from repairing nonmetallic hoods or fenders may be flammable and/or explosive. Repair such components in a ventilated area away from open flames or sparks. Use suitable Personal Protection Equipment (PPE).

Inspect all lines and hoses for wear or deterioration. Replace damaged lines and hoses. The lines and the hoses should have adequate support and secure clamps. Tighten all connections to the recommended torque. Damage to the protective cover or insulation may provide fuel for fires.

Store fuels and lubricants in properly marked containers away from unauthorized personnel. Store oily rags and flammable materials in protective containers. Do not smoke in areas that are used for storing flammable materials.



3001SH02

Use caution when you are fueling a machine. Do not smoke while you are fueling a machine. Do not fuel a machine near open flames or sparks. Always stop the engine before fueling. Fill the fuel tank outdoors. Properly clean areas of spillage.



3001SH03

### Battery and battery cables

The following actions are recommended to minimize the risk of fire or an explosion related to the battery.



3001SH04

Do not operate a machine if battery cables or related parts show signs of wear or damage. Contact your dealer for service.

Follow safe procedures for engine starting with jump-start cables. Improper jumper cable connections can cause an explosion that may result in injury.

Do not charge a frozen battery. This action may cause an explosion.

Gases from a battery can explode. Keep any open flames or sparks away from the top of a battery. Do not smoke in battery charging areas.

Never check the battery charge by placing a metal object across the terminal posts. Use a voltmeter in order to check the battery charge.

Daily inspect battery cables that are in areas that are visible. Inspect cables, clips, straps, and other restraint for damage. Replace any damaged parts. Check for signs of the following, which can occur over time due to use and environmental factors :

- Fraying
- Abrasion
- Cracking
- Discoloration
- Cuts on the insulation of the cable
- Fouling
- Corroded terminals, damaged terminals, and loose terminals

Replace damaged battery cable (s) and replace any related parts. Eliminate any fouling, which may have caused insulation failure or related component damage or wear. Ensure that all components are reinstalled correctly.

An exposed wire on the battery cable may cause a short ground if the exposed area comes into contact with a grounded surface. A battery cable short produces heat from the battery current, which may be a fire hazard.

An exposed wire on the ground cable between the battery and the disconnect switch may cause the disconnect switch to be bypassed if the exposed area comes into contact with a grounded surface. This action may result in an unsafe condition for servicing the machine. Repair components or replace components before servicing the machine.

**▲ Fire on a machine can result in personal injury or death. Exposed battery cables that come into contact with a grounded connection can result in fires. Replace cables and related parts that show signs of wear or damage. Contact your Hyundai Heavy Industries dealer.**

## **Wiring**

Check electrical wires daily. If any of the following conditions exist, replace parts before you operate the machine.

- Fraying
- Signs of abrasion or wear
- Cracking
- Discoloration
- Cuts on insulation
- Other damage

Make sure that all clamps, guards, clips, and straps are reinstalled correctly. This action will help to prevent vibration, rubbing against other parts, and excessive heat during machine operation.

Attaching electrical wiring to hoses and tubes that contain flammable fluids or combustible fluids should be avoided.

Consult your Hyundai Heavy Industries dealer for repair or for replacement parts.

Keep wiring and electrical connections free of debris.



## **Lines, Tubes, and Hoses**

Do not bend high-pressure lines. Do not strike high-pressure lines. Do not install any lines that are bent or damaged. Use the appropriate backup wrenches in order to tighten all connections to the recommended torque.

Check lines, tubes, and hoses carefully. Wear Personal Protection Equipment (PPE) in order to check for leaks. Always use a board or cardboard when you check for a leak. Leaking fluid that is under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. A pin hole leak can cause severe injury. If fluid is injected into your skin, you must get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.

Replace the affected parts if any of the following conditions are present :

- End fittings are damaged or leaking.
- Outer coverings are chafed or cut.
- Wires are exposed.
- Outer coverings are swelling or ballooning.
- Flexible parts of the hoses are kinked.
- Outer covers have exposed embedded armoring.
- End fittings are displaced.

Make sure that all clamps, guards, and heat shields are installed correctly. During machine operation, this action will help to prevent vibration, rubbing against other parts, excessive heat, and failure of lines, tubes, and hoses.

Do not operate a machine when a fire hazard exists. Repair any lines that are corroded, loose, or damaged. Leaks may provide fuel for fires. Consult your Hyundai Heavy Industries dealer for repair or for replacement parts.

## **Ether**

Ether (if equipped) is commonly used in cold weather applications. Ether is flammable and poisonous.

Do not spray ether manually into an engine if the machine is equipped with a thermal starting aid for cold weather starting.

Use ether in ventilated areas. Do not smoke while you are replacing an ether cylinder or while you are using an ether spray.

Do not store ether cylinders in living areas or in the operator compartment of a machine. Do not store ether cylinders in direct sunlight or in temperatures above 49°C(120.2 °F). Keep ether cylinders away from unauthorized personnel.

## 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.

## **Fire extinguisher Location**

Make sure that a fire extinguisher is available. Be familiar with the operation of the fire extinguisher. Inspect the fire extinguisher and service the fire extinguisher. Obey the recommendations on the instruction plate.

Mount the fire extinguisher in the accepted location per local regulations.

If your machine is equipped with a ROPS structure, strap the mounting plate to the ROPS in order to mount the fire extinguisher. If the weight of the fire extinguisher exceeds 4.5 kg (10 lb), mount the fire extinguisher near the bottom of the ROPS. Do not mount the fire extinguisher at the upper one-third area on the ROPS.

Do not weld the ROPS structure in order to install the fire extinguisher. Also, do not drill holes in the ROPS structure in order to mount the fire extinguisher on the ROPS.

Consult your Hyundai Heavy Industries dealer for the proper procedure for mounting the fire extinguisher.

## THE EUROPEAN UNION PHYSICAL AGENTS (VIBRATION) DIRECTIVE 2002/44/EC

### Vibration Data for Earth-moving Machines

#### Information Concerning Hand/Arm Vibration Level

When the machine is operated according to the intended use, the hand/arm vibration of this machine is below  $2.5 \text{ m/s}^2$ .

#### Information Concerning Whole Body Vibration Level

The highest root mean square value of weighted acceleration to which the whole body is subjected, is less than  $0.5 \text{ m/s}^2$ .

This section provides vibration data and a method for estimating the vibration level for earth moving machines.

**Vibration levels are influenced by many different parameters. Many items are listed below.**

- Operator training, behavior, mode and stress
- Job site organization, preparation, environment, weather and material
- Machine type, quality of the seat, quality of the suspension system, attachments and condition of the equipment

It is not possible to get precise vibration levels for this machine. The expected vibration levels can be estimated with the information in below Table in order to calculate the daily vibration exposure. A simple evaluation of the machine application can be used.

Estimate the vibration levels for the three vibration directions. For typical operating conditions, use the average vibration levels as the estimated level. With an experienced operator and smooth terrain, subtract the Scenario Factors from the average vibration level. For aggressive operations and severe terrain, add the Scenario Factors to the average vibration level in order to obtain the estimated vibration level.

※ 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.

## **Guidelines for Reducing Vibration Levels on Earthmoving Equipment**

Properly adjust machines. Properly maintain machines. Operate machines smoothly. Maintain the conditions of the terrain. The following guidelines can help reduce the whole body vibration level :

1. Use the right type and size of machine, equipment, and attachments.
2. Maintain machines according to the manufacturer's recommendations.
  - a. Tire pressures
  - b. Brake and steering systems
  - c. Controls, hydraulic system and linkages
3. Keep the terrain in good condition.
  - a. Remove any large rocks or obstacles.
  - b. Fill any ditches and holes.
  - c. Provide machines and schedule time in order to maintain the conditions of the terrain.
4. Use a seat that meets "ISO 7096". Keep the seat maintained and adjusted.
  - a. Adjust the seat and suspension for the weight and the size of the operator.
  - b. Inspect and maintain the seat suspension and adjustment mechanisms.
5. Perform the following operations smoothly.
  - a. Steer
  - b. Brake
  - c. Accelerate
  - d. Shift the gears.
6. Move the attachments smoothly.
7. Adjust the machine speed and the route in order to minimize the vibration level.
  - a. Drive around obstacles and rough terrain.
  - b. Slow down when it is necessary to go over rough terrain.
8. Minimize vibrations for a long work cycle or a long travel distance.
  - a. Use machines that are equipped with suspension systems.
  - b. Use the ride control system on machines.
  - c. If no ride control system is available, reduce speed in order to prevent bounce.
  - d. Haul the machines between workplaces.
9. Less operator comfort may be caused by other risk factors. The following guidelines can be effective in order to provide better operator comfort:
  - a. Adjust the seat and adjust the controls in order to achieve good posture.
  - b. Adjust the mirrors in order to minimize twisted posture.
  - c. Provide breaks in order to reduce long periods of sitting.
  - d. Avoid jumping from the cab
  - e. Minimize repeated handling of loads and lifting of loads.
  - f. Minimize any shocks and impacts during sports and leisure activities.

## **Sources**

The vibration information and calculation procedure is based on "ISO/TR 25398 Mechanical Vibration- Guideline for whole body vibration exposure of operators of earthmoving equipment. The method is based on measured vibration emission under real working conditions for all machines.

You should check the original directive. This document summarizes part of the content of the applicable law. This document is not meant to substitute the original sources. Other parts of these documents are based on information from the United Kingdom Health and Safety Executive.

## MODIFICATIONS

Modifications to the machine, including use of unauthorized accessories and spare parts, may affect the machine's condition and its ability to function as it was designed. No changes of any kind may be performed without first obtaining written approval from Hyundai Heavy Industries. Hyundai Heavy Industries reserves the right to refuse all warranty claims that have resulted due to or can be attributed to unauthorized modifications.

Never modify the operator's cabin by welding, grinding, drilling holes or adding attachments unless instructed by Hyundai Heavy Industries in writing. Changes to the cabin can cause loss of operator protection from roll-over and falling objects, and result in death or serious injury.

The person who performs unauthorized modifications assumes all responsibility for consequences that arise due to the modification or can be attributed to the modification, including damage to the machine.

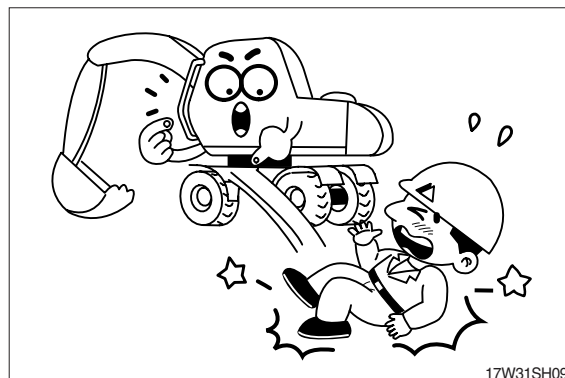
Modifications may be considered to be officially approved, if at least one of the following conditions has been met :

1. The attachment, the accessory, or the spare part has been made or distributed by Hyundai Heavy Industries and has been installed according to approved methods described in a publication available from Hyundai Heavy Industries; or
2. The modification has been approved in writing by the Engineering Department at each product company within Hyundai Heavy Industries.

## 2. DURING OPERATING THE MACHINE

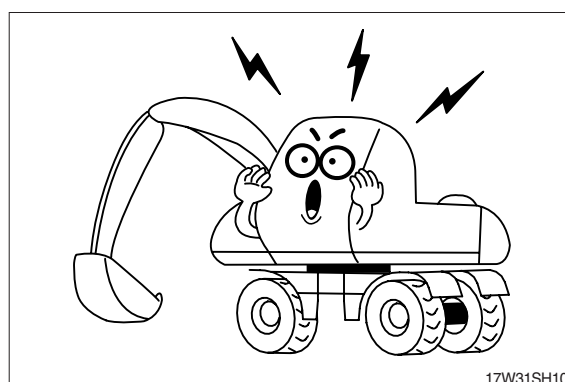
Use the handle and footstep when getting on or off the machine.

Do not jump on or off the machine.



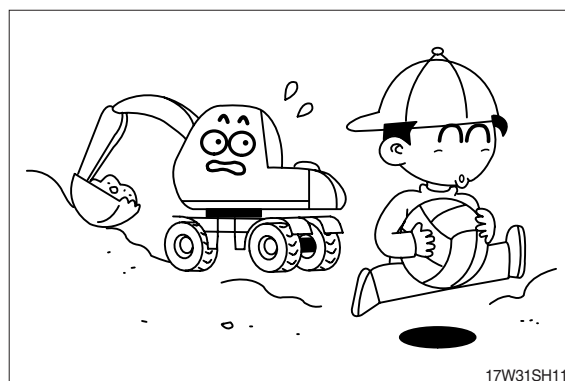
Sound the horn to warn nearby personnel before operating the machine.

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



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

Place safety guards if necessary.

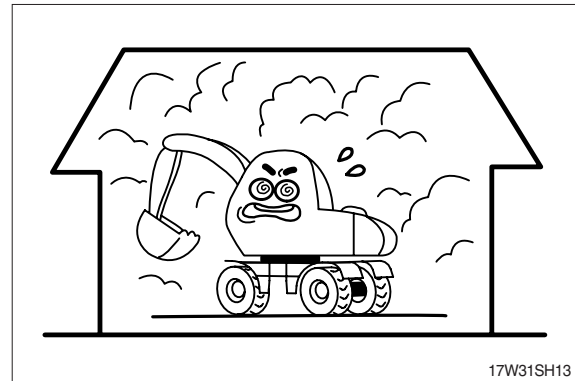


When using the work equipment, pay attention to job site.

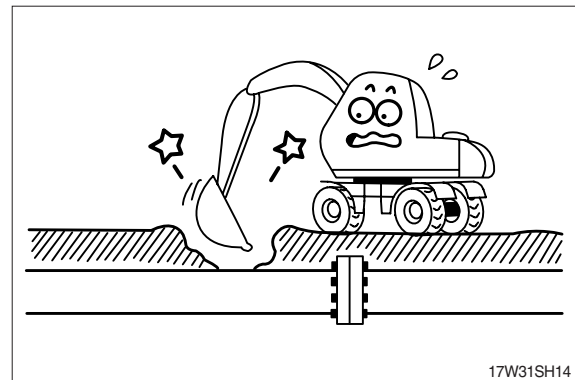




Provide proper ventilation when operating engine in a closed area to avoid the danger of exhaust gases.

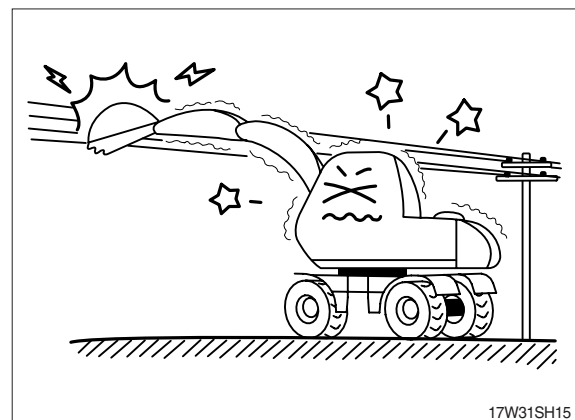


Check the locations of underground gas pipes or water line and secure the safety before operation.

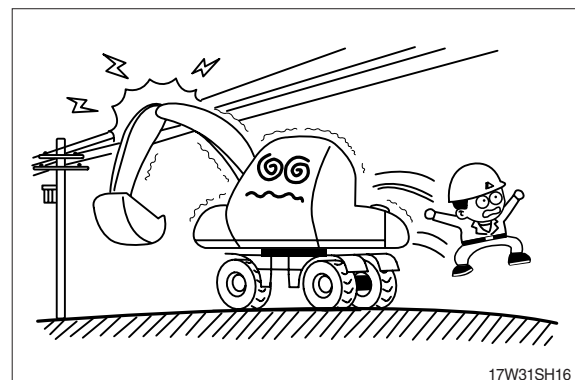


The operating near the electrical lines is very dangerous.  
Operate within safe working range permitted as below.

Supply voltage	Min safe separation
6.6 kV	3 m (10 ft)
33.0 kV	4 m (13 ft)
66.0 kV	5 m (16 ft)
154.0 kV	8 m (26 ft)
275.0 kV	10 m (33 ft)

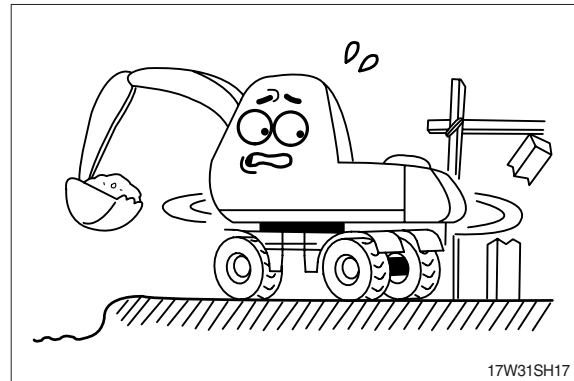


If the machine touches the electric power lines, keep sitting on the operator's seat and make sure the personnel on the ground not to touch the machine until turning off the electric current. Jump off the machine without contacting the machine when you need to get off.

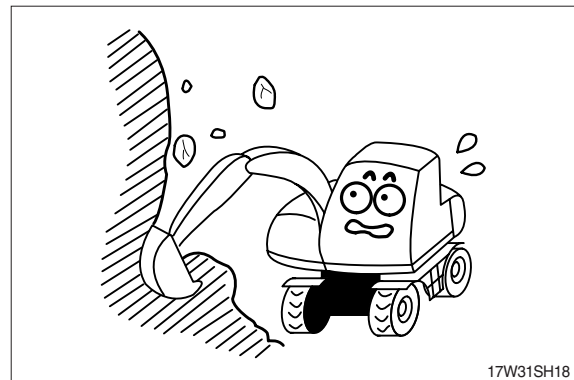


Watch out for obstacles.

Be particularly careful to check the machine clearance during the swing.

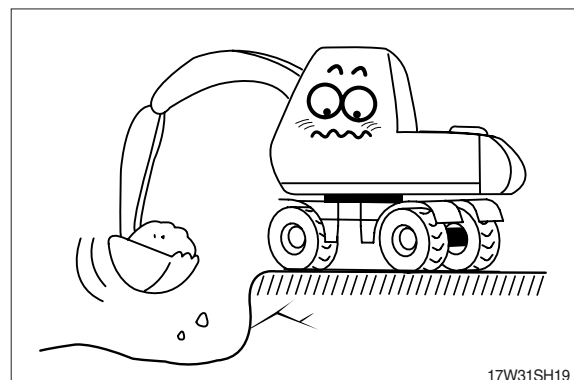


When using the machine as breaker or working in a place where stones may fall down, cab roof guard and head guard should be provided for proper protection.



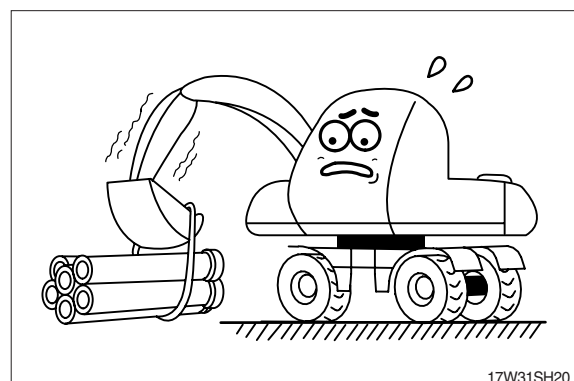
Avoid operating on a cliff or soft ground as there is danger of rolling over.

Make sure to get off easily as keeping the track at a right angle and putting the travel motor into the backward position when working on a cliff or soft ground inevitably.

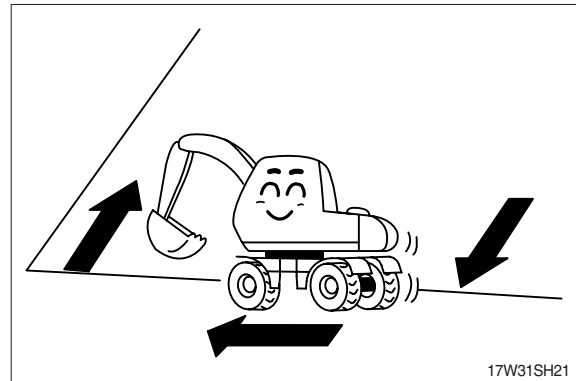


Operate for the lifting work considering the capacity of machine, weight and width of the load.

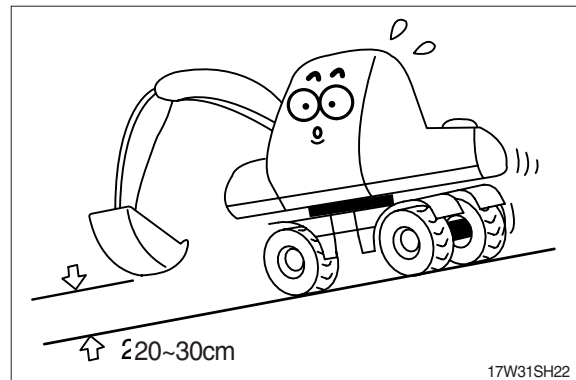
Be careful not to lift exceeding the machine capacity as it can be the cause of machine damage and safety accident.



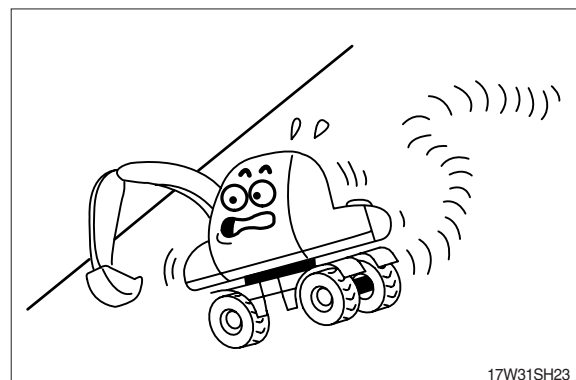
Avoid traveling in a cross direction on a slope as it can cause the danger of rolling over and sliding.



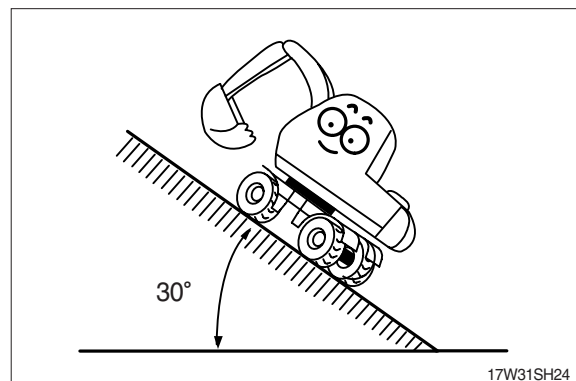
Traveling on a slope is dangerous.  
Be sure to operate slowly when traveling down a slope and maintain the bucket at a height of 20~30 cm (1 ft) above the ground so that it can be used as brake in an emergency.



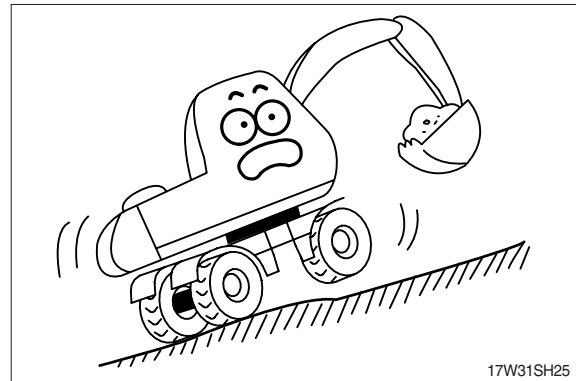
Steering of the machine while traveling on a slope is dangerous.  
When an inevitable turning of direction is required, turn on the flat and solid ground.



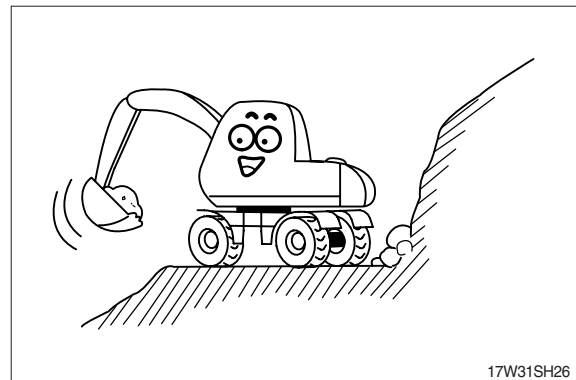
The engine angularity limits are 30 degree.  
Do not operate by more than the engine limits in any case.



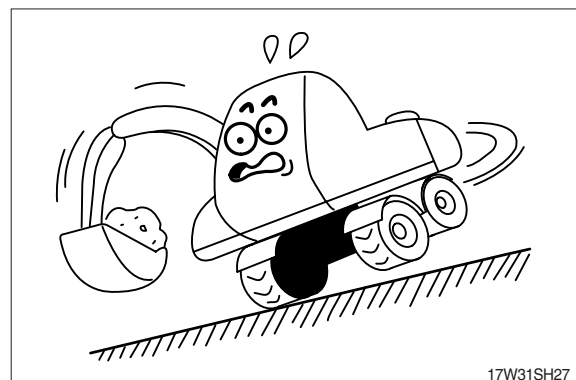
The operation on a slope is dangerous.  
Avoid operating the machine on a slope of over 10 degree.



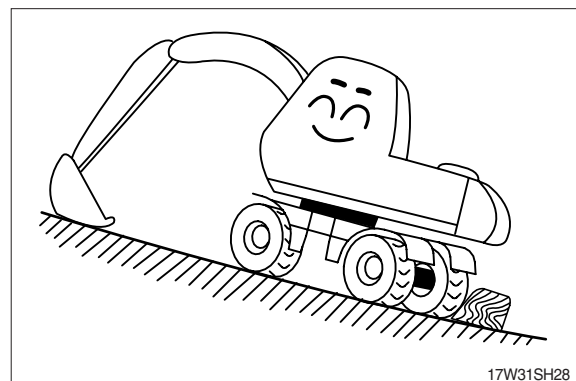
Operate the machine after making ground flat when operation is required on a slope.



The swing on the slope can be danger of rolling over.  
Do not operate to swing the machine with the bucket loaded on a slope since the machine may lose its balance under such an instance.

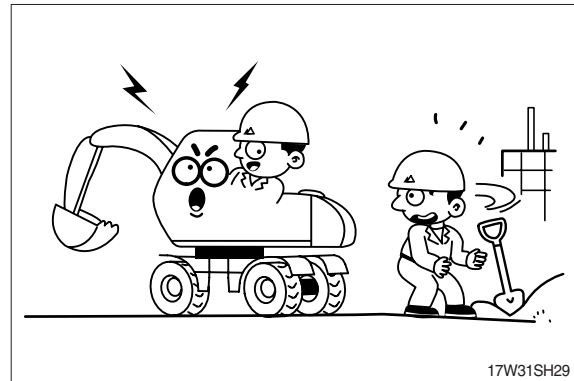


Avoid parking and stopping on a slope.  
Lower the bucket to the ground and block the tires when parking.

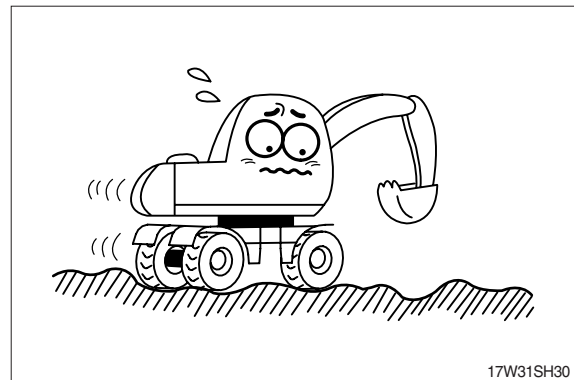


Before traveling the machine, sound the horn to warn nearby personnel.

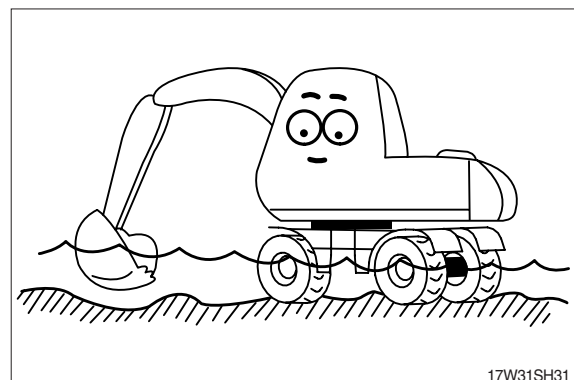
Operate forward and backward correctly with confirming the location of the travel motor.



Slow down when traveling through obstacles or uneven ground.



When 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 axle center.



## MOUNTING AND DISMOUNTING

Never jump on or off the machine. Never get on or off a moving machine.

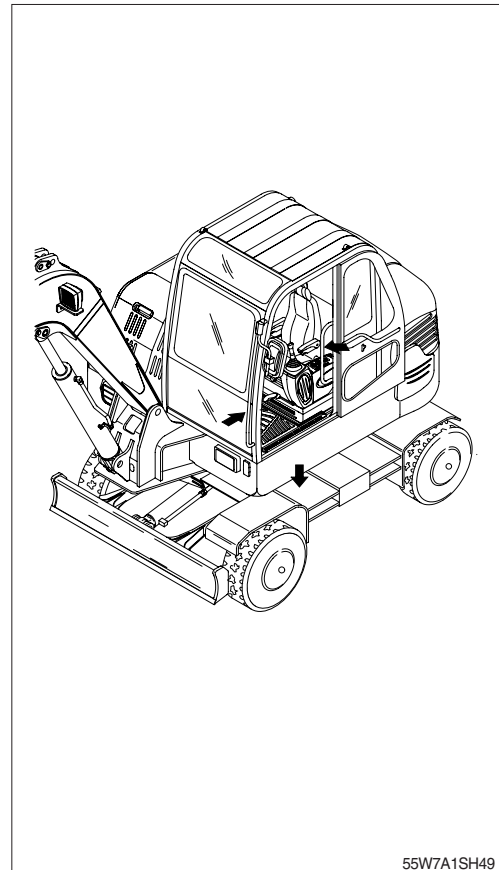
When mounting or dismounting, always face the machine and use the handrails, machine or foot steps. In this case please contact your Hyundai distributor.

Do not hold any control levers when getting on or off the machine.

Ensure safety by always maintaining at least three-point contact of hands and feet with the handrails, foot steps.

Always remove any oil or mud from the handrails, foot steps. If they are damaged, repair them and tighten any loose bolts.

If grasping the door handrail when mounting or dismounting or moving on the tires, open and lock the door securely in the open position. Otherwise, the door may move suddenly, causing you to lose balance and fall.



## KEEP RIDERS OFF MACHINE

Riders on a machine are subject to injury such as being struck objects and being thrown off the machine.

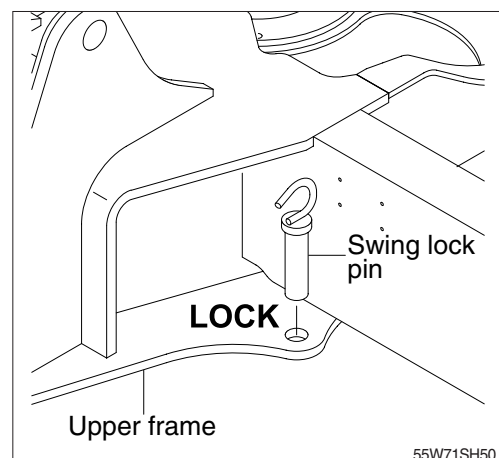
Only allow the operator on the machine. Keep riders off.

## ALWAYS APPLY LOCK WHEN LEAVING MACHINE

When leaving the machine, always place the swing lock pin securely in the LOCK position.

If you accidentally touch the travel or swing lever when they are not locked, the work equipment may suddenly move and cause serious injury or damage.

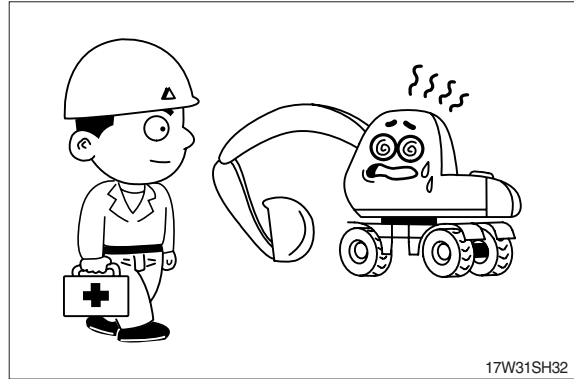
When leaving the machine, lower the work equipment completely to the ground, stop the engine and use the key to lock all the equipment. Then set the swing lock pin to the lock position. Always take the key with you.



### 3. DURING MAINTENANCE

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

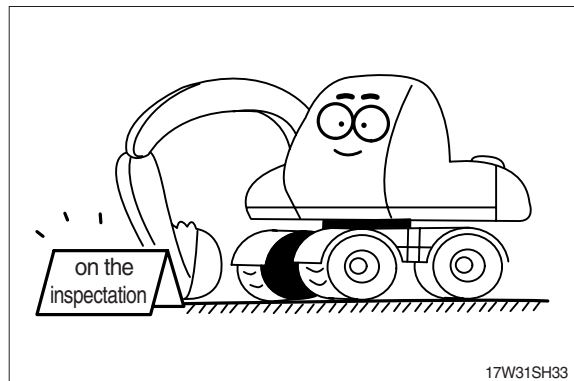
Inspect immediately the cause of trouble such as vibration, overheating and trouble in the cluster then repair.



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.

Lower the dozer blade and/or outrigger to the ground.



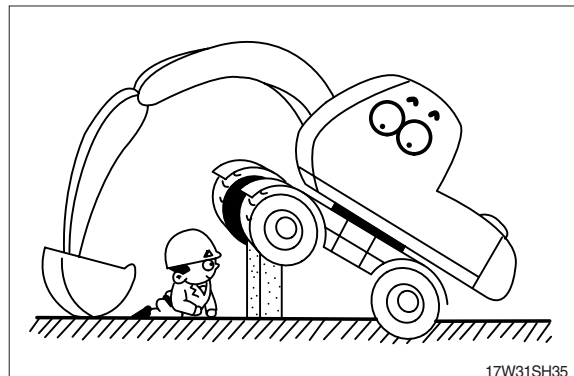
Do not remove the radiator cap from hot engine. Open the cap after the engine cools, below 50°C (122°F) to prevent personal injury from heated coolant spray or steam.



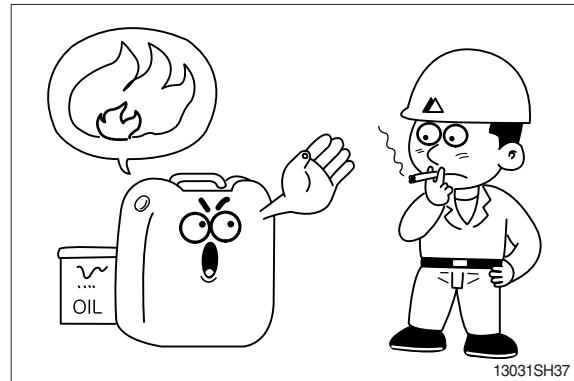
Do not work below the machine.

Be sure to work with proper safety supports.

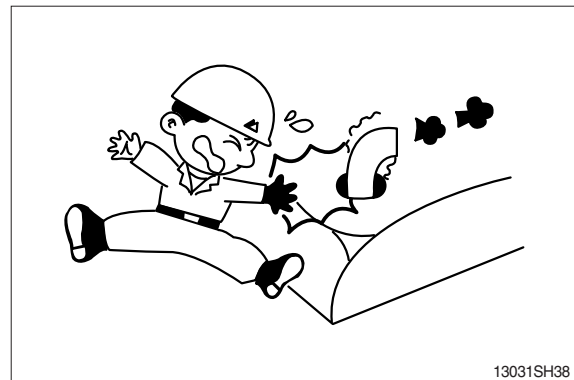
Do not depend on the hydraulic cylinders to hold up the equipment and attachment.



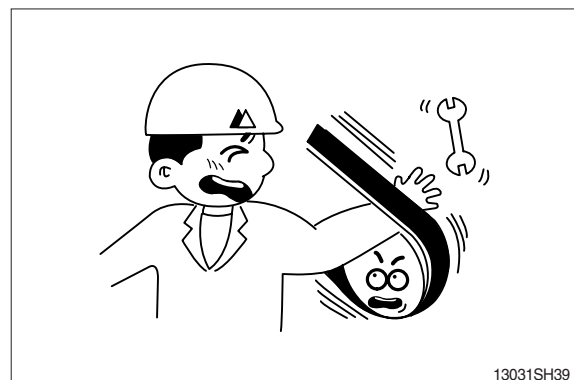
There is the danger of fire in fuel and oil.  
Store in cool and dry area, away from any open flames.



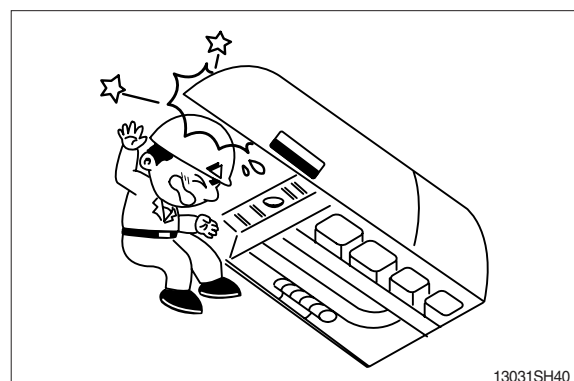
Do not touch exhaust pipe, or may cause severe burn.



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



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





Be careful that the front window may be promptly closed.

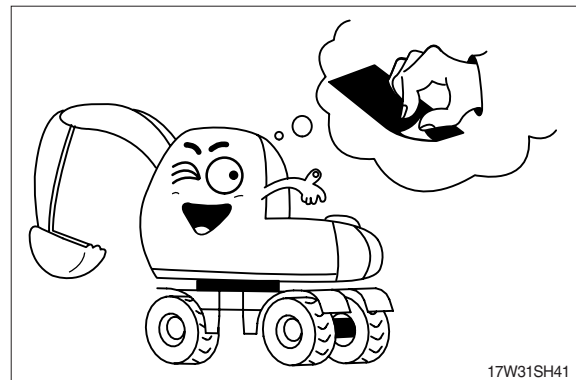
Be sure to support stay, when the side door needs to be opened.

Be careful that the open side door may closed by the external or natural force like strong wind.

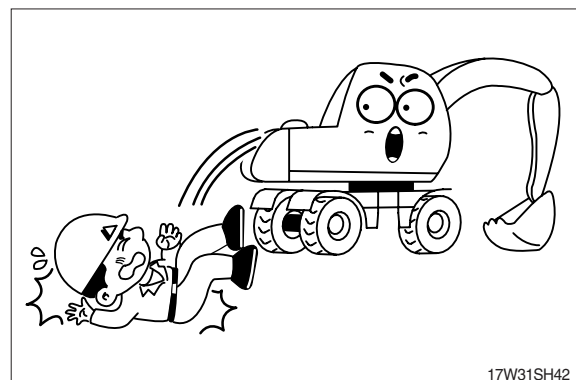


The antislip protection should be replaced if they have become worn or have been printed over.

Be sure to free of oil, water and grease etc.



Be careful of not touching slip, fall down etc., when you work at the upper frame to service engine and/or other component.

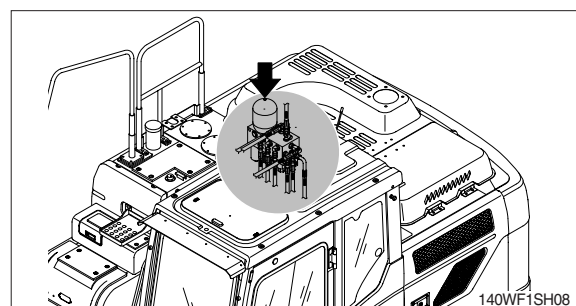


## HIGH PRESSURE GAS

Contain high pressure gas.

To avoid explosion and personal injury, do not expose to fire, do not weld, do not drill.

Relieve pressure before discharging.



## LIFT EYES CAN FAIL

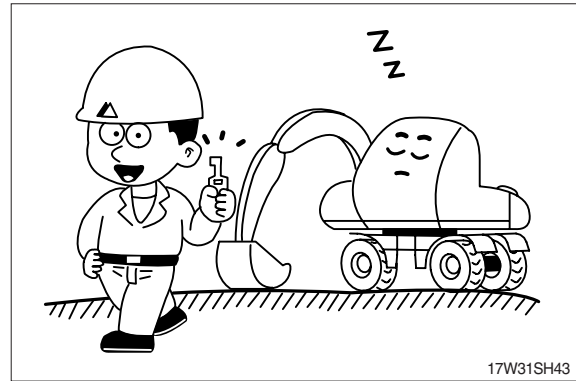
Lift eyes or tank can fail when lifting tank containing fluids resulting in possible personal injury.

Drain tank of all fluids before lifting.

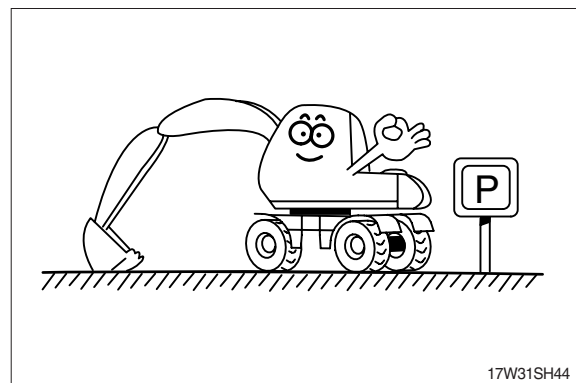
## 4. PARKING

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

Lock the cab door.

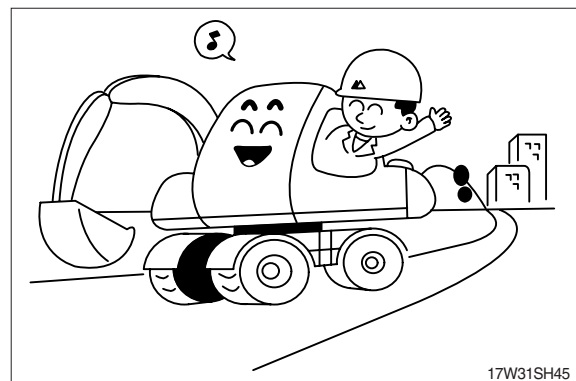


Park the machine in the flat and safe place.



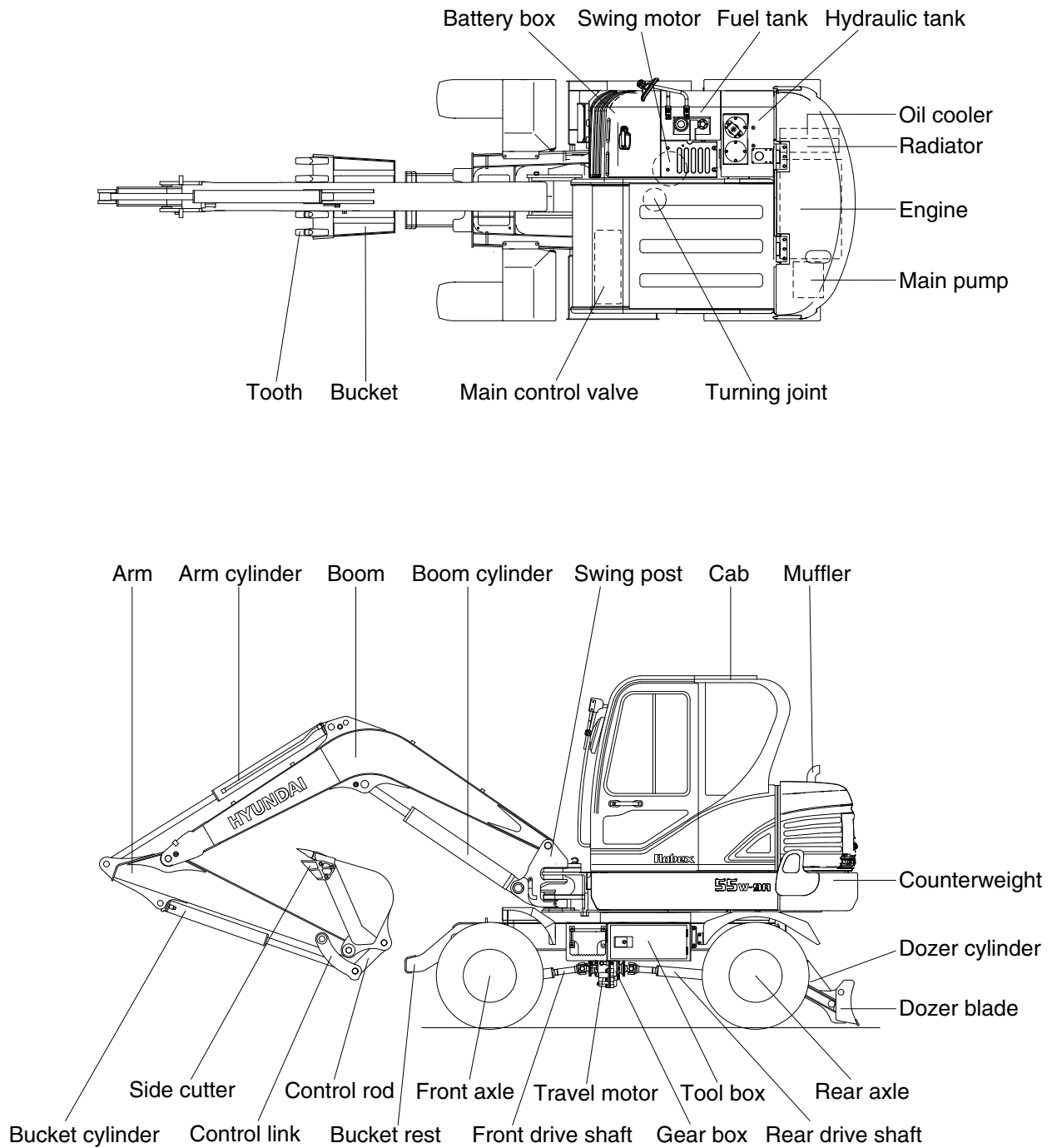
Hope you can work easily and safely observing safety rules.

For safe operation, observe all safety rules.



# SPECIFICATIONS

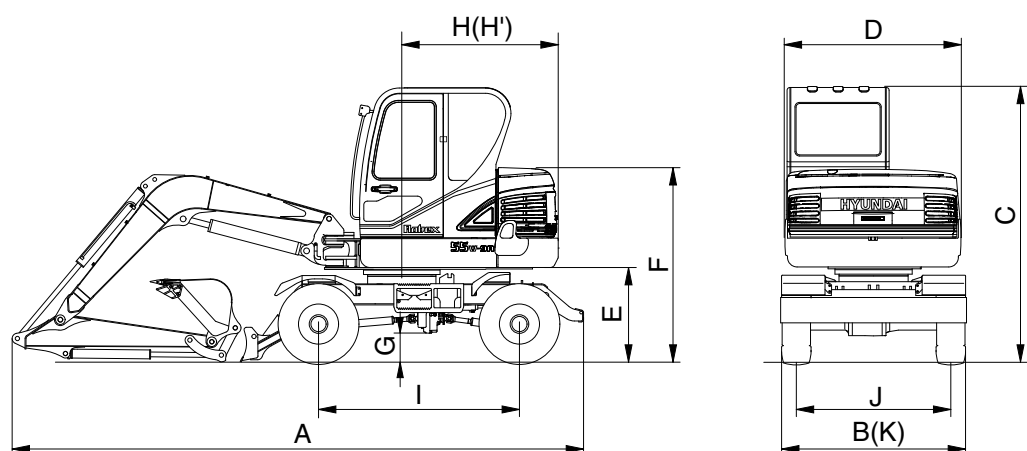
## 1. MAJOR COMPONENTS



55W9A2SP01

## 2. SPECIFICATIONS

### 1) 3.0 m (9'10") MONO BOOM, 1.6 m (5' 3") ARM WITH BOOM SWING SYSTEM

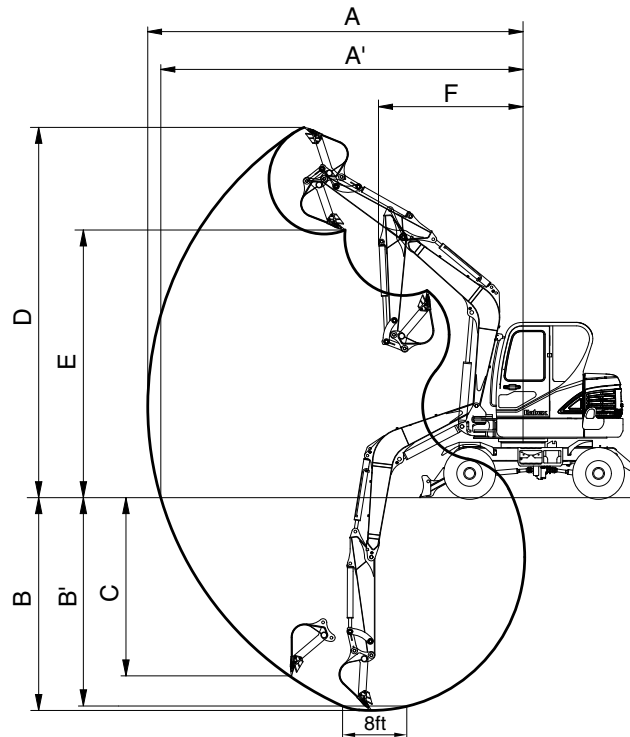


55W9A2SP02

Description		Unit	Specification
Operating weight		kg (lb)	5550 (12240)
Bucket capacity(SAE heaped), standard		m <sup>3</sup> (yd <sup>3</sup> )	0.18 (0.24)
Overall length	A	mm (ft-in)	5970 (19' 6")
Overall width	B		1925 ( 6' 4")
Overall height	C		2850 ( 9' 4")
Upperstructure width	D		1850 ( 6' 1")
Ground clearance of counterweight	E		986 ( 3' 3")
Engine cover height	F		1970 ( 6' 6")
Minimum ground clearance	G		290 (11.4")
Rear-end distance	H		1650 ( 5' 5")
Rear-end swing radius	H'		1650 ( 5' 5")
Wheel base	I		2100 ( 6'11")
Tread	J		1600 ( 5' 3")
Dozer blade width	K		1925 ( 6' 4")
Travel speed	Low	km/hr (mph)	11.6 (7.2)
	High		30 (18.7)
Swing speed		rpm	7.8
Gradeability		Degree (%)	35 (70)
Max traction force		kg (lb)	3400 (7500)

### 3. WORKING RANGE

#### 1) 3.0 m (9'10") MONO BOOM WITH BOOM SWING SYSTEM



55W9A2SP03

Description		1.6 m (5' 3") Arm
Max digging reach	A	6150 mm (20' 2")
Max digging reach on ground	A'	5980 mm (19' 7")
Max digging depth	B	3500 mm (11' 6")
Max digging depth (8 ft level)	B'	3100 mm (10' 2")
Max vertical wall digging depth	C	2960 mm ( 9' 9")
Max digging height	D	6070 mm (19' 11")
Max dumping height	E	4340 mm (14' 3")
Min swing radius	F	2350 mm ( 7' 9")
Boom swing radius (left/right)		80°/50°
Bucket digging force	SAE	37.7 kN
		3850 kgf
		8490 lbf
	ISO	42.4 kN
		4330 kgf
		9550 lbf
Arm crowd force	SAE	28.4 kN
		2900 kgf
		6390 lbf
	ISO	31.9 kN
		3260 kgf
		7190 lbf











## 4. WEIGHT

Item	R55W-9A	
	kg	lb
Upperstructure assembly	2680	5910
Main frame weld assembly	600	1320
Engine assembly	280	620
Main pump assembly	30	70
Main control valve assembly	40	90
Swing motor assembly	75	165
Hydraulic oil tank assembly	90	200
Fuel tank assembly	60	130
Boom swing post	110	240
Counterweight	210	460
Cab assembly	350	770
Lower chassis assembly	2080	4590
Lower frame weld assembly	550	1210
Swing bearing	90	200
Travel motor assembly	40	90
Turning joint	30	70
Gear box	94	207
Front axle assembly	280	617
Rear axle assembly	200	440
Dozer blade assembly	200	440
Front attachment assembly (3.0 m boom, 1.6 m arm, 0.18 m <sup>3</sup> SAE heaped bucket)	790	1740
3.0 m boom assembly	240	530
1.6 m arm assembly	130	290
0.18 m <sup>3</sup> SAE heaped bucket assembly	170	370
Boom cylinder assembly	70	155
Arm cylinder assembly	60	130
Bucket cylinder assembly	35	80
Bucket control link assembly	40	90
Boom swing cylinder assembly	40	90
Blade cylinder assembly	30	70











## 5. LIFTING CAPACITIES

1) 3.0 m ( 9'10") boom, 1.6 m ( 5' 3") arm equipped with 0.18m³ (SAE heaped) bucket and the dozer blade down.

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

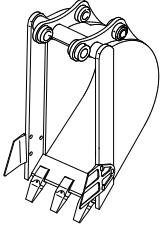
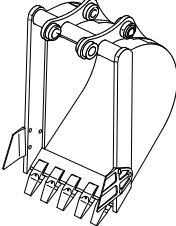
Load point height		Load radius								At max. reach		
		2.0 m (7 ft)		3.0 m (10 ft)		4.0 m (13 ft)		5.0 m (16 ft)		Capacity		Reach
												m (ft)
5.0 m (16 ft)	kg lb									*960 *2120	*960 *2120	4.47 (14.7)
4.0 m (13 ft)	kg lb					*1020 *2250	*1020 *2250			*990 *2180	720 1590	5.26 (17.3)
3.0 m (10 ft)	kg lb					*1150 *2540	1120 2470	*990 *2180	760 1680	*1020 *2250	620 1370	5.69 (18.7)
2.0 m (7 ft)	kg lb			*1900 *4190	1690 3730	*1400 *3090	1070 2360	*1200 *2650	740 1630	*1070 *2360	570 1260	5.86 (19.2)
1.0 m (3 ft)	kg lb			*2500 *5510	1580 3480	*1670 *3680	1020 2250	*1310 *2890	720 1590	*1110 *2450	570 1260	5.81 (19.1)
Ground Line	kg lb	*2690 *5930	*2690 *5930	*2720 *6000	1530 3370	*1820 *4010	990 2180	*1350 *2980	700 1540	*1160 *2560	620 1370	5.51 (18.1)
-1.0 m (-3 ft)	kg lb	*4040 *8910	3040 6700	*2610 *5750	1520 3350	*1760 *3880	980 2160			*1180 *2600	740 1630	4.92 (16.1)
-2.0 m (-7 ft)	kg lb	*3400 *7500	3100 6830	*2090 *4610	1550 3420							

2) 3.0 m ( 9'10") boom, 1.6 m ( 5' 3") arm equipped with 0.18m³ (SAE heaped) bucket and the dozer blade up.

Load point height		Load radius								At max. reach		
		2.0 m (7 ft)		3.0 m (10 ft)		4.0 m (13 ft)		5.0 m (16 ft)		Capacity		Reach
												m (ft)
5.0 m (16 ft)	kg lb									*960 *2120	880 1940	4.47 (14.7)
4.0 m (13 ft)	kg lb					*1020 *2250	*1020 *2250			760 1680	650 1430	5.26 (17.3)
3.0 m (10 ft)	kg lb					*1150 *2540	1010 2230	810 1790	690 1520	650 1430	550 1210	5.69 (18.7)
2.0 m (7 ft)	kg lb			1770 3900	1510 3330	1130 2490	960 2120	790 1740	670 1480	610 1340	510 1120	5.86 (19.2)
1.0 m (3 ft)	kg lb			1660 3660	1410 3110	1080 2380	910 2010	760 1680	640 1410	610 1340	510 1120	5.81 (19.1)
Ground Line	kg lb	*2690 *5930	2630 5800	1610 3550	1360 3000	1040 2290	880 1940	750 1650	630 1390	650 1430	550 1210	5.51 (18.1)
-1.0 m (-3 ft)	kg lb	3210 7080	2650 5840	1600 3530	1350 2980	1040 2290	870 1920			790 1740	660 1460	4.92 (16.1)
-2.0 m (-7 ft)	kg lb	3270 7210	2700 5950	1630 3590	1380 3040							

- Note
- Lifting capacity are based on SAE J1097 and ISO 10567.
  - 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.
  - The load point is a hook located on the back of the bucket.
  - \*indicates load limited by hydraulic capacity.

