

# CONTROL DEVICES

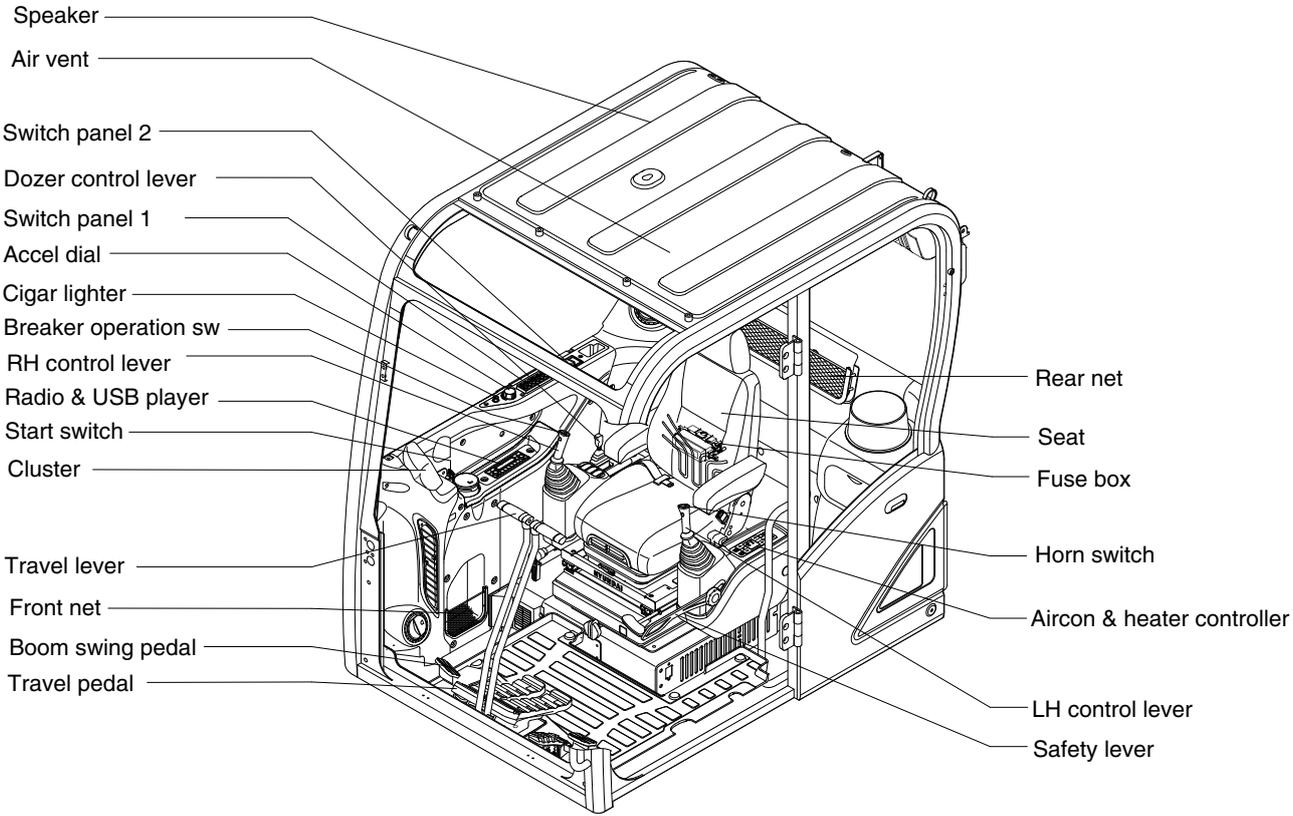
## 1. CAB DEVICES

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 warning system for early detection of machine malfunction.



87A3CD04

## 2. CLUSTER

### 1) STRUCTURE (TYPE A)

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.



87A3CD50

- ※ 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 3-8 for details.

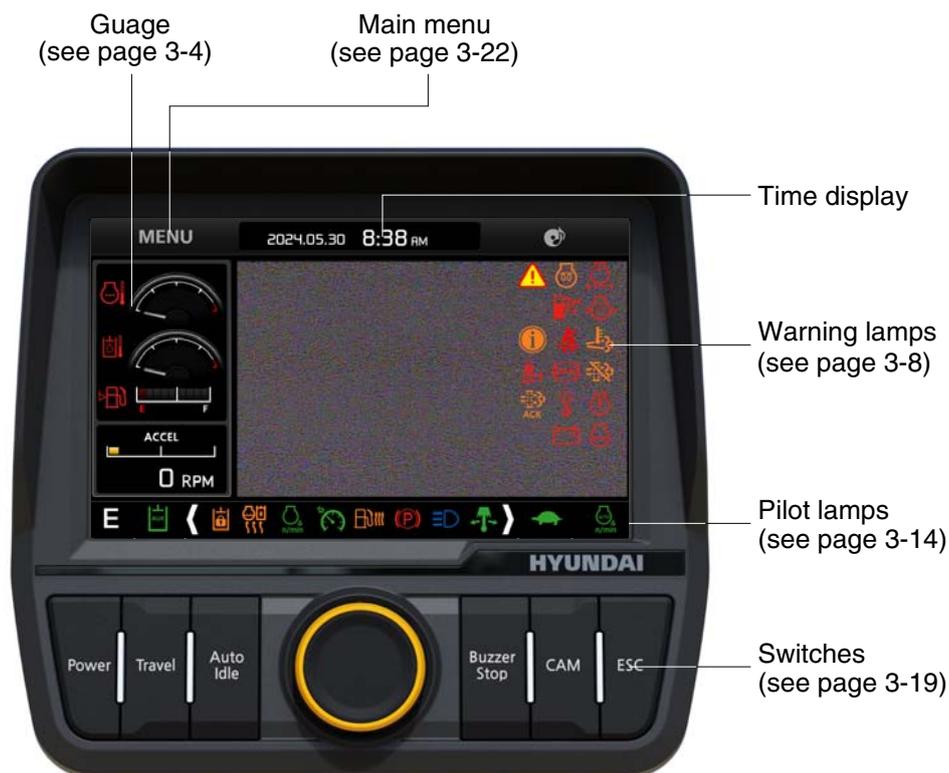
## STRUCTURE (TYPE B)

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.



87A3CD10

- ※ 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 3-8 for details.
- ※ If the camera screen is canceled according to the driver's intention, there is a risk of an accident due to limited visibility. Therefore, any travel or operation of the equipment is strictly prohibited when the driver's visibility is limited, and we are not responsible for any accidents resulting from this.

## 2) GAUGE (TYPE A)

### (1) Operation screen

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



87A3CD51

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

### (2) Engine coolant temperature gauge



87A3CD52

- ① This gauge indicates the temperature of coolant.
    - Black range : General state
    - Red range : Engine overheated state
  - 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 even though the machine is in the normal condition range, check the electric device as this can be caused by poor connection of sensor or connector, and poor grounding of the instrument, etc.

### (3) Hydraulic oil temperature gauge



87A3CD53

- 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 in the normal condition range, check the electric device as this can be caused by poor connection of sensor.

#### (4) Fuel level gauge



87A3CD54

- ① This gauge indicates the amount of fuel in the fuel tank.
    - Black range : 23 ℓ (6.1 U.S. gal) or more
    - Red range : below 23 ℓ (6.1 U.S. gal)
  - ② Fill the fuel when in the red range, or  lamp lights ON in red.  
If the gauge indicates the red range or  lamp lights ON in red
- ※ red even though the machine is in the normal condition range, check the electric device as this can be caused by poor connection of sensor.

#### (5) Engine rpm gauge and clinometer



Engine rpm

87A3CD55

- ① This displays the engine speed.
- ② This displays the tilt of machine.

#### (6) Accel dial gauge



87A3CD56

- ① This gauge indicates the level of accel dial from 0 to 10 step.

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

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



87A3CD57

- 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



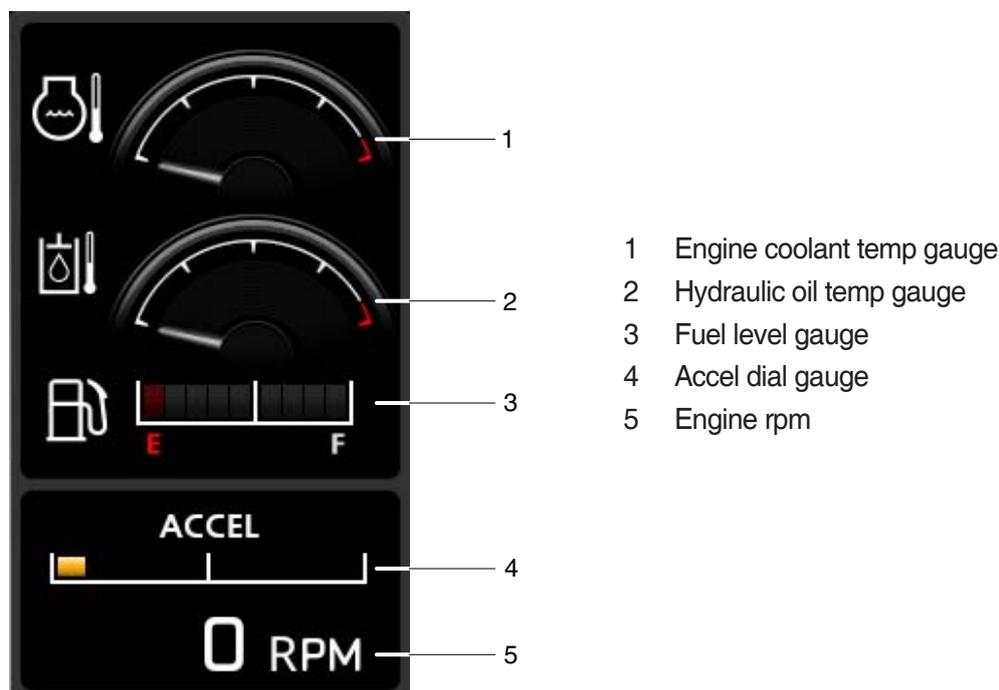
HX60A3CD108

- 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.

## GAUGE (TYPE B)

### (1) Operation screen

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



87A3CD11

### (2) Engine coolant temperature gauge



- ① This gauge indicates the temperature of coolant.
    - Black range : General state
    - Red range : Engine overheated state
  - 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 even though the machine is in the normal condition range, check the electric device as this can be caused by poor connection of sensor or connector, and poor grounding of the instrument, etc.

### (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 in the normal condition range, check the electric device as this can be caused by poor connection of sensor.

#### (4) Fuel level gauge



87A3CD14

- ① This gauge indicates the amount of fuel in the fuel tank.
    - Black range : 23 l (6.1 U.S. gal) or more
    - Red range : below 23 l (6.1 U.S. gal)
  - ② Fill the fuel when in 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 in the normal condition range, check the electric device as this can be caused by poor connection of sensor.

#### (5) Engine rpm



87A3CD16

- ① This displays the engine speed.

#### (6) Accel dial gauge



87A3CD15

- ① This gauge indicates the level of accel dial from 0 to 10 step.

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

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



87A3CD17

- 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



87A3CD18

- 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

##### - TYPE A



87A3CD60

- ※ 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 up when the buzzer stop switch is pushed or the pop-up is touched. And the buzzer stops.
- ※ Refer to page 3-20 for the switch.

##### - TYPE B



87A3CD20

- ※ Each warning lamp on the right-top of the camera screen 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 up when the buzzer stop switch is pushed or the pop-up is touched. And the buzzer stops.
- ※ Warning lights turn on in order from the upper right corner according to the order in which they occur.
- ※ Refer to page 3-20 for the switch.

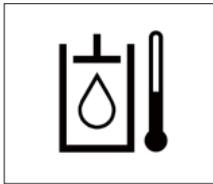
### (1) Engine coolant temperature warning lamp



290F3CD61

- ① The  lamp pops up on the center of LCD and the buzzer sounds when the engine coolant temperature is over 110°C or more.
- ② The pop-up  lamp moves to the original position and lights up 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.

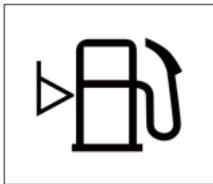
### (2) Hydraulic oil temperature warning lamp



290F3CD62

- ① This warning 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



290F3CD63

- ① This warning lamp lights up and the buzzer sounds when the level of fuel is below 23 ℓ (6.1 U.S. gal).
- ② Fill the fuel immediately when the lamp is ON.

### (4) Emergency warning lamp



290F3CD64

- ① This warning lamp pops up and the buzzer sounds when each of the below warnings occurs.
  - 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 will stop.  
This is same as following warning lamps.
- ② When this warning lamp lights up, machine must be checked and serviced immediately.

### (5) Engine oil pressure warning lamp



290F3CD65

- ① This lamp lights up when the engine oil pressure is low.
- ② If the lamp lights up, shut OFF the engine immediately. Check oil level.

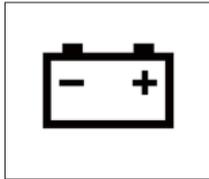
#### (6) Check engine warning lamp



290F3CD66

- ① Warning lamp is turned ON when the engine must be checked.
- ※ **When the warning lamp is turned ON, stop the machine and find the cause for repair.**

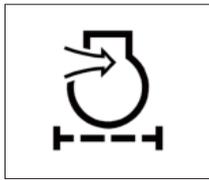
#### (7) Battery charging warning lamp



290F3CD67

- ① This warning lamp lights up when the battery charging voltage is low.
- ② Check the battery charging circuit when this lamp lights up.

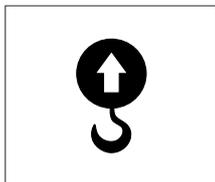
#### (8) Air cleaner warning lamp



290F3CD68

- ① This warning lamp lights up when the air cleaner is clogged.
- ② Check, clean or replace the filter.

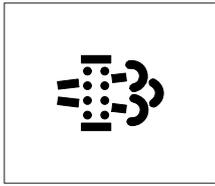
#### (9) Overload warning lamp (option)



HX603CD80

- ① When the machine is overloaded, the overload warning lamp lights up when the overload switch is ON. (if equipped)
- ② Reduce the machine load.