## 6. BUCKET SELECTION GUIDE

	
0.07m³ SAE heaped bucket	0.18 m³ SAE heaped bucket

Capacity		Width		Weight	Recommendation
					3.0 m (9' 10") boom
SAE heaped	CECE heaped	Without side cutter	With side cutter		1.6 m (5' 3") arm
0.07 m³ (0.09 yd³)	0.06 m³ (0.08 yd³)	315 mm (12.4")	360 mm (14.2")	115 kg (255 lb)	Applicable for materials with density of 1600 kgf/m³ (2700 lb/yd³) or less
0.18 m³ (0.24 yd³)	0.15 m³ (0.20 yd³)	670 mm (26.4")	740 mm (29.1")	170 kg (375 lb)	



## 7. SPECIFICATIONS FOR MAJOR COMPONENTS

### 1) ENGINE

Item	Specification
Model	Yanmar 4TNV98C
Type	4-cycle diesel engine, low emission
Cooling method	Water cooling
Number of cylinders and arrangement	4 cylinders, in-line
Firing order	1-3-4-2
Combustion chamber type	Direct injection type
Cylinder bore × stroke	98 × 110 mm (3.85" × 4.33")
Piston displacement	3319 cc (203 cu in)
Compression ratio	18.5 : 1
Rated gross horse power(SAE J1995)	66.9 Hp at 2400 rpm (49.9 kW at 2400 rpm)
Maximum torque at 1550rpm	24 kgf · m (173.6 lbf · ft)
Engine oil quantity	11.6 l (3.1 U.S. gal)
Dry weight	270 kg (595 lb)
High idling speed	2550+ 50 rpm
Low idling speed	1000 ± 100 rpm
Rated fuel consumption	176 g/Hp · hr at 2400 rpm
Starting motor	12V-3.0 kW
Alternator	12V-80A(-#0214), 12V-100 A(#0215-)
Battery	1 × 12V × 100Ah

### 2) MAIN PUMP

Item	Specification
Type	Variable displacement tandem axis piston pumps
Capacity	2 × 25 cc/rev
Maximum pressure	220 kgf/cm <sup>2</sup> (3130 psi)
Rated oil flow	2 × 63.5 l /min (16.5 U.S. gpm/ 13.7 U.K. gpm)
Rated speed	2500 rpm

### 3) GEAR PUMP

Item	Specification
Type	Fixed displacement gear pump single stage
Capacity	16.2/6.5 cc/rev
Maximum pressure	220/30 kgf/cm <sup>2</sup> (3130/430 psi)
Rated oil flow	40.5/16.3ℓ/min (10.7/4.3 U.S. gpm/8.9/3.6 U.K. gpm)

### 4) MAIN CONTROL VALVE

Item	Specification
Type	9 spools sectional block
Operating method	Hydraulic pilot system
Main relief valve pressure	220 kgf/cm <sup>2</sup> (3130 psi)
Overload relief valve pressure	240 kgf/cm <sup>2</sup> (3410 psi)

### 5) SWING MOTOR

Item	Specification
Type	Two fixed displacement axial piston motor
Capacity	32.3 cc/rev
Relief pressure	220 kgf/cm <sup>2</sup> (3130 psi)
Braking system	Automatic, spring applied hydraulic released
Braking torque	14 kgf·m (101 lbf·ft)
Brake release pressure	20~40 kgf/cm <sup>2</sup> (284~570 psi)
Reduction gear type	2 - stage planetary

### 6) TRAVEL MOTOR

Item	Specification
Type	Bent axis design variable displacement axial piston motor
Relief pressure	220 kgf/cm <sup>2</sup> (3130 psi)
Counterbalance valve	Applied
Capacity	80 cc

## 7) POWER TRAIN

Item	Description		Specification
Gear box	Type		2 speed hydrostatic
	Gear ratio	1st	4.06
		2nd	1.31
	Clutch pressure		26~32 kgf/cm <sup>2</sup> (370~455 psi)
Parking brake	Type		Multi disc brake integrated in rear axle
	Maximum braking power		700 kgf · m (5060 lbf · ft)
Axle	Type		4 wheel drive with differential
	Gear ratio		8.67
	Brake		Multi disc brake
	Brake pressure		52 kgf/cm <sup>2</sup> (740 psi)
	Steering pressure		140 kgf/cm <sup>2</sup> (1990 psi)

## 8) CYLINDER

Item		Specification
Boom cylinder	Bore dia × Rod dia × Stroke	ø 110 × ø 65 × 715mm
	Cushion	Extend only
Arm cylinder	Bore dia × Rod dia × Stroke	ø 90 × ø 55 × 850mm
	Cushion	Extend and retract
Bucket cylinder	Bore dia × Rod dia × Stroke	ø 80 × ø 50 × 660mm
	Cushion	Extend only
Dozer cylinder	Bore dia × Rod dia × Stroke	ø 110 × ø 60 × 219mm
	Cushion	-
Boom swing cylinder	Bore dia × Rod dia × Stroke	ø 95 × ø 50 × 535mm
	Cushion	-

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

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

## 9) BUCKET

Item		Capacity		Tooth quantity	Width	
		SAE heaped	CECE heaped		Without side cutter	With side cutter
R55W-9A	STD	0.18 m <sup>3</sup> (0.24 yd <sup>3</sup> )	0.15 m <sup>3</sup> (0.20 yd <sup>3</sup> )	5	670 mm (26.4")	740 mm (29.1")
	OPT	0.07 m <sup>3</sup> (0.09 yd <sup>3</sup> )	0.06 m <sup>3</sup> (0.08 yd <sup>3</sup> )	3	315 mm (12.4")	360 mm (14.2")

## 8. RECOMMENDED OILS

HYUNDAI genuine lubricating oils have been developed to offer the best performance and service life for your equipment. These oils have been tested according to the specifications of HYUNDAI and, therefore, will meet the highest safety and quality requirements.

We recommend that you use only HYUNDAI genuine lubricating oils and grease officially approved by HYUNDAI.

Service point	Kind of fluid	Capacity ℓ (U.S. gal)	Ambient temperature °C( °F)								
			-50 (-58)	-30 (-22)	-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil pan	Engine oil	11.6 (3.1)	★SAE 5W-40								
								SAE 30			
				SAE 10W							
				SAE 10W-30							
					SAE 15W-40						
Swing drive	Grease	0.2 (0.1)	★NLGI NO.1								
								NLGI NO.2			
	Gear oil	1.5 (0.4)	★SAE 75W-90								
					SAE 85W-140						
Gear box case	Gear oil	1.8 (0.5)									
Front axle		Center: 4.5 (1.19) Hub: 0.4×2 (0.11×2)				SAE 85W-90 LSD(GL-5)					
Rear axle		Center:4.5 (1.19) Hub: 0.4×2 (0.11×2)									
Hydraulic tank	Hydraulic oil	Tank; 70 (18.5)  System; 120 (31.7)	★ISO VG 15								
				ISO VG 32							
					ISO VG 46, HBHO VG 46★ <sup>3</sup>						
					ISO VG 68						
Fuel tank	Diesel fuel★ <sup>1</sup>	117 (30.9)	★ASTM D975 NO.1								
							ASTM D975 NO.2				
Fitting (grease nipple)	Grease	As required	★NLGI NO.1								
								NLGI NO.2			
Radiator (reservoir tank)	Mixture of antifreeze and water★ <sup>2</sup>	9.5 (2.5)	Ethylene glycol base permanent type (50 : 50)								
			★Ethylene glycol base permanent type (60 : 40)								

**SAE** : Society of Automotive Engineers

**API** : American Petroleum Institute

**ISO** : International Organization for Standardization

**NLGI** : National Lubricating Grease Institute

**ASTM** : American Society of Testing and Material

★ : Cold region (Russia, CIS, Mongolia)

★<sup>1</sup> : Ultra low sulfur diesel

- sulfur content ≤ 15 ppm

★<sup>2</sup> : Soft water

City water or distilled water

★<sup>3</sup> : Hyundai Bio Hydraulic Oil

※ Using any lubricating oils other than HYUNDAI genuine products may lead to a deterioration of performance and cause damage to major components.

※ Do not mix HYUNDAI genuine oil with any other lubricating oil as it may result in damage to the systems of major components.

※ Do not use any engine oil other than that specified above, as it may clog the diesel particulate filter(DPF).

※ For HYUNDAI genuine lubricating oils and grease for use in regions with extremely low temperatures, please contact HYUNDAI dealers.

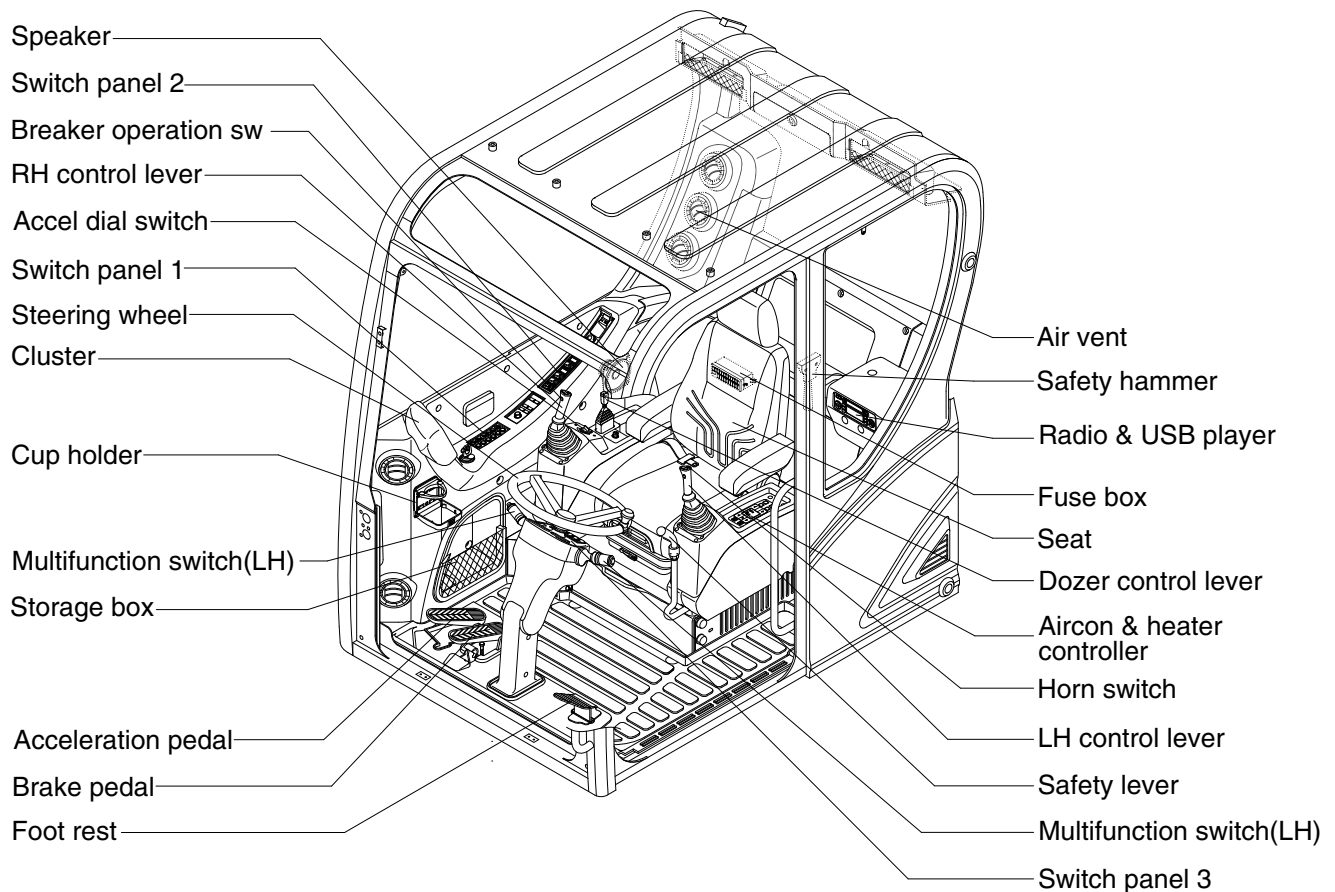
# CONTROL DEVICES

## 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.



55W9A3CD01

## 2. CLUSTER ((machine serial No.: ~#0578)

### 1) STRUCTURE

The cluster consists of LCD and switches as shown below. The LCD is to warn the operator in case of abnormal machine operation or conditions for the appropriate operation and inspection.

Also, The LCD is to set and display for modes, monitoring and utilities with the switches.

The switches or touch screen are to set the machine operation modes.

- ※ **The cluster installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, Maintenance.**
- ※ **When the cluster provides a warning immediately check the problem, and perform the required action.**



55W9A3CD07

- ※ **The warning lamp pops up, lights ON (on the left-top side) and the buzzer sounds when the machine has a problem.**

**The warning lamp lights ON until the problem is cleared. Refer to page 3-5 for details.**

## 2) GAUGE

### (1) Operation screen

When you first turn starting switch ON, the operation screen will appear.

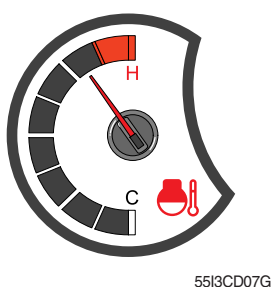




- |                             |                    |              |
|-----------------------------|--------------------|--------------|
| 1 Engine coolant temp gauge | 3 Fuel level gauge | 5 Accel dial |
| 2 Hydraulic oil temp gauge  | 4 Engine rpm       |              |

※ Operation screen type can be set by the screen type menu of the display.

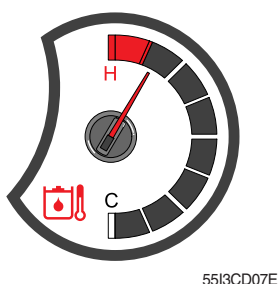
Refer to page 3-21 for details.



### (2) Engine coolant temperature gauge



- ① This gauge indicates the temperature of coolant.
    - Black range : 40-115°C (104-239°F)
    - Red range : Above 115°C (239°F)
  - ② If the indicator is in the red range or  lamp lights ON in red, turn OFF the engine and check the engine cooling system.
- ※ If the gauge indicates the red range or  lamp lights ON in red even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

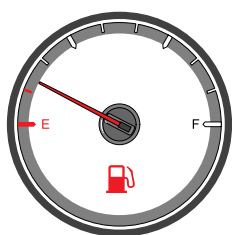
### (3) Hydraulic oil temperature gauge





- ① This gauge indicates the temperature of hydraulic oil.
    - Black range : 40-105°C (104-221°F)
    - Red range : Above 105°C (221°F)
  - ② If the indicator is in the red range or  lamp lights ON in red, reduce the load on the system. If the gauge stays in the red range, stop the machine and check the cause of the problem.
- ※ If the gauge indicates the red range or  lamp lights ON in red even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.



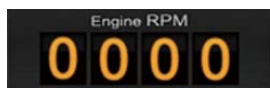
#### (4) Fuel level gauge



55I3CD07F

- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the red range, or  lamp lights ON in red.
- ※ If the gauge indicates the red range or  lamp lights ON in red even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

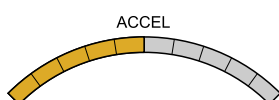
#### (5) Engine rpm display



559A3CD35

- ① This displays the engine speed.

#### (6) Accel dial display



55I3CD07C

- ① This displays acceleration dial level from 0 to 10 step.

### 3) COMMUNICATION ERROR AND LOW VOLTAGE WARNING POP-UP

#### (1) Communication error pop-up



559A3CD71

- ① Cluster displays this communication error pop-up when it has communication error with MCU.
- ② Communication error pop-up displays at operation screen only. Just buzzer alarm at the other screen.
- ③ If communication with MCU become normal state, it will disappear automatically.

#### (2) Low voltage warning pop-up

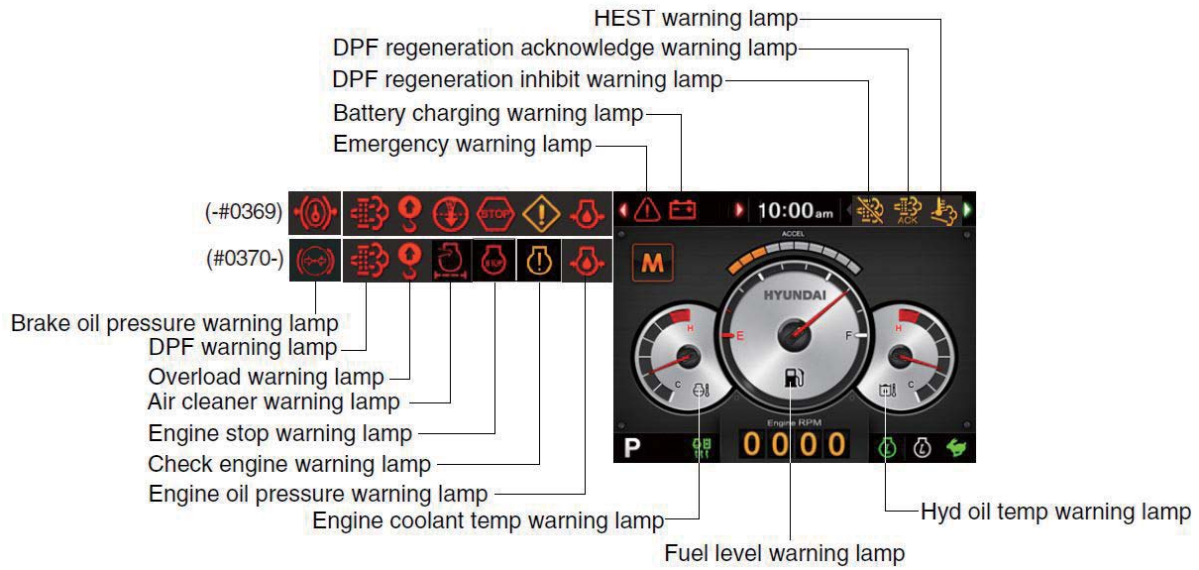


559A3CD72

- ① Cluster displays this low voltage warning pop-up when the battery voltage is low.
- ② Low voltage warning pop-up displays at operation screen only. Just buzzer alarm at the other screen.
- ③ This pop-up will disappear with using touch screen or buzzer stop switch. While the battery voltage is low, buzzer sounds every minute.
- ④ When the battery voltage is higher than 11.5 V, the pop-up off.



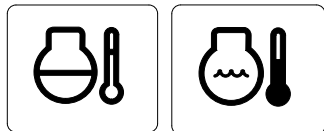
#### 4) WARNING LAMPS






559A3CD08EA

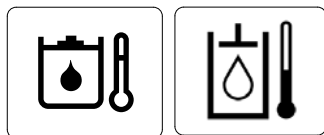
- ※ Each warning lamp on the left-top of the LCD pops up on the center of LCD and the buzzer sounds when the each warning is happened. The pop-up warning lamp moves to the original position and lights ON when the buzzer stop switch is pushed or the pop-up is touched. And the buzzer stops. Refer to page 3-12 for the switch.
- ※ When the warning lamps light ON more than 4, you can check all lamps with next page button( ◀ , ▶ ) near the warning lamps.




##### (1) Engine coolant temperature warning lamp



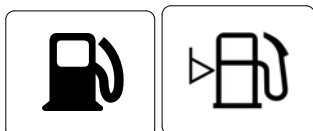
- ① The  lamp pops up on the center of LCD and the buzzer sounds when the engine coolant temperature is over 115°C.
- ② The pop-up  lamp moves to the original position and lights ON when the buzzer stop switch is pushed or pop-up is touched. Also, the buzzer stops and  lamp keeps ON.
- ③ Check the cooling system when the lamp keeps ON.

##### (2) Hydraulic oil temperature warning lamp



- ① The  lamp pops up on the center of LCD and the buzzer sounds when the hydraulic oil temperature is over 105°C.
- ② The pop-up  lamp moves to the original position and lights ON when the buzzer stop switch is pushed or pop-up is touched. Also, the buzzer stops and  lamp keeps ON.
- ③ Check the hydraulic oil level and hydraulic oil cooling system.

##### (3) Fuel level warning lamp



- ① This warning lamp lights ON and the buzzer sounds when the level of fuel is below 10%.
- ② Fill the fuel immediately when the lamp is ON.

#### (4) Emergency warning lamp



21093CD30

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

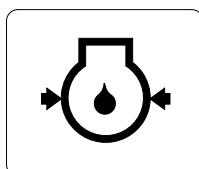
- Engine coolant overheating (over 115°C)
- Hydraulic oil overheating (over 105°C)
- MCU input voltage abnormal
- Accel dial circuit abnormal or open

※ The pop-up warning lamp moves to the original position and lights ON when the buzzer stop switch is pushed or pop-up is touched. Also the buzzer stops.

This is same as following warning lamps.

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

#### (5) Engine oil pressure warning lamp

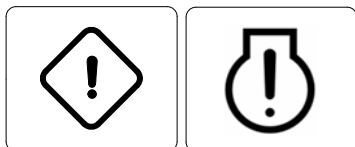


21093CD32

① This lamp lights ON when the engine oil pressure is low.

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

#### (6) Check engine warning lamp



① This lamp lights ON when the communication between MCU and engine ECM on the engine is abnormal, or if the cluster received any fault code from engine ECM.

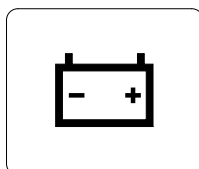
② Check the communication line between them.

If the communication line is OK, then check the fault codes on the cluster.

③ Also, this lamp pops up when the level of DPF soot is high.

※ Refer to the page 3-7 for the DPF warning lamp.

#### (7) Battery charging warning lamp

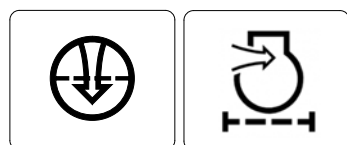


21093CD34

① This lamp lights ON when the battery charging voltage is low.

② Check the battery charging circuit when this lamp is ON.

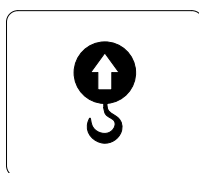
#### (8) Air cleaner warning lamp



① This lamp lights ON when the filter of air cleaner is clogged.

② Check the filter and clean or replace it.

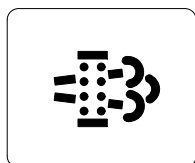
### (9) Overload warning lamp (opt)



21093CD36






- ① When the machine is overload, the overload warning lamp lights ON during the overload switch is ON. (if equipped)
- ② Reduce the machine load.  
Initiate a manual regeneration

### (10) DPF (diesel particulate filter) warning lamp

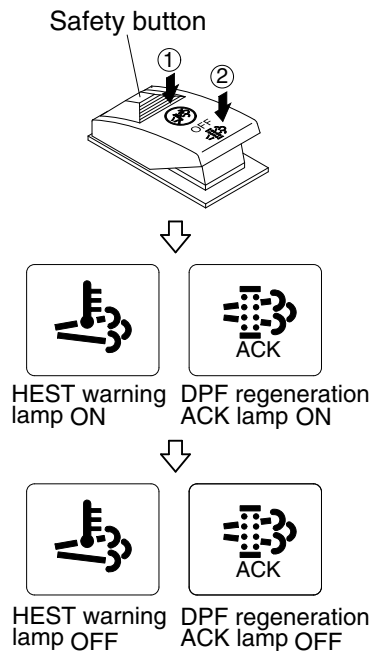


2609A3CD19

- ① This warning lamp lights ON or OFF when the regeneration is needed.
  - ② This warning lamp lights ON while DPF regeneration inhibit switch is in "Regeneration inhibited" state, when stationary regeneration is permitted.
  - ③ This warning lamp lights ON during reset regeneration standby or in back up mode.
  - ④ This warning lamp lights flash during reset regeneration standby DPF regeneration inhibit switch is in "Regeneration inhibited" state.
- ※ Consequences of delaying regeneration
- Poor performance caused by increasing exhaust gas pressure.
  - Higher fuel consumption
  - Shorter filter lifetime

Condition	Warning lamp			Remedy
	DPF 	Check engine  or  (pop up)	Stop engine  or  (pop up)	
Normal	Off	Off	Off	· Automatic regeneration
Soot low	On	Off	Off	· Push DPF switch to OFF position if DPF switch is in inhibit position. · Engine power may be reduced automatically (soot medium)
Soot midium	Blink	Off	Off	
Soot high	On	On	Off	· Engine power and speed will be reduced automatically · Initiate a manual regeneration
Stop	On	Off	On	· Stop the engine immediatary. · Please contact your Hyundai service center or local dealer.

## ※ Manual regeneration method of DPF



559A3CD143

※ Manual regeneration applies if the machine is in a fireproof area and there is no plan to turn off the machine during the regeneration.

- ① Stop and park the machine.
- ② The accel dial to the lowest position and operate the engine in idling.
- ③ Pull the safety button and push the switch to position ② to initiate the manual regeneration of DPF.

※ Refer to the page 3-28 for the switch operation.

※ The engine speed may increase gradually to high idle rpm and DPF regeneration begins and it will take approximately 25~30 minutes.

- ④ When the manual regeneration starts, the DPF warning lamp turns OFF and the regeneration acknowledge lamp and HEST warning lamp will light ON during the regeneration function is operating.
- ⑤ The regeneration acknowledge lamp and HEST warning lamp will light OFF when the regeneration function is completed.

### (11) HEST (High exhaust system temperature) warning lamp



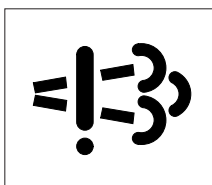
2609A3CD21

- ① This warning lamp indicates, when illuminated, that exhaust temperatures are high due to regeneration of the DPF.
- ② The lamp will also illuminate during a manual regeneration.
- ③ When this lamp is illuminated, be sure the exhaust pipe outlet is not directed at any surface or material that can melt, burn, or explode.

⚠ When this lamp is illuminated, the exhaust gas temperature could reach 600°C [1112°F], which is hot enough to ignite or melt common materials, and to burn people.

※ The lamp does not signify the need for any kind of equipment or engine service; It merely alerts the equipment operator to high exhaust temperatures. It will be common for the lamp to illuminate on and off during normal equipment operation as the engine completes regeneration.

### (12) Emission system fail warning lamp

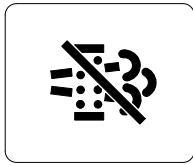


300A3CD15

- ① This warning lamp indicates there are faults related to the emission system.
- ② The lamp lights ON when each of the below warnings is happened.
  - a. The EGR valve malfunctions.
  - b. Electrical malfunction of the EGR control sensors. (disconnection, short)
  - c. Tampering with the EGR control sensors.
- ③ This warning lamp can be shown together with DPF warning lamp or engine fail lamp or engine stop warning lamp when diagnosis DPF systems.

※ Please contact your Hyundai service center or local dealer.

### (13) DPF regeneration inhibit warning lamp

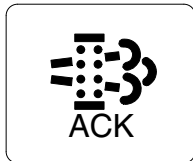


2609A3CD20

- ① This warning lamp indicates, when illuminated, the DPF switch is pushed inhibit position, therefore automatic and manual regeneration can not occur.

※ **Refer to the page 3-28 for the DPF switch.**

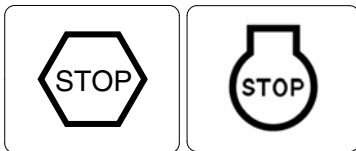
### (14) DPF regeneration acknowledge warning lamp



559A3CD10

- ① This warning lamp lights ON stationary regeneration is in process.
- ② This warning lamp lights ON, when stationary regeneration is in process after DPF regeneration request switch is pressed and hold for more than 3 seconds.
- ③ This warning lamp lights flash when stationary regeneration standby or regeneration interlock switch is in "regeneration permitted (interlock enabled) status.
- ④ This warning lamp lights flash while stationary regeneration standby or back mode, when DPF regeneration inhibit switch in "Regeneration permitted" status and regeneration interlock switch is in regeneration permitted status.

### (15) Stop engine warning lamp

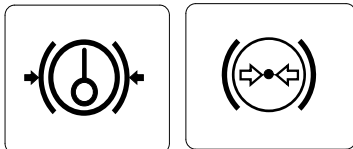


- ① If the lamp lights ON, stop the engine immediately and check the engine.

- ② Check the fault codes on the monitor.

※ **Please contact your Hyundai service center or local dealer.**

### (16) Brake oil pressure warning lamp

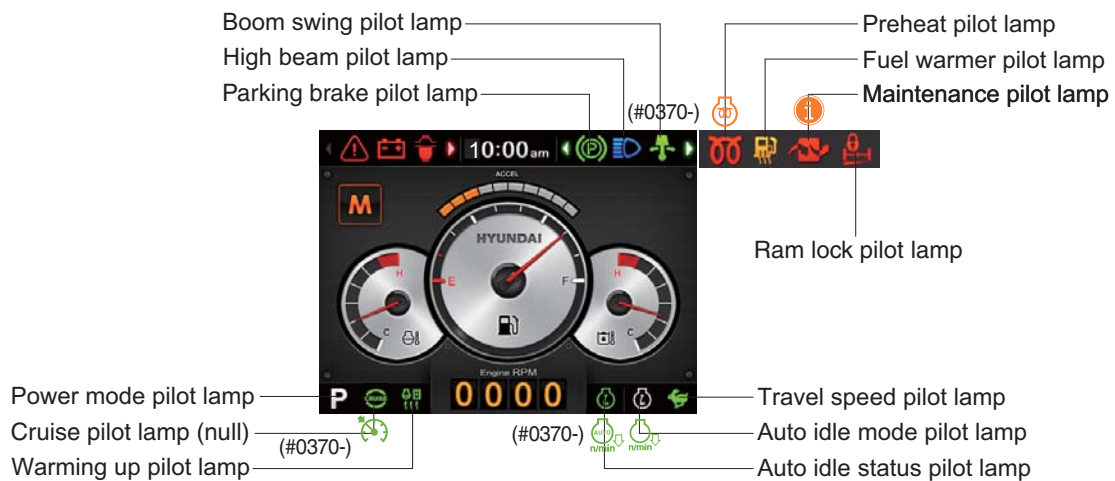


- ① The lamp lights ON when the oil pressure of service brake drops below the normal range.

- ② When the lamp is ON, stop the engine and check for its cause.

※ **Do not operate until any problems are corrected.**









## 5) PILOT LAMPS



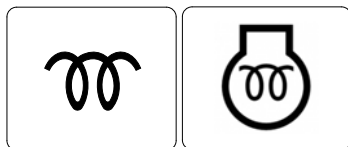
55W9A3CD02

※ When the pilot lamps light ON more than 3, you can check all lamps with next page button (◀, ▶).

### (1) Mode pilot lamps

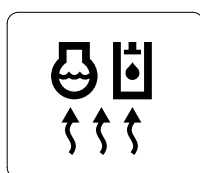
No	Mode	Pilot lamp	Selected mode
1	Power mode	 	Heavy duty power work mode Standard power mode
2	Travel mode	 	Low speed traveling High speed traveling
3	Auto idle mode	   	Auto idle status Auto idle mode

**(2) Preheat pilot lamp**



- ① Turning the start key switch ON position starts preheating in cold weather.
- ② Start the engine after this lamp is OFF.

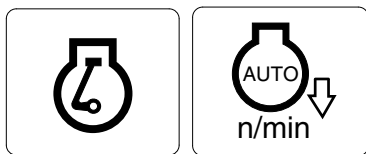
### (3) Warming up pilot lamp



- ① This lamp is turned ON when the coolant temperature is below 30°C (86°F).
- ② The automatic warming up is cancelled when the engine coolant temperature is above 30°C, or when 10 minutes have passed since starting the engine.

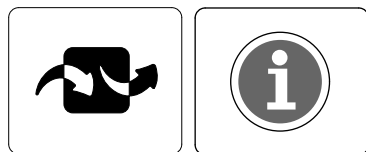
21093CD40

#### (4) Auto idle status/ mode pilot lamp



- ① The auto idle pilot lamp will be ON when the idle mode is selected.
- ② The auto idle status pilot lamp will be ON when all levers and pedals are at neutral position, and the auto idle mode is selected.

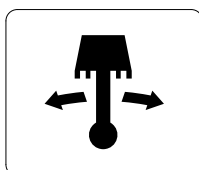
#### (5) Maintenance pilot lamp



- ① This lamp will be ON when the consuming parts are needed to change or replace. It means that the change or replacement interval of the consuming parts remains below 30 hours.
- ② Check the message in maintenance information of main menu. Also, this lamp lights ON for 3 minutes when the start switch is ON position.

※ Refer to the page 3-19.

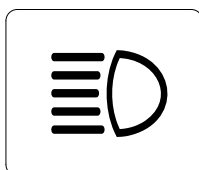
#### (6) Boom swing pilot lamp



559A3CD31

- ① This lamp is ON when the boom swing pedal is operated.

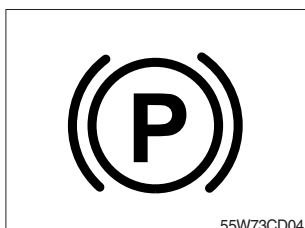
#### (7) High beam pilot lamp



55WI3CD50

- ① This lamp works when the illuminating direction is upward.
- ② This lamp comes ON when the dimmer switch is operated, e.g., when passing another vehicle.

#### (8) Parking brake pilot lamp

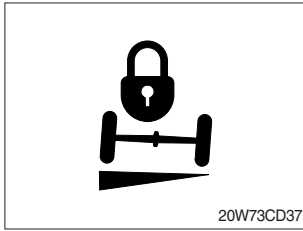


55W73CD04

- ① When the parking brake is actuated, the lamp lights ON.

※ Check the lamp is OFF before driving.

**(9) Ram lock pilot lamp**



- ① This pilot lamp lights ON when ram lock switch is rear position.
- ② Also, the pilot lamp lights ON when the parking switch is ON or service brake is applied.



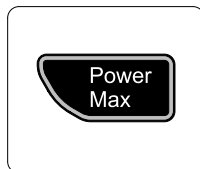
## 6) SWITCHES



559A3CD47

※ When the switches are selected, the pilot lamps are displayed on the LCD. Refer to the page 3-10 for details.

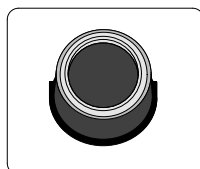
### (1) Power mode switch



559A3CD25

- ① This switch is to select the machine power mode and selected power mode pilot lamp is displayed on the pilot lamp position.
  - P : Heavy duty power work.
  - S : Standard power work.
- ② The pilot lamp changes S → P → S in order.

### (2) Select switch



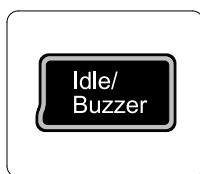
55I3CD50C

- ① This switch is used to select or change the menu and input value.
- ② Knob push
  - Long (over 2 sec) : Return to the operation screen
  - Medium (0.5~2 sec) : Return to the previous screen
  - Short (below 0.5 sec) : Select menu
- ③ Knob rotation
 

This knob changes menu and input value.

  - Right turning : Down direction / Increase input value
  - Left turning : Up direction / Decreased input value

### (3) Auto idle/ buzzer stop switch



559A3CD50D

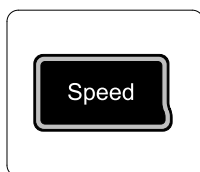
① This switch is used to activate or cancel the auto idle function.

※ **Refer to the page 3-11 for details.**

② The buzzer sounds when the machine has a problem.



In this case, push this switch and buzzer stops, but the warning lamp blinks until the problem is cleared.

### (4) Travel speed control switch

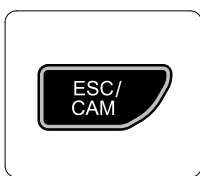


55133CD50B

① This switch is used to select the travel speed alternatively.

-  : Low speed
-  : High speed

### (5) Escape/ Camera switch



559A3CD50E

① This switch is used to return to the previous menu or parent menu.

② In the operation screen, pushing this switch will display the view of the camera on the machine (if equipped).

Please refer to page 3-23 for the camera.

③ If the camera is not installed, this switch is used only ESC function.

## 7) MAIN MENU

### · Operation screen



559A3CD32A



559A3CD32B



559A3CD32C



### Main menu screen



559A3CD32D





### Sub menu screen



559A3CD32E

※ Please refer to select switch, page 3-12 for selection and change of menu and input value.

### (1) Structure

No	Main menu	Sub menu	Description
1	 Monitoring 55I3CD51A	Active fault - Machine Active fault - Engine Logged fault - Machine Logged fault - Engine Monitoring (Analog) Monitoring (Digital) - Input Monitoring (Digital) - Output	MCU ECU MCU ECU Machine information Switch status Output status
2	 Management 55I3CD51B	ESL mode setting Change password Option attach Maintenance information Machine Information A/S phone number Service menu	ESL mode setting Password change Setting option attachment Replacement, Change interval oils and filters Cluster, MCU, Engine, Machine A/S phone number, A/S phone number change Delete logged faults, Software download, Operating hour, power shift
3	 Display 55I3CD51C	Clock Screen type Brightness setting Unit setting Language Calibration	Clock A type, B type, C type Manual, Auto Temperature, Pressure 12 language Calibrating the touch screen
4	 Utilities 55I3CD51D	Camera setting Mode Video	Number of active, Display order, Camera No. Operation mode select Play music and video file

## (2) Monitoring

### ① Active fault - Machine



559A3CD50



559A3CD50A

- The active faults of the MCU can be checked by this menu.

### ② Active fault - Engine



559A3CD50B



559A3CD50C

- The active faults of engine ECU can be checked by this menu.

### ③ Logged fault - Machine/ Engine



559A3CD51



559A3CD50A

- The logged faults of the MCU or engine ECU can be checked by this menu.
- Only for the service person.

### ④ Monitoring (Analog)



559A3CD52



559A3CD52A

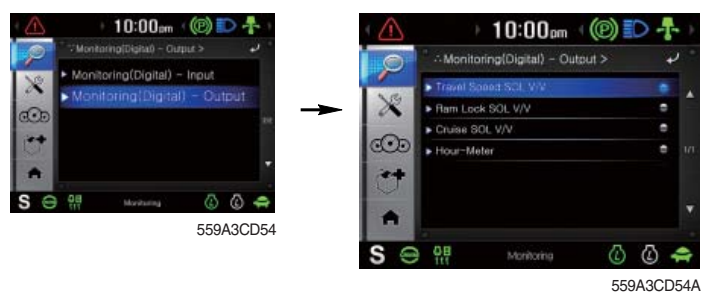
- The machine status such as the engine rpm, oil temperature, voltage and pressure etc. can be checked by this menu.

### ⑤ Monitoring (Digital) - Input



- The switch status can be confirmed by this menu.
- The activated switches are blue light ON.

### ⑥ Monitoring (Digital) - Output



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

### (3) Management

#### ① ESL mode setting



#### ESL mode setting

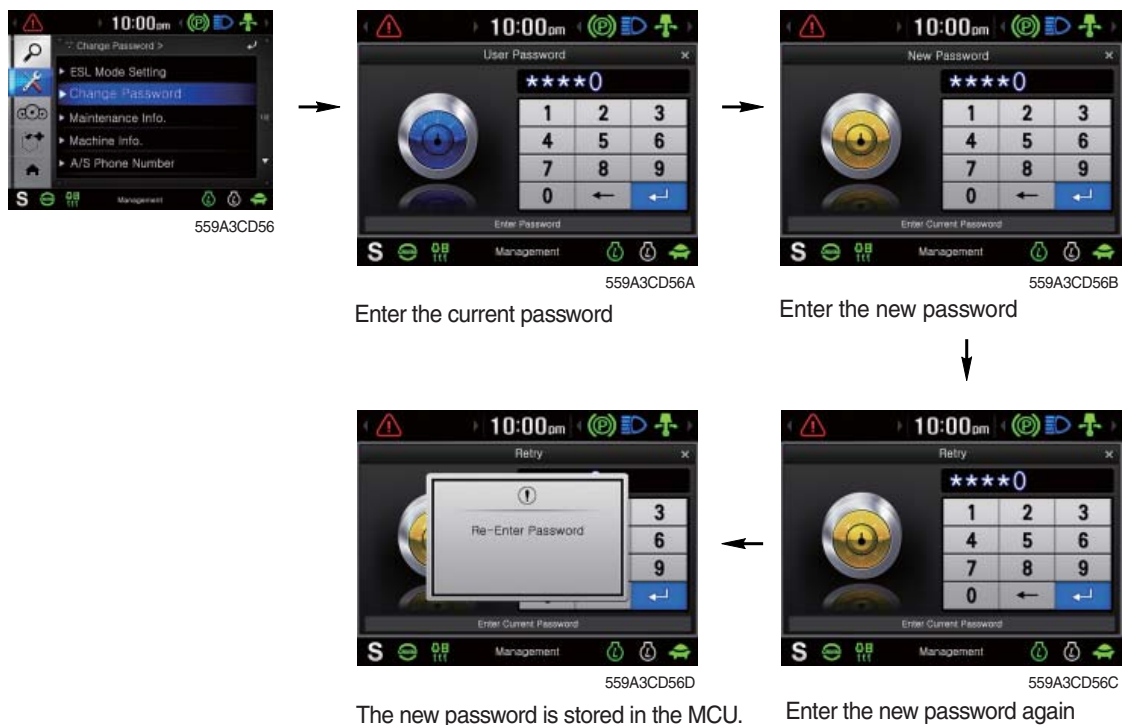
- ESL : Engine Starting Limit
- ESL mode is designed to be a theft deterrent or will prevent the unauthorized operation of the machine.
- If the ESL mode was selected Enable, the password will be required when the start switch is turned ON.
- **Disable** : Not used ESL function
- **Enable (always)** : The password is required whenever the operator starts engine.
- **Enable (Interval)** : The password is required when the operator starts engine first.  
But the operator can restart the engine within the interval time without inputting the password.  
The interval time can be set maximum 2 days.

※ Default password : 00000

※ Password length : 5~10 digit

#### ② Change password

- The password is 5~10 digits.



### ③ Option attach

#### a. Option attach selection



- Three kinds of option attachment can be selected by this menu.

- ① Rotary Grapple (4 way)
- ② Grapple (2 way)
- ③ Auger (2 way)

※ There are two user modes (type A or B) in each option attach.



## b. Proportional flux control setting

User can set preferable value of each option attachment by this menu.

### a) Rotary setting



- Select Rotary  
RCV, button and flux  
can be set by this menu



- RCV setting
  - Enable set LH or RH RCV for rotary operation.
  - Example :  
Select LH for rotary ->  
RH set for grapple automatically.



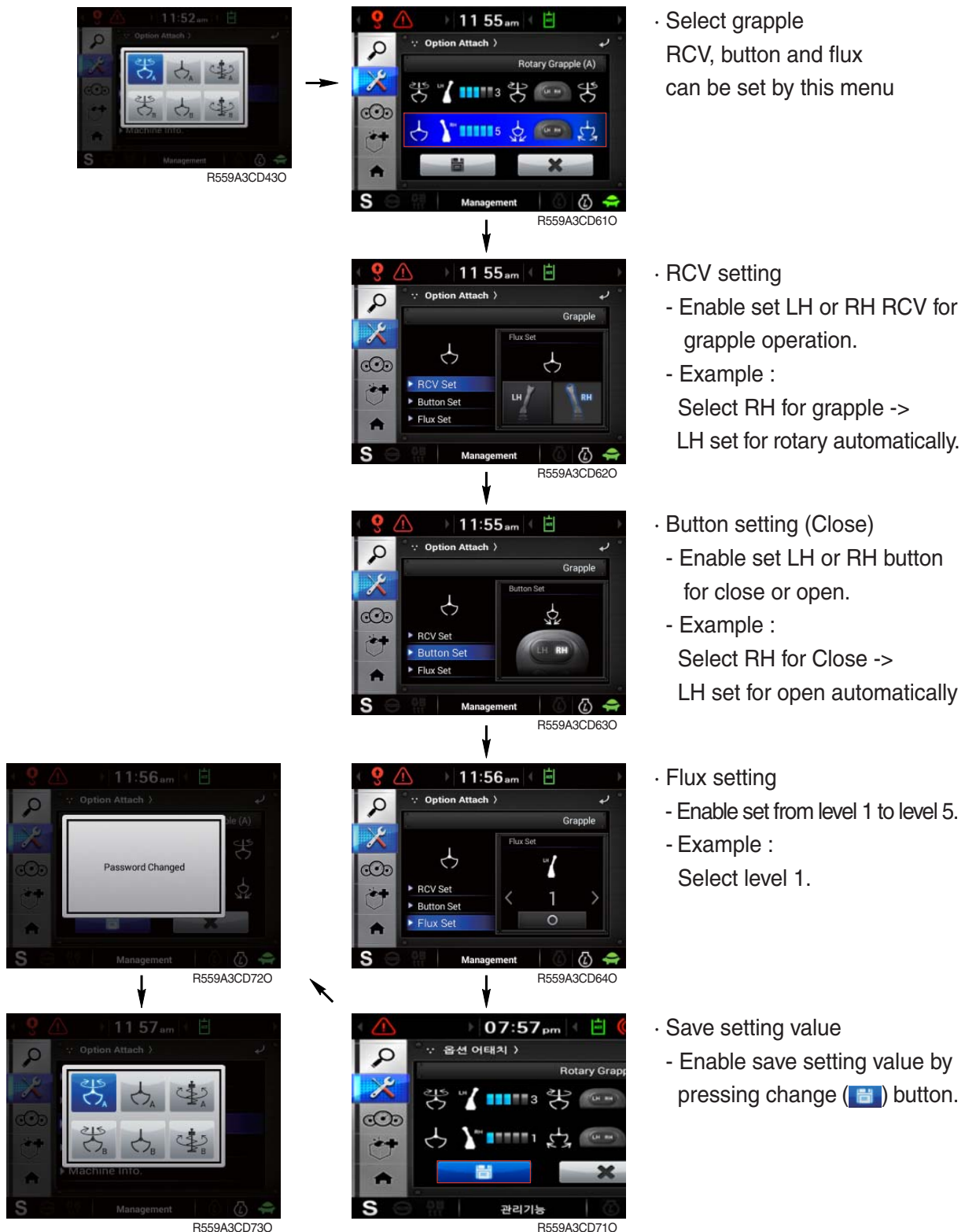
- Button setting (CW rotation)
  - Enable set LH or RH button for CW or CCW rotation.
  - Example :  
Select LH for CW rotation ->  
RH set for CCW rotation automatically



- Flux setting
  - Enable set from level 1 to level 5.
  - Example :  
Select level 3.




## b) Grapple setting



- Select grapple  
RCV, button and flux can be set by this menu
  - RCV setting
    - Enable set LH or RH RCV for grapple operation.
    - Example :  
Select RH for grapple -> LH set for rotary automatically.
  - Button setting (Close)
    - Enable set LH or RH button for close or open.
    - Example :  
Select RH for Close -> LH set for open automatically
  - Flux setting
    - Enable set from level 1 to level 5.
    - Example :  
Select level 1.
  - Save setting value
    - Enable save setting value by pressing change (change) button.
- Setting value saved once, it memorized in each icon and the last setting value is activated.
- Saved setting can be used by pressing Icon button only.
- There are two kinds (A and B) in each option attach setting and six kinds of option attach setting can be saved totally (2 of 4 way, 4 of 2 way).

### c. Confirmation



Symbol (  ) is activated when option attach function is used.

Previous setting value can be checked by following procedure.

- a) - Menu > Management > option attach

#### a) Rotary setting

- Rotary RCV : LH
- Rotary flux level : 3
- CW rotation : LH
- CCW rotation : RH

#### b) Grapple setting

- Grapple RCV : RH
- Grapple flux level : 3
- Open : LH
- Close : RH

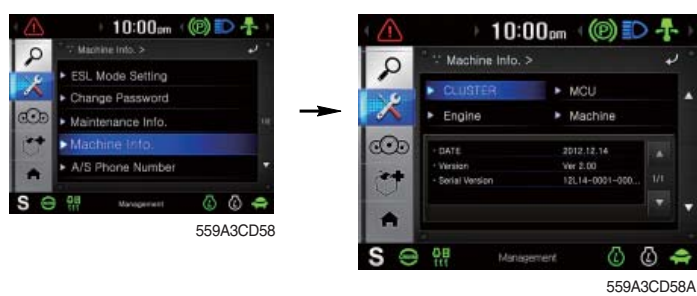
### ③ Maintenance information



- Elapse : Maintenance elapsed time.
- Interval : The change or replace interval can be changed in the unit of 50 hours.
- History-Hour : Maintenance replacement history.
- Replacement : The elapsed time will be reset to zero (0).
- **Change or relpace interval**

No	Item	Interval
1	Engine oil	500
2	Final gear oil	1000
3	Swing gear oil	1000
4	Hydraulic oil	5000
5	Pilot line filter	1000
6	Hydraulic oil return filter	1000
7	Engine oil filter	500
8	Fuel filter	500
9	Pre-filter	500
10	Hydraulic tank breather	250
11	Air cleaner	500
12	Radiator coolant	2000
13	Swing gear pinion grease	1000

### ④ Machine Information



- This can confirm the identification of the cluster, MCU, engine and machine.

#### ⑤ A/S phone number



- The A/S phone number can be checked and changed.

#### ⑥ Service menu



- Delete logged fault : Logged faults of MCU or engine ECU can be deleted.
- S/W download : Update and display software about operating system, application, image and font.
- Operating hours : Operating hours since the machine line out can be checked.
- Power shift : Set power shift mode (standard/option)

### (4) Display

#### ① Clock



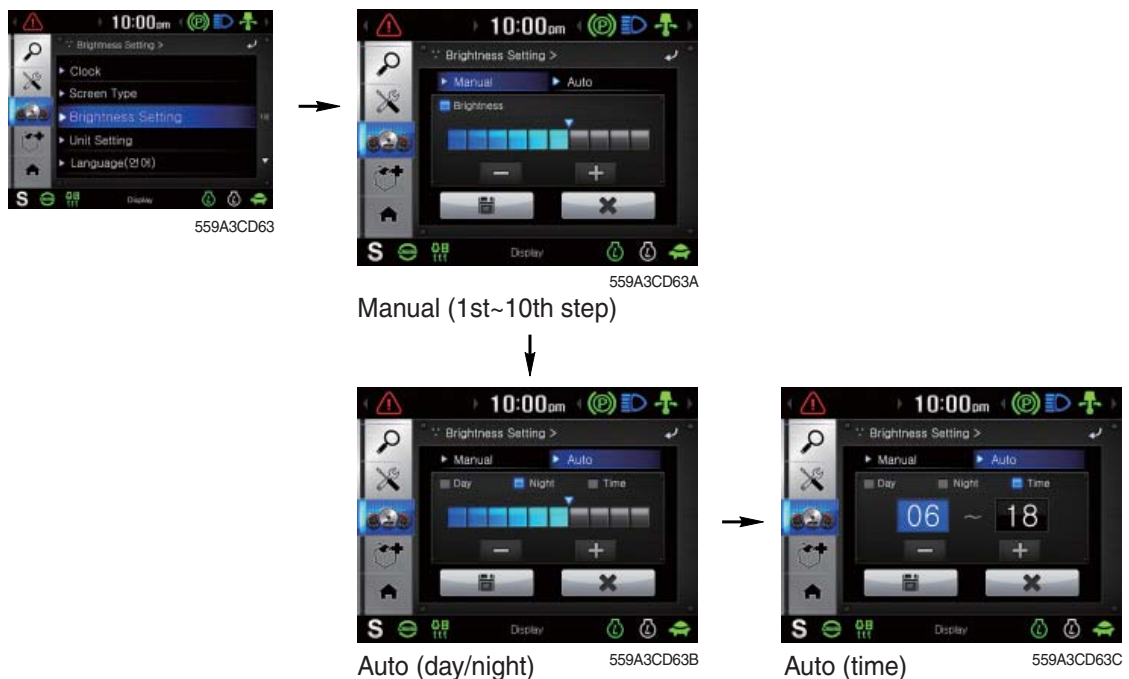
- The first line's three spots "\*\*\*\*-\*\*-\*\*" represent Year/Month/Day each.
- The second line shows the current time. (AM, PM/0:00~12:59)

## ② Screen type



- The screen type (A,B,C) of the LCD can be selected by this menu.

## ③ Brightness setting calibration



- If "Auto" is chosen, brightness for day and night can be differently set up. Also, users can define which day time interval. (Set day starting time and ending time)

## ④ Unit setting



- Temperature : °C ↔ °F
- Pressure : bar ↔ MPa ↔ kgf/cm<sup>2</sup> ↔ psi

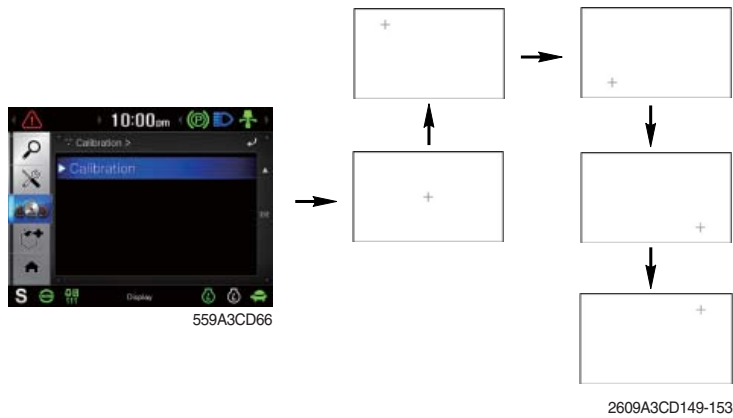
## ⑤ Language



- User can select preferable language and all displays are changed the selected language.

## ⑥ Calibration

- When touch awareness goes wrong, this function use.  
 Fall in the next step if touches the middle point of cross with fingernail.  
 If touches total five points as follows, the setting is completed.





## (5) Utilities

### ① Camera setting

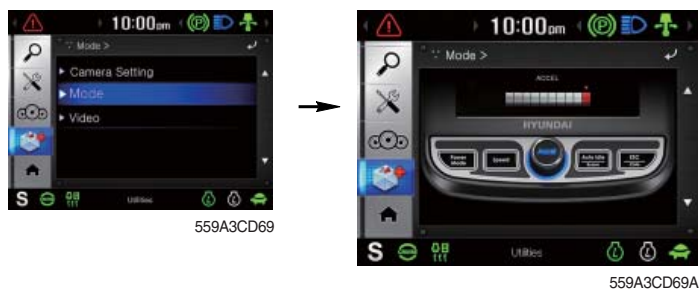
- Three cameras can be installed on the machine and the display order can be set by this menu.
- If the camera was not equipped, this menu is not useful.



- In the operation screen, if the ESC/CAM switch is pushed, rear view camera display or stop.
- Turning the select switch in clockwise direction, the next ordered will be shown and in counter-clockwise direction, the previously ordered will be shown. Also, you can change camera channel using touch the screen.
- Push the select switch or touch the screen, the displayed screen will be enlargement.



### ② Mode



- When this cluster's buttons are not work, you can control using touch screen instead of these buttons.
- You can only control in this mode screen.

### ③ Video

- Play MP4 or codec file of external hard disk through USB port.
- The USB port is located under the cluster.



- Over 1100 engine rpm, the screen turns into the operation screen with MP4 or codec file playing for the safety.

No.	Function	Control	No.	Function	Control
1	Previous track	Power mode switch or touch	7	Sound volume	Speed switch or touch
2	Next track	Speed switch or touch	8	Stop	ESC/CAM button or touch
3	Play	Touch	9	File name	-
4	Pause	Touch	10	Current time/ Total time	-
5	Contents display	Touch	11	Current playing time	-
6	Mute	Touch	-	-	-



## CLUSTER (machine serial No.: #0579~)

### 1) STRUCTURE

The cluster consists of LCD and switches as shown below. The LCD is to warn the operator in case of abnormal machine operation or conditions for the appropriate operation and inspection.

Also, The LCD is to set and display for modes, monitoring and utilities with the switches.

The switches or touch screen are to set the machine operation modes.

- ※ **The cluster installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, Maintenance.**
- ※ **When the cluster provides a warning immediately check the problem, and perform the required action.**



HX60A3CD100B

- ※ **The warning lamp pops up, lights ON (on the left-top side) and the buzzer sounds when the machine has a problem.**

The warning lamp lights ON until the problem is cleared. Refer to page 3-27 for details.

## 2) GAUGE

### (1) Operation screen

When you first turn starting switch ON, the operation screen will appear.



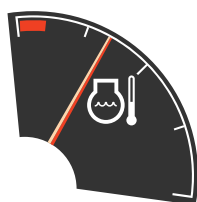
HX60A3CD101A

- |                             |                    |              |
|-----------------------------|--------------------|--------------|
| 1 Engine coolant temp gauge | 3 Fuel level gauge | 5 Accel dial |
| 2 Hydraulic oil temp gauge  | 4 Engine rpm       | 6 Clinometer |

※ Operation screen type can be set by the screen type menu of the display.

Refer to page 3-44 for details.


### (2) Engine coolant temperature gauge




290F3CD53

① This gauge indicates the temperature of coolant.

- Black range : 40-115°C (104-239°F)
- Red range : Above 115°C (239°F)

② If the indicator is in the red range or  lamp lights ON in red, turn OFF the engine and check the engine cooling system.

※ If the gauge indicates the red range or  lamp lights ON in red even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.


### (3) Hydraulic oil temperature gauge




290F3CD54

① This gauge indicates the temperature of hydraulic oil.

- Black range : 40-105°C (104-221°F)
- Red range : Above 105°C (221°F)



② If the indicator is in the red range or  lamp lights ON in red, reduce the load on the system. If the gauge stays in the red range, stop the machine and check the cause of the problem.

※ If the gauge indicates the red range or  lamp lights ON in red even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

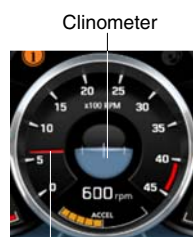
#### (4) Fuel level gauge



HX60A3CD55A

- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the red range, or  lamp lights ON in red.
- ※ If the gauge indicates the red range or  lamp lights ON in red even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

#### (5) Engine rpm display



HX60A3CD105K

- ① This displays the engine speed.

#### (6) Accel dial display



290F3CD59

- ① This displays acceleration dial level from 0 to 10 step.

### 3) COMMUNICATION ERROR AND LOW VOLTAGE WARNING POP-UP

#### (1) Communication error pop-up



HX60A3CD107A

- ① Cluster displays this communication error pop-up when it has communication error with MCU.
- ② Communication error pop-up displays at operation screen only. Just buzzer alarm at the other screen.
- ③ If communication with MCU become normal state, it will disappear automatically.

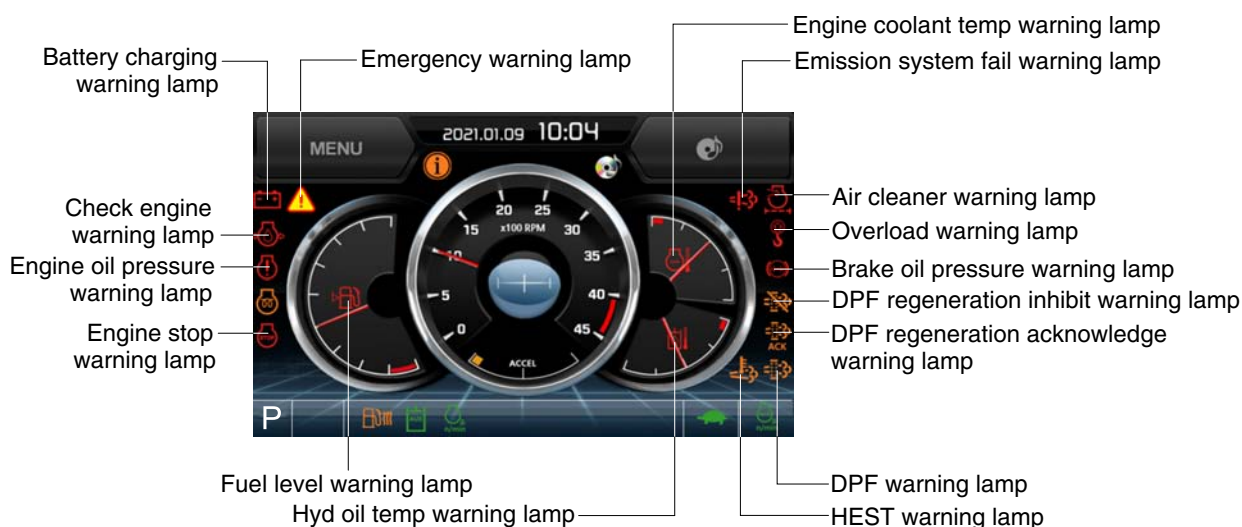
#### (2) Low voltage warning pop-up



HX60A3CD108

- ① Cluster displays this low voltage warning pop-up when the battery voltage is low.
- ② Low voltage warning pop-up displays at operation screen only. Just buzzer alarm at the other screen.
- ③ This pop-up will disappear with using touch screen or buzzer stop switch. While the battery voltage is low, buzzer sounds every minute.
- ④ When the battery voltage is higher than 11.5 V, the pop-up off.