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



87A3CD28

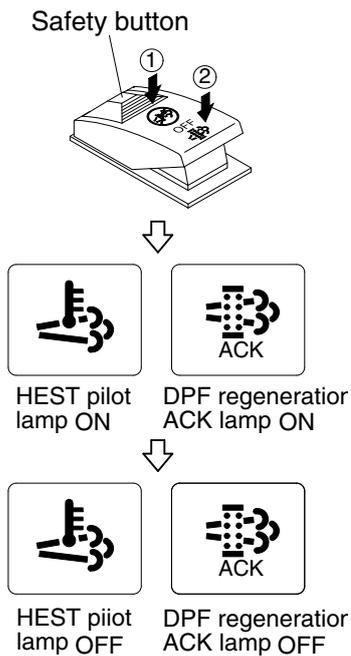
- ① This warning lamp lights up or go off when the regeneration is needed.
- ② This warning lamp lights up while DPF regeneration inhibit switch is in "Regeneration inhibited" state, when stationary regeneration is permitted.
- ③ This warning lamp lights up during reset regeneration standby or in back up mode.
- ④ This warning lamp blinks 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 3-44 page) · 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 HD Hyundai Construction Equipment service center or local dealer.

※ Manual regeneration method of DPF



85A3CD213

※ Manual regeneration must be operated in a fireproof area.

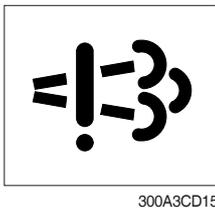
- ① Stop and park the machine.
- ② The accel dial to the lowestest position and operate the engine in idling.
- ③ Pull the safety button and push the switch to position ② to initiate the manual regeneration of DPF.

※ Refer to page 3-44 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 light go off and the regeneration acknowledge lamp and HEST warning lamp will light up while the regeneration function is operating.
- ⑤ The regeneration acknowledge lamp and HEST warning lamp will light OFF when the regeneration function is completed.

(11) Emission system fail warning lamp

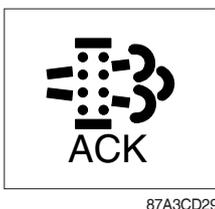


- ① This warning lamp indicates there are faults related to the emission system.
- ② The lamp lights up when each of the below warnings is happened.
  - a. The EGR valve malfunctions.
  - b. Electrical malfunction of the EGR control sensors. (disconnection, short)
  - c. Tampering with the EGR control sensors.

③ This warning lamp can be shown together with DPF warning lamp or engine fail lamp or engine stop warning lamp when DPF system is diagnosed.

※ Please contact your HD Hyundai Construction Equipment service center or local dealer.

(12) DPF regeneration acknowledge warning lamp



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

(13) Stop engine warning lamp



290F3CD252

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

(14) Water in fuel warning lamp



HX60A3CD110

- ① This warning lamp lights up when the water separator is full of water or malfunctioning.
- ② When this lamp lights up, stop the machine and drain water from the water separator.

(15) Seat belt reminder warning lamp



300A3CD25

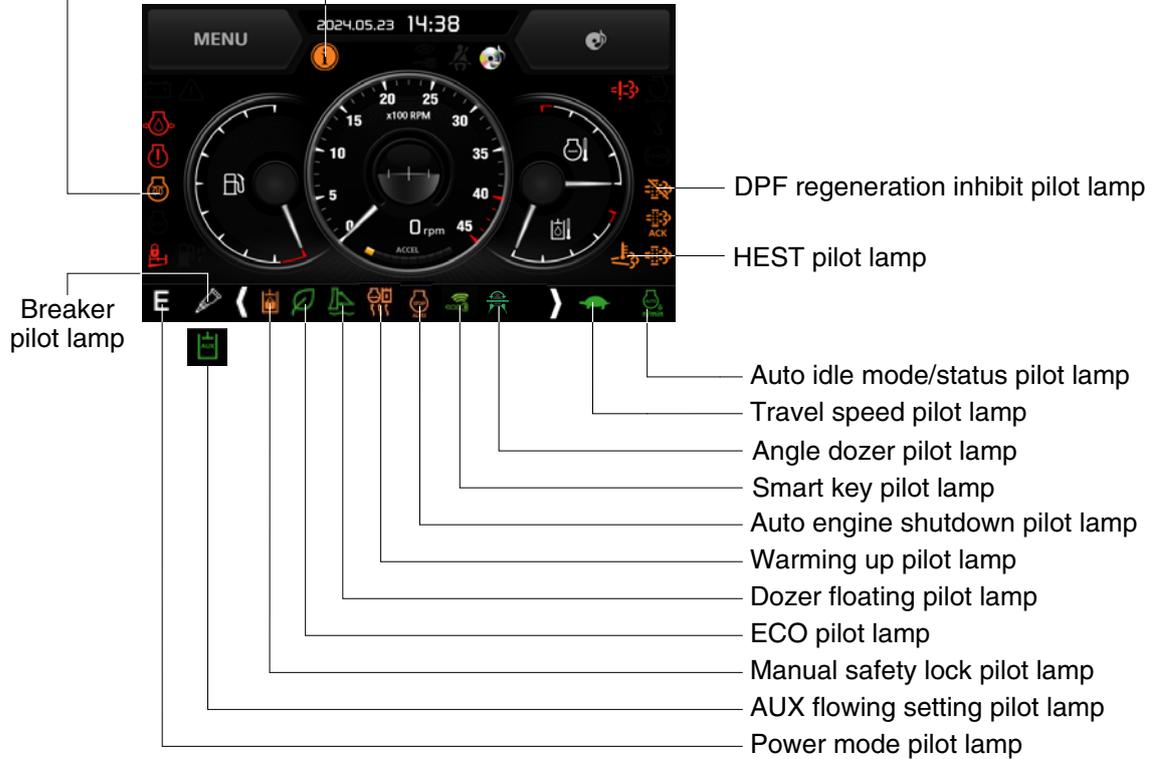
- ① When operator does not fasten the operator's seat belt, the seat belt reminder warning lamp lights up and the buzzer sounds.
- ② Fasten the seat belt.

## 5) PILOT LAMPS

### - TYPE A

Maintenance pilot lamp

Preheat pilot lamp

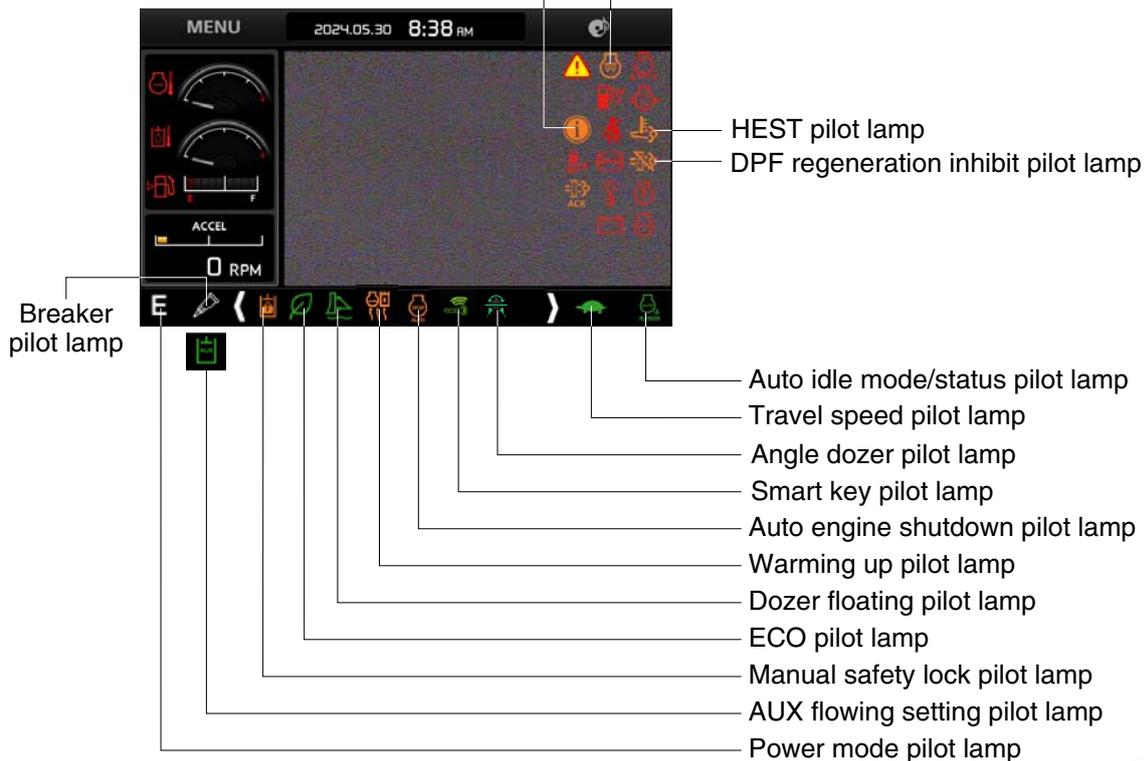


87A3CD61

### - TYPE B

Maintenance pilot lamp

Preheat pilot lamp

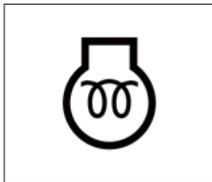


87A3CD21

### (1) Mode pilot lamps

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

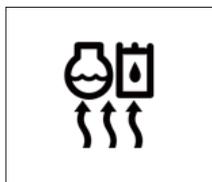
### (2) Preheat pilot lamp



290F3CD79

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

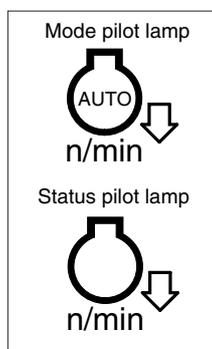
### (3) Warming up pilot lamp



290F3CD80

- ① This lamp is lights up 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 (86°F), or when 10 minutes have passed since starting the engine.

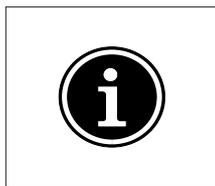
### (4) Auto idle mode/status pilot lamp



85A3CD106

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

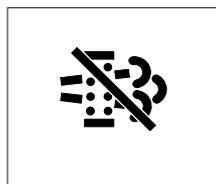
#### (5) Maintenance pilot lamp



HX60A3CD116

- ① This lamp lights up when consumable parts are in need of replacement. It means that the change or replacement interval of parts is 30 hours from the required change interval.
  - ② Check the message in maintenance information of main menu. Also, this lamp lights up for 3 minutes when the start switch is switched to the ON position.
- ※ Refer to page 3-27.

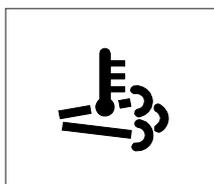
#### (6) DPF regeneration inhibit pilot lamp



85A3CD107

- ① This pilot lamp indicates, the DPF switch is pushed to the inhibit position, therefore automatic and manual regeneration can not occur.
- ※ Refer to page 3-44 for the DPF switch.

#### (7) HEST (High exhaust system temperature) pilot lamp



85A3CD109

- ① This pilot 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 is common for the lamp to illuminate on and off during normal equipment operation as the engine completes regeneration cycles.

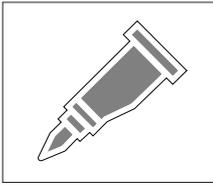
#### (8) Dozer floating pilot lamp



85A3CD112

- ① This lamp will be light up when the dozer floating lever is pressed.
- ※ Refer to page 3-49.

### (9) Breaker pilot lamp



85A3CD116

- ① This lamp will be light up as conditions below.
- The breaker selection switch is pressed on the membrane switch.
  - The AUX switch is pressed to OFF positions.
- ※ Refer to page 3-43 and 3-46.

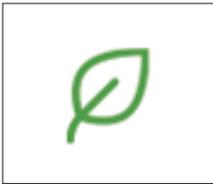
### (10) AUX flowing setting pilot lamp



85A3CD114

- ① This lamp will be light up as conditions below.
- The AUX flow setting is selected Enables in the cluster.
  - The AUX switch is pressed to AUX positions.
- ※ Refer to page 3-27 and 3-44.

### (11) ECO mode pilot lamp



85A3CD111A

- ① This lamp will light up when the ECO mode switch is pressed.
- ② The machine will be operated in economy conditions.

### (12) Manual safety lock pilot lamp



140WA3CD37

- ① This lamp lights up when the safety knob is set to the LOCK position.
- ※ Refer to page 3-48 for the safety knob.

### (13) Auto engine shutdown pilot lamp



220A3CD202A

- ① This lamp lights up when the auto engine shutdown is activated.
- ※ Refer to page 3-32.

(14) Smart key pilot lamp (option)



300A3CD36A

- ① This lamp lights up when the engine is started by the start button.
  - ② This lamp is red when the authentication fails, it will be green when it authentication is successful.
- ※ Refer to page 3-31.

(15) Angle dozer pilot lamp (option)



85A3CD113

- ① This lamp will be light up when the AUX switch is pressed to ANGLE DOZER positions.
- ※ Refer to page 3-44.

## 6) SWITCHES

### - TYPE A



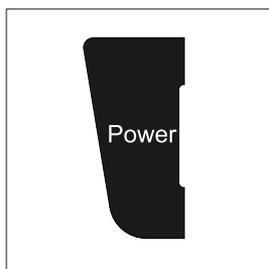
※ When the switches are selected, the pilot lamps are displayed on the LCD. Refer to page 3-14 for details.

### - TYPE B



※ When the switches are selected, the pilot lamps are displayed on the LCD. Refer to page 3-14 for details.