## 4) WARNING LAMPS






HX60A3CD109C

- ※ Each warning lamp on the left-top of the LCD pops up on the center of LCD and the buzzer sounds when the each warning is happened. The pop-up warning lamp moves to the original position and lights ON when the buzzer stop switch is pushed or the pop-up is touched. And the buzzer stops. Refer to page 3-36 for the switch.
- ※ When the warning lamps light ON more than 4, you can check all lamps with next page button ( ◀ , ▶ ) near the warning lamps.

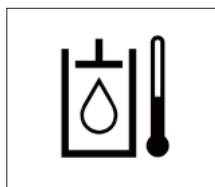
### (1) Engine coolant temperature warning lamp






290F3CD61

- ① The  lamp pops up on the center of LCD and the buzzer sounds when the engine coolant temperature is over 115°C or more.
- ② The pop-up  lamp moves to the original position and lights ON when the buzzer stop switch is pushed or pop-up is touched. Also, the buzzer stops and  lamp keeps ON.
- ③ Check the cooling system when the lamp keeps ON.

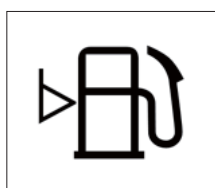
### (2) Hydraulic oil temperature warning lamp



290F3CD62

- ① The  lamp pops up on the center of LCD and the buzzer sounds when the hydraulic oil temperature is over 105°C or more.
- ② The pop-up  lamp moves to the original position and lights ON when the buzzer stop switch is pushed or pop-up is touched. Also, the buzzer stops and  lamp keeps ON.
- ③ Check the hydraulic oil level and hydraulic oil cooling system.

### (3) Fuel level warning lamp



290F3CD63

- ① This warning lamp lights ON and the buzzer sounds when the level of fuel is below 10%.
- ② Fill the fuel immediately when the lamp is ON.

#### (4) Emergency warning lamp



290F3CD64

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

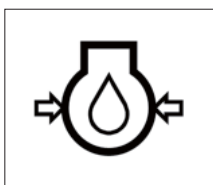
- Engine coolant overheating (over 115°C)
- Hydraulic oil overheating (over 105°C)
- MCU input voltage abnormal
- Accel dial circuit abnormal or open

※ The pop-up warning lamp moves to the original position and lights ON when the buzzer stop switch is pushed or pop-up is touched. Also the buzzer stops.

This is same as following warning lamps.

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

#### (5) Engine oil pressure warning lamp



290F3CD65

① This lamp lights ON when the engine oil pressure is low.

② If the lamp lights ON, shut off the engine immediately. Check oil level.

#### (6) Check engine warning lamp



290F3CD66

① This lamp lights ON when the communication between MCU and engine ECM on the engine is abnormal, or if the cluster received any fault code from engine ECM.

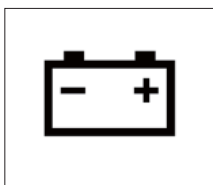
② Check the communication line between them.

If the communication line is OK, then check the fault codes on the cluster.

③ Also, this lamp pops up when the level of DPF soot is high.

※ Refer to the page 3-29 for the DPF warning lamp.

#### (7) Battery charging warning lamp

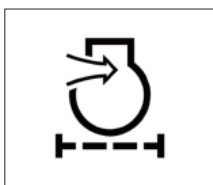


290F3CD67

① This lamp lights ON when the battery charging voltage is low.

② Check the battery charging circuit when this lamp is ON.

#### (8) Air cleaner warning lamp

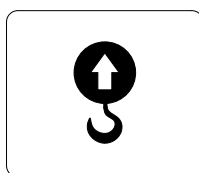


290F3CD68

① This lamp lights ON when the filter of air cleaner is clogged.

② Check the filter and clean or replace it.

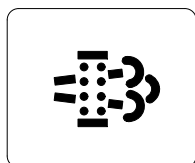
### (9) Overload warning lamp (option)



21093CD36




- ① When the machine is overload, the overload warning lamp lights ON during the overload switch is ON. (if equipped)
- ② Reduce the machine load.  
Initiate a manual regeneration

### (10) DPF (diesel particulate filter) warning lamp



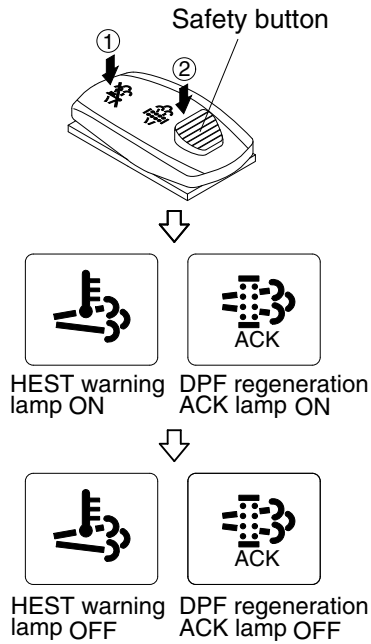
2609A3CD19

- ① This warning lamp lights ON or OFF when the regeneration is needed.
  - ② This warning lamp lights ON while DPF regeneration inhibit switch is in "Regeneration inhibited" state, when stationary regeneration is permitted.
  - ③ This warning lamp lights ON during reset regeneration standby or in back up mode.
  - ④ This warning lamp lights flash during reset regeneration standby DPF regeneration inhibit switch is in "Regeneration inhibited" state.
- ※ Consequences of delaying regeneration
- Poor performance caused by increasing exhaust gas pressure.
  - Higher fuel consumption
  - Shorter filter lifetime

Condition	Warning lamp			Remedy
	DPF 	Check engine  (pop up)	Stop engine  (pop up)	
Normal	Off	Off	Off	• Automatic regeneration
Soot low	On	Off	Off	• Push DPF switch to OFF position if DPF switch is in inhibit position. (see 3-60 page) • Engine power may be reduced automatically (soot medium)
Soot medium	Blink	Off	Off	
Soot high	On	On	Off	• Engine power and speed will be reduced automatically • Initiate a manual regeneration
Stop	On	Off	On	• Stop the engine immediately. • Please contact your Hyundai service center or local dealer.



## ※ Manual regeneration method of DPF



HX603CD143

※ Manual regeneration applies if the machine is in a fireproof area and there is no plan to turn off the machine during the regeneration.

- ① Stop and park the machine.
- ② The accel dial to the lowerest position and operate the engine in idling.
- ③ Pull the safety button and push the switch to position ② to initiate the manual regeneration of DPF.

※ Refer to the page 3-57 for the switch operation.

※ The engine speed may increase gradually to high idle rpm and DPF regeneration begins and it will take approximately 25~30 minutes.

- ④ When the manual regeneration starts, the DPF warning lamp turns OFF and the regeneration acknowledge lamp and HEST warning lamp will light ON during the regeneration function is operating.
- ⑤ The regeneration acknowledge lamp and HEST warning lamp will light OFF when the regeneration function is completed.

## (11) HEST (High exhaust system temperature) warning lamp



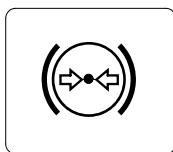
2609A3CD21

- ① This warning lamp indicates, when illuminated, that exhaust temperatures are high due to regeneration of the DPF.
- ② The lamp will also illuminate during a manual regeneration.
- ③ When this lamp is illuminated, be sure the exhaust pipe outlet is not directed at any surface or material that can melt, burn, or explode.

▲ When this lamp is illuminated, the exhaust gas temperature could reach 600°C [1112°F], which is hot enough to ignite or melt common materials, and to burn people.

※ The lamp does not signify the need for any kind of equipment or engine service; It merely alerts the equipment operator to high exhaust temperatures. It will be common for the lamp to illuminate on and off during normal equipment operation as the engine completes regeneration.

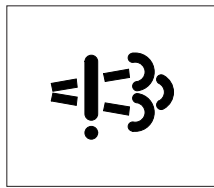
## (12) Brake oil pressure warning lamp



- ① The lamp lights ON when the oil pressure of service brake drops below the normal range.
- ② When the lamp is ON, stop the engine and check for its cause.

※ Do not operate until any problems are corrected.

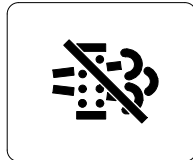
### (13) Emission system fail warning lamp



300A3CD15

- ① This warning lamp indicates there are faults related to the emission system.
  - ② The lamp lights ON when each of the below warnings is happened.
    - a. The EGR valve malfunctions.
    - b. Electrical malfunction of the EGR control sensors.  
(disconnection, short)
    - c. Tampering with the EGR control sensors.
  - ③ **This warning lamp can be shown together with DPF warning lamp or engine fail lamp or engine stop warning lamp when diagnosis DPF systems.**
- ※ **Please contact your Hyundai service center or local dealer.**

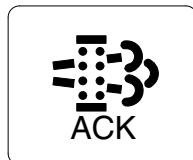
### (14) DPF regeneration inhibit warning lamp



2609A3CD20

- ① This warning lamp indicates, when illuminated, the DPF switch is pushed inhibit position, therefore automatic and manual regeneration can not occur.
- ※ **Refer to the page 3-57 for the DPF switch.**

### (15) DPF regeneration acknowledge warning lamp



559A3CD10

- ① This warning lamp lights ON stationary regeneration is in process.
- ② This warning lamp lights ON, when stationary regeneration is in process after DPF regeneration request switch is pressed and hold for more than 3 seconds.
- ③ This warning lamp lights flash when stationary regeneration standby or regeneration interlock switch is in "regeneration permitted (interlock enabled) status.
- ④ This warning lamp lights flash while stationary regeneration standby or back mode, when DPF regeneration inhibit switch in "Regeneration permitted" status and regeneration interlock switch is in regeneration permitted status.

### (16) Engine stop warning lamp



- ① If the lamp lights ON, stop the engine immediately and check the engine.
  - ② Check the fault codes on the monitor.
- ※ **Please contact your Hyundai service center or local dealer.**









## 5) PILOT LAMPS



HW60A3CD112C

※ The left and the right movement buttons (◀ and ▶) are activated when nine indicator or more light, and touching the button shifts to the previous/next page. The buttons are not activated when eight indicators or less light.

### (1) Mode pilot lamp

Sequence	Mode	Pilot lamp	Selected mode
1	Power mode		Heavy duty power work mode
			Standard power mode
2	Travel mode		Low speed traveling
			High speed traveling
3	Auto idle mode		Auto idle mode
			Auto idle status

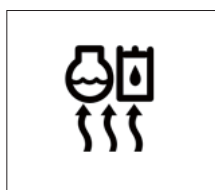
### (2) Engine preheat pilot lamp



290F3CD79

- ① Turning the start switch ON automatically starts preheating.
  - ② Start the engine after this indicator turns off.
- See Page 4-4.

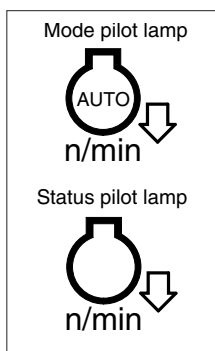
### (3) Warming up pilot lamp



290F3CD80

- ① This lamp is turned ON when the coolant temperature is below 30°C (86°F).
- ② The automatic warming up is cancelled when the engine coolant temperature is above 30°C, or when 10 minutes have passed since starting the engine.

### (4) Auto idle status/ mode pilot lamp



85A3CD106

- ① The auto idle mode pilot lamp will be ON when the idle mode is selected.
- ② The auto idle status pilot lamp will be ON when all levers and pedals are at neutral position, and the auto idle mode is selected.
- ③ One of the lever or pedal is operated, the status lamp will be OFF and the engine speed returns to the previous conditions.

### (5) Maintenance pilot lamp

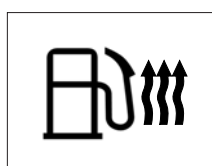


HX60A3CD116

- ① This lamp will be ON when the consuming parts are needed to change or replace. It means that the change or replacement interval of the consuming parts remains below 30 hours.
- ② Check the message in maintenance information of main menu. Also, this lamp lights ON for 3 minutes when the start switch is ON position.

※ Refer to the page 3-41.

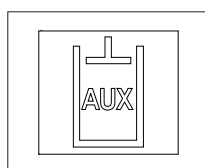
### (6) Fuel warmer pilot lamp



HX60A3CD111

- ① This lamp is turned ON when the coolant temperature is below 10°C (50°F) or the hydraulic oil temperature 20°C (68°F).
- ② The automatic fuel warming is cancelled when the engine coolant temperature is above 60°C, and the hydraulic oil temperature is above 45°C since the start switch was ON position.

### (7) Optional flow control pilot lamp

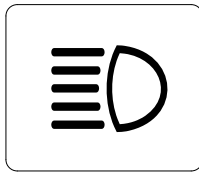


HW60A3CD48A

- ① The indicator lights when activating (performing) the optional flow control function.

※ Refer to the Page 3-41.

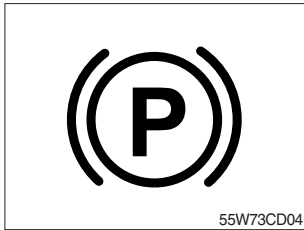
**(8) High beam pilot lamp**



55W13CD50

- ① This lamp works when the illuminating direction is upward.
- ② This lamp comes ON when the dimmer switch is operated, e.g, when passing another vehicle.

**(9) Parking brake pilot lamp**



55W73CD04

- ① When the parking brake is actuated, the lamp lights ON.
- ※ **Check the lamp is OFF before driving.**

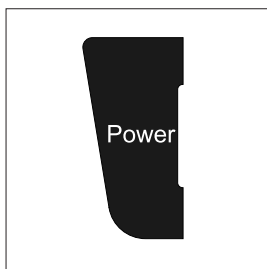
## 6) SWITCHES



HX60A3CD117D

※ Selecting the switch displays the indicator on LCD. See Page 3-32 for further information.

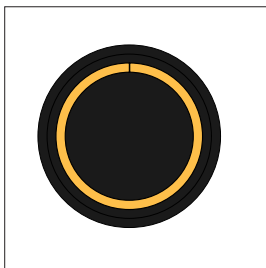
### (1) Power mode switch



HX60A3CD118

- ① This switch selects the system power mode, and the selected power mode indicator is displayed on the indicator position.
  - P : High-load work
  - S : Standard load work
- ② The indicators shifts in the sequence of S → P → S.

### (2) Select switch



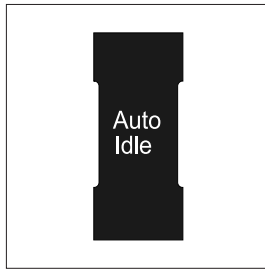
HX60A3CD119

- ① The switch is used for selecting or changing the menus and input values.
- ② Knob pressing
  - Pressing short (0.5 sec. or less) : Menu selecting
- ③ Knob turning
 

This knob is used for changing menus and input values :

  - Right turning : Increasing downward direction and input value
  - Left turning : Decreasing upward direction and input value

### (3) Auto idle switch

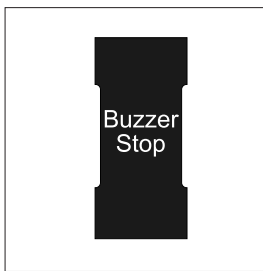


HX60A3CD120

- ① This switch is used for operating or canceling the auto idle function.

※ See Page 3-33 for further information.

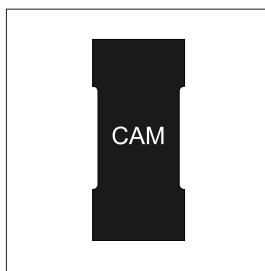
### (4) Buzzer stop switch



HX60A3CD121

- ① The buzzer sounds when the system fails.  
In such a case, press the switch to stop the buzzer. The alarm indication is kept lit until trouble is resolved.

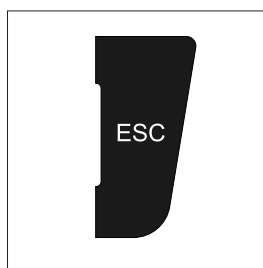
### (5) Camera switch



HX60A3CD122

- ① Pressing this switch on the operation screen of the main menu displays the area illuminated by the camera mounted on the system (if the camera is mounted).  
See Page 3-51 for information of the camera.

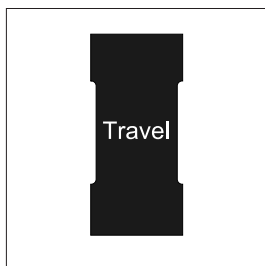
### (6) Escape switch



HX60A3CD123

- ① This switch is used for return to the previous or the next menu.

### (7) Travel speed switch



HX60A3CD104

- ① This switch is used for changing driving speed.

🏎️ : High speed

🐢 : Low speed

※ Do not operated the driving speed switch during driving.

System stability may adversely be affected.

⚠️ Rapid change of system stability may cause injury or death of driver.

## 7) MAIN MENU

Main menu screen



HX60A3CD124A



Sub menu screen







HX60A3CD125A

※ See “Selection Switch” on page 3-35 for further information on selection and change of the menus and input values.

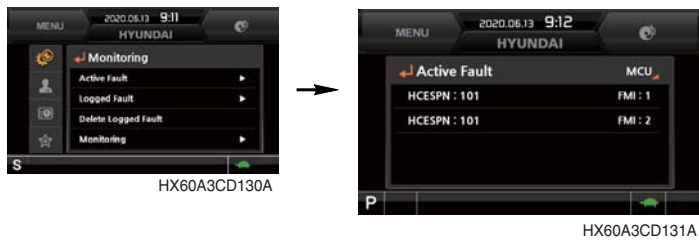
※ Touching the main menu switch, or pressing the selection switch prompts the sub-menu screen.

### (1) Structure

No.	Main menu	Sub-menu	Description
1	 Monitoring	Active fault Logged fault Delete logged fault Monitoring	List of active fault of system/engine List of logged fault of system/engine Deleting specifics of logged fault (system/engine) Monitoring (conditions of system, switch, and output)
2	 Management	Maintenance info.  Aux flow setting ELS mode setting Machine information Contact  Cluster update Service menu	Checking and initialization of service Interval of oil and filters Optional attachment setting ELS mode setting/user password changing Information of cluster, MCU, engine system Display and change of contact information for after-sales services System and application updating Power shift, Operation hours, Main gauge type, Display RPM, DPF filter exchange, AVCU setting, Adding language
3	 Display	Clock adjust Brightness setting Unit setting Language selection	Current time setting Manual, auto Temperature, Distance, Pressure, Flow, Volumn 24 languages
4	 Utilities	Entertainment Camera setting  Clinometer setting Emergency mode	Video/music file playing Setup of number of active cameras, display sequences, and camera numbers Initializing slope sensor Back-up switch for failed cluster switch

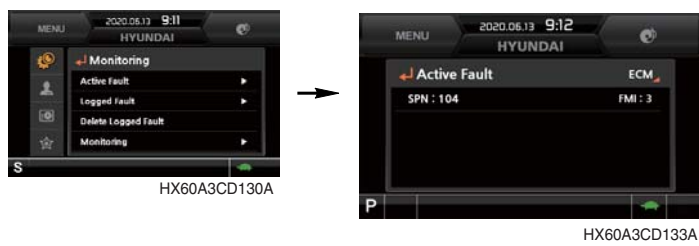
## (2) Monitoring

### ① Active fault - system



- You may use this menu to check active fault of MCU.

### ② Active fault - engine



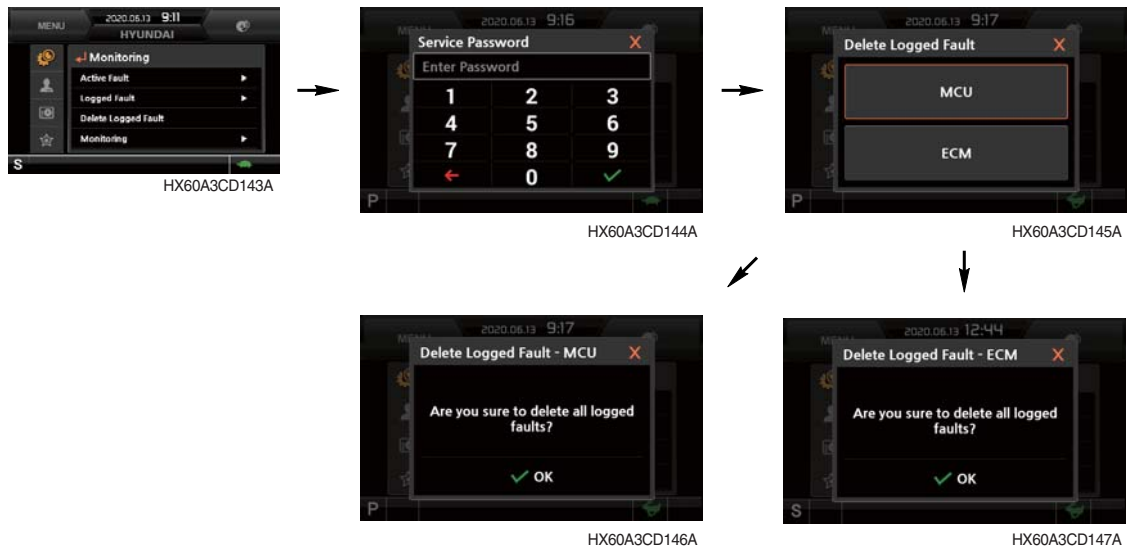
- You may use this menu to check active fault of engine ECM.

### ③ Logged fault - system/engine



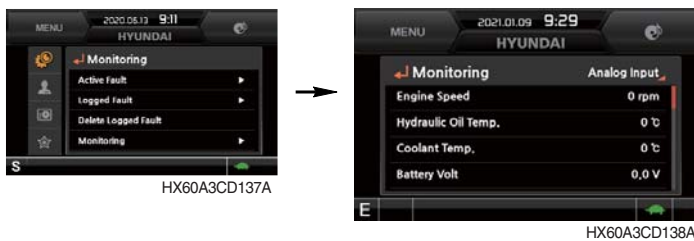
- You may use this menu to check fault logged on system MCU or engine ECM.
- The menu is accessible by maintenance engineer only.

#### ④ Delete logged fault



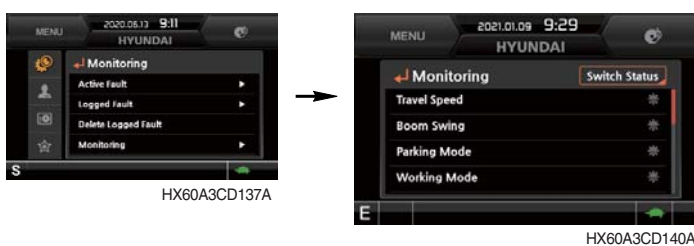
- Delete logged fault: You are allowed to delete fault logged on system MCU or engine ECM. (Deletion can be deleted only while the engine is kept stopped.)

#### ⑤ Monitoring (system conditions)



- You may use this menu to check the system conditions such as engine rotation rate, oil temperature, voltage and pressure.

#### ⑥ Monitoring (switch conditions)



- You may use this menu to check digital switch information of the system.
- The operation switch lights blue.



## ⑦ Monitoring (output conditions)



- You may use this menu to check digital output information of the system.
- Output lights blue.

### (3) Management

#### ① Maintenance info.



- Elapsed: Time elapsed since inspection and maintenance is displayed.
- Change interval: You are allowed of changing exchange cycle in 50 hours.
- History-Hourmeter: History of inspection, maintenance and exchange is displayed.
- Replacement: Elapsed time is reset to zero.
- **Change or replace interval**

No	Item	Interval
1	Engine oil	500
2	Final gear oil	1000
3	Swing gear oil	1000
4	Hydraulic oil	5000
5	Pilot line filter	1000
6	Hydraulic oil return filter	1000
7	Engine oil filter	500
8	Fuel filter	500
9	Pre-filter	500
10	Hydraulic tank breather	1000
11	Air cleaner	1000
12	Radiator coolant	2000
13	Swing gear pinion grease	1000

#### ② Aux flow setting

##### a. Optional attachment setup



- Setup up to three optional attachments.

- Rotary grapple (4-way)
- Grapple (2-way)
- Auger (2-way)

※ Each option attachment operating in one of two user modes (Type A and B)

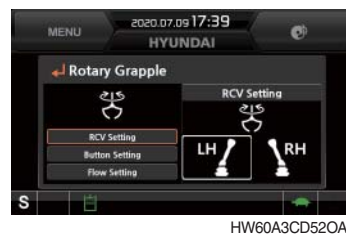
## b. Proportional flow control setting

You may use this menu to set the values of individual option attachments.

### a) Rotary setup



- Rotary selecting  
RCV, button, and flow setup.



- RCV setup
  - It is possible to set operating RCV for rotary operation to LH or RH .
  - Selecting rotary RCV to LH automatically sets grapple RCV to RH.



- Button setup (rotating clockwise)
  - Selecting clockwise rotating direction to LH automatically sets counterclockwise rotating direction to RH.

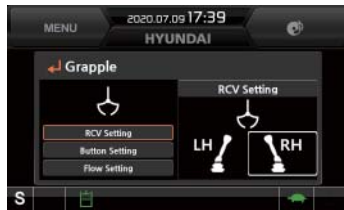


- Flow setup
  - You may set flow between Level 1 and 5.

## b) Grapple setting



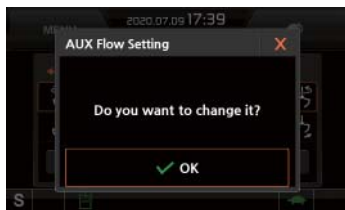
- Grapple selection  
RCV, button and flow setup



- RCV setup
  - It is possible to set RCV for grapple operation to LH or RH.
  - Selecting grapple RCV to RH automatically sets rotary RCV to LH.



- Button setup (Close)
  - Setting Close to RH automatically sets Open to LH.



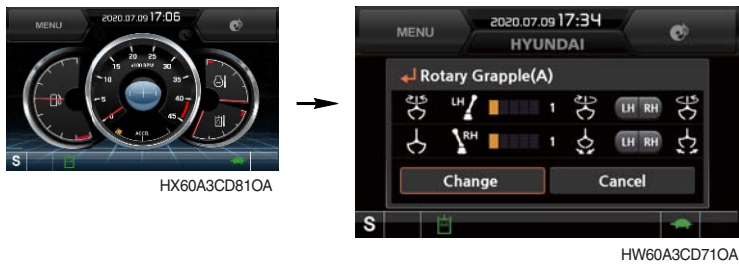
- Flow setup
  - Setting between Level 1 and 5.



- Never forget to select Change button **once** flow setting is complete.

- ※ Saved setting is stored in each icon, and value finally stored becomes active.
- ※ You may use any stored values by pressing Icon button.
- ※ It is possible to perform two user's settings per attachment (A and B), and to store up to six values.  
(Two for 4-way, four for 2-way)

### c) Checking settings



※ Operating optional attachment function activates the symbol  on the bottom of the main screen.

※ You are allowed of checking settings as follows in the course of Menu - Administrator Functions - Optional Attachment.

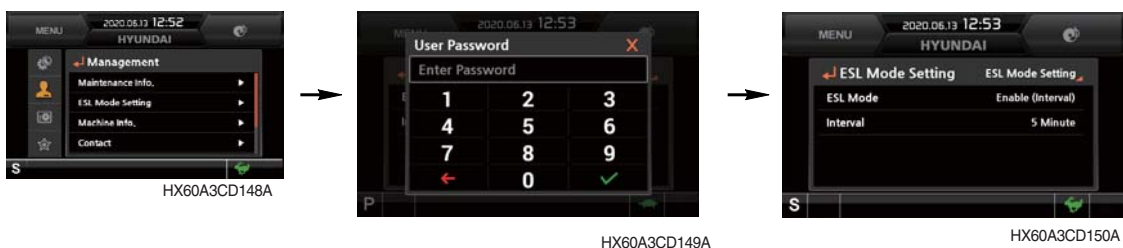
#### (a) Rotary setup

- Rotary RCV setup : LH
- Rotary flow level : 3
- CW direction control : LH
- CCW direction control : RH

#### (b) Grapple setup

- Grapple RCV setup : RH
- Grapple flow level : 3
- Open control : LH
- Close contro l: RH

### ③ ESL mode setting



- The ESL mode setting is designed to prevent theft and unauthorized operation of the system.
- When selecting the ESL mode setting to continuous operation, password should be entered when turning the Start button ON.
- Disabled : The ESL mode setting function does not operate.

Continuous operation : Password should be entered whenever operator starts the engine.

Enable(interval): Password should be entered when operator starts the engine first. It is not required to enter the password until restart within specified time.

You may set the specified time up to two days.

※ Default password : 00000

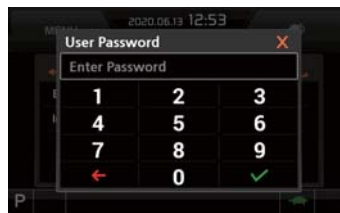
※ Length of password : 5-10 digits

#### ④ Changing password

- The length of the password is between 5 and 10 digits.



HX60A3CD151A



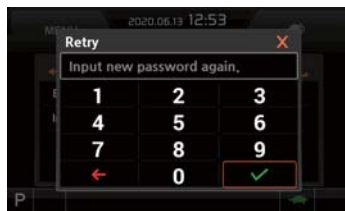
HX60A3CD149A

Entering current password



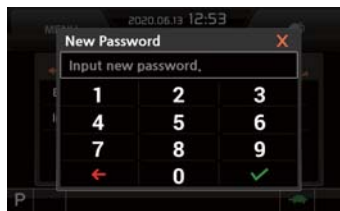
HX60A3CD153A

Selecting Change Password



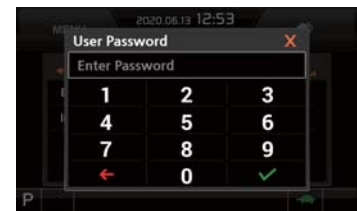
HX60A3CD156A

Storing new password in MCU



HX60A3CD155A

Entering new password again



HX60A3CD149A

Entering new password

#### ⑤ Machine information



HX60A3CD160A



HX60A3CD161A



HX60A3CD162A

- On this screen, you may check information of the instrument panel, the system controller (MCU), the engine and the system.

#### ⑥ Contact



HX60A3CD163A



HX60A3CD164A



HX60A3CD165A

- You may check or change the contact information for after-sales services.

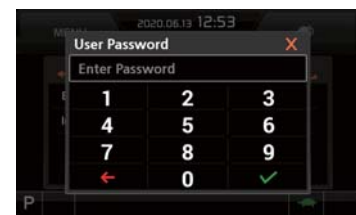
## ⑦ Cluster update



HX60A3CD169A



HX60A3CD170A



HX60A3CD149A

Selecting Cluster Update

Entering user's password

- It is possible to update the cluster and CAN.
- ※ Do not turn power off while updating.

## a. Application update



HX60A3CD172A



HX60A3CD173A



HX60A3CD174A

Selecting application items

Selecting files to update

Selecting OK



HX60A3CD176



HX60A3CD175A

Completed

In progress

b. System update



HX60A3CD177A

Selecting system items



HX60A3CD173A

Selecting files to update



HX60A3CD174A

Selecting OK



HX60A3CD176

Completed

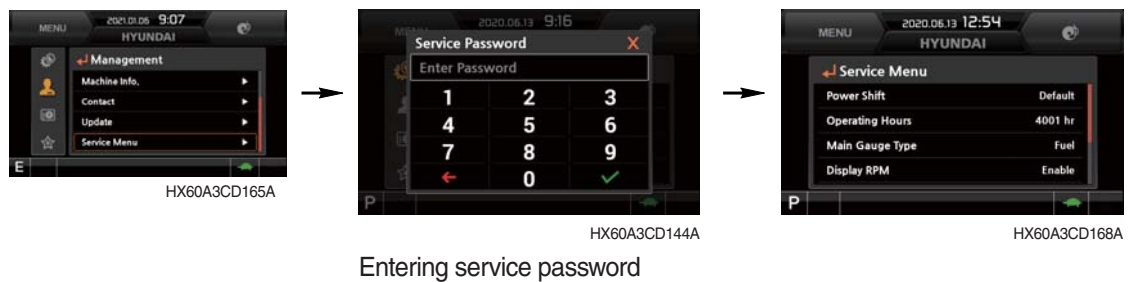


HX60A3CD175A

In progress



## ⑧ Service menu



- Power shift : Set the power shift mode (default/option).
- Operating hours : You may check operating hours of the system in individual modes after acceptance of the system.
- Main gauge type : It is possible to display engine rotation rate or fuel level on the main gage of the main screen.
- Display RPM : It is possible to set display of numeric value of engine rotation rate on the main gauge of the main screen.
- DPF filter exchange : You may initialize parameters relevant to DPF of engine ECU after cleaning the DPF filter.
- AVCU setting : You may select Standard, 2-Way or 4-Way dependent upon the system options.
- Adding language : It is possible to update language displayed on the cluster when it is required to correct language.

※ The service menu is accessible by maintenance engineer only. Do not attempt unauthorized adjustment.

#### (4) Display

##### ① Clock adjust



HX60A3CD191A



HX60A3CD192A

- "\*\*\*\*\_\*\*\_\*\*" on the first line indicates year/month/day.
- The second line indicates current time (00:00 - 12:59 am/pm)

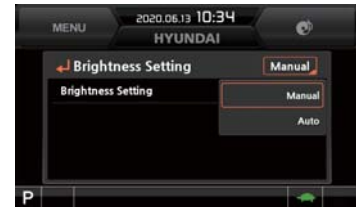
##### ② Brightness setting



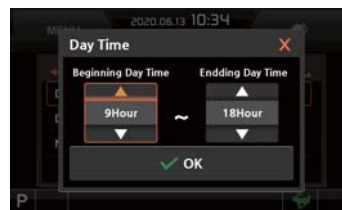
HX60A3CD193A



Manual (Level 1 to 10) HX60A3CD194A



HX60A3CD195A



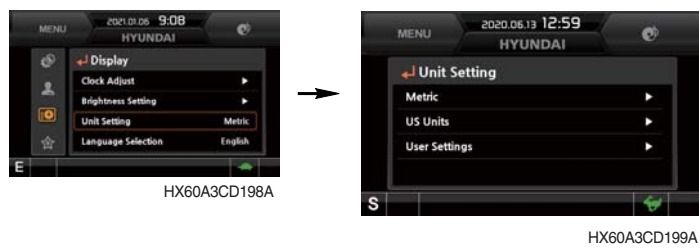
Auto (day/night) HX60A3CD197A



Auto (daytime) HX60A3CD196A

- Selecting "Auto" allows setting brightness different in day and night. It is also allowed to set hours in daytime. (Setting beginning day time and ending day time)

### ③ Unit setting



- Metric: Units are changed to metric units.
- U.S. units: Units are changed to U.S. units.
- User setting : Units are changed to user setting.

Item	Metric system	U.S. unit	User's setup
Temperature	°C	°F	°C, °F
Distance	km	mile	km, mile
Pressure	bar	Mpa	bar, Mpa, kgf/cm <sup>2</sup> , psi
Flow	lpm	gpm	lpm, gpm
Volume	l	gal	l, gal

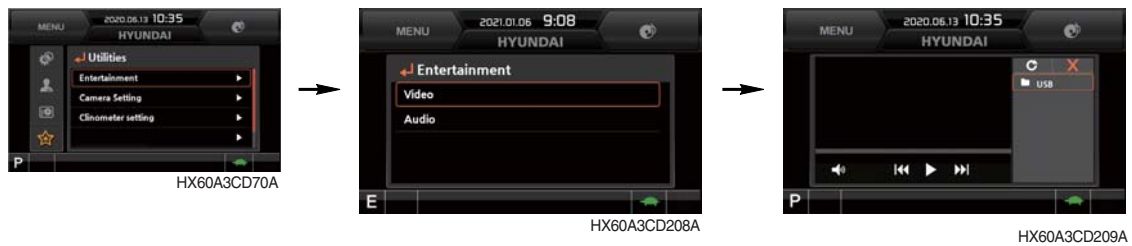
### ④ Language selection



- You may select your language (from 24 languages), and all the information is displayed in the selected language.

## (5) Utilities

### ① Entertainment



- You may play MP4 or CODEC files of detachable hard disk through USB port.
- USB port is on the left of the instrument panel.
- When engine rotation rate exceeds 1100 rpm or higher, the screen is switched to the operation screen even while MP4 or CODEC file is played for safety. When engine rotation rate drops to 1100 rpm or lower, animation clip is played again.

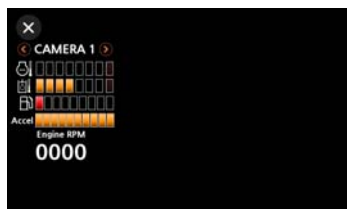
**⚠ Do not play animation clip while operating the system to prevent risks of accident.**

### ② Camera setting



- You may install three cameras on the system, and set display sequence on this menu.
- If no camera is installed, this menu is disabled.
- When rotating Select switch clockwise, the screen of the next camera is displayed. When rotating the switch counterclockwise, the screen of the previous camera is displayed. You may also change the camera channel by touching the screen.
- You may display or hide the mini instrument panel by pressing Select switch or touching the screen.

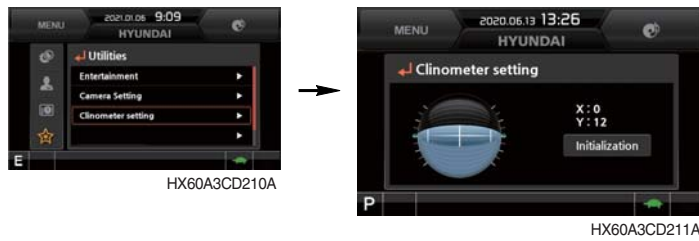
(Mini instrument panel displayed → hidden → displayed)



HX60A3CD204

- Pressing ESC switch or touching X icon on the screen terminates the camera mode.

### ③ Clinometer setting



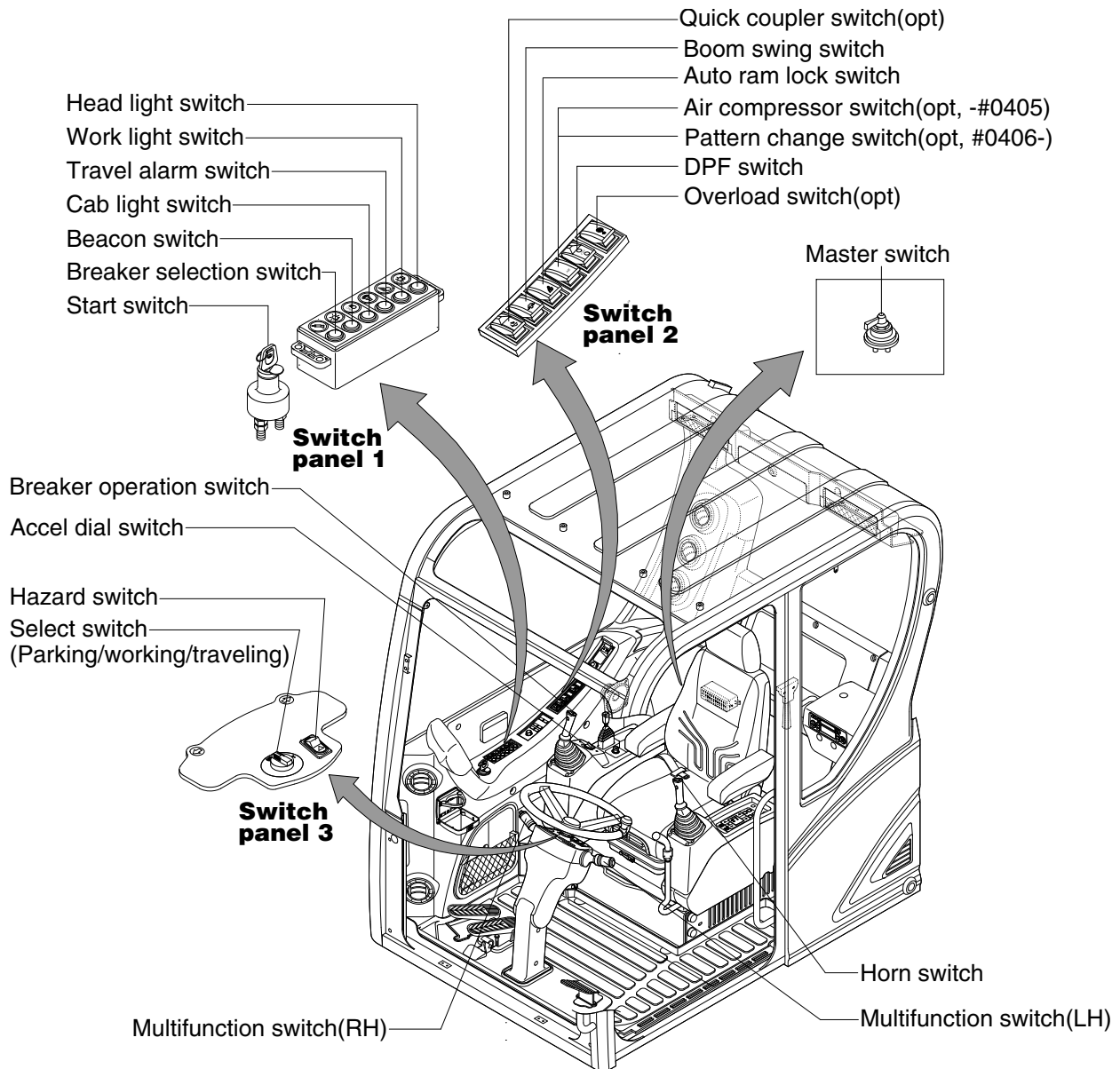
- Pressing “Default” when the system is kept on flat surface resets X and Y values to zero.
- You may check gradient of the system on the operating screen of the instrument panel.

### ④ Emergency mode



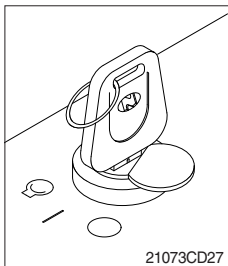
- When the switch or the acceleration dial of the monitor fails, the switch is displayed on LCD, and you are allowed to perform operation by touching the screen.
- Such operation is allowed only on this mode screen.

### 3. SWITCHES



55W9A3CD20

#### 1) STARTING SWITCH



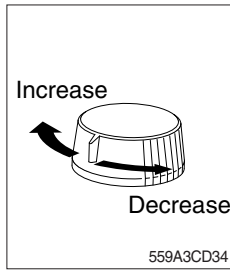
(1) There are three positions, OFF, ON and START.

- (OFF) : None of electrical circuits activate.
- | (ON) : All the systems of machine operate.
- (START) : Use when starting the engine.

Release key immediately after starting.

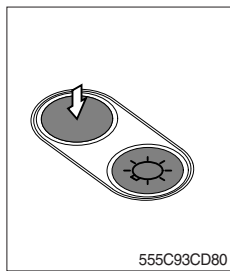
※ **Key must be in the ON position with engine running to maintain electrical and hydraulic function and prevent serious machine damage.**

## 2) ACCEL DIAL



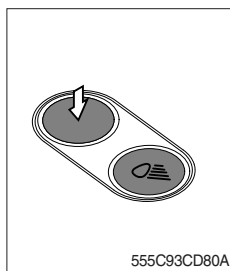
- (1) There are 10 dial setting.
- (2) Setting 1 is low idle and setting 10 is high idle.
  - By rotating the accel dial to right : Engine speed increased.
  - By rotating the accel dial to left : Engine speed decreased.

## 3) HEAD LIGHT SWITCH



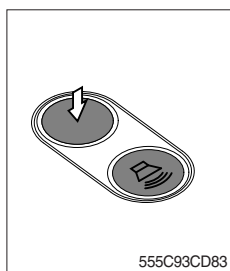
- (1) This switch is used to operate the head light.
  - Press the switch once, the head light comes ON and the pilot lamp ON.
  - Press the switch once more, the head light and pilot lamp turn off.

## 4) WORK LIGHT



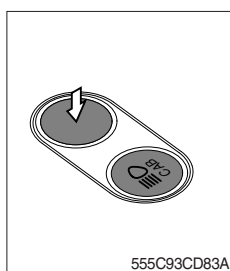
- (1) This switch is used to operate the work light.
  - Press the switch once, the work light comes ON and the pilot lamp ON.
  - Press the switch once more, the work light and pilot lamp turn off.

## 5) TRAVEL ALARM SWITCH



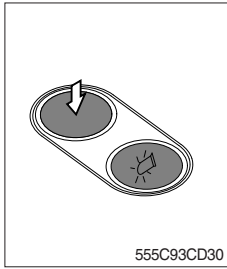
- (1) This switch is used to alarm surroundings when the machine travels to forward and backward.
- (2) On pressing this switch, the alarm operates only when the machine is traveling.

## 6) CAB LIGHT SWITCH



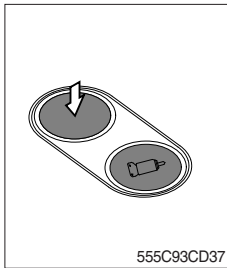
- (1) This switch turns on the cab light on the cab.

### 7) BEACON SWITCH (option)



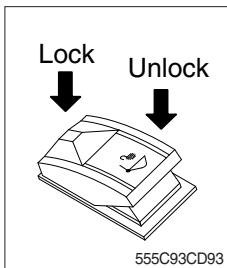
- (1) This switch turns ON the rotary light on the cab.
- (2) The below indicator lamp is turned ON when operating this switch.

### 8) BREAKER SELECTION SWITCH (option)



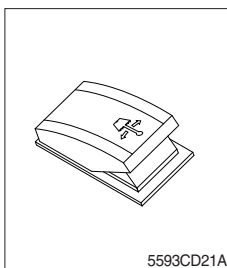
- (1) This switch is used to operate breaker.
- ※ The breaker operates only when this switch is pressed.

### 9) QUICK COUPLER SWITCH (option)



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

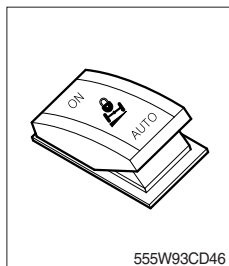
### 10) BOOM SWING SWITCH



- (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.



## 11) AUTO RAM LOCK SWITCH



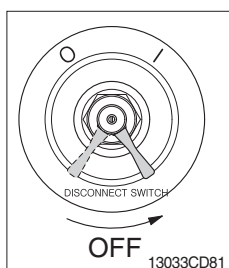
(1) This switch activate front axle oscillation cylinder to locking position for increase of stability.

- ON : Set front axle to locking position for excavation work or travels even ground. Also, the ram lock pilot lamp comes ON at the travel pilot lamp.
- AUTO : Set front axle to locking or unlocking as table.

※ Refer to page 3-31 for select switch.

Select switch (parking/working/ traveling)	Ram lock	Conditions
Parking (P)	Locking	· Always
Traveling (T)	Unlocking	· Always
Working (W)	Locking	· FNR lever in neutral position · Service brake pedal is depressed.
	Unlocking	· FNR lever in forward/reverse position and service brake pedal is not depressed. · 2 way pedal is equipped and service brake pedal is not depressed.

## 12) MASTER SWITCH

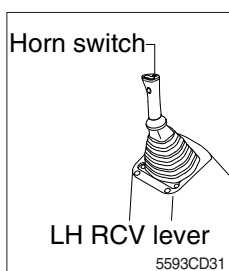


(1) This switch is used to shut off the entire electrical system.

- (2) I : The battery remains connected to the electrical system.  
O : The battery is disconnected to the electrical system.

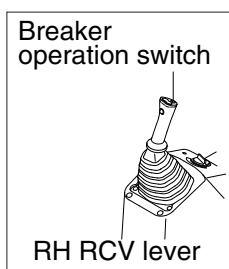
※ **Never turn the master switch to O (OFF) with the engine running. It could result in engine and electrical system damage.**

## 13) HORN SWITCH



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

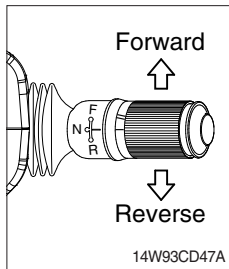
## 14) BREAKER OPERATION SWITCH



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

## 15) RH MULTI FUNCTION SWITCH

### (1) FNR lever



① This lever changes travel direction of machine.

- **F** : Machine moves forward
- **N** : Neutral position
- **R** : Machine moves backward

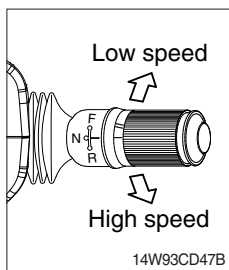
**▲ Travel direction will be reversed if lower structure is positioned with dozer in front.**

② The warning buzzer sounds when the lever is in the reverse position.

**▲ If this lever is not in the neutral position, engine does not started.**

**▲ Be sure to stop the machine when changing the direction forward or backward while traveling.**

### (2) Travel speed switch

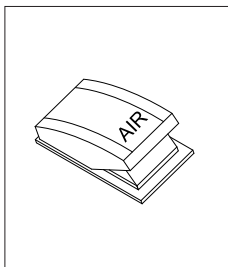


① This switch is for selecting travelling speed between high and low.

- Low speed (turtle mark) : 11.3 km/hr (7.0 mph), turtle mark
- High speed (rabbit mark) : 30 km/hr (19.0 mph), rabbit mark

**▲ In case of changing the travel speed, be sure to stop the machine completely.**

## 16) AIR COMPRESSOR SWITCH (option, -#0405)



(1) This switch is used to activate the air compressor.

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

## 17) PATTERN CHANGE SWITCH (option, #0406-)



① The pattern change can be operated easily using this switch.

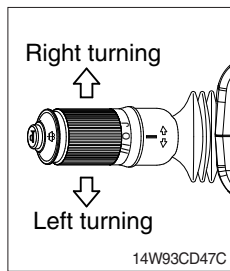
- Position ISO : ISO type pattern
- Position A : A type pattern

※ Before starting the machine, check switch position.

※ Refer to the page 4-26 for the details.

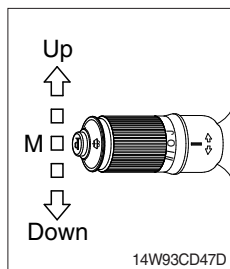
## 18) LH MULTI FUNCTION SWITCH

### (1) Direction indication lamp switch



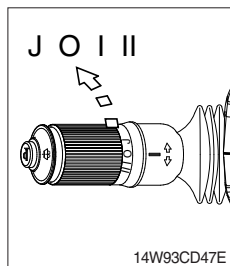
- ① This switch is used to warn or signal the turning direction of the machine to other machines or equipment.
- ② Push the lever to forward for turning right (↗), pull the lever to backward for turning left (↖).
- ③ The turning pilot lamp comes ON at the travel pilot lamp on the steering column.

### (2) Dimmer switch



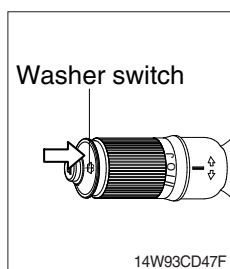
- ① This switch is used to turn the head lights direction.
- ② Switch positions.
  - Up (↗) : To flash for passing
  - Middle (M) : Head lights low beam ON
  - Down (↖) : Head lights high beam ON
- ③ If you release the switch when it's in up position, the switch will return to middle.

### (3) WIPER SWITCH



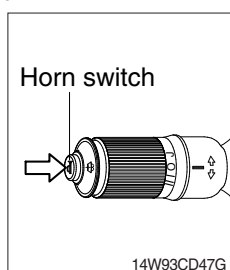
- ① When the switch is in J position, the wiper moves intermittently.
- ② When placed in I or II position, the wiper moves continuously.

### (4) WASHER SWITCH



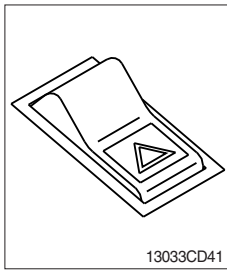
- ① If you push the grip of the lever, washer liquid will be sprayed and the wiper will be activated 2-3 times.
- ※ Check the quantity of washer liquid in the tank. If the level of the washer liquid is LOW, add the washer liquid ( in cold, winter days) or water. The capacity of tank is 1.5 liter.

### (5) HORN SWITCH



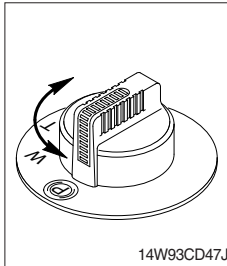
- ① This switch is at the end of left side multifunction switch. On pressing, the horn sounds.

## 19) HAZARD SWITCH



- (1) Use for parking, or loading machine.
  - (2) LH and RH turn signal lamps come ON at the same time by this switch.
- ※ If the switch is left ON for a long time, the battery may be discharged.

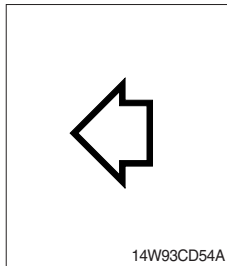
## 20) SELECT SWITCH (parking / working / traveling)



- (1) This switch is used to select the operation mode as below.
  - Parking ((P)) : The parking brake is applied.
  - Working (W) : The machine needs to be working.
  - Traveling (T) : The machine needs to be traveling.

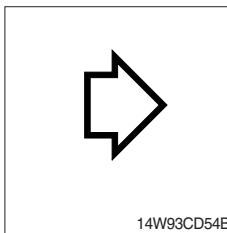
## 21) TURNING PILOT LAMP

### (1) Left turning pilot lamp



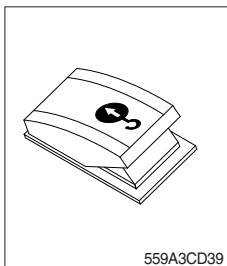
- (1) This lamp flashes with sound when the LH multifunction switch is move to backward position.

### (2) Right turning pilot lamp



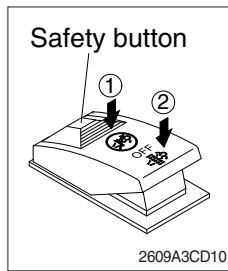
- ① This lamp flashes with sound when the LH multifunction switch is
- ② move to forward position.

## 22) OVERLOAD SWITCH (option)



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

### 23) DPF (diesel particulate filter) SWITCH



(1) This switch is used to select the regeneration function of the DPF.

#### (2) Inhibit position (①)

- ① The inhibit position disallows any automatic or manual regeneration of the DPF.
- ② This may be used by operator to prevent regeneration when the machine is operating in a hazardous environment concerned about high temperature.
- ③ It is strongly recommended that this position is only activated when high temperatures may cause a hazardous condition.

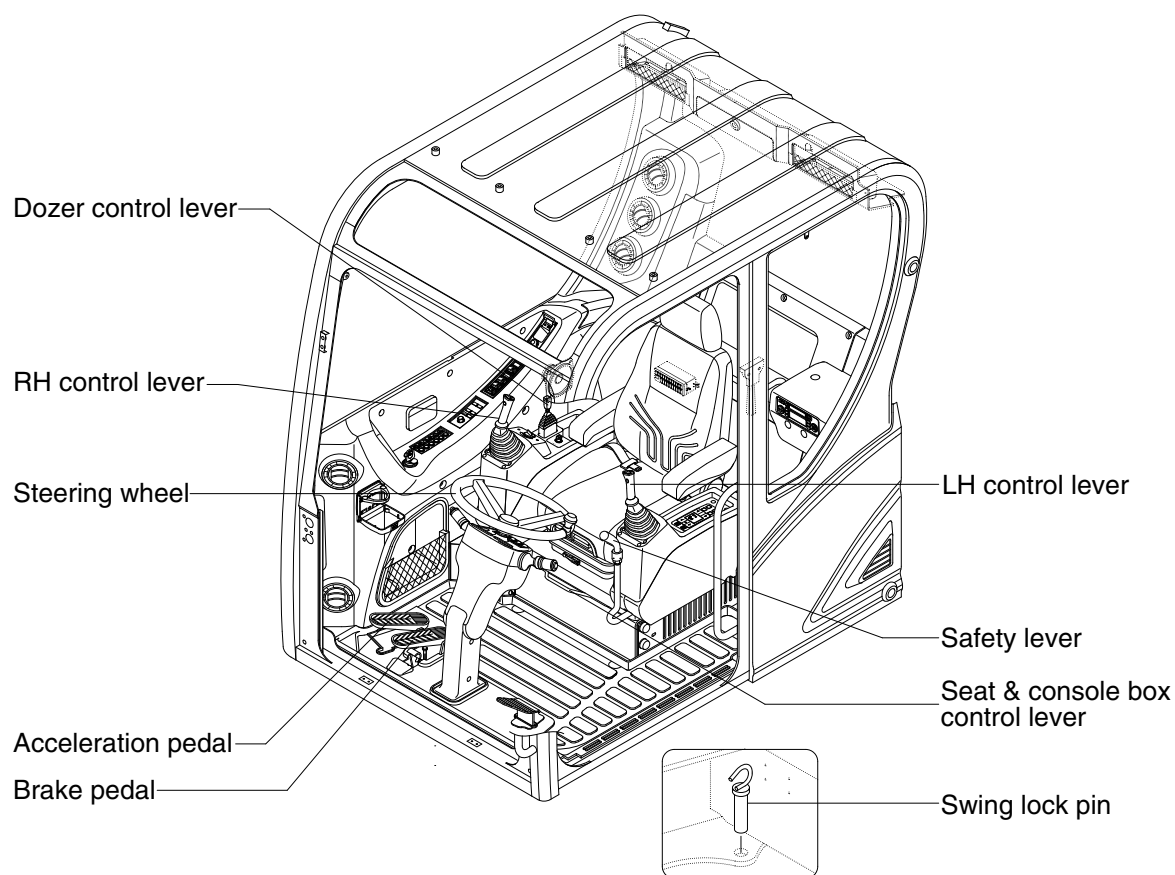
#### (3) OFF position

This position will initiate a automatic regeneration of the DPF.