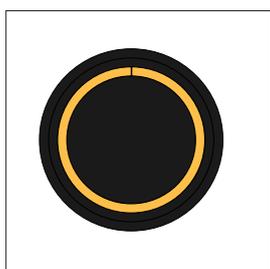
### (1) Power mode switch



HX60A3CD118

- ① This switch is to select the machine power mode and when pressed, the power mode pilot lamp will be displayed on the section of the monitor.
  - P : Heavy duty power work.
  - S : Standard power work.
  - E : Economy power mode
- ② The pilot lamp changes S → E → P → S in this order.

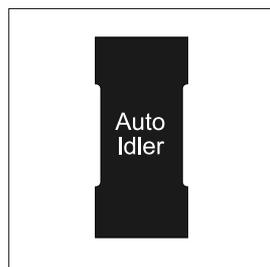
### (2) Select switch



HX60A3CD119

- ① This switch is used to select or change the menu or input value.
- ② Knob push
  - 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

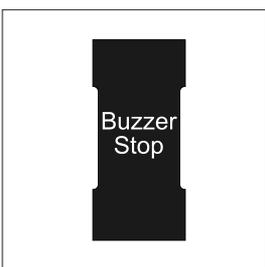
### (3) Auto idler switch



HX60A3CD120

- ① This switch is used to activate or cancel the auto idle function.  
※ Refer to page 3-15 for details.

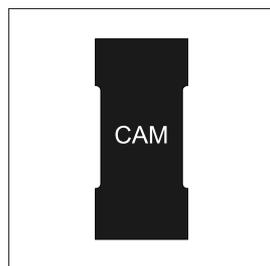
### (4) Buzzer stop switch



HX60A3CD121

- ① The buzzer sounds when the machine has a problem.  
In this case, push this switch and buzzer stops, but the warning lamp lights up until the problem is cleared.

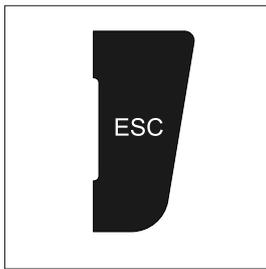
### (5) Camera switch



HX60A3CD122

- ① In the operation screen, pushing this switch will display the view of the camera on the machine (if equipped).  
※ Please refer to page 3-38 for the camera.

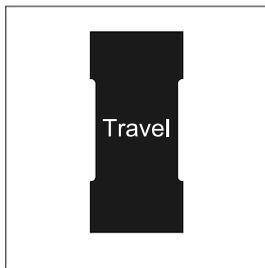
### (6) Escape switch



HX60A3CD123

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

### (7) Travel speed control switch



HX60A3CD104

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

-  : Low speed
-  : High speed

※ Do not change the setting of the travel speed switch while machine is moving. Machine stability may be adversely affected.

⚠ Serious injury or death can result from sudden changes in machine stability.

## 7) MAIN MENU

### - TYPE A

Main menu screen



87A3CD63



Sub menu screen



HW60AH3CD125A

- ※ Please refer to the select switch, page 3-20 for selection and change of menus and input values.
- ※ In the operation screen, tap MENU or press the select switch to access the sub-menu screen.

### - TYPE B

Main menu screen



87A3CD30



Sub menu screen



HW60AH3CD125A

- ※ Please refer to the select switch, page 3-20 for selection and change of menus and input values.
- ※ In the operation screen, tap MENU or press the select switch to access the sub-menu screen.

(1) Structure

No	Main menu	Sub menu	Description
1	 Monitoring	Active fault - Machine Active fault - Engine Logged fault - Machine/engine Delete logged fault Monitoring - Machine Monitoring - Switch Monitoring - Output	MCU ECU MCU, ECU MCU, ECU Engine rpm, oil temp, voltage and pressure etc. Digital switch status Digital output status
2	 Management	Maintenance information Breaker flow level AUX flow setting  ESL mode setting Auto engine shutdown Change password Machine information A/S phone number Cluster update CAN update Service menu	Elapsed time, Change interval, Replacement etc. Breaker flow level setting Option atch selection, Proportional flow control setting, Confirmation ESL mode setting One time, Always, Disable Password change Cluster, MCU, Engine, Machine A/S phone number, A/S phone number change Application, System Program download, Update Power shift, Operating hour, Gauge type, Rpm, AVCU set, Language update etc
3	 Display	Clock Brightness Unit Language	Current time set Manual, Auto Temperature, Pressure, Flow, Distance, Volumn 22 kinds
4	 Utilities	Entertainment Camera setting  Clinometer setting Manual Emergency mode	Video/music file playing Setup of number of active cameras, display sequences, and camera numbers Initializing slope sensor Display cluster manual Back-up switch for failed cluster switch and accel dial

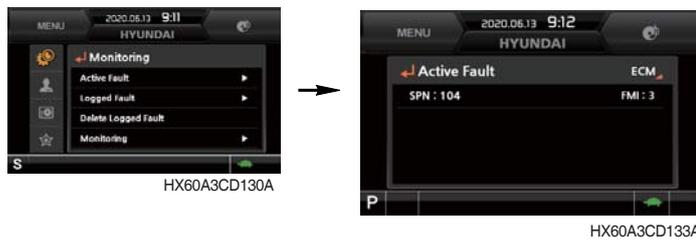
## (2) Monitoring

### ① Active fault - Machine



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

### ② Active fault - Engine



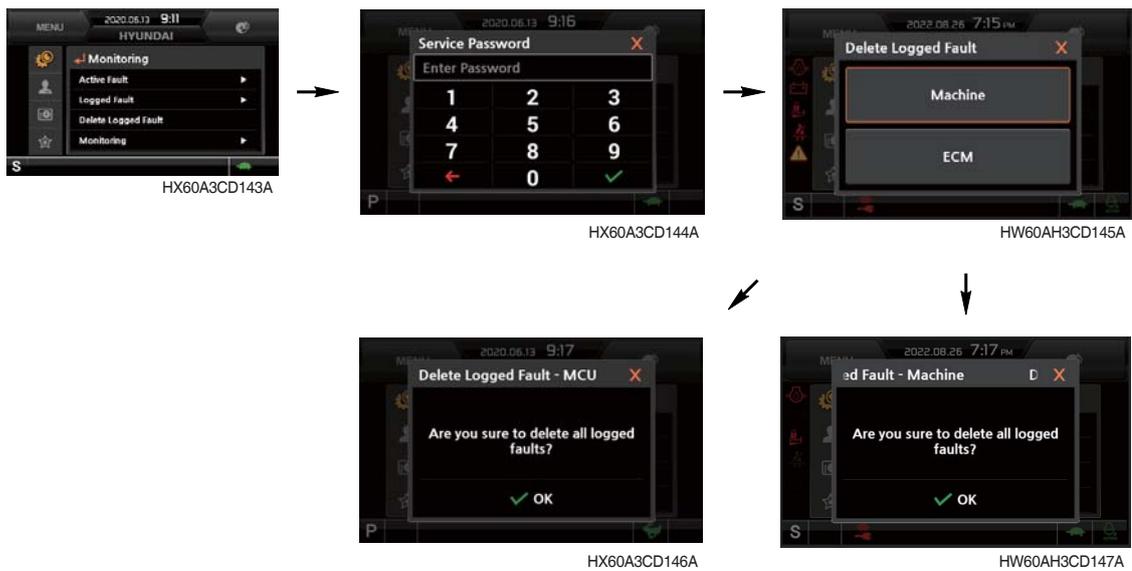
- The active faults of the engine ECU can be checked by this menu.

### ③ Logged fault - Machine/ Engine



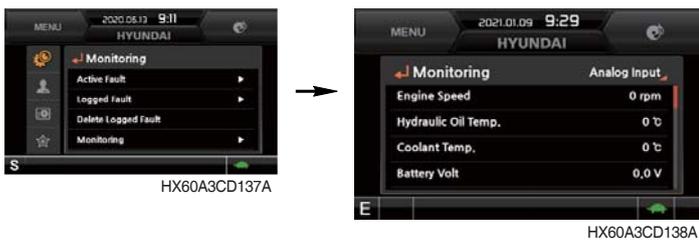
- The logged faults of the machine MCU or engine ECU can be checked by this menu.
- This menu can be used only HD Hyundai Construction Equipment service man.

④ Delete logged fault



- The logged faults of the MCU, engine ECU can be deleted by this menu. (It is possible under the engine stop conditions)

⑤ Monitoring (machine status)



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

⑥ Monitoring (switch status)



- The digital switch status of the machine can be checked by this menu.
- The activated switch will display in blue color.

⑦ Monitoring (output status)



- The digital output status of the machine can be checked by this menu.
- The digital output status will display in blue color.

### (3) Management

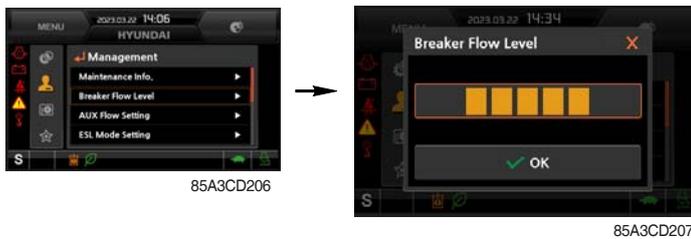
#### ① Maintenance information



- Elapsed time : Display the elapsed time after the maintenance.
- Change interval : The change intervals can be changed in hour increments of 50.
- Change history : Display the change history for the maintenance.
- Replacement : The elapsed time will be reset to zero (0).

※ **Change or replace interval**  
Refer to the page 6-15.

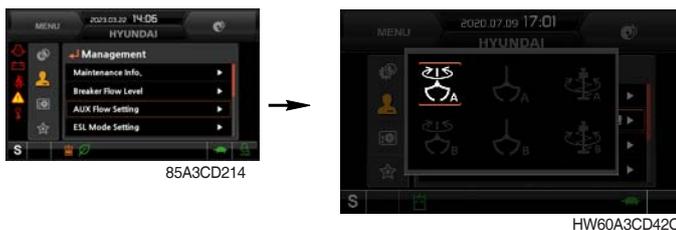
#### ② Breaker flow level



- The breaker flow level can be modulated in 1~5 steps.

#### ③ AUX flow setting

##### a. Option attach selection



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

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

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

b. Proportional flow control setting

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

a) Rotary setting



- Select rotary RCV, button and flow can be set by this menu



- RCV setting
  - Enable set LH or RH RCV for rotary operation.
  - Select LH for rotary → RH set for grapple automatically

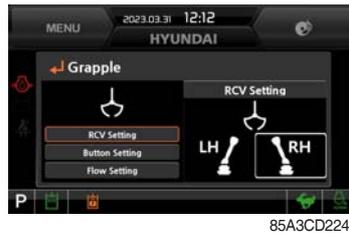


- Button setting (CW rotation)
  - Select LH for CW rotation → RH set for CCW rotation automatically



- Flow setting
  - Enable set from level 1 to level 5.

## b) Grapple setting



- Select grapple  
RCV, button and flow can be set by this menu

- RCV setting
  - Enable set LH or RH RCV for grapple operation.
  - Select LH for grapple → RH set for rotary automatically

- Button setting (Close)
  - Select RH for Close → LH set for open automatically

- Flow setting
  - Enable set from level 1 to level 5.

- Flow setting value can be saved by pressing 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

TYPE A



85A3CD227

TYPE B



87A3CD30

· AUX flowing setting pilot lamp (  ) is activated on the lower side of the main screen as below conditions.

※ The AUX switch is pressed to the AUX position and the AUX flow setting is selected Enabled.

a) Rotary setting

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

b) Grapple setting

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

④ ESL mode setting



85A3CD215



HX60A3CD149A



HW60AH3CD150A

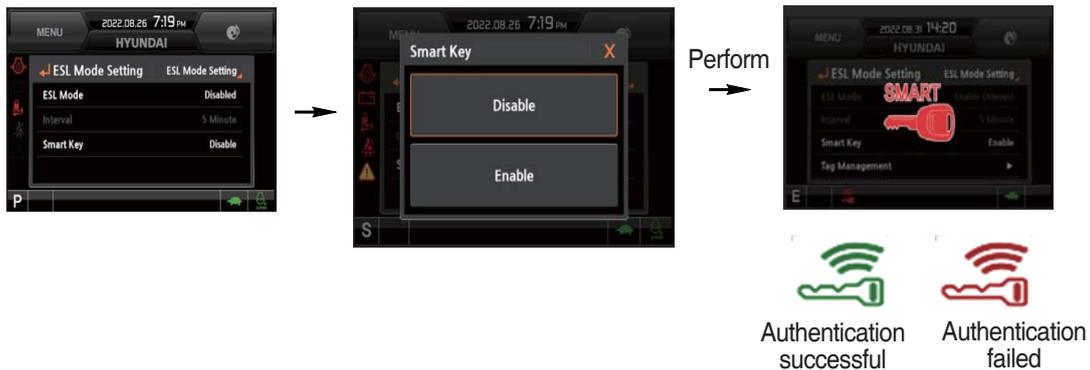
- ESL : Engine Starting Limit
- ESL mode is designed to be a theft deterrent or will prevent the unauthorized operation of the machine.
- When you Enable the ESL mode, the password will be required when the starting switch is turned to the on position.
- Disable : ESL function is disabled and password is not required to start engine.
- Enable (always) : The password is required whenever the operator starts engine.
- 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 to a maximum 4 hours.

※ Default password : 00000

Password length : 5~10 digits

## Start Limit - Smart Key Setting (When smart key is installed)



### - Smart Key Exclusive

When the Smart key option (optional) is installed, Smart key menu is shown, and performance or non-performance of Smart key authentication can be set through the Smart key menu.

When the Smart key is not in the cabin, the approval procedure is rejected, and password must be entered.

## Start Limit - Tag Management



- The tag management menu is activated only when the Smart key menu is set through performance.

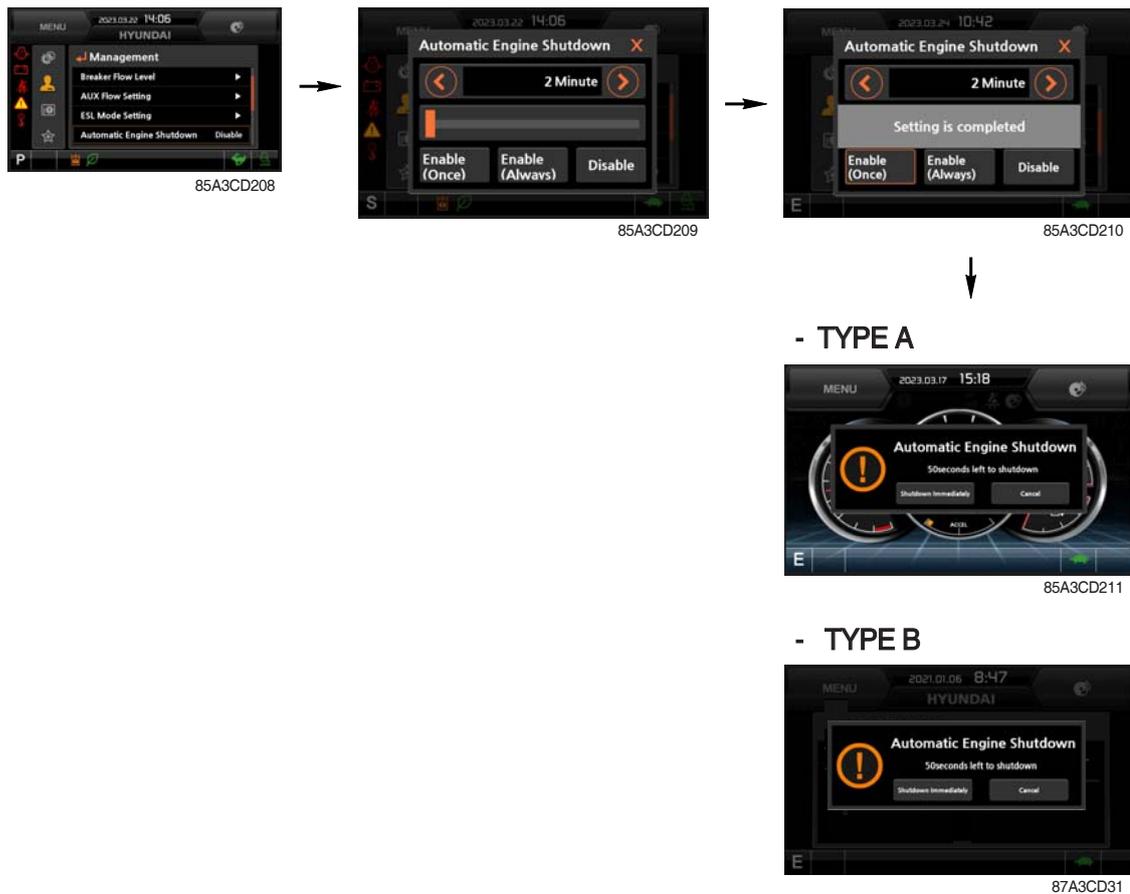
Tag can be registered or deleted.

- When registering the tag : Locate only the tag preferred for registration inside the cabin.
- When deleting the tag : All registered tags are deleted.

### ※ Engine Starting Condition

Case	ESL Mode	Smart Key	Condition
1	Disable	Disable	- With registered tag : Engine can be started without password input. - Without registered tag : Engine can be started without password input.
2	Disable	Enable	If Smart Key is enabled, ESL Mode is automatically enabled. This Case 2 work the same as the Case 4.
3	Enable	Disable	- With registered tag : Engine can be started with password input. - Without registered tag : Engine can be started with password input.
4	Enable	Enable	- With registered tag : Engine can be started without password input. - Without registered tag : Engine can be started with password input.

## ⑤ Automatic engine shutdown



The automatic engine shutdown function can be set by this menu.

### a. Once (one time)

- Automatic shutdown function set Once when key-on or engine operation condition.
  - Key-off when the shutdown button clicks after pop-up the automatic stop icon.
  - Shift automatic shutdown function to Disable when the cancel button clicks after pop-up the automatic stop icon.
- Keep Disable for the automatic shutdown function when key-off after key-on again or start engine.

### b. Always (continuous use)

- Automatic shutdown function set Always when key-on or engine operation condition.
  - Key-off when the shutdown button clicks after pop-up the automatic stop icon.
  - Shift automatic shutdown function to Disable when when the cancel button clicks after pop-up the automatic stop icon.
- Keep Always for the automatic shutdown function when key-off after key-on again or start engine.

### c. Disable

- Disable the engine automatic shutdown function.

### ⑥ Password change

– The password is 5~10 digits.



Enter the current password



Select the password change



Saved the new password in the MCU



Enter the new password again



Enter the new password

### ⑦ Machine information



· The information of the cluster, machine MCU and engine and machine checked by this menu.

### ⑧ A/S phone number



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

### ⑨ Cluster update



HX60A3CD169A



HX60A3CD149A

Enter the user password



HX60A3CD170A

Select the cluster update

- The cluster and CAN device can be updated by this menu.
- ※ Do not turn power off while updating.

#### a. Application update



HX60A3CD172A

Select application item



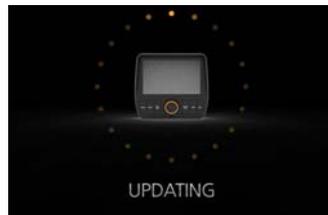
HX60A3CD173A

Select file to update



HX60A3CD174A

Select OK



HX60A3CD176

Completed



HX60A3CD175A

In process

#### b. System update



HX60A3CD177A

Select system item



HX60A3CD173A

Select file to update



HX60A3CD174A

Select OK



HX60A3CD176

Completed



HX60A3CD175A

In process

## ⑩ Service menu



Enter the manager password

- Power shift : Power shift mode (default/option can be set by this menu).
  - Operating hours : Operating hours in individual modes since the machine line out can be checked by this menu.
  - Main gauge type : The engine rpm or fuel level gauge can be display on the main gauge of the main screen by this menu (type A only).
  - Display RPM : Display the numeric value of engine rpm on the main gauge of the main screen can be set by this menu (type A only).
  - AVCU setting : 2-Way or 4-Way dependent upon the machine options can be selected by this menu.
  - Adding language : The language displayed on the cluster can be update by this menu when it is required to correct language.
- ※ This menu can be used only HD Hyundai Construction Equipment service man. Do not attempt unauthorized adjustment.

#### (4) Display

##### ① Clock adjust



HX60A3CD191A



HX60A3CD192A

- The first row of boxes indicate Year/Month/Day.
- The second row shows the current time. (AM, PM/0:00~12:59)

##### ② Brightness

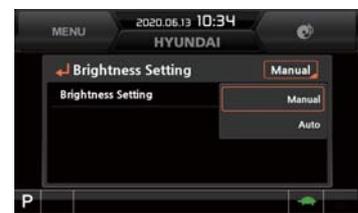


HX60A3CD193A

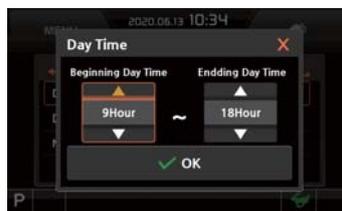


HX60A3CD194A

Manual (1st~10th step)



HX60A3CD195A



Auto (day/night)

HX60A3CD197A



Auto (day time)

HX60A3CD196A

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

### ③ Unit set



- Metric units : Units change to metric units.
- US units : Units change to U.S. units
- User setting : Units change to user setting units

Item	Metric units	U.S. units	User setting
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

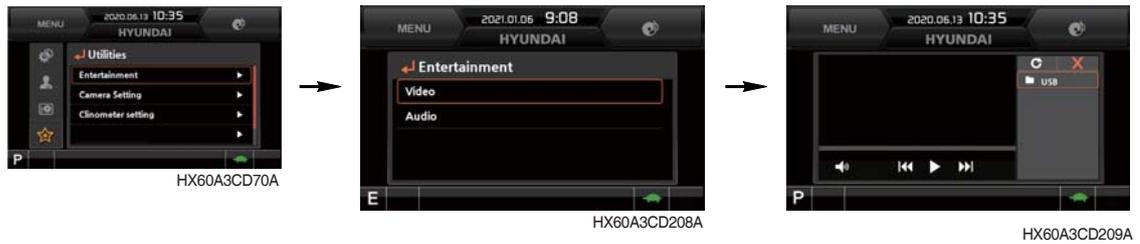
### ④ Language selection



- User can select preferable language (22 languages) and all displays are changed the selected language.

## (5) Utilities

### ① Entertainment



- Play MP4 or codec file of external hard disk through USB port.
- The USB port is located left side of the cluster.
- Over 1100 engine rpm, the screen turns into the operation screen with MP4 or codec file playing for the safety. The video is played again when the engine revolution is 1100 rpm or less.

**▲ The video play is prohibited for the safety reason when the machine is operated.**

### ② Camera setting



- Three cameras can be installed on the machine and display order can be set by this menu.
  - ※ If the camera is not equipped, this menu is not useful.
  - 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, the camera channel can be changed by touching the screen.
  - Display change to reduction size or display is not visible by pushing the select switch or touch the screen.
- (display reduction size → hiding → display)



HX60A3CD204

- The camera display is terminated by pressing the ESC switch or touch the X icon on the screen.

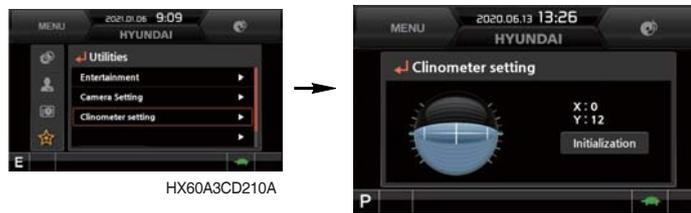
- **Camera control switch**

- Select the CAM switch to activate Rear / RH view camera from the beginning screen.
- While in that mode, select the ESC switch to return to the home screen.



87A3CD32

③ **Clinometer setting**



HX60A3CD210A

HX60A3CD211A

- When the machine is on the flatland, if you touch "initialization" on cluster, the values of X, Y will reset to "0".
- You can confirm tilt of machine in cluster's operating screen.

④ **Manual**



HX60A3CD212A

85A3CD229

- Manual of the cluster can be read on the monitor.

⑤ **Emergency mode**

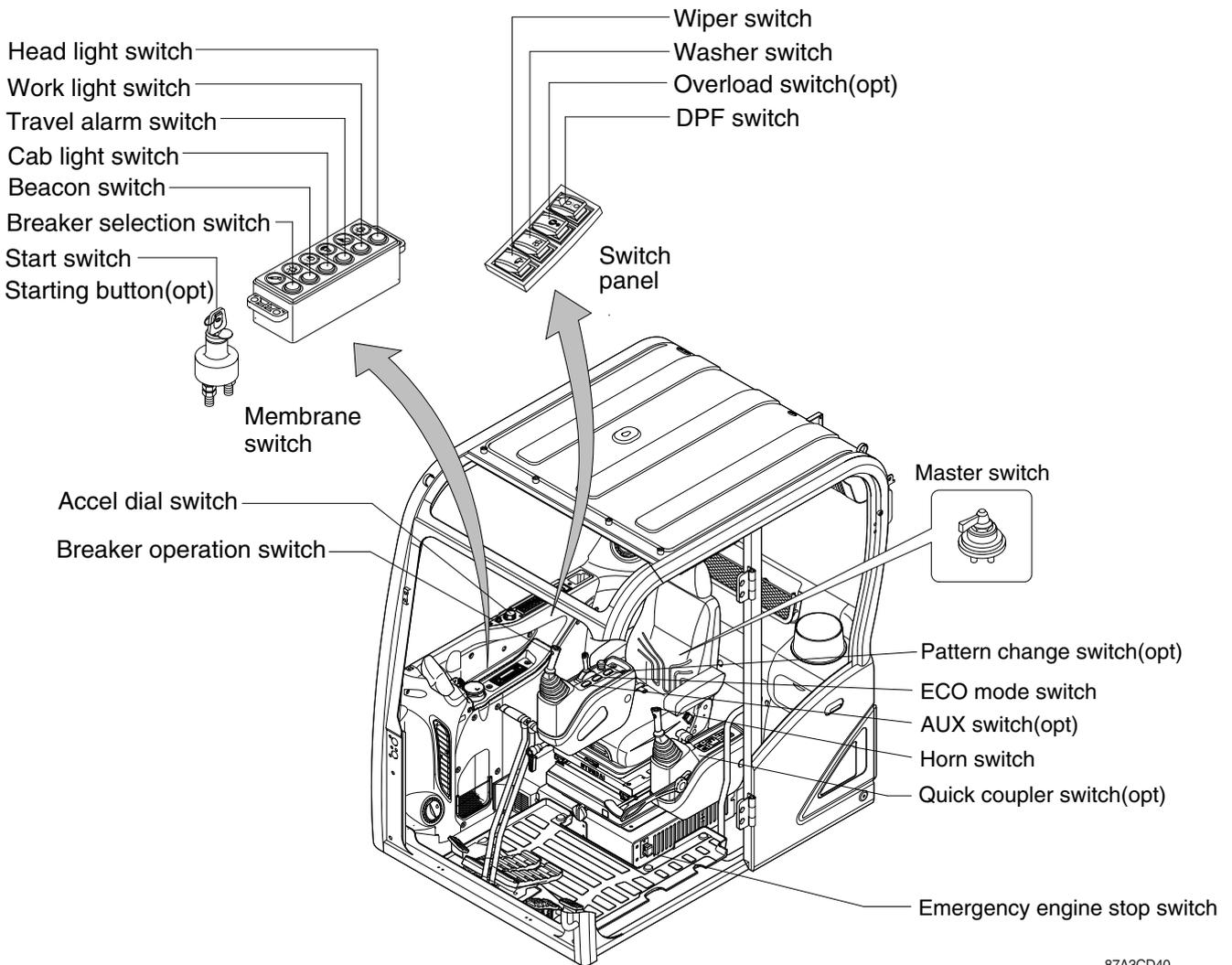


HX60A3CD205A

HX60A3CD206A

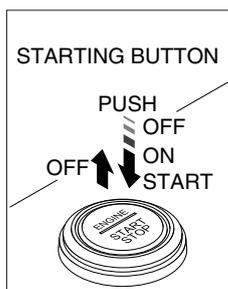
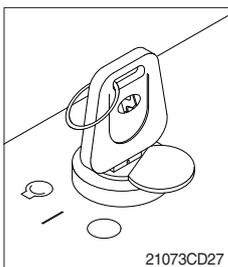
- When switches of the monitor and the accel dial fails, switches are displayed on LCD, and you are allowed to perform operation by touching the screen.
- Such operation is allowed only on this mode screen.