#### (4) Manual regeneration position (②)

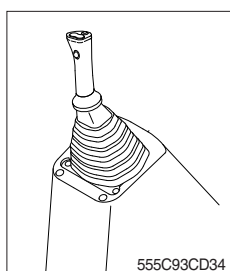
- ① This position will only initiate a manual regeneration of the DPF when the machine is in non-mission condition, engine must run at low idle speed and DPF soot levels are high enough to allow regeneration.
- ② HEST lamp will be illuminated during the entire regeneration.
- ※ Refer to the page 3-8 for details.
- ※ This switch can be move to the manual regeneration position (②) only when the safety button is pulled to backward.
- ※ Also, this switch return to the OFF position when released the manual regeneration position (②).

## 4. LEVERS AND PEDALS



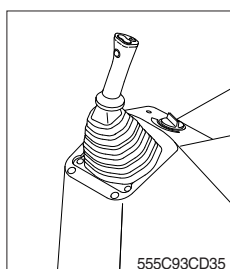
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### 1) LH CONTROL LEVER



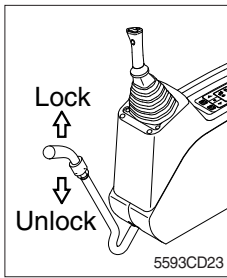
- (1) This joystick is used to control the swing and the arm.
- (2) Refer to **operation of working device** in chapter 4 for details.

### 2) RH CONTROL LEVER



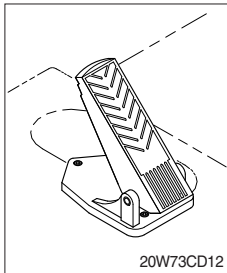
- (1) This joystick is used to control the boom and the bucket.
- (2) Refer to **operation of working device** in chapter 4 for details.

### 3) SAFETY LEVER



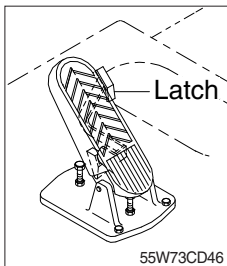
- (1) All control levers and pedals are disabled from operation by locating the lever to lock position as shown.
  - ※ **Be sure to raise the lever to LOCK position and tilt LH console box when leaving from operator's seat.**
- (2) By pushing lever to UNLOCK position, machine is operational.
  - ※ **Do not use the safety lever for handle when getting on or off the machine.**

### 4) ACCELATION PEDAL



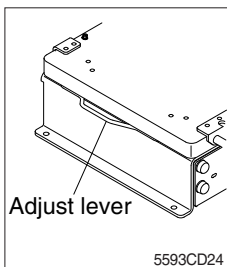
- (1) When this pedal is stepped, the machine starts traveling.
  - ▲ **Before starting the machine with stepping on the pedal, check if the underframe is certainly in the traveling direction.**

### 5) BRAKE PEDAL



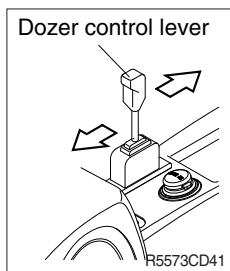
- (1) Pedal and latch provide two kinds of service brake function.
- (2) To operate service brake, push pedal with latch by foot.
  - ▲ **Push pedal and latch at once to avoid unexpected locking of pedal in traveling condition.**
  - ▲ **During travel, do not push pedal only in full stroke. It is dangerous due to the locking of service brake.**
- (3) If you want to choose working brake, just push pedal in full stroke without latch then the latch locks pedal and service brake is working continuously until you push the latch to release the pedal.
- (4) Push latch to release working brake.

### 6) SEAT AND CONSOLE BOX ADJUST LEVER



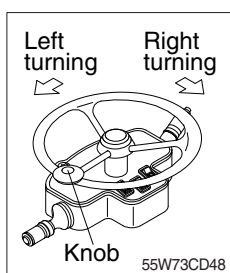
- (1) This lever is used to move the seat and console box to fit the contours of the operator's body.
- (2) Pull the lever to adjust forward or backward over 90 mm (3.5").

## 7) DOZER CONTROL LEVER



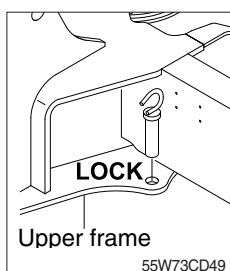
- (1) This lever is used to operate the dozer blade.
- (2) If the lever is pushed forward, the dozer blade will be going down.  
If the lever is pulled back, the dozer blade will be going up.

## 8) STEERING WHEEL



- (1) If the steering wheel is turned to left, the machine will move to the left and turn it to the right, the machine will move to the right.
- (2) As the handle is equipped with a knob, it is convenient to operate with one hand or quickly.

## 9) SWING LOCK PIN



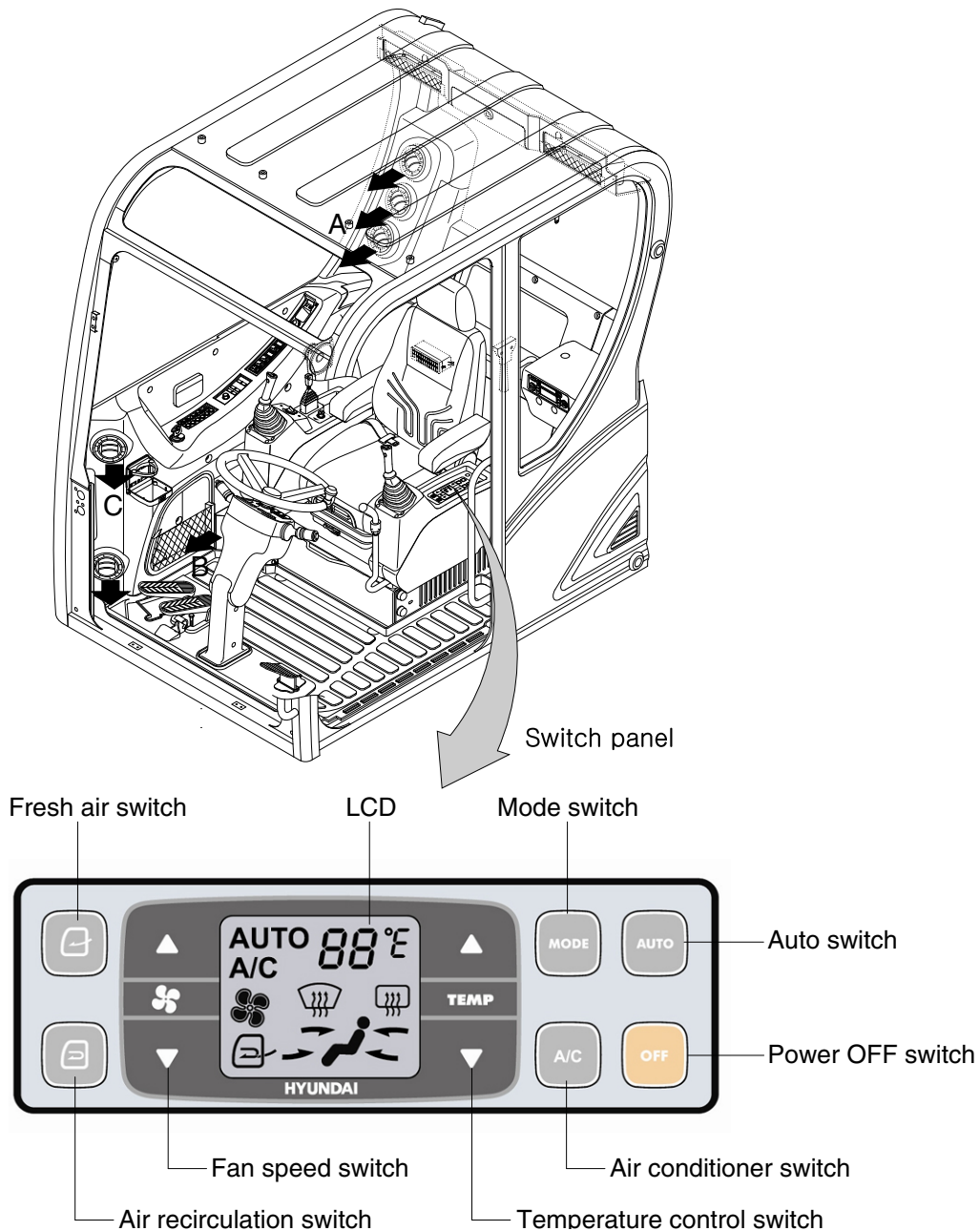
- (1) This is the system to lock the swing by connecting the upper swing part and the lower frame mechanically.
  - (2) The swing is locked when the lever is down and released when the lever is up.
- ※ **Before operating the machine, be sure to release the swing lock device.**



## 5. FULL AUTO AIR CONDITIONER AND HEATER

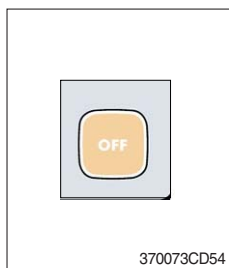
Full auto air conditioner and heater system automatically keeps the optimum condition in accordance with operator's temperature configuration sensing ambient and cabin inside temperature.

- Location of air flow ducts



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## 1) POWER OFF SWITCH

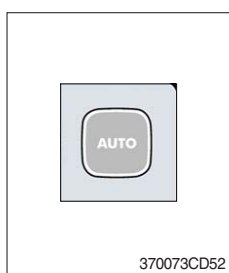


- (1) This switch makes the system and the LED OFF.  
Just before the power OFF, set values are stored.

### (2) Default setting values

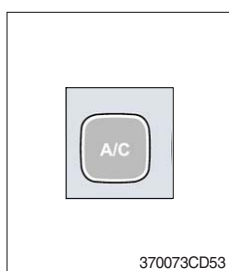
Function	Air conditioner	In/outlet	LCD	Temperature	Mode
Value	OFF	Inlet	OFF	Previous sw OFF	Previous sw OFF

## 2) AUTO SWITCH



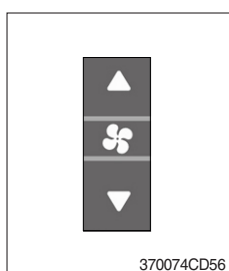
- (1) Turn the starting switch to ON position, LCD lights ON.  
Auto air conditioner and heater system automatically keeps the optimum condition in accordance with operator's temperature configuration sensing ambient and cabin inside temperature.
- (2) This switch can restart system after system OFF.

## 3) AIR CONDITIONER SWITCH (compressor switch)



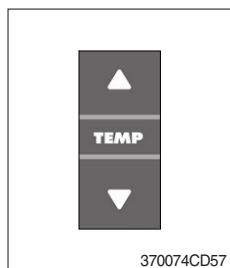
- (1) This switch turns the compressor and the LCD ON.
- (2) In accordance with the temperature sensed by duct (evaporator) sensor, compressor turns ON or OFF automatically.
- ※ **Air conditioner operates to remove vapor and drains water through a drain hose. Water can be sprayed into the cab in case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

## 5) TEMPERATURE CONTROL SWITCH

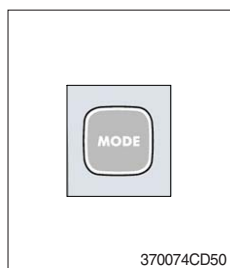


- (1) Setting temperature indication (17~32°C, scale : 1°C)
- (2) Max cool and max warm beeps 5 times.
- (3) The max cool or the max warm position operates as following table.

Temperature	Compressor	Fan speed	In/Outlet	Mode
Max cool	ON	Max (Hi)	Recirculation	Vent
Max warm	OFF	Max (Hi)	Fresh	Foot

- (4) Temperature unit can be changed between celsius (°C) and fahrenheit (°F)
  - ① Default status (°C)
  - ② Push Up/Down temperature control switch simultaneously more than 5 second displayed temperature unit change (°C → °F)

## 6) MODE SWITCH

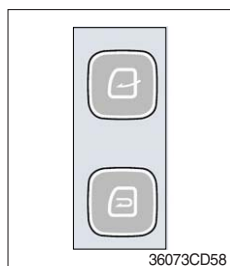


- (1) Operating this switch, it beeps and displays symbol of each mode in order. (Vent → Vent/Foot → Foot → Foot/Def → Vent)

Mode switch		Vent	Vent/Foot	Foot	Foot/Def
Outlet	A	●	●		
	B		●	●	●
	C				●

- (2) When defroster switch operating, FRESH AIR/AIR RECIRCULATION switch turns to FRESH AIR mode and air conditioner switch turns ON.
- (3) When this switch ON, the system operates with previous configuration.

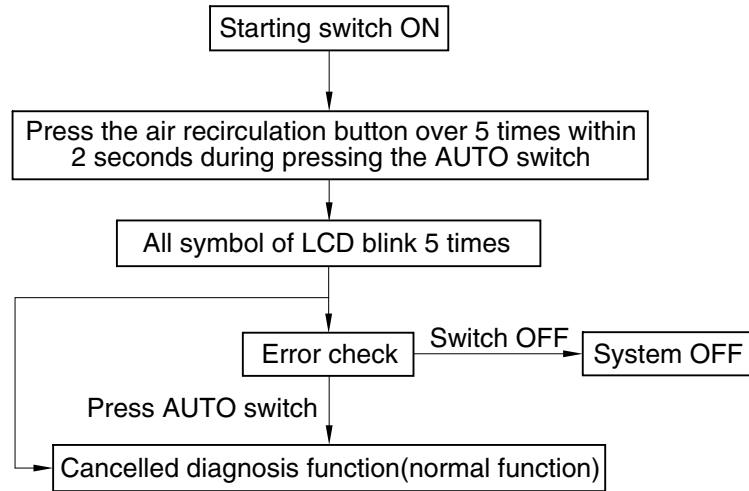
## 7) FRESH AIR/AIR RECIRCULATION SWITCH



- (1) It is possible to change the air-inlet method.
  - ① **Fresh air** ( )  
Inhaling air from the outside.  
※ **Check out the fresh air filter periodically to keep a good efficiency.**
  - ② **Air recirculation** ( )  
It recycles the heated or cooled air to increase the energy efficiency.  
※ **Change air occasionally when using recirculation for a long time.**  
※ **Check out the recirculation filter periodically to keep a good efficiency.**

## 8) SELF DIAGNOSIS FUNCTION

### (1) Procedure



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### (2) Error check

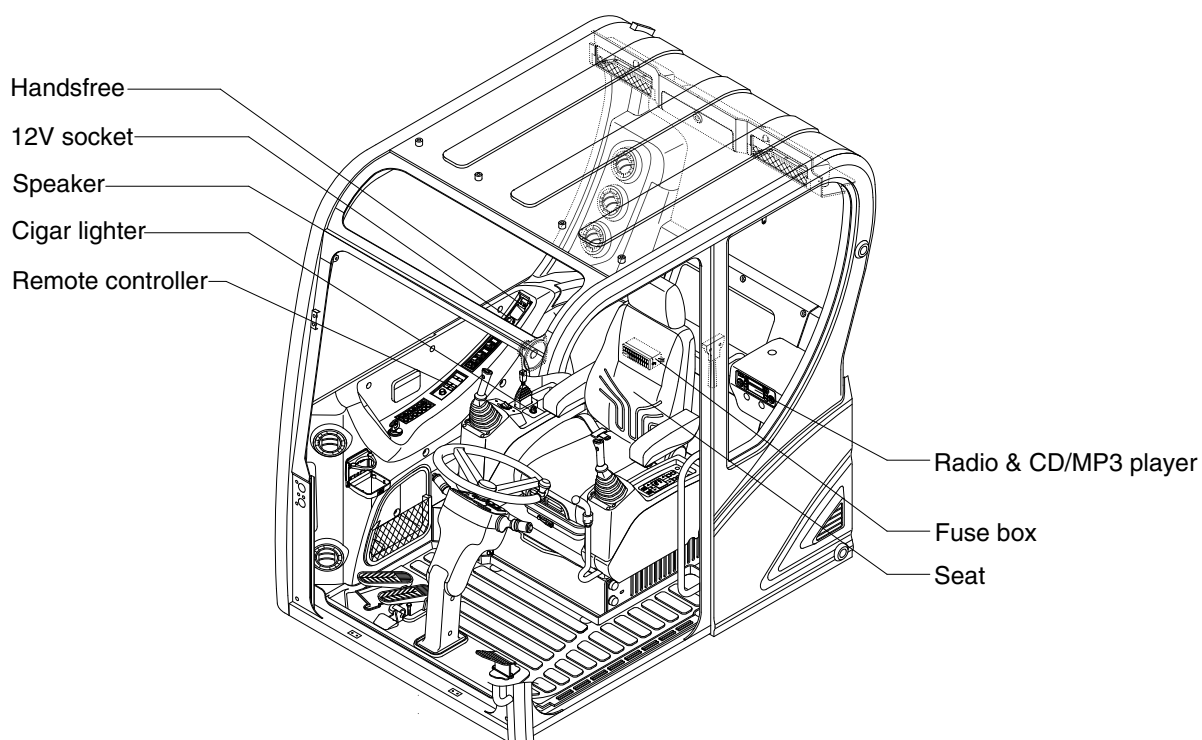
- The corresponding error code flickers on the setup temperature display panel, the other symbol will turn OFF.
- Error code flickers every 0.5 second.
- If error code is more than two, each code flickers 2 times in sequence.
- Error code

Error code	Description	Error code	Description
11	Cabin inside sensor	15	Temp actuator
12	Ambient sensor	16	Mode actuator 1
13	Coolant temp sensor	17	Mode actuator 2
14	Duct (evaporator) sensor	18	Intake actuator

### (3) Fail safe function

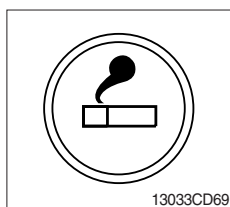
Error description	Fail safe function
Cabin inside sensor (11)	25°C alternate value control
Ambient sensor (12)	20°C alternate value control
Coolant temp sensor (13)	More than 10 minutes after engine start up, the alternate value is ON
Duct (evaporator) sensor (14)	1°C alternate value control
Temp actuator (15)	If opening amount is 0 %, the alternate value is 0 %
	If not, the alternate value is 100 %
Mode actuator 1, 2 (16, 17)	The alternate value is Vent

## 6. OTHERS



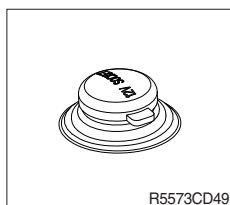
55W93CD06

### 1) CIGAR LIGHTER



- (1) This can be used when the engine starting switch is ON.
  - (2) The lighter can be used when it springs out in a short while after being pressed down.
- ※ **Service socket**  
**Use cigar lighter socket when you need emergency power.**  
**Do not use the lighter exceeding 12V, 120W.**

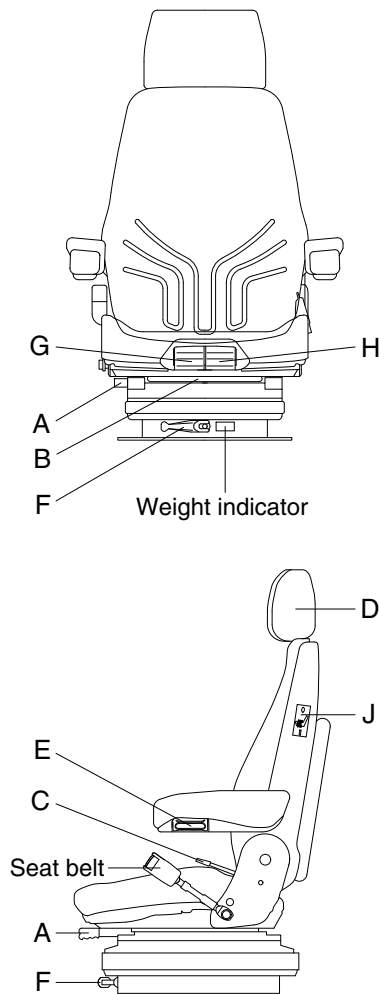
### 2) 12V SOCKET (option)



- (1) Utilize the power of 12V as your need and do not exceed power of 12V, 120W.

### 3) SEAT

The seat is adjustable to fit the contours of the operator's body. It will reduce operator fatigue due to long work hours and enhance work efficiency.



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#### (1) Forward/Backward adjustment (A)

- ① Pull lever A to adjust seat forward or backward.
- ② The seat can be moved forward and backward over 130 mm (5.1") in 13 steps.

▲ Do not lift the locking lever with you leg or calf.

#### (2) Upward/Downward adjustment (B)

- ① Pull lever B to adjust seat upward or downward over 60 mm (2.4").
- ② Forward or backward side adjustment only can be made, tilting to one side, by moving lever B respectively.

#### (3) Reclining adjustment (C)

Pull lever C to adjust seat back rest.

#### (4) Armrest adjustment (E)

This can be adjusted by pushing the button E to right and left.

#### (5) Headrest adjustment (D)

This is adjustable vertically and forward or rearward to fit operator's requirements.

#### (6) Weight adjustment (F)

Adjust the lever with the seat empty to the operator's weight.

#### (7) Seat depth adjustment (G)

- ① The depth of the seat pan can be individually adjusted.
- ② To adjust the depth of the seat cushion, pull the right handle upward. By moving the seat cushion backwards or forwards the desired seating position can be reached.

#### (8) Seat pan angle adjustment (H)

- ① The angle of the seat pan can be individually adjusted.
- ② To adjust the angle of the seat pan, pull the left handle upwards. By exerting pressure on or off the front or rear part of the seat pan it can be moved to the desired position.

#### (9) Seat heater (J)

The seat heater can be turned on/off by pressing the switch.

0 = Seat heater OFF

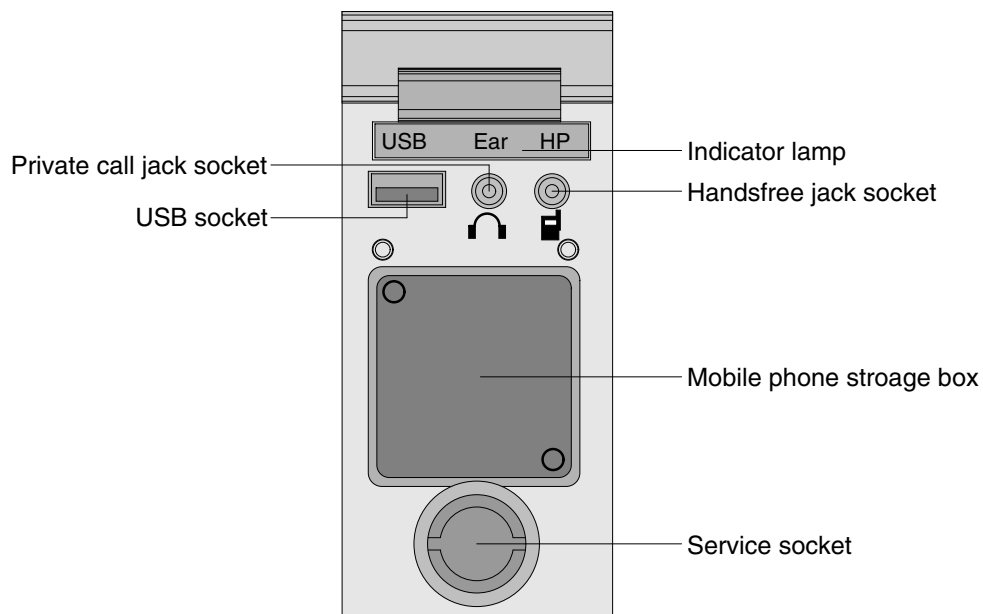
I = Seat heater ON

▲ Always check the condition of the seat belt and mounting hardware before operating the machine.

▲ Replace the seat belt at least once every three years, regardless of appearance.

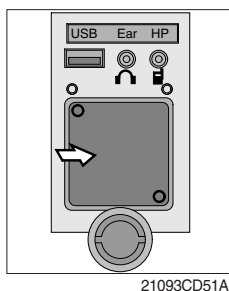
#### 4) HANDSFREE

Allow you to dial a call or to have a conversation without holding your handset. Use the remote controller when making and answering a calls or ring off.



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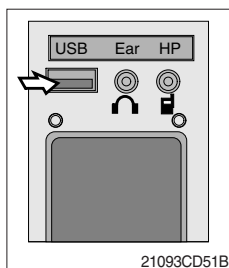
##### (1) Mobile phone storage box



21093CD51A

- ① Mobile phone can be stored when call by handsfree.

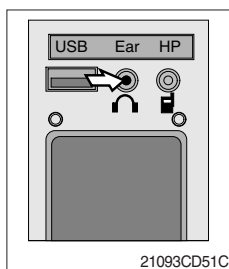
##### (2) USB socket



21093CD51B

- ① This socket is used to charging the mobile phone.

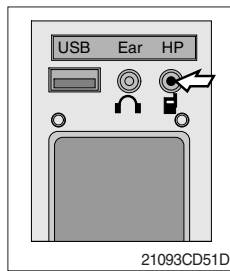
##### (3) Private call jack socket



21093CD51C

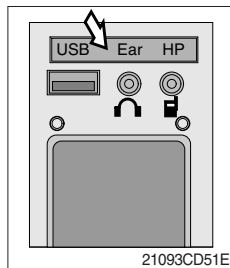
- ① This can be used protect you privacy calling by using ear phone.
- ② The mobile phone must be connected handsfree jack socket.

#### (4) Handsfree jack socket



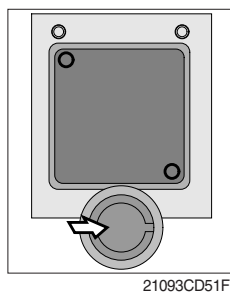
- ① Connect the jack cable when call by handsfree.
- ② Use the special adapter when jack cable is not interchangeable.
- ③ Check the jack type of mobile phone before use.

#### (5) Indicator lamp



- ① This lamp is turned ON when the handsfree mode selected.

#### (6) Service socket



- ① Utilize the power of 12 V as your need and do not exceed power of 12 V, 30 W.

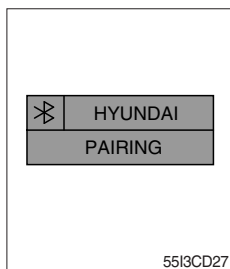


## (7) Wireless handsfree

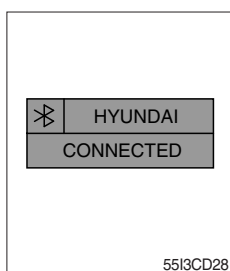


- ① Select the handsfree mode by pressing bluetooth button on the mobile phone.

Press the **CALL** button for more than 6 seconds for pairing (connection process of the mobile phone and handsfree), you can hear beep sounds three times.

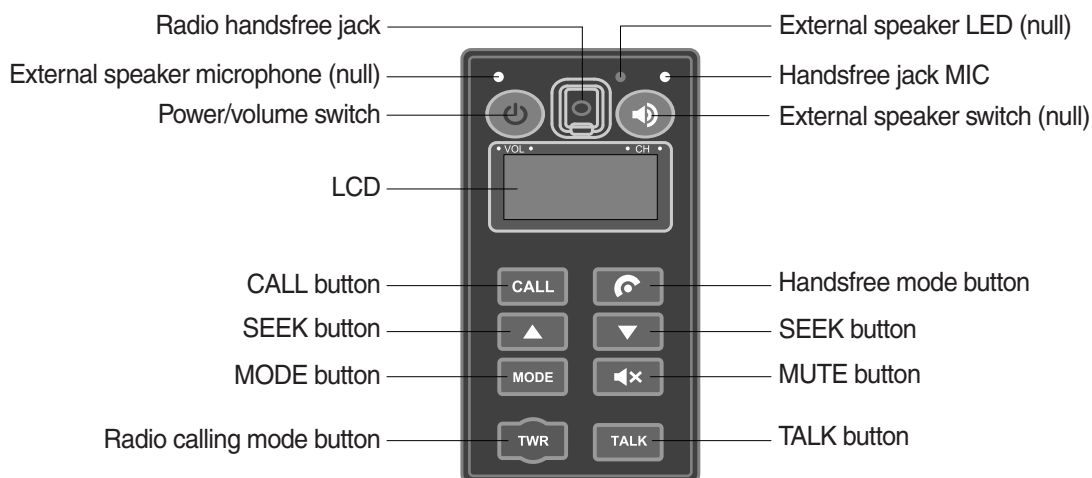


- ② The mobile phone finds bluetooth named "HYUNDAI".  
Select "HYUNDAI" and set "connect with Bluetooth on the mobile phone".  
· Default password : 0000



- ③ The Bluetooth pairing is made, the LCD screen shows "CONNECTED".
- ④ Once the Bluetooth pairing is made, they will be automatically connected after 20 seconds when start key ON.
- ⑤ When you want to deactivate the pairing, press and hold the **CALL** button for more than 3 seconds then you can hear beep sounds twice and the function will be deactivated.

## 5) REMOTE CONTROLLER (MACHINE SERIAL NO.: -#0667)



55I3CD31

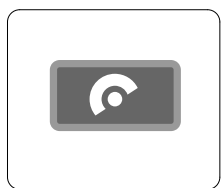
### (1) Power and volume switch



55I3CD31A

- ① This switch is used to turn the audio or handsfree ON or OFF.
  - ② This switch is turned to right, the handsfree volume is increased over 7 steps.
  - ③ If it is turned to left, volume will be decreased.
- ※ This switch adjust the audio volume when selected audio mode.

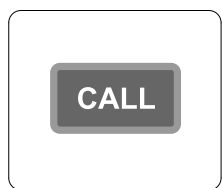
### (2) Mode change button



55I3CD31B

- ① This button is to select the handsfree mode or audio mode.
  - Lamp ON : Handsfree mode ("TEL MUTE" displayed ON audio LCD)
  - Lamp OFF : Audio mode

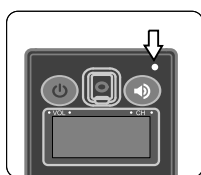
### (3) Call button



55I3CD31C

- ① This button is used answer a call, last number radial, ring off.
  - ② For calling, press the button 0.5~1.5 seconds until the beep sounds.
- ※ This can be used when the starting switch is ON.

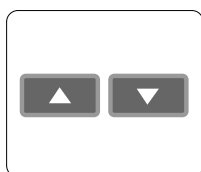
#### (4) Handsfree MIC



55I3CD31D

- ① This MIC transfers user voice to receiver of the call when making a call by handsfree.

#### (5) Seek button



55I3CD31E

- ① If this button pressed, the radio automatically stops at the next frequency of broadcasting for your listening.
- ② This button enable to select the song of the MP3 from USB.
  - ▲ : Turn a station of higher frequency and the next song of the MP3.
  - ▼ : Turn a station of lower frequency and the previous song of the MP3.

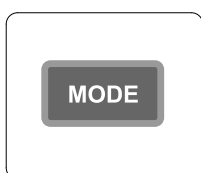
#### (6) Mute button



55I3CD31F

- ① Short press this button to mute or cancel the mute (silence) while broadcasting.

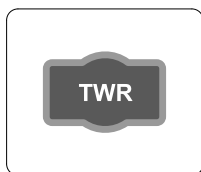
#### (7) Mode button



55I3CD31G

- ① Press the mode button to select the desired mode.
  - ② Radio → MP3 → AUX
- ※ The LCD displayed each mode.

### (8) Radio calling mode button



55I3CD31H

- ① Press this button, activated or deactivated the radio handsfree function.
- ② As long as you do not press this button, you can hear the other party.
- ③ The LED is turned ON when this button is activated.  
The LED turned OFF when the audio mode or the mobile phone handsfree calling mode is activated.

#### ※ Radio handsfree

You can make a call to external worker without holding the radio by hand. (The radio is not installed to the machine).

### (9) Talk button



55I3CD31J

- ① The call is connected while pressing this button (when TALK button is activated).
- ※ Unlike mobile phones, when you want to talk through the radio, you need to press the button (Push-to-talk method).  
While one is talking through the radio, the other party can only listen to him/her.

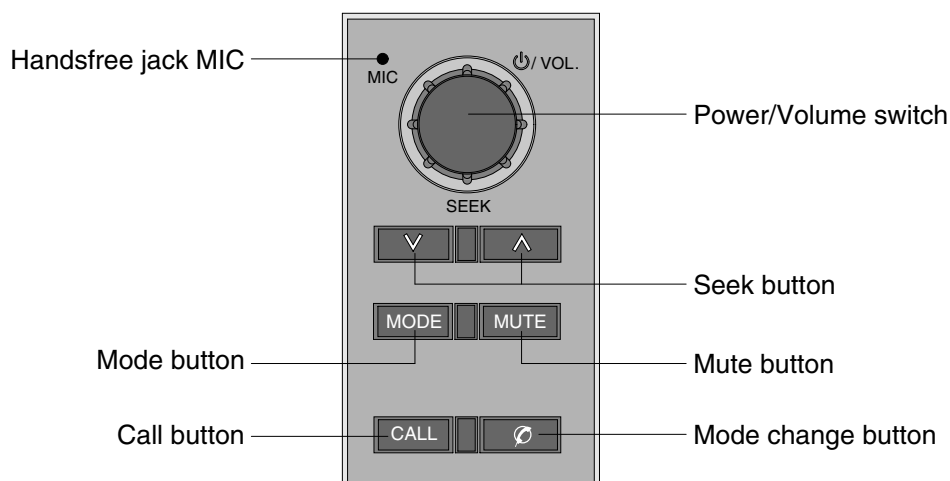
### (10) Handsfree jack



55I3CD31K

- ① Connect the jack cable when call by radio handsfree.

## REMOTE CONTROLLER (MACHINE SERIAL NO.: #0668-)



21093CD52

### (1) Power and volume switch



21093CD52A

- ① This switch is used to turn the audio or handsfree ON or OFF.
  - ② This switch is turned to right, the handsfree volume is increased over 7 steps.
  - ③ If it is turned to left, volume will be decreased.
- ※ This switch adjust the audio volume when selected audio mode.

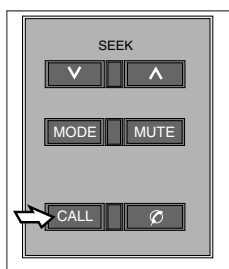
### (2) Mode change button



21093CD52B

- ① This button is to select the handsfree mode or audio mode.
  - Lamp ON : Handsfree mode ("TEL MUTE" displayed ON audio LCD)
  - Lamp OFF : Audio mode

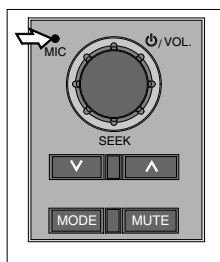
### (3) Call button



21093CD52C

- ① This button is used answer a call, last number redial, ring off.
  - ② For calling, press the button over 0.5sec within 3 seconds until the beep sounds.
- ※ This can be used when the starting switch is ON.

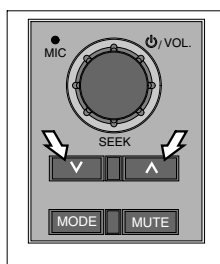
#### (4) Handsfree MIC





21093CD52D

- ① This MIC transfers user voice to receiver of the call when making a call by handsfree.

#### (5) Seek button



21093CD52E

- ① If this button pressed, the radio automatically stops at the next frequency of broadcasting for your listening.
- ② Press  to turn a station of a higher frequency or  to a lower frequency.

#### (6) Mute button



21093CD52G

- ① Short press this button to mute or cancel the mute (silence) while broadcasting.

#### (7) Mode button



21093CD52F

- ① Press the mode button to select the desired mode.
  - ② FM1 → FM2 → AM → CD → MP3 → FM1
- ※ The LCD displayed each mode.

## 6) FUSE BOX

WORK LAMP	30A	START KEY, ROOM LAMP	30A
HORN, CIGAR LIGHTER	30A	CLUSTER, MCU	20A
FUEL FILLER P/P, BEACON LAMP	20A	AIRCON/ HEATER	20A
WIPER MOTOR	10A	CONTROLLER	30A
SOLENOID	20A	TURN LAMP	10A
ALT, START	20A	CASSETTE, SW PANEL	10A
TRAVEL, SAFETY SOL	20A	CLUSTER MCU	10A
PRE-HEAT, FUEL FEEDING	20A	AIRCON & HEATER	20A
ILLUMINATION	10A	AIRCON FAN	40A
ILLUMINATION	10A	HEAD LAMP	20A
FUSE HOLDER		SPARE	10A
		SPARE	40A

55W9A3CD29

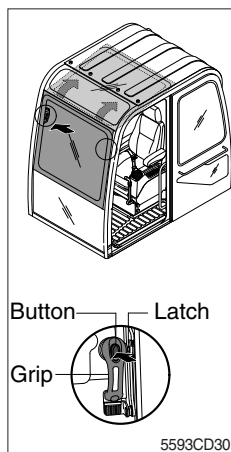
(1) The fuses protect the electrical parts and wiring from burning out.

(2) The fuse box cover indicates the capacity of each fuse and circuit it protects.

※ **Replace a fuse with another of the same capacity.**

▲ **Before replacing a fuse, be sure to turn OFF the starting switch.**

## 7) UPPER WINDSHIELD



(1) Perform the following procedure in order to open the upper windshield.

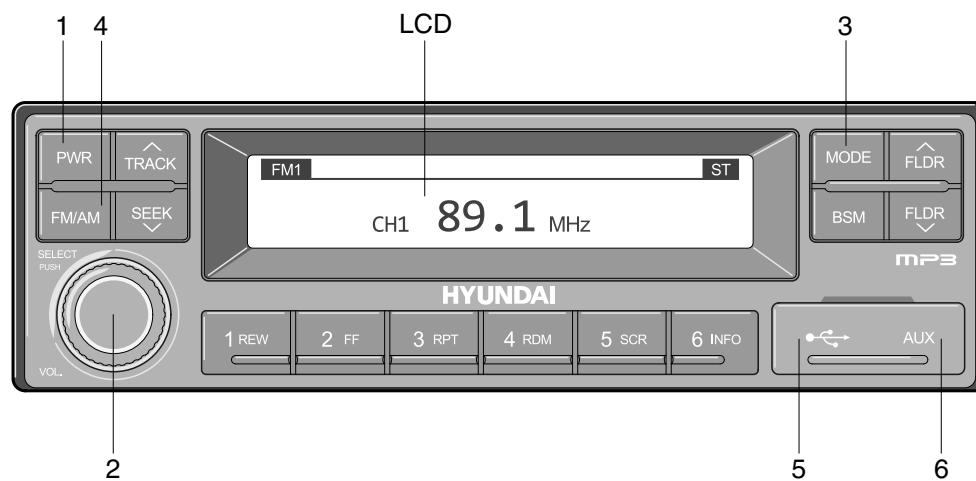
- ① Release both latches in order to release the upper windshield.
- ② Hold both grips that are located at both side the windshield frame push the windshield upward.
- ③ Hold both grips that are provided on the windshield frame and back into the storage position until auto lock latch is engaged.

▲ **When working, without having locked the windshield by the auto lock (by pushing the windshield to the rear until it's completely fixed), please be careful as it can cause personal injury if the windshield is not fixed or falls off.**

(2) Perform the following procedure in order to close the upper windshield.  
Reverse step ① through step ③ in order to close the upper windshield.

## 8) RADIO AND USB PLAYER (MACHINE SERIAL NO.: ~#0254)

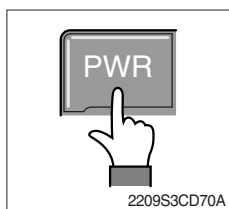
### ■ BASIC FUNCTIONS



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                   |

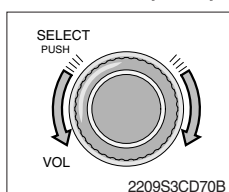
#### (1) Power (PWR) button



- 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

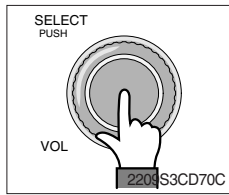
##### · Volume (VOL) button



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

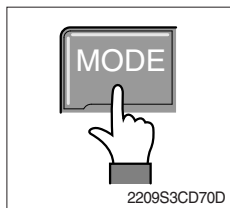


## · Sound setting



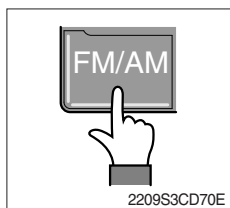
- ① Press the SELECT button to conduct sound setting.  
Each press of the button will change the sound setting in the following order.  
BASS → MIDDLE → TREBLE → BALANCE → EQ → BEEP
- ② After selecting the desired setting, turn the SELECT button clockwise/counter-clockwise to adjust the sound setting value.
- ③ **BASS adjustment**  
Turn the SELECT button clockwise to increase the bass and counter-clockwise to decrease the bass. BASS can be adjusted from max +10/min -10. If there are no adjustments for 3 seconds, the changes will be saved and the previous mode will be restored.
- ④ **MIDDLE adjustment**  
Turn the SELECT button clockwise to increase the middle and counter-clockwise to decrease the middle. MIDDLE can be adjusted from max +10/min -10. If there are no adjustments for 3 seconds, the changes will be saved and the previous mode will be restored.
- ⑤ **TREBLE adjustment**  
Turn the SELECT button clockwise to increase the treble and counter-clockwise to decrease the treble. TREBLE can be adjusted from max +10/min -10. If there are no adjustments for 3 seconds, the changes will be saved and the previous mode will be restored.
- ⑥ **Left/Right BALANCE adjustment**  
Turn the SELECT button clockwise to increase the right-side speaker volume and counter-clockwise to increase the left-side speaker volume. BALANCE can be adjusted from 10L/10R. If there are no adjustments for 3 seconds, the changes will be saved and the previous mode will be restored.
- ⑦ **EQ (EQUALIZER) adjustment**  
Turn the SELECT button clockwise/counter-clockwise to select the desired EQ. EQ settings are as shown below.  
Cls (classic) → Pop → Rock → Jazz → off  
If there are no adjustments for 3 seconds, the changes will be saved and the previous mode will be restored.  
※ Upon selecting EQ, the BASS, MIDDLE and TREBLE values will be turned off.  
The BASS, MIDDLE, TREBLE values can be set only when EQ Off is selected.
- ⑧ **BEEP sound adjustment**  
Turn the SELECT button clockwise/counter-clockwise to the beep sound ON/OFF. If there are no adjustments for 3 seconds, the changes will be saved and the previous mode will be restored.

### (3) MODE selection button



- ① Press the MODE button to change to RADIO/USB/AUX/iPod modes. However, the mode can be selected only when the respective media is connected.
  - ② If iPod is connected to the audio, the mode will change in the following order.  
RADIO → iPod → USB (handfree)
  - ③ If USB, AUX is connected to the audio, the mode will change in the following order.  
RADIO → USB(front) → USB(handfree) → AUX
- ※ **USB and AUX mode will operate only when corresponding devices are connected.**
  - ※ **When connecting iPod, AUX and front USB cannot be connected.**
  - ※ **The iPod is connected to the USB in the machine handfree.**

### (4) Radio (FM/AM) selection button



- ① Each press of the FM/AM button will change the radio mode in the following order.  
FM1 → FM2 → FM3 → AM
- ② Preset memory of up to FM : 18 stations, AM : 6 stations

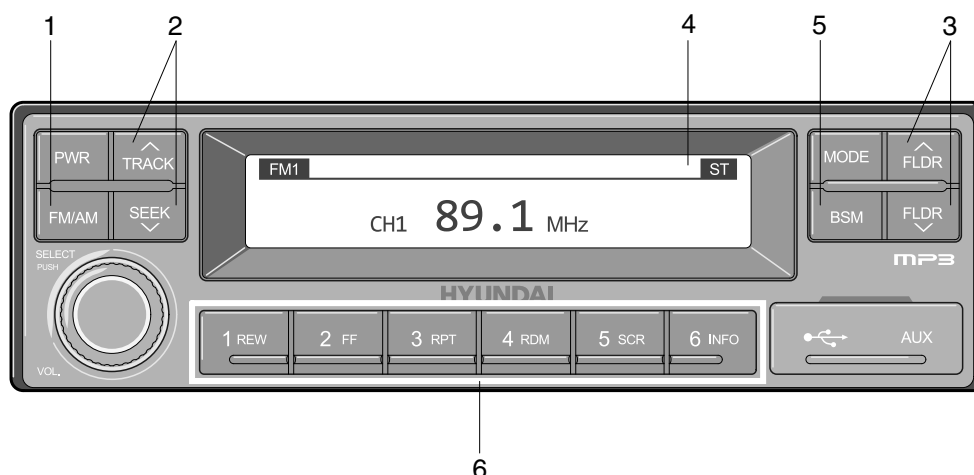
### (5) USB slot

Connects USB to play USB music files.

### (6) AUX terminal

Connects AUX cable to play AUX music files.

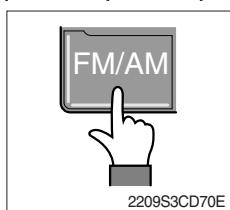
## ■ RADIO



2209S3CD71

- |   |  |
|---|--|
| 1 Radio (FM/AM) selection button        | 4 LCD display                                    |
| 2 TRACK/SEEK button                     | 5 BSM (Best Station Memory) button               |
| 3 Broadcast manual search (FLDR) button | 6 Saving broadcast frequencies to PRESET numbers |

### (1) Radio (FM/AM) selection button



- ① Each press of the FM/AM button will change the radio mode in the following order.  
FM1 → FM2 → FM3 → AM

- ② In addition, pressing the FM/AM button when the starting switch is in ON state will turn the power on and activate the radio.

### ③ Setting regional Radio Frequency

#### ► North America Frequency

Press the FM/AM and Preset 1 button simultaneously to set frequency in accordance to the North America Frequency settings. "nA" will become displayed on the LCD for one second.

FM : 87.7 ~ 107.9 MHz (200 KHz)

AM : 530 ~ 1710 KHz (10 KHz)

#### ► Local/Middle East/Asia Frequency

Press the FM/AM and Preset 2 button simultaneously to set frequency in accordance to the Local/Middle East/Asia Frequency settings. "InT" will become displayed on the LCD for one second.

FM: 87.5 ~ 108 MHz (100 KHz)

AM: 531 ~ 1602 KHz (9 KHz)

#### ► Europe Frequency

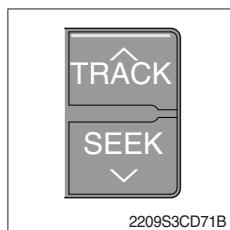
Press the FM/AM and Preset 3 button simultaneously to set frequency in accordance to the North America Frequency settings. "Eu" will become displayed on the LCD for one second.

FM: 87.5 ~ 108 MHz (50 KHz)

MW: 531 ~ 1602 KHz (9 KHz)

LW: 153 ~ 279 KHz (1 KHz)

## (2) TRACK/SEEK button



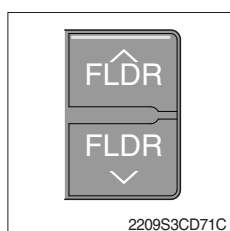
- ① As buttons used to automatically search broadcasts, pressing the button will automatically search and stop at a frequency with superior reception.

TRACK  $\wedge$  : Searches frequencies higher than current frequency

SEEK  $\vee$  : Searches frequencies lower than current frequency

※ When frequencies cannot be properly found due to weak broadcast reception, try using manual FLDR button. (Refer to manual FLDR button explanation below)

## (3) Broadcast manual search (FLDR) button



- ① As button used to search frequencies manually, a press of the SEEK step (refer to note below) will change the frequency.

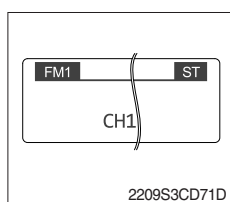
Pressing and holding the button will continue changing the frequency. Releasing the button will stop the search at the current frequency.

FLDR  $\wedge$  : Searches frequencies higher than current frequency

FLDR  $\vee$  : Searches frequencies lower than current frequency

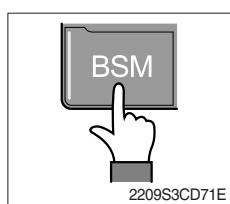
※ SEEK STEP : FM-100KHz, AM-9KHz

## (4) LCD display



- ① The currently received broadcast frequency info and status are displayed.

## (5) BSM (Best Station Memory) button

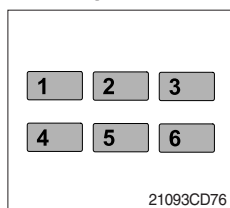


- ① Press and hold the BSM button to listen to the presets saved in FM BAND FM1, FM2, and FM3 or AM BAND AM for 5 seconds each.

When you find a station you wish to listen to, press the BSM button again to receive the selected broadcast.

- ② Shortly press the BSM button to automatically save frequencies with superior reception in presets (1REW~6INFO). The BSM feature will save AM frequencies in AM mode and FM frequencies in FM mode.

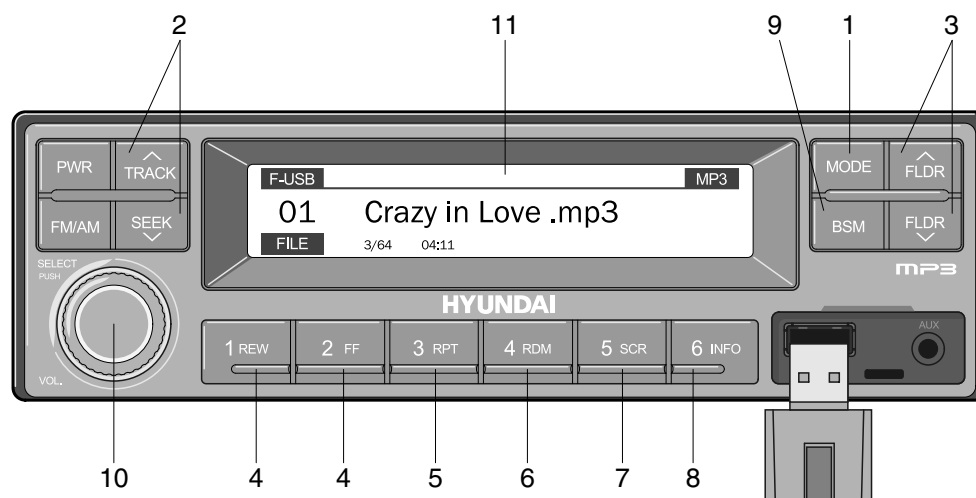
## (6) Saving broadcast frequencies to PRESET numbers



Up to 18 FM broadcasts and 6 AM broadcasts can be saved.

- ① Use the auto/manual search buttons to find the desired frequency.
  - ② Select the preset button (1REW~ 6INFO) to which you wish to save the selected frequency. Press and hold the preset button.
  - ③ The frequency will be saved to the preset button to a sound of a beep. The saved frequency number will be displayed on the LCD DISPLAY. (However, the beep will not sound if the beep function has been turned off in sound setting. )
  - ④ After saving is complete, pressing the preset button will play the corresponding broadcast frequency.
- ※ No beep sound signifies that the preset has not been saved. In this case, try again from the first step. (However, the beep will not sound if the beep function has been turned off in sound setting.)

## ■ USB CONNECTION

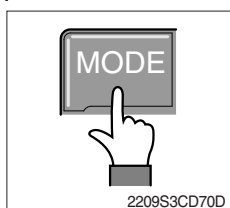


2209S3CD72

- |                             |   |
|-----------------------------|---|
| 1 USB selection button      | 7 Scroll (SCR) button                       |
| 2 TRACK UP/SEEK DOWN button | 8 View music info (INFO) button             |
| 3 FLDR UP/DOWN button       | 9 Scan button (BSM)                         |
| 4 FF/REW button             | 10 Finding and playing file (SELECT) button |
| 5 RPT/FOLDER RPT button     | 11 LCD display                              |
| 6 RDM/FOLDER RDM button     |   |

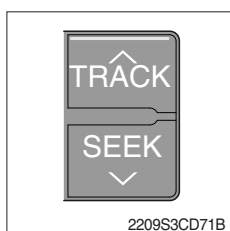
- Operates only when a USB is connected. Connecting a USB to the audio will automatically convert to USB mode.
- Connecting the USB when the starting switch is in ON state will turn the power on and automatically play the songs within the USB.

### (1) USB selection button



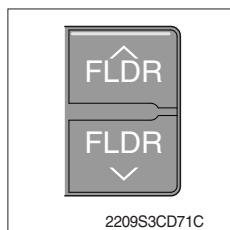
- ① While playing a different mode, press the MODE button to convert to USB mode. Connecting a USB to the audio will automatically convert to USB mode even if another mode is playing and automatically play the songs within the USB.
- ② If the USB is connected to both the front USB and handfree, then MODE is converted in the following order.  
RADIO → USB(front) → USB(handfree)

### (2) TRACK UP/SEEK DOWN button



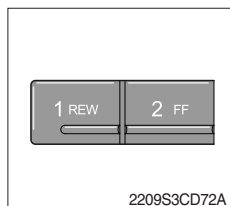
- ① While playing USB, press the TRACK ^ button to play the beginning of the next song.  
Press the SEEK v button to return to the beginning of the current song. Press the button again to play the beginning of the previous song.

### (3) FLDR UP/DOWN button



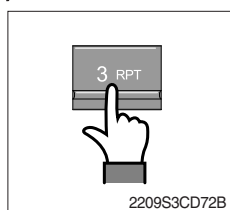
- ① If there are more than 2 folders in the USB, pressing the FLDR UP/DOWN button will move to the previous or next folder.
- ② If there are no folders in the USB, then pressing the button will move up/down within the folder in 10 file increments.

### (4) FF/REW button



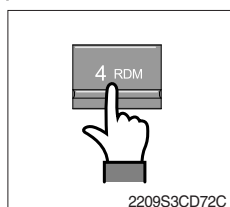
- ① While a USB is operating, press and hold the FF button to fast-forward the song. When fast-forward is complete, the next song will properly play from the beginning even if you continue holding the button. Press and hold the REW button to rewind the song. When rewind is complete, the current song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

### (5) RPT/FOLDER RPT button



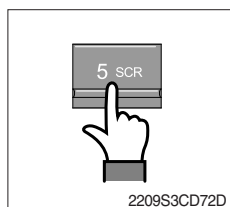
- ① While music is playing, shortly press the RPT button to repeat the currently playing song.
- ② (RPT function) Press and hold the RTP button to sequentially repeat all songs within the current folder. (FOLDER RPT, however, music files in the USB must be saved in folder format.)

### (6) RDM/FOLDER RDM button



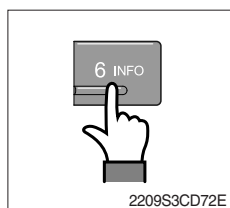
- ① While music is playing, shortly press the RDM button to randomly play the songs in the current folder. (RDM)
- ② While music is playing, press and hold the RDM button to randomly play the songs in the current folder. (FOLDER RDM, however, music files in the USB must be saved in folder format.)

### (7) Scroll (SCR) button



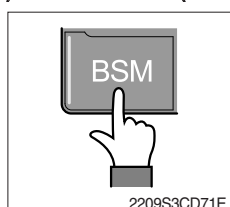
- ① Press the SCR button to turn ON/OFF the scroll function which scrolls the file name of the currently playing song on the LCD from right to left.

### (8) View music info (INFO) button



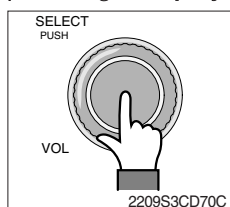
- ① Each time the INFO button is pressed, the info on the currently playing song will be displayed in the following order.  
FILE NAME → TITLE → ARTIST → ALBUM → DIR

### (9) Scan button (BSM)



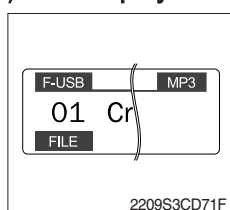
- ① While music is playing, shortly press the BSM button to scan each song within the USB for 10 seconds in sequential order. (SCN)
- ② Press and hold the BSM button to scan each song within the current folder for 10 seconds in sequential order. (FOLDER SCN, however, music files in the USB must be saved in folder format.)

### (10) Finding and playing file (SELECT) button



- ① While USB is playing, press and hold the SELECT button for over 3 seconds to enter FILE BROWSER mode and search for desired files.
- ② After entering FILE BROWSER mode, turn the SELECT button left/right to find the desired folder. After finding the folder, press the SELECT button to select the folder. Turn the SELECT button left/right to find the desired song and press the SELECT button to play.
- ③ If there are no adjustments for 3 seconds after pressing the SELECT button, the function will be turned off and the USB play screen will be displayed.

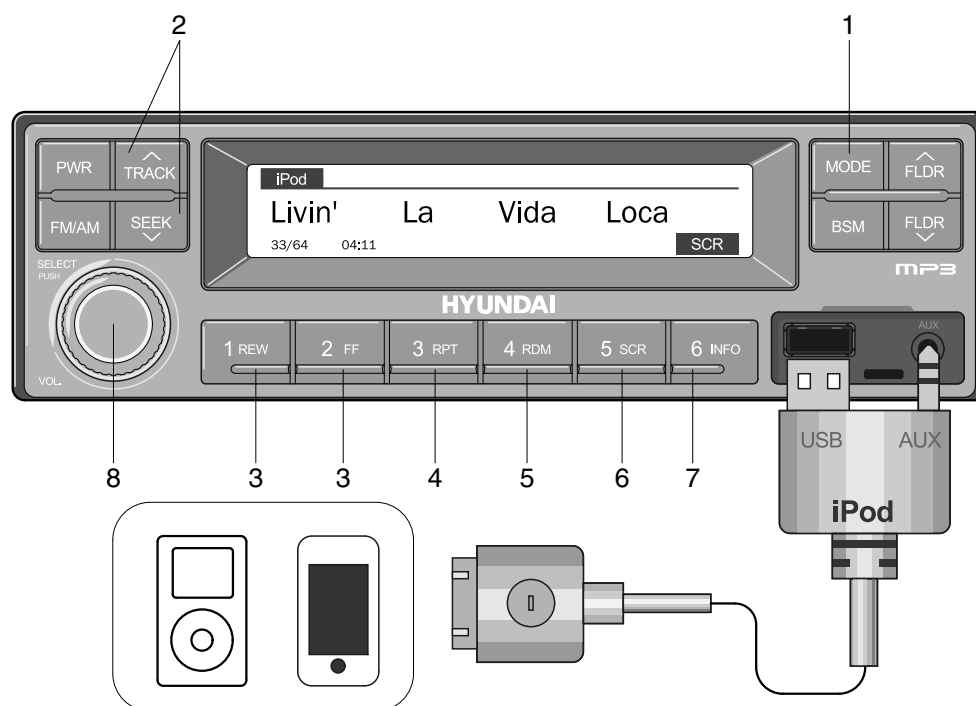
### (11) LCD display



- ① Displays the info of the currently playing song.
  - F-USB : Displays USB is connected to the Audio Front
  - R-USB : Displays USB is connected to the handfree
  - RPT : Displays that repeat function is turned on
  - 📁 RPT : Displays that folder repeat function is turned on
  - RDM : Displays that random play is turned on
  - 📁 RDM : Displays that folder random play is turned on
  - SCR : Displays that SCROLL is turned on



## ■ IPOD CONNECTION

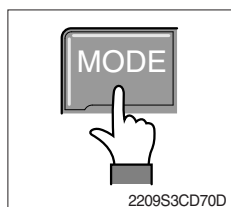


2209S3CD73

- |                             |  |
|-----------------------------|--|
| 1 iPod selection button     | 5 Random play (RDM) button                 |
| 2 TRACK UP/SEEK DOWN button | 6 Scroll (SCR) button                      |
| 3 FF/REW button             | 7 View music info (INFO) button            |
| 4 Repeat (RPT) button       | 8 Finding and playing file (SELECT) button |

- Operates only when an iPod is connected. Connecting an iPod to the audio will automatically convert to iPod mode. Connecting the USB when the starting switch is in ON state will turn the power on and automatically play the songs within the iPod.
- The iPod cable is supplied separately.

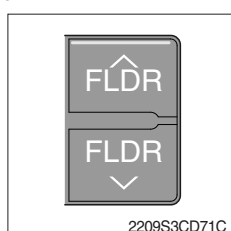
### (1) iPod selection button



2209S3CD70D

- ① While playing a different mode, press the MODE button to convert to iPod mode. Connecting an iPod to the audio will automatically convert to iPod mode even if another mode is playing and automatically play the songs within the iPod.

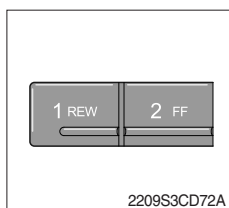
### (2) TRACK UP/SEEK DOWN button



2209S3CD71C

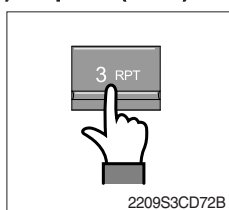
- ① While playing music, press the TRACK ^ button to play the beginning of the next song. Press the SEEK v button to return to the beginning of the current song. Press the button again to play the beginning of the previous song.

### (3) FF/REW button



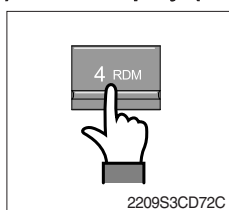
- ① While an iPod is operating, press and hold the FF button to fast-forward the song.
- ② When fast-forward is complete, the next song will properly play from the beginning even if you continue holding the button. Press and hold the REW button to rewind the song.
- ③ When rewind is complete, the current 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



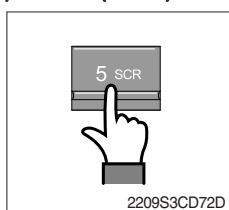
- ① While music is playing, press the RPT button to repeat the currently playing song.

### (5) Random play (RDM) button



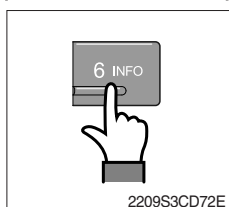
- ① While music is playing, press the RDM button to randomly play the songs.

### (6) Scroll (SCR) button



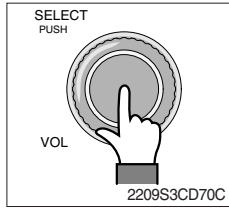
- ① Displays the file name of the currently playing song on the LCD. Here, the SCR button turns the file name SCROLL ON/OFF.

### (7) View music info (INFO) button



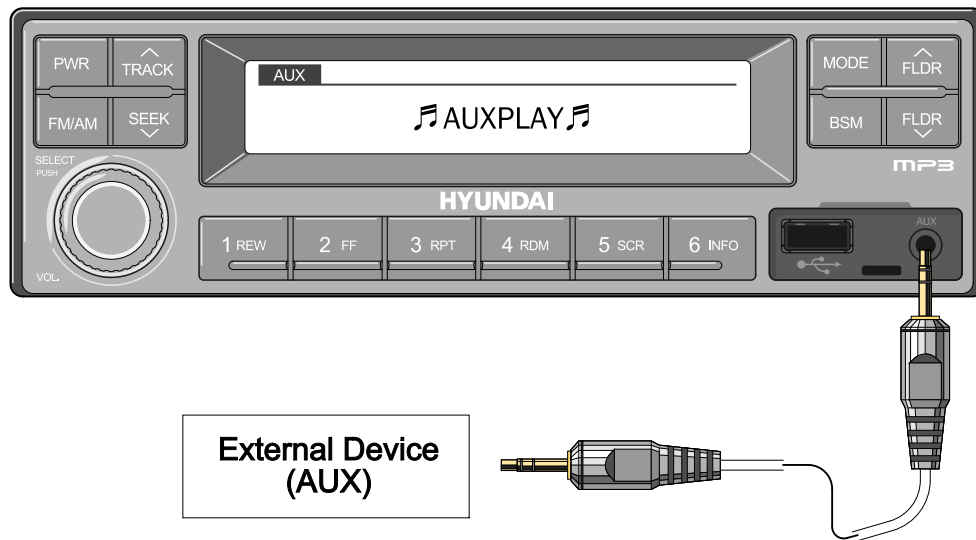
- ① Each time the INFO button is pressed, the info on the currently playing song will be displayed in order of ARTIST → ALBUM → TITLE.

### (8) Finding and playing file (SELECT) button



- ① While iPod is playing, press and hold the SELECT button for over 3 seconds to enter CATEGORY mode and search for desired files.
- ② After entering CATEGORY mode, turn the SELECT button left/right to find the desired category.
- ③ Category will be displayed in the following order.  
PLAYLISTS → ARTISTS → ALBUMS → GENRES → SONGS → COMPOSERS → AUDIOBOOKS → PODCASTS
- ④ After finding the category, press the SELECT button to select the category. Turn the SELECT button left/right to find the desired song and press the SELECT button to play.
- ⑤ If there are no adjustments for 3 seconds after pressing the SELECT button, the function will be turned off and the iPod play screen will be displayed.

## ■ AUX connection



- Operates only when an external device is connected to AUX. Connecting an AUX device to the audio using the AUX cable will automatically convert to AUX mode.
- When an external device is connected, only the PWR, FM/AM, MODE, and VOL buttons can be operated.
- Settings can be made only through the external device connected to AUX.
- The AUX cable is supplied separately.

### (1) Connecting an external device using the AUX cable

















- ① While playing a different mode, press the MODE button to convert to AUX mode.
- ② If an external device is connected to the Audio through the AUX terminal, AUX mode will automatically be converted and play music from AUX. Connecting the AUX when the starting switch is in ON state will turn the power on and automatically play the songs within the AUX.

## RADIO AND USB PLAYER (MACHINE SERIAL NO.: #0255~)



9403CD101

### FRONT PANEL PRESENTATION

- |  |   |
|--|---|
| <p>1  ..... Power ON/OFF,<br/>Volume UP/DOWN button</p> <p>2  ..... Manual UP/DOWN Tuning,<br/>File search, SEL button</p> <p>3  ..... Mode button,<br/>Audio mute button</p> <p>4  ..... Radio seek up button</p> <p>5  ..... Radio seek down button</p> <p>6  ..... Station preset 1<br/>DIS ..... Display button</p> <p>7  ..... Station preset 2</p> <p>8  ..... Station preset 3<br/>RPT ..... Repeat play button</p> <p>9  ..... Station preset 4<br/>RDM ..... Random play button</p> | <p>10  ..... Station preset 5<br/>DIR- ..... Directory down button</p> <p>11  ..... Station preset 6<br/>DIR+ ..... Directory up button</p> <p>12  ..... Scan play button (SCAN)<br/>Best station memory (BSM) button</p> <p>13  ..... Track up button</p> <p>14  ..... Track down button</p> <p>15  ..... USB connector</p> <p>16  ..... AUX IN Jack</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.

#### Clock ON/OFF control

- ④ 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.**

#### Clock adjustment

- ⑤ 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.

## (2) Menu Selection



- ① This button can adjust the sound effect and other things.  
Each time you press this button (2), LCD displays as follows :

BAS → TREB → BAL L=R → FAD F=R → EQ → LOUD ON →  
BEEP 2ND

On each setting, the level can be controlled by turning TUNE knob (2).  
When the last adjustment is made, after 5 seconds, the display will automatically return to the previous display mode.

### ② Bass control

To adjust the bass tone level, first select the bass mode by pressing SEL button (2) repeatedly until BASS appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the bass level as desired. The bass level will be shown on the display panel from a minimum of BASS-7 to a maximum of BASS+7.

### ③ Treble control

To adjust the treble tone level, first select the treble mode by pressing SEL button (2) repeatedly until TREB appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the treble level as desired. The treble level will be shown on the display panel from a minimum of TREB -7 to a maximum of TREB +7.

### Balance control

- ④ To adjust the left-right speaker balance, first select the balance mode by pressing SEL button (2) repeatedly until BAL indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the balance as desired. The balance position will be shown by the bars on the display panel from BAL 10R (full right) to BAL 10L (full left).

### Fader control

- ⑤ To adjust the front-rear speaker balance, first select the fader mode by pressing SEL button (2) repeatedly until FADER indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the front-rear speaker level as desired. The fader position will be shown by the bars on the display panel from FAD 10F (full front) to FAD 10R (full rear).

### EQ control

- ⑥ You can select an equalizer curve for 4 music types (CLASSIC, POP, ROCK, JAZZ). Press button (2) until EQ is displayed, then turn knob (2) right or left to select the desired equalizer curve. Each time you turn the knob, LCD displays as follows :

EQ OFF   CLASSIC   POP   ROCK   JAZZ

When the EQ mode is activated, the BASS and TREBLE modes  
※ are not displayed.

#### ⑦ Loud control

When listening to music at low volume levels, this feature will boost the bass and treble response. This action will compensate for the reduction in bass and treble performance experienced at low volume.

To select the loudness feature, press button (2) until LOUD is displayed, then turn knob (2) right or left to activate or deactivate loudness.

#### ⑧ Beep control

To adjust the BEEP mode, first select the BEEP mode by pressing button (2) repeatedly until BEEP indication appears on the display panel. Then turn knob (2) left or right within 5 seconds to select BEEP 2ND, BEEP OFF or BEEP ON.

- BEEP 2ND : You will only hear the beep sound when the buttons are held down for more than 2 seconds.
- BEEP OFF : You can not hear the sound beep when you press the buttons.
- BEEP ON : You can hear the beep sound each time you press the buttons.

#### (3) Mute control

- ① Press and hold MUTE button (3) for over 2 seconds to mute sound output and MUTE ON will blink on the LCD. Press the button again to cancel MUTE function and resume to normal playing mode.

#### (4) Mode selection

- ① Repeat press MODE button (3) to switch between FM1, FM2, AM, USB, AUX, BT MUSIC.
- ※ If there is no USB, AUX, Bluetooth Phone connected, it would not display USB, AUX, BT when you press button (3).



## ■ RADIO

### (1) Mode button



- ① Repeat press MODE button to select FM1, FM2 or AM.

### (2) Manual tuning button



- ① To manually tune to a radio station, simply turn encoder TUNE (2) left or right to increase or decrease the radio frequency.

### (3) Auto tuning button



- ① To automatically select a radio station, simply press Seek up or Track down button.



### (4) Station preset button



- ① In radio mode, pressing buttons (6) to (11) will recall the radio stations that are memorized. To store desired stations into any of the 6 preset memories, in either the AM or FM bands, use the following procedure :
  - a. Select the desired station.
  - b. Press and hold one of the preset buttons for more than 2 seconds to store the current station into preset memory. Six stations can be memorized on each of FM1, FM2, and AM.

#### (5) Preset scan (PS) / Best station memory (BSM) button



① Press BSM button (12) momentarily to scan the 6 preset stations stored in the selected band. When you hear your desired station, press it again to listen to it.

Press BSM button (12) for longer than 2 seconds to activate the Best Station Memory feature which will automatically scan and enter each station into memory.

※ If you have already set the preset memories to your favorite stations, activating the BSM tuning feature will erase those stations and enter into the new ones. This BSM feature is most useful when travelling in a new area where you are not familiar with the local stations.

## ■USB PLAYER

### (1) USB playback



- ① The unit was equipped with a front USB jack and also a rear USB Jack.

With a USB device plugged in the front USB jack, it will be detected as front USB mode. And with a USB device plugged in the rear USB jack, it will be detected as rear USB. To get to a USB mode, press MODE (3) button momentarily or insert the USB device in front or rear USB jack.

- ※ If no mp3 or wma files in USB device, it will convert to the previous mode after display NO FILE.

### (2) Track Up / Down button



- ① Press SEEK up (13) or TRACK down (14) to select the next or previous track. Press and hold the buttons to advance the track rapidly in the forward or backward direction.



### (3) MP3 directory / File searching



- ① Button (2) is used to select a particular directory and file in the device. Turn button (2) right or left to display the available directories. Press button (2) momentarily when the desired directory is displayed, then turn button (2) right or left again to display the tracks in that directory. Press button (2) to begin playback when the desired file is displayed.

### (4) Directory Up / Down button



- ① During MP3/WMA playback, simply press DIR- button (10) to select the previous directory (if available in the device); simply press DIR+ button (11) to select the next directory (if available in the device).

- ※ If the USB device does not contain directories, it would play MP3/WMA tracks at 10- file when you press DIR- button (10), and play MP3/WMA tracks at 10+ file when you press DIR+ (11) button.

#### (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

- 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.
- Display up to 32 characters in the LCD display.
- No support any of MULTI-CAED Reader.
- 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.

## ■AUX OPERATION

It is possible to connect your portable media player to the audio system for playback of the audio tracks via the cab speakers.

To get the best results when connecting the portable media to the audio system, follow these steps :

- Use a 3.5 mm stereo plug cable to connect the media player headphone socket at each end as follows.
- Adjust the portable media player to approximately 3/4 volume and start playback.
- Press the MODE button (3) on the audio unit to change into AUX mode.
- The volume and tone can now be adjusted on the audio unit to the desired level.

- ※ **The audio quality of your media player and the audio tracks on it may not be of the same sound quality as the audio system is CD Player.**
- ※ **If the sound of the media player is too low compared with the radio or CD, increase the volume of the player.**
- ※ **If the sound of the media player is too loud and/or distorted, decrease the volume of the player.**
- ※ **When in AUX mode, only the Volume, Bass, Treble, EQ and Mode functions of the audio unit can be used.**

## ■ RESET AND PRECAUTIONS

### (1) Reset function

Interfering noise or abnormal compressed files in the MP3 disc or USB instrument may cause intermittent operation (or unit frozen/locking up). It is strongly recommended to use appropriate USB storage to not cause any malfunction to the audio unit. In the unlikely event that the player fails to operate correctly, try to reset unit by any of following two methods.

① press and hold   simultaneously for about 5 seconds. (without Bluetooth)

② Take out the fuse for the audio system in the vehicle once and then plug it back in.

※ It will be necessary to re-enter the radio preset memories as these will have been erased when the microprocessor was reset.

※ After resetting the player, ensure all functions are operating correctly.

### (2) Precautions

When the inside of the cab is very cold and the player is used shortly after switching on the heater, moisture may form on the disc or the optical parts of the player and proper playback may not be possible.

If moisture forms on the optical parts of the player, do not use the player for about one hour. The condensation will disappear naturally allowing normal operation.

- ① Operation voltage : 9~32 volts DC, negative
- ② Output power : 40 watts maximum (20 watts x 2 channels)
- ③ Tuning range

Area	Band	Frequency range	Step
USA	FM	87.5~107.9 MHZ	200K
	AM	530~1710 KHZ	10K
EUROPE	FM	87.5~108.0 MHZ	50K
	AM	522~1620 KHZ	9K
ASIA	FM	87.5~108.0 MHZ	100K
	AM	531~1602 KHZ	9K
LATIN	FM	87.5~107.9 MHZ	100K
	AM	530~1710 KHZ	10K

#### ● AREA Selection :

- To select an area, press and hold related buttons at FM1 band for about 3 seconds.
- USA Area: Press and hold mode + 1DIS buttons for 3 seconds
- EUROPE Area: Press and hold mode + 2 buttons for 3 seconds
- ASIA Area: Press and hold mode + 3RPT buttons for 3 seconds
- LATIN Area: Press and hold mode + 4RDM buttons for 3 seconds.

④ USB version : USB 1.1

## 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%

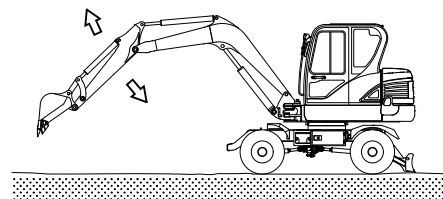
※ **Excessive operation may deteriorate the potential performance of machine and shorten lifetime of the machine.**

### 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 operation hours.

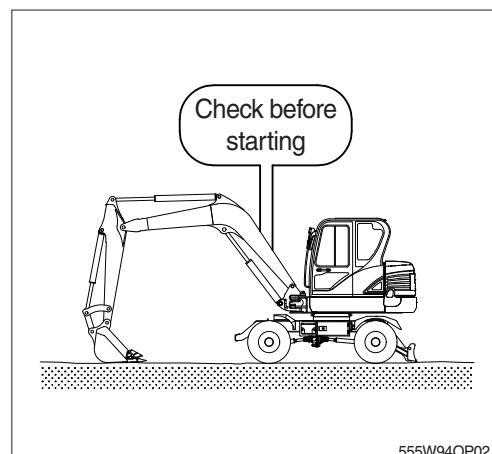
Checking items	Hours
Engine oil	50
Engine oil filter element	
Prefilter (water, element)	
Fuel filter	
Transmission gear oil	100
Front axle differential gear oil	
Rear axle differential gear oil	
Axle planetart gear oil	
Hydraulic oil return filter element	250
Line filter element	



555W94OP01

## 2. CHECK BEFORE STARTING THE ENGINE

- 1) Look around the machine and under the machine to check for loosen nut or bolts, collection of dirt, or leakage of oil, fuel or coolant and check the condition of the work equipment and hydraulic system. Check also loosen wiring, and collection of dust at places which reach high temperature.  
※ **Refer to the daily check on the chapter 6, maintenance.**
- 2) After checking air pressure of tire, make sure that around the machine is clear.
- 3) Adjust seat to fit the contours of the operator's body for the pleasant operation.
- 4) Adjust the rear view mirror.

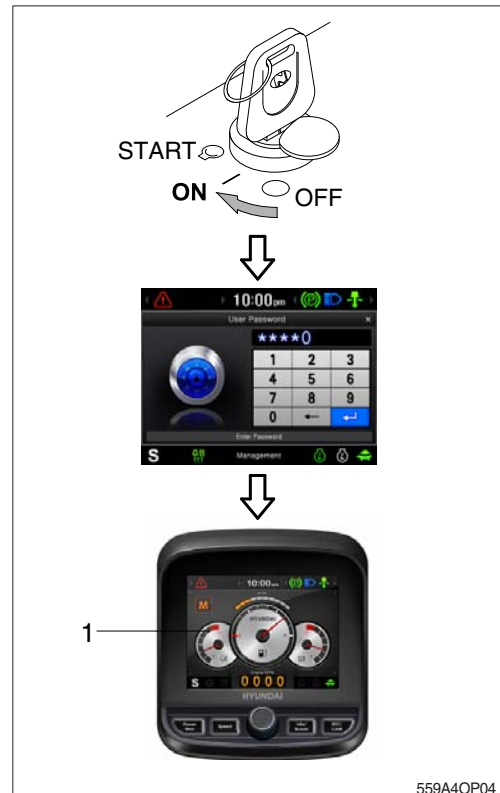




### 3. STARTING AND STOP THE ENGINE

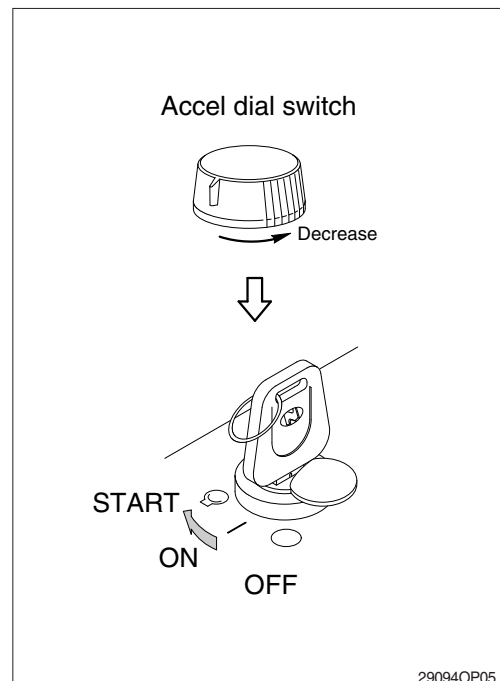
#### 1) CHECK INDICATOR LIGHTS

- (1) Check if all the operating levers are in the neutral position.
- (2) 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 3-18 for ESL mode.
- (3) 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

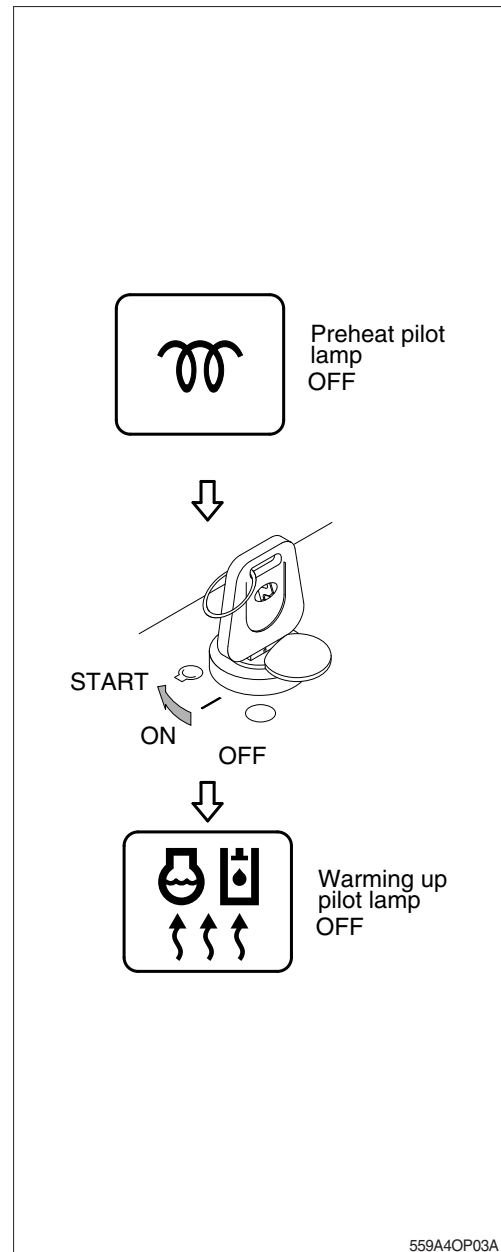
- ※ Sound the horn to warn the surroundings after checking if personnel or obstacles are in the area.
- (1) Turn the accel dial switch to low idle position.
  - (2) Turn the starting switch to START position to start the engine.
  - ※ Do not hold the starting switch in the START position for longer than 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.



### 3) STARTING ENGINE IN COLD WEATHER

- ※ Sound horn to warn surroundings after checking if there are obstacles in the area.
- ※ Replace the engine oil and fuel referring to recommended oils at page 2-10.
- ※ Fill the anti-freeze solution to the coolant as required.
- ※ If you turn ON the starting switch, the fuel warmer is automatically operated to heat the fuel by sensing the coolant temperature.

- (1) Check if all the levers are in the neutral position.
- (2) Turn the accel dial switch to low idle position.
- (3) Turn the starting switch to the ON position, and wait 1~2 minutes. More time may take according to ambient temperature.
- (4) Wait for five minutes to warm up the engine after the preheating pilot lamp off, and then turn the starting switch to the START position to start the engine.
  - ※ If the engine does not start, allow the starter to cool for about 2 minutes before attempting to start the engine again.
- (5) Release the starting switch immediately after starting engine.
- (6) If the temperature of the coolant is lower than 30°C the warming up automatically starts.
  - ※ Do not operate the working devices, or convert the operation mode into other mode during the warming up.



#### 4) INSPECTION AFTER ENGINE START

Inspect and confirm the following after engine starts.

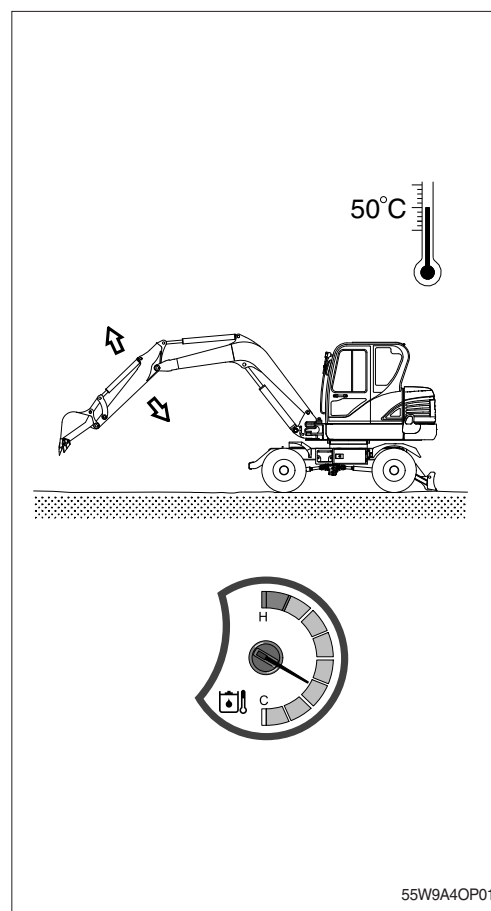
- (1) Is the level gauge of hydraulic oil tank in the normal level?
  - (2) Are there leakages of oil or water?
  - (3) Are all the warning lamps turned OFF (1)?
  - (4) Are the indicator of water temperature gauge (2) and hydraulic temperature gauge (3) in the operating range?
  - (5) Are the engine sound and the color of exhaust gas normal?
  - (6) Are the sound and vibration normal?
- ※ **Do not increase engine speed quickly after starting, it can damage engine or turbocharger.**
  - ※ **If there are problems in the cluster, stop the engine immediately and correct problems as required.**



55I4OP06

#### 5) WARMING-UP OPERATION

- ※ The most suitable temperature for the hydraulic oil is about 50°C (122°F).  
It can cause serious trouble in the hydraulic system by sudden operation when the hydraulic oil temperature is below 25°C (77°F).  
Then temperature must be raised to at least 25°C (77°F) before starting work.
- (1) Run the engine at low idling for 5 minutes.
  - (2) Speed up the idling and run the engine at mid-range speed.
  - (3) Operate bucket lever for 5 minutes.
    - ※ **Do not operate anything except bucket lever.**
  - (4) Run the engine at the high speed and operate the bucket lever and arm lever for 5-10 minutes.
    - ※ **Operate only the bucket lever and arm lever.**
  - (5) This warming-up operation will be completed by operation of all cylinders several times, and operation of swing and traveling.
- ※ **Increase the warming-up operation during winter.**

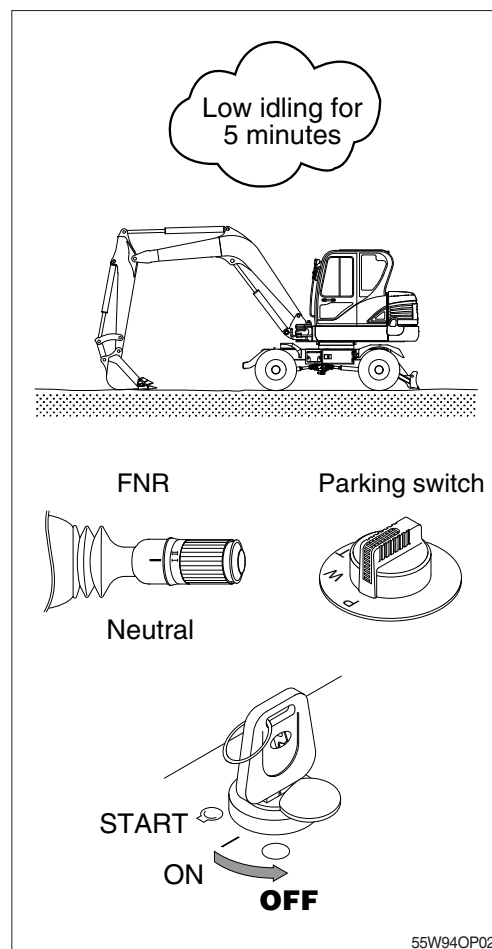


55W9A4OP01

## 6) TO STOP THE ENGINE

- ※ If the engine is abruptly stopped before it has cooled down, engine life may be greatly shortened. Consequently, do not abruptly stop the engine apart from an emergency.
- ※ In particularly if the engine has overheated, do not abruptly stop it but run it at medium speed to allow it to cool gradually, then stop it.

- (1) Place the FNR lever in the neutral.
- (2) Down the bucket and dozer blade on the ground then put all the levers in the neutral position.
- (3) Put the parking switch in the parking position.
- (4) Run the engine at low idling speed for about 5 minutes.
- (5) Return the key of starting switch to the OFF position.
- (6) Remove the key to prevent other people using the machine and LOCK safety lever.
- (7) Lock the cab door.

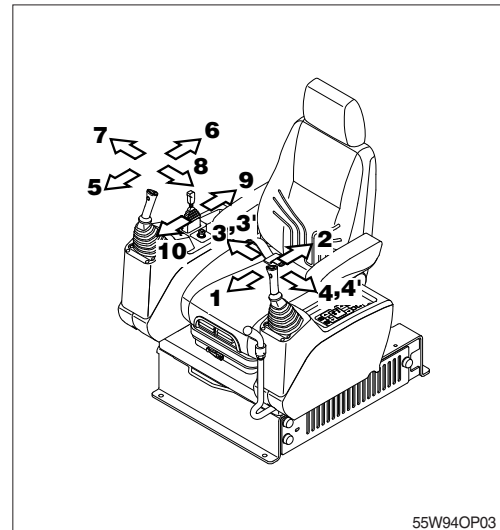


## 4. OPERATION OF WORKING DEVICE

※ **Confirm the operation of control lever and working device.**

- 1) Left control lever controls arm and swing.
- 2) Right control lever controls boom and bucket.
- 3) When you release the control lever, control lever returns to neutral position automatically.

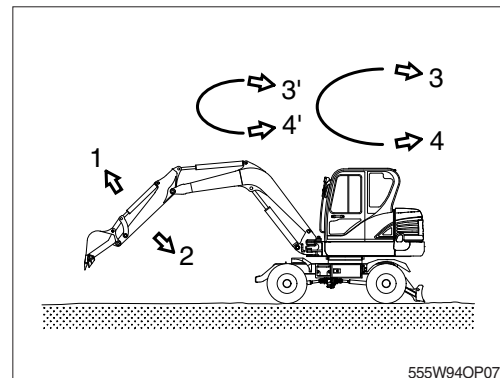
※ **When operating swing, consider the swing distance by inertia.**



※ **Left control lever**

- 1 Arm roll-out
- 2 Arm roll-in
- 3 Swing right
- 4 Swing left
- 3' Boom right (boom swing switch selected)
- 4' Boom left (boom swing switch selected)

※ **Refer to page 3-26 for boom offset switch.**

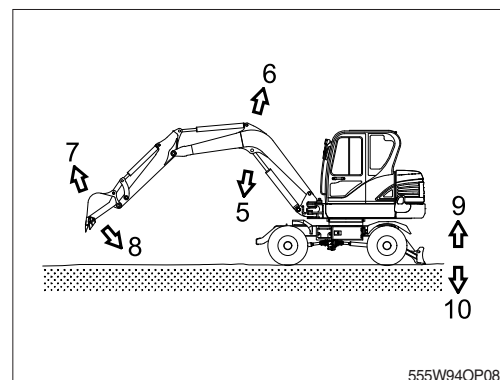


※ **Right control lever**

- 5 Boom lower
- 6 Boom raise
- 7 Bucket roll-out
- 8 Bucket roll-in

※ **Dozer control lever**

- 9 Dozer blade up
- 10 Dozer blade down



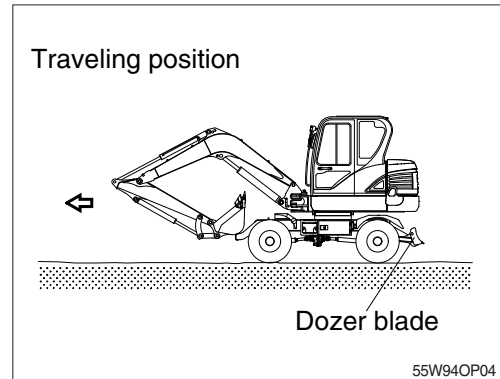
## 5. TRAVELING OF THE MACHINE

### 1) BASIC OPERATION

#### (1) Traveling position

It is the position which the dozer and rear axle is in the rear and the working device is forward.

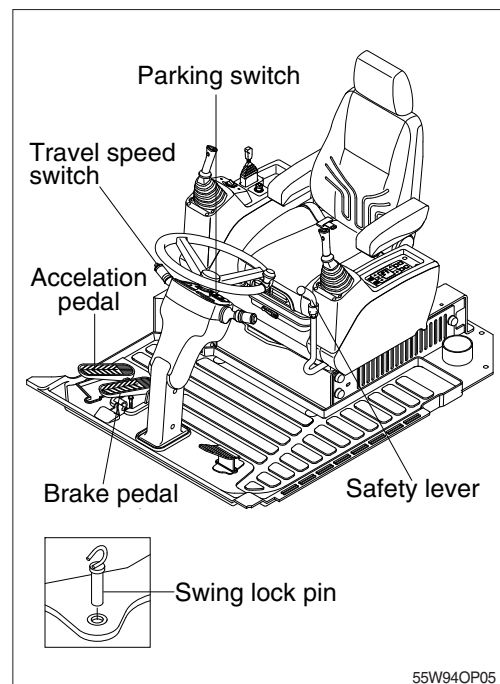
- ▲ **Travel directions will be reversed if lower structure is positioned with dozer in front.**



#### (2) Traveling operation

When warm-up operation is completed after the engine is started, move the machine according to the following procedure.

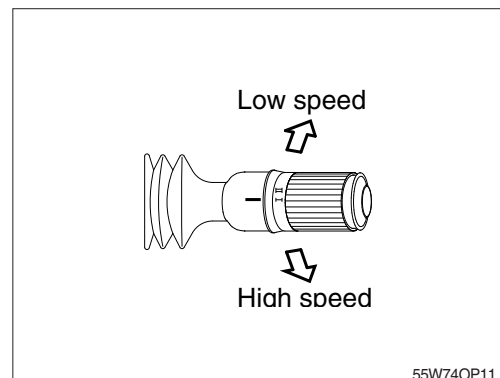
- ① Set the swing lock pin to release position.
  - ② Release the safety lever.
  - ③ Put the parking switch in the traveling position.
  - ④ Lift up the dozer blade.
  - ⑤ Select traveling direction.
  - ⑥ Place the travel speed switch in low speed.
  - ⑦ Press gently the acceleration pedal to move the machine.
- ※ **When speed up on a slope, a noise for valve of travel motor may occur. It is not out of order in machine but peculiar sound.**
  - ※ **Be sure that the brake works normally on the safe place before fast traveling.**



#### (3) Changing speed

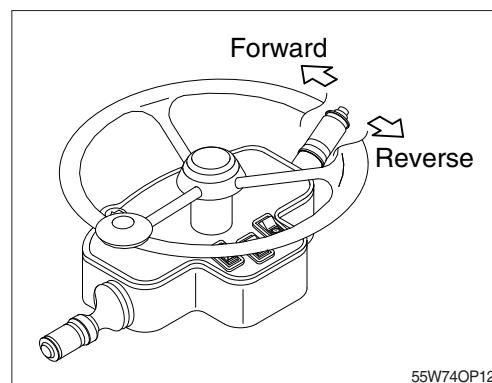
If you want to change the speed, select the travel speed switch desired position.

- ※ **Foot operated park brake needs to be fully applied before machine will allow change from low speed to high speed or opposite.**
- ▲ **Do not start the machine abruptly after changing speed.**



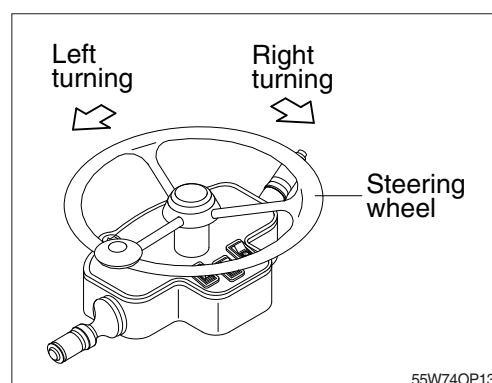
#### (4) Changing direction (forward/reverse)

- ① **Be sure to stop the machine** when changing the direction forward or backward while traveling.
  - ② Put the levers in the desired position to change direction.
- ※ **When changing direction, check beforehand there is no obstacle in the direction you will be headed.**
  - ※ **It could be cause of machine failure to change the direction forward or backward while traveling.**



#### (5) Turning the machine

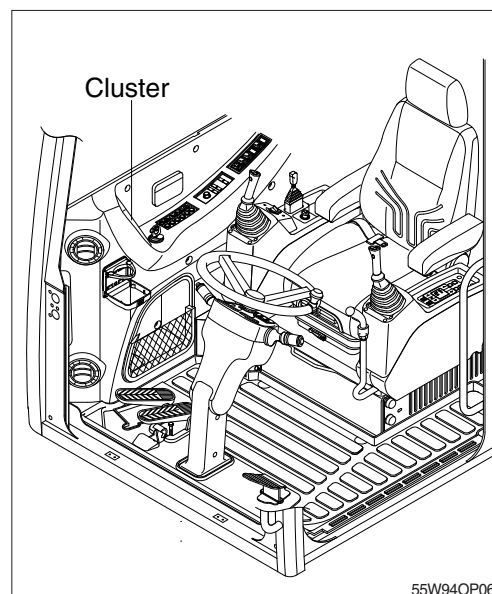
- ① Turn the machine by moving the steering wheel into the desired direction.
  - ② You can turn the machine to the left or right.
- ※ **Do not turn the machine abruptly when traveling at high speed and avoid turn on a slope.**
  - ▲ **Steering does not function with engine OFF.**



#### (6) Precautions when driving

The operators must be familiar with the following precautions including general safety hints.

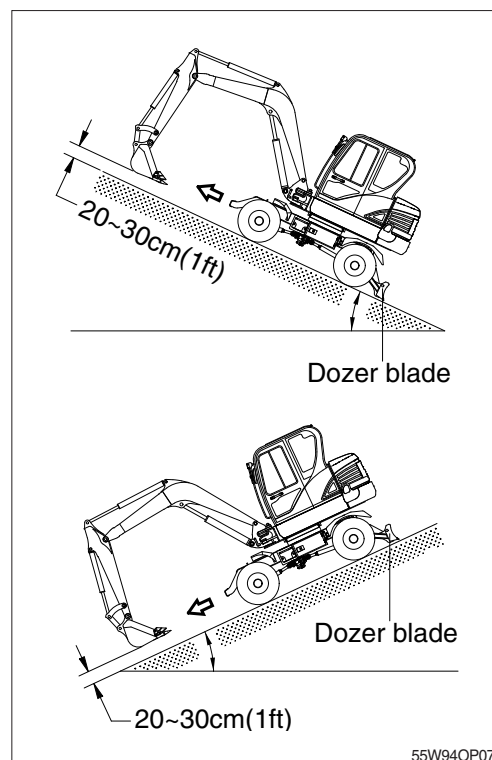
- ① If the warning lamp lights up on the cluster, stop the machine immediately and check carefully whether the relevant parts are out of order or not.
- ② Do not allow the engine to run at overload.
- ③ Stop the engine and check as soon as finding out abnormal noise or smell.
- ④ Check the gauges frequently.
- ⑤ Do not allow passengers or riders on the machine while it is running or in operation.
- ⑥ Never get on or off the machine while it is moving.





## 2) TRAVELING ON A SLOPE

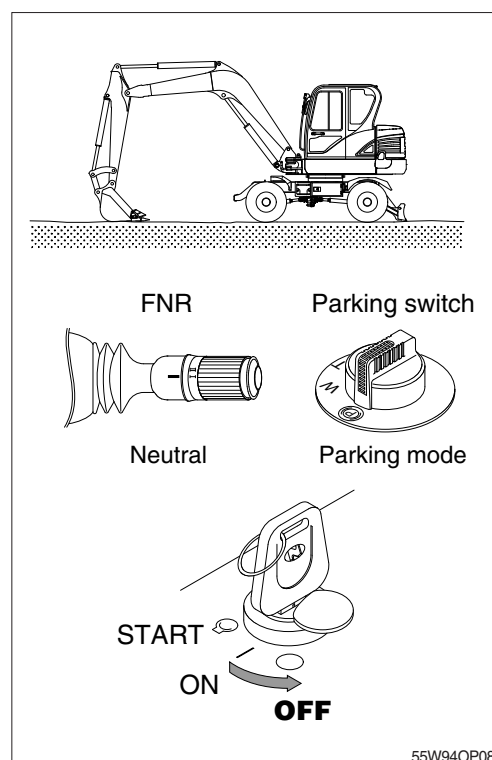
- (1) Never travel down a slope in neutral.
  - (2) Lower the bucket 20 to 30 cm (1 ft) to the ground so that it can be used as a brake in an emergency.
  - (3) If the machine starts to slide or loses stability, lower the bucket immediately and brake the machine.
  - (4) When parking on a slope, use the bucket as a brake and place blocks behind the tires 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.**



## 3) PARKING THE MACHINE

To park the machine, keep the steps below.

- (1) Release the acceleration pedal slowly.
  - (2) Depress the brake pedal.
  - (3) Place the FNR lever in the neutral.
  - (4) Put the parking switch in the parking position and release the brake pedal.
  - (5) Lower the bucket and dozer blade to the ground.
  - (6) Stop the engine, place the start key switch in the OFF and remove the key.
  - (7) Lock the swing lock pin and the cab door.
- ※ **Whenever parking on a slope, always block the tires after lowering the bucket to the ground.**
- ※ **Contain the swing lock pin in the tool box to avoid loss.**





#### 4) TOWING THE MACHINE

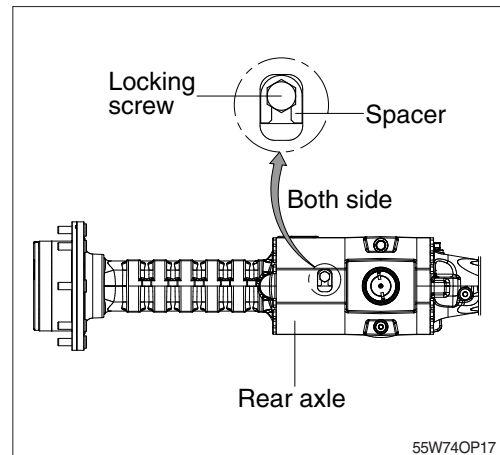
Except for an emergency, do not tow this machine.  
If it is inevitable to tow this machine, observe the following.

##### (1) General

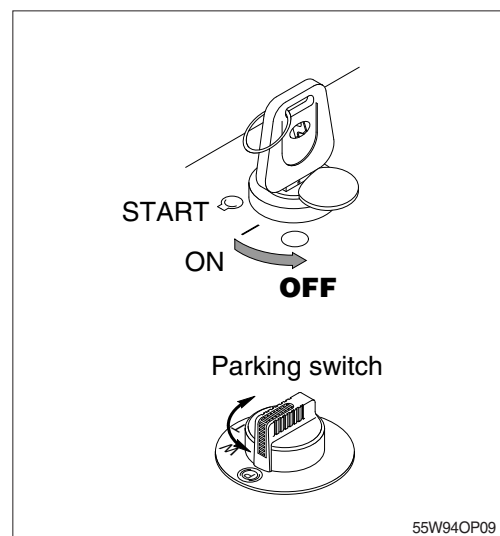
- ① Parking brake cylinder of the machine is operated by the spring force and released by hydraulic pressure.  
If the engine does not operate, the brake will be operated to stop the machine.
  - ② When the machine is towed move it for a repair to nearby place at the low speed.  
Transport it on a trailer, if it has to be moved for a long distance.
  - ③ When the steering device and the brake of the machine to be towed can not be operated, transport by trailer.
- ▲ Injury or death could result if a disabled machine is towed incorrectly.
  - ▲ If your machine is towed by another machine, ALWAYS use a wire rope with a sufficient towing capacity.
  - ▲ NEVER allow a disabled machine to be towed on a slope.
  - ▲ When connecting up a towing machine, do not let anyone enter the area between the towing machine and the equipment being towed.
  - ▲ Set the towing machine and the towing connection of the equipment being towed in a straight line when connecting it.
  - ▲ Never tow machine using a light-duty towing hook.

## (2) Towing the machine

- ① When moving the machine or in case of an emergency towing, the power flow between final drive (spur gear drive) and travel motor will be interrupted.
- ② For this purpose, loosen the locking screw and remove the spacer of rear axle.
- ③ Tighten locking screw both side.
- ▲ **Both sides of locking screw must be tightened more and more by turns.**



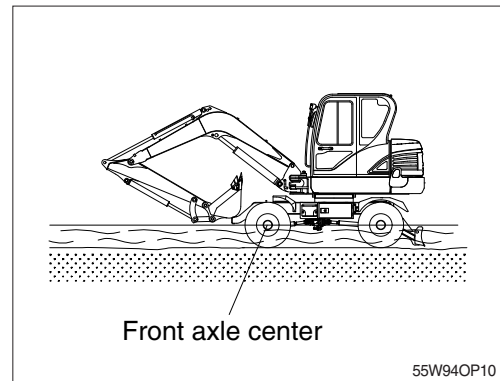
- ④ Turn start key ON position, place parking switch at traveling position to release brake.



## 5) PRECAUTIONS FOR OPERATION

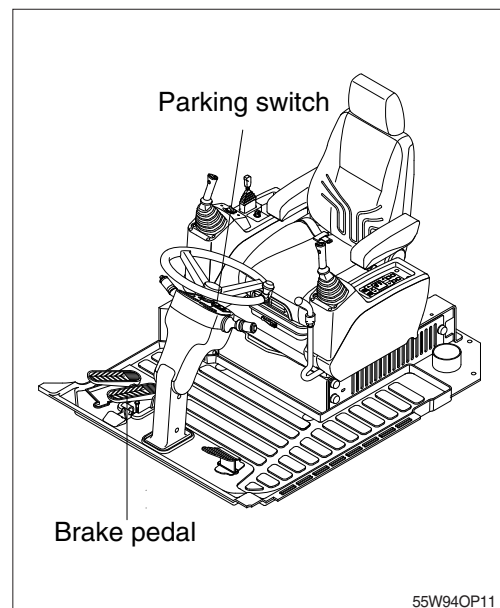
### (1) Permissible water depth

- ① Do not immerse the machine in water by more than the permissible depth (axle center).
- ② For parts that have been immersed in water for a long time, pump in grease until the old grease comes out from the bearings.



### (2) When the brake does not operate

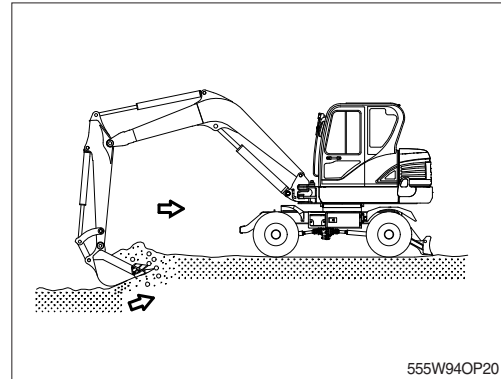
- ① If the machine does not stop even though the brake pedal is applied, use the parking brake to activate the emergency brake by parking switch.
- ※ **After using the parking brake as an emergency brake, ask Hyundai dealer to check complete brake system.**
- ▲ **Never use emergency brake, except when the service brake fails.**



## 6. EFFICIENT WORKING METHOD

1) Do the digging work by arm.

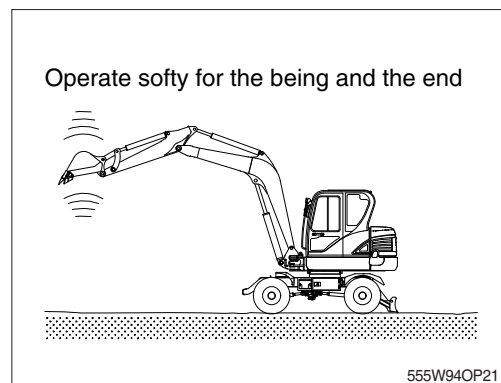
Use the pulling force of arm for digging and use together with the digging force of the bucket if necessary.



555W94OP20

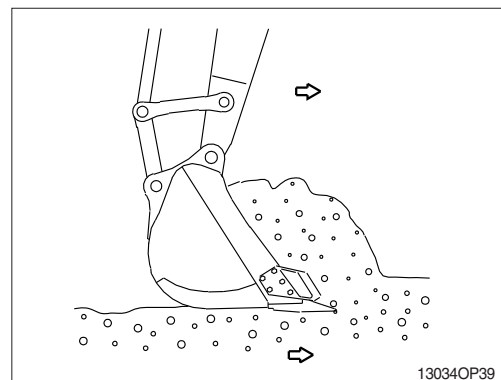
2) When lowering and raising the boom operate softly for the beginning and the end.

In particularly, sudden stops while lowering the boom may cause damage to the machine.



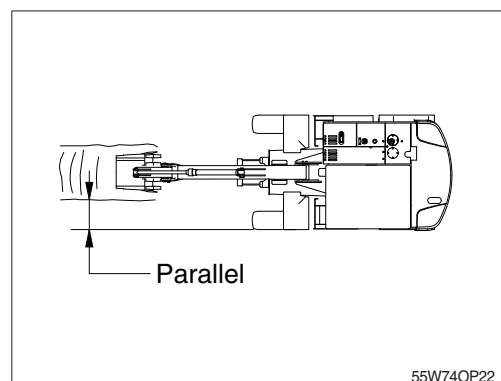
555W94OP21

3) The digging resistance and wearing of tooth can be reduced by putting the end of bucket tooth to the digging direction.



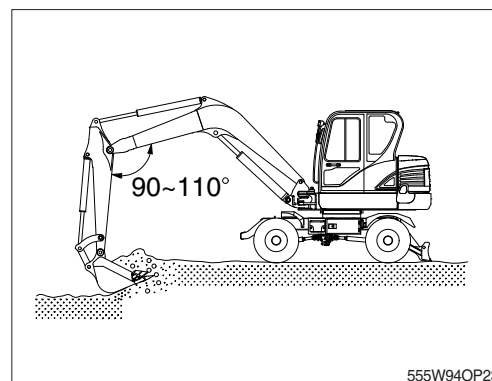
13034OP39

4) Set the tracks parallel to the line of the ditch to be excavated when digging ditch. Do not swing while digging.

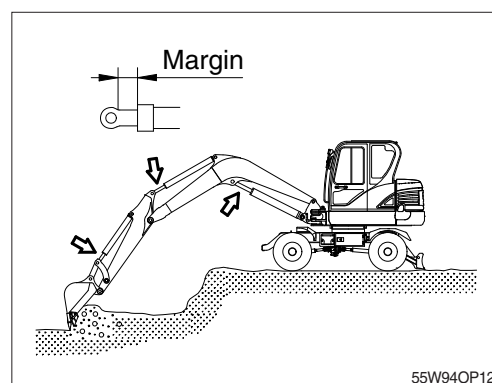


55W74OP22

- 5) Dig slowly with keeping the angle of boom and arm, 90-110 degree when maximum digging force is required.

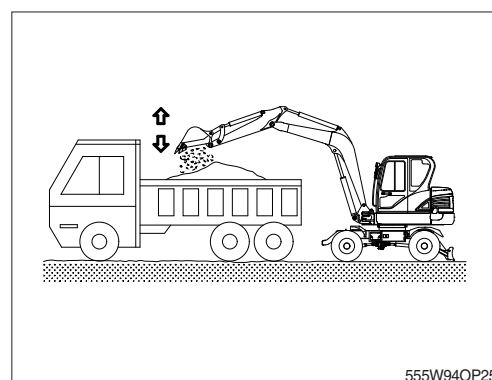


- 6) Operate leaving a small safety margin of cylinder stroke to prevent damage of cylinder when working with the machine.

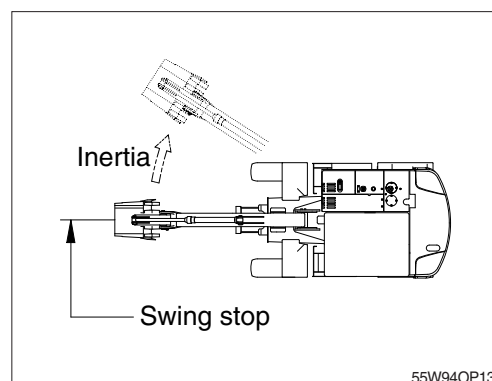


- 7) Keep the bucket to the dumping position and the arm horizontal when dumping the soil from the bucket.  
Operate bucket lever 2 or 3 times when hard to dump.

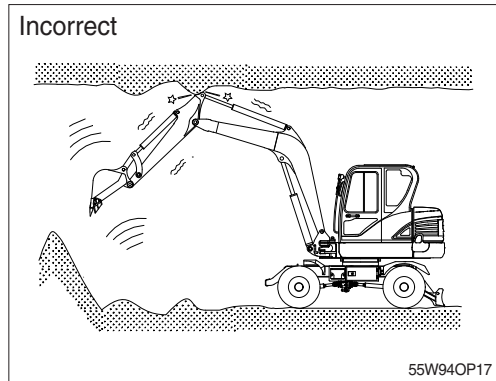
※ Do not use the impact of bucket tooth when dumping.



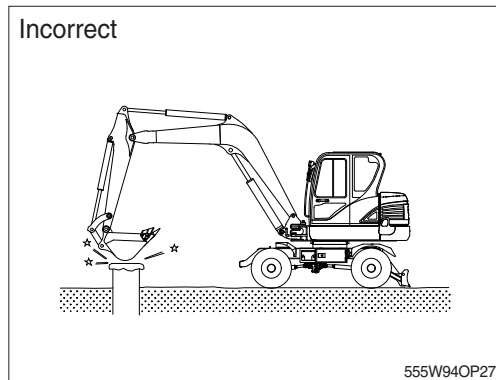
- 8) Operate stop of swing considering the swing slip distance is created by inertia after neutralizing the swing lever.



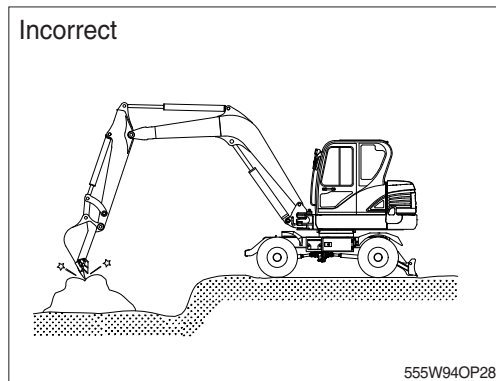
- 9) If the excavation is in an underground location or in a building, make sure that there is adequate overhead clearance and that there is adequate ventilation.



- 10) Do not use the dropping force of the work equipment for digging.  
The machine can be damaged by the impact.



- 11) Do not use the bucket to crack hard objects like concrete or rocks.  
This may break a tooth or pin, or bend boom.



## 12) NEVER CARRY OUT EXCESSIVE OPERATIONS

Operation exceeding machine performance may result in accident or failure.

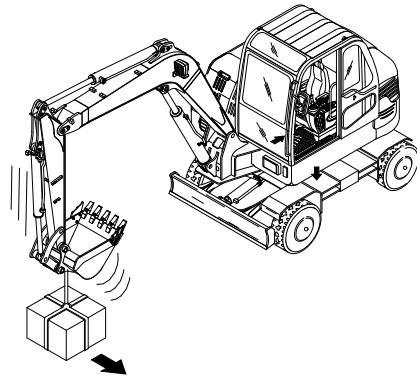
Carry out lifting operation within specified load limit.

Never carry out operations which may damage the machine such as overload or over-impact-load.

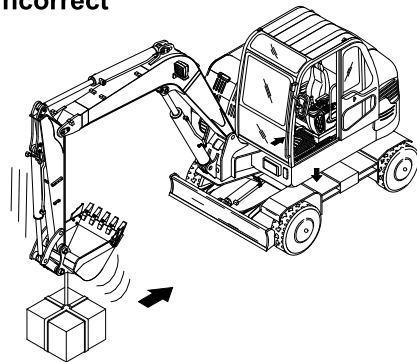
Never travel while carrying a load.

In case you need installing over load warning device for object handling procedure, please contact Hyundai distributor.