### 3. SWITCHES



87A3CD40

#### 1) STARTING SWITCH



Starting button with smart key tag (opt)

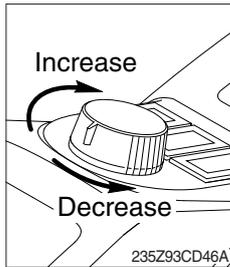
(1) There are three positions, OFF, ON and START.

- ○ (OFF) : No of electrical circuits activate.
- | (ON) : All the systems of machine operate.
- Ⓚ (START) : Use when starting the engine.

Release key immediately after starting.

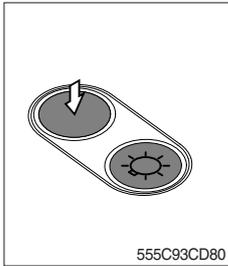
- ※ If you turn ON the starting switch in cold weather, the fuel warmer is automatically operated to heat the fuel by sensing the coolant temperature. Start the engine in 1~2 minutes after turning ON the starting switch. More time may be required according to ambient temperature.
- ※ Starting switch controller tries engine starting at least 3 seconds even if switch is released after driver's start trial (key switch : start position / starting button : long push) to prevent short-time cranking (which can not starting engine). If no-start conditions (unlock safety knob) are resolved (lock safety knob) during the 3 seconds of engine starting attempt, engine can be started.
- ※ Key must be in the ON position with engine running maintain electrical and hydraulic function and prevent serious machine damage.

## 2) ACCEL DIAL



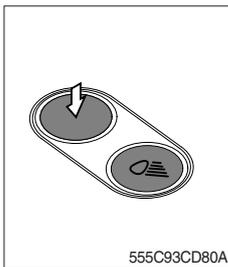
- (1) There are 10 dial settings.
- (2) Setting 1 is low idle and setting 10 is high idle.
  - By rotating the accel dial to right : Engine speed increased.
  - By rotating the accel dial to left : Engine speed decreased.

## 3) HEAD LIGHT SWITCH



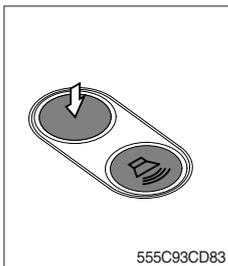
- (1) This switch is used to operate the head light and illumination lamps.
- (2) Press the switch once, the head light and the below illumination lamps light up.
  - Air conditioner and heater controller
  - Radio and USB player
  - USB socket, DPF switch, accel dial and cigar lighter
- (3) Press the switch once more, the head light and illumination lamps turn off.

## 4) WORK LIGHT SWITCH



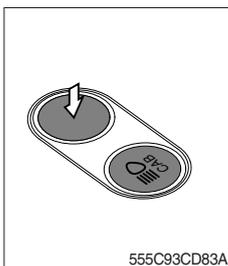
- (1) This switch is used to operate the work light.
  - Press the switch once, the work light and the pilot lamp light up.
  - Press the switch once more, the work light and pilot lamp turn off.

## 5) TRAVEL ALARM SWITCH



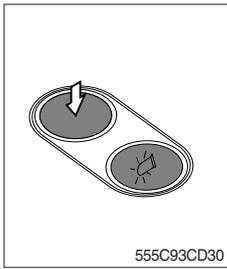
- (1) This switch is to activate travel alarm function surrounding when the machine travels.
  - ON : The travel alarm function is activated.
  - OFF : The travel alarm function is not activated.

## 6) CAB LIGHT SWITCH



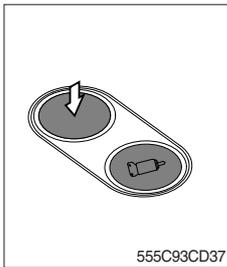
- (1) This switch turns on the cab light on the cab.

## 7) BEACON SWITCH (option)



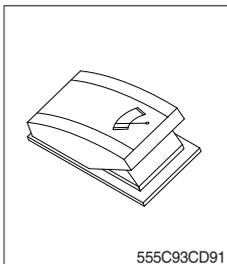
- (1) This switch turns ON the rotary light on the cab.
- (2) The indicator lamp lights up when operating this switch.

## 8) BREAKER SELECTION SWITCH (option)



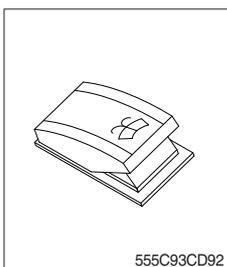
- (1) When this switch is pressed, the breaker will be ready to operation.  
※ Refer to page 3-46 for details.

## 9) WIPER SWITCH



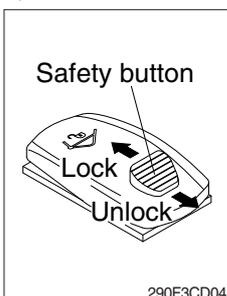
- (1) This switch is used to operate the wiper.  
The wiper operates.  
△ If wiper does not operate with the switch in the ON position, turn the switch off immediately. Check the cause. If the switch remains ON, motor failure can result.

## 10) WASHER SWITCH



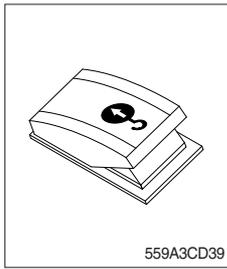
- (1) This switch is used to operate the washer.  
Washer fluid is sprayed and the wiper is operated only when this switch is pressed. If you release the switch, return to the first position.

## 11) QUICK COUPLER SWITCH (option)



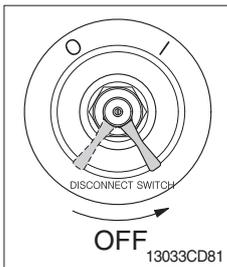
- (1) This switch is used to engage or disengage the moving hook on quick coupler.  
※ Refer to page 8-10 for details.

## 12) OVERLOAD SWITCH (option)



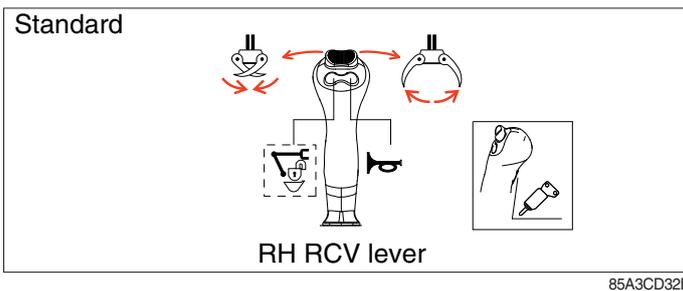
- (1) When this switch is activated, buzzer makes sound and overload warning lamp lights up in the event that the machine is or becomes in an overloaded situation.
- (2) When the switch is inactivated, buzzer stops and warning lamp goes off.

## 13) MASTER SWITCH



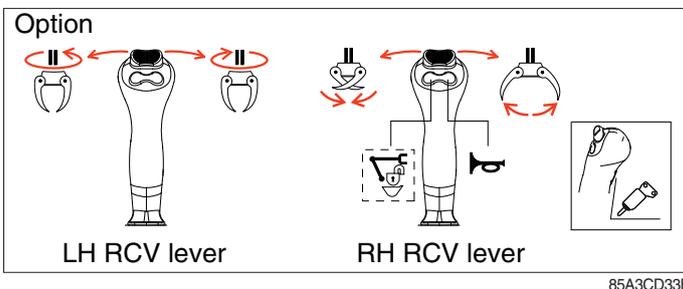
- (1) This switch is used to shut off the entire electrical system.
  - (2) I : The battery remains connected to the electrical system.  
O : The battery is disconnected from the electrical system.
- ※ **Never turn the master switch to O (OFF) with the engine running. It could result in engine and electrical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

## 14) CONTROL LEVER SWITCH (LH, RH)



(1) The breaker operates in three steps below.

- **First step : Select breaker selection switch on the membrane switch.**
- **Second step : Select Aux switch to position 3.**
- **Third step : Press breaker operation switch.**



(2) This switch operates the clamshell or shear.

- ※ **This switch applies to double action hydraulic attachment circuit.**

## 15) 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 and is concerned about high exhaust temperature.
- ③ It is strongly recommended that this position is only activated when high temperatures may cause a hazardous condition.

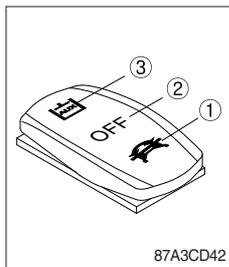
### (3) OFF position (③)

This position will initiate an 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 3-16 for details.
- ※ This switch can be moved to the manual regeneration position (②) only when the safety button is pulled backward.
- ※ Also, this switch returns to the OFF position when released from the manual regeneration position (②).

## 16) AUX SWITCH (option)

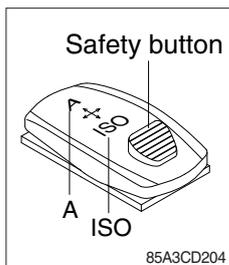


(1) This switch is used to select the auxiliary optional functions.

- ① : Angle dozer
- ② : Off
- ③ : Breaker operating or 2way or 4way

※ Refer to page 3-27 and section, Levers and pedals for details.

## 17) PATTERN CHANGE SWITCH (option)



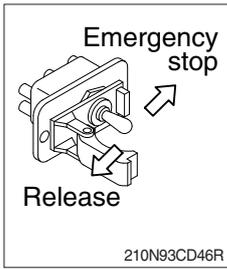
(1) The pattern change can be operated easily using this switch.

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

▲ Before starting the machine, check switch position.

※ Refer to page 4-22 for the details.

## 18) EMERGENCY ENGINE STOP SWITCH

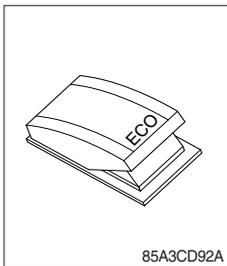


(1) This switch is used to stop the engine in the event of an emergency.

(2) The engine system reboot is required through master switch ON / OFF operation for restarting after the emergency stop switch operation.

※ **Be sure to return the emergency switch to the release position before trying to restart the engine.**

## 19) ECO MODE SWITCH

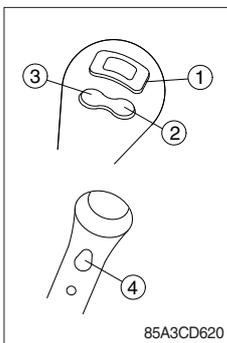


(1) This switch is used to improve the fuel economy of the equipment.

(2) The pump horsepower is reduced, when you press this switch.

## 20) LH RCV LEVER SWITCH

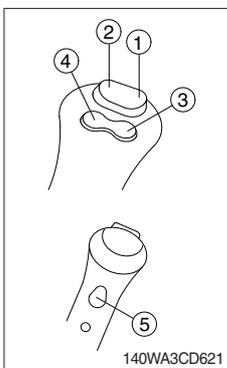
### (1) Button type



The switches on the LH RCV lever is function as below.

- ① None
- ② None
- ③ None
- ④ None

### (2) Proportional type (option)

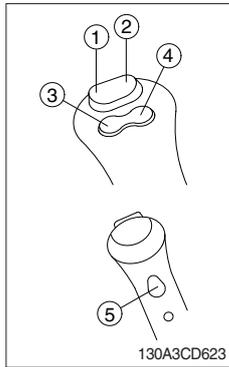


The switches on the LH RCV lever is function as below.

- ① **CW rotating switch**  
When this switch is pressed, the clockwise rotating will operate.
- ② **CCW rotating switch**  
When this switch is pressed, the counterclockwise rotating will operate.
- ③ None.
- ④ None.
- ⑤ None.

## 21) RH RCV LEVER SWITCH

### (1) Proportional type



The switches on the RH RCV lever is function as below.

① **2-way clamp switch**

When this switch is pressed, the clamp will only operate when the crusher operation mode is selected.

② **2-way release switch**

When this switch is pressed, the release or breaker will operate when the crusher operation mode or breaker operation mode is selected.

③ **Quick coupler switch**

This switch is used to engage or disengage the moving hook on quick coupler.