**Incorrect**



**Incorrect**



55W7A4OP30

### 13) 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.

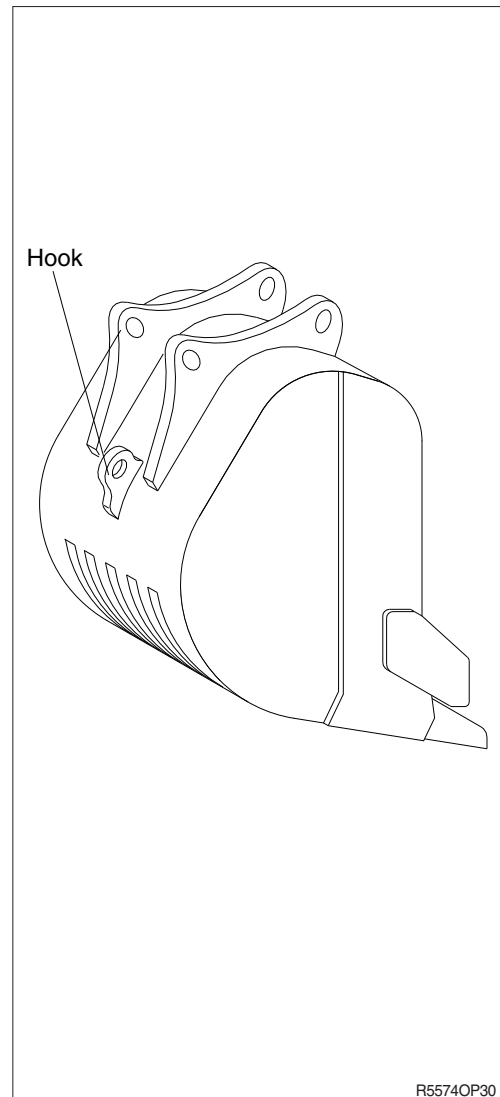
Due to the possible danger of the load falling or of collision with the load, no persons shall be allowed in the working area.

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.

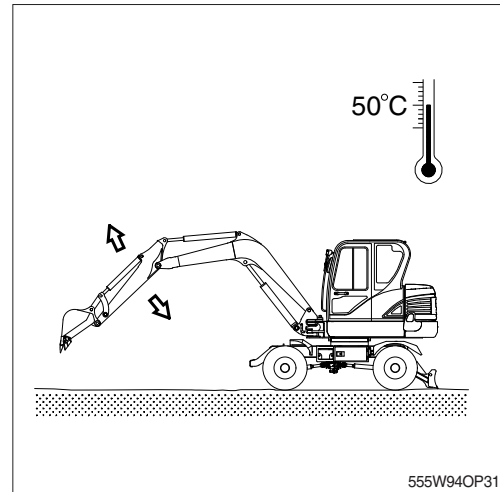




## 7. OPERATION IN THE SPECIAL WORK SITES

### 1) OPERATION THE MACHINE IN A COLD WEATHER

- (1) Use proper engine oil and fuel for the weather.
- (2) Fill the required amount of antifreeze in the coolant.
- (3) Refer to the starting engine in cold weather.  
Start the engine and extend the warming up operation.
- (4) Be sure to open the heater cock when using the heater.
- (5) Always keep the battery completely charged.  
※ **Discharged batteries will freeze more easily than fully charged.**
- (6) Clean the machine and park on the wood plates.



### 2) OPERATION IN SANDY OR DUSTY WORK SITES

- (1) Inspect air cleaner element frequently. Clean or replace element more frequently, if warning lamp comes ON and buzzer sounds simultaneously, regardless of inspection period.  
※ **Replace the inner and outer element after 4 times of cleaning.**
- (2) Inspect radiator, oil cooler and condenser frequently, and keep cooling fins clean.
- (3) Prevent sand or dust from getting into fuel tank and hydraulic tank during refilling.
- (4) Prevent sand or dust from penetrating into hydraulic circuit by tightly closing breather cap of hydraulic oil tank. Replace hydraulic oil filter and air breather element frequently. Also, replace the fuel filter frequently.
- (5) Keep all lubricated part, such as pins and bushings, clean at all times.
- (6) If the air conditioner and heater filters clogged, the heating or cooling capacity will drop. Clean or replace the filter element more frequently.
- (7) Clean electrical components, especially the starting motor and alternator to avoid accumulation of dust.

### **3) SEA SHORE OPERATION**

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

### **4) OPERATION IN MUD, WATER OR RAIN WORK SITES**

- (1) Perform a walk around inspection to check for any loose fittings, obvious damage to the machine or any fluid leakage.
- (2) After completing operations, clean mud, rocks or debris from the machine. Inspect for damage, cracked welds or loosened parts.
- (3) Perform all daily lubrication and service.
- (4) If the operations were in salt water or other corrosive materials, make sure to flush the affected equipment with fresh water.

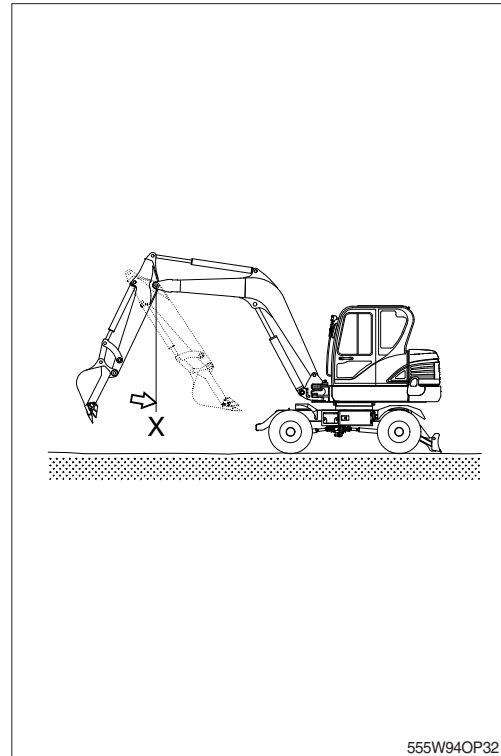
### **5) OPERATION IN ROCKY WORK SITES**

- (1) Check for damage to the undercarriage and for looseness, flaws, wear and damage in bolts and nut.
- (2) Loosen the track tension a little when working in such areas.
- (3) Do not turn the undercarriage directly over the sharp edge rock.

## 8. NORMAL OPERATION OF EXCAVATOR

Followings may occur during operation due to the nature of a hydraulic excavator.

- 1) When rolling in the arm, the roll-in movement stop momentary at point X in the picture shown, then recovers speed again after passing point X.  
The reason for this phenomenon is that movement by the arm weight is faster than the speed of oil flow into the cylinder.
- 2) When lowering the boom, one may hear continuous sound.  
This is caused by oil flow in the valve.
- 3) Overloaded movement will produce sound caused by the relief valves, which are for the protection of the hydraulic systems.
- 4) When the machine is started swing or stopped, a noise near the swing motor may be heard. The noise is generated when the brake valve relieves.



## 9. ATTACHMENT LOWERING (when engine is stopped)

- 1) On machines equipped with an accumulator, for a short time (within 2 minutes) 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.

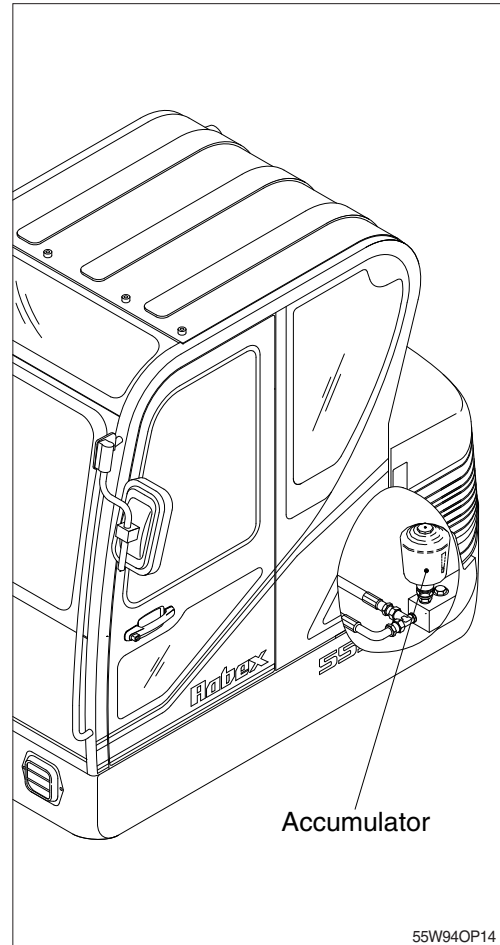
**▲ Be sure no one is under or near the attachment before lowering the boom.**

- 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.**



## 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 and dried.  
Grease each lubrication part.

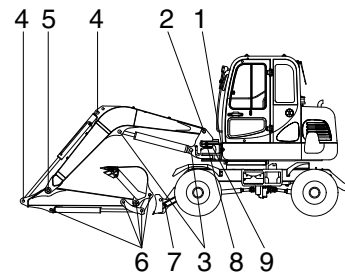
#### (2) Lubrication position of each part

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.



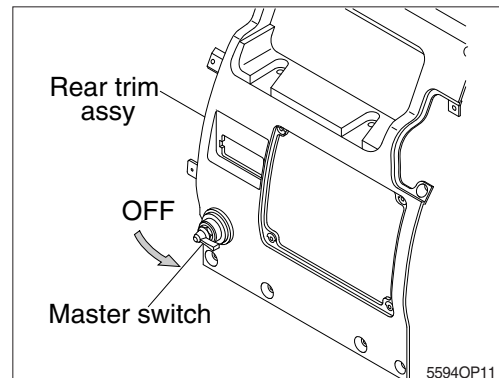
- 1 Lubricating manifold(4EA)
- 2 Boom connection pin(2EA)
- 3 Boom cylinder pin(2EA)
- 4 Arm cylinder pin(2EA)
- 5 Boom and arm connection pin(1EA)
- 6 Arm and bucket(5EA)
- 7 Dozer blade and cylinder(4EA)
- 8 Boom swing post pin(2EA)
- 9 Boom swing cylinder pin(1EA)

55W740P33

#### (3) Master switch

Turn OFF the master switch mounted in the rear trim assy of the cab.

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

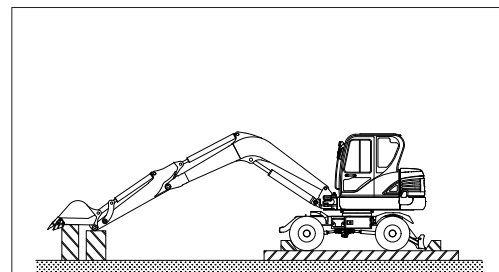


55940P11

#### (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.

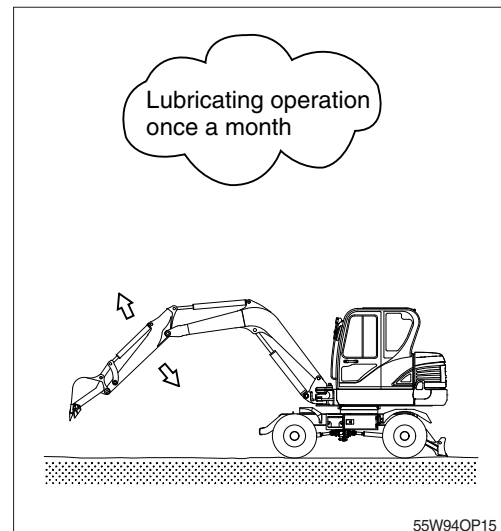


555W940P34

## 2) DURING STORAGE

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

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



### ※ BATTERY

- ① Once a month, start the engine for 15 minutes (or use a charger) to charge the battery.
- ② Every 2 months, check the battery voltage and keep battery voltage over 12.54V.
- ③ If the machine stock period is over 6 months, disconnect the battery negative (-) terminal.

## 3) AFTER STORAGE

Carry out the following procedure when taking out of a long time storage.

- (1) Wipe off the anticorrosive lubricant on the hydraulic piston rod.
- (2) Completely fill fuel tank, lubricate and add oil.

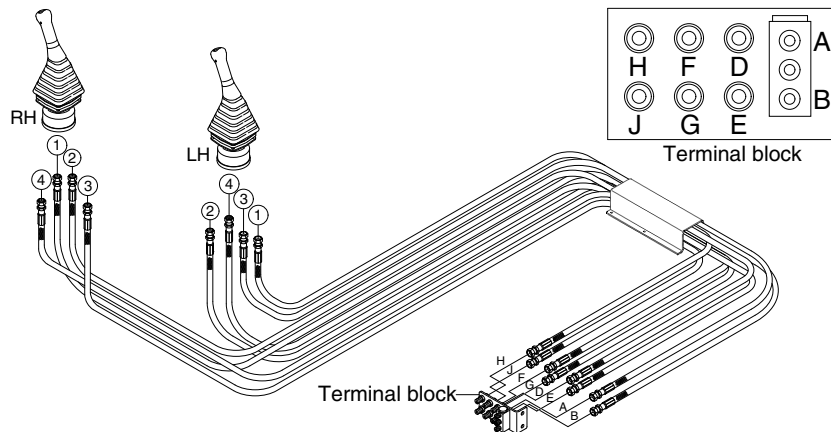
### (3) When storage period is 6 months over

If the machine stock period is over 6 months, carry out the following procedure.

This procedure is to drain condensation water for the **swing reduction gear** durability.

- ※ Remove the drain port plug and drain the water until the gear oil comes out and then tighten the drain plug.
- ※ Refer to the service instruction, section 6 for the drain plug location.
- ※ If the machine is stored without carrying out the monthly lubricating operation, consult your Hyundai dealer for service.

## 11. RCV LEVER OPERATING PATTERN

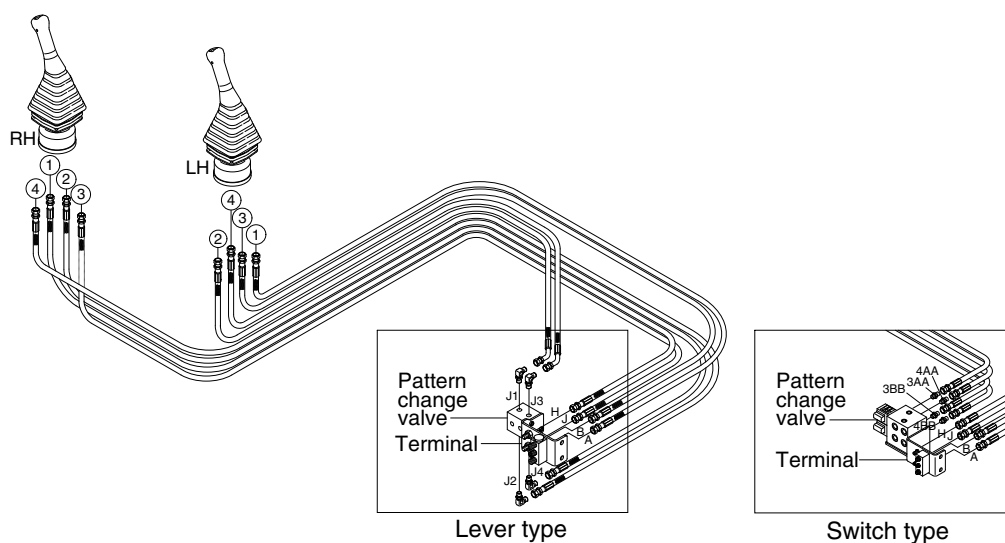


※ Whenever a change is made to the machine control pattern also exchange the pattern label in the cab to match the new pattern.

55940P12

Pattern	Operation		Control function	Hose connection (port)			
	Left	Right		RCV lever	Change of Terminal block		
					From	To	
ISO Type			Left	1 Arm out	②	D	-
Hyundai				2 Arm in	④	E	-
			3 Swing right	③	B	-	
			4 Swing left	①	A	-	
			Right	5 Boom lower	④	G	-
6 Boom raise	②	F		-			
7 Bucket out	①	H		-			
8 Bucket in	③	J		-			
A Type			Left	1 Boom lower	②	D	J
Right	2 Boom raise	④		E	H		
	3 Swing right	③	B	-			
	4 Swing left	①	A	-			
	5 Arm out	④	G	D			
	6 Arm in	②	F	E			
	7 Bucket out	①	H	-			
8 Bucket in	③	J	-				
B Type			Left	1 Boom lower	②	D	J
Right	2 Boom raise	④		E	H		
	3 Bucket in	③	B	F			
	4 Bucket out	①	A	G			
	5 Arm out	④	D	D			
	6 Arm in	②	F	E			
	7 Swing right	①	H	B			
8 Swing left	③	J	A				
C Type			Left	1 Swing right	②	D	J
Right	2 Swing left	④		E	H		
	3 Arm in	③	B	F			
	4 Arm out	①	A	G			
			Right	Same as ISO type			

## RCV LEVER OPERATING PATTERN (option, A type)



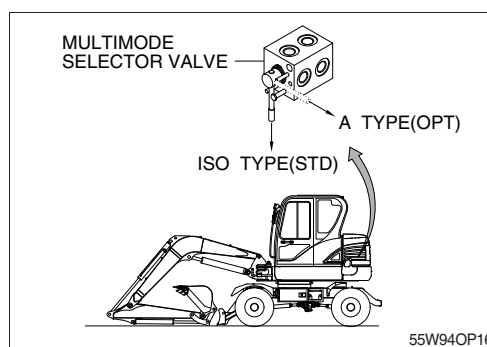
5594OP14

Pattern	Operation		Control function	Hose connection (port)		
	Left	Right		RCV lever	Valve	
A type			Left	1 Boom lower	②	J1 / 3AA
				2 Boom raise	④	J3 / 3BB
				3 Swing right	③	terminal B
				4 Swing left	①	terminal A
			Right	5 Arm out	④	J2 / 4AA
				6 Arm in	②	J4 / 4BB
				7 Bucket out	①	terminal H
				8 Bucket in	③	terminal J

### ■ Lever type

1) The machine control pattern can easily be changed from the "ISO" type to the "A" type by changing the position of the lever.

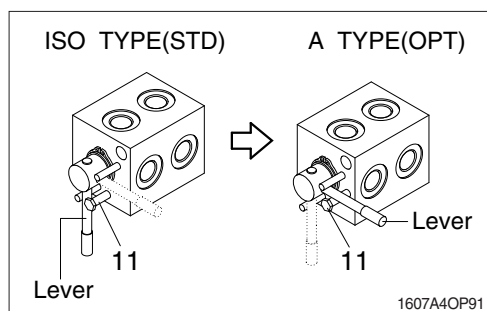
▲ Before starting the machine, check the lever position of pattern change valve and actual operating of attachment.



55W94OP16

### 2) Change of operating pattern (ISO → A type)

- (1) Loosen bolt (11).
- (2) Move lever from the "ISO" type to "A" type position.
- (3) After setting the lever, tighten bolt to secure lever.



1607A4OP91

■ Switch type : Please refer to the page 3-29, pattern change switch.



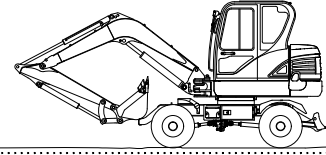
## 1. ROAD TRAVELING

As this machine can run at the maximum speed of 30.5km/h, it is not necessary to transport the machine on trailer in a short distance.

But the transportation by the trailer is convenient in a long distance.

If it is necessary to travel on a road, observe the followings.

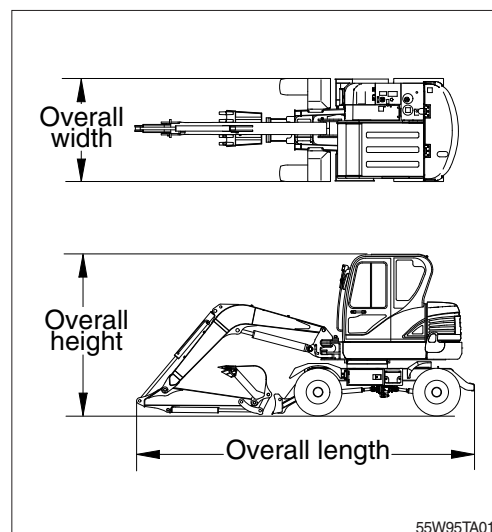
- 1) Comply with regulations regarding this machine for the sake of safety.
- 2) Perform daily inspection before starting the machine.
- 3) Cross the bridge after checking that it will safely support the machine weight. If the bridge can not support, a detour must be prepared or the bridge must be reinforced.
- 4) When traveling for a long distance, stop every hour to allow tires and other components to cool down and check any abnormality.
- 5) Drive with the bucket empty.



55W95TA06

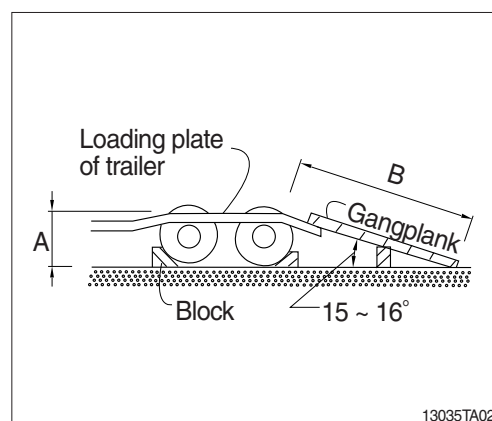
## 2. PREPARATION FOR TRANSPORTATION

- 1) When transporting the machine, observe the various road rules, road transportation vehicle laws and vehicle limit ordinances, etc.
- 2) Select proper trailer after confirming the weight and dimension from the chapter 2, specification.
- 3) Check the whole route such as the road width, the height of bridge and limit of weight and etc., which will be passed.
- 4) Get the permission from the related authority if necessary.
- 5) Prepare suitable capacity of trailer to support the machine.



- 6) Prepare gangplank for safe loading referring to the below table and illustration.

A	B
1.0	3.65 ~ 3.85
1.1	4.00 ~ 4.25
1.2	4.35 ~ 4.60
1.3	4.75 ~ 5.00
1.4	5.10 ~ 5.40
1.5	5.50 ~ 5.75

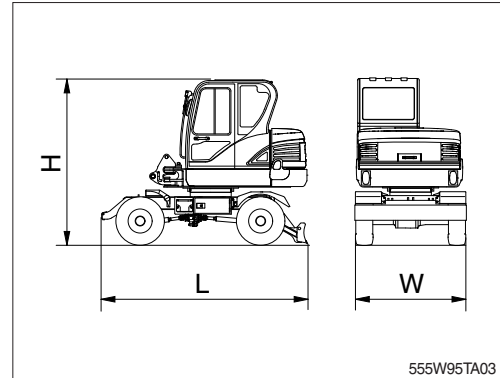


### 3. DIMENSION AND WEIGHT

#### 1) Base machine

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	3580 (11' 9")
H	Height	mm (ft-in)	2850 ( 9' 4")
Wd	Width	mm (ft-in)	1925 ( 6' 4")
Wt	Weight	kg (lb)	4760 (10490)

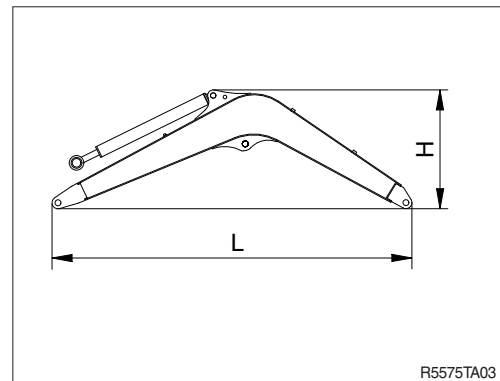
※ With 210 kg (460 lb) counterweight.



#### 2) Boom assembly

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	3120 (10' 3")
H	Height	mm (ft-in)	1140 ( 3' 9")
Wd	Width	mm (ft-in)	250 ( 0'10")
Wt	Weight	kg (lb)	300 (660)

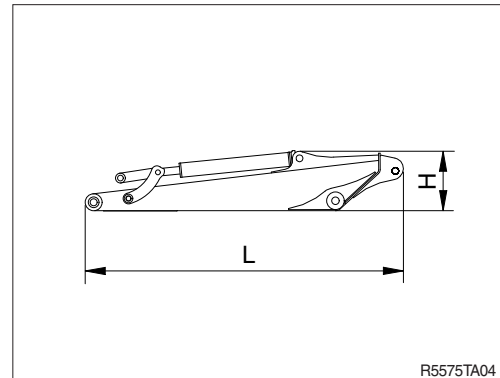
※ 3.0 m (9'10") boom with arm cylinder (included piping and pins).



#### 3) Arm assembly

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	2130 ( 6'12")
H	Height	mm (ft-in)	450 ( 1' 6")
Wd	Width	mm (ft-in)	170 ( 0' 7")
Wt	Weight	kg (lb)	205 (450)

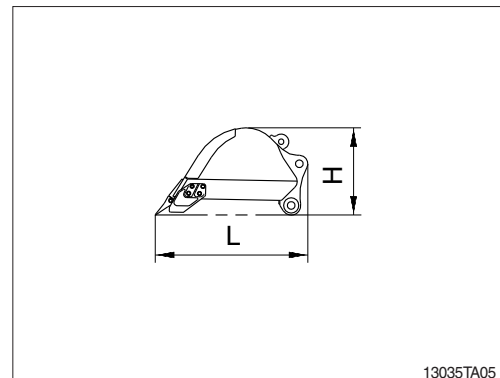
※ 1.6 m (5' 3") arm with bucket cylinder (included linkage and pins).



#### 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)

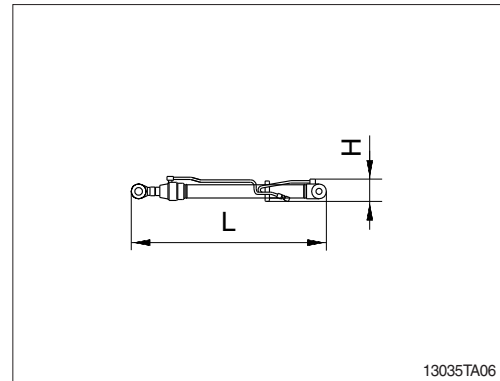
※ 0.18 m<sup>3</sup> (0.24 yd<sup>3</sup>) SAE heaped bucket (Included tooth and side cutters).



### 5) Boom cylinder

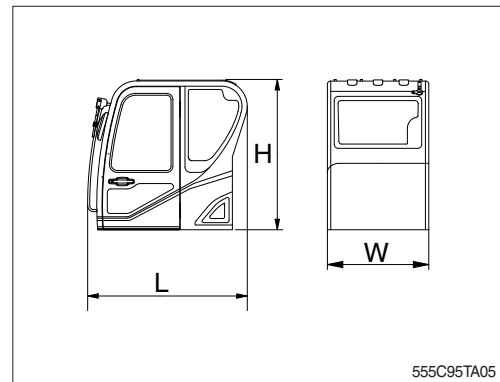
Mark	Description	Unit	Specification
L	Length	mm (ft-in)	1210 ( 3' 12")
H	Height	mm (ft-in)	150 ( 0' 6")
Wd	Width	mm (ft-in)	280 ( 0' 11")
Wt	Weight	kg (lb)	70 (155)

※ Included piping.



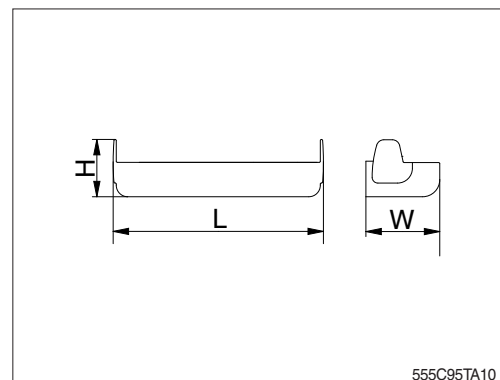
### 6) Cab assembly

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	1650 ( 5' 5")
H	Height	mm (ft-in)	1530 ( 5' 0")
Wd	Width	mm (ft-in)	1060 ( 3' 6")
Wt	Weight	kg (lb)	350 (770)



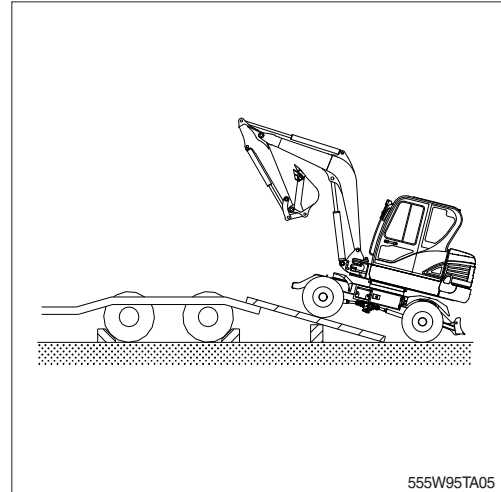
### 7) Counterweight

Mark	Description	Unit	Specification
L	Length	mm (ft-in)	1850 ( 6' 1")
H	Height	mm (ft-in)	420 ( 1' 5")
Wd	Width	mm (ft-in)	645 ( 2' 1")
Wt	Weight	kg (lb)	210 (460)

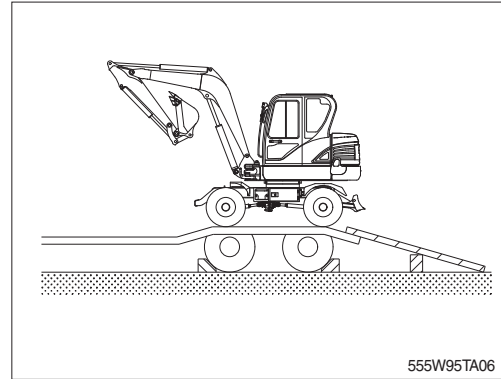


## 4. LOADING THE MACHINE

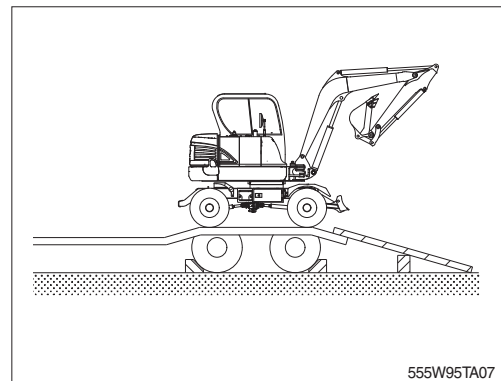
- 1) Load and unload the machine on a flat ground.
- 2) Use the gangplank with sufficient length, width, thickness and gradient.
- 3) Place block tires of the truck and the trailer not to move the trailer.
- 4) Place the swing lock device to the **LOCK** position before fixing the machine at the bed of trailer and confirm if the machine parallels the bed of trailer.
- 5) Drive straight and depress the acceleration pedal slowly on the gangplank with the two speed switch positioned as low speed.



- 6) Do the following after loading the machine to the trailer.
  - (1) Stop loading when the machine is located horizontally with the rear wheel of trailer.



- (2) Place the swing lock device to the **LOCK** position after the swing the machine 180 degree.



(3) Lower the working equipment gently after the location is determined.

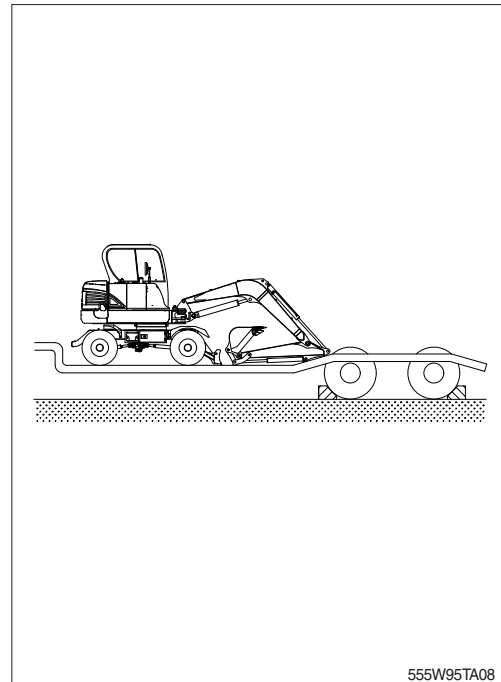
※ **Place rectangular timber under the bucket cylinder to prevent the damage of it during transportation.**

▲ **Be sure to keep the travel speed switch on the low speed while loading and unloading the machine.**

▲ **Avoid using the working equipment for loading and unloading since it will be very dangerous.**

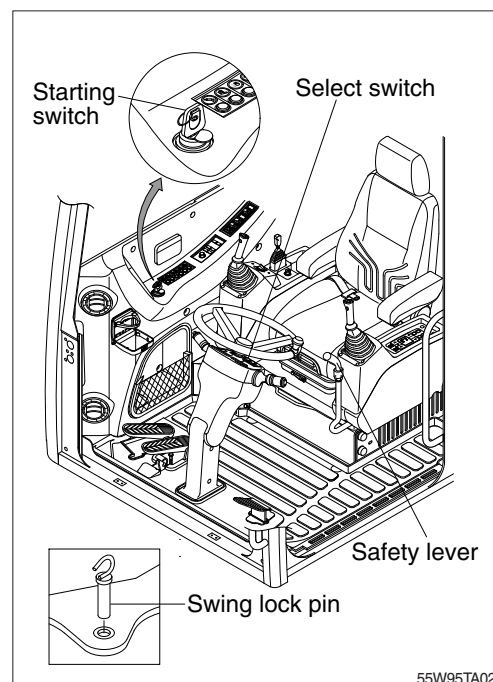
▲ **Do not operate any other device when loading.**

▲ **Be careful on the boundary place of loading plate or trailer as the balance of machine will abruptly be changed on the point.**

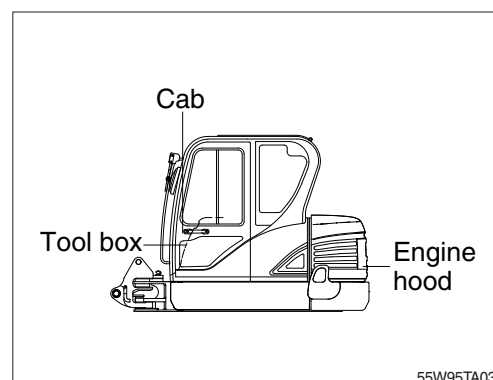


## 5. FIXING THE MACHINE

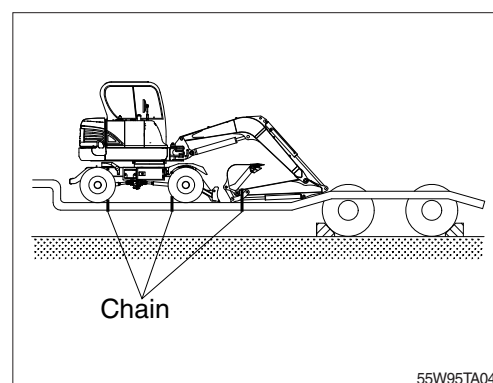
- 1) Place the swing lock pin on the LOCK position.
- 2) Place the parking switch to the parking position.
- 3) Keep the safety lever on the SAFETY position.
- 4) Turn OFF all the switches and remove the key.



- 5) Secure all locks.



- 6) Place timber underneath of the tires and fix firmly with wire rope to prevent the machine from moving forward, backward, right or left.



## 6. LOADING AND UNLOADING BY CRANE

- 1) Check the weight, length, width and height of the machine referring to the chapter 2, specification when you are going to hoist the machine.
- 2) Use long wire rope and stay to keep the distance with the machine as it should avoid touching with the machine.
- 3) Put a rubber plate contact with wire rope and machine to prevent damage.
- 4) Place crane on the proper place.
- 5) Install the wire rope and stay like the illustration.

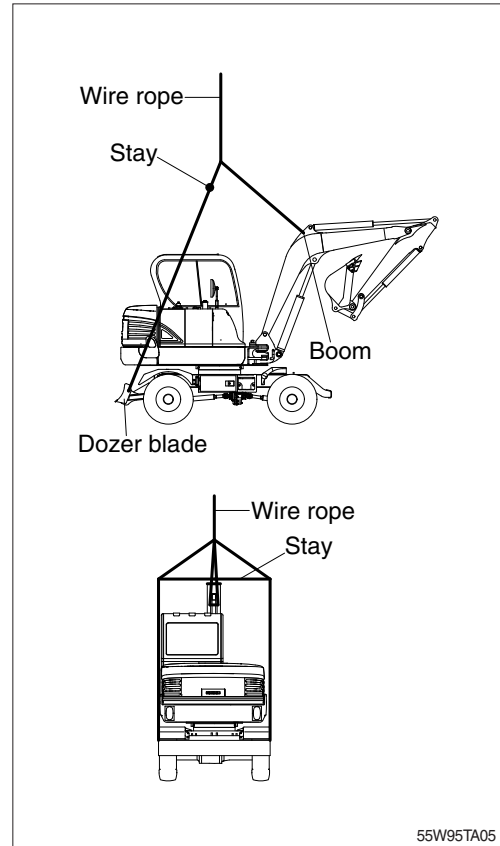
**⚠ Make sure wire rope is proper size.**

**⚠ Place the safety lever to LOCK position to prevent the machine moving when hoisting the machine.**

**⚠ The wrong hoisting method or installation of wire rope can cause damage to the machine.**

**⚠ Do not load abruptly.**

**⚠ Keep area clear of personnel.**

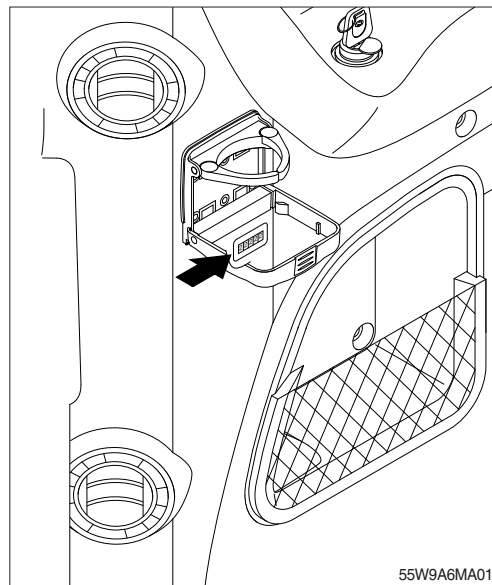




## 1. INSTRUCTION

### 1) INTERVAL OF MAINTENANCE

- (1) You may inspect and service the machine by the period as described at page 6-11 based on hour meter at cluster.
- (2) Shorten the interval of inspect and service depending on site condition.(Such as dusty area, quarry, sea shore and etc.)
- (3) Practice the entire related details at the same time when the service interval is doubled.  
For example, in case of 100hours, carry out all the maintenance 「Each 100hours, each 50 hours and daily service」 at the same time.



### 2) PRECAUTION

- (1) Start to maintenance after you have the full knowledge of machine.
- (2) The monitor installed on this machine does not entirely guarantee the condition of the machine.  
Daily inspection should be performed according to clause 4, maintenance check list.
- (3) Engine and hydraulic components have been preset in the factory.  
Do not allow unauthorized personnel to reset them.
- (4) Ask to your local dealer or Hyundai for the maintenance advice if unknown.
- (5) Drain the used oil and coolant in a container and handle according to the method of handling for industrial waste to meet with regulations of each province or country.

### 3) PROPER MAINTENANCE

#### (1) Replace and repair of parts

It is required to replace the wearable and consumable parts such as bucket tooth, side cutter, filter and etc., regularly.

Replace damaged or worn parts at proper time to keep the performance of machine.

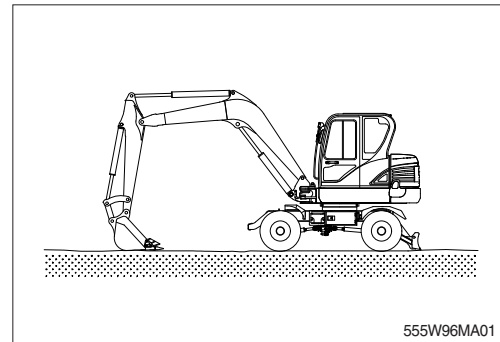
- (2) Use genuine parts.
  - (3) Use the recommended oil.
  - (4) Remove the dust or water around the inlet of oil tank before supplying oil.
  - (5) Drain oil when the temperature of oil is warm.
  - (6) Do not repair anything while operating the engine.  
Stop the engine when you fill the oil.
  - (7) Relieve hydraulic system of the pressure before repairing the hydraulic system.
  - (8) Confirm if the cluster is in the normal condition after completion of service.
  - (9) For more detail information of maintenance, please contact local Hyundai dealer.
- ※ **Be sure to start the maintenance after fully understand the chapter 1, safety hints.**

#### 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.

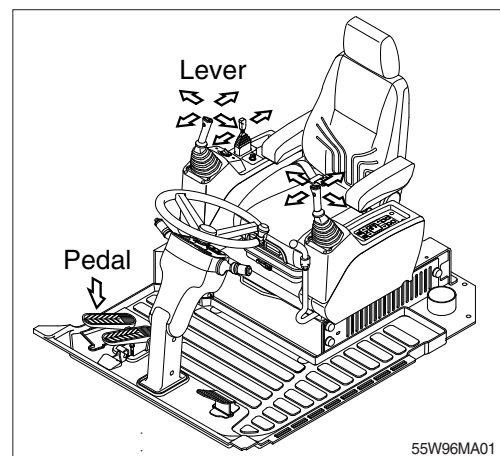
Be sure to relieve the pressure in the system before repairing hydraulic system.

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

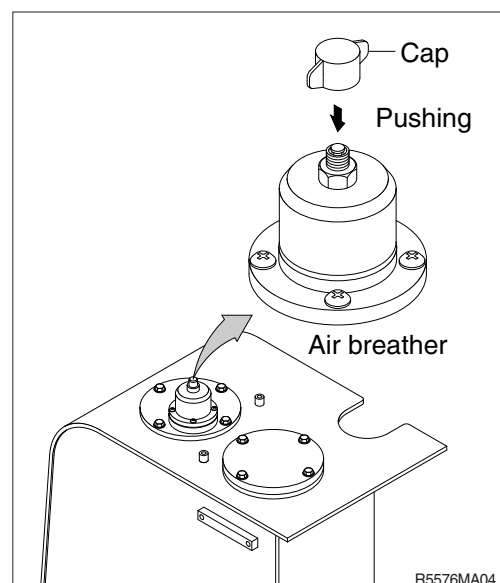


- (2) Set the safety lever completely in the release position, operate the control levers and pedals fully to the front, rear, left and right, to release the pressure in the hydraulic circuit.

※ **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.



## **5) PRECAUTION WHEN INSTALLING HYDRAULIC HOSES OR PIPES**

- (1) Be particularly careful that the joint of hose, pipe and functioning item are not damaged.  
Avoid contamination.
- (2) Assemble after cleaning the hose, pipe and joint of functioning item.
- (3) Use genuine parts.
- (4) Do not assemble the hose in the condition of twisted or sharp radius.
- (5) Keep the specified tighten torque.

## 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	
	Brake line	Service brake line hose	Every 2 years
		Parking brake line hose	
		Steering 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.

## 2. TIGHTENING TORQUE

Use following table for unspecified torque.

### 1) BOLT AND NUT

#### (1) Coarse thread

Bolt size	8T		10T	
	kgm	lbft	kgm	lbft
M 6 × 1.0	0.85 ~ 1.25	6.15 ~ 9.04	1.14 ~ 1.74	8.2 ~ 12.6
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
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 × 3.0	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	
	kgm	lbft	kgm	lbft
M 8 × 1.0	2.2 ~ 3.4	15.9 ~ 24.6	3.0 ~ 4.4	21.7 ~ 31.8
M10 × 1.2	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

**2) PIPE AND HOSE (FLARE type)**

Thread size (PF)	Width across flat (mm)	kgf·m	lbf·ft
1/4"	19	4	28.9
3/8"	22	5	36.2
1/2"	27	9.5	68.7
3/4"	36	18	130
1"	41	21	152
1-1/4"	50	35	253

**3) PIPE AND HOSE (ORFS type)**

Thread size (UNF)	Width across flat (mm)	kgf·m	lbf·ft
9/16-18	19	4	28.9
11/16-16	22	5	36.2
13/16-16	27	9.5	68.7
1-3/16-12	36	18	130
1-7/16-12	41	21	152
1-11/16-12	50	35	253

**4) FITTING**

Thread size	Width across flat (mm)	kgf·m	lbf·ft
1/4"	19	4	28.9
3/8"	22	5	36.2
1/2"	27	9.5	68.7
3/4"	36	18	130
1"	41	21	152
1-1/4"	50	35	253

#### 4) TIGHTENING TORQUE OF MAJOR COMPONENT

No.	Descriptions		Bolt size	Torque	
				kgf · m	lbf · ft
1	Engine	Engine mounting bolt (engine-Bracket)	M10 × 1.5	6.9±1.0	50±7.2
2		Engine mounting bolt (bracket-Frame)	M16 × 2.0	25±2.5	181±18.1
3		Radiator mounting bolt, nut	M10 × 1.5	6.9±1.4	50±10.0
4		Cooling fan mounting bolt	M 8 × 1.25	1.8±0.2	13±1.4
5		Coupling mounting socket bolt	M14 × 2.0	14±1.0	101±7.2
		Coupling mounting clamp bolt	M16 × 2.0	11±1.0	79.6±7.2
6	Hydraulic system	Main pump mounting bolt	M12 × 1.75	12.3±3.0	92±22.0
7		Main control valve mounting bolt	M 8 × 1.25	2.5±0.5	18±3.6
8		Travel motor mounting bolt	M12 × 1.75	14.7±2.2	106±15.9
9		Fuel tank mounting bolt	M16 × 2.0	29.7±4.5	215±33
10		Hydraulic oil tank mounting bolt	M16 × 2.0	29.7±4.5	215±33
11		Turning joint mounting bolt, nut	M12 × 1.75	14.7±2.2	106±16.0
12	Power train system	Swing motor mounting bolt	M16 × 2.0	29.7±4.5	215±33.0
13		Swing bearing upper mounting bolt	M16 × 2.0	29.7±4.5	215±33.0
15		Swing bearing lower mounting bolt	M16 × 2.0	29.7±4.5	215±33.0
16		Front axle mounting bolt, nut	M16 × 2.0	29.7±4.5	215±33.0
17		Rear axle mounting bolt, nut	M16 × 2.0	29.7±4.5	215±33.0
18		Gear box mounting bolt	M14 × 2.0	19.6±2.9	142±21.0
19		Oscillating cylinder mounting bolt	M16 × 2.0	29.7±4.5	215±33.0
20		Oscillating cylinder support bolt	M12 × 1.75	12.8±3.0	92.6±22.0
21		Wheel nut	M18 × 1.5	46.0±3.0	333±22.0
22		Front drive shaft mounting bolt, nut	M10 × 1.25	7.4±1.5	53.5±11.0
23		Rear drive shaft mounting bolt, nut	M10 × 1.25	7.4±1.5	53.5±11.0
24	Others	Counterweight mounting bolt	M20 × 2.5	57.8±6.4	418±46.3
25		Cab mounting bolt, nut	M12 × 1.75	12.8±3.0	92±22.0
26		Operator's seat mounting bolt	M 8 × 1.25	1.17±0.1	8.5±0.7



### 3. FUEL, COOLANT AND LUBRICANTS

#### 1) NEW MACHINE

New machine used and filled with following lubricants.

Description	Specification
Engine oil	SAE 15W-40 (API CJ-4)
Hydraulic oil	Hyundai genuine long life hydraulic oil (ISO VG3 2, VG 46, VG 68) Conventional hydraulic oil (ISO VG15, ★ <sup>1</sup> Cold region) Hyundai Bio Hydraulic Oil (HBHO, ISO VG 46)
Swing reduction gear oil	SAE 85W-140 (API GL-5)
Transmission gear oil	SAE 85W-90 LSD (API GL-5)
Axle gear oil	SAE 85W-90 LSD (API GL-5)
Grease	Lithium base grease NLGI No. 2
Fuel	ASTM D975-No. 2, ★ <sup>2</sup> Ultra low sulfur fuel
Coolant	Mixture of 50% ethylene glycol base antifreeze and 50% water.

SAE : Society of Automotive Engineers

API : American Petroleum Institute

ISO : International Organization for Standardization

NLGI : National Lubricating Grease Institute

ASTM : American Society of Testing and Material

★<sup>1</sup> Cold region

- Russia, CIS, Mongolia

★<sup>2</sup> Ultra low sulfur diesel

- Sulfur content ≤ 15 ppm

## 2) RECOMMENDED OILS

HYUNDAI genuine lubricating oils have been developed to offer the best performance and service life for your equipment. These oils have been tested according to the specifications of HYUNDAI and, therefore, will meet the highest safety and quality requirements.

We recommend that you use only HYUNDAI genuine lubricating oils and grease officially approved by HYUNDAI.

Service point	Kind of fluid	Capacity ℓ (U.S. gal)	Ambient temperature °C( °F)								
			-50 (-58)	-30 (-22)	-20 (-4)	-10 (14)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Engine oil pan	Engine oil	11.6 (3.1)	★SAE 5W-40								
								SAE 30			
				SAE 10W							
				SAE 10W-30							
					SAE 15W-40						
Swing drive	Grease	0.2 (0.1)	★NLGI NO.1								
						NLGI NO.2					
	Gear oil	1.5 (0.4)	★SAE 75W-90								
					SAE 85W-140						
Gear box case	Gear oil	1.8 (0.5)									
Front axle		Center: 4.5 (1.19) Hub: 0.4×2 (0.11×2)				SAE 85W-90 LSD(GL-5)					
Rear axle		Center:4.5 (1.19) Hub: 0.4×2 (0.11×2)									
Hydraulic tank	Hydraulic oil	Tank; 70 (18.5)	★ISO VG 15								
				ISO VG 32							
		System; 120 (31.7)			ISO VG 46, HBHO VG 46★ <sup>3</sup>						
					ISO VG 68						
Fuel tank	Diesel fuel★ <sup>1</sup>	117 (30.9)	★ASTM D975 NO.1								
						ASTM D975 NO.2					
Fitting (grease nipple)	Grease	As required	★NLGI NO.1								
						NLGI NO.2					
Radiator (reservoir tank)	Mixture of antifreeze and water★ <sup>2</sup>	9.5 (2.5)				Ethylene glycol base permanent type (50 : 50)					
			★Ethylene glycol base permanent type (60 : 40)								

**SAE** : Society of Automotive Engineers

**API** : American Petroleum Institute

**ISO** : International Organization for Standardization

**NLGI** : National Lubricating Grease Institute

**ASTM** : American Society of Testing and Material

★ : Cold region (Russia, CIS, Mongolia)

★<sup>1</sup> : Ultra low sulfur diesel

- sulfur content ≤ 15 ppm

★<sup>2</sup> : Soft water

City water or distilled water

★<sup>3</sup> : Hyundai Bio Hydraulic Oil

※ Using any lubricating oils other than HYUNDAI genuine products may lead to a deterioration of performance and cause damage to major components.

※ Do not mix HYUNDAI genuine oil with any other lubricating oil as it may result in damage to the systems of major components.

※ Do not use any engine oil other than that specified above, as it may clog the diesel particulate filter(DPF).

※ For HYUNDAI genuine lubricating oils and grease for use in regions with extremely low temperatures, please contact HYUNDAI dealers.

## 4. MAINTENANCE CHECK LIST

### 1) DAILY SERVICE BEFORE STARTING

Check items	Service	Page
Visual check		
Fuel tank	Check, Refill	6-25
Hydraulic oil level	Check, Add	6-27
Engine oil level	Check, Add	6-18
Coolant level	Check, Add	6-20
Control panel & pilot lamp	Check, Clean	6-39
Prefilter (water, element)	Check, Drain	6-25
Fan belt tension	Check, Adjust	6-23
★ Attachment pin and bushing	Lubricate	6-39
· Boom cylinder tube end		
· Boom foot		
· Boom cylinder rod end		
· Arm cylinder tube end		
· Arm cylinder rod end		
· Boom + Arm connecting		
· Bucket cylinder tube end		

★ Lubricate every 10 hours or daily for initial 100 hours.

### 2) EVERY 50 HOURS SERVICE

Check items	Service	Page
Fuel tank (water sediment)	Drain	6-25
Drive shaft joint (flange bearing)	Check, Add	6-31
Swing reduction gear oil	Check, Add	6-30
Swing gear & pinion	Check, Add	6-30
Gear box case oil	Check, Add	6-36
Wheel nut	Check, Tight	6-33
Tire air pressure	Check, Inflate	6-33
Axle oil	Add, Lubricate	6-34, 35
Bucket linkage & blade pins	Lubricate	6-37
· Bucket cylinder rod end		
· Arm + Bucket connecting		
· Arm + Bucket control link		
· Bucket control rod		
· Bucket link connecting		
· Boom swing cylinder head and rod		
· Boom swing post pin		
· Dozer blade cylinder (rod end, tube end)	Lubricate	6-32
· Dozer blade pivot pin	Lubricate	6-32
· Drive shaft (front and rear)	Lubricate	6-31
· Axle pivot	Lubricate	6-32
· Hub pivot	Lubricate	6-32
· Steering links	Lubricate	6-33

### 3) INITIAL 50 HOURS SERVICE

Check items	Service	Page
Engine oil	Change	6-18, 19
Engine oil filter	Replace	6-18, 19
Prefilter (water, element)	Replace	6-25
Fuel filter	Replace	6-26
Bolts & Nuts	Check, Tight	6-8
· Power train mounting bolts		
· Swing motor mounting bolts		
· Swing bearing mounting bolts		
· Engine mounting bolts		
· Counterweight mounting bolts		
· Turning joint locating bolts		
· Hydraulic pump mounting bolts		

**Service the above items only for the new machine, and thereafter keep the normal service interval.**

### 4) INITIAL 100 HOURS SERVICE

Check items	Service	Page
Transmission gear oil	Change	6-36
Axle gear oil	Change	6-34, 35

### 5) EVERY 100 HOURS SERVICE

Check items	Service	Page
★ Element in hydraulic tank breather	Replace	6-26

★ Replace filter for continuous hydraulic breaker operation only.

### 6) INITIAL 250 HOURS SERVICE

Check items	Service	Page
Swing reduction gear oil	Change	6-30
Swing reduction gear grease	Check, Add	6-30
★ Pilot line filter element	Replace	6-29
★ Hydraulic return filter element	Replace	6-28

★ Replace 2 filters for continuous hydraulic breaker operation only.

## 7) EVERY 250 HOURS SERVICE

Check items	Service	Page
Battery electrolyte	Check	6-40
Hydraulic tank air breather element	Replace	6-26
Front axle steering case grease	Lubricate	6-32
Front & rear axle gear oil	Check, Add	6-34
Aircon & heater fresh air filter	Check, Clean	6-43
Swing bearing grease	Lubricate	6-30
Attachment pin & bushing	Lubricate	6-39
· Boom cylinder tube end		
· Boom foot		
· Boom cylinder rod end		
· Arm cylinder tube end		
· Arm cylinder rod end		
· Boom + Arm connecting		
· Bucket cylinder tube end		

## 8) EVERY 500 HOURS SERVICE

Check items	Service	Page
★ Engine oil	Change	6-18, 19
★ Engine oil filter	Replace	6-18, 19
Prefilter	Replace	6-25
☆ Air cleaner element (primary)	Inspect, Clean	6-24
Fuel filter element	Replace	6-26
Radiator, cooler fin and charge air cooler	Check, Clean	6-23

★ 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.

## 9) EVERY 1000 HOURS SERVICE

Check items	Service	Page
Swing reduction gear oil	Change	6-29
Swing reduction gear grease	Change	6-29
Axle gear oil	Change	6-35
Transmission gear oil	Change	6-36
Hydraulic oil return filter element	Replace	6-28
Pilot line filter element	Replace	6-28

#### 10) EVERY 1500 HOURS SERVICE

Check items	Service	Page
Crankcase breather	Check	6-24

#### 11) EVERY 2000 HOURS SERVICE

Check items	Service	Page
Hydraulic oil* <sup>1</sup>	Change	6-28
HBHO (Hyundai Bio Hydraulic Oil, ISO VG 46)* <sup>2</sup>	Change	6-28
Hydraulic tank suction strainer	Check, Clean	6-28
Coolant	Change	6-20, 21, 22, 23
Hoses, fittings, clamps (fuel, coolant, hydraulic)	Check, Retighten, Replace	-

\*<sup>1</sup> Conventional hydraulic oil

\*<sup>2</sup> If do not want to change HBHO every 2000 hours, contact HYUNDAI dealer and ask about SAMPLING.

※Change oil every 600 hours of continuous hydraulic breaker operation.

#### 12) EVERY 3000 HOURS SERVICE

Check items	Service	Page
DPF (Diesel Particulate Filter)	Clean	6-27

#### 13) EVERY 5000 HOURS SERVICE

Check items	Service	Page
Hydraulic oil* <sup>3</sup>	Change	6-28

\*<sup>3</sup> Hyundai genuine long life hydraulic oil

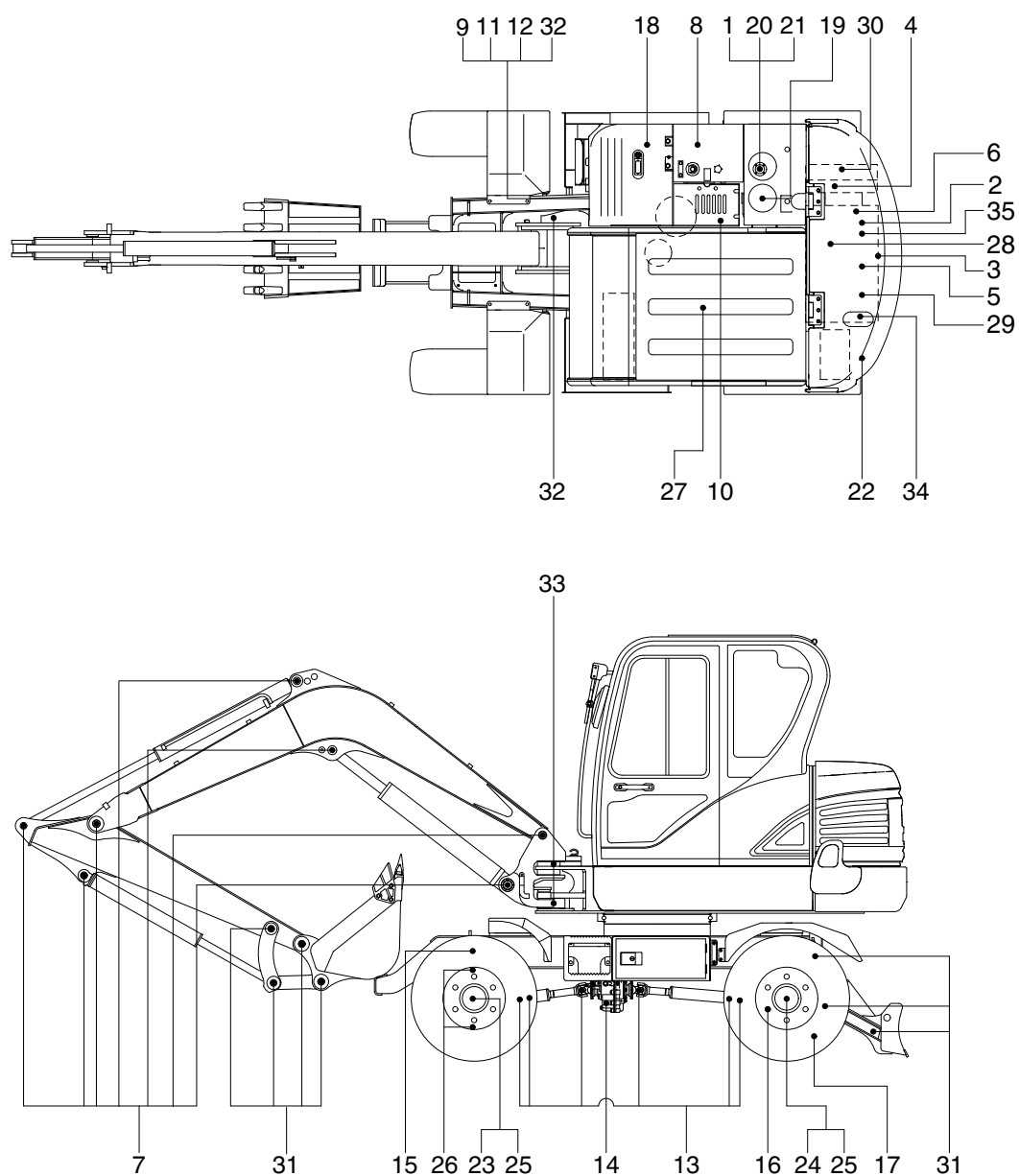
※Change oil every 1000 hours of continuous hydraulic breaker operation.

#### 14) 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 (primary, safety)	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
Tire pressure	Check, Inflate	6-33
Bucket		
· Tooth	Replace	6-38
· Side cutter	Replace	6-38
· Linkage	Adjust	6-37
· Bucket assy	Replace	6-37
Air conditioner and heater		
· Fresh air filter	Clean, Replace	6-43
· Recirculation filter	Replace	6-43

## 5. MAINTENANCE CHART



55W9A6MA02

### 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.
4. For other details, refer to the service manual.



Service interval	No.	Description	Service action	Oil symbol	Capacity / (U.S.gal)	Service points No.
10Hours or daily	1	Hydraulic oil level	Check, Add	HO	70 (18.5)	1
	2	Engine oil level	Check, Add	EO	11.6 (3.1)	1
	4	Radiator coolant level	Check, Add	C	9.5 (2.5)	1
	5	Prefilter (water, element)	Check, Clean	-	-	1
	6	Fan belt tension and damage	Check, Adjust	-	-	1
50 hours or weekly	8	Fuel tank (water, sediment)	Check, Clean	-	-	1
	10	Swing reduction gear oil	Check, Add	GO	1.5 (0.4)	1
	12	Swing gear and pinion	Lubricate	PGL	-	1
	13	Drive shaft(flange bearing)	Lubricate	PGL	-	6
	14	Transmission gear oil	Check, Add	GO	1.84 (0.5)	1
	15	Front axle pivot pin bushing	Check, Add	PGL	-	1
	16	Wheel nut	Check, Tighten	-	-	40
	17	Tire air pressure	Check, Add	-	-	8
	23	Front axle differential gear oil	Check, Add	GO	4.5 (1.19)	1
	24	Rear axle differential gear oil	Check, Add	GO	4.5 (1.19)	1
	25	Axle planetary gear oil(Front, rear)	Check, Add	GO	0.4 (0.11)	4
	31	Bucket linkage & blade pins	Lubricate	PGL	-	8
250 Hours	7	Attachment pins (swivel type)	Lubricate	PGL	-	7
	9	Swing bearing	Lubricate	PGL	-	3
	18	Battery(Electrolyte, Voltage)	Check	-	-	1
	26	Front axle steering case	Lubricate	PGL	-	4
	27	Air conditioner filter (outer)	Clean	-	-	1
	32	Boom swing cylinder (swivel type)	Lubricate	PGL	-	2
	33	Attachment pins (swivel type)	Lubricate	PGL	-	2
500 Hours	2	Engine oil	Change	EO	11.6(3.1)	1
	3	Engine oil filter	Replace	-	-	1
	5	Prefilter (water, element)	Replace	-	-	1
	28	Air cleaner element (primary)	Check, Clean	-	-	1
	29	Fuel filter element	Replace	-	-	1
	30	Radiator, cooler fin and charge air cooler	Check, Clean	-	-	3
1000 Hours	10	Swing reduction gear oil	Change	GO	1.5(0.4)	1
	11	Swing reduction gear grease	Change	PGL	0.35 (0.09)	1
	14	Transmission gear oil	Change	GO	1.84(0.49)	1
	19	Hydraulic oil return filter	Replace	-	-	1
	20	Air breather element	Replace	-	-	1
	22	Pilot line filter element	Replace	-	-	1
	23	Front axle differential gear oil	Change	GO	4.5 (1.19)	1
	24	Rear axle differential gear oil	Change	GO	4.5 (1.19)	1
	25	Axle planetary gear oil(Front, rear)	Change	GO	0.4 (0.11)	4
1500 hours	34	Crankcase breather	Check	-	-	1
2000 Hours	1	Hydraulic tank oil* <sup>1</sup>	Change	HO	70 (18.5)	1
	1	Hydraulic oil (HBHO* <sup>2</sup> )	Change	-	70 (18.5)	1
	4	Radiator coolant	Change	C	9.5 (2.5)	1
	21	Hydraulic oil suction strainer	Check, Clean	-	-	1
	-	Hoses, fittings, clamps (fuel, coolant, hydraulic)	Check, Retighten, Replace	-	-	-
3000 hours	35	DPF (diesel particulate filter)	Clean	-	-	1
5000 hours	1	Hydraulic tank oil* <sup>2</sup>	Change	HO	70 (18.5)	1
As required	27	Air conditioner filters	Check, Replace	-	-	2
	28	Air cleaner element(Primary, safety)	Check, Replace	-	-	2

\*<sup>1</sup> Conventional hydraulic oil

\*<sup>2</sup> Hyundai Bio Hydraulic Oil

\*<sup>3</sup> Hyundai genuine long life hydraulic oil

★ Severely dusty area operation only.

※ Oil symbol

Please refer the recommended lubricants for specification.

DF : Diesel fuel

GO : Gear oil

HO : Hydraulic oil

C : Coolant

PGL : Grease

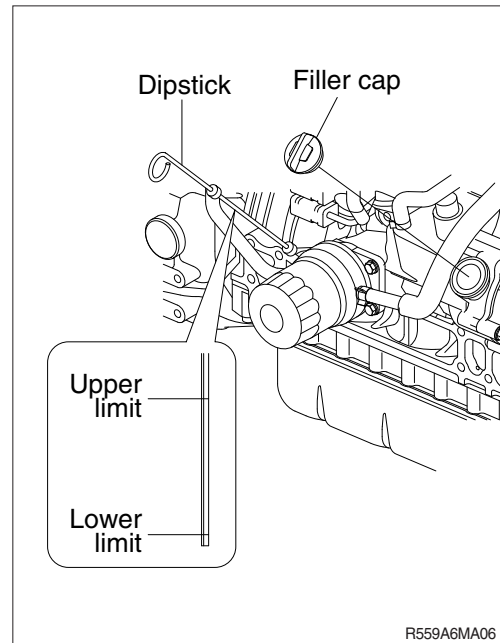
EO : Engine oil

## 6. SERVICE INSTRUCTION

### 1) CHECK ENGINE OIL LEVEL

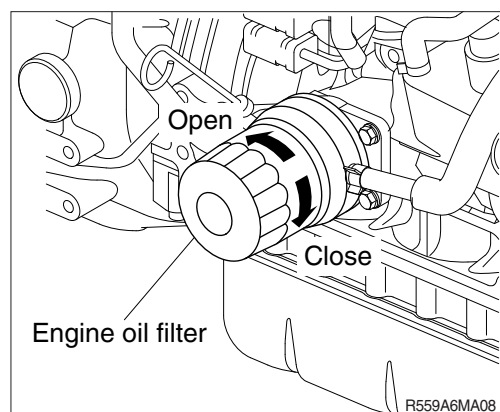
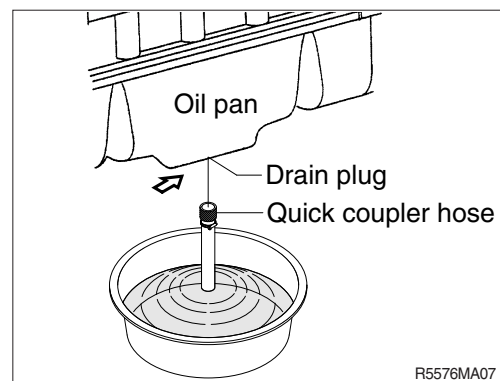
Check the oil level with the machine on a flat ground before starting engine.

- (1) Pull out the dipstick and wipe with a clean cloth.
  - (2) Check the oil level by inserting the dipstick completely into the hole and pulling out again.
  - (3) If oil level is LOW, add oil and then check again.
- ※ **If the oil is contaminated or diluted, change the oil regardless of the regular change interval.**
  - ※ **Check oil level after engine has been stopped for 15 minutes.**
  - ▲ **Do not operate unless the oil level is in the normal range.**

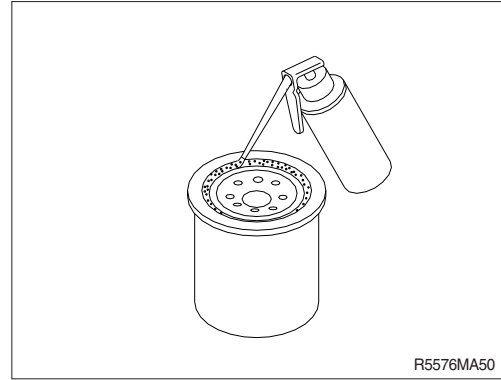


### 2) REPLACEMENT OF ENGINE OIL AND OIL FILTER

- (1) Warm up the engine.
  - (2) Remove the cover of drain plug and connect the quick coupler hose.
- ※ **A drain pan with a capacity of 20 liters (5 U.S. gallons) will be adequate.**
- (3) Clean around the filter head, remove the filter with a filter wrench and clean the gasket surface.

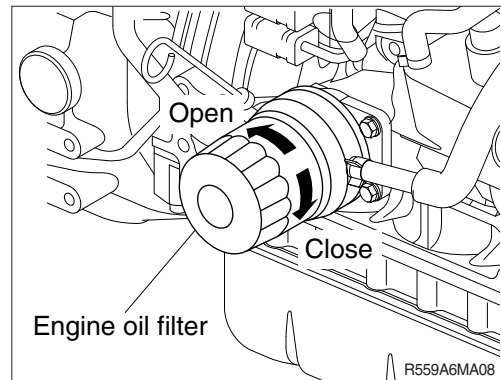


- (4) Apply a light film of lubricating oil to the gasket sealing surface before installing the filters.

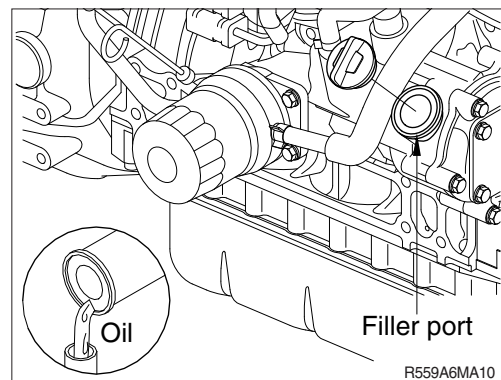


- (5) Install the new filter manually by turning it clockwise until it contacts the filter head.  
Tighten to 2.0~2.4 kgf·m (14~17 lbf·ft) or one additional turn using the filter wrench.  
Remove the quick coupler hose.

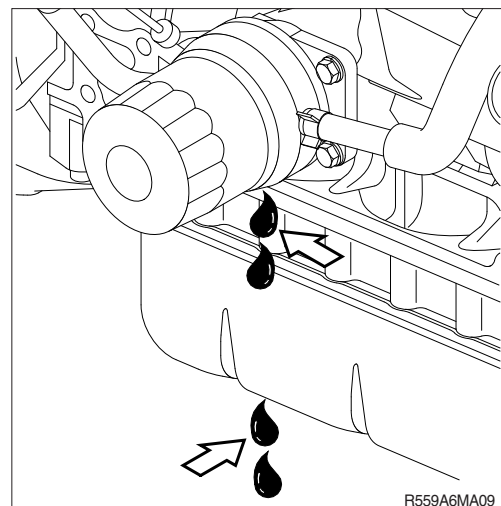
※ **Mechanical over-tightening may distort the threads or damage the filter element seal.**



- (6) Fill the engine with clean oil to the proper level.  
·Quantity : 11.6ℓ(3.1 U.S.gallons)



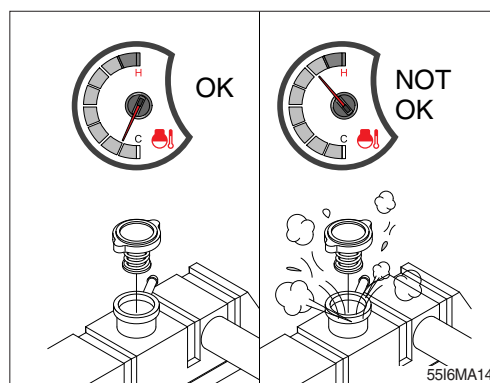
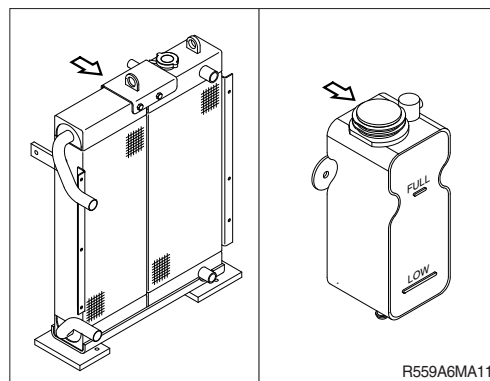
- (7) Operate the engine at low idle and inspect for leaks at the filters and the drain plug.  
Shut the engine off and check the oil level with the dipstick. Allow 15minutes for oil to drain down before checking.
- (8) Reinstall the oil filler cap. If any engine oil is spilled, wipe it away with a clean cloth.



### 3) CHECK COOLANT

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

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



### 4) FLUSHING AND REFILLING OF RADIATOR

- (1) Change coolant

**▲ Avoid prolonged and repeated skin contact with used antifreeze. Such prolonged repeated contact can cause skin disorders or other bodily injury.**

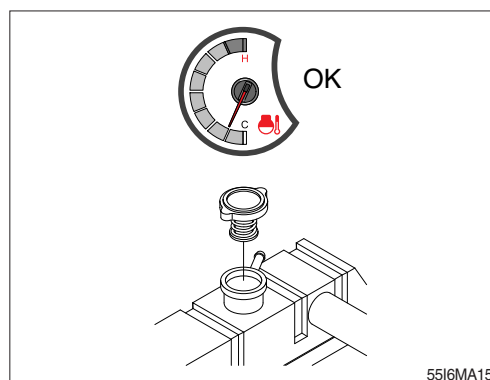
**Avoid excessive contact-wash thoroughly after contact.**

**Keep out of reach of children.**

**※ Protect the environment : Handling and disposal of used antifreeze can be subject to federal, state, and local law regulation.**

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

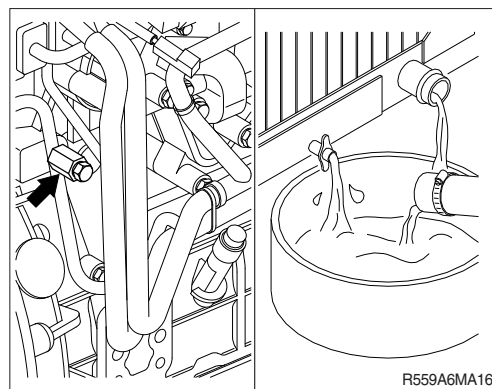
**If in doubt, contact your local authorities for guidance as to proper handling of used antifreeze.**



- ▲** Wait until the temperature is below 50°C (122°F) before removing the coolant system pressure cap.

Failure to do so can cause personal injury from heated coolant spray.

Drain the cooling system by opening the drain valve on the radiator and removing the plug in the bottom of the water inlet. Drain the coolant from engine block. A drain pan with a capacity of 20 liters (5 U.S.gallons) will be adequate in most applications.

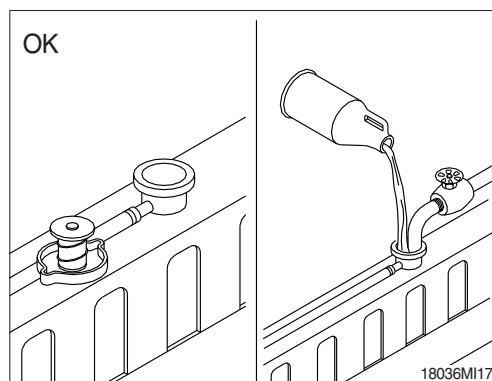


## (2) Flushing of cooling system

- ① Fill the system with a mixture of sodium carbonate and water(or a commercially available equivalent).

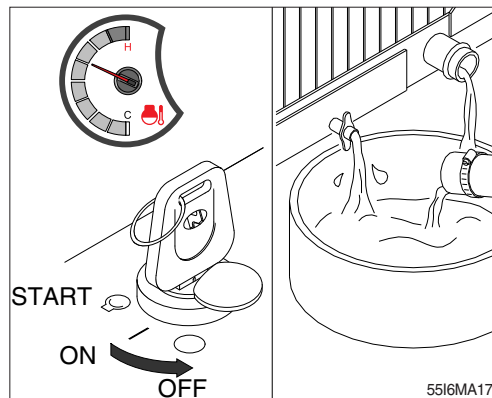
※ Use 0.5 kg (1.0 pound) of sodium carbonate for every 23 liters (6.0 U.S.gallons) of water.

※ Do not install the radiator cap. The engine is to be operated without the cap for this process.



- ② Operate the engine for 5 minutes with the coolant temperature above 80°C (176°F) .

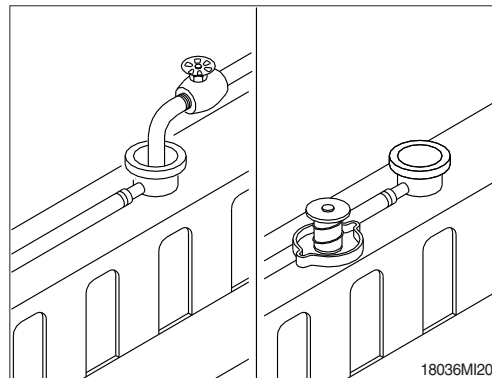
Shut the engine off, and drain the cooling system.



- ③ Fill the cooling system with clean water.

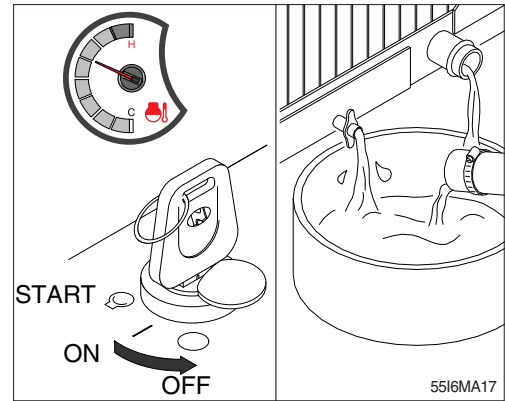
※ Be sure to vent the engine and aftercooler for complete filling.

※ Do not install the radiator cap or the new coolant filter.



- ④ Operate the engine for 5 minutes with the coolant temperature above 80°C (176°F). Shut the engine off, and drain the cooling system.

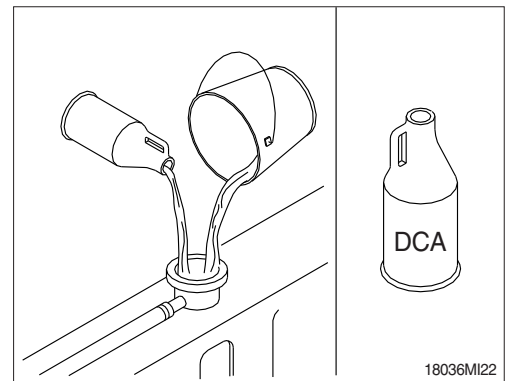
※ If the water being drained is still dirty, the system must be flushed again until the water is clean.



### (3) Cooling system filling

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

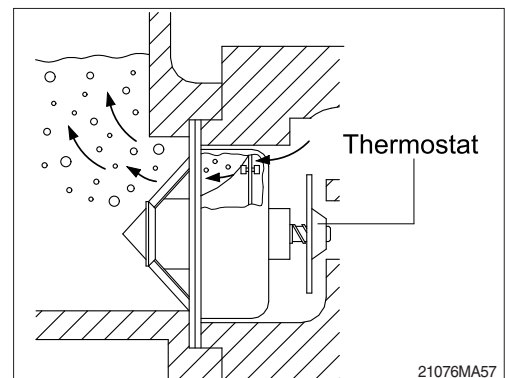
Coolant capacity (engine only) : 4.2 l (1.1 U.S. gallons)



- ② The system has a maximum fill rate of 14 liters (3.5 U.S. gallons) per minute. Do not exceed this fill rate.

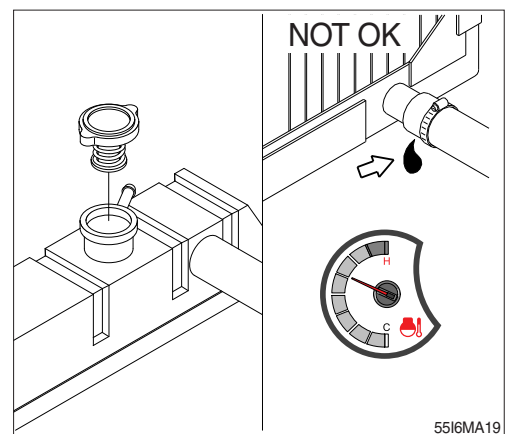
※ The system must be filled slowly to prevent air locks.

During filling, air must be vented from the engine coolant passage.



- ③ Install the pressure cap. Operate the engine until it reaches a temperature 80°C (176°F), and check for coolant leaks.

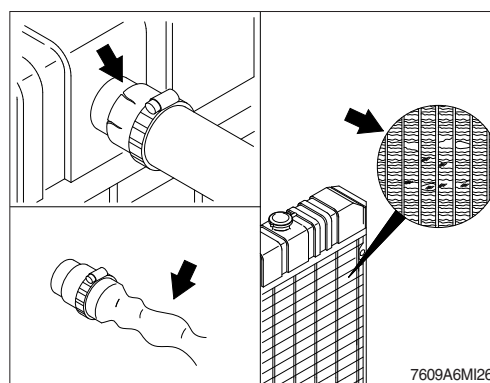
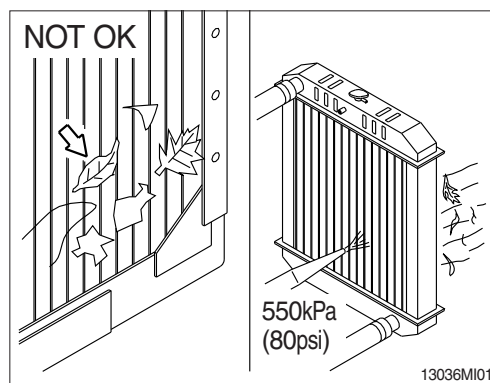
Check the coolant level again to make sure the system is full of coolant.



## 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 550 kPa (80 psi) 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.

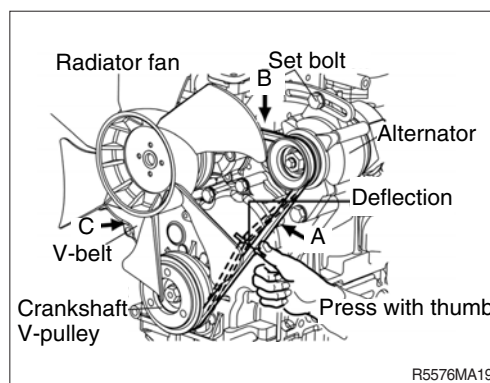


## 6) FAN BELT TENSION

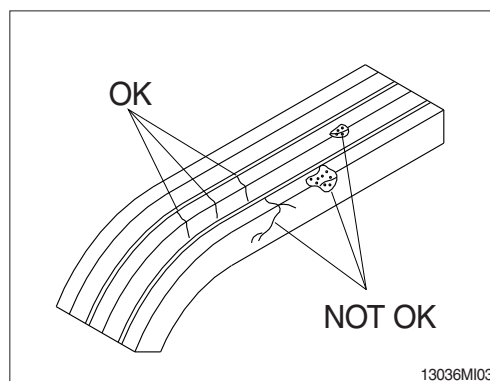
- (1) Measure the belt deflection at the longest span of the belt.

· Deflection

	A	B	C
Used belt	10~14	7~10	9~13
New belt	8~12	5~8	7~11



- (2) Inspect the drive for damage (cracks, oil or wear).  
If any of these conditions exist, replace.





## 7) INSPECTION OF COOLING FAN

▲ Personal injury can result from a fan blade failure. Never pull or pry on the fan. This can damage the fan blade and cause fan failure.

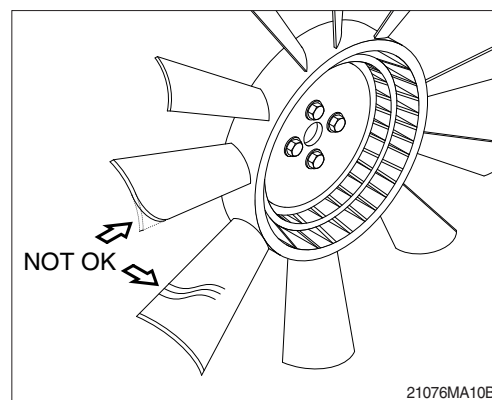
※ Rotate the crankshaft by using the engine barring gear.

※ A visual inspection of the cooling fan is required daily.

Check for cracks, loose rivets, and bent or loose blades.

Check the fan to make sure it is securely mounted. Tighten the capscrews if necessary.

Replace any fan that is damaged.



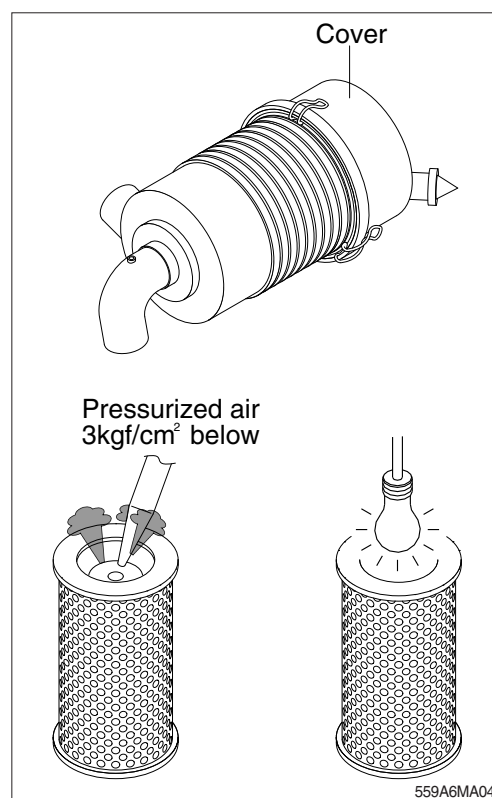
## 8) CLEANING OF AIR CLEANER

### (1) Primary element

- ① Open cover and remove the element.
  - ② Clean the inside of the body.
  - ③ Clean the element with pressurized air.
    - Remove the dust inside of the element by the pressurized air (below 3 kgf/cm<sup>2</sup>, 40 psi) forward and backward equally.
  - ④ Inspect for cracks or damage of element by putting a light bulb inside of the element.
  - ⑤ Insert element and close cover.
- ※ Replace the primary element after 4 times cleanings.

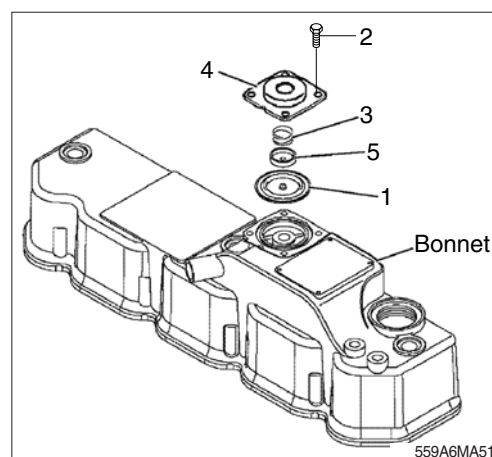
### (2) Safety element

- ※ Replace the safety element only when the primary element is cleaned for the 4 times.
- ※ Always replace the safety element. Never attempt to reuse the safety element by cleaning the element.



## 9) CRANKCASE BREATHER

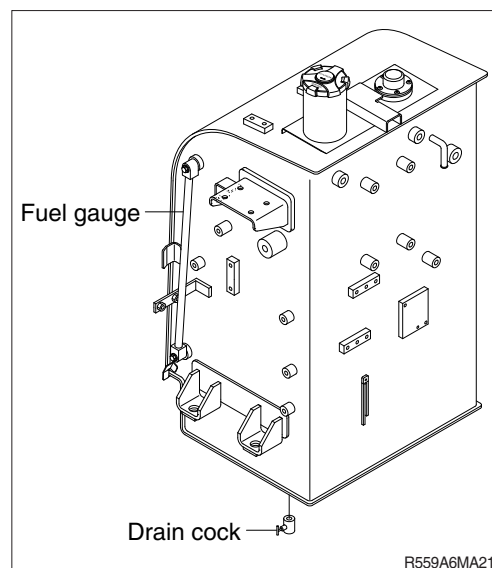
- (1) Remove the bolts (2) retaining the diaphragm cover.
- (2) Remove the diaphragm cover (4), spring (3), diaphragm plate (5) and diaphragm (1).
- (3) Inspect the diaphragm for tears. Inspect the spring for distortion. Replace components if necessary.
- (4) Reinstall the diaphragm, diaphragm plate, spring and diaphragm cover. Tighten the bolts.





## 10) 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.

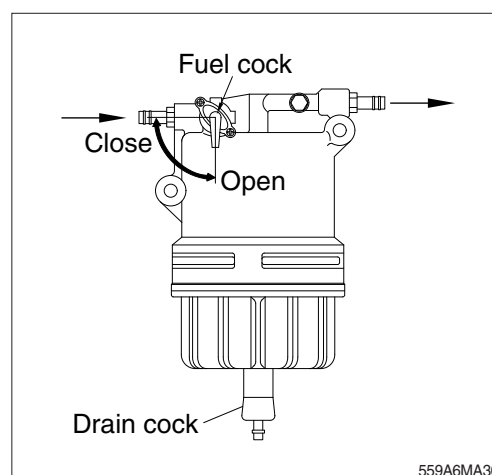


## 11) PREFILTER

- ※ **Inspect or drain the collection bowl of water daily and replace the element after first 250 hours of operation or rebuild, then every 500 hours thereafter.**

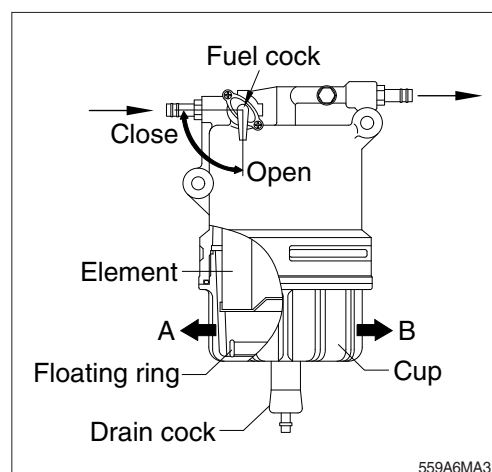
### (1) Drain water

- ① Close the fuel cock.
- ② Loosen the drain cock at the bottom of the fuel prefilter. Drain any water collected inside.
- ③ Hand-tighten the drain cock.
  - Tightening torque :  $0.15 \pm 0.05 \text{ kgf} \cdot \text{m}$   
( $1.1 \pm 0.37 \text{ lbf} \cdot \text{ft}$ )
- ④ Open the fuel cock.
- ⑤ Be sure to prime the diesel fuel system when you are finished. See priming the fuel system on page 6-26.
- ⑥ Check for leaks.

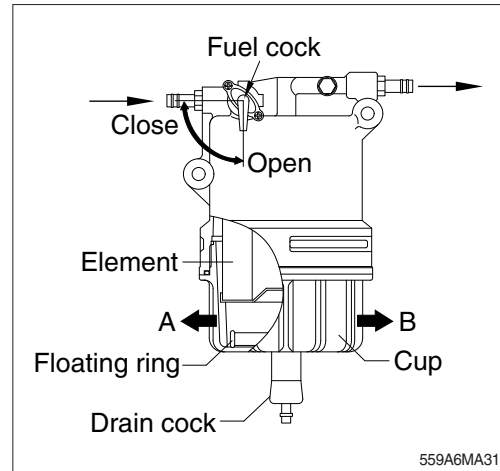


### (2) Replace element

- ① Close the fuel cock.
- ② Turn the retaining ring to the left (A) and remove the cup.
- ③ Carefully hold the cup to prevent fuel from spilling. If you spill any fuel, clean up the spill completely.
- ④ Remove the float ring from the cup. Pour the contaminants into the container and dispose of it properly.

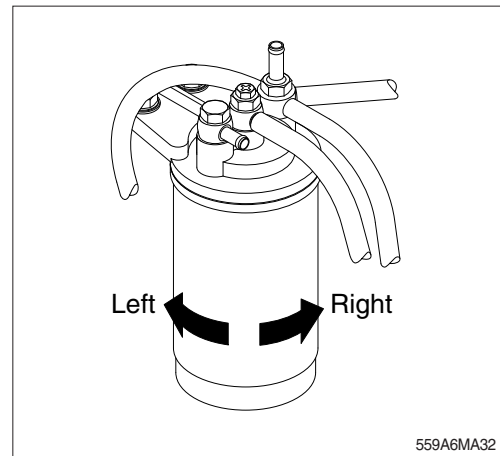


- ⑤ Replace the new element into the top of filter.
- ⑥ Install the new O-ring in the cup.
- ⑦ Position the floating ring in the cup.
- ⑧ Check the condition of the cup. Replace if necessary.
- ⑨ Install the cup to the bracket by tightening the retaining ring to the right (B) to a torque of 2.8~3.4 kgf·m (20.3~24.6 lbf·ft).
- ⑩ Close the drain cock.
- ⑪ Open the fuel cock.
- ⑫ Prime the fuel system.
- ⑬ Check for leaks.



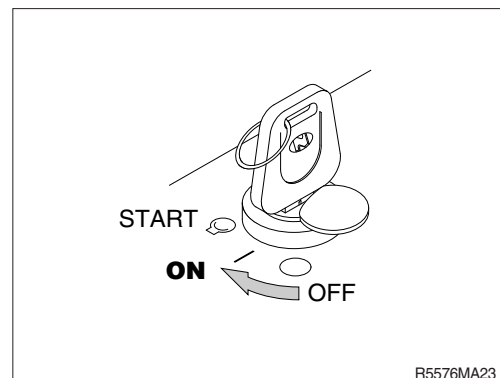
## 12) REPLACEMENT OF FUEL FILTER

- (1) Stop the engine and allow it to cool.
- (2) Close the fuel cock of the fuel prefilter.
- (3) Remove the fuel filter with a filter wrench, turning it to the left. When removing the fuel filter, carefully hold it to prevent the fuel from spilling. Wipe up all spilled fuel.
- (4) Clean the filter mounting surface and apply a small amount of diesel fuel to the gasket of the new fuel filter.
- (5) Install the new fuel filter. Turn to the right and hand-tighten if only until it comes in contact with the mounting surface. Tighten to 2.0~2.4 kgf·m (14.5~17.4 lbf·ft) or one additional turn using the filter wrench.
- (6) Open the fuel cock of the prefilter.
- (7) Prime the fuel system.
- (8) Check for leaks.



## 13) PRIMING THE FUEL SYSTEM

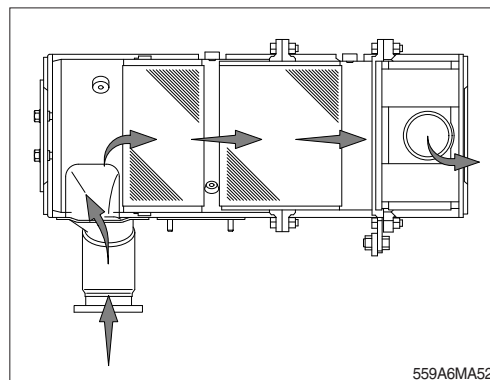
- (1) Turn the starting switch to the ON position for 10~15 seconds. This will allow the electric fuel pump to prime the fuel system.
- ※ **Never use the starter motor to crank the engine in order to prime the fuel system. This may cause the starter motor to overheat and damage the coils, pinion and/or ring gear.**



#### 14)DPF (diesel particulate filter) **CLEANING**

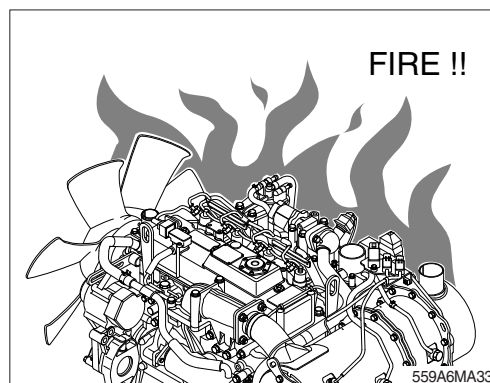
The diesel particulate filter can not be cleaned for maintenance purpose using conventional tools. The diesel particulate filter needs to be cleaned and checked using an approved cleaning machine at a authorized service center.

- ※ The diesel particulate filter shall be cleaned every 3000 hours.
- ※ Please contact your Hyundai service center or local dealer.



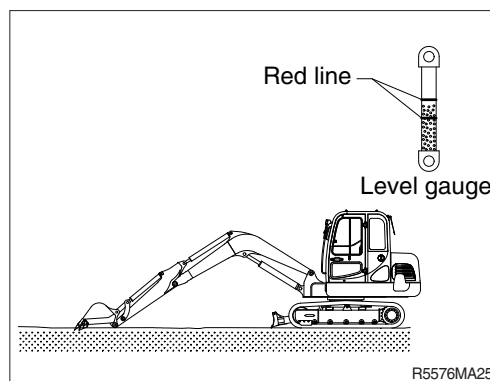
#### 15) LEAKAGE OF FUEL

- ▲ Be careful and clean the fuel hose, injection pump, fuel filter and other connections as the leakage from these part can cause fire.



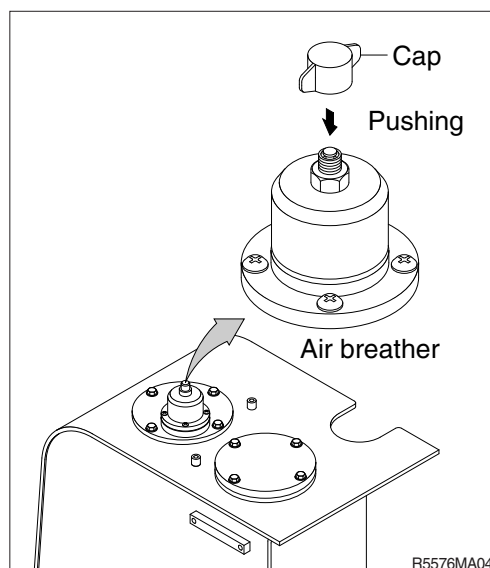
#### 16) HYDRAULIC OIL CHECK

- (1) Stop the engine after retract the arm and bucket cylinders, then lower the boom and set the bucket on the ground at a flat location as in the illustration.
- (2) Check the oil level at the level gauge of hydraulic oil tank.
- (3) The oil level is normal if between the red lines.



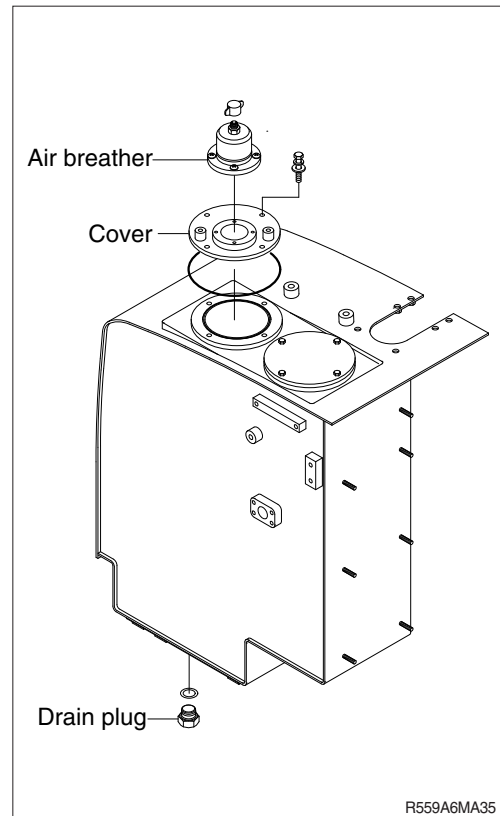
#### 17) FILLING HYDRAULIC OIL

- (1) Stop the engine to the position of level check.
- (2) Loosen the cap and relieve the pressure in the tank by pushing the top of the air breather.
- (3) Remove the breather on the top of oil tank and fill the oil to the specified level.
  - Tightening torque :  $1.44 \pm 0.3$  kgf·m  
( $10.4 \pm 2.1$  lbf·ft)
- (4) Start engine after filling and operate the work equipment several times.
- (5) Check the oil level at the level check position after engine stops.



## 18) CHANGE HYDRAULIC OIL

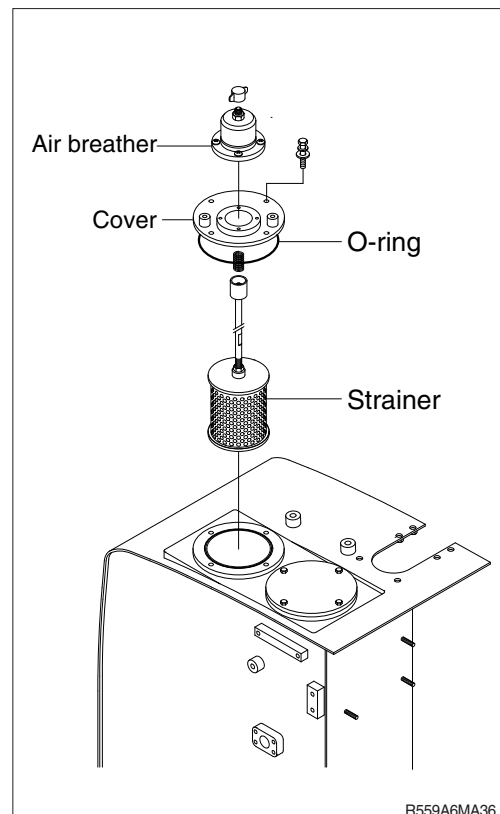
- (1) Lower the bucket on the ground pulling the arm and bucket cylinder to the maximum.
  - (2) Loosen the cap and relieve the pressure in the tank by pushing the top of the air breather.
  - (3) Remove the cover.
    - Tightening torque :  $6.9 \pm 1.4 \text{ kgf} \cdot \text{m}$   
( $50 \pm 10 \text{ lbf} \cdot \text{ft}$ )
  - (4) Prepare a suitable container.
  - (5) To drain the oil loosen the drain plug at the bottom of the oil tank.
  - (6) Fill proper amount of recommended oil.
  - (7) Put the breather in the right position.
  - (8) Bleed air hydraulic pump loosen the air breather at top of hydraulic pump assembly.
  - (9) Start engine and run continually. Release the air by full stroke of each control lever.
- ※ In case of injecting HBHO (Hyundai Bio Hydraulic Oil) to machines that have formerly used different hydraulic oil, the proportion of residual oil must not exceed 2 %
- ※ Do not mix any other Bio oil, use only HBHO as bio oil.
- If changing to Bio oil, contact HYUNDAI dealer.



## 19) CLEAN SUCTION STRAINER

Clean suction strainer as follows paying attention to the cause to be kept during oil filling.

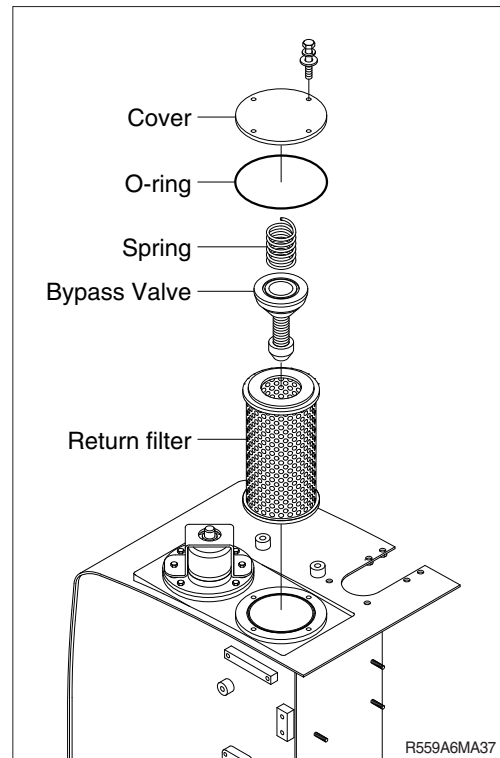
- (1) Remove the cover on the top of the oil tank.
    - Tightening torque :  $6.9 \pm 1.4 \text{ kgf} \cdot \text{m}$   
( $50 \pm 10 \text{ lbf} \cdot \text{ft}$ )
  - (2) Pull out the strainer in the tank.
  - (3) Wash the foreign material on the suction strainer with gasoline or cleaning oil.
  - (4) Replace the suction strainer if it is damaged.
  - (5) Assemble with reverse order of disassembly. Be sure to install a new O-ring and reinsert in the oil tank.
- ※ Loosen the bolt slowly at the cover can be spring out by the spring when removing it.



## 20) REPLACEMENT OF RETURN FILTER

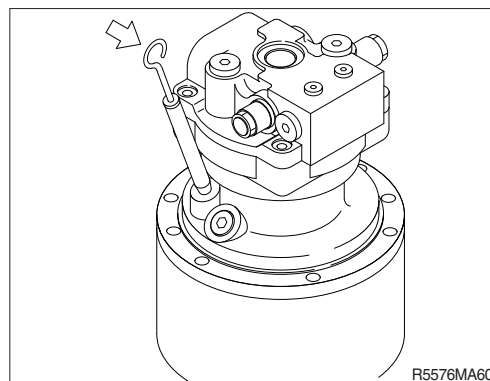
Replace as follows paying attention to the cause to be kept during the replacement.

- (1) Remove the cover.
  - Tightening torque :  $6.9 \pm 1.4$  kgf·m  
( $50 \pm 10$  lbf·ft)
- (2) Remove the spring, by-pass valve, and return filter in the tank.
- (3) Replace the element with new one.



## 21) CHECK THE SWING REDUCTION GEAR OIL

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

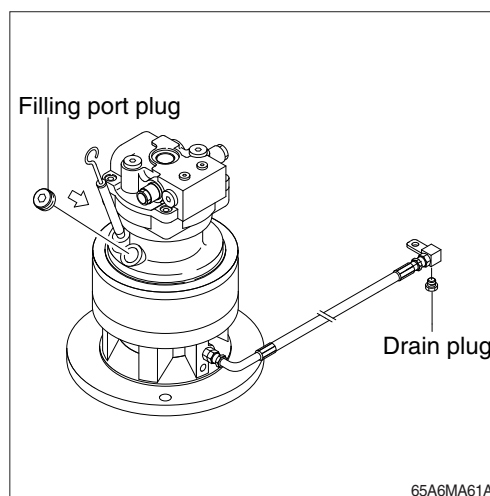


## 22) CHANGE SWING REDUCTION GEAR OIL

- (1) Raise the temperature of oil by swinging the machine before replace the oil and park the machine on the flat ground.
- (2) Loosen the plug.
- (3) Drain into a proper container.
- (4) Wash the drain plug and reinstall it with sealing tape.

Fill proper amount of recommended oil.

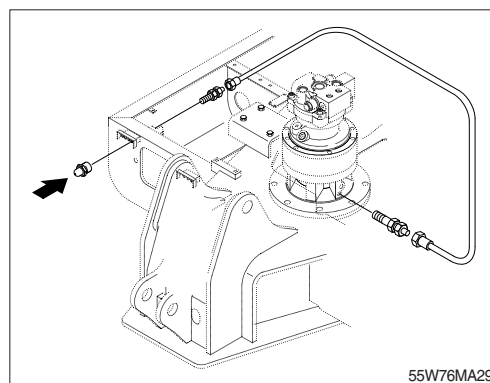
· Amount of oil : 1.5 ℓ (0.4 U.S.gal)



## 23) LUBRICATE BEARING OF OUTPUT SHAFT IN REDUCTION GEAR

- (1) Grease at fitting.

※ Lubricate every 50 hours.

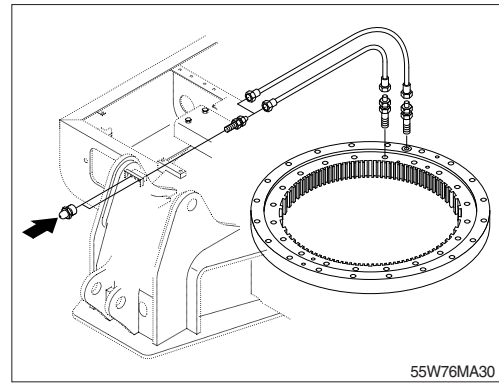


## 24) MANIFOLD

### (1) Swing bearing

Grease at 2 fitting.

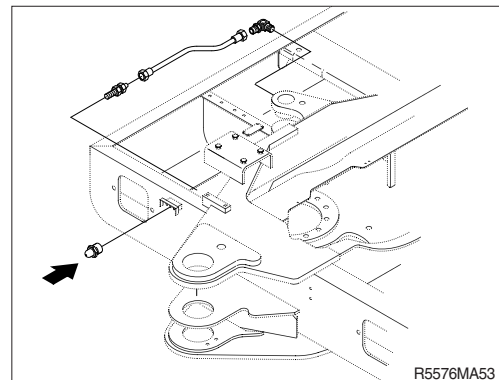
※ Lubricate every 250 hours.



### (2) Boom swing cylinder

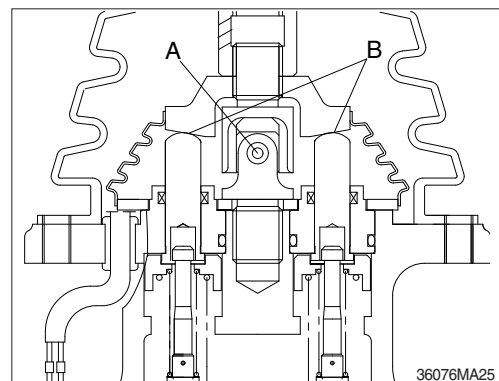
Grease at fitting.

※ Lubricate every 50 hours.



## 25) LUBRICATE RCV LEVER

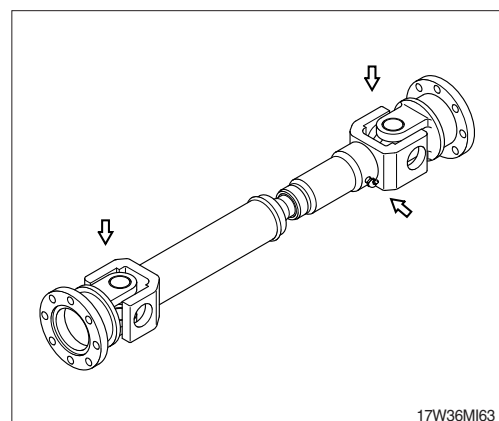
Remove the bellows and with a grease gun grease the joint part (A) and sliding parts (B).



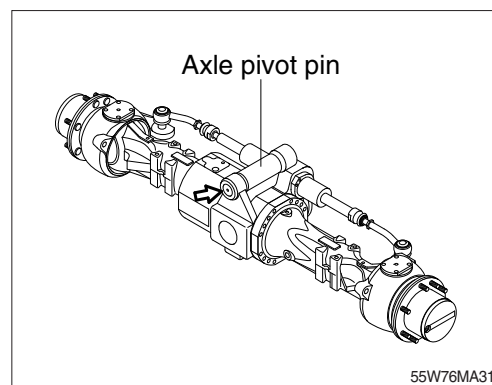
## 26) LUBRICATE

### (1) Drive shaft

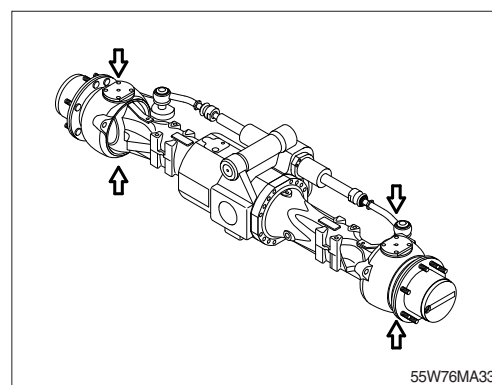
- ① Front drive shaft : 3 point
- ② Rear drive shaft : 3 point



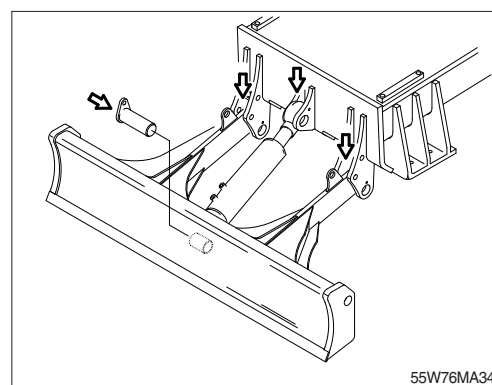
(2) Front axle : 1 point



(3) Steering link : 4 point



(4) Dozer blade : 4 point





## 27) TIRE

### (1) Air pressure

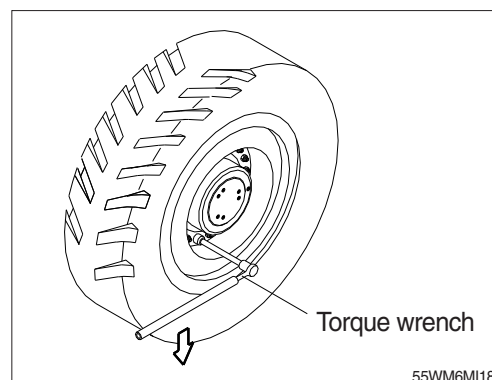
It is important to keep air pressure properly for maximizing tire life. Both excessive and insufficient air pressure of tires should be avoided not to damage tires.

·Specification : 5.25 kgf/cm<sup>2</sup> (75 psi)

### (2) Handling of tire

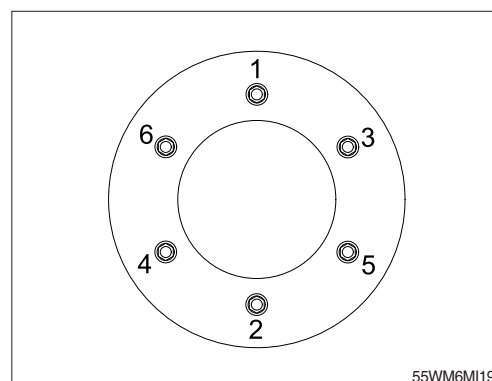
#### ① Removal of tire

- Lift the main body until a tire separate from the ground, and place the block under front and rear axle.
- Loosen wheel nut with torque wrench and remove tire.



#### ② Installation of tire

- Coat some grease on wheel stud and nut screw.
  - Install the tires and tighten a nut slightly and get down a tire on the ground, and then tighten the torque in the order as figure.
- Tightening torque : 43~49 kgf·m  
(311~354 lbf·ft)

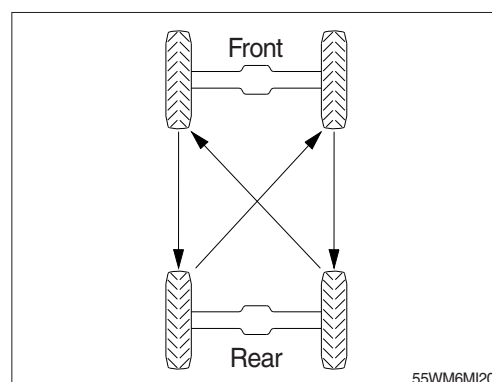


#### ③ Position change of tire

- Tire is worn out differently part by part according to installing position, so change position regularly as figure.

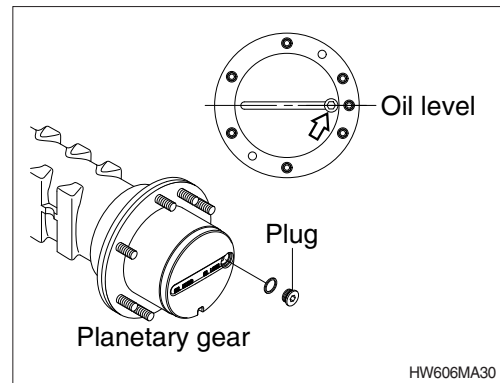
**Keep air pressure at standard.**

**Use same pattern of groove and same maker's tire.**



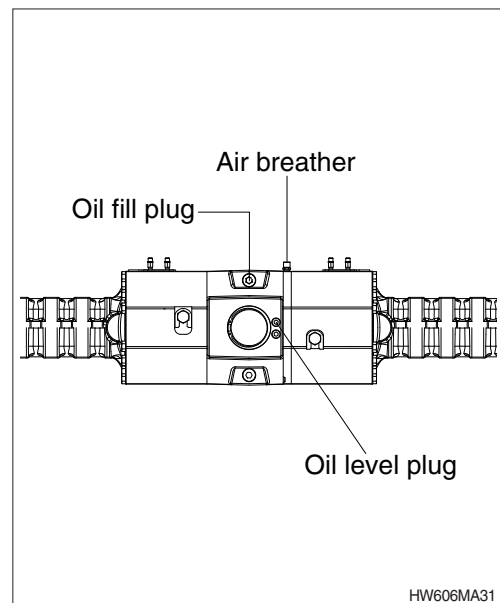
## 28) CHECK PLANETARY GEAR OIL LEVEL

- (1) Move the machine to flat ground.
  - (2) Remove the plug and check the oil amount.
  - (3) If the oil level is below the plug hole, supply oil through a plug hole.
- ※ **Set the plug of planetary gear in parallel to the ground.**
- (4) After checking, install plug.