※ **Refer to page 8-10.**

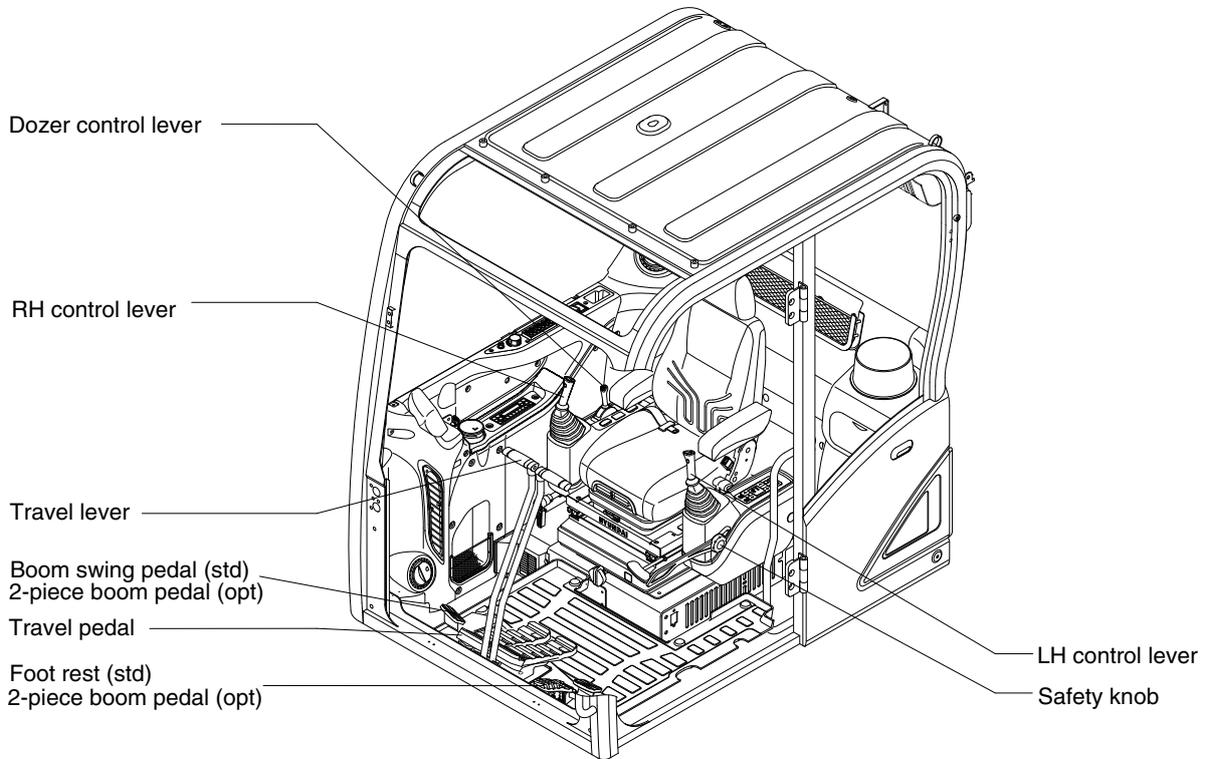
④ **Horn switch**

When this switch is pressed, the horn will sound.

⑤ **Breaker switch**

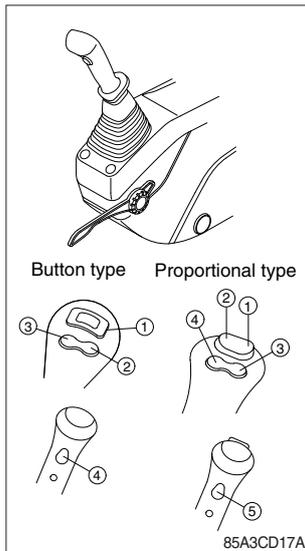
When this switch is pressed, the breaker will only operate when the breaker operation mode is selected.

## 4. LEVERS AND PEDALS



87A3CD45

### 1) LH CONTROL LEVER



(1) This joystick is used to control the swing and the arm.

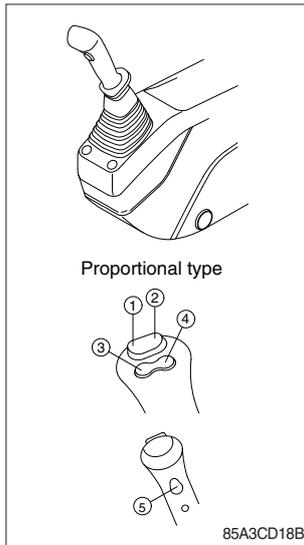
※ Refer to operation of working device in chapter 2 for details.

(2) The switch functions are as below.

No.	Button type	Proportional type (opt)
①	N.A	Rotating-CW
②	N.A	Rotating-CCW
③	N.A	N.A
④	N.A	N.A
⑤	-	N.A

※ Refer to page 3-45 for the details of the switch function.

## 2) RH CONTROL LEVER



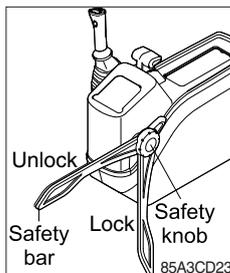
(1) This joystick is used to control the boom and the bucket.  
 ※ Refer to operation of working device in chapter 2 for details.

(2) The switch functions are as below.

No.	Proportional type
①	2-way clamp
②	2-way release
③	Quick coupler
④	Horn
⑤	Breaker

※ Refer to page 3-46 for the details of the switch function.

## 3) SAFETY KNOB



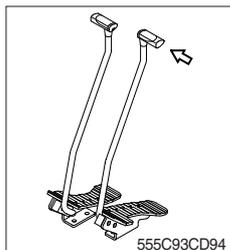
(1) All control levers and pedals are disabled from operation by locating the safety knob to the LOCK position as shown.

※ Be sure to turn the safety knob to LOCK position when entering or leaving from operators seat/cabin.

(2) The machine is operational by turning the safety knob to the UNLOCK position.

※ Do not use the safety bar for handle when getting on or off the machine.

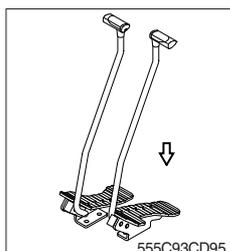
## 4) TRAVEL LEVER



(1) This lever is mounted on travel pedal and used for traveling by hand. The operation principle is same as the travel pedal.

(2) Refer to traveling of the machine in chapter 4 for details.

## 5) TRAVEL PEDAL

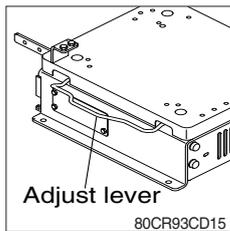


(1) This pedal is used to move the machine forward or backward.

(2) If left side pedal is pressed, left track will move.  
 If right side pedal is pressed, right track will move.

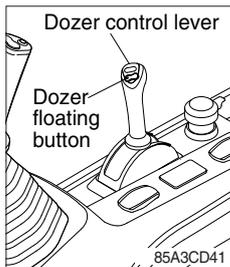
(3) Refer to traveling of machine in chapter 4 for details.

## 6) SEAT AND CONSOLE BOX ADJUST LEVER



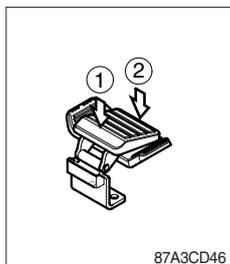
- (1) This lever is used to move the seat and console box to fit the contours of the operator's body.
- (2) Pull the lever to adjust forward or backward over 90 mm (3.5").

## 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.
- (3) The dozer floating feature activates when the dozer floating button is pressed.
  - First step : Press the dozer floating button.
  - Second step : Push the dozer lever until the end.
  - Third step : The lever is fixed even if the dozer lever is released.  
(detent function)
- (4) Floating release method.
  - First step : Press the dozer floating button again.
  - Second step : Pull back the fixed dozer lever.

## 8) BOOM SWING PEDAL

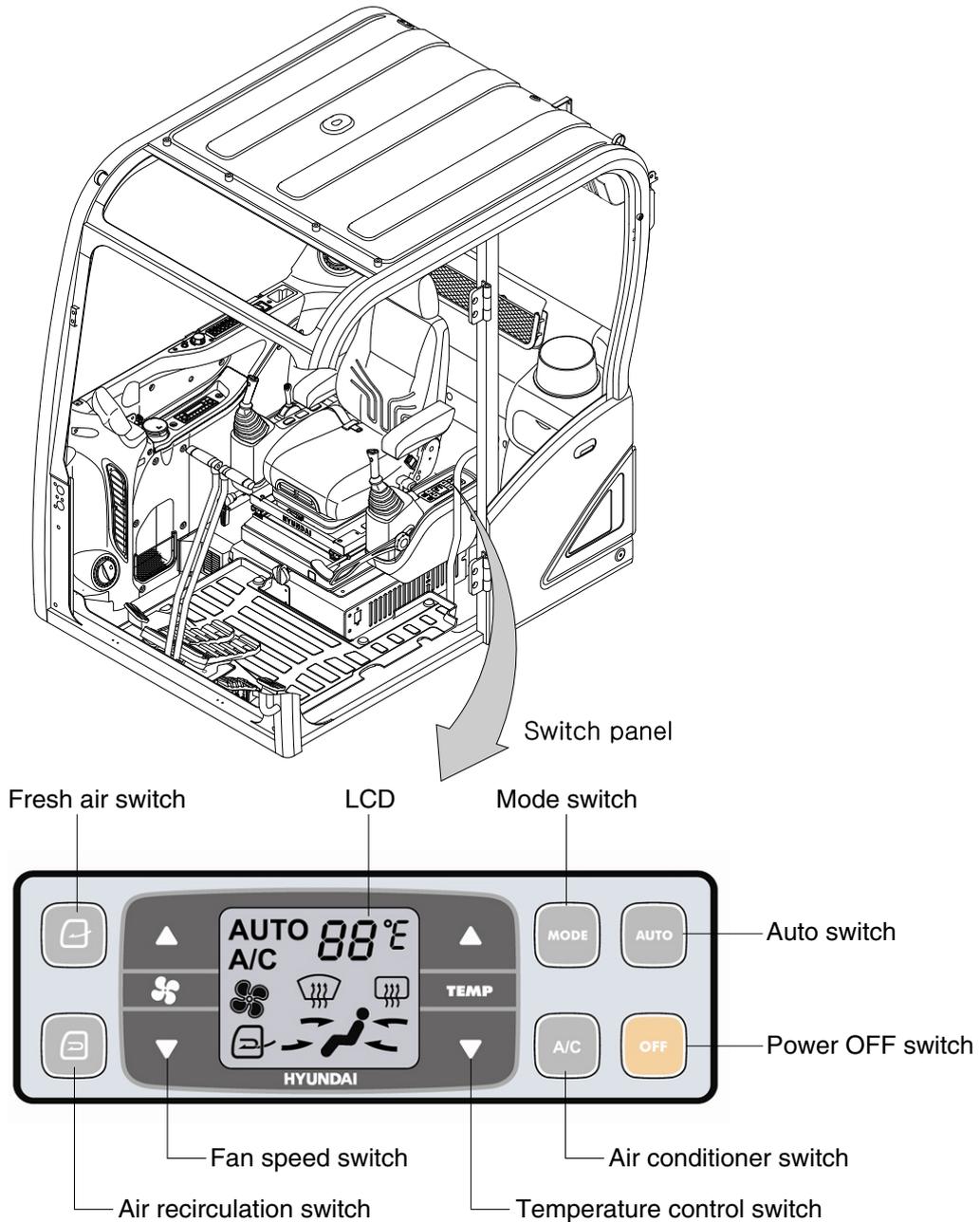


- (1) This pedal is used to swing the boom to the right and left direction.
- (2) If the front (①) of the pedal is pressed, boom will swing to the left direction.  
If the rear (②) of the pedal is pressed, boom will swing to the right direction.

## 5. FULL AUTO AIR CONDITIONER AND HEATER

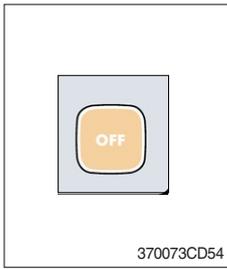
Full auto air conditioner and heater system automatically keeps the optimum condition in accordance with operator's temperature configuration sensing ambient and cabin inside temperature.

- Location of air flow ducts



87A3CD47

### 1) POWER OFF SWITCH

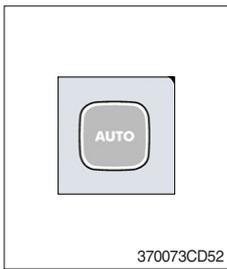


- (1) This switch turns the system and the LED OFF.  
Just before the power OFF, set values are stored.

#### (2) Default setting values

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

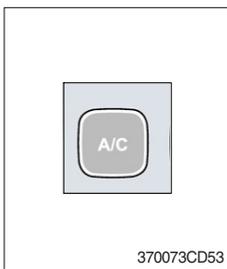
### 2) AUTO SWITCH



- (1) Turn the starting switch to ON position, LCD lights up.  
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 goes OFF.

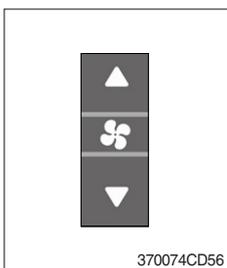
### 3) AIR CONDITIONER SWITCH (compressor switch)



- (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.**

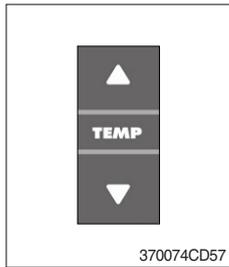
**In this case, exchange the drain cock.**

### 4) FAN SPEED SWITCH



- (1) Fan speed is controlled automatically by sett 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 turns the system ON.

## 5) TEMPERATURE CONTROL SWITCH

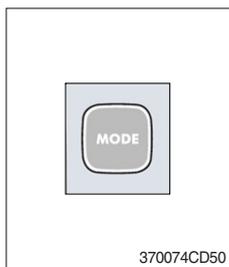


- (1) Setting temperature indication (17~32°C, scale : 1 °C)
- (2) Max cool and max warm beeps 5 times.
- (3) The max cool or the max warm position operates per the following table.

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 The temperature unit can be changed (°C ↔ °F) by pressing temperature switches (Up/Down) simultaneously for more than 5 seconds.

## 6) MODE SWITCH

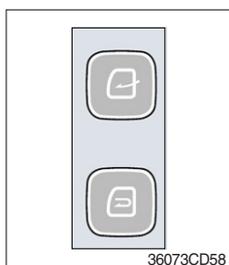


- (1) Operating this switch, it beeps and displays symbol of each mode in the following order. (Vent → Vent/Foot → Foot → Foot/Def → Vent)

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

- (2) When operating defroster, 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.