## 29) CHECK AND SUPPLYING AXLE OIL

- (1) Move the machine to flat ground.
  - (2) Open the axle air breather to relieve internal air pressure.
  - (3) Remove the oil level plug and check the oil amount. If the oil level is at the hole of the plug, it is normal.
  - (4) If the oil level is below the plug hole, supply oil through a oil fill plug hole.
- ▲ **When checking the oil level, press the service brake.**
- ▲ **As the machine is hot after operation, wait until the oil temperature has dropped.**



### 30) CHANGE THE AXLE OIL

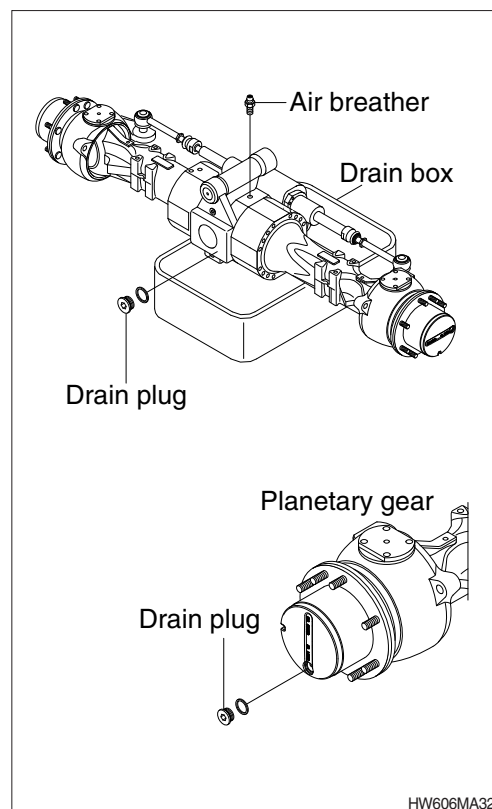
- (1) Place a drain box under drain plug to catch oil.
- (2) Remove the air breather to relieve internal pressure.

#### (3) Drain oil into the differential gear

- ① Remove the drain plug to drain oil off.
- ② Wash drain plug and install it.

#### (4) Drain oil into the planetary gear

- ① Drain oil by removing drain plug.
- ※ The drain plug should be facing to the ground.



- (5) Supply oil into the differential gear and the planetary gear.

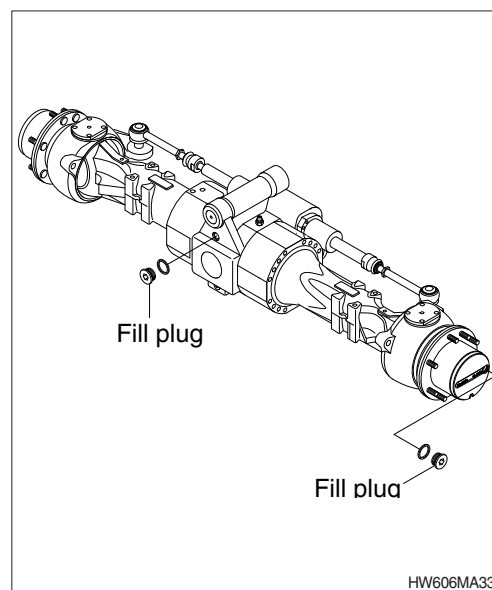
- Oil amount

Description	Capacity
Front axle differential gear	4.5 l (1.19 U.S. gal)
Rear axle differential gear	4.5 l (1.19 U.S. gal)
Planetary gear case (each)	0.4 l (0.11 U.S. gal)

- (6) Supply oil until it overflows from the oil filler, then install the plug.

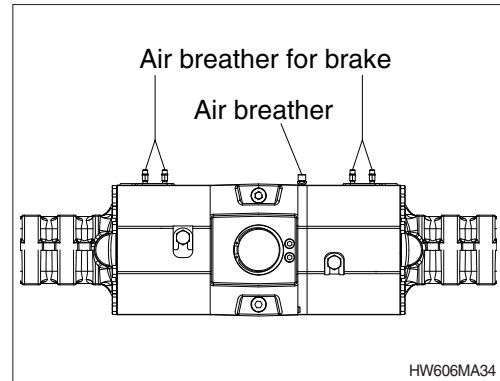
▲ As the machine is hot after operation, wait until the temperature has dropped.

- ※ If a work requires frequent use of brake, replace it earlier than normal change interval.



### 31) CLEANING AXLE BREATHER

- (1) Remove dust or debris around the breather.
- (2) Remove the breather and wash it with cleaning oil.



### 32) CHECK AND SUPPLYING T/M GEAR OIL

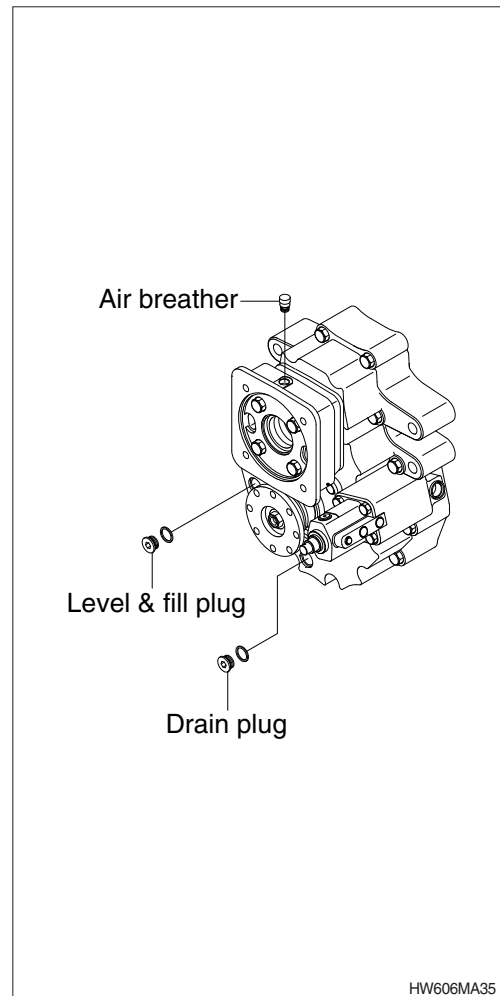
- (1) Move the machine to flat ground.
- (2) Open the transmission air breather to relieve internal air pressure.
- (3) Remove the level & fill plug and check the oil amount. If the oil level is at the hole of the plug, it is normal.

- (4) If the oil level is below the plug hole, supply oil through a plug hole.

**▲ As the machine is hot after operation, wait until the oil temperature has dropped.**

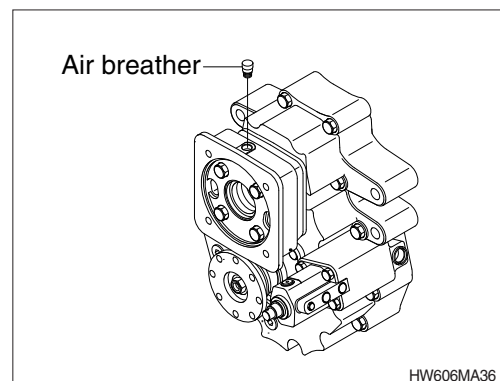
### 33) CHANGE THE T/M GEAR OIL

- (1) Place a drain transmission under drain plug to catch oil.
- (2) Open transmission air breather to relieve internal air pressure.
- (3) Remove the drain plug to drain oil.
- (4) Wash drain plug and install it.
- (5) Supply oil into the transmission case.
  - Oil amount : 1.8 l (0.49 U.S. gal)



### 34) CLEANING T/M AIR BREATHER

- (1) Remove dust or debris around the air breather.
- (2) Remove the air breather and wash it with cleaning oil.



### 35) REPLACEMENT OF BUCKET

⚠ When knocking the pin in with a hammer, metal particles may fly and cause serious injury, particularly if they get into your eyes. When carrying out this operation, always wear goggles, helmet, gloves, and other protective equipment.

- ※ When the bucket is removed, place it in a stable condition.
- ※ When performing joint work, make sure signals to each other and work carefully for safety's sake.

(1) Lower the bucket on the ground as the picture shown in the right.

(2) Lock the safety lever to the LOCK position and stop the engine.

(3) Remove the stopper bolts (1) and nuts (2), then remove pins (3, 4) and remove the bucket.

※ When removing the pins, place the bucket so that it is in light contact with the ground.

※ If the bucket is lowered strongly to the ground, the resistance will be increased and it will be difficult to remove the pins.

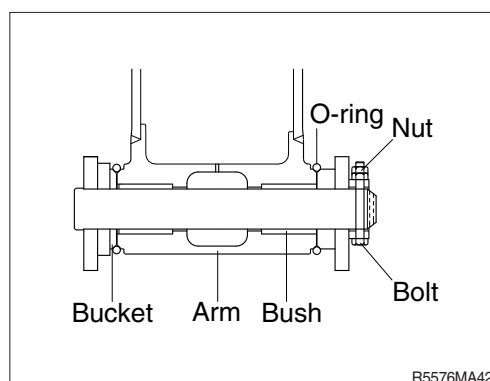
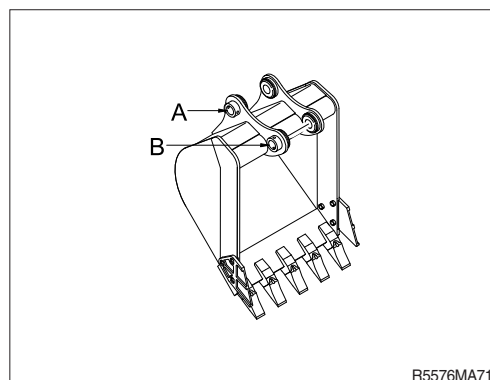
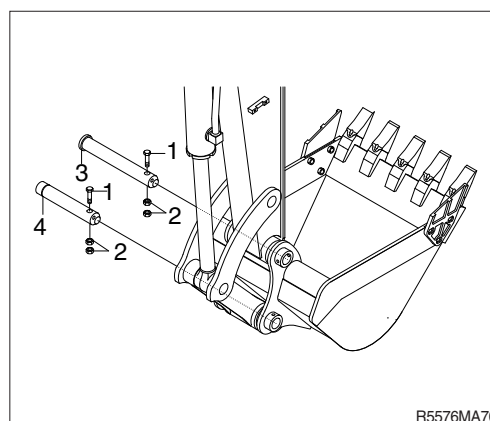
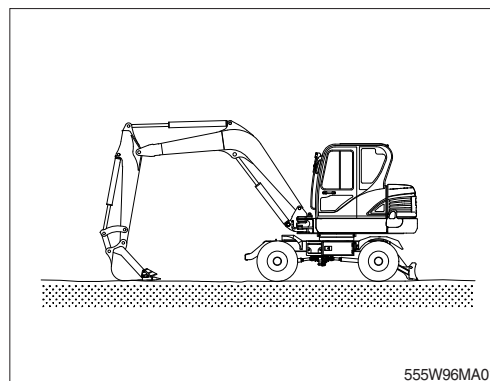
※ After remove the pins, make sure that they do not become contaminated with sand or mud and that the seals of bushing on both sides do not become damaged.

(4) Align the arm with holes (A) and the link with holes (B), then coat with grease and install pins (3, 4)

※ When installing the bucket, the O-rings are easily damaged, so fit the O-rings on the boss of the bucket as shown in the picture.

After knocking the pin, move the O-ring down to the regular groove.

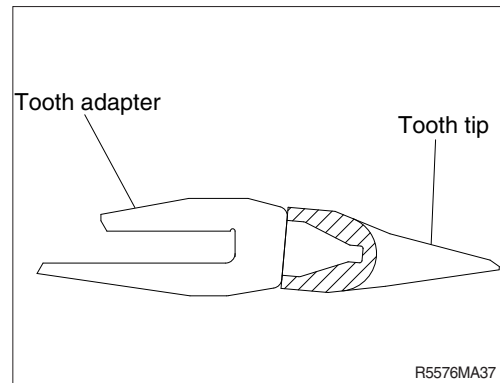
(5) Install the stopper bolt (1) and nuts (2) for each pin, then grease the pin.



### 36) REPLACEMENT OF BUCKET TOOTH

#### (1) Timing of replacement

- ① Check wearing condition as shown in the illustration and replace tooth tip before adapter starts to wear.
- ② If excessive use, tooth adapter has worn out, replacement may become impossible.

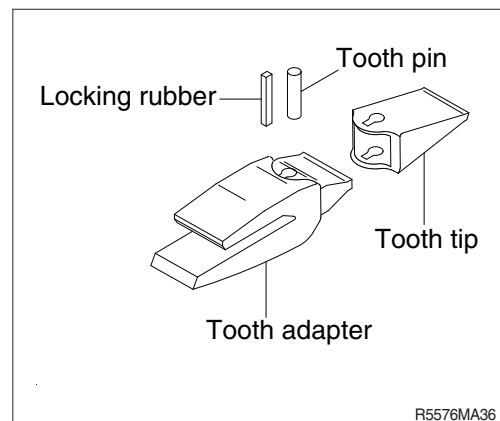


#### (2) Instructions for replacement

- ① Pull out pin by striking pin with punch or hammer, avoiding damage to locking rubber.
- ② Remove dust and mud from surface of tooth adapter by using knife.
- ③ Place locking rubber in its proper place, and fit tooth tip to adapter.
- ④ Insert pin until locking rubber is positioned at tooth pin groove.

▲ Personal injury can result from bucket falling.

▲ Block the bucket before changing tooth tips or side cutters.



### 37) LUBRICATE 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 pin	2
4	Arm cylinder pin	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 pin	2
9	Boom swing cylinder pin	1

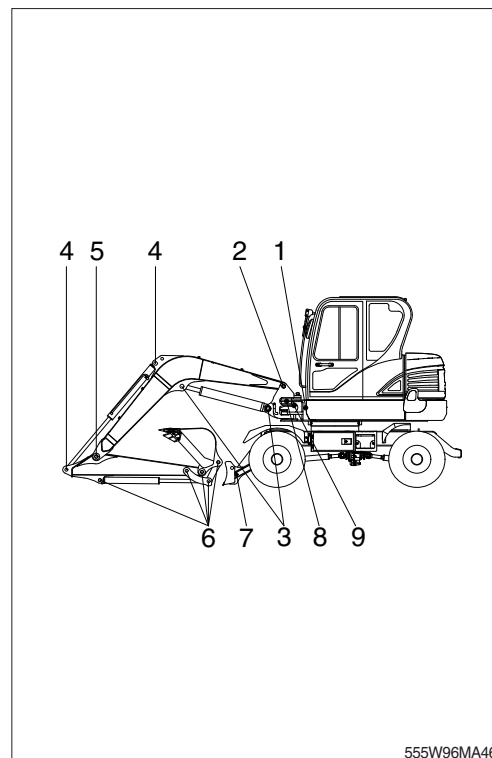
※ **Shorten lubricating interval when working in the water or dusty place.**

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

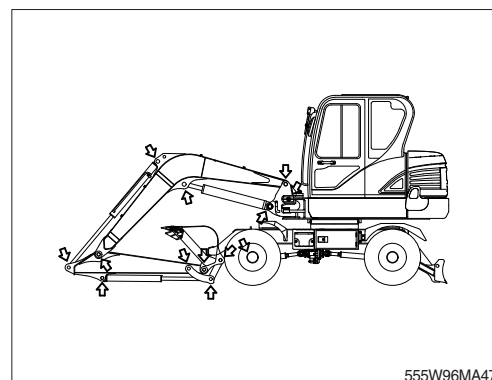
※ **Mount the lip to be faced outside when replace the dust seal.**

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

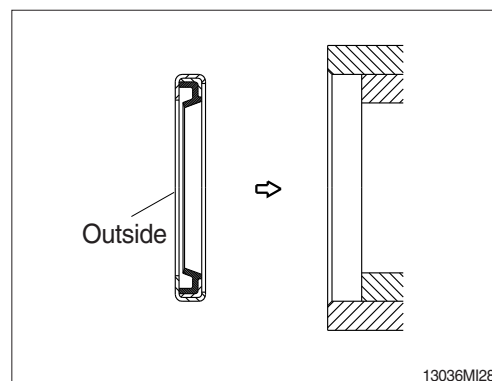
※ **Assemble the seal same direction with picture and use with plastic hammer when replace.**



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555W96MA47

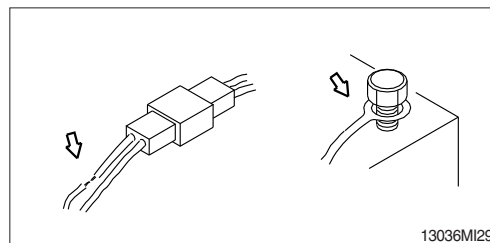


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## 7. ELECTRICAL SYSTEM

### 1) WIRING, GAUGES

Check regularly and repair loose or malfunctioning gauges when found.



### 2) BATTERY

#### (1) Clean

- ① Wash the terminal with hot water if it is contaminated, and apply grease to the terminals after washing.

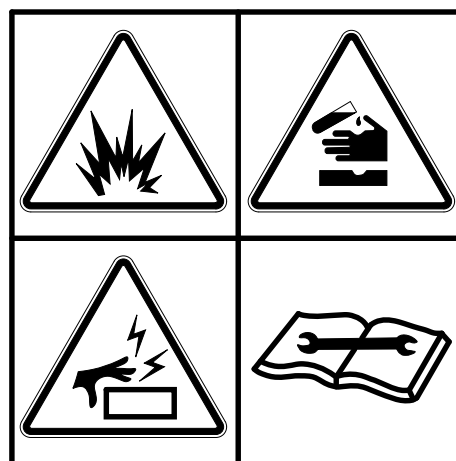
⚠ **Battery gas can explode. Keep sparks and flames away from batteries.**

⚠ **Always wear protective glasses when working with batteries.**

⚠ **Do not stain clothes or skin with electrolyte as it is acid.**

Be careful not to get the electrolyte in eyes.

Wash with clean water and go to the doctor if it enters the eyes.



#### (2) Recycle

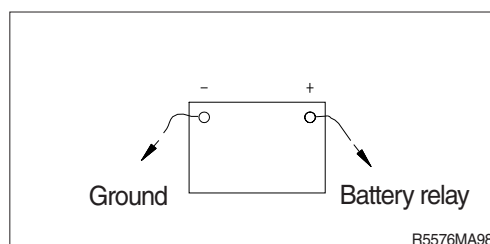
Never discard a battery.

Always return used batteries to one of the following locations.

- A battery supplier
- An authorized battery collection facility
- Recycling facility

#### (3) Method of removing the battery cable

Remove the cable from the ground connection first (⊖ terminal side) and reconnect it last when reassembling.





### 3) STARTING THE ENGINE WITH A BOOSTER CABLE

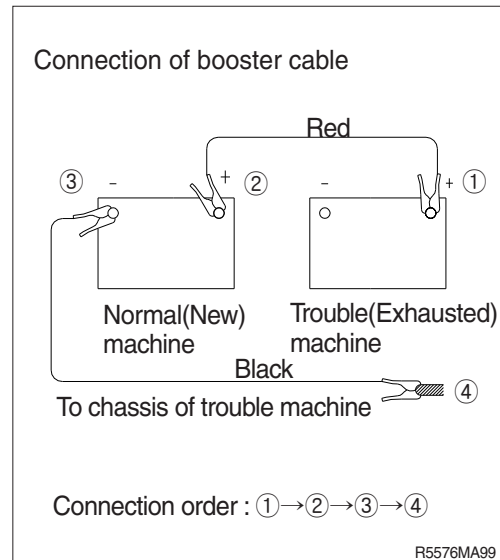
Keep following order when you are going to start engine using booster cable.

#### (1) Connection of booster cable

※ **Use the same capacity of battery for starting.**

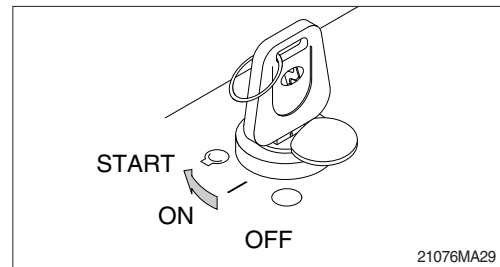
- ① Make sure that the starting switches of the normal machine and trouble machine are both at the OFF position.
- ② Connect the red terminal of booster cable to the battery (+) terminal between exhausted and new battery.
- ③ Connect the black terminal of the booster cable between new battery (-) terminal and chassis of trouble machine.

※ **Keep firmly all connection, the spark will be caused when connecting finally.**



#### (2) Starting the engine

- ① Starting the engine of the normal machine and keep it to run at high idle.
- ② Start engine of the trouble machine with starting switch.
- ③ If you can not start it by one time, restart the engine after 2 minutes.



#### (3) Taking off the booster cable

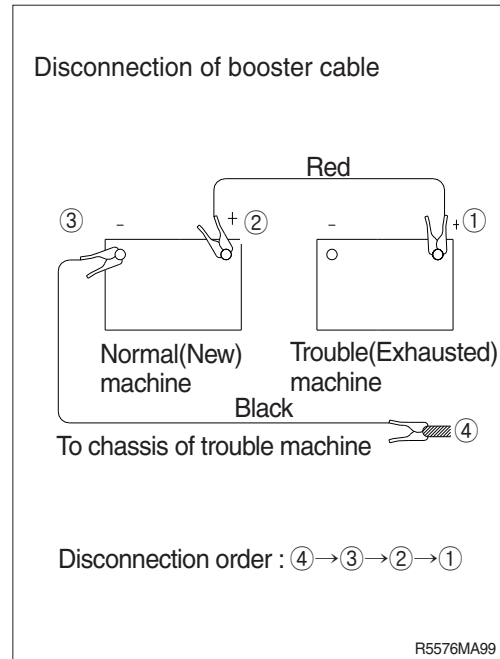
- ① Take off the booster cable(black).
- ② Take off the booster cable(red) connected to the (+) terminal.
- ③ Run engine with high idle until charging the exhausted battery by alternator, fully.

▲ **Explosive gas is generated while using the battery or charging it. Keep away flame and be careful not to cause the spark.**

※ **Charge the battery in the well ventilated place.**

※ **Place the machine on the earth or concrete. Avoid charging the machine on the steel plate.**

※ **Do not connect (+) terminal and (-) terminal when connecting booster cable because it will be shorted.**



#### (4) Welding repair

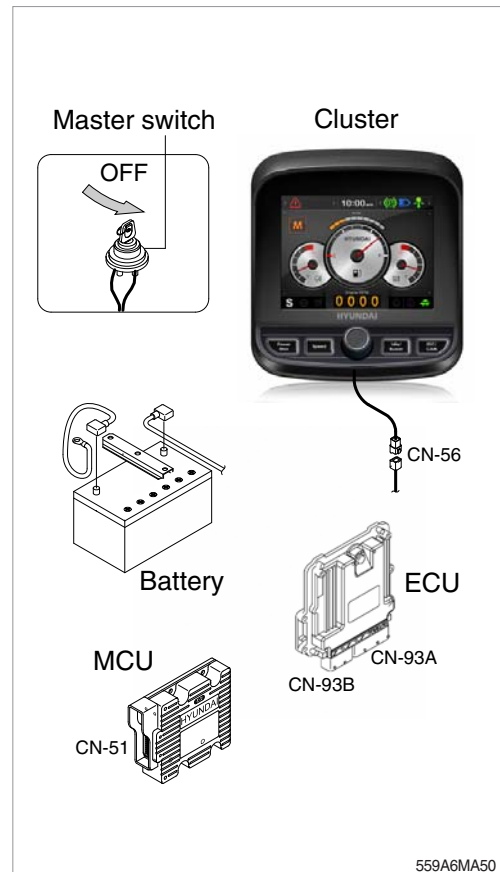
Before start to welding, follow the below procedure.

- 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 (MCU, ECU, 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 system.

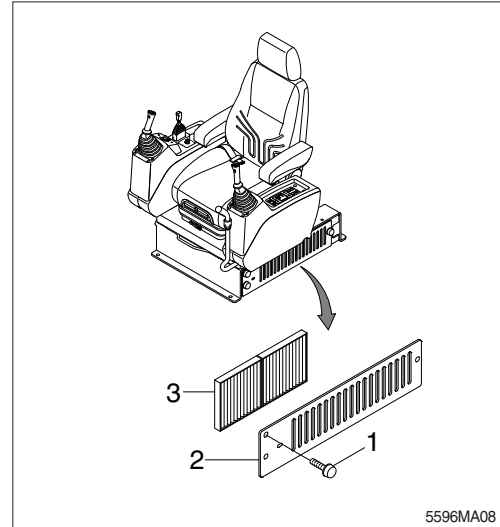


## 8. AIR CONDITIONER AND HEATER

### 1) CLEAN AND REPLACE OF THE CIRCULATION FILTER

※ **Always stop the engine before servicing.**

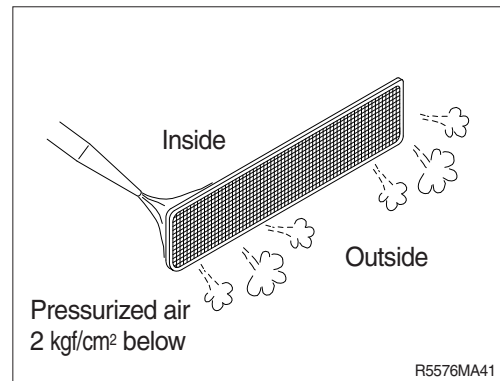
- (1) Remove the screw (1) and cover (2) on the seat base.
- (2) Remove the circulation filter (3).



- (4) Clean the filter using a pressurized air (Below 2 kgf/cm<sup>2</sup>, 28psi).

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

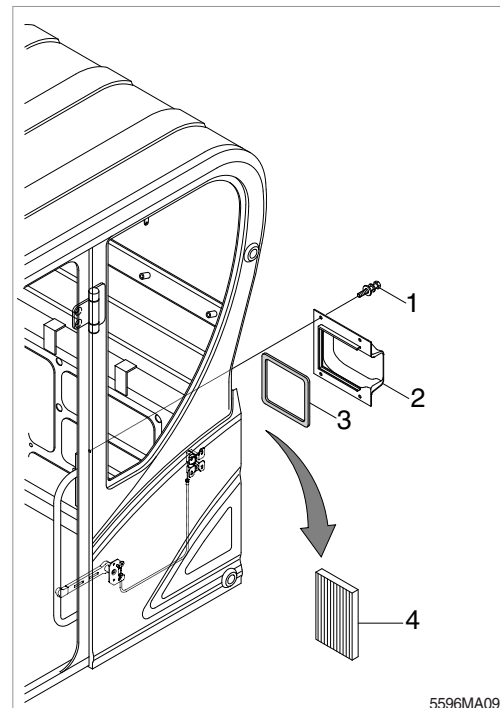
- (5) Inspect the filter after cleaning. If it is damaged or badly contaminated, use a new filter.



### 2) CLEAN AND REPLACE OF THE RECIRCULATION FILTER

※ **Always stop the engine before servicing.**

- (1) Remove the screw (1), cover (2) and pad (3).
- (2) Remove the recirculation filter (4).

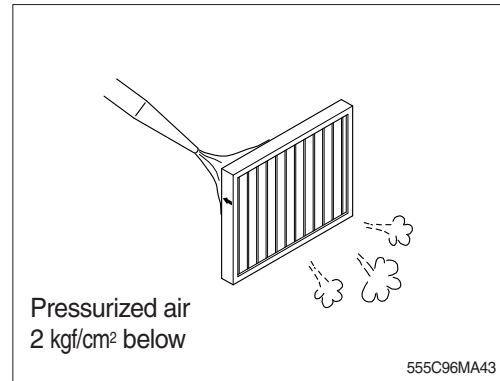


- (3) Clean the recirculation filter using a pressurizes are (Below 2 kgf/cm<sup>2</sup>, 28psi) or washing with water.



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

- (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

### (1) Equipment contains fluorinated greenhouse gas.

Model	Type	Quantity	GWP
R55W-9A	HFC-134a	0.95 kg (2.09 lb)	1359 CO <sub>2</sub> eq.

#### ※ GWP

Global warming potential (GWP) is a measure of how much heat a gas traps in the atmosphere relative to that of carbon dioxide (CO<sub>2</sub>). GWP is calculated in terms of the 100-year warming potential of 1 kg of a greenhouse gas relative to 1 kg of CO<sub>2</sub>.

### (2) Environmental precautions

The air conditioning system of the machine is filled with HFC-134a refrigerant at the factory.

HFC-134a refrigerant is a fluorinated greenhouse gas and contributes to global warming.

Do not release refrigerant into the environment.

### (3) Safety precautions

Work on the air conditioning system must only be performed by a qualified service technician.

Do not attempt to perform work on the air conditioning system.

Wear safety goggles, chemical resistant gloves and appropriate personal protective equipment to protect bare skin when there is a risk of contact with refrigerant.

### (4) Action in case of exposure

#### ① Eye contact / Limited skin contact

Rinse with warm water and apply a light bandage. Seek medical attention immediately.

#### ② Extensive skin contact

Rinse with warm water and carefully heat the area with warm water or warm clothing.

Seek medical attention immediately.

#### ③ Inhalation

Leave the area and find fresh air. Seek medical attention immediately.

# TROUBLESHOOTING GUIDE

## 1. ENGINE

※ This guide is not intended to cover every conditions, however many of the more common possibilities are listed.

Trouble	Service	Remark
The engine oil pressure lamp lights ON when engine speed is raised after completion of warm up.	<ul style="list-style-type: none"> <li>· Add the oil to the specified level.</li> <li>· Replace the oil filter cartridge.</li> <li>· Check oil leakage from the pipe or the joint.</li> <li>· Replace the monitor.</li> </ul>	
Steam is emitted from the top part of the radiator (the pressure valve). Coolant level warning lamp lights ON.	<ul style="list-style-type: none"> <li>· Supply the coolant and check leakage.</li> <li>· Adjust fan belt tension.</li> <li>· Wash out inside of cooling system.</li> <li>· Clean or repair the radiator fin.</li> <li>· Check the thermostat.</li> <li>· Tighten the radiator cap firmly or replace the packing of it.</li> <li>· Replace the monitor.</li> </ul>	
The engine does not start when the starting motor is turned over.	<ul style="list-style-type: none"> <li>· Add fuel.</li> <li>· Repair where air is leaking into fuel system.</li> <li>· Check the injection pump or the nozzle.</li> <li>· Check the valve clearance.</li> <li>· Check engine compression pressure.</li> </ul>	
Exhaust gas is white or blue.	<ul style="list-style-type: none"> <li>· Adjust to specified oil quantity.</li> <li>· Replace with specified fuel.</li> </ul>	
Exhaust gas occasionally turns black.	<ul style="list-style-type: none"> <li>· Clean or replace the air cleaner element.</li> <li>· Check the nozzle.</li> <li>· Check engine compression pressure.</li> <li>· Clean or replace the turbocharger.</li> </ul>	
Combustion noise occasionally changes to breathing sound.	<ul style="list-style-type: none"> <li>· Check the nozzle.</li> </ul>	
Unusual combustion noise or mechanical noise.	<ul style="list-style-type: none"> <li>· Check with specified fuel.</li> <li>· Check over-heating.</li> <li>· Replace the muffler.</li> <li>· Adjust valve clearance.</li> </ul>	

## 2. ELECTRICAL SYSTEM

Trouble	Service	Remark
Lamp does not glow brightly even when engine runs at high speed. Lamp flickers while engine runs.	<ul style="list-style-type: none"> <li>· Check for loose terminals and open-circuit wiring.</li> <li>· Adjust belt tension.</li> </ul>	
Battery charging lamp does not go out even when engine runs at high speed.	<ul style="list-style-type: none"> <li>· Check the alternator.</li> <li>· Check and repair wiring.</li> </ul>	
Unusual noise is emitted from the alternator.	<ul style="list-style-type: none"> <li>· Check the alternator.</li> </ul>	
Starting motor does not turn when starting switch is turned ON.	<ul style="list-style-type: none"> <li>· Check and repair the wiring.</li> <li>· Charge the battery.</li> <li>· Check the starting motor.</li> <li>· Check the safety relay.</li> </ul>	
The pinion of the starting motor keeps going in and out.	<ul style="list-style-type: none"> <li>· Charge the battery.</li> <li>· Check the safety relay.</li> </ul>	
Starting motor turns the engine sluggishly.	<ul style="list-style-type: none"> <li>· Charge the battery.</li> <li>· Check the starting motor.</li> </ul>	
The starting motor disengages before the engine starts up.	<ul style="list-style-type: none"> <li>· Check and repair the wiring.</li> <li>· Charge the battery.</li> </ul>	
The engine warming up lamp does not go ON.	<ul style="list-style-type: none"> <li>· Check and repair wiring.</li> <li>· Check the monitor.</li> </ul>	
The engine oil pressure lamp does not light up when engine is stationary (when the starting switch is in ON position.)	<ul style="list-style-type: none"> <li>· Check the monitor.</li> <li>· Check the caution lamp switch.</li> </ul>	
Battery charging lamp does not light up when the engine is stationary. (when the starting switch is in ON position.)	<ul style="list-style-type: none"> <li>· Check the monitor.</li> <li>· Check and repair the wiring.</li> </ul>	

### 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.	



# HYDRAULIC BREAKER AND QUICK COUPLER

## 1. SELECTING HYDRAULIC BREAKER

- 1) Become familiar with the manual and select breakers suitable to machine specifications.
- 2) Make careful selection in consideration of oil quantity, pressure and striking force, to enable satisfied performance.
- 3) When apply a breaker to the machine, consult your local dealer of Hyundai for further explanation.

## 2. CIRCUIT CONFIGURATION

- 1) As for breaker oil pressure line, use extra spool of main control valve.
- 2) Set proper breaker pressure on load relief valve.
- 3) The pressure of the ROBEX55W-9A system is 220 kgf/cm<sup>2</sup> (3130 psi).
- 4) The accumulator should be used to the breaker charging and return line.  
If the accumulator is not used, it will be damage as the input wave is delivered.  
※ **Keep the pressure pulsation of pump below 60 kgf/cm<sup>2</sup> (853 psi) by installing the accumulator.**
- 5) Do not connect the breaker return line to the main control, but connect to the return line front of the cooler.
- 6) Do not connect the breaker return line to drain lines, such as of swing motor, travel motor or pump, otherwise they should be damaged.
- 7) One of spool of the main control valve should be connected to the tank.
- 8) Select the size of pipe laying considering the back pressure.
- 9) Shimless tube should be used for the piping. The hose and seal should be used Hyundai genuine parts.
- 10) Weld the bracket for pipe clamp to prevent damage caused by vibration.

### 3. MAINTENANCE

#### 1) MAINTENANCE OF HYDRAULIC OIL AND FILTER

- (1) As machine with an hydraulic breaker provides the hydraulic oil becomes severely contaminated.
- (2) So, unless frequently maintained, the machine may easily go out of order.
- (3) Inspect and maintain hydraulic oil and 3 kinds of filter elements in particular, in order to prolong machine life.
- (4) Replace when the breaker work is used for short time according to the standard of right graph.

#### 2) RELEASE THE PRESSURE IN BREAKER CIRCUIT

When breaker operating is finished, stop engine and push pedal or switch for breaker to release pressure in breaker circuit.

If pressure still remains, the lifetime of the diaphragm in the accumulator will be shortened.

- 3) Be careful to prevent contamination by dust, sand and etc.  
If such pollution become mixed into the oil, the pump moving parts will wear abnormally, shorten lifetime and become damaged.
- 4) When operating breaker, bolts and nuts of main equipment may be loosened by vibration. So, it must be inspected periodically.

Service interval

unit : hours

Attachment	Operating rate	Hydraulic oil	Filter element
Breaker	100 %	600* <sup>1</sup>	250
		1000* <sup>2</sup>	

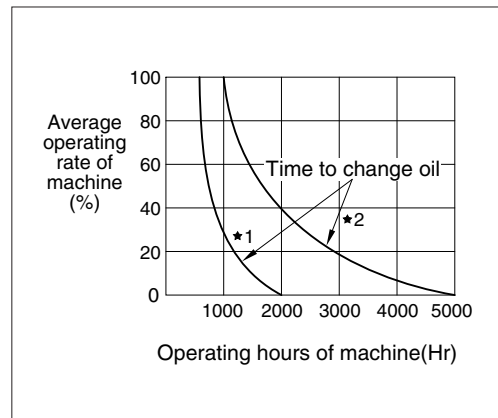
\*<sup>1</sup>: Conventional hydraulic oil

\*<sup>2</sup>: Hyundai genuine long life hydraulic oil

#### ● Replace following filter same time

- Hydraulic return filter : 1 EA
- Pilot line filter : 1 EA
- Element in hydraulic tank breather : 1 EA

Hyd oil change guide for hydraulic breaker



\*<sup>1</sup>: Conventional hydraulic oil

\*<sup>2</sup>: Hyundai genuine long life hydraulic oil

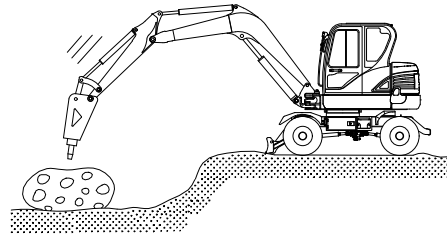
## 4. PRECAUTIONS WHILE OPERATING THE BREAKER

### 1) DO NOT BREAK ROCK WHILE LOWERING

As the breaker is heavy in comparison with bucket, it must be operated slowly.

If breaker is rapidly pushed down, working device may be damaged.

Incorrect

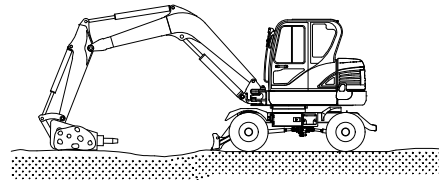


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### 2) DO NOT USE BREAKER TO CARRY BROKEN STONE OR ROCK BY SWING OPERATING

This may damage the operation device and swing system.

Incorrect

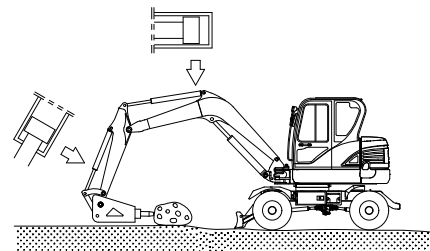


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### 3) OPERATE BREAKER WITH A GAP IN EXCESS OF 100 mm (4 inches) FROM THE END OF THE STROKE TIP

If breaker is operated with the end tip, the cylinder may be damaged.

Incorrect

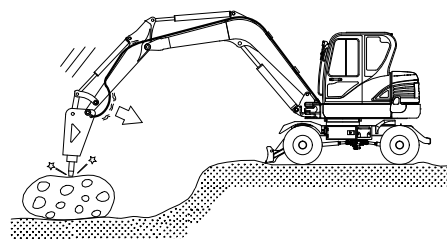


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### 4) IF THE HYDRAULIC HOSES VIBRATE EXCESSIVELY

If the machine used in this condition continuously this will effect badly on the machine such as loosening bolt, oil leakage, damage of pump pipe and etc.

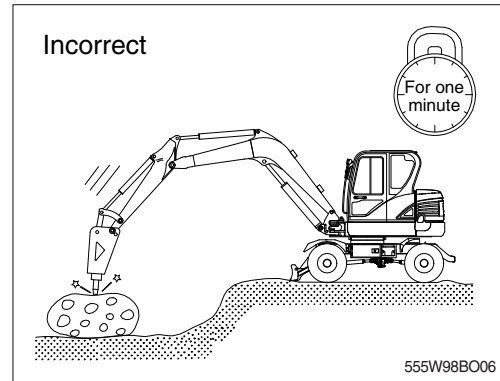
Incorrect



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**5) DO NOT CONTINUE TO WORKING OVER ONE MINUTE AT SAME POSITION OF BOOM AND ARM**

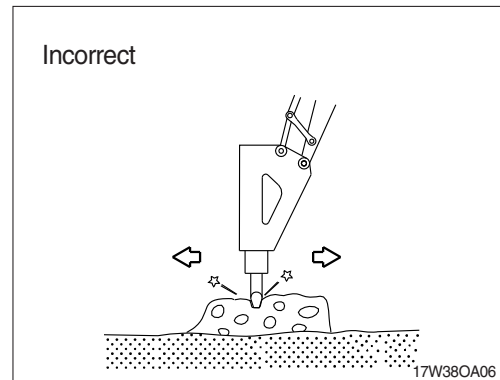
This will increase the temperature of the oil, and cause problem in the accumulator and seals.



**6) DO NOT MOVE MACHINE OR BREAKER WHILE STRIKING**

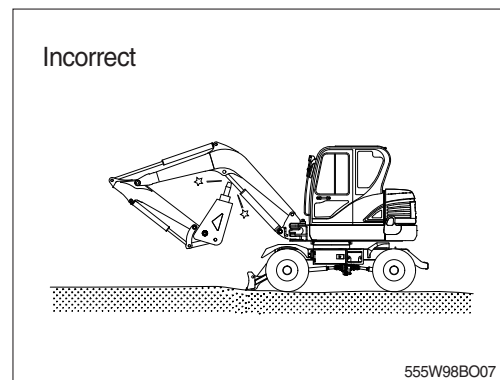
Do not move hammer while striking.

This will cause damage to the working device and the swing system.

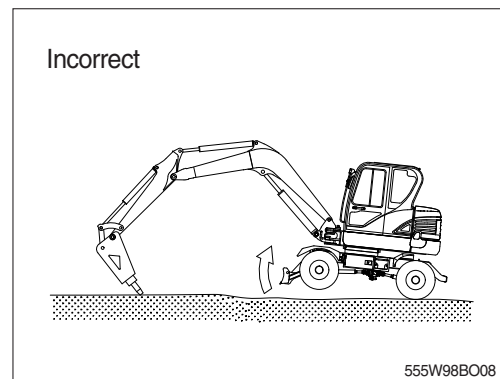


**7) TAKE CARE OF CHISEL AND BOOM INTERFACE**

Make sure of the arm and bucket control lever operation.



**8) Do not extend the bucket cylinder fully and thrusting to raise the machine off the ground.**

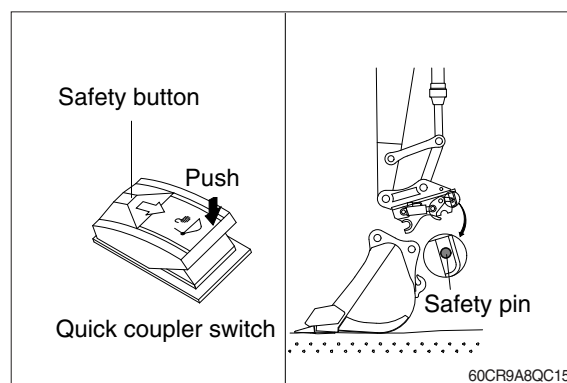


## 5. QUICK COUPLER

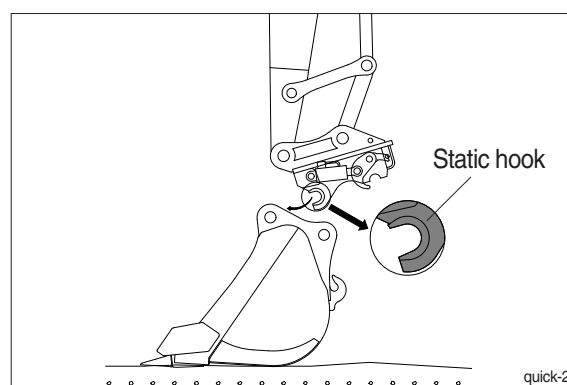
### ■ MACHINE SERIAL NO. : -#0623

#### 1) FIXING BUCKET WITH QUICK COUPLER

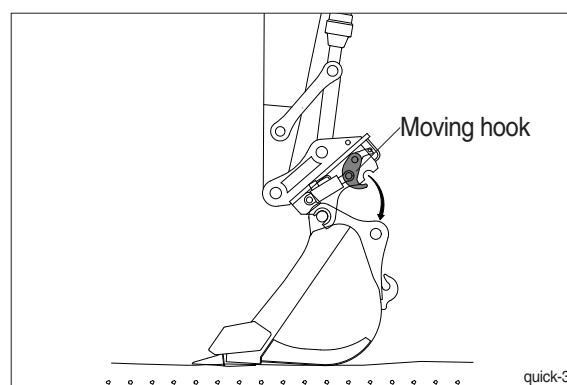
- (1) Before fixing bucket, remove safety pin of the moving hook.
- (2) Pulling safety button, press the quick coupler switch to unlock position. Then, the moving hook is placed on release position.



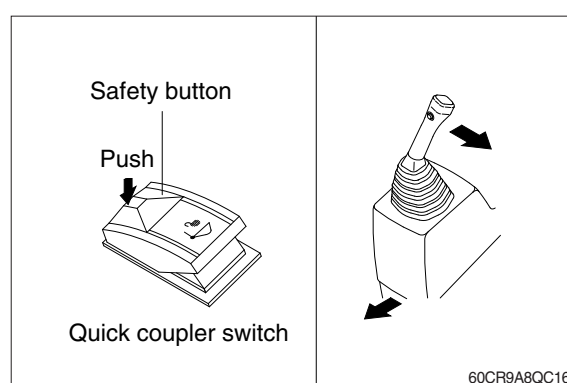
- (3) Aligning the arm and bucket, insert static hook of quick coupler to the bucket pin.



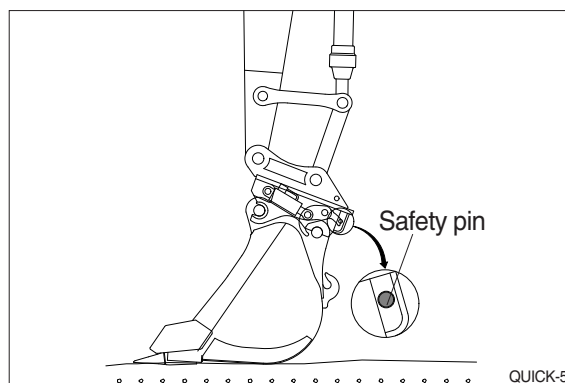
- (4) Operate RCV lever to bucket-in position. Then, the moving hook is coupled with the bucket link pin. Make sure that the moving hook is completely contacted with bucket link pin.



- (5) Press quick coupler switch to lock position. Operate RCV lever to bucket-in position.
- ※ **Be sure to check connection status between bucket pins and hooks of quick coupler.**



- (6) After checking the connection status between bucket pins and hooks of quick coupler, **insert safety pin of moving hook to lock position.**



## 2) REMOVE BUCKET FROM QUICK COUPLER

Removing procedure is reverse of fixing.

## 3) PRE-CAUTION OF USING QUICK COUPLER

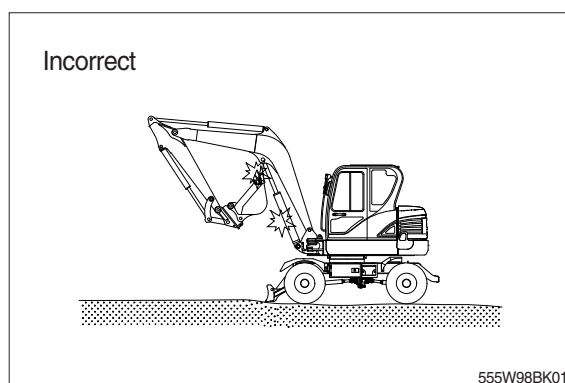
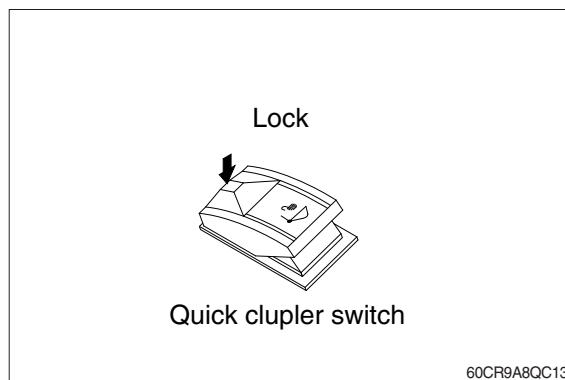
- ⚠ When operating the machine with quick coupler, confirm that the quick coupler switch is lock position and safety pin of moving hook is inserted.

Operating the machine with quick coupler switch unlocked and without safety pin of moving hook can cause the bucket to drop off and bring about the accident.

- ⚠ Serious injury or death can result from this accident.

- ⚠ Be careful to operate the machine equipped with quick coupler. The bucket may hit cab, boom and boom cylinders when it reaches vicinity of them.

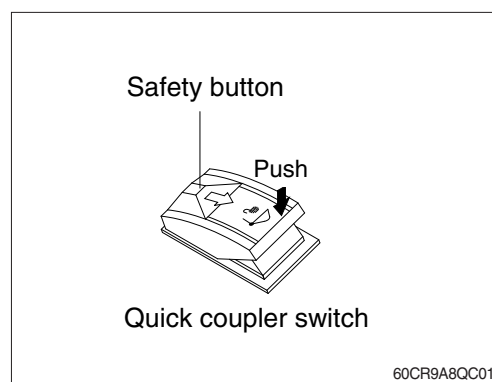
- ※ HYUNDAI will not be responsible for any injury or damage in case that safety pin is not installed properly.



■ MACHINE SERIAL NO. : #0624-

1) FIXING BUCKET WITH QUICK COUPLER

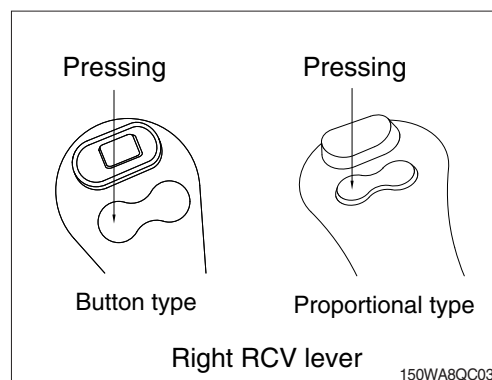
- (1) Park the excavator and attachment on firm and level ground.
- (2) After checking the safe environment conditions for installing/removing the quick coupler, perform the disengagement process.
- (3) To unlock the quick coupler switch, press the safety button forward and press the switch.



- (4) Quick coupler symbols and warning messages appear on the cluster screen, and warning buzzers sound.
- ※ The warning buzzer continues to operate up to step (12).



- (5) To unlock the quick coupler, press the quick coupler button on the right RCV lever. To maintain the unlock status of the quick coupler the operator must maintain pressing the coupler button.



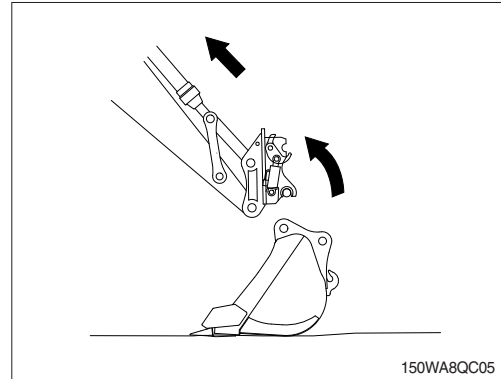


- (6) The warning message in the cluster screen is changed, and the quick coupler lock is released.

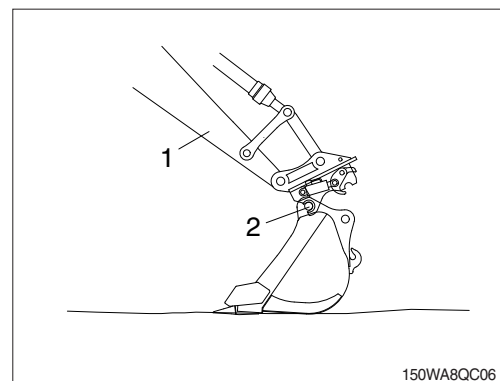


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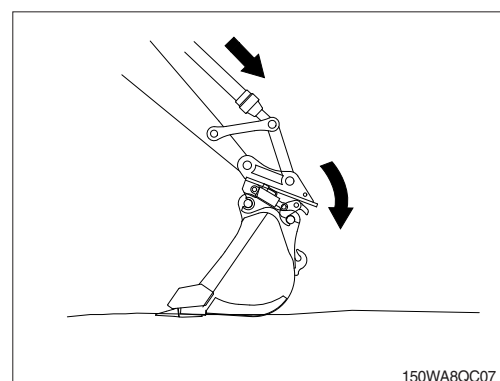
- (7) Retract the bucket cylinder. Align the quick coupler with attachment mounting pins or interface.



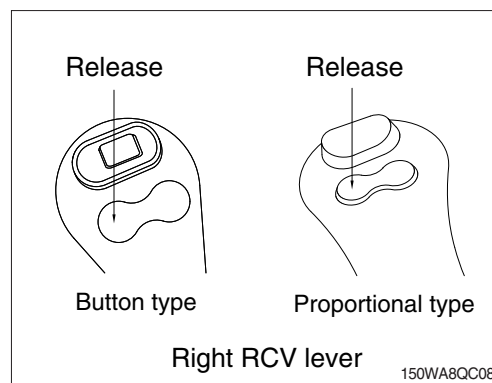
- (8) Move the arm (1) and raise it until hook engages the upper (2) pin or interface of attachment.



- (9) With the bucket crowded, engage the quick coupler to the lower attachment pin or interface.



(10) To engage the quick coupler, release the quick coupler button on the right RCV lever.



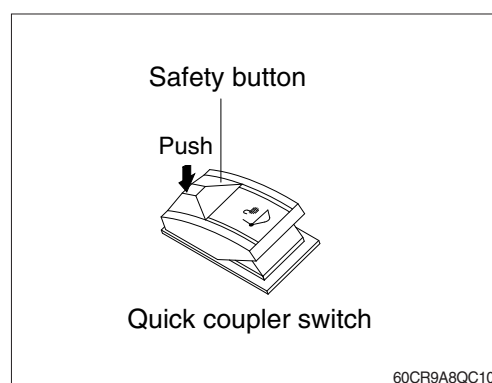
(11) The warning message in the cluster screen is changed, and the quick coupler lock is engaged.

※ After changing warning message, the quick coupler will be locked even if the operator presses the quick coupler button of the right RCV lever again. To unlock the quick coupler again the operator must repeat from the process (3).

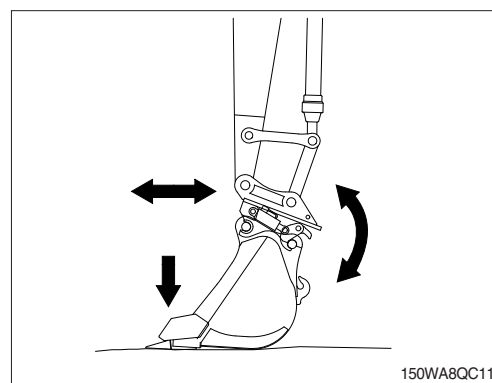


(12) To confirm the engagement of the quick coupler, release the safety button to its original position.

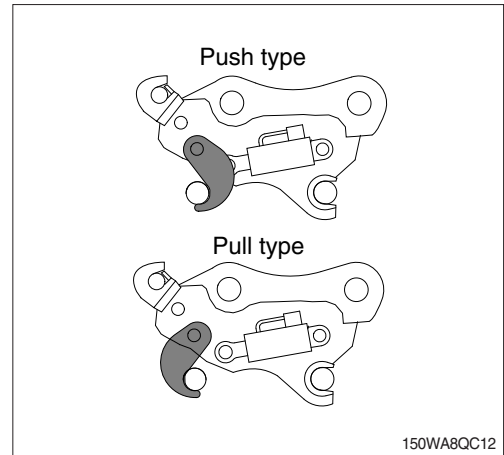
- The buzzer will stop activating.
- The warning message will disappear.



(13) Shake the attachment vigorously and lower the boom to the ground and apply down pressure to the quick coupler and attachment to check that attachment is fully engaged and locked to the quick coupler.



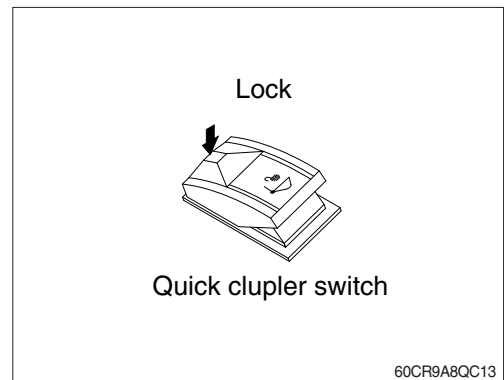
- (14) Visually check that quick coupler is fully engaged and locked before operating the machine and attachment.



## 2) PRECAUTION OF USING QUICK COUPLER

- ⚠ When operating the machine with quick coupler, confirm that the quick coupler switch is in the LOCK position.

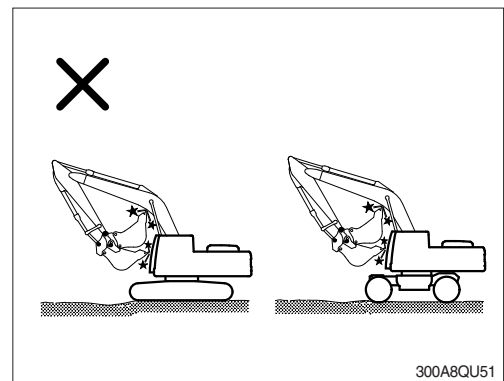
Operating the machine with quick coupler switch unlocked can cause the bucket to drop off and could result in personal injury, death, machine damage or property damage.



- ⚠ Be careful of the operating the machine which is equipped with quick coupler.

The bucket may hit cab, boom and boom cylinders when it reaches the vicinity of them as shown in the illustration.

HYUNDAI will not be responsible for any injury, death or damage in the event that the quick coupler and attachment are not installed correctly.



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