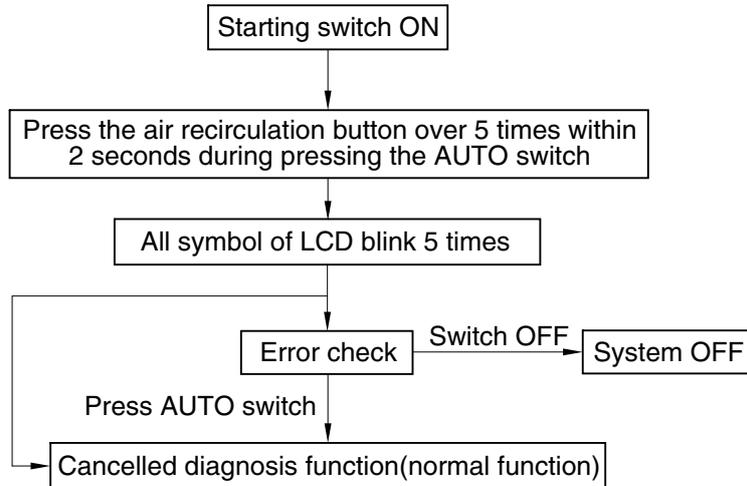
## 7) FRESH AIR/AIR RECIRCULATION SWITCH



- (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 periods of time**  
\* **Check condition of an outer filter and an inner filter periodically to maintain good efficiency of the system.**

## 8) SELF DIAGNOSIS FUNCTION

### (1) Procedure



3607A3CD69

### (2) Error check

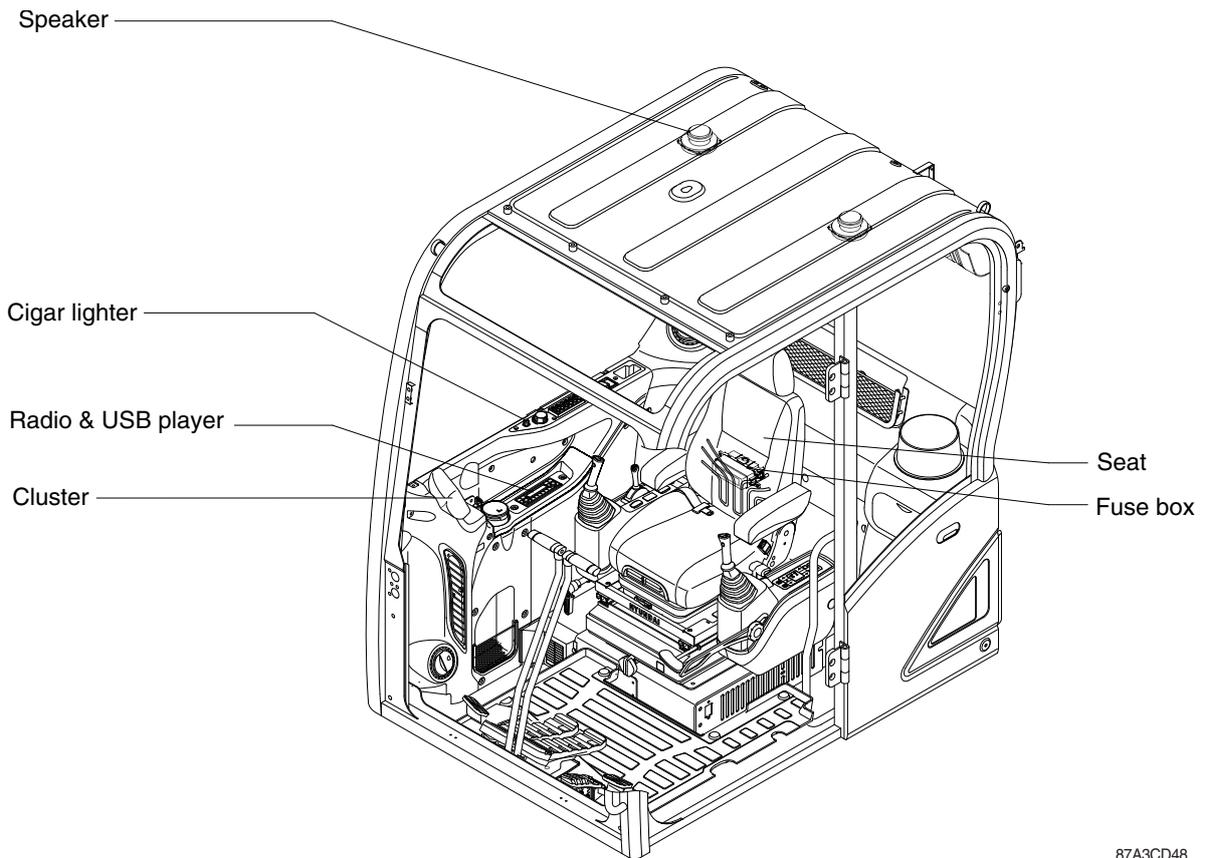
- The corresponding error code flickers on the setup temperature display panel, the other symbol will turn OFF.
- Error code flickers every 0.5 second.
- If error code is more than two, each code flickers 2 times in sequence.
- Error code

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

### (3) Fail safe function

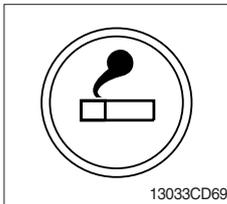
Error description	Fail safe function
Cabin inside sensor (11)	25°C alternate value control
Ambient sensor (12)	20°C alternate value control
Duct (evaporator) sensor (14)	1°C alternate value control
Temp actuator (15)	If opening amount is 0 %, the alternate value is 0 %
	If not, the alternate value is 100 %
Mode actuator 1, 2 (16, 17)	The alternate value is Vent

## 6. OTHERS



87A3CD48

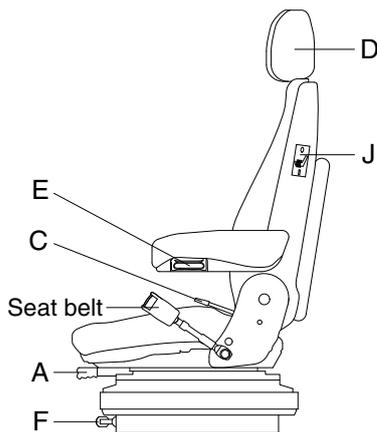
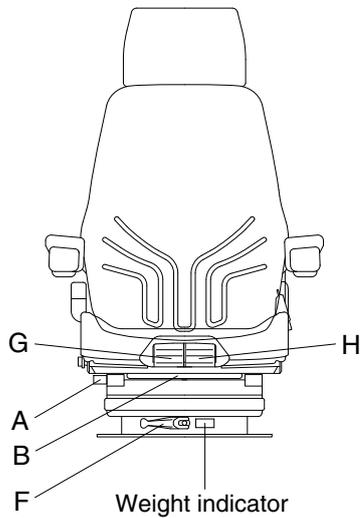
### 1) CIGAR LIGHTER



- (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 12 V, 120 W.**

## 2) 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.



140Z93CD55

### (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.

### (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.

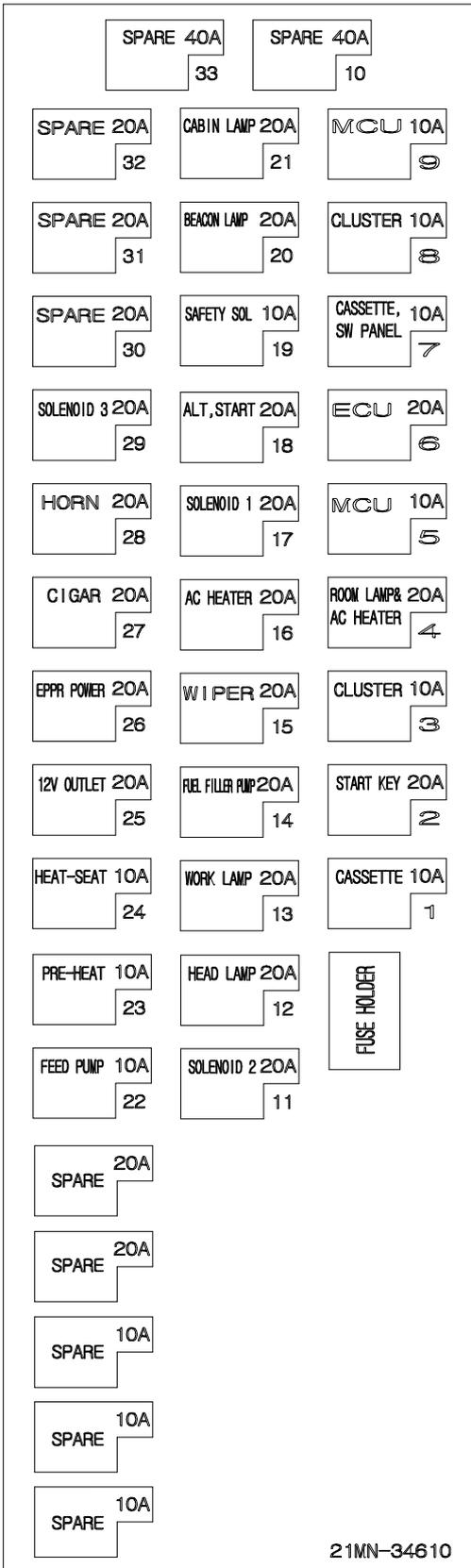
0 = Seat heater OFF

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.

### 3) FUSE BOX



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

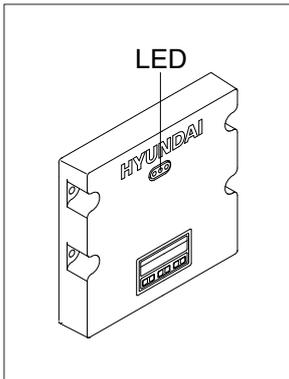
(2) The fuse box cover indicates the capacity of each fuse and which circuit it protects.

※ When replacing a fuse or relay, always use one of the same capacity.

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

21MN-34610

#### 4) MCU



85A3CD57

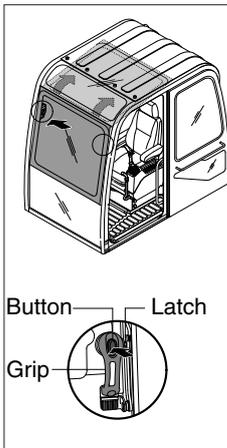
(1) To match the pump absorption torque with the engine torque, MCU varies EPPR valve output pressure, which controls pump discharge volume whenever engine speed drops and provides feedback, under the reference rpm of each mode set.

(2) Three LED lamps on the MCU display as below.

LED lamp	Trouble	Service
G is turned ON	Normal	-
G and R are turned ON	Trouble on MCU	· Change the MCU
G and Y are turned ON	Trouble on serial communication line	· Check if serial communication lines between controller and cluster are disconnected
Three LED's are turned OFF	Trouble on MCU power	· Check if the input power wire (24 V, GND) of controller is disconnected · Check the fuse

G : green, R : red, Y : yellow

#### 5) UPPER WINDSHIELD



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

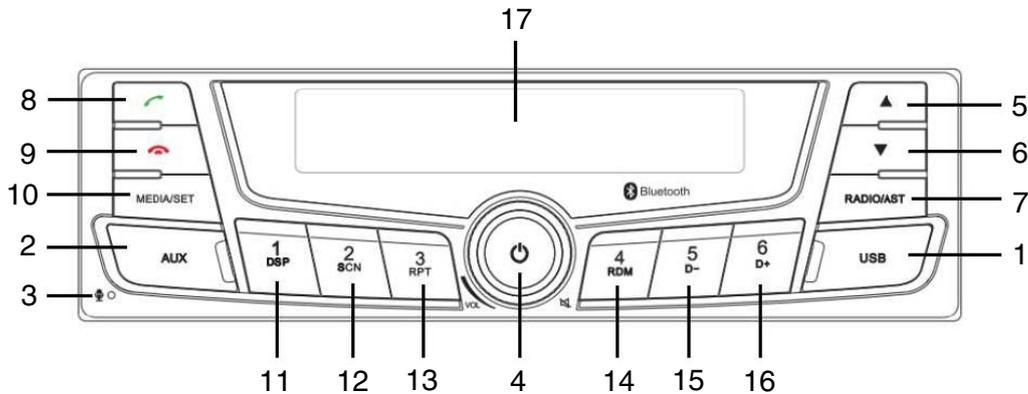
- ① Release both latches in order to release the upper windshield.
- ② Hold both grips that are located at both sides the windshield frame and push the windshield upward.
- ③ Hold both grips that are provided on the windshield frame and pull back into the storage position until auto lock latch is engaged.

※ **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. Steps in the reverse order to close the upper windshield.

## 6) RADIO, USB PLAYER, BLUETOOTH AUDIO

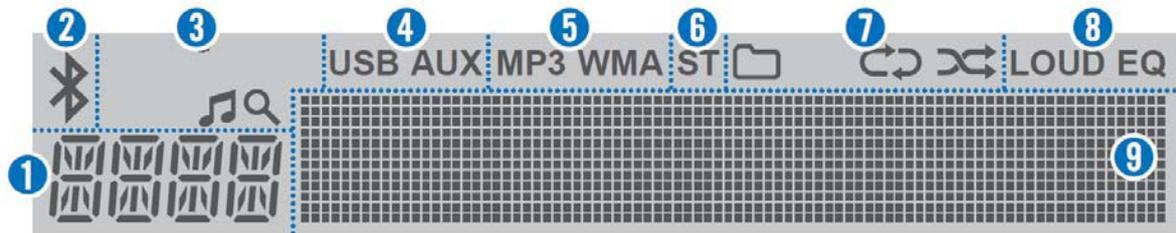
### ■ FRONT VIEW



19A3RD05

- |   |  |
|---|--|
| <p>1 USB port with cover : Open the cover and connect the USB storage device.</p> <p>2 AUX port with cover : Open the cover and plugging the external audio device.</p> <p>3 Internal Microphone</p> <p>4 Power ON/OFF, Mute and Pause knob.</p> <p>5 Searching for next station, manual step up and next track.<br/>* Short Press :<br/>Radio mode) Search for the next station automatically USB/BT Audio) Next Track<br/>* Long Press :<br/>Radio mode) Step up manually USB/BT Audio) Fast Forward</p> <p>6 Searching for previous station, manual step down and previous song.<br/>• Short Press :<br/>Radio mode) Search for the previous station automatically USB/BT Audio) Previous song<br/>• Long Press :<br/>Radio mode) Step down manually USB/BT Audio) Fast rewind</p> <p>7 Radio Button: enters Radio mode, changes the radio band ,and activates Automatic station storage<br/>• Short Press : Select the Radio band<br/>• Long Press : AST mode</p> | <p>8 Call button :<br/>• When a call comes in : accepts a call(press) ; switches a call mode (Talking / Private mode)</p> <p>9 Call end button :<br/>• During a call connection : ends a call (press);</p> <p>10 Media selection or Setup button<br/>• Short Press : Move back to previous media<br/>• Long Press : Move to the setting mode</p> <p>11~16 Preset buttons :<br/>- Radio : Recall each stored station(press); store each station (press and hold).<br/>- USB/BT AUDIO :<br/>Preset1 : Display folder name / ID3 Information<br/>Preset2 : Scan each track for 10 seconds<br/>Preset3 : Repeat the file and folder<br/>Preset4 : Play folders at random or play all<br/>Preset5 :<br/>• Short Press: Move to previous folder<br/>• Long Press : Play first 10 tracks of current folder<br/>Preset6 :<br/>• Short Press : Move to next folder<br/>• Long Press : Play first 10 tracks of current folder</p> <p>17 Display window for play / reception /menu state and information.</p> |
|---|--|

## ■ DISPLAY WINDOW (LCD)

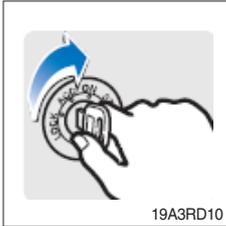


19A3RD03

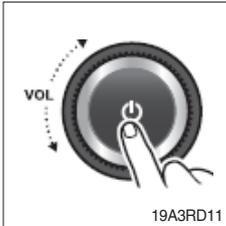
- |  |  |
|--|--|
| <p>1 Function display area for showing the function mode.</p> <p>2 Bluetooth indicator for the Bluetooth connection.</p> <p>3 Search indicator for USB play list.</p> <p>4 USB/AUX indicators for the USB or External device connection.</p> <p>5 MP3/WMA indicators for USB's Audio Stream detections.</p> <p>6 ST (Stereo) indicators for FM stereo reception.</p> | <p>7 Playback mode indicators for USB playback mode.</p> <p>    📁 : Folder mode.</p> <p>    🔄 : Repeat playback.</p> <p>    🎲 : Random playback.</p> <p>8 LOUD/EQ indicators for sound effect.</p> <p>    LOUD : Loudness mode.</p> <p>    EQ : EQ mode.</p> <p>9 Multi-function display area for showing the play, reception or menu information.</p> |
|--|--|

## ■ GENERAL

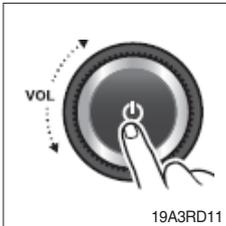
### (1) Turning the unit on/off



- ① Turn the starting switch to ON position.



- ② Press the POWER button to turn the power on.
  - If the source is ready, playback also starts.
  - To turn on the power directly.



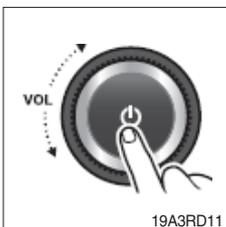
- ③ When power is on, press and hold the POWER button to turn power off.

### (2) Adjusting volume directly



- ① Turn the VOLUME dial to control volume.
  - Available volume range: 00 (mute) ~ 30.

### (3) Muting the sound quickly



- ① Press the MUTE button to turn mute on.
  - "Mute" will be displayed on the LCD and mute the sound.
  - Press the MUTE button again or turn VOLUME dial to restore sound.

#### (4) Setting the sound



- ① Press and hold MEDIA/SET button for 2 seconds, then rotate the volume to access the [AUDIO SET] menu

Press the volume knob to access the Audio Settings menu.

Then press the volume knob and the Audio Settings option appears as below.

- BASS : sets the bass sound level (-7 ~ +7).
- TREBLE : sets the treble sound level (-7 ~ +7).
- BALANCE : sets the sound balance between the right and left speakers (LEFT 7 ~ RIGHT 7).
- EQUALIZER : selects the one of the 5 EQ styles (EQ OFF, CLASSIC, POP, ROCK, JAZZ).
- LOUD : Selects the one of the 2 options (ON, OFF)

- ※ If there is no operation after 5 seconds, automatically exit the [Audio Settings] menu.
- ※ The BASS and TREBLE can be adjusted only if the EQ OFF is selected in the sub-menu.
- ※ Press and hold [MEDIA/SET] to enter the settings, and press [VOL] again to return to the Previous Settings item when you press [VOL] to enter the previous one.

#### (5) Setting the system functions



- ① Press and hold [MEDIA/SET] for 2 seconds, then rotate the volume knob to access the [SYSTEM SET] menu.

Press the volume knob to access the system settings menu. Then press the volume knob and the system settings option appears.

Each item can be adjusted by rotating the volume knob.

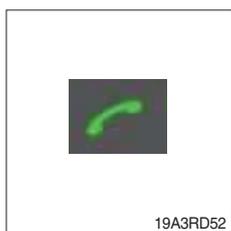
- ② S-VOL Settings.
  - The S-VOL value ranges from 5 to 25. You can set the default volume here.
  - When the player is turned on, if the volume of the last shutdown is greater than the default volume, it will be restored to the default volume after being turned on.
  - If the volume before power off is between VOL5 and the default volume, turn it on and return to the volume before power off.
  - If the volume is less than VOL5 before power off, power on will return to VOL5.

## **(6) Setting the regions**

- ASIA / MIDDLE EAST  
FM : 87.5 ~ 108.0 MHz (100 kHz step)  
AM : 531 ~ 1,602 kHz (9 kHz step)
- AMERICA  
FM : 87.5 ~ 107.9 MHz (200 kHz step)  
AM : 530 ~ 1,710 kHz (10 kHz step)
- LATIN  
FM : 87.5 ~ 108.0 MHz (100 kHz step)  
AM : 530 ~ 1,710 kHz (10 kHz step)
- EUROPE  
FM : 87.5 ~ 108.0 MHz (50 kHz step)  
AM : 522 ~ 1,620 kHz (9 kHz step)
- JAPAN  
FM : 76 ~ 90 MHz (100 kHz step)  
AM : 522 ~ 1,629 kHz (9 kHz step)
- Russia (OIRT)  
FM : 65.0 ~ 74.0 MHz (30 kHz step)  
AM : 522 ~ 1,602 kHz (9 kHz step)

## ■ BLUETOOTH

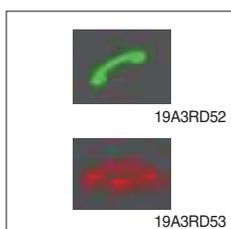
### (1) Pairing/Connecting your device



- ① Press  button for 2 seconds. The Bluetooth icon on the screen starts blinking for 120 seconds .  
[ The Bluetooth device is visible at this point ]
- ② Turn on your phone's Bluetooth
- ③ Go to your phone's Bluetooth Settings page
- ④ Look for a new Bluetooth device
- ⑤ Select [HYUNDAI] from the list of Bluetooth names.
- ⑥ When pairing is completed, the fixed Bluetooth icon will be displayed on the screen.

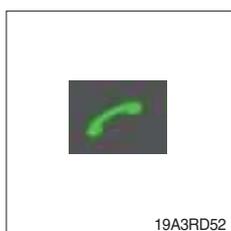
### (2) Answering a call

- ※ When a call comes in, the audio source is muted, and display the call information with ring tone.
- ※ If the phonebook is not downloaded, only incoming phone number is displayed without the caller information.



- ① To answer a call, press the  button or to reject a call press and hold the  button.
  - When a call comes in, the audio source is muted.
  - When a call is ended, this unit returns to the previous state media playback.

### (3) Private calls



During the call, you can do this by pressing  button to switch the sound output between the phone and the car speakers.

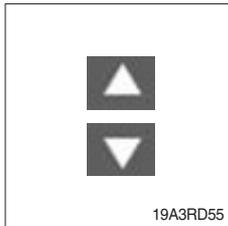
## ■ RADIO

### (1) Tuning in a radio station



- ① Press the RADIO/AST button repeatedly to enter the radio band in order of FM1, FM2, FMA, AM1, AMA.

You can select the FM1, FM2, FMA or AM1, AMA radio band. While the Auto Store stations (AST) are stored, you can select the AMA or FMA band by additional. The previously chosen broadcasting station will be received.



- ② Press the TUNE/TRACK UP & DOWN button to select the station. During the FM reception, the Stereo [ST] indicator is on.

### (2) Saving radio stations manually (Long Press : More than 2 seconds)

※ You can save up to 6 preset channels each for FM1, FM2, AM1 band. If change the stations while driving, use preset button to prevent accidents.

- ① Press RADIO/AST button repeatedly to select the band.
- ② After selecting the frequency, press and hold the PRESET [1 DSP] ~ [6 D+] button.
- ③ The frequency is saved to the selected preset button.
  - A total of 18 frequencies with 6 preset frequencies each for FM1/FM2/AM1 modes can be saved.

### (3) Saving radio stations automatically (Short Press)

※ You can save up to 6 preset channels automatically each for FMA and AMA band.

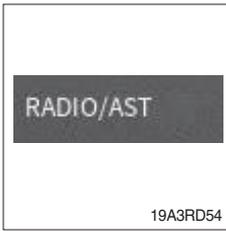


- ① Press the RADIO/AST button repeatedly to enter the radio band.
  - The previously chosen broadcasting station will be received.



- ② Press and hold the RADIO/AST button to automatically save receivable frequencies to preset button.
  - Up to 6 stations can be stored in each of the FMA and AMA band.

#### (4) Listening to a preset station



- ① Press the RADIO/AST button repeatedly to enter the radio band.
  - You can select the FM1, FM2, FMA or AM1, AMA radio band. While the Auto Store stations (AST) are stored, you can select the AMA or FMA band by additional.
  - The previously chosen broadcasting station will be received.
- ② Press the PRESET [1 DSP] ~ [6 D+] button.
  - From the 6 presets, select the frequency you want to listen to.

### ■ USB PLAYER

#### (1) Playing an USB device



- ① Open the cover, plug the USB device (included MP3/WMA media file) to the USB port.

Once a USB is connected, USB will automatically start playing from the first file within the USB.

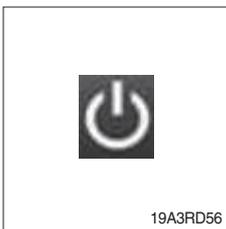
If a previously played USB is reconnected, then the file after the most recently played file is played.

If a different USB is connected or the file information within the USB was changed, then the USB will start playing from the first song within the USB.



- ② When an USB device to be played is already connected, press the MEDIA/SET button to play USB device.

The previously selected file is played.



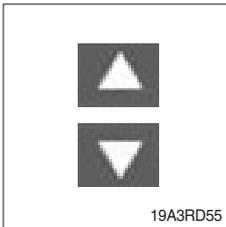
- ③ While playing, press the Volume Knob to pause the file.

## (2) Changing the song information

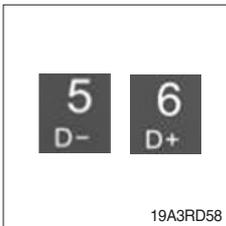


- ① Press the [1 DSP] button repeatedly to display information about the file being played.
- ② The information displayed includes the file name, playing time, ID3 Tag or folder name information saved with the song.

## (3) Controlling the playback



- ① While playing, Press the Track up and Track down button to move to the previous or next track.

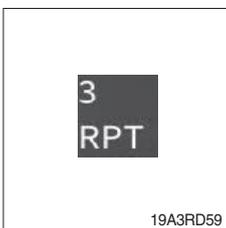


- ② Press the [5 D-] or [6 D+] button to moves to the previous or next folder.  
[5 D-] press : move to previous folder.  
[6 D+] press : move to next folder.



- ③ While playing, press the [1 DSP] button to pause the track. Press the button again to play the current track.

## (4) Change the playback mode



- ① Press the [3 RPT] button to select the Repeat playback mode.
- ②  On : The current file plays repeatedly.
- ③  On : The current folder plays repeatedly.
- ④ Off : Cancels repeat playback.



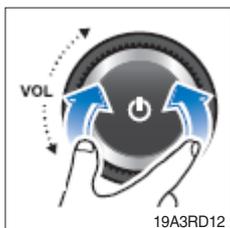
- ① Press the [4 RDM] button to select the Random playback mode.
- ②  On : All files of current folder play in random order.
- ③  On : All files of USB device play in random order.
- ④ Off : Cancels random playback.

## (5) Handling precautions for USB device

- ① The amount of time required to recognize the external USB device may differ depending on the type, size, or file formats stored on the USB. Such differences in the required time are not indications of malfunction. Please wait the period of time required to recognize the device.
- ② The device may not recognize the USB device if separately purchased USB hubs and extension cables are being used.
- ③ The device may not support normal operation when using formats such as HDD Type, CF, or SD Memory.

## ■ AUX PLAYER

※ By connecting an optional portable audio device to the AUX input jack (stereo 3.5 mm) on the unit and then simply selecting the source, you can listen on your car speakers.



- ① Turn the VOLUME dial left to decrease the volume level.
  - The AUX volume can also be controlled separately through the connected device.



- ② Turn the external audio equipment off. Open the cover, connect the audio output of the external audio equipment to AUX input terminal on the unit.
- ③ Turn the external audio equipment on. Start playback of the external audio equipment at a moderate volume.



- ④ Press the MEDIA/SET button repeatedly to select the AUX function.
- ⑤ Set your usual listening volume by turn the VOLUME dial left/right on the unit.
  - Once the connector is disconnected, the previous mode will be restored.
  - AUX mode can be used only when an external audio player has been connected